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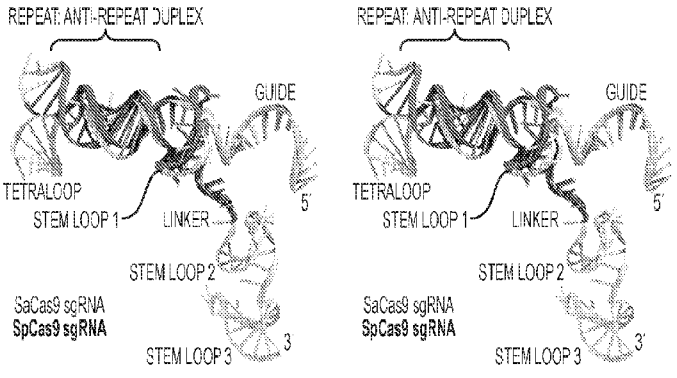


Fig. 13E

(57) Abstract: The invention provides for systems, methods, and compositions for altering expression of target gene sequences and related gene products. Provided are structural information on the Cas protein of the CRISPR-Cas system, use of this information in generating modified components of the CRISPR complex, vectors and vector systems which encode one or more components or modified components of a CRISPR complex, as well as methods for the design and use of such vectors and components. Also provided are methods of directing CRISPR complex formation in eukaryotic cells and methods for utilizing the CRISPR-Cas system. In particular the present invention comprehends optimized functional CRISPR-Cas enzyme systems. In particular the present invention comprehends engineered new guide architectures and enzymes to be used in optimized *Staphylococcus aureus* CRISPR-Cas enzyme systems.

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ENGINEERING AND OPTIMIZATION OF SYSTEMS, METHODS, ENZYMES AND GUIDE SCAFFOLDS OF CAS9 ORTHOLOGS AND VARIANTS FOR SEQUENCE MANIPULATION

RELATED APPLICATIONS AND INCORPORATION BY REFERENCE

[0001] This application claims the benefit of U.S. Provisional Patent Application Nos. 62/181,659, filed June 18, 2015 and 62/207,318, filed August 19, 2015.

[0002] All documents cited or referenced herein ("herein cited documents"), and all documents cited or referenced in herein cited documents, together with any manufacturer's instructions, descriptions, product specifications, and product sheets for any products mentioned herein or in any document incorporated by reference herein, are hereby incorporated herein by reference, and may be employed in the practice of the invention. More specifically, all referenced documents are incorporated by reference to the same extent as if each individual document was specifically and individually indicated to be incorporated by reference.

STATEMENT AS TO FEDERALLY SPONSORED RESEARCH

[0003] This invention was made with government support under Grant No. MH100706 awarded by the National Institutes of Health. The government has certain rights in the invention. This invention was also supported by JST, PRESTO, JSPS KAKENHI Grant Numbers 26291010 and 15H01463.

FIELD OF THE INVENTION

[0004] The present invention generally relates to systems, methods and compositions used for the control of gene expression involving sequence targeting, such as genome perturbation or gene-editing, that may use vector systems related to Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) and components thereof. In particular the present invention comprehends engineered new guide and enzyme architectures to be used in optimized CRISPR-Cas enzyme systems with particular reference to *Staphylococcus aureus* Cas9 enzyme (SaCas9) systems and corresponding guide scaffolds as well as one or more orthologous CRISPR-Cas enzyme systems.

BACKGROUND OF THE INVENTION

[0005] Recent advances in genome sequencing techniques and analysis methods have significantly accelerated the ability to catalog and map genetic factors associated with a diverse range of biological functions and diseases. Precise genome targeting technologies are needed to

enable systematic reverse engineering of causal genetic variations by allowing selective perturbation of individual genetic elements, as well as to advance synthetic biology, biotechnological, and medical applications. Although genome-editing techniques such as designer zinc fingers, transcription activator-like effectors (TALEs), or homing meganucleases are available for producing targeted genome perturbations, there remains a need for new genome engineering technologies that are affordable, easy to set up, scalable, and amenable to targeting multiple positions within the eukaryotic genome.

SUMMARY OF THE INVENTION

[0006] There exists a pressing need for alternative and robust systems and techniques for sequence targeting with a wide array of applications. This invention addresses this need and provides related advantages. The CRISPR/Cas or the CRISPR-Cas system (both terms are used interchangeably throughout this application) does not require the generation of customized proteins to target specific sequences but rather a single Cas enzyme can be programmed by a short RNA molecule to recognize a specific DNA target, in other words the Cas enzyme can be recruited to a specific DNA target using said short RNA molecule. Adding the CRISPR-Cas system to the repertoire of genome sequencing techniques and analysis methods may significantly simplify the methodology and accelerate the ability to catalog and map genetic factors associated with a diverse range of biological functions and diseases. To utilize the CRISPR-Cas system effectively for genome editing without deleterious effects, it is critical to understand aspects of engineering and optimization of these genome engineering tools, which are aspects of the claimed invention.

[0007] In a first aspect, the invention provides a non-naturally occurring or engineered CRISPR-Cas system guide RNA or chimeric single guide RNA molecule (sgRNA), wherein when the sgRNA is in complex with a CRISPR enzyme within a prokaryotic or eukaryotic cell the CRISPR enzyme is capable of effecting the manipulation of a target nucleic acid within the cell, or a non-naturally occurring or engineered composition comprising a CRISPR-Cas system comprising said guide RNA or optionally sgRNA, the guide RNA or optionally sgRNA comprising a guide sequence capable of hybridizing to a target sequence in a genomic locus of interest in a prokaryotic or eukaryotic cell wherein architecture of the guide RNA or optionally sgRNA is modified. The invention particularly provides for a non-naturally occurring or engineered CRISPR-Cas system comprising a *Staphylococcus aureus* Cas9 enzyme (SaCas9) and

the corresponding *Staphylococcus aureus* guide RNA (Sa sgRNA), wherein the SaCas9 or the Sa sgRNA are further optimized.

[0008] The invention also comprehends one or more orthologous CRISPR-Cas systems which are engineered and optimized in accordance with structural and functional comparative data presented herein. CRISPR-Cas systems have been classified, based on elements of gene organization, into three major types: Type I, represented e.g., by cas3, Type II, represented, e.g., by cas9 (csn1), and Type III, represented, e.g., by cas10. Type II enzymes, including cas9, are large multidomain proteins sufficient for targeting and cleaving DNA. A recently proposed evolutionary scheme encompasses "Class 2" CRISPR-Cas systems are comprised by SaCas9 and orthologous systems characterized by single-subunit effector complexes.

[0009] The herein provided structural information for SaCas9 relates to a crystal structure of a complex comprising SaCas9, a SaCas9 sgRNA, a target DNA and a non-target DNA strand. In an aspect of the invention, the crystal structure provides for a structural comparison among Cas9 orthologs (for example, between SaCas9 and SpCas9) as well as with evolutionaly conserved Cas9 proteins and CRISPR-SaCas9 complex components. The structural information further identifies aspects of SaCas9 associated with distinctive differences, including for example, the previously uncharacterized wedge (WED) domain. Furthermore, the structural information detailed herein reveals aspects of small Cas9 variants that posess activity in mammalian cells.

[0010] All aspects of the invention also encompass favorable thermodynamic states that allow for the herein described CRISPR-Cas systems to function in a physiologically relevant environment. In a preferred embodiment, the physiologically relevant environment includes but is not limited to an *in vivo* environment, e.g. in a eukaryotic cell or in an mammalian cell.

[0011] In an aspect, there is provided an engineered SaCas9 protein, wherein the protein complexes with a nucleic acid molecule comprising RNA to form a CRISPR complex, wherein when in the CRISPR complex, the nucleic acid molecule targets one or more target polynucleotide loci, the protein comprises at least one modification compared to unmodified SaCas9, and wherein the CRISPR complex comprising the modified protein has altered activity as compared to the complex comprising the unmodified SaCas9 protein.

[0012] In an aspect, the altered activity of the engineered SaCas9 protein comprises an altered binding property as to the nucleic acid molecule comprising RNA or the target polynucleotide loci, altered binding kinetics as to the nucleic acid molecule comprising RNA or the target

polynucleotide loci, or altered binding specificity as to the nucleic acid molecule comprising RNA or the target polynucleotide loci compared to off-target polynucleotide loci.

[0013] In certain embodiments, the altered activity of the engineered SaCas9 protein comprises increased targeting efficiency or decreased off-target binding. In certain embodiments, the altered activity of the engineered SaCas9 protein comprises modified cleavage activity.

[0014] In certain embodiments, the altered activity comprises increased cleavage activity as to the target polynucleotide loci. In certain embodiments, the altered activity comprises decreased cleavage activity as to the target polynucleotide loci. In certain embodiments, the altered activity comprises decreased cleavage activity as to off-target polynucleotide loci. In certain embodiments, the altered activity comprises increased cleavage activity as to off-target polynucleotide loci. Accordingly, in certain embodiments, there is increased specificity for target polynuycleotide loci as compared to off-target polynucleotide loci. In other embodiments, there is reduced specificity for target polynuycleotide loci as compared to off-target polynucleotide loci.

[0015] In an aspect of the invention, the altered activity of the engineered SaCas9 protein comprises altered helicase kinetics.

[0016] In an aspect of the invention, the engineered SaCas9 protein comprises a modification that alters association of the protein with the nucleic acid molecule comprising RNA, or a strand of the target polynucleotide loci, or a strand of off-target polynucleotide loci. In an aspect of the invention, the engineered SaCas9 protein comprises a modification that alters formation of the CRISPR complex.

[0017] In an aspect, SaCas9 quaternary complex structural information described herein provides guidance for altering CRISPR-SaCas9 structural components. Further, the SaCas9 structural information provides guidance for altering SaCas9 orthologs, as well as for incorporating aspects of such orthologs into modified SaCas9 proteins.

[0018] In an aspect, the invention provides a non-naturally occurring or engineered composition comprising a Sa guide RNA (e.g. sgRNA) comprising a guide sequence capable of hybridizing to a target sequence in a genomic locus of interest in a cell wherein architecture of the Sa sgRNA is modified.

[0019] In some embodiments, at least one loop region, is/are further modified by the insertion of distinct RNA sequence(s) that bind to one or more adaptor proteins, and wherein the adaptor protein is associated with one or more functional domains. In some embodiments, the insertion of

distinct RNA sequence(s) that bind to one or more adaptor proteins is an aptamer sequence or two or more aptamer sequences specific to the same or different adaptor protein(s).

[0020] In some embodiments, the adaptor protein comprises MS2, PP7, Qβ, F2, GA, fr, JP501, M12, R17, BZ13, JP34, JP500, KU1, M11, MX1, TW18, VK, SP, FI, ID2, NL95, TW19, AP205, ϕCb5, ϕCb8r, ϕCb12r, ϕCb23r, 7s, PRR1.

[0021] In some embodiments, the functional domain is a transcriptional activation domain, a transcriptional repressor domain or comprises a nuclease domain.

[0022] In an aspect of the invention, the SaCas9 sgRNA is modified (e.g. by the introduction of one or more nucleotide mutations, by truncation/deletion and/or insertion of specific nucleotides or nucleotide sequences) by affecting the binding of the non-target DNA strand to the RuvC domain.

[0023] In an aspect of the invention, the SaCas9 sgRNA is modified to alter the open conformation of the CRISPR-SaCas9 quaternary complex wherein the central channel which accommodates the guide-target heteroduplex either attracts the heteroduplex with high affinity or prevents the heteroduplex from being accommodated.

[0024] In an aspect of the invention, the SaCas9 sgRNA is modified (e.g. by the introduction of one or more nucleotide mutations, by truncation/deletion and/or insertion of specific nucleotides or nucleotide sequences) to alter its association with the REC lobe which recognizes the guide:target heteroduplex. Modifications may be made in either the seed sequence of the sgRNA or in the arginine cluster on the bridge helix in SaCas9.

[0025] In an aspect of the invention, the SaCas9 sgRNA is modified (e.g. by the introduction of one or more nucleotide mutations, by truncation/deletion and/or insertion of specific nucleotides or nucleotide sequences) to alter recognition of the repeat:anti-repeat duplex by the REC and WED domains.

[0026] In an aspect, the invention provides a non-naturally occurring or engineered composition comprising a CRISPR-Cas system comprising a SaCas9 enzyme wherein architecture of the SaCas9 enzyme is modified. In a preferred embodiment the SaCas9 enzyme is modified based on structural and mutational analysis. In a more preferred embodiment the structural analysis is based on the crystal structure of the SaCas9 in complex with the Sa sgRNA and its target DNA or sequence.

[0027] In an aspect, the invention provides a non-naturally occurring or engineered composition comprising a SaCas9 enzyme, wherein the SaCas9 enzyme is modified at regions that do not overlap with corresponding conserved regions of the ortholog *Streptococcus pyogenes* Cas9 enzyme (SpCas9). Structural features of SpCas9 which may be amenable to modification (for example, to modify or abolish nuclease activity or to truncate the enzyme while retaining nuclease activity) have been further described in PCT/US14/69925, titled "CRISPR-CAS SYSTEMS, CRYSTAL STRUCTURE AND USES THEREOF" filed on December 12, 2014 and its priority documents, all the contents of which are herein incorporated by reference in their entirety. By structurally aligning SaCas9 and SpCas9 enzymes, the structural features of SaCas9 which correspond to the structural features of SpCas9 may be determined and specific regions may be modified to arrive at SaCas9 modified enzymes with varied functions.

[0028] In some embodiments, the functional domain associated with the SaCas9 enzyme is a transcriptional activation domain, a transcriptional repressor domain or comprises a nuclease domain.

[0029] In an aspect of the invention, the PI domain of the SaCas9 is modified (e.g. by the introduction of one or more amino acid mutations, by truncation/deletion and/or insertion of specific amino acids or amino acid sequences) to alter PAM specificity.

[0030] In some embodiments, the cell is a eukaryotic cell. In some embodiments, the eukaryotic cell is a mammalian cell. In some embodiments, the mammalian cell is a human cell or a mouse cell.

[0031] In an aspect, the invention provides a polynucleotide encoding the present guide (e.g. a Sa sgRNA or a modified Sa sgRNA).

[0032] In an aspect, the invention provides a vector comprising the polynucleotide operably linked to a suitable promoter. In some embodiments, the vector also comprises a further polynucleotide encoding a Sa Cas9 enzyme.

[0033] In an aspect, the invention provides a vector system, comprising one of the present vectors and a second vector comprising a polynucleotide encoding a Sa Cas9 enzyme.

[0034] In an aspect, the invention provides a transformant organism or model transformed with any one of the vectors to thereby express the Sa sgRNA or a modified Sa sgRNA and, optionally, the CRISPR enzyme, preferably a SaCas9 enzyme.

[0035] In an aspect, the invention provides a method of modifying a genomic locus of interest to alter gene expression in a cell by introducing into the cell the composition, polynucleotide or vectors described herein.

[0036] The invention, in its various aspects as described herein, is based on a number of surprising discoveries in relation to RNA and enzyme components of CRISPR-Cas systems comprising a SaCas9 enzyme.

[0037] In an aspect the invention also provides a composition as herein discussed which is a non-naturally occurring or engineered Sa sgRNA capable of effecting the manipulation of a target nucleic acid within a prokaryotic or eukaryotic cell when in complex within the cell with a SaCas9 enzyme; the Sa sgRNA comprising, in a tandem arrangement:

I. a guide sequence or a truncated guide sequence, which is capable of hybridizing to a sequence of the target nucleic acid to be manipulated;

II. a tracr mate sequence, comprising a region of sense sequence;

III. a linker sequence; and

IV. a tracr sequence, comprising a region of antisense sequence which is positioned adjacent the linker sequence and which is capable of hybridizing with the region of sense sequence thereby forming a stem loop;

wherein the guide sequence comprises a length of 20-24 nucleotides.

[0038] When said sgRNA molecule is present within the cell, the region of antisense sequence is hybridized to the region of sense sequence thereby forming the stem loop; and wherein when said sgRNA molecule binds within the cell to the CRISPR enzyme so forming a CRISPR-Cas complex, the guide sequence hybridizes to a sequence of the target nucleic acid thereby directing sequence-specific binding of the CRISPR/Cas complex to the target nucleic acid, whereupon said sequence of said target nucleic acid is manipulated by the CRISPR enzyme of the complex.

[0039] In any of the sgRNAs described herein, the tracr sequence further comprises at least two regions of secondary structure, preferably at least one tetraloop and one stem loop. The tracr sequence may further comprises one or more regions of secondary structure, preferably stem loops. The tracr sequence may further comprise 1 stem loops or more than 1 stem loops, 2 stem loops or more than 2 stem loops, 3 stem loops or more than 3 stem loops. In preferred embodiments of the invention the optimized Sa sgRNA has a tetraloop and two stem loops, as Applicants have identified stem loop 2 to play a role in functionality *in vivo*.

[0040] In any of the sgRNAs described herein, the guide sequence comprises a length of 21 or more nucleotides, 22 or more nucleotides, 23 or more nucleotides, or 24 or more nucleotides; preferably the guide sequence comprises a length of 21, 22, 23 or 24 nucleotides. In all of the sgRNAs described herein, the guide sequence may consist of a length of 21, 22, 23 or 24 nucleotides. In any of the sgRNAs described herein, if the guide sequence is truncated, the truncated guide sequence may consist of a length of 20, 19, 18 or 17 nucleotides.

[0041] In any of the sgRNAs described herein, particularly if the sgRNA adopts a +73nt architecture, the tracr sequence may be 49 or more nucleotides in length, 50 or more nucleotides in length, 51 or more nucleotides in length, 52 or more nucleotides in length, or 53 or more nucleotides in length. In further embodiments of the invention, the sgRNA may adopt a +85nt or longer architecture and the tracr sequence may be 61 or more nucleotides in length, 62 or more nucleotides in length, 63 or more nucleotides in length, 64 or more nucleotides in length and so forth in accordance with the guide sequence length.

[0042] In any of the sgRNAs described herein the 5' or 3' terminal end of the tracr sequence opposite the region of antisense sequence comprises a poly uracil (U) tract, preferably wherein the poly U tract comprises 5 or more U nucleotides, optionally wherein the poly U tract consists of 5 U nucleotides, preferably wherein the poly U tract consists of 6 U nucleotides or consists of 7 U nucleotides.

[0043] In any of the sgRNAs described herein when complexed with the CRISPR enzyme within the cell the guide sequence is capable of hybridizing to a target nucleic acid associated with a PAM sequence comprising NNGGR or NNGRRT (e.g. 5′-TTGAAT-3′ PAM or 5′-TTGGGT-3′)

[0044] In an aspect, the invention as herein discussed provides DNA polynucleotide molecule(s) encoding:

a. any chimeric RNA molecule as described herein;
b. any tracr RNA according as described herein; or
c. both any chimeric RNA molecule as described herein and any tracr RNA as described herein.

[0045] In an aspect, the invention as herein discussed provides a DNA polynucleotide molecule encoding any CRISPR-Cas system chimeric single guide RNA molecule (sgRNA) as described herein.

[0046] In an aspect, the invention as herein discussed also provides a DNA expression vector comprising a DNA polynucleotide molecule encoding any chimeric RNA molecule as described herein, or a DNA expression vector comprising a DNA polynucleotide molecule encoding any tracr RNA according as described herein, or a DNA expression vector comprising a DNA polynucleotide molecule encoding any chimeric RNA molecule as described herein and a DNA polynucleotide molecule encoding any tracr RNA according as described herein; wherein each expression vector further comprises one or more regulatory element(s) operably linked to sequences encoding said RNAs and capable of directing expression of the RNAs within the cell.

[0047] In an aspect, the invention as herein discussed also provides a DNA expression vector comprising a DNA polynucleotide molecule encoding any sgRNA as described herein, wherein the vector further comprises one or more regulatory element(s) operably linked to sequences encoding the sgRNA and capable of directing expression of the sgRNA within the cell.

[0048] In an aspect, the invention as herein discussed also provides a delivery vector carrying:

a. any chimeric RNA molecule as described herein;

b. any tracr RNA according as described herein; or

c. both any chimeric RNA molecule as described herein and any tracr RNA as described herein.

[0049] In an aspect, the invention as herein discussed also provides a delivery vector carrying any CRISPR-Cas system chimeric single guide RNA molecule (sgRNA) described herein.

[0050] In an aspect, the invention as herein discussed also provides delivery vector carrying:

a. a DNA expression vector comprising a DNA polynucleotide molecule encoding any chimeric RNA molecule as described herein;

b. a DNA expression vector comprising a DNA polynucleotide molecule encoding any tracr RNA according as described herein; or

c. a DNA expression vector comprising a DNA polynucleotide molecule encoding any chimeric RNA molecule as described herein and additionally comprising a DNA polynucleotide molecule encoding any tracr RNA according as described herein.

[0051] In an aspect, the invention as herein discussed also provides a delivery vector carrying a DNA expression vector comprising a DNA polynucleotide molecule encoding any sgRNA as described herein, wherein the vector further comprises one or more regulatory element(s) operably

linked to sequences encoding the sgRNA and capable of directing expression of the sgRNA within the cell.

[0052] Any such delivery vectors described above may further carry the CRISPR enzyme; or may further carry an RNA molecule encoding the CRISPR enzyme and which is capable of expressing the enzyme.

[0053] Alternatively, any such delivery vectors may further carry a DNA expression vector which comprises a DNA polynucleotide molecule encoding the CRISPR enzyme, and which further comprises one or more regulatory element(s) operably linked to sequences encoding the enzyme and capable of directing expression of the enzyme within the cell. The enzyme and components of the sgRNA may be carried on the same or different vectors.

[0054] Any delivery vector carrying any of the components described herein may comprise liposomes, particles, e.g., nanoparticles, exosomes or microvesicles. Alternatively, any delivery vector carrying any of the components described herein may comprise a viral vector which is a retroviral vector, optionally a lentiviral vector, a baculoviral vector, a herpes simplex virus vector, an adenoviral vector, an adenoassociated viral (AAV) vector such as AAV8 vector, or a poxvirus such as a vaccinia virus. Embodiments of the invention relate to CRIPSR-Cas enzymes being modified or truncated to be smaller in size to allow for efficient packaging into vectors and vector systems.

[0055] In an aspect, the invention as herein discussed provides a non-naturally occurring or engineered CRISPR-Cas complex comprising:

a. a CRISPR-Cas system chimeric single guide RNA molecule (sgRNA) as described herein; and

b. a CRISPR enzyme comprising a SaCas9 enzyme;

wherein within the cell:

i. the region of antisense sequence of the tracr sequence hybridizes with the sense sequence of the tracr mate sequence;

ii. the CRISPR enzyme forms a CRISPR/Cas complex with the sgRNA; and

iii. the guide sequence is capable of hybridizing to a sequence of the at least one target nucleic acid to direct sequence-specific binding of the CRISPR/Cas complex to a sequence of the target nucleic acid, whereupon the CRISPR enzyme is capable of effecting the manipulation of said sequence.

[0056] In the methods or compositions described herein the CRISPR enzyme of the composition may be provided as a polynucleotide sequence which comprises either (a) RNA, which is capable of expressing the enzyme or (b) DNA, wherein the polynucleotide sequence is operably linked to one or more regulatory element(s) capable of directing expression of RNA encoding the CRISPR enzyme.

[0057] In such methods or compositions comprising a sgRNA, in the composition the sgRNA is provided via a DNA expression vector comprising a DNA polynucleotide molecule encoding a CRISPR-Cas system chimeric single guide RNA molecule (sgRNA) as described herein, wherein the vector further comprises one or more regulatory element(s) operably linked to sequences encoding the sgRNA and capable of directing expression of the sgRNA within the cell; and wherein in the composition the enzyme is provided via a DNA expression vector further comprising one or more regulatory element(s) operably linked to polynucleotide sequences encoding the enzyme and capable of directing expression thereof; wherein polynucleotides encoding sgRNA and enzyme are provided on the same or different DNA expression vectors, preferably on the same DNA expression vector.

[0058] In such methods or compositions:

a. polynucleotides comprising or encoding sgRNA, or a DNA expression vector encoding and capable of expressing the same; or

b. polynucleotides comprising or encoding the chimeric RNA molecule of the sgRNA, or a DNA expression vector encoding and capable of expressing the same; and polynucleotides comprising or a DNA expression vector comprising a DNA polynucleotide molecule encoding and capable of expressing the same; and

i. the CRISPR enzyme, or

ii. a DNA expression vector comprising polynucleotides encoding the enzyme and further comprising one or more regulatory element(s) operably linked to polynucleotide sequences encoding the enzyme and capable of directing expression thereof

may be comprised in one or more delivery vectors.

[0059] In such methods or compositions:

a. the polynucleotides comprising or encoding sgRNA or the DNA expression vectors encoding sgRNA; and

b. the CRISPR enzyme or the DNA expression vector comprising polynucleotides encoding the enzyme;

are comprised in the same delivery vector or in two or more different delivery vectors.

[0060] In such methods or compositions the one or more or two or more delivery vectors is a recombinant virus. The recombinant virus may be a retrovirus, optionally a lentivirus, a baculovirus, a herpes simplex virus, an adenovirus, an adenoassociated virus (AAV) such as AAV8, or a poxvirus such as a vaccinia virus.

[0061] In such methods or compositions the one or more or two or more delivery vectors comprise(s) liposomes, particles, e.g., nanoparticles, exosomes or microvesicles.

[0062] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein the CRISPR enzyme may further comprise one or more nuclear localization sequences (NLSs) capable of driving the accumulation of the CRISPR enzyme to a detectible amount in the nucleus of the cell of the organism. The CRISPR enzyme may comprise two or more NLSs, three or more NLSs, four or more NLSs, five or more NLSs, six or more NLSs, seven or more NLSs, eight or more NLSs, nine or more NLSs, or ten or more NLSs. The CRISPR enzyme may comprise at least one NLS at or near the amino-terminus of the CRISPR enzyme and/or at least one NLS at or near the carboxy-terminus of the CRISPR enzyme.

[0063] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein said manipulation of the at least one target nucleic acid by the CRISPR-Cas complex comprises cleavage of the at least one target nucleic acid. Cleavage may comprise one or more double-strand break(s) introduced into the target nucleic acid, optionally at least two double-strand break(s). Said cleavage may be via one or more single-strand break(s) introduced into the target nucleic acid, optionally at least two single-strand break(s).

[0064] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein one or more double-strand break(s) or one or more single-strand break(s) may lead to the formation of one or more insertion and deletion mutations (INDELs) in the target nucleic acid.

[0065] In any of the methods, systems or compositions described herein involving cleavage, the composition may comprise components of at least two types of Sa CRISPR/Cas complex,

wherein each type of complex comprises a guide sequence capable of hybridizing to different sequences of the target nucleic acid.

[0066] In such methods, systems or compositions said cleavage is cleavage of first and second strands of the target nucleic acid via at least two double-strand breaks introduced into the target nucleic acid;

wherein a first double-strand break is introduced at a first position of the target nucleic acid by manipulating a first target sequence and a second double-strand break is introduced at a second position of the target nucleic acid by manipulating a second target sequence;

wherein upon introduction of first and second double-strand breaks sequences between first and second double-strand breaks are excised.

[0067] In any of the methods, systems or compositions described herein involving cleavage, the composition may comprise comprises components of at least four types of Sa CRISPR/Cas complex, wherein each type of complex comprises a guide sequence capable of hybridizing to different sequences of the target DNA.

[0068] In such methods, systems or compositions said cleavage is via at least two pairs of single-strand breaks introduced into the target DNA;

wherein to introduce a first pair of single-strand breaks a first single-strand break is introduced into a first strand of DNA by manipulating a first target sequence to create a first nick and a second single-strand break is introduced into the opposite strand of DNA by manipulating a second target sequence to create a second nick;

wherein to introduce a second pair of single-strand breaks a third single-strand break is introduced into said first strand of DNA by manipulating a third target sequence to create a third nick and a fourth single-strand break is introduced into said opposite strand of DNA by manipulating a fourth target sequence to create a fourth nick;

wherein upon introduction of first and second pairs of single-strand breaks target sequences between first and second pairs of single-strand breaks are excised.

[0069] First and second nicks may be offset relative to each other by at least one base pair so creating a first overhang, and wherein third and fourth nicks are offset relative to each other by at least one base pair so creating a second overhang.

[0070] Following excision upon cleavage the ends of the cleaved first strand of DNA may be ligated together and the ends of the cleaved second strand of DNA may be ligated together thus reforming unbroken first and second strands.

[0071] In methods, systems or compositions described herein, said modification, alteration or manipulation may comprise insertion of one or more nucleotides into or adjacent target sequences, deletion of one or more nucleotides in or adjacent target sequences, translocation of target sequences, repression of transcription of target gene sequences or and/or repression or inactivation of target sequences.

[0072] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein the enzyme comprising a SaCas9 enzyme, may be a fragment or derivative of SaCas9, or may comprise one or more amino acid substitutions compared to the wild-type SaCas9.

[0073] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein the SaCas9 may be a modified SaCas9 enzyme. Modifications to the SaCas9 enzyme may be made in accordance with the crystal structure information provided herein or at corresponding positions to its ortholog SpCas9 enzyme.

[0074] The SaCas9 enzyme may comprise one or more substitution(s) to the HNH nuclease domain and/or the RuvC nuclease domain of SaCas9. The substitution may be D10A, E477A, H701A and D704A in the RuvC domain and/or D556A, H557 and N580A in the HNH domain

[0075] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein a catalytically inactive (e.g. a Cas9 enzyme having reduced or no nuclease activity) SaCas9 may be fused to one or more transcriptional repressor domains, optionally wherein the one or more transcriptional repressor domains comprises KRAB, SID and/or SID4X or any one or more transcriptional repressor domains described herein. The or more transcriptional repressor domain may comprise a NuE domain or a NcoR domain.

[0076] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein a catalytically inactive (e.g. a Cas9 enzyme having reduced or no nuclease activity) SaCas9 may be fused to one

or more transcriptional activation domains such as VP64 or any one or more transcriptional activation domains described herein.

[0077] The transcriptional activation domain associated with the CRISPR enzyme may be a transcriptional activation domain which comprises p65, MyoD1, HSF1, RTA and SET7/9.

[0078] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein the SaCas9 may be fused to one or more additional nuclease domain(s) capable of cleaving the target nucleic acid, optionally a Fok1 nuclease domain.

[0079] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein the SaCas9 may be fused to one or more functional domains having activities comprising methylase activity, demethylase activity, transcription activation activity, transcription repression activity, transcription release factor activity, histone modification activity, RNA cleavage activity, DNA cleavage activity, DNA integration activity or nucleic acid binding activity.

[0080] In any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, methods, systems, compositions or complexes described herein various functional domains may be fused to the SaCas9 enzyme.

[0081] Any of the functional domains described herein can be attached to the SaCas9 CRISPR enzyme via a linker, e.g., a flexible glycine-serine (GlyGlyGlySer) or $(GGGS)_3$ or a rigid alpha-helical linker such as (Ala(GluAlaAlaAlaLys)Ala). Linkers such as $(GGGGS)_3$ are preferably used herein to separate protein or peptide domains. $(GGGGS)_3$ is preferable because it is a relatively long linker (15 amino acids). The glycine residues are the most flexible and the serine residues enhance the chance that the linker is on the outside of the protein. $(GGGGS)_6$ $(GGGGS)_9$ or $(GGGGS)_{12}$ may preferably be used as alternatives. Other preferred alternatives are $(GGGGS)_1$, $(GGGGS)_2$, $(GGGGS)_4$, $(GGGGS)_5$, $(GGGGS)_7$, $(GGGGS)_8$, $(GGGGS)_{10}$, or $(GGGGS)_{11}$. Alternative linkers are available, but highly flexible linkers are thought to work best to allow for maximum opportunity for the 2 parts of the Cas9 to come together and thus reconstitute Cas9 activity. One alternative is that the NLS of nucleoplasmin can be used as a linker. For example, a linker can also be used between the Cas9 and any functional domain. Again, a $(GGGGS)_3$ linker may be used here (or the 6, 9, or 12 repeat versions therefore) or the NLS of nucleoplasmin can be used as a linker between Cas9 and the functional domain.

[0082] In general, the invention comprehends the sgRNA comprising a guide sequence fused to a tracr sequence. The tracr sequence may further comprise at least two regions of secondary structure, preferably at least two stem loops. When said sgRNA molecule is present within the cell, the region of antisense sequence may be hybridized to the region of sense sequence thereby forming the stem loop; and wherein when said sgRNA molecule binds within the cell to the CRISPR enzyme so forming a CRISPR-Cas complex, the guide sequence hybridizes to a sequence of the target nucleic acid thereby directing sequence-specific binding of the CRISPR/Cas complex to the target nucleic acid, whereupon said sequence of said target nucleic acid is manipulated by the CRISPR enzyme of the complex.

[0083] In one aspect, the invention provides a method for altering or modifying expression of a gene product. The said method may comprise introducing into a cell containing and expressing a DNA molecule encoding the gene product an engineered, non-naturally occurring CRISPR-Cas system comprising a Cas protein and the present guide RNA.

[0084] In general, it will be appreciated that the guide comprise a guide sequence that targets the DNA molecule, so that the guide RNA targets the DNA molecule encoding the gene product and the Cas protein cleaves the DNA molecule encoding the gene product, whereby expression of the gene product is altered; and, wherein the Cas protein and the guide RNA do not naturally occur together.

[0085] In general, the invention comprehends the guide RNA comprising a guide sequence fused to a tracr sequence. The invention further comprehends the Cas protein being codon optimized for expression in a Eukaryotic cell. In a preferred embodiment the Eukaryotic cell is a mammalian cell and in a more preferred embodiment the mammalian cell is a human cell. In a further embodiment of the invention, the expression of the gene product is decreased.

[0086] In one aspect, the invention provides an engineered, non-naturally occurring CRISPR-Cas system comprising a Cas protein and the present guide RNA that targets a DNA molecule encoding a gene product in a cell, whereby the guide RNA targets the DNA molecule encoding the gene product and the Cas protein cleaves the DNA molecule encoding the gene product, whereby expression of the gene product is altered; and, wherein the Cas protein and the guide RNA do not naturally occur together.

[0087] In an embodiment of the invention the Cas protein is a type II CRISPR-Cas protein and in a preferred embodiment the Cas protein is a Cas9 protein. The invention further comprehends

the Cas protein being codon optimized for expression in a Eukaryotic cell. In a preferred embodiment the Eukaryotic cell is a mammalian cell and in a more preferred embodiment the mammalian cell is a human cell. In a further embodiment of the invention, the expression of the gene product is decreased.

[0088] In another aspect, the invention provides an engineered, non-naturally occurring vector system comprising one or more vectors comprising a first regulatory element operably linked to the present guide RNA that targets a DNA molecule encoding a gene product and a second regulatory element operably linked to a Cas protein. Components (a) and (b) may be located on same or different vectors of the system. The present guide RNA targets the DNA molecule encoding the gene product in a cell and the Cas protein cleaves the DNA molecule encoding the gene product, whereby expression of the gene product is altered; and, wherein the Cas protein and the guide RNA do not naturally occur together.

[0089] In some embodiments, the guide further comprises a tracr sequence downstream of a tracr mate sequence.

[0090] In some embodiments, component (a) of the above vectors further comprises two or more guide sequences operably linked to the first regulatory element, wherein when expressed, each of the two or more guide sequences direct sequence specific binding of a CRISPR complex to a different target sequence in a eukaryotic cell.

[0091] In some embodiments, the system comprises the tracr sequence under the control of a third regulatory element, such as a polymerase III promoter. In some embodiments, the tracr sequence exhibits at least 50%, 60%, 70%, 80%, 90%, 95%, or 99% of sequence complementarity along the length of the tracr mate sequence when optimally aligned. Determining optimal alignment is within the purview of one of skill in the art. For example, there are publically and commercially available alignment algorithms and programs such as, but not limited to, ClustalW, Smith-Waterman in matlab, Bowtie, Geneious, Biopython and SeqMan.

[0092] In some embodiments, guide forms a CRISPR complex with the CRISPR enzyme. The CRISPR complex or polynucleotides encoding it preferably comprise one or more nuclear localization sequences of sufficient strength to drive accumulation of said CRISPR complex in a detectable amount in the nucleus of a eukaryotic cell.

[0093] In some embodiments, the CRISPR enzyme is a Cas9 enzyme. In some embodiments, the Cas9 enzyme is S. aureus, S. pneumoniae, S. pyogenes, or S. thermophilus Cas9, and may

include mutated Cas9 derived from these organisms. The enzyme may be a Cas9 homolog or ortholog. In some embodiments, the CRISPR enzyme is codon-optimized for expression in a eukaryotic cell. In some embodiments, the CRISPR enzyme directs cleavage of one or two strands at the location of the target sequence. In a preferred embodiment, the Cas9 enzyme is S. aureus or a similar smaller Cas9 ortholog.

[0094] In some embodiments, the first regulatory element in the present vectors is a polymerase III promoter. In some embodiments, the second regulatory element in the present vectors is a polymerase II promoter.

[0095] In some embodiments, the guide sequence is at least 15, 16, 17, 18, 19, 20, 25 nucleotides, or between 10-30, or between 15-25, or between 20-24 nucleotides in length.

[0096] In any of the sgRNA, DNA polynucleotide molecule, DNA expression vector, delivery vector, method, system, composition or complex described herein said manipulation may be performed *in vitro* or *ex vivo*.

[0097] In an aspect, the invention also provides any of the sgRNA, DNA polynucleotide molecule, DNA expression vector, delivery vector, system, composition or complex as described herein for use as a medicament, optionally for use in the treatment of a viral infection. In such cases, treatment is treatment of a mammal, optionally a human.

[0098] In an aspect, the invention also provides the use of any of the sgRNA, DNA polynucleotide molecule, DNA expression vector, delivery vector, system, composition or complex as described herein in the manufacture of a medicament, optionally for the treatment of a viral infection. In such cases, treatment is treatment of a mammal, optionally a human.

[0099] In an aspect, the invention also provides pharmaceutical compositions comprising any of the sgRNAs, DNA polynucleotide molecules, DNA expression vectors, delivery vectors, systems, compositions or complexes described herein. Such pharmaceutical compositions may contain an excipient. Such pharmaceutical compositions may be formulated for administration to a mammal, optionally a human.

[00100] It will be appreciated that the invention described herein involves various components which may display variations in their specific characteristics. It will be appreciated that any combination of features described above and herein, as appropriate, are contemplated as a means for implementing the invention.

[00101] In general, applying to any of the aspects discussed herein, the sgRNA is a non-naturally occurring or engineered CRISPR-Cas system chimeric single guide RNA molecule. It is preferably capable of effecting the manipulation of a target nucleic acid within a prokaryotic or eukaryotic cell when in complex within the cell with a CRISPR enzyme. Examples of preferred CRISPR enzymes are a *Staphylococcus aureus* Cas9 enzyme (SaCas9) or other similar smaller Cas9 orthologs. The sgRNA may comprise, in some embodiments, the following, in a tandem arrangement:

I. a guide sequence, which is capable of hybridizing to a sequence of the target nucleic acid to be manipulated;

II. a tracr mate sequence, comprising a region of sense sequence;

III. a linker sequence; and

IV. a tracr sequence, comprising a region of antisense sequence which is positioned adjacent the linker sequence and which is capable of hybridizing with the region of sense sequence thereby forming a stem loop.

[00102] In some aspects, especially those relating to SaCas9, the guide sequence comprises a length of 21 or more nucleotides.

[00103] Specifically, the invention provides a non-naturally occurring or engineered composition comprising a CRISPR-Cas system comprising a chimeric single guide RNA molecule (sgRNA) capable of effecting the manipulation of a target nucleic acid within a prokaryotic or eukaryotic cell when in complex within the cell with a CRISPR enzyme, the sgRNA comprising a guide sequence capable of hybridizing to a target sequence in a genomic locus of interest in a cell wherein architecture of the sgRNA is modified. Preferred modifcations to the architecture are discussed herein.

[00104] Example of a preferred CRISPR enzymes is an SaCas9 enzyme. The Sa sgRNA may comprise, in some embodiments, the following, in a tandem arrangement:

I. a guide sequence or a truncated guide sequence (TRU guides), which is capable of hybridizing to a sequence of the target nucleic acid to which it binds or can manipulate;

II. a tracr mate sequence, comprising a region of sense sequence;

III. a linker sequence; and

IV. a tracr sequence, comprising a region of antisense sequence which is positioned adjacent the linker sequence and which is capable of hybridizing with the region of sense sequence thereby forming a stem loop.

[00105] In some aspects, especially those relating to SaCas9, the guide sequence comprises a length of 21 or more nucleotides.

[00106] In general, and throughout this specification, the term "vector" refers to a nucleic acid molecule capable of transporting another nucleic acid to which it has been linked. Vectors include, but are not limited to, nucleic acid molecules that are single-stranded, double-stranded, or partially double-stranded; nucleic acid molecules that comprise one or more free ends, no free ends (e.g. circular); nucleic acid molecules that comprise DNA, RNA, or both; and other varieties of polynucleotides known in the art. One type of vector is a "plasmid," which refers to a circular double stranded DNA loop into which additional DNA segments can be inserted, such as by standard molecular cloning techniques. Another type of vector is a viral vector, wherein virally-derived DNA or RNA sequences are present in the vector for packaging into a virus (e.g. retroviruses, replication defective retroviruses, adenoviruses, replication defective adenoviruses, and adeno-associated viruses). Viral vectors also include polynucleotides carried by a virus for transfection into a host cell. Certain vectors are capable of autonomous replication in a host cell into which they are introduced (e.g. bacterial vectors having a bacterial origin of replication and episomal mammalian vectors). Other vectors (e.g., non-episomal mammalian vectors) are integrated into the genome of a host cell upon introduction into the host cell, and thereby are replicated along with the host genome. Moreover, certain vectors are capable of directing the expression of genes to which they are operatively-linked. Such vectors are referred to herein as "expression vectors." Common expression vectors of utility in recombinant DNA techniques are often in the form of plasmids.

[00107] Recombinant expression vectors can comprise a nucleic acid of the invention in a form suitable for expression of the nucleic acid in a host cell, which means that the recombinant expression vectors include one or more regulatory elements, which may be selected on the basis of the host cells to be used for expression, that is operatively-linked to the nucleic acid sequence to be expressed. Within a recombinant expression vector, "operably linked" is intended to mean that the nucleotide sequence of interest is linked to the regulatory element(s) in a manner that allows

for expression of the nucleotide sequence (e.g. in an in vitro transcription/translation system or in a host cell when the vector is introduced into the host cell).

[00108] The term "regulatory element" is intended to include promoters, enhancers, internal ribosomal entry sites (IRES), and other expression control elements (e.g. transcription termination signals, such as polyadenylation signals and poly-U sequences). Such regulatory elements are described, for example, in Goeddel, GENE EXPRESSION TECHNOLOGY: METHODS IN ENZYMOLOGY 185, Academic Press, San Diego, Calif. (1990). Regulatory elements include those that direct constitutive expression of a nucleotide sequence in many types of host cell and those that direct expression of the nucleotide sequence only in certain host cells (e.g., tissue-specific regulatory sequences). A tissue-specific promoter may direct expression primarily in a desired tissue of interest, such as muscle, neuron, bone, skin, blood, specific organs (e.g. liver, pancreas), or particular cell types (e.g. lymphocytes). Regulatory elements may also direct expression in a temporal-dependent manner, such as in a cell-cycle dependent or developmental stage-dependent manner, which may or may not also be tissue or cell-type specific. In some embodiments, a vector comprises one or more pol III promoter (e.g. 1, 2, 3, 4, 5, or more pol I promoters), one or more pol II promoters (e.g. 1, 2, 3, 4, 5, or more pol II promoters), one or more pol I promoters (e.g. 1, 2, 3, 4, 5, or more pol I promoters), or combinations thereof. Examples of pol III promoters include, but are not limited to, U6 and H1 promoters. Examples of pol II promoters include, but are not limited to, the retroviral Rous sarcoma virus (RSV) LTR promoter (optionally with the RSV enhancer), the cytomegalovirus (CMV) promoter (optionally with the CMV enhancer) [see, e.g., Boshart et al, Cell, 41:521-530 (1985)], the SV40 promoter, the dihydrofolate reductase promoter, the β-actin promoter, the phosphoglycerol kinase (PGK) promoter, and the EF1α promoter. Also encompassed by the term "regulatory element" are enhancer elements, such as WPRE; CMV enhancers; the R-U5' segment in LTR of HTLV-I (Mol. Cell. Biol., Vol. 8(1), p. 466-472, 1988); SV40 enhancer; and the intron sequence between exons 2 and 3 of rabbit β-globin (Proc. Natl. Acad. Sci. USA., Vol. 78(3), p. 1527-31, 1981). It will be appreciated by those skilled in the art that the design of the expression vector can depend on such factors as the choice of the host cell to be transformed, the level of expression desired, etc. A vector can be introduced into host cells to thereby produce transcripts, proteins, or peptides, including fusion proteins or peptides, encoded by nucleic acids as described herein (e.g., clustered

regularly interspersed short palindromic repeats (CRISPR) transcripts, proteins, enzymes, mutant forms thereof, fusion proteins thereof, etc.).

[00109] In one aspect, the invention encompasses embodiments wherein an engineered short, bi-directional U6 promoter (a minimal bi-directional promoter) rationally designed from taking the transcription factor binding sites and elements from human U6 promoter is used to drive two transcripts going in opposite directions: In a preferred embodiment, such a bidirectional U6 promoter is incorporated into the SaCas9 AAV vector to deliver 2 Sa sgRNAs. Further aspects of the invention incorporate embodiments as described in PCT/US2014/041800 titled "DELIVERY, ENGINEERING AND OPTIMIZATION OF TANDEM GUIDE SYSTEMS, METHODS AND COMPOSITIONS FOR SEQUENCE MANIPULATION" filed on June 10, 2014 and its priority documents, the contents of which are herein incorporated by reference in their entirety. Further aspects also incorporate features as described in Ran et al. "Double nicking by RNA-guided CRISPR Cas9 for enhanced genome editing specificity." Cell. 2013 Sep 12;154(6):1380-9, the contents of which are also incorporated herein by reference in their entirety.

[00110] Advantageous vectors include lentiviruses and adeno-associated viruses, and types of such vectors can also be selected for targeting particular types of cells.

[00111] In one aspect, the invention provides a eukaryotic host cell. The host cell may comprise (a) a first regulatory element operably linked to a tracr mate sequence and one or more insertion sites for inserting one or more of the present guide sequences upstream of the tracr mate sequence, wherein when expressed, the guide sequence directs sequence-specific binding of a CRISPR complex to a target sequence in a eukaryotic cell, wherein the CRISPR complex comprises a CRISPR enzyme complexed with (1) the guide sequence that is hybridized to the target sequence, and (2) the tracr mate sequence that is hybridized to the tracr sequence; and/or (b) a second regulatory element operably linked to an enzyme-coding sequence encoding said CRISPR enzyme comprising a nuclear localization sequence. In some embodiments, the host cell comprises components (a) and (b). In some embodiments, component (a), component (b), or components (a) and (b) are stably integrated into a genome of the host eukaryotic cell. In some embodiments, component (a) further comprises the tracr sequence downstream of the tracr mate sequence under the control of the first regulatory element. In some embodiments, component (a) further comprises two or more guide sequences operably linked to the first regulatory element, wherein when expressed, each of the two or more guide sequences direct sequence specific

binding of a CRISPR complex to a different target sequence in a eukaryotic cell. In some embodiments, the eukaryotic host cell further comprises a third regulatory element, such as a polymerase III promoter, operably linked to said tracr sequence. In some embodiments, the tracr sequence exhibits at least 50%, 60%, 70%, 80%, 90%, 95%, or 99% of sequence complementarity along the length of the tracr mate sequence when optimally aligned. The enzyme may be a Cas9 homolog or ortholog. In some embodiments, the CRISPR enzyme is codon-optimized for expression in a eukaryotic cell. In some embodiments, the CRISPR enzyme directs cleavage of one or two strands at the location of the target sequence. In some embodiments, the CRISPR enzyme lacks DNA strand cleavage activity. In some embodiments, the first regulatory element is a polymerase III promoter. In some embodiments, the second regulatory element is a polymerase II promoter. In some embodiments, the guide sequence is at least 15, 16, 17, 18, 19, 20, 25 nucleotides, or between 10-30, or between 15-25, or between 15-20 nucleotides in length. In an aspect, the invention provides a non-human eukaryotic organism; preferably a multicellular eukaryotic organism, comprising a eukaryotic host cell according to any of the described embodiments. In other aspects, the invention provides a eukaryotic organism; preferably a multicellular eukaryotic organism, comprising a eukaryotic host cell according to any of the described embodiments. The organism in some embodiments of these aspects may be an animal; for example a mammal. Also, the organism may be an arthropod such as an insect. The organism also may be a plant. Further, the organism may be a fungus.

[00112] With respect to use of the CRISPR-Cas system generally, mention is made of the documents, including patent applications, patents, and patent publications cited throughout this disclosure as embodiments of the invention can be used as in those documents. CRISPR-Cas system(s) (e.g., single or multiplexed) can be used in conjunction with recent advances in crop genomics. Such CRISPR-Cas system(s) can be used to perform efficient and cost effective plant gene or genome interrogation or editing or manipulation—for instance, for rapid investigation and/or selection and/or interrogations and/or comparison and/or manipulations and/or transformation of plant genes or genomes; e.g., to create, identify, develop, optimize, or confer trait(s) or characteristic(s) to plant(s) or to transform a plant genome. There can accordingly be improved production of plants, new plants with new combinations of traits or characteristics or new plants with enhanced traits. Such CRISPR-Cas system(s) can be used with regard to plants in Site-Directed Integration (SDI) or Gene Editing (GE) or any Near Reverse Breeding (NRB) or

Reverse Breeding (RB) techniques. With respect to use of the CRISPR-Cas system in plants, mention is made of the University of Arizona website "CRISPR-PLANT" (http://www.genome.arizona.edu/crispr/) (supported by Penn State and AGI). Embodiments of the invention can be used in genome editing in plants or where RNAi or similar genome editing techniques have been used previously; see, e.g., Nekrasov, "Plant genome editing made easy: targeted mutagenesis in model and crop plants using the CRISPR/Cas system," Plant Methods 2013, 9:39 (doi:10.1186/1746-4811-9-39); Brooks, "Efficient gene editing in tomato in the first generation using the CRISPR/Cas9 system," Plant Physiology September 2014 pp 114.247577; Shan, "Targeted genome modification of crop plants using a CRISPR-Cas system," Nature Biotechnology 31, 686-688 (2013); Feng, "Efficient genome editing in plants using a CRISPR/Cas system," Cell Research (2013) 23:1229–1232. doi:10.1038/cr.2013.114; published online 20 August 2013; Xie, "RNA-guided genome editing in plants using a CRISPR-Cas system," Mol Plant. 2013 Nov;6(6):1975-83. doi: 10.1093/mp/sst119. Epub 2013 Aug 17; Xu, "Gene targeting using the Agrobacterium tumefaciens-mediated CRISPR-Cas system in rice," Rice 2014, 7:5 (2014), Zhou et al., "Exploiting SNPs for biallelic CRISPR mutations in the outcrossing woody perennial Populus reveals 4-coumarate: CoA ligase specificity and Redundancy," New Phytologist (2015) (Forum) 1-4 (available online only at www.newphytologist.com); Caliando et al, "Targeted DNA degradation using a CRISPR device stably carried in the host genome, NATURE COMMUNICATIONS 6:6989, DOI: 10.1038/ncomms7989, www.nature.com/naturecommunications DOI: 10.1038/ncomms7989; US Patent No. 6,603,061 - Agrobacterium-Mediated Plant Transformation Method; US Patent No. 7,868,149 - Plant Genome Sequences and Uses Thereof and US 2009/0100536 - Transgenic Plants with Enhanced Agronomic Traits, all the contents and disclosure of each of which are herein incorporated by reference in their entirety. In the practice of the invention, the contents and disclosure of Morrell et al "Crop genomics: advances and applications," Nat Rev Genet. 2011 Dec 29;13(2):85-96; each of which is incorporated by reference herein including as to how herein embodiments may be used as to plants. Accordingly, reference herein to animal cells may also apply, mutatis mutandis, to plant cells unless otherwise apparent.

[00113] In one aspect, the invention provides a kit comprising one or more of the components described herein. In some embodiments, the kit comprises a vector system and instructions for using the kit. In some embodiments, the vector system comprises (a) a first regulatory element

operably linked to a tracr mate sequence and one or more insertion sites for inserting one or more guide sequences upstream of the tracr mate sequence, wherein when expressed, the guide sequence directs sequence-specific binding of a CRISPR complex to a target sequence in a eukaryotic cell, wherein the CRISPR complex comprises a CRISPR enzyme complexed with (1) the guide sequence that is hybridized to the target sequence, and (2) the tracr mate sequence that is hybridized to the tracr sequence; and/or (b) a second regulatory element operably linked to an enzyme-coding sequence encoding said CRISPR enzyme comprising a nuclear localization sequence. In some embodiments, the kit comprises components (a) and (b) located on the same or different vectors of the system. In some embodiments, component (a) further comprises the tracr sequence downstream of the tracr mate sequence under the control of the first regulatory element. In some embodiments, component (a) further comprises two or more guide sequences operably linked to the first regulatory element, wherein when expressed, each of the two or more guide sequences direct sequence specific binding of a CRISPR complex to a different target sequence in a eukaryotic cell. In some embodiments, the system further comprises a third regulatory element, such as a polymerase III promoter, operably linked to said tracr sequence. In some embodiments, the tracr sequence exhibits at least 50%, 60%, 70%, 80%, 90%, 95%, or 99% of sequence complementarity along the length of the tracr mate sequence when optimally aligned. In some embodiments, the CRISPR enzyme comprises one or more nuclear localization sequences of sufficient strength to drive accumulation of said CRISPR enzyme in a detectable amount in the nucleus of a eukaryotic cell. In some embodiments, the CRISPR enzyme is a type II CRISPR system enzyme. In some embodiments, the CRISPR enzyme is a Cas9 enzyme. In some embodiments, the Cas9 enzyme is *S. aureus, S. pneumoniae, S. pyogenes* or *S. thermophilus* Cas9 (St Cas9), and may include mutated Cas9 derived from these organisms. In preferred embodiments, the Cas9 enzymes are selected for smaller size which allows for easier packaging into vectors. The enzyme may be a Cas9 homolog or ortholog. In some embodiments, the CRISPR enzyme is codon-optimized for expression in a eukaryotic cell. In some embodiments, the CRISPR enzyme directs cleavage of one or two strands at the location of the target sequence. In some embodiments, the CRISPR enzyme lacks DNA strand cleavage activity. In some embodiments, the first regulatory element is a polymerase III promoter. In some embodiments, the second regulatory element is a polymerase II promoter. In some embodiments, the guide sequence is at least 15, 16, 17, 18, 19, 20, 25 nucleotides, or between 10-30, or between 15-25, or

between 20-24, or between 18-24 nucleotides in length. As described herein, the preferred guide length for SaCas9 is 21, 22, 23 or 24 nucleotides in length (Ran, 2015), although 20 nucleotides in length can be used.

[00114] In one aspect, the invention provides a method of modifying a target polynucleotide in a eukaryotic cell. In some embodiments, the method comprises allowing a CRISPR complex to bind to the target polynucleotide to effect cleavage of said target polynucleotide thereby modifying the target polynucleotide, wherein the CRISPR complex comprises a CRISPR enzyme complexed with a guide sequence hybridized to a target sequence within said target polynucleotide, wherein said guide sequence is linked to a tracr mate sequence which in turn hybridizes to a tracr sequence. In some embodiments, said cleavage comprises cleaving one or two strands at the location of the target sequence by said CRISPR enzyme. In some embodiments, said cleavage results in decreased transcription of a target gene. In some embodiments, the method further comprises repairing said cleaved target polynucleotide by homologous recombination with an exogenous template polynucleotide, wherein said repair results in a mutation comprising an insertion, deletion, or substitution of one or more nucleotides of said target polynucleotide. In some embodiments, said mutation results in one or more amino acid changes in a protein expressed from a gene comprising the target sequence. In some embodiments, the method further comprises delivering one or more vectors to said eukaryotic cell, wherein the one or more vectors drive expression of one or more of: the CRISPR enzyme, the guide sequence linked to the tracr mate sequence, and the tracr sequence. In some embodiments, said vectors are delivered to the eukaryotic cell in a subject. In some embodiments, said modifying takes place in said eukaryotic cell in a cell culture. In some embodiments, the method further comprises isolating said eukaryotic cell from a subject prior to said modifying. In some embodiments, the method further comprises returning said eukaryotic cell and/or cells derived therefrom to said subject.

[00115] In one aspect, the invention provides a method of modifying expression of a polynucleotide in a eukaryotic cell. In some embodiments, the method comprises allowing a CRISPR complex to bind to the polynucleotide such that said binding results in increased or decreased expression of said polynucleotide; wherein the CRISPR complex comprises a CRISPR enzyme complexed with a guide sequence hybridized to a target sequence within said polynucleotide, wherein said guide sequence is linked to a tracr mate sequence which in turn

hybridizes to a tracr sequence. In some embodiments, the method further comprises delivering one or more vectors to said eukaryotic cells, wherein the one or more vectors drive expression of one or more of: the CRISPR enzyme, the guide sequence linked to the tracr mate sequence, and the tracr sequence.

[00116] In one aspect, the invention provides a method of generating a model eukaryotic cell comprising a mutated disease gene. In some embodiments, a disease gene is any gene associated an increase in the risk of having or developing a disease. In some embodiments, the method comprises (a) introducing one or more vectors into a eukaryotic cell, wherein the one or more vectors drive expression of one or more of: a CRISPR enzyme, a guide sequence linked to a tracr mate sequence, and a tracr sequence; and (b) allowing a CRISPR complex to bind to a target polynucleotide to effect cleavage of the target polynucleotide within said disease gene, wherein the CRISPR complex comprises the CRISPR enzyme complexed with (1) the guide sequence that is hybridized to the target sequence within the target polynucleotide, and (2) the tracr mate sequence that is hybridized to the tracr sequence, thereby generating a model eukaryotic cell comprising a mutated disease gene. In some embodiments, said cleavage comprises cleaving one or two strands at the location of the target sequence by said CRISPR enzyme. In some embodiments, said cleavage results in decreased transcription of a target gene. In some embodiments, the method further comprises repairing said cleaved target polynucleotide by homologous recombination with an exogenous template polynucleotide, wherein said repair results in a mutation comprising an insertion, deletion, or substitution of one or more nucleotides of said target polynucleotide. In some embodiments, said mutation results in one or more amino acid changes in a protein expression from a gene comprising the target sequence.

[00117] In one aspect, the invention provides a method for developing a biologically active agent that modulates a cell signaling event associated with a disease gene. In some embodiments, a disease gene is any gene associated an increase in the risk of having or developing a disease. In some embodiments, the method comprises (a) contacting a test compound with a model cell of any one of the described embodiments; and (b) detecting a change in a readout that is indicative of a reduction or an augmentation of a cell signaling event associated with said mutation in said disease gene, thereby developing said biologically active agent that modulates said cell signaling event associated with said disease gene.

[00118] In one aspect, the invention provides a recombinant polynucleotide comprising a guide sequence upstream of a tracr mate sequence, wherein the guide sequence when expressed directs sequence-specific binding of a CRISPR complex to a corresponding target sequence present in a eukaryotic cell. In some embodiments, the target sequence is a viral sequence present in a eukaryotic cell. In some embodiments, the target sequence is a proto-oncogene or an oncogene.

[00119] In one aspect the invention provides for a method of selecting one or more cell(s) by introducing one or more mutations in a gene in the one or more cell (s), the method comprising: introducing one or more vectors into the cell (s), wherein the one or more vectors drive expression of one or more of: a CRISPR enzyme, the present guide (which may comprise of a guide sequence linked to a tracr mate sequence and a tracr sequence), and an editing template; wherein the editing template comprises the one or more mutations that abolish CRISPR enzyme cleavage; allowing homologous recombination of the editing template with the target polynucleotide in the cell(s) to be selected; allowing a CRISPR complex to bind to a target polynucleotide to effect cleavage of the target polynucleotide within said gene, wherein the CRISPR complex comprises the CRISPR enzyme complexed with the present guide in which the guide sequence is hybridized to the target sequence, wherein binding of the CRISPR complex to the target polynucleotide induces cell death, thereby allowing one or more cell(s) in which one or more mutations have been introduced to be selected. In a preferred embodiment, the CRISPR enzyme is Cas9. In another preferred embodiment of the invention the cell to be selected may be a eukaryotic cell. Aspects of the invention allow for selection of specific cells without requiring a selection marker or a two-step process that may include a counter-selection system.

[00120] In another aspect the invention comprehends a CRISPR-cas9 (*S. aureus*) system having an X-ray diffraction pattern corresponding to or resulting from any or all of the foregoing and/or a crystal having the structure defined by the crystal co-ordinates in Example 1.

[00121] In a further aspect, the invention involves a computer-assisted method for identifying or designing potential compounds to fit within or bind to CRISPR-cas9 system or a functional portion thereof or vice versa (a computer-assisted method for identifying or designing potential CRISPR-cas9 systems or a functional portion thereof for binding to desired compounds) or a computer-assisted method for identifying or designing potential CRISPR-cas9 systems (e.g., with regard to predicting areas of the CRISPR-cas9 system to be able to be manipulated—for instance, based on crystral structure data or based on data of cas9 orthologs, or with respect to where a

functional group such as an activator or repressor can be attached to the CRISPR-cas9 system, or as to cas9 truncations or as to designing nickases), said method comprising:

using a computer system, e.g., a programmed computer comprising a processor, a data storage system, an input device, and an output device, the steps of:

(a) inputting into the programmed computer through said input device data comprising the three-dimensional co-ordinates of a subset of the atoms from or pertaining to the CRISPR-cas9 crystal structure, e.g., in the CRISPR-cas9 system binding domain or alternatively or additionally in domains that vary based on variance among cas9 orthologs or as to cas9s or as to nickases or as to functional groups, optionally with structural information from CRISPR-cas9 system complex(es), thereby generating a data set;

(b) comparing, using said processor, said data set to a computer database of structures stored in said computer data storage system, e.g., structures of compounds that bind or putatively bind or that are desired to bind to a CRISPR-cas9 system or as to cas9 orthologs (e.g., as cas9s or as to domains or regions that vary amongst cas9 orthologs) or as to the CRISPR-cas9 crystal structure or as to nickases or as to functional groups;

(c) selecting from said database, using computer methods, structure(s)—e.g., CRISPR-cas9 structures that may bind to desired structures, desired structures that may bind to certain CRISPR-cas9 structures, portions of the CRISPR-cas9 system that may be manipulated, e.g., based on data from other portions of the CRISPR-cas9 crystral structure and/or from cas9 orthologs, truncated cas9s, novel nickases or particular functional groups, or positions for attaching functional groups or functional-group-CRISPR-cas9 systems;

(d) constructing, using computer methods, a model of the selected structure(s); and

(e) outputting to said output device the selected structure(s);

and optionally synthesizing one or more of the selected structure(s);

and further optionally testing said synthesized selected structure(s) as or in a CRISPR-cas9 system;

or, said method comprising: providing the co-ordinates of at least two atoms of the CRISPR-cas9 crystal structure, e.g., at least two atoms of the herein Crystral Structure Table of the CRISPR-cas9 crystal structure or co-ordinates of at least a sub-domain of the CRISPR-cas9 crystral structure ("selected co-ordinates"), providing the structure of a candidate comprising a binding molecule or of portions of the CRISPR-cas9 system that may be manipulated, e.g., based on data

from other portions of the CRISPR-cas9 crystral structure and/or from cas9 orthologs, or the structure of functional groups, and fitting the structure of the candidate to the selected co-ordinates, to thereby obtain product data comprising CRISPR-cas9 structures that may bind to desired structures, desired structures that may bind to certain CRISPR-cas9 structures, portions of the CRISPR-cas9 system that may be manipulated, truncated cas9s, novel nickases, or particular functional groups, or positions for attaching functional groups or functional-group-CRISPR-cas9 systems, with output thereof; and optionally synthesizing compound(s) from said product data and further optionally comprising testing said synthesized compound(s) as or in a CRISPR-cas9 system.

[00122] In a further aspect, the invention involves a computer-assisted method for identifying or designing i) a potential compound to fit within or bind to a CRISPR-Cas9 system or a portion thereof, which comprises: a) providing the co-ordinates of at least two atoms of the CRISPR-Cas9 system of the Crystal Structure of Table 7, b) providing the structure of a candidate molecule i) for binding to or within the CRISPR-Cas9 system, or ii) for manipulating a portion of the CRISPR-Cas9 system, c) fitting the structure of the candidate molecule to the at least two atoms of the CRISPR-Cas9 system, wherein fitting comprises determining interactions between one or more atoms of the candidate molecule and atoms of the CRISPR-SpCas9 system, and d) selecting the candidate molecule if it is predicted to bind to or within the CRISPR-Cas9 system.

[00123] The testing can comprise analyzing the CRISPR-cas9 system resulting from said synthesized selected structure(s), e.g., with respect to binding, or performing a desired function.

[00124] The output in the foregoing methods can comprise data transmission, e.g., transmission of information via telecommunication, telephone, video conference, mass communication, e.g., presentation such as a computer presentation (eg POWERPOINT), internet, email, documentary communication such as a computer program (eg WORD) document and the like. Accordingly, the invention also comprehends computer readable media containing: atomic co-ordinate data according to the herein Crystal Structure Coordinates and/or the Figures, said data defining the three dimensional structure of CRISPR-cas9 or at least one sub-domain thereof, or structure factor data for CRISPR-cas9, said structure factor data being derivable from the atomic co-ordinate data of herein Crystal Structure Coordinates and/or the Figures. The computer readable media can also contain any data of the foregoing methods. The invention further comprehends methods a computer system for generating or performing rational design as in the foregoing methods

containing either: atomic co-ordinate data according to herein Crystal Structure Coordinates and/or the Figures, said data defining the three dimensional structure of CRISPR-cas9 or at least one sub-domain thereof, or structure factor data for CRISPR-cas9, said structure factor data being derivable from the atomic co-ordinate data of herein Crystal Structure Coordinates and/or the Figures. The invention further comprehends a method of doing business comprising providing to a user the computer system or the media or the three dimensional structure of CRISPR-cas9 or at least one sub-domain thereof, or structure factor data for CRISPR-cas9, said structure set forth in and said structure factor data being derivable from the atomic co-ordinate data of herein Crystal Structure Coordinates and/or the Figures, or the herein computer media or a herein data transmission.

[00125] In aspects of the invention, the engineered and optimized guide RNAs and Cas9 enzymes described herein are used in compositions and methods of targeted genome modification.

[00126] In some embodiments, phenotypic alteration is preferably the result of genome modification when a genetic disease is targeted, especially in methods of therapy and preferably where a repair template is provided to correct or alter the phenotype.

[00127] In some embodiments diseases that may be targeted include those concerned with disease-causing splice defects.

[00128] In some embodiments, cellular targets include Hemopoietic Stem/Progenitor Cells (CD34+); Human T cells; and Eye (retinal cells) – for example photoreceptor precursor cells.

[00129] In some embodiments Gene targets include: Human Beta Globin – HBB (for treating Sickle Cell Anemia, including by stimulating gene-conversion (using closely related HBD gene as an endogenous template)); CD3 (T-Cells); and CEP920 - retina (eye).

[00130] In some embodiments disease targets also include: Cancer; HIV, HBV, Thalassemia, Sickle Cell Anemia (based on a point mutation); and ophthalmic disease – for example Leber Congenital Amaurosis (LCA)-causing Splice Defect.

[00131] In some embodiments delivery methods include: Cationic Lipid Mediated "direct" delivery of Enzyme-Guide complex (RiboNucleoProtein) and electroporation of plasmid DNA. Aspects of *in vivo* electroporation are further described in "Plasmid DNA gene therapy by electroporation: principles and recent advances." Murakami T, Sunada Y. Curr Gene Ther. 2011 Dec;11(6):447-56 and further Non-Viral approaches are described in "Nonviral approach for

targeted nucleic acid delivery." Jafari M, Soltani M, Naahidi S, Karunaratne DN, Chen P. Curr Med Chem. 2012;19(2):197-208, herein incorporated by reference in their entirety.

[00132] In preferred embodiments, the ortholog is *Staphyloccus aureus* so that the Cas9 is that from or derived from *Staphyloccus aureus* (referred to as SaCas9). In some embodiments, the *Staphyloccus aureus* is *Staphyloccus aureus* subspecies *aureus*.

[00133] Although alanine is preferred as the replacement residue in the mutant, other alternatives are available, provided that they retain the function of the modified Cas9. For example, in the case of a residue such as N580, the usual mutant is to Ala to provide N580A. However, alternatives are envisaged that retain the certain function, i.e. are catalytically inactive. Suitable guidance is given below, but preferred alternatives to alanine, may include, in some embodiments, other small and/or non-polar amino acids. These can include glycine, isoleucine, leucine, methionine, phenylalanine, tryptophan, or valine. For example amino acid substitutions in SpCas9 at N863 can include, e.g., N863G, N863V, N863L, N863I, N863F, or N863M; and similarly in SaCas9, N580G, N580V, N580L, N580I, N580F or N580M. The same approach can be applied to any of the other mutants mentioned herein, in particular those mutated to alanine. Further guidance is provided in the table below and accompanying discussion.

[00134] It will be appreciated that the terms tracrRNA and tracr sequence can be used interchangeably herein

[00135] Inventive methods can further comprise delivery of templates, such as repair templates, which may be dsODN or ssODN, see below. Delivery of templates may be via the cotemporaneous or separate from delivery of any or all the CRISPR enzyme, guide, tracr mate or tracrRNA and via the same delivery mechanism or different. In some embodiments, it is preferred that the template is delivered together with the guide, tracr mate and/or tracrRNA and, preferably, also the CRISPR enzyme. An example may be an AAV vector where the CRISPR enzyme is an SaCas9 as described herein.

[00136] In some embodiments, the present invention provides modified enzymes that are nickases. Methods directed to use of two or more nickases are also provided, in particular a dual or double nickase approach. In some aspects and embodiments, a single type Cas9 nickase may be delivered, for example a modified SpCas9 or a modified SaCas9 nickase as described herein. This results in the target DNA being bound by either two SpCas9s or 2 SaCas9s. However, it is also envisaged that the different Cas9 orthologs may be used, one Cas9 ortholog on the coding strand

of the DNA and another ortholog Cas9 on the non-coding or opposite DNA strand. For instance, a SpCas9 could be used to form a CRISPR complex with a target on one DNA strand and a SaCas9 could be used to form a CRISPR complex with a target on the other DNA strand. Alternatively, a SpCas9 could be used on one strand and an ortholog Cas9 could be used on another strand, or a SaCas9 could be used on one strand and an ortholog Cas9 could be used on another strand. Using dual, but different Cas9 will require delivery or constitutional expression of an additional Cas9, with an ortholog-specific sgRNAs or guide scaffolds for each Cas9 ortholog. However, it may be advantageous to do so as the two different ortholog Cas9s require different PAMs and may also have different guide requirements, thus allowing a greater deal of control for the user, especially if one of the two orthologs was controllable, i.e. inducible.

[00137] Guidance is provided below in respect of guide length (the spacer or guide sequence). In some embodiments, for Sp, optimal guide length can vary as low as Keith Joung's 17-nucleotide 'tru-guide.' In some embodiments, for Sa, the optimal guide length may be 20 or 21 or 22 or 23 or 24 nucleotides in length (Ran 2015).

[00138] Also provided is a host cell or cell line. This may be an *in vivo, ex vivo* or *in vitro* host cell or cell line. The host cell or cell line may, in some embodiments, comprise or have been modified by the composition or enzyme according to the present invention. Also provided are progeny of said host cell or cell line. In some embodiments, the cells of the host cell, cell line or progeny are stem cells or a stem cell line.

[00139] Methods, products and uses described herein may be used for non-therapeutic purposes. Furthermore, any of the methods described herein may be applied *in vitro* and *ex vivo*.

[00140] In relation to the guides in general, but specifically in respect of the sgRNA and the CRISPR complex formed therewith, it is preferable that the guide has one or more of the following features. In some embodiments, the tracr sequence has one or more hairpins and is 30 or more nucleotides in length, more preferably 40 or more nucleotides in length, or more preferably 50 or more nucleotides in length. In some embodiments, the guide sequence is between 10 to 30 nucleotides in length. In some embodiments, the CRISPR/Cas enzyme is a Type II Cas9 enzyme. In some embodiments, the tracr sequence has one or more hairpins and is 30 or more nucleotides in length, more preferably 40 or more nucleotides in length, or more preferably 50 or more nucleotides in length, the guide sequence is between 10 to 30 nucleotides in length and the CRISPR/Cas enzyme is a Type II Cas9 enzyme.

[00141] In an aspect, the invention provides use of the modified enzymes and/or guides in double nicking (Cas9 nickase) methods, double dead-Cas9 methods or dual Cas9 nickase + dead Cas9 methods, i.e. where two Cas9s form CRISPR complexes with (nearby) targets on separate strands of the DNA. These two targets are nearby with an offset creating overhangs as described herein. Optimal overhang lengths are described herein, but range from 1 to 10, 20, 30, 40, 50, 60, 70, 80, 90, or 100, such as 1 to 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13,14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99 or 100 nucleotides on each 3' overhanging end. The offset between the 5' end of each of guide pair is, in some embodiments 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 or 60 nucleotides. Ranges of around 15-60, 16-60, 17-60, 18-60, 19-60, 20-60, 21-60, 22-60, 23-60, 24-60, 25-60, 15-55, 16-55, 17-55, 18-55, 19-55, 20-55, 21-55, 22-55, 23-55, 24-, 25-55, 35-60, 15-40, 16-40, 17-40, 18-40, 19-40, 20-40, 21-40, 22-40, 23-40, 24-40, 25-40, 15-45, 16-45, 17-45, 18-45, 19-45, 20-45, 21-45, 22-45, 23-45, 24-45, 25-45, 30-50, 35-55, and especially 35-45 are also preferred in some embodiments.

[00142] It is preferred, and this can apply to any of the aspects or embodiments of the invention, that the methods, systems and compositions described herein do not include an NLS. In other words, although generally useful, use of an NLS can be optional. For example, if mitochondrial DNA is to be targeted, then an NLS is not required.

[00143] Accordingly, it is an object of the invention not to encompass within the invention any previously known product, process of making the product, or method of using the product such that Applicants reserve the right and hereby disclose a disclaimer of any previously known product, process, or method. It is further noted that the invention does not intend to encompass within the scope of the invention any product, process, or making of the product or method of using the product, which does not meet the written description and enablement requirements of the USPTO (35 U.S.C. §112, first paragraph) or the EPO (Article 83 of the EPC), such that Applicants reserve the right and hereby disclose a disclaimer of any previously described product, process of making the product, or method of using the product.

[00144] It is noted that in this disclosure and particularly in the claims and/or paragraphs, terms such as "comprises", "comprised", "comprising" and the like can have the meaning attributed to it in U.S. Patent law; e.g., they can mean "includes", "included", "including", and the like; and that terms such as "consisting essentially of" and "consists essentially of" have the meaning ascribed to them in U.S. Patent law, e.g., they allow for elements not explicitly recited, but exclude elements that are found in the prior art or that affect a basic or novel characteristic of the invention. It may be advantageous in the practice of the invention to be in compliance with Art. 53(c) EPC and Rule 28(b) and (c) EPC. Nothing herein is to be construed as a promise.

[00145] These and other embodiments are disclosed or are obvious from and encompassed by, the following Detailed Description.

BRIEF DESCRIPTION OF THE DRAWINGS

[00146] The novel features of the invention are set forth with particularity in the appended claims. A better understanding of the features and advantages of the present invention will be obtained by reference to the following detailed description that sets forth illustrative embodiments, in which the principles of the invention are utilized, and the accompanying drawings of which:

[00147] **Figure 1A-1F** shows the the structure of the SaCas9–sgRNA–target DNA quaternary complex. (A) Domain organization of SaCas9. BH, bridge helix. CTD, C-terminal domain. (B) Schematic of the sgRNA–target DNA complex. The putative stem loop 2 was truncated to facilitate crystallization. (C and D) Ribbon (C) and surface (D) representations of the SaCas9–sgRNA–target DNA complex. The active sites of the RuvC (Asp10) and HNH (Asn580) domains are indicated by red circles. Molecular graphic images were prepared using CueMol (www.cuemol.org). (E and F) Ribbon (E) and surface (F) representations of the SpCas9–sgRNA–target DNA complex (PDB ID 4UN3). The SpCas9-specific insertions in the REC and PI domains are highlighted in pale blue. In (F), the L1 and L2 linker regions and the HNH domain are omitted for clarity.

[00148] **Figure 2A-2G** depicts the sgRNA–target DNA complex. (A) Nucleotide sequence of the sgRNA and target DNA. The putative stem loop 2 (dashed box) was truncated to facilitate crystallization. U73 is disordered in the structure. (B) Overview of the sgRNA–target DNA complex. (C and D) Close-up view of the repeat:anti-repeat duplex (C) and stem loop 1 (D). Key interactions are shown as dashed lines. (E) Mutational analysis of sgRNA scaffolds. Effects of mutations on the ability to induce indels in the target EMX locus were examined. Base changes from the sgRNA (+77) scaffold are shown at the respective positions, with dashes indicating

unaltered bases (n = 3, error bars show mean ± S.E.M.). (F) Transcriptional activation of the target ASCL1 (left) and MYOD1 (right) genes by dSaCas9-based activators. See also Figure 10. (G) Superimposition of the SaCas9 sgRNA and SpCas9 sgRNA (PDB ID 4OO8 (stereoview).

[00149] **Figures 3** shows a schematic of the nucleic-acid recognition by SaCas9. SaCas9 residues that interact with sgRNA and target DNA via their main chain are shown in parentheses. Water-mediated hydrogen-bonding interactions are omitted for clarity. U73 is disordered in the structure.

[00150] **Figure 4A-4F** shows the recognition mechanism of the sgRNA. (A–D) Recognition of the seed region (A), the repeat:anti-repeat duplex (B), stem loop 1 (C), and the basal region of stem loop 1 (D). Hydrogen bonds and salt bridges are shown as dashed lines. In (A), the target DNA strand is omitted for clarity. The inset shows the view positions of panels A-D superimposed on the overall structure of the complex. (E and F) The REC and WED domains of SpCas9 (PDB ID 4UN3) (E) and SaCas9 (F) are depicted. The SpCas9-specific insertions are highlighted in pale blue.

[00151] **Figure 5A-5H** shows details of PAM recognition. (A and B) Recognition of the 5'-TTGAAT-3' PAM (A) and 5'-TTGGGT-3' PAM (B) (stereoview). The PAM sequences are highlighted in purple. Water molecules are shown as red spheres. Hydrogen bonds are shown as dashed lines. (C) Mutational analysis of the PAM-interacting residues and the phosphate lock loop (PLL) measured by indel rate at two *EMX1* targets (n = 3, error bars show mean ± S.E.M.). (D and E) PAM recognition by the PI domains of SpCas9 (PDB ID 4UN3) (D) and SaCas9 (E). The PAM sequences are highlighted in purple. Hydrogen bonds are shown as dashed lines. The target DNA strands are omitted for clarity. In (D), the SpCas9-specific insertion is highlighted in pale blue. (F and G) +1 phosphate recognition by the phosphate lock loop of SpCas9 (PDB ID 4UN3) (F) and SaCas9 (G). (H) Recognition of the minor groove of the PAM duplex.

[00152] **Figure 6A-6C** shows RuvC and HNH nuclease domains. (A and B) Structural comparison of the RuvC (A) and HNH (B) domains of SaCas9, SpCas9 (PDB ID 4UN3) and AnCas9 (PDB ID 4OGE). The conserved a helices and b strands are numbered. The catalytic residues are shown as stick models. BH, bridge helix. PLL, phosphate lock loop. (C) Comparison of the spatial arrangements between the RuvC and HNH domains in SaCas9, SpCas9 (PDB ID 4UN3) and AnCas9 (PDB ID 4OGE). The Ca atoms of the catalytic histidine residues in the HNH

domains are shown as spheres. The cleavage sites of the target DNA strands are indicated by magenta circles. In SpCas9, the disordered region in the L1 linker is indicated by dashed lines.

[00153] **Figures 7A-7F** show the structural comparison of SpCas9 and SaCas9. (A) Quaternary complex structures of SpCas9 (PDB ID 4UN3) (A) and SaCas9 (B). Stereoviews of REC lobes of SpCas9 (PDB ID 4UN3) (C) and SaCas9 (D). The SpCas9-specific insertions are highlighted in pale blue. WED and PI domains of SpCas9 (PDB ID 4UN3) (E) and SaCas9 (F). The core β-strands in the PI domains are numbered. The PAM sequences are highlighted in purple. Hydrogen bonds are shown as dashed lines. The target DNA strands are omitted for clarity. The SpCas9-specific insertion is highlight in pale blue. PL, phosphate lock loop.

[00154] **Figure 8A-8J** shows depicts structure-guided engineering of SaCas9 system and its applications. (A) Schematic of the three-component SaCas9 activator system. (B) Design of the dSaCas9-based transcriptional activator and the reporter system. NLS, nuclear localization signal. Lk, peptide linker. 2A, 2A self-cleaving peptide. CMV, cytomegalovirus. (C) Representative fluorescent microscopy images showing the activation of the reporter gene and the low background level of the new reporter design. Scale bar, 100 μm. (D) Optimization of different fusion scaffolds for the dSaCas9-based activator using the reporter system. MS2-SL, stem-loop of the MS2 aptamer. 'IS' denotes the insertion site of the MS2-SL. (E) Transcriptional activation of the endogenous target ASCL1 and MYOD1 genes by dSaCas9-based activators, with previously described dSpCas9-based activators as positive controls. (F) Structural-guided design of split-SaCas9 system. Split sites 1 and 2 were designed at flexible linker regions, whereas split site 3 was designed at the β-strand in the WED domain as a negative control. (G) Cleavage activity of wild-type (WT) SaCas9 and the three different auto-assembled split-SaCas9 designs. (H and I) Schematic of the inducible SaCas9 system. NES, nuclear export signal. ABA, abscisic acid. DA, dimerization domain A. DB, dimerization domain B. (J) Cleavage activity of the wild-type (WT) SaCas9 and three different inducible SaCas9 systems. 'ABA' denotes inducible SaCas9 design based on the abscisic acid sensing system; 'AC' denotes design based on A/C heterodimerizer; 'Rapa' denotes design based on the FRB/FKBP system (see Experimental Procedures section for additional details).

[00155] **Figure 9** shows an Electron density map. The $2mF_O - DF_C$ electron density map around the PAM is shown as a gray mesh, contoured at 1σ and 2σ for water molecules and the

Cas9–sgRNA–DNA complex, respectively. The PAM is highlighted in purple. Water molecules are shown as red spheres.

[00156] **Figure 10A-10B** shows the activity of wild-type and C946A mutant of SaCas9. The abilities of the wild-type and C946A mutant of SaCas9 to induce indels in the target *DYRK1A* locus were examined. (A) Target sequence in the human *DYRK1A* locus used to test endogenous genome cleavage by the wild-type (WT) and mutants of SaCas9. The cleavage sites by the RuvC and HNH domains are indicated by cyan and pink triangles, respectively. (B) Comparison of the genome cleavage activities of the WT and C946A mutant of SaCas9. The activities were evaluated by percentage of indel formation at the *DYRK1A* locus using next-generation sequencing of targeted amplicon (n = 3 for all experiments, error bars indicate MLE) (see Methods for more detail). (n = 3, error bars show mean ± S.E.M.).

[00157] **Figure 11** shows a sequence alignment of SaCas9 and SpCas9 with domain annotation. Sequence alignment was performed using Geneious package. All domain name annotations and coloring are the same as in Figure 1. Residues numbers for SaCas9 and SpCas9 are labeled on top and bottom, respectively.

[00158] **Figure 12** depicts crystal structures of SpCas9 (PDB ID 4CMP) and AnCas9 (PDB ID 4OGE) in the apo form. The active sites of the HNH and RuvC nuclease domains are indicated by red circles. In AnCas9, residues 99–136 and 171–224 in the REC lobe are disordered, probably due to their flexibility.

[00159] **Figure 13A-13E** shows a comparison of SaCas9 sgRNA and SpCas9 sgRNA. (A and B) Crystal structures (left) and nucleotide sequences (right) of the SpCas9 sgRNA (PDB ID 4OO8) (A) and SaCas9 sgRNA (B). (C) Effect of the stem loop 2 truncation on *in vitro* DNA cleavage activity. An *Eco*RI-linearized plasmid substrate (150 ng) was cleaved with SaCas9–sgRNA (8, 16, 32 nM) at 37°C for 1 h, and then resolved on an ethidium bromide-stained 1% agarose gel. (D) Effect of the stem loop 2 truncation on *in vivo* DNA cleavage activity (n = 3, error bars show mean ± S.E.M.). (E) Superimposition of the SaCas9 sgRNA and SpCas9 sgRNA.

[00160] **Figures 14A-14B** shows the structural comparison between SaCas9, SpCas9 (PDB ID 4UN3) and AnCas9 (PDB ID 4OGE). (A) REC lobes (the C-terminal halves) of SaCas9, SpCas9 and AnCas9. The conserved α helices are numbered. (B) Superimposition of the REC lobes (the C-terminal halves) of SaCas9, SpCas9 and AnCas9 (stereoview).

[00161] **Figure 15A-15B** shows genome cleavage activity of the SaCas9 mutants bearing an alanine substitution in the catalytic residues in the RuvC and HNH nuclease domains. (A) Target sequence in the human *DYRK1A* locus used to test endogenous genome cleavage by the wild-type (WT) and mutants of SaCas9. The cleavage sites by the RuvC and HNH domains are indicated by cyan and pink triangles, respectively. (B) Comparison of the genome cleavage activities of the wild-type (WT) and different mutants of SaCas9. The activities were evaluated by percentage of indel formation at the *DYRK1A* locus using next-generation sequencing of targeted amplicon (n = 3 for all experiments, error bars indicate MLE) (see Methods for more detail).

[00162] **Figure 16** shows the structural comparison of the SaCas9 RuvC domain with *T. thermophilus* RuvC in complex with a Holliday junction substrate (PDB ID 4LD0). The non-target DNA strand was modelled into the SaCas9 RuvC domain, based on the superimposition of *T. thermophilus* RuvC on SaCas9. The catalytic residues are shown as stick models. The cleavage sites of the DNA strands are indicated by magenta circles.

[00163] **Figure 17** shows the recognition mechanism of the target DNA in SpCas9 (PDB ID 4UN3). Hydrogen bonds are shown as dashed lines. Related to Figure 5.

[00164] **Figure 18** shows solved crystal structures of Cas9 orthologs. The active sites of the RuvC and HNH domains, and the cleavage sites of the target DNA strands are indicated by red and magenta circles, respectively.

[00165] **Figure 19A-19B** shows aspects of structure determination. Panel (A) shows simulated annealing omit $mF_O - DF_C$ electron density map for the PAM and the PAM-interacting residues (shown as a blue mesh, contoured at 4.5σ) (stereoview). Panel (B) shows the location of the C946A mutation used in crystallization. The C946A mutation is located on a surface-exposed α helix in the TOPO domain, and does not contact the bound nucleic acids.

[00166] **Figure 20** shows a structure-guided sequence alignment of SaCas9 and SpCas9. The structures of SaCas9 and SpCas9 (PDB ID 4UN3) were superimposed by the secondary-structure matching (SSM) algorithm, using CueMol (http://www.cuemol.org), and then the sequence alignment was manually refined. The figure was prepared using ESPript3 (http://espript.ibcp.fr/ESPript/ESPript/). The secondary structures of SaCas9 and SpCas9 are shown above and below the sequences, respectively.

[00167] **Figure 21A-21C** shows a structural comparison of the REC, WED and PI domains. Panel A depicts a structural comparison of the WED and PI domains of SaCas9, SpCas9 and AnCas9. The core β-strands in the WED and PI domains are numbered. The SpCas9-specific insertion is highlight in pale blue. The PAM-interacting residues in SaCas9 and SpCas9, and the

corresponding residues in AnCas9 are shown as stick models. Panels B and C depict recognition of the sgRNA scaffolds in SaCas9 (B) and SpCas9 (PDB ID 4UN3) (C)

[00168] **Figure 22A-22B** illustrates the result of an experiment showing nickase activity of D10A and N580A mutants of SaCas9. Panel A illustrates the sequence of the target locus for 5 gRNAs annotated in gray and shows activity of the mutant enzymes with the indicated guides. NHEJ % on the Y axis represents on-target cleavage rates as measured by TOPO sequencing. Panel B shows wild type S.aureus Cas9 with the indicated gRNAs targeting five different loci. NHEJ % on the Y axis represents on-target cleavage rates as measured by T7E1 assay.

[00169] The figures herein are for illustrative purposes only and are not necessarily drawn to scale.

DETAILED DESCRIPTION OF THE INVENTION

[00170] With respect to general information on CRISPR-Cas Systems, components thereof, and delivery of such components, including methods, materials, delivery vehicles, vectors, particles, AAV, and making and using thereof, including as to amounts and formulations, all useful in the practice of the instant invention, reference is made to: US Patents Nos. 8,999,641, 8,993,233, 8,945,839, 8,932,814, 8,906,616, 8,895,308, 8,889,418, 8,889,356, 8,871,445, 8,865,406, 8,795,965, 8,771,945 and 8,697,359; US Patent Publications US 2014-0310830 (US APP. Ser. No. 14/105,031), US 2014-0287938 A1 (U.S. App. Ser. No. 14/213,991), US 2014-0273234 A1 (U.S. App. Ser. No. 14/293,674), US2014-0273232 A1 (U.S. App. Ser. No. 14/290,575), US 2014-0273231 (U.S. App. Ser. No. 14/259,420), US 2014-0256046 A1 (U.S. App. Ser. No. 14/226,274), US 2014-0248702 A1 (U.S. App. Ser. No. 14/258,458), US 2014-0242700 A1 (U.S. App. Ser. No. 14/222,930), US 2014-0242699 A1 (U.S. App. Ser. No. 14/183,512), US 2014-0242664 A1 (U.S. App. Ser. No. 14/104,990), US 2014-0234972 A1 (U.S. App. Ser. No. 14/183,471), US 2014-0227787 A1 (U.S. App. Ser. No. 14/256,912), US 2014-0189896 A1 (U.S. App. Ser. No. 14/105,035), US 2014-0186958 (U.S. App. Ser. No. 14/105,017), US 2014-0186919 A1 (U.S. App. Ser. No. 14/104,977), US 2014-0186843 A1 (U.S. App. Ser. No. 14/104,900), US 2014-0179770 A1 (U.S. App. Ser. No. 14/104,837) and US 2014-0179006 A1 (U.S. App. Ser. No. 14/183,486), US 2014-0170753 (US App Ser No 14/183,429), US 2015-0184139 (U.S. App. Ser. No. 14/324,960), 14/054,414; European Patents EP 2 784 162 B1 (EP14170383.5), EP 2 764 103 (EP13824232.6) and EP 2 771 468 B1 (EP13818570.7); , , and PCT Patent Publications WO 2014/093661 (PCT/US2013/074743), WO 2014/093694 (PCT/US2013/074790), WO 2014/093595 (PCT/US2013/074611), WO 2014/093718 (PCT/US2013/074825), WO

2014/093709 (PCT/US2013/074812), WO 2014/093622 (PCT/US2013/074667), WO 2014/093635 (PCT/US2013/074691), WO 2014/093655 (PCT/US2013/074736), WO 2014/093712 (PCT/US2013/074819), WO 2014/093701 (PCT/US2013/074800), WO2014/018423 (PCT/US2013/051418), WO 2014/204723 (PCT/US2014/041790), WO 2014/204724 (PCT/US2014/041800), WO 2014/204725 (PCT/US2014/041803), WO 2014/204726 (PCT/US2014/041804), WO 2014/204727 (PCT/US2014/041806), WO 2014/204728 (PCT/US2014/041808), WO 2014/204729 (PCT/US2014/041809), WO 2015/089351 (PCT/US2014/069897), WO 2015/089354 (PCT/US2014/069902), WO 2015/089364 (PCT/US2014/069925), WO 2015/089427 (PCT/US2014/070068), WO 2015/089462 (PCT/US2014/070127), WO 2015/089419 (PCT/US2014/070057), WO 2015/089465 (PCT/US2014/070135), WO 2015/089486 (PCT/US2014/070175), PCT/US2015/051691, PCT/US2015/051830. Reference is also made to US provisional patent applications 61/758,468; 61/802,174; 61/806,375; 61/814,263; 61/819,803 and 61/828,130, filed on January 30, 2013; March 15, 2013; March 28, 2013; April 20, 2013; May 6, 2013 and May 28, 2013 respectively. Reference is also made to US provisional patent application 61/836,123, filed on June 17, 2013. Reference is additionally made to US provisional patent applications 61/835,931, 61/835,936, 61/836,127, 61/836, 101, 61/836,080 and 61/835,973, each filed June 17, 2013. Further reference is made to US provisional patent applications 61/862,468 and 61/862,355 filed on August 5, 2013; 61/871,301 filed on August 28, 2013; 61/960,777 filed on September 25, 2013 and 61/961,980 filed on October 28, 2013. Reference is yet further made to: PCT Patent applications Nos: PCT/US2014/041803, PCT/US2014/041800, PCT/US2014/041809, PCT/US2014/041804 and PCT/US2014/041806, each filed June 10, 2014; PCT/US2014/041808 filed June 11, 2014; and PCT/US2014/62558 filed October 28, 2014, and US Provisional Patent Applications Serial Nos.: 61/915,148, 61/915,150, 61/915,153, 61/915,203, 61/915,251, 61/915,301, 61/915,267,61/915,260, and 61/915,397, each filed December 12, 2013; 61/757,972 and 61/768,959, filed on January 29, 2013 and February 25, 2013; 61/835,936, 61/836,127, 61/836,101, 61/836,080, 61/835,973, and 61/835,931, filed June 17, 2013; 62/010,888 and 62/010,879, both filed June 11, 2014; 62/010,329 and 62/010,441, each filed June 10, 2014; 61/939,228 and 61/939,242, each filed February 12, 2014; 61/980,012, filed April 15,2014; 62/038,358, filed August 17, 2014; 62/054,490, 62/055,484, 62/055,460 and 62/055,487, each

filed September 25, 2014; and 62/069,243, filed October 27, 2014. Reference is made to US provisional patent application 61/930,214 filed on January 22, 2014.

[00171] Mention is also made of US application 62/180,709, filed 17-Jun-15, PROTECTED GUIDE RNAS (PGRNAS); US application 62/091,455, filed, 12-Dec-14, PROTECTED GUIDE RNAS (PGRNAS); US application 62/096,708, 24-Dec-14, PROTECTED GUIDE RNAS (PGRNAS); US application 62/091,462, 12-Dec-14, DEAD GUIDES FOR CRISPR TRANSCRIPTION FACTORS; US application 62/096,324, 23-Dec-14, 62/180,681, 17-Jun-2015, and 62/237,496, 5-Oct-2015, DEAD GUIDES FOR CRISPR TRANSCRIPTION FACTORS; US application 62/091,456, 12-Dec-14, and 62/180,692, 17-Jun-2015, ESCORTED AND FUNCTIONALIZED GUIDES FOR CRISPR-CAS SYSTEMS; US application 62/091,461, 12-Dec-14, DELIVERY, USE AND THERAPEUTIC APPLICATIONS OF THE CRISPR-CAS SYSTEMS AND COMPOSITIONS FOR GENOME EDITING AS TO HEMATOPOETIC STEM CELLS (HSCs); US application 62/094,903, 19-Dec-14, UNBIASED IDENTIFICATION OF DOUBLE-STRAND BREAKS AND GENOMIC REARRANGEMENT BY GENOME-WISE INSERT CAPTURE SEQUENCING; US application 62/096,761, 24-Dec-14, ENGINEERING OF SYSTEMS, METHODS AND OPTIMIZED ENZYME AND GUIDE SCAFFOLDS FOR SEQUENCE MANIPULATION; US application 62/098,059, 30-Dec-14, and 62/181,667, 18-Jun-2015, RNA-TARGETING SYSTEM; US application 62/096,656, 24-Dec-14, and 62/181,151, 17-Jun-2015, CRISPR HAVING OR ASSOCIATED WITH DESTABILIZATION DOMAINS; US application 62/096,697, 24-Dec-14, CRISPR HAVING OR ASSOCIATED WITH AAV; US application 62/098,158, 30-Dec-14, ENGINEERED CRISPR COMPLEX INSERTIONAL TARGETING SYSTEMS; US application 62/151,052, 22-Apr-15, CELLULAR TARGETING FOR EXTRACELLULAR EXOSOMAL REPORTING; US application 62/054,490, 24-Sep-14, DELIVERY, USE AND THERAPEUTIC APPLICATIONS OF THE CRISPR-CAS SYSTEMS AND COMPOSITIONS FOR TARGETING DISORDERS AND DISEASES USING PARTICLE DELIVERY COMPONENTS; US application 61/939,154, 12-FEB-14, SYSTEMS, METHODS AND COMPOSITIONS FOR SEQUENCE MANIPULATION WITH OPTIMIZED FUNCTIONAL CRISPR-CAS SYSTEMS; US application 62/055,484, 25-Sep-14, SYSTEMS, METHODS AND COMPOSITIONS FOR SEQUENCE MANIPULATION WITH OPTIMIZED FUNCTIONAL CRISPR-CAS SYSTEMS; US application 62/087,537, 4-Dec-14, SYSTEMS, METHODS AND COMPOSITIONS FOR SEQUENCE MANIPULATION WITH OPTIMIZED

FUNCTIONAL CRISPR-CAS SYSTEMS; US application 62/054,651, 24-Sep-14, DELIVERY, USE AND THERAPEUTIC APPLICATIONS OF THE CRISPR-CAS SYSTEMS AND COMPOSITIONS FOR MODELING COMPETITION OF MULTIPLE CANCER MUTATIONS IN VIVO; US application 62/067,886, 23-Oct-14, DELIVERY, USE AND THERAPEUTIC APPLICATIONS OF THE CRISPR-CAS SYSTEMS AND COMPOSITIONS FOR MODELING COMPETITION OF MULTIPLE CANCER MUTATIONS IN VIVO; US application 62/054,675, 24-Sep-14, and 62/181,002, 17-Jun-2015, DELIVERY, USE AND THERAPEUTIC APPLICATIONS OF THE CRISPR-CAS SYSTEMS AND COMPOSITIONS IN NEURONAL CELLS/TISSUES; US application 62/054,528, 24-Sep-14, DELIVERY, USE AND THERAPEUTIC APPLICATIONS OF THE CRISPR-CAS SYSTEMS AND COMPOSITIONS IN IMMUNE DISEASES OR DISORDERS; US application 62/055,454, 25-Sep-14, DELIVERY, USE AND THERAPEUTIC APPLICATIONS OF THE CRISPR-CAS SYSTEMS AND COMPOSITIONS FOR TARGETING DISORDERS AND DISEASES USING CELL PENETRATION PEPTIDES (CPP); US application 62/055,460, 25-Sep-14, MULTIFUNCTIONAL-CRISPR COMPLEXES AND/OR OPTIMIZED ENZYME LINKED FUNCTIONAL-CRISPR COMPLEXES; US application 62/087,475, 4-Dec-14, FUNCTIONAL SCREENING WITH OPTIMIZED FUNCTIONAL CRISPR-CAS SYSTEMS; US application 62/055,487, 25-Sep-14, FUNCTIONAL SCREENING WITH OPTIMIZED FUNCTIONAL CRISPR-CAS SYSTEMS; US application 62/087,546, 4-Dec-14, and 62/181,687, 18-Jun-2015, MULTIFUNCTIONAL CRISPR COMPLEXES AND/OR OPTIMIZED ENZYME LINKED FUNCTIONAL-CRISPR COMPLEXES; and US application 62/098,285, 30-Dec-14, CRISPR MEDIATED IN VIVO MODELING AND GENETIC SCREENING OF TUMOR GROWTH AND METASTASIS.

[00172] Mention is made of US applications 62/181,659, 18-Jun-2015 and 62/207,318, 19-Aug-2015, ENGINEERING AND OPTIMIZATION OF SYSTEMS, METHODS, ENZYME AND GUIDE SCAFFOLDS OF CAS9 ORTHOLOGS AND VARIANTS FOR SEQUENCE MANIPULATION. Mention is made of US applications 62/181,675, 18-Jun-2015, and Attorney Docket No. 46783.01.2128, filed 22-Oct-2015, NOVEL CRISPR ENZYMES AND SYSTEMS, US application 62/232,067, 24-Sep-2015, US application 62/205,733, 16-Aug-2015, US application 62/201,542, 5-Aug-2015, US application 62/193,507, 16-Jul-2015, and US application 62/181,739, 18-Jun-2015, each entitled NOVEL CRISPR ENZYMES AND SYSTEMS and of US

application 62/245,270, 22-Oct-2015, NOVEL CRISPR ENZYMES AND SYSTEMS. Mention is also made of US application 61/939,256, 12-Feb-2014, and WO 2015/089473 (PCT/US2014/070152), 12-Dec-2014, each entitled ENGINEERING OF SYSTEMS, METHODS AND OPTIMIZED GUIDE COMPOSITIONS WITH NEW ARCHITECTURES FOR SEQUENCE MANIPULATION. Mention is also made of PCT/US2015/045504, 15-Aug-2015, US application 62/180,699, 17-Jun-2015, and US application 62/038,358, 17-Aug-2014, each entitled GENOME EDITING USING CAS9 NICKASES.

[00173] Each of these patents, patent publications, and applications, and all documents cited therein or during their prosecution ("appln cited documents") and all documents cited or referenced in the appln cited documents, together with any instructions, descriptions, product specifications, and product sheets for any products mentioned therein or in any document therein and incorporated by reference herein, are hereby incorporated herein by reference, and may be employed in the practice of the invention. All documents (e.g., these patents, patent publications and applications and the appln cited documents) are incorporated herein by reference to the same extent as if each individual document was specifically and individually indicated to be incorporated by reference.

[00174] Also with respect to general information on CRISPR-Cas Systems, mention is made of the following (also hereby incorporated herein by reference):

- Multiplex genome engineering using CRISPR/Cas systems. Cong, L., Ran, F.A., Cox, D., Lin, S., Barretto, R., Habib, N., Hsu, P.D., Wu, X., Jiang, W., Marraffini, L.A., & Zhang, F. Science Feb 15;339(6121):819-23 (2013);
- RNA-guided editing of bacterial genomes using CRISPR-Cas systems. Jiang W., Bikard D., Cox D., Zhang F, Marraffini LA. Nat Biotechnol Mar;31(3):233-9 (2013);
- One-Step Generation of Mice Carrying Mutations in Multiple Genes by CRISPR/Cas-Mediated Genome Engineering. Wang H., Yang H., Shivalila CS., Dawlaty MM., Cheng AW., Zhang F., Jaenisch R. Cell May 9;153(4):910-8 (2013);
- Optical control of mammalian endogenous transcription and epigenetic states. Konermann S, Brigham MD, Trevino AE, Hsu PD, Heidenreich M, Cong L, Platt RJ, Scott DA, Church GM, Zhang F. Nature. Aug 22;500(7463):472-6. doi: 10.1038/Nature12466. Epub 2013 Aug 23 (2013);

- Double Nicking by RNA-Guided CRISPR Cas9 for Enhanced Genome Editing Specificity. Ran, FA., Hsu, PD., Lin, CY., Gootenberg, JS., Konermann, S., Trevino, AE., Scott, DA., Inoue, A., Matoba, S., Zhang, Y., & Zhang, F. Cell Aug 28. pii: S0092-8674(13)01015-5 (2013-A);
- DNA targeting specificity of RNA-guided Cas9 nucleases. Hsu, P., Scott, D., Weinstein, J., Ran, FA., Konermann, S., Agarwala, V., Li, Y., Fine, E., Wu, X., Shalem, O., Cradick, TJ., Marraffini, LA., Bao, G., & Zhang, F. Nat Biotechnol doi:10.1038/nbt.2647 (2013);
- Genome engineering using the CRISPR-Cas9 system. Ran, FA., Hsu, PD., Wright, J., Agarwala, V., Scott, DA., Zhang, F. Nature Protocols Nov;8(11):2281-308 (2013-B);
- Genome-Scale CRISPR-Cas9 Knockout Screening in Human Cells. Shalem, O., Sanjana, NE., Hartenian, E., Shi, X., Scott, DA., Mikkelson, T., Heckl, D., Ebert, BL., Root, DE., Doench, JG., Zhang, F. Science Dec 12. (2013). [Epub ahead of print];
- Crystal structure of cas9 in complex with guide RNA and target DNA. Nishimasu, H., Ran, FA., Hsu, PD., Konermann, S., Shehata, SI., Dohmae, N., Ishitani, R., Zhang, F., Nureki, O. Cell Feb 27, 156(5):935-49 (2014);
- Genome-wide binding of the CRISPR endonuclease Cas9 in mammalian cells. Wu X., Scott DA., Kriz AJ., Chiu AC., Hsu PD., Dadon DB., Cheng AW., Trevino AE., Konermann S., Chen S., Jaenisch R., Zhang F., Sharp PA. Nat Biotechnol. Apr 20. doi: 10.1038/nbt.2889 (2014);
- CRISPR-Cas9 Knockin Mice for Genome Editing and Cancer Modeling. Platt RJ, Chen S, Zhou Y, Yim MJ, Swiech L, Kempton HR, Dahlman JE, Parnas O, Eisenhaure TM, Jovanovic M, Graham DB, Jhunjhunwala S, Heidenreich M, Xavier RJ, Langer R, Anderson DG, Hacohen N, Regev A, Feng G, Sharp PA, Zhang F. Cell 159(2): 440-455 DOI: 10.1016/j.cell.2014.09.014(2014);
- Development and Applications of CRISPR-Cas9 for Genome Engineering, Hsu PD, Lander ES, Zhang F., Cell. Jun 5;157(6):1262-78 (2014).
- Genetic screens in human cells using the CRISPR/Cas9 system, Wang T, Wei JJ, Sabatini DM, Lander ES., Science. January 3; 343(6166): 80–84. doi:10.1126/science.1246981 (2014);
- Rational design of highly active sgRNAs for CRISPR-Cas9-mediated gene inactivation, Doench JG, Hartenian E, Graham DB, Tothova Z, Hegde M, Smith I, Sullender M, Ebert

BL, Xavier RJ, Root DE., (published online 3 September 2014) Nat Biotechnol. Dec;32(12):1262-7 (2014);

- *In vivo* interrogation of gene function in the mammalian brain using CRISPR-Cas9, Swiech L, Heidenreich M, Banerjee A, Habib N, Li Y, Trombetta J, Sur M, Zhang F., (published online 19 October 2014) Nat Biotechnol. Jan;33(1):102-6 (2015);
- Genome-scale transcriptional activation by an engineered CRISPR-Cas9 complex, Konermann S, Brigham MD, Trevino AE, Joung J, Abudayyeh OO, Barcena C, Hsu PD, Habib N, Gootenberg JS, Nishimasu H, Nureki O, Zhang F., Nature. Jan 29;517(7536):583-8 (2015).
- A split-Cas9 architecture for inducible genome editing and transcription modulation, Zetsche B, Volz SE, Zhang F., (published online 02 February 2015) Nat Biotechnol. Feb;33(2):139-42 (2015);
- Genome-wide CRISPR Screen in a Mouse Model of Tumor Growth and Metastasis, Chen S, Sanjana NE, Zheng K, Shalem O, Lee K, Shi X, Scott DA, Song J, Pan JQ, Weissleder R, Lee H, Zhang F, Sharp PA. Cell 160, 1246–1260, March 12, 2015 (multiplex screen in mouse), and
- *In vivo* genome editing using *Staphylococcus aureus* Cas9, Ran FA, Cong L, Yan WX, Scott DA, Gootenberg JS, Kriz AJ, Zetsche B, Shalem O, Wu X, Makarova KS, Koonin EV, Sharp PA, Zhang F., (published online 01 April 2015), Nature. Apr 9;520(7546):186-91 (2015).
- Shalem et al., "High-throughput functional genomics using CRISPR-Cas9," Nature Reviews Genetics 16, 299-311 (May 2015).
- Xu et al., "Sequence determinants of improved CRISPR sgRNA design," Genome Research 25, 1147-1157 (August 2015).
- Parnas et al., "A Genome-wide CRISPR Screen in Primary Immune Cells to Dissect Regulatory Networks," Cell 162, 675-686 (July 30, 2015).
- Ramanan et al., CRISPR/Cas9 cleavage of viral DNA efficiently suppresses hepatitis B virus," Scientific Reports 5:10833. doi: 10.1038/srep10833 (June 2, 2015)
- Nishimasu et al., Crystal Structure of Staphylococcus aureus Cas9," Cell 162, 1113-1126 (Aug. 27, 2015)

- BCL11A enhancer dissection by Cas9-mediated in situ saturating mutagenesis, Canver et al., Nature 527(7577):192-7 (Nov. 12, 2015) doi: 10.1038/nature15521. Epub 2015 Sep 16.
- *Cpf1 Is a Single RNA-Guided Endonuclease of a Class 2 CRISPR-Cas System*, Zetsche et al., Cell 163, 759-71 (Sep 25, 2015).
- *Discovery and Functional Characterization of Diverse Class 2 CRISPR-Cas Systems*, Shmakov et al., Molecular Cell, 60(3), 385–397 doi: 10.1016/j.molcel.2015.10.008 Epub October 22, 2015.
- *Rationally engineered Cas9 nucleases with improved specificity*, Slaymaker et al., Science 2015 Dec 1. pii: aad5227. [Epub ahead of print].

each of which is incorporated herein by reference, may be considered in the practice of the instant invention, and discussed briefly below:

- Cong *et al.* engineered type II CRISPR-Cas systems for use in eukaryotic cells based on both *Streptococcus thermophilus* Cas9 and also *Streptococcus pyogenes* Cas9 and demonstrated that Cas9 nucleases can be directed by short RNAs to induce precise cleavage of DNA in human and mouse cells. Their study further showed that Cas9 as converted into a nicking enzyme can be used to facilitate homology-directed repair in eukaryotic cells with minimal mutagenic activity. Additionally, their study demonstrated that multiple guide sequences can be encoded into a single CRISPR array to enable simultaneous editing of several at endogenous genomic loci sites within the mammalian genome, demonstrating easy programmability and wide applicability of the RNA-guided nuclease technology. This ability to use RNA to program sequence specific DNA cleavage in cells defined a new class of genome engineering tools. These studies further showed that other CRISPR loci are likely to be transplantable into mammalian cells and can also mediate mammalian genome cleavage. Importantly, it can be envisaged that several aspects of the CRISPR-Cas system can be further improved to increase its efficiency and versatility.
- Jiang *et al.* used the clustered, regularly interspaced, short palindromic repeats (CRISPR)–associated Cas9 endonuclease complexed with dual-RNAs to introduce precise mutations in the genomes of *Streptococcus pneumoniae* and *Escherichia coli*. The approach relied on dual-RNA:Cas9-directed cleavage at the targeted genomic site to kill unmutated cells and circumvents the need for selectable markers or counter-selection systems. The study

reported reprogramming dual-RNA:Cas9 specificity by changing the sequence of short CRISPR RNA (crRNA) to make single- and multinucleotide changes carried on editing templates. The study showed that simultaneous use of two crRNAs enabled multiplex mutagenesis. Furthermore, when the approach was used in combination with recombineering, in *S. pneumoniae*, nearly 100% of cells that were recovered using the described approach contained the desired mutation, and in *E. coli*, 65% that were recovered contained the mutation.

- Wang *et al.* (2013) used the CRISPR/Cas system for the one-step generation of mice carrying mutations in multiple genes which were traditionally generated in multiple steps by sequential recombination in embryonic stem cells and/or time-consuming intercrossing of mice with a single mutation. The CRISPR/Cas system will greatly accelerate the *in vivo* study of functionally redundant genes and of epistatic gene interactions.
- Konermann *et al.* (2013) addressed the need in the art for versatile and robust technologies that enable optical and chemical modulation of DNA-binding domains based CRISPR Cas9 enzyme and also Transcriptional Activator Like Effectors
- Ran *et al.* (2013-A) described an approach that combined a Cas9 nickase mutant with paired guide RNAs to introduce targeted double-strand breaks. This addresses the issue of the Cas9 nuclease from the microbial CRISPR-Cas system being targeted to specific genomic loci by a guide sequence, which can tolerate certain mismatches to the DNA target and thereby promote undesired off-target mutagenesis. Because individual nicks in the genome are repaired with high fidelity, simultaneous nicking *via* appropriately offset guide RNAs is required for double-stranded breaks and extends the number of specifically recognized bases for target cleavage. The authors demonstrated that using paired nicking can reduce off-target activity by 50- to 1,500-fold in cell lines and to facilitate gene knockout in mouse zygotes without sacrificing on-target cleavage efficiency. This versatile strategy enables a wide variety of genome editing applications that require high specificity.
- Hsu *et al.* (2013) characterized SpCas9 targeting specificity in human cells to inform the selection of target sites and avoid off-target effects. The study evaluated >700 guide RNA variants and SpCas9-induced indel mutation levels at >100 predicted genomic off-target loci in 293T and 293FT cells. The authors that SpCas9 tolerates mismatches between guide RNA and target DNA at different positions in a sequence-dependent manner, sensitive to

the number, position and distribution of mismatches. The authors further showed that SpCas9-mediated cleavage is unaffected by DNA methylation and that the dosage of SpCas9 and sgRNA can be titrated to minimize off-target modification. Additionally, to facilitate mammalian genome engineering applications, the authors reported providing a web-based software tool to guide the selection and validation of target sequences as well as off-target analyses.

- Ran *et al.* (2013-B) described a set of tools for Cas9-mediated genome editing *via* non-homologous end joining (NHEJ) or homology-directed repair (HDR) in mammalian cells, as well as generation of modified cell lines for downstream functional studies. To minimize off-target cleavage, the authors further described a double-nicking strategy using the Cas9 nickase mutant with paired guide RNAs. The protocol provided by the authors experimentally derived guidelines for the selection of target sites, evaluation of cleavage efficiency and analysis of off-target activity. The studies showed that beginning with target design, gene modifications can be achieved within as little as 1–2 weeks, and modified clonal cell lines can be derived within 2–3 weeks.
- Shalem *et al.* described a new way to interrogate gene function on a genome-wide scale. Their studies showed that delivery of a genome-scale CRISPR-Cas9 knockout (GeCKO) library targeted 18,080 genes with 64,751 unique guide sequences enabled both negative and positive selection screening in human cells. First, the authors showed use of the GeCKO library to identify genes essential for cell viability in cancer and pluripotent stem cells. Next, in a melanoma model, the authors screened for genes whose loss is involved in resistance to vemurafenib, a therapeutic that inhibits mutant protein kinase BRAF. Their studies showed that the highest-ranking candidates included previously validated genes NF1 and MED12 as well as novel hits NF2, CUL3, TADA2B, and TADA1. The authors observed a high level of consistency between independent guide RNAs targeting the same gene and a high rate of hit confirmation, and thus demonstrated the promise of genome-scale screening with Cas9.
- Nishimasu *et al.* reported the crystal structure of *Streptococcus pyogenes* Cas9 in complex with sgRNA and its target DNA at 2.5 A° resolution. The structure revealed a bilobed architecture composed of target recognition and nuclease lobes, accommodating the sgRNA:DNA heteroduplex in a positively charged groove at their interface. Whereas the

recognition lobe is essential for binding sgRNA and DNA, the nuclease lobe contains the HNH and RuvC nuclease domains, which are properly positioned for cleavage of the complementary and non-complementary strands of the target DNA, respectively. The nuclease lobe also contains a carboxyl-terminal domain responsible for the interaction with the protospacer adjacent motif (PAM). This high-resolution structure and accompanying functional analyses have revealed the molecular mechanism of RNA-guided DNA targeting by Cas9, thus paving the way for the rational design of new, versatile genome-editing technologies.

- Wu *et al.* mapped genome-wide binding sites of a catalytically inactive Cas9 (dCas9) from *Streptococcus pyogenes* loaded with single guide RNAs (sgRNAs) in mouse embryonic stem cells (mESCs). The authors showed that each of the four sgRNAs tested targets dCas9 to between tens and thousands of genomic sites, frequently characterized by a 5-nucleotide seed region in the sgRNA and an NGG protospacer adjacent motif (PAM). Chromatin inaccessibility decreases dCas9 binding to other sites with matching seed sequences; thus 70% of off-target sites are associated with genes. The authors showed that targeted sequencing of 295 dCas9 binding sites in mESCs transfected with catalytically active Cas9 identified only one site mutated above background levels. The authors proposed a two-state model for Cas9 binding and cleavage, in which a seed match triggers binding but extensive pairing with target DNA is required for cleavage.
- Platt *et al.* established a Cre-dependent Cas9 knockin mouse. The authors demonstrated *in vivo* as well as *ex vivo* genome editing using adeno-associated virus (AAV)-, lentivirus-, or particle-mediated delivery of guide RNA in neurons, immune cells, and endothelial cells.
- Hsu *et al.* (2014) is a review article that discusses generally CRISPR-Cas9 history from yogurt to genome editing, including genetic screening of cells.
- Wang *et al.* (2014) relates to a pooled, loss-of-function genetic screening approach suitable for both positive and negative selection that uses a genome-scale lentiviral single guide RNA (sgRNA) library.
- Doench *et al.* created a pool of sgRNAs, tiling across all possible target sites of a panel of six endogenous mouse and three endogenous human genes and quantitatively assessed their ability to produce null alleles of their target gene by antibody staining and flow

cytometry. The authors showed that optimization of the PAM improved activity and also provided an on-line tool for designing sgRNAs.

- Swiech *et al.* demonstrate that AAV-mediated SpCas9 genome editing can enable reverse genetic studies of gene function in the brain.
- Konermann *et al.* (2015) discusses the ability to attach multiple effector domains, e.g., transcriptional activator, functional and epigenomic regulators at appropriate positions on the guide such as stem or tetraloop with and without linkers.
- Zetsche *et al.* demonstrates that the Cas9 enzyme can be split into two and hence the assembly of Cas9 for activation can be controlled.
- Chen *et al.* relates to multiplex screening by demonstrating that a genome-wide *in vivo* CRISPR-Cas9 screen in mice reveals genes regulating lung metastasis.
- Ran *et al.* (2015) relates to SaCas9 and its ability to edit genomes and demonstrates that one cannot extrapolate from biochemical assays.
- Shalem *et al.* (2015) described ways in which catalytically inactive Cas9 (dCas9) fusions are used to synthetically repress (CRISPRi) or activate (CRISPRa) expression, showing. advances using Cas9 for genome-scale screens, including arrayed and pooled screens, knockout approaches that inactivate genomic loci and strategies that modulate transcriptional activity.
- Xu *et al.* (2015) assessed the DNA sequence features that contribute to single guide RNA (sgRNA) efficiency in CRISPR-based screens. The authors explored efficiency of CRISPR/Cas9 knockout and nucleotide preference at the cleavage site. The authors also found that the sequence preference for CRISPRi/a is substantially different from that for CRISPR/Cas9 knockout.
- Parnas *et al.* (2015) introduced genome-wide pooled CRISPR-Cas9 libraries into dendritic cells (DCs) to identify genes that control the induction of tumor necrosis factor (Tnf) by bacterial lipopolysaccharide (LPS). Known regulators of Tlr4 signaling and previously unknown candidates were identified and classified into three functional modules with distinct effects on the canonical responses to LPS.Ramanan *et al* (2015) demonstrated cleavage of viral episomal DNA (cccDNA) in infected cells. The HBV genome exists in the nuclei of infected hepatocytes as a 3.2kb double-stranded episomal DNA species called covalently closed circular DNA (cccDNA), which is a key component in the HBV life

cycle whose replication is not inhibited by current therapies. The authors showed that sgRNAs specifically targeting highly conserved regions of HBV robustly suppresses viral replication and depleted cccDNA.

- Nishimasu *et al.* (2015) reported the crystal structures of SaCas9 in complex with a single guide RNA (sgRNA) and its double-stranded DNA targets, containing the 5'-TTGAAT-3' PAM and the 5'-TTGGGT-3' PAM. A structural comparison of SaCas9 with SpCas9 highlighted both structural conservation and divergence, explaining their distinct PAM specificities and orthologous sgRNA recognition.
- Canver *et al.* (2015) demonstrated a CRISPR-Cas9-based functional investigation of non-coding genomic elements. The authors we developed pooled CRISPR-Cas9 guide RNA libraries to perform *in situ* saturating mutagenesis of the human and mouse BCL11A enhancers which revealed critical features of the enhancers.
- Zetsche et al. (2015) reported characterization of Cpf1, a class 2 CRISPR nuclease from *Francisella novicida U112* having features distinct from Cas9. Cpf1 is a single RNA-guided endonuclease lacking tracrRNA, utilizes a T-rich protospacer-adjacent motif, and cleaves DNA via a staggered DNA double-stranded break.
- Shmakov et al. (2015) reported three distinct Class 2 CRISPR-Cas systems. Two system CRISPR enzymes (C2c1 and C2c3) contain RuvC-like endonuclease domains distantly related to Cpf1. Unlike Cpf1, C2c1 depends on both crRNA and tracrRNA for DNA cleavage. The third enzyme (C2c2) contains two predicted HEPN RNase domains and is tracrRNA independent.
- Slaymaker et al (2015) reported the use of structure-guided protein engineering to improve the specificity of Streptococcus pyogenes Cas9 (SpCas9). The authors developed "enhanced specificity" SpCas9 (eSpCas9) variants which maintained robust on-target cleavage with reduced off-target effects.

[00175] Also, "Dimeric CRISPR RNA-guided FokI nucleases for highly specific genome editing", Shengdar Q. Tsai, Nicolas Wyvekens, Cyd Khayter, Jennifer A. Foden, Vishal Thapar, Deepak Reyon, Mathew J. Goodwin, Martin J. Aryee, J. Keith Joung Nature Biotechnology 32(6): 569-77 (2014), relates to dimeric RNA-guided FokI Nucleases that recognize extended sequences and can edit endogenous genes with high efficiencies in human cells.

[00176] In addition, mention is made of PCT application PCT/US14/70057, Attorney Reference 47627.99.2060 and BI-2013/107 entitiled "DELIVERY, USE AND THERAPEUTIC APPLICATIONS OF THE CRISPR-CAS SYSTEMS AND COMPOSITIONS FOR TARGETING DISORDERS AND DISEASES USING PARTICLE DELIVERY COMPONENTS (claiming priority from one or more or all of US provisional patent applications: 62/054,490, filed September 24, 2014; 62/010,441, filed June 10, 2014; and 61/915,118, 61/915,215 and 61/915,148, each filed on December 12, 2013) ("the Particle Delivery PCT"), incorporated herein by reference, with respect to a method of preparing an sgRNA-and-Cas9 protein containing particle comprising admixing a mixture comprising an sgRNA and Cas9 protein (and optionally HDR template) with a mixture comprising or consisting essentially of or consisting of surfactant, phospholipid, biodegradable polymer, lipoprotein and alcohol; and particles from such a process. For example, wherein Cas9 protein and sgRNA were mixed together at a suitable, e.g., 3:1 to 1:3 or 2:1 to 1:2 or 1:1 molar ratio, at a suitable temperature, e.g., 15-30C, e.g., 20-25C, e.g., room temperature, for a suitable time, e.g., 15-45, such as 30 minutes, advantageously in sterile, nuclease free buffer, e.g., 1X PBS. Separately, particle components such as or comprising: a surfactant, e.g., cationic lipid, e.g., 1,2-dioleoyl-3-trimethylammonium-propane (DOTAP); phospholipid, e.g., dimyristoylphosphatidylcholine (DMPC); biodegradable polymer, such as an ethylene-glycol polymer or PEG, and a lipoprotein, such as a low-density lipoprotein, e.g., cholesterol were dissolved in an alcohol, advantageously a C_{1-6} alkyl alcohol, such as methanol, ethanol, isopropanol, e.g., 100% ethanol. The two solutions were mixed together to form particles containing the Cas9-sgRNA complexes. Accordingly, sgRNA may be pre-complexed with the Cas9 protein, before formulating the entire complex in a particle. Formulations may be made with a different molar ratio of different components known to promote delivery of nucleic acids into cells (e.g. 1,2-dioleoyl-3-trimethylammonium-propane (DOTAP), 1,2-ditetradecanoyl-*sn*-glycero-3-phosphocholine (DMPC), polyethylene glycol (PEG), and cholesterol) For example DOTAP : DMPC : PEG : Cholesterol Molar Ratios may be DOTAP 100, DMPC 0, PEG 0, Cholesterol 0; or DOTAP 90, DMPC 0, PEG 10, Cholesterol 0; or DOTAP 90, DMPC 0, PEG 5, Cholesterol 5. DOTAP 100, DMPC 0, PEG 0, Cholesterol 0. That application accordingly comprehends admixing sgRNA, Cas9 protein and components that form a particle; as well as particles from such admixing. Aspects of the instant invention can involve particles; for example, particles using a process analogous to that of the Particle Delivery PCT, e.g., by admixing a mixture comprising

sgRNA and/or Cas9 as in the instant invention and components that form a particle, e.g., as in the Particle Delivery PCT, to form a particle and particles from such admixing (or, of course, other particles involving sgRNA and/or Cas9 as in the instant invention).

[00177] Applicants solved the structures of SaCas9 (residues 1–1053; N580A/C946A). The role of the N580A mutation was to prevent full cleavage of the target DNA during crystallization. Other mutations are known, such as D10A. Applicants replaced a non-conserved cysteine residue (Cys946) with alanine for crystallization, since the C946A mutation was tested and did not affect the DNA cleavage activity in vivo. Accordingly, in one aspect, the present invention provides a modified Cas9 comprising a single nickase mutation and a further mutation in a non-conserved residue. This modified SaCas9 is useful in forming a crystal, for example, if further studies are required. The single nickase mutation includes either a mutation at the active (catalytic) site in the HNH domain or a mutation at the active (catalytic) site in the RuvC domain. The non-conserved residue is, in some embodiments, a cysteine residue. Cys946 is preferred in SaCas9 or a corresponding position in an orthologous CRISPR-Cas9 enzyme. Potential nickase compostions may be generated by introducing one or more mutations in one of the catalytic domains, either RuvC or HNH. Embodiments further include modified SaCas9 comprising double, triple, and quadruple mutants which may include mutations at D10 & C946, preferably D10A and C946A; or N580 and C946, preferably N580A and C946A. Other useful embodiments for crystallization include a complex comprising at least one, preferably two, more preferably three and most preferably all four of the following: the modified Cas9 just described; a 73-nucleotide (nt) sgRNA; a 28-nt target DNA strand; and/or a 8-nt non-target DNA strand containing the PAM. In an embodiment of the invention, the PAM is NNGRRN. In some such embodiments, the PAM is, without limitation, 5′-TTGAAT-3′, 5′-TTGGGT-3′, 5′-TTGAAA-3’, 5′-TTGAAG-3’, 5′-TTGAAT-3’

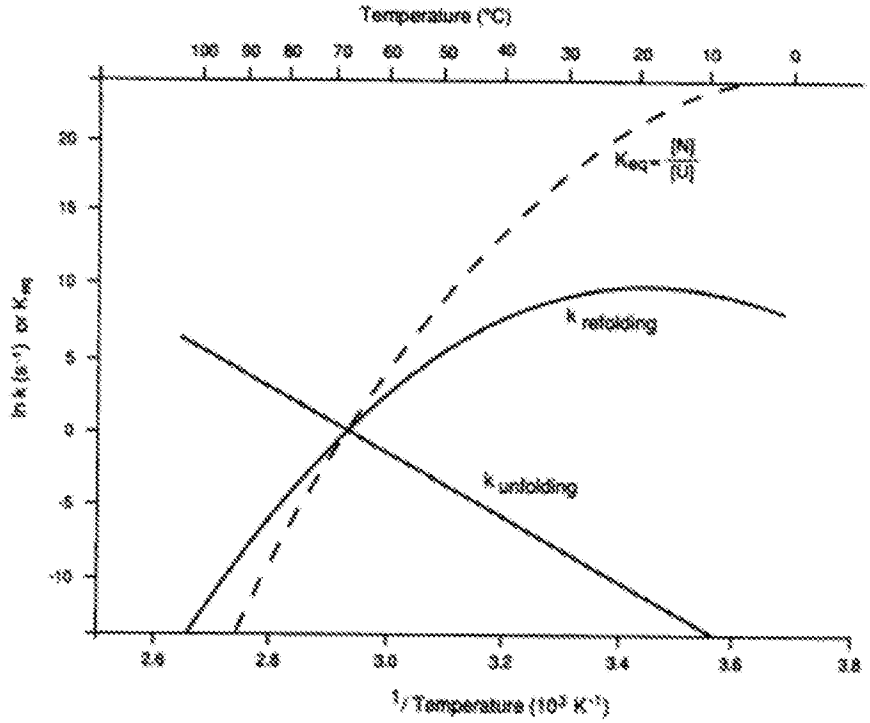
[00178] The herein provided structural information for SaCas9 relates to a crystal structure of a complex comprising SaCas9, a SaCas9 sgRNA, a target DNA and a non-target DNA strand. The SaCas9 sgRNA has a +73 architecture wherein one of the putative stem loops (stem loop 2) is truncated for improved crystal quality. Given that SaCas9 sgRNA lacking stem loop 2 supports cleavage *in vitro* but not *in vivo*, the herein described compositions, methods and systems of the invention encompass any alteration or one or more modifications to arrive at optimized enzymes and guide scaffolds that allow for a CRISPR-Cas system that is functional in a physiologically

relevant environment, e.g. in an *in vivo* environment. Furthermore, any such alteration or one or more modifications, e.g. mutations to the nucleotide sequence of the SaCas9 sg RNA achieves a favorable thermodynamic state for binding and functionality.

[00179] A "favorable thermodynamic state" relates to an equilibrium state comprising a form of the product (e.g., molecule, compound, protein, etc.) wherein the Gibbs free energy is lower than that of the energy of the reactant or starting material thus producing an energetically favorable state. The energetically favorable state will proceed through a higher energy state than the reactant overcoming any activation energy (Ea) to arrive at a lower energy conformation. Factors which influence the energy conformation include, but are not limited to, the nature of the solution (e.g., temperature or pH), the primary nucleotide sequence, secondary conformation (e.g, hydrogen bonding, Van der Waals forces, electrostatic interactions, dipole-dipole interaction) the size of the protein, etc.

[00180] The CRISPR-SaCas9 complex structure described herein has been elucidated by X-ray crystallography and describes structural features which are key to understanding the biological functionality of the CRISPR-Cas9 system in general and the comparative data between the CRISPR-SaCa9 complex structure and the CRISPR-SpCas9 structure allow for a rational design basis that extends to other orthologous Cas9 enzyme complexes. Applicants determined that the larger SpCas9 enzyme allowed for more modifications and optimizations, whereas the smaller SaCas9 enzyme was less forgiving. Thus, an aspect of the invention encompasses identifying parameters of the system which are important for an Cas enzyme and/or its sgRNA to work within the CRISPR system.

[00181] Generally, the basic element of specific site recognition is between a short stretch of base pairs (e.g., three) and a small piece of protein usually part of an alpha-helix or even a beta-sheet in some instances. Despite differences in which the protein inserts into the major groove of a DNA, for example, there are common features among different eukaryotic families.



[00182]

[00183] In the reproduced plot above, typical temperature dependence of the rates of equilibria of protein folding transitions do not involve intrinsically slow isomerizations. The natural logarithms of the rate constants for unfolding and refolding are plotted as a function of reciprocal temperature, in an Arrhenius plot. The similar plot of the equilibrium constant Keq between the native (N) and unfolded (U) states is a Van't Hoff plot. The curvature of the Van't Hoff plot is due to the greater apparent heat capacity of U than of N. The linear Arrhenius plot for the rates of unfolding indicates that the transition state has the same heat capacity as N. The greater heat capacity of U is reflected entirely in the curvature of the Arrhenius plot for the rate of refolding, because ln Keq = ln $k_{refolding}$ – ln $k_{folding}$. (Data generated by Creighton, T. Biochem. J. 270:1-16(1990), reproduced from Meyers, R.A., ed., "Molecular Biology and Biotechnology: A Comprehensive Desk Reference" 1995, p. 756).

[00184] With respect to the refolding of the protein, the protein will often times adopt a non-random conformation and often appears similar to the molten globule state. However, the refolded protein consists of subdomains of native-like secondary structure which interact and are stable with each other. (Meyers, R.A., ed., "Molecular Biology and Biotechnology: A Comprehensive Desk Reference" 1995).

[00185] The transition state of a protein ($E^{\ddagger}$) is the high energy conformation which usually appears as the distorted form of the native conformation. It is possible to characterize the transition state by altering the folding conditions and/or the covalent structure of the protein to determine the effects on the rates of unfolding and refolding. (Meyers, R.A., ed., "Molecular Biology and Biotechnology: A Comprehensive Desk Reference" 1995).

[00186] Protein structures are also constantly changing in solution, thus when modeling or elucidating a protein structure, the model most often represents the average of the most frequently observed positions of the atoms. It is important, therefore, to take into account the effect of the solution on the protein structure *in vivo*. (Meyers, R.A., ed., "Molecular Biology and Biotechnology: A Comprehensive Desk Reference" 1995). Solution properties which can influence the protein structure include intermolecular forces between solute (e.g., protein) and solvent particles and energy changes in the solution (e.g., separation of solute particles, separation of solvent particles, and new interactions between solute and solvent).

[00187] As such, dynamic models can predict or ascertain catalytically important residues which would otherwise be difficult to determine via a static protein model. A residue which may appear to be inaccessible to the ligand molecule may play a significant role of the molecular trajectory calculated in a dynamic model. (Meyers, R.A., ed., "Molecular Biology and Biotechnology: A Comprehensive Desk Reference" 1995).

[00188] Aspects of the invention relate to arriving at new crystal structures (e.g. quaternary complexes of SaCas9 with a sgRNA including stem loop 2 and other CRISPR-Cas complexes of orthologues CRISPR enzymes) as well as making modifications and optimizations to the CRISPR-Cas enzyme and its sgRNA to arrive at a favorable thermodynamic state. The favorable thermodynamic state can be influenced by one or more of the solution properties and/or the secondary structure of the protein. Factors include but are not limited to temperature, pH, pressure, and/or protein folding dynamics and these should be taken into account to ensure that the CRISPR-Cas enzyme complex is functional in a physiologically relevant environment, e.g. *in vivo*.

[00189] The structure revealed that SaCas9 has a bilobed architecture consisting of a REC lobe (residues 41–425) and a NUC lobe (residues 1–40 and 435–1053). The two lobes are connected by an arginine-rich bridge helix (residues 41–73) and a linker loop (residues 426–434) (see Figure 1).

As such, any of these residues in SaCas9, or corresponding positions in ortholog Cas9s, are envisaged to be suitable split sites for a Split Cas9 approach.

[00190] In an aspect, the invention provides a non-naturally occurring or engineered inducible CRISPR-Cas system. In an aspect, the inducible CRISPR-Cas system comprises separate NUC and REC lobes from a Cas9 (Wright, A.V. et al. Rational design of a splitCas9 enzyme complex. Proc. Natl. Acad. Sci. USA 112, 2984–2989 (2015)). Upon addition of gRNA, the two Cas9 parts assemble into an intact complex with cleavage activity similar to that of the wildtype protein. However, although a truncated gRNA is no longer able to assemble the split Cas9, it can still bring intact Cas9 to its target sequence, which encompasses an alternative approach of using this system.

[00191] In an aspect the invention provides a non-naturally occurring or engineered inducible CRISPR-Cas system wherein peptide dimerization domains, rather than gRNA, bring the Cas9 parts together in response to small molecules or light. In other words, two or more parts of the Cas9 are brought together to reconstitute the Cas9 by peptide-driven dimerization as further described in Zetsche, B. et al. "A splitCas9 architecture for inducible genome editing and transcription modulation". Nat. Biotechnol. 33, 139–142 (2015), herein incorporated by reference in its entirety. A split in the Cas9 sequence was used to separate the C' and N' terminal domains. The N' and C' terminal parts are fused with proteins that dimerize upon the addition of rapamycin. Background cleavage can be eliminated in the absence of rapamycin by shuttling the N' terminal part of Cas9 out of the nucleus with a nuclear export signal and ensuring that only the assembled complex would be transported back into the nucleus by outfitting the C' terminal fragments with two import signals. This can be used for genome editing and inducible transcriptional activation.

[00192] In other words, Cas9 can be split into two distinct fragments, which reconstitute a functional full-length Cas9 nuclease when brought back together using chemical induction. The split Cas9 architecture will be useful for a variety of applications. For example, split Cas9 may enable genetic strategies for restricting Cas9 activity to intersectional cell populations by putting each fragment under a different tissue specific promoter. Additionally, different chemically inducible dimerization domains such as APA and gibberellin may also be employed. This split Cas9 system can be used in the present invention in order to control activity of the Cas9 described herein.

[00193] Applicants have also now determined new and specific split points for SaCas9 based on the crystal coordinate data. These are described below with reference to SaCas9.

[00194] In an aspect, the inducer energy source is preferably chemical induction (or is provided by such).

[00195] The split position or location is the point at which the first part of the Cas9 enzyme is separated from the second part. In some embodiments, the first will comprise or encode amino acids 1 to X, whilst the second part will comprise or encode amino acids X+1 to the end. In this example, the numbering is contiguous, but this may not always be necessary as amino acids (or the nucleotides encoding them) could be trimmed from the end of either of the split ends, provided that sufficient DNA binding activity and, if required, DNA nickase or cleavage activity is retained, for example at least 40%, 50%, 60%, 70%, 80%, 90% or 95% activity compared to wildtype Cas9.

[00196] The exemplary numbering provided herein may be in reference to the wildtype protein, preferably the wildtype SpCas9 protein. However, it is envisaged that mutants of the wildtype SpCas9 protein can be used. For example, in the crystal data paper itself, a deadCas9 was used and these are preferred in some embodiments, see the discussion elsewhere herein. The numbering may also not follow exactly the SpCas9 numbering as, for instance, some N' or C' terminal truncations or deletions may be used, but this can be addressed suing standard sequence alignment tools. Orthologs are also preferred as a sequence alignment tool.

[00197] Thus, the split position may be selected using ordinary skill in the art, for instance based on the crystal data provided in the herein cited materials.

[00198] In SpCas9, all of the split points in the following table worked in that Applicants were able to reconstitute Cas9 with the inducible dimerization domains.

Fusion Side	Structure	Domain
202A/203S	Outside loop	Rec 2
255F/256D	Outside loop	Rec 2
310E/311I	Outside loop	Rec 1
534R/535K	Outside loop	Rec 1
572E/573C	Unstructured	Rec 1
713S/714G	Unstructured	Rec 1
1003L/104E	Unstructured	RuvC3
1054G/1055E	Unstructured	RuvC3

1114N/1115S	Unstructured	PI
1152K/1153S	Outside loop	PI
1245K/1246G	Unstructured	PI

Table showing Amino Acid position of split in SpCas9 (1368 a.a. in total)

[00199] Identifying potential split sites is most simply done with the help of a crystal structure. For Sp mutants, it should be readily apparent what the corresponding position for, for example, a sequence alignment. For non-Sp enzymes one can use the crystal structure of an ortholog if a relatively high degree of homology exists between the ortholog and the intended Cas9.

[00200] Ideally, the split position should be located within a region or loop. Preferably, the split position occurs where an interruption of the amino acid sequence does not result in the partial or full destruction of a structural feature (e.g. alpha-helixes or beta-sheets). Unstructured regions (regions that did not show up in the crystal structure because these regions are not structured enough to be "frozen" in a crystal) are often preferred options. Applicants previously made splits in all unstructured regions that are exposed on the surface of SpCas9. The positions within the unstructured regions or outside loops may not need to be exactly the numbers provided above, but may vary by, for example 1, 2, 3, 4, 5, 6, 7, 8, 9, or even 10 amino acids either side of the position given above, depending on the size of the loop, so long as the split position still falls within an unstructured region of outside loop. In an aspect, amino acids at the split may be deleted or substituted in the modified enzyme. For example, there may be deleted 1, 2, 3, 4, 5, 6, 7, 8, 9, or even 10 amino acids. Further, additions or substitutions may be made at the N-terminal and or C-terminal amino acids that comprise the split, for example to enhance stability of the split protein, or to reduce or prevent degradation of the subunits of the split protein. In an aspect, the split point falls in an unstructured loop. In an aspect, the split point does not fall in an area of secondary structure. In an aspect, the split point does not fall in a region interacting with the sgRNA and/or the DNA.

[00201] A split in an outside loop of the Rec 2 domain is preferred in some embodiments. In other embodiments, a split in an outside loop of Rec 1 is preferred. In other embodiments, a split in an outside loop of PI is preferred. In other embodiments, a split in an unstructured region of Rec 1 is preferred. In other embodiments, a split in an unstructured region of RuvC-III is preferred. In other embodiments, a split in an unstructured region of PI is preferred. In an embodiment of the invention, a split is made in SaCas9 between amino acids 739 and 740 in

RuvC-III. In an embodiment of the invention, a split is made in a linker of SaCas9 between amino acids 430 and 431.

[00202] Applicants have now determined new split sites for SaCas9.

Fusion Side	Structure	Domain
430/431	Unstructured loop	Between REC and NUC lobes (between 3'/C' terminal end of Rec Domain and 5'/N' terminal end of RuvCII domain).
739/740	Unstructured region	RuvCIII domain

Table showing Amino Acid position of split in SaCas9 (1053 a.a. in total)

[00203] In some embodiments, with any Cas9, the split is preferably positioned in an unstructured loop or an unstructured region. In some embodiments, with split SaCas9, the split is preferably positioned at or around amino acid position 430 or 431, in particular between 430 and 431. In some embodiments, with split SaCas9, the split is preferably positioned at or around amino acid position 739 or 740, in particular between 739 and 740.

[00204] With split SaCas9, a certain amount of variation should be tolerated on each side of each split. For example, for split point 1: -4 to +2 amino acid positions is ideal. In some embodiments, the split is positioned at (ideally C' terminal to) amino acid positions 426, 427, 428, 429 or 430. In some embodiments, the split is positioned at (ideally C' terminal to) amino acid positions 431, 432 or even 433. In some embodiments, the split is positioned at (ideally C' terminal to) amino acid positions 426-433.

[00205] Without being bound by theory, it is understood that any further towards the N' terminal than -4 and the split position gets too close to the sgRNA. Further towards the C' terminal than +2 and the split position gets too close to an alpha-helix.

[00206] For split point 2: the split point at 739-740 may be moved within -7 to +4 amino acid positions. In some embodiments, the split is positioned at (ideally C' terminal to) amino acid positions 732, 733, 734, 735, 736, 737, 738, or 739. In some embodiments, the split is positioned at (ideally C' terminal to) amino acid positions 740, 471, 742, 743, 744 or even 745. In some embodiments, the split is positioned at (ideally C' terminal to) amino acid positions 732-745. Without being bound by theory, it is understood that split 2 is located in the middle of an unstructured region flanked by alpha-helixes. Corresponding positions in other orthologues are also envisaged.

[00207] The promoter used for SaCas9 splits is CBh, and bGHpA is the polyA signal in all constructs cloned so far and are planning to clone. However, we know that CMV, EF1alpha and EFS (minimal EF1a promoter) work well for SpCas9 and will also work for SaCas9. In an aspect, the promoter used for SaCas9 splits is CBh. In other aspects, CMV, EF1alpha and EFS (minimal EF1a promoter) may be used as promoters. In an aspect, a polyA tail such as bGHpA may be used.

[00208] An inducer energy source may be considered to be simply an inducer or a dimerizing agent. The term 'inducer energy source' is used herein throughout for consistency. The inducer energy source (or inducer) acts to reconstitute the Cas9. In some embodiments, the inducer energy source brings the two parts of the Cas9 together through the action of the two halves of the inducible dimer. The two halves of the inducible dimer therefore are brought together in the presence of the inducer energy source. The two halves of the dimer will not form into the dimer (dimerize) without the inducer energy source. Thus, the two halves of the inducible dimer cooperate with the inducer energy source to dimerize the dimer. This in turn reconstitutes the Cas9 by bringing the first and second parts of the Cas9 together.

[00209] The CRISPR enzyme fusion constructs each comprise one part of the split Cas9. These are fused, preferably via a linker such as a GlySer linker described herein, to one of the two halves of the dimer. The two halves of the dimer may be substantially the same two monomers that together form the homodimer, or they may be different monomers that together form the heterodimer. As such, the two monomers can be thought of as one half of the full dimer.

[00210] The Cas9 is split in the sense that the two parts of the Cas9 enzyme substantially comprise a functioning Cas9. That Cas9 may function as a genome editing enzyme (when forming a complex with the target DNA and the guide), such as a nickase or a nuclease (cleaving both strands of the DNA), or it may be a deadCas9 which is essentially a DNA-binding protein with very little or no catalytic activity, due to typically two or more mutations in its catalytic domains (D10 combined with H840 or N863, and especially D10A combined with H840A or N863A are most preferable in Sp Cas9 and corresponding mutants will be appropriate for orthologs). The two parts of the split Cas9 can be thought of as the N' terminal part and the C' terminal part of the split Cas9. The fusion is typically at the split point of the Cas9. In other words, the C' terminal of the N' terminal part of the split Cas9 is fused to one of the dimer halves, whilst the N' terminal of the C' terminal part is fused to the other dimer half.

[00211] The Cas9 does not have to be split in the sense that the break is newly created. The split point is typically designed in silico and cloned into the constructs. Together, the two parts of the split Cas9, the N' terminal and C' terminal parts, form a full Cas9, comprising preferably at least 70% or more of the wildtype amino acids (or nucleotides encoding them), preferably at least 80% or more, preferably at least 90% or more, preferably at least 95% or more, and most preferably at least 99% or more of the wildtype amino acids (or nucleotides encoding them). Some trimming may be possible, and mutants are envisaged. Non-functional domains such as the Rec2 domain may be removed entirely. What is important is that the two parts may be brought together and that the desired Cas9 function is restored or reconstituted. The dimer may be a homodimer or a heterodimer.

[00212] One or more, preferably two, NLSs may be used in operable linkage to the first CRISPR enzyme construct. One or more, preferably two, NESs may be used in operable linkage to the first CRISPR enzyme construct. The NLSs and/or the NESs preferably flank the split Cas9-dimer (i.e. half dimer) fusion, i.e. one NLS may be positioned at the N' terminal of the first CRISPR enzyme construct and one NLS may be at the N' terminal of the first CRISPR enzyme construct. Similarly, one NES may be positioned at the N' terminal of the second CRISPR enzyme construct and one NES may be at the N' terminal of the second CRISPR enzyme construct. Where reference is made to N' or C' terminals, it will be appreciated that these correspond to 5' and 3' ends in the corresponding nucleotide sequence.

[00213] A preferred arrangement is that the first CRISPR enzyme construct is arranged 5'-NLS-(N' terminal Cas9 part)-linker-(first half of the dimer)-NLS-3'. A preferred arrangement is that the second CRISPR enzyme construct is arranged 5'-NES--(second half of the dimer)-linker-(C' terminal Cas9 part)-NES-3'. A suitable promoter is preferably upstream of each of the constructs. The two constructs may be delivered separately or together. In some embodiments, one or all of the NES(s) in operable linkage to the second CRISPR enzyme construct may be swapped out for an NLS. However, this is typically not preferred and, in other embodiments, the localization signal in operable linkage to the second CRISPR enzyme construct is one or more NES(s). It will also be appreciated that the NES may be operably linked to the N' terminal fragment of the split Cas9 and that the NLS may be operably linked to the C' terminal fragment of the split Cas9. However, the arrangement where the NLS is operably linked to the N' terminal

fragment of the split Cas9 and that the NES is operably linked to the C' terminal fragment of the split Cas9 is preferred.

[00214] The NES functions to localize the second CRISPR enzyme fusion construct outside of the nucleus, at least until the inducer energy source is provided (e.g., at least until an an energy source is provided to the inducer to perform its function). The presence of the inducer stimulates dimerization of the two CRISPR enzyme fusions within the cytoplasm and makes it thermodynamically worthwhile for the dimerized, first and second, CRISPR enzyme fusions to localize to the nucleus. Without being bound by theory, Applicants believe that the NES sequesters the second CRISPR enzyme to the cytoplasm (i.e. outside of the nucleus). The NLS on the first CRISPR enzyme localizes it to the nucleus. In both cases, Applicants use the NES or NLS to shift an equilibrium (the equilibrium of nuclear transport) to a desired direction. The dimerization typically occurs outside of the nucleus (a very small fraction might happen in the nucleus) and the NLSs on the dimerized complex shift the equilibrium of nuclear transport to nuclear localization, so the dimerized and hence reconstituted Cas9 enters the nucleus.

[00215] Beneficially, Applicants have been able to reconstitute function in the split Cas9, e.g. a split SpCas9. Transient transfection was used to prove the concept and dimerization occurred in the background in the presence of the inducer energy source. No activity was seen with separate fragments of the CRISPR enzyme. Stable expression through lentiviral delivery was then used to develop this and show that a split Cas9 approach can be used.

[00216] This present split Cas9 approach is beneficial as it allows the Cas9 activity to be inducible, thus allowing for temporal control. Furthermore, different localization sequences may be used (i.e. the NES and NLS as preferred) to reduce background activity from auto-assembled complexes. Tissue specific promoters, for example one for each of the first and second CRISPR enzyme fusion constructs, may also be used for tissue-specific targeting, thus providing spatial control. Two different tissue specific promoters may be used to exert a finer degree of control if required. The same approach may be used in respect of stage-specific promoters or there may a mixture of stage and tissue specific promoters, where one of the first and second CRISPR enzyme fusion constructs is under the control of (i.e. operably linked to or comprises) a tissue-specific promoter, whilst the other of the first and second CRISPR enzyme fusion constructs is under the control of (i.e. operably linked to or comprises) a stage-specific promoter.

[00217] The inducible CRISPR-Cas system comprises one or more nuclear localization sequences (NLSs), as described herein, for example as operably linked to the first CRISPR enzyme fusion construct. These nuclear localization sequences are ideally of sufficient strength to drive accumulation of said first CRISPR enzyme fusion construct in a detectable amount in the nucleus of a eukaryotic cell. Without wishing to be bound by theory, it is believed that a nuclear localization sequence is not necessary for CRISPR complex activity in eukaryotes, but that including such sequences enhances activity of the system, especially as to targeting nucleic acid molecules in the nucleus, and assists with the operation of the present 2-part system.

[00218] Equally, the second CRISPR enzyme fusion construct is operably linked to a nuclear export sequence (NES). Indeed, it may be linked to one or more nuclear export sequences. In other words, the number of export sequences used with the second CRISPR enzyme fusion construct is preferably 1 or 2 or 3. Typically 2 is preferred, but 1 is enough and so is preferred in some embodiments. Suitable examples of NLS and NES are known in the art. Preferred examples are those used in the Examples herein. For example, a preferred nuclear export signal (NES) is human protein tyrosin kinase 2; and (NLS). Preferred signals will be species specific.

[00219] Where the FRB and FKBP system are used, the FKBP is preferably flanked by nuclear localization sequences (NLSs). Where the FRB and FKBP system are used, the preferred arrangement is N' terminal Cas9 – FRB – NES : C' terminal Cas9-FKBP-NLS. Thus, the first CRISPR enzyme fusion construct would comprise the C' terminal Cas9 part and the second CRISPR enzyme fusion construct would comprise the N' terminal Cas9 part.

[00220] Another beneficial aspect to the present invention is that it may be turned on quickly, i.e. that is has a rapid response. It is believed, without being bound by theory, that Cas9 activity can be induced through dimerization of existing (already present) fusion constructs (through contact with the inducer energy source) more rapidly than through the expression (especially translation) of new fusion constructs. As such, the first and second CRISPR enzyme fusion constructs may be expressed in the target cell ahead of time, i.e. before Cas9 activity is required. Cas9 activity can then be temporarily controlled and then quickly constituted through addition of the inducer energy source, which ideally acts more quickly (to dimerize the heterodimer and thereby provide Cas9 activity) than through expression (including induction of transcription) of Cas9 delivered by a vector, for example.

[00221] Based on the structural information provided herein, Applicants arrive at a SaCas9 that can be split into two components, which reconstitute a functional nuclease when brought back together. Applicants demonstrate that SaCas9 can be rendered chemically inducible by being split into two fragments and that rapamycin-sensitive dimerization domains may be used for controlled reassembly of the Cas9. Applicants show that the re-assembled Cas9 may be used to mediate genome editing (through nuclease/nickase activity) as well as transcription modulation (as a DNA-binding domain, the so-called "dead Cas9"). As such, the use of rapamycin-sensitive dimerization domains is preferred. Reassembly of the SaCas9 is preferred. Reassembly can be determined by restoration of binding activity. Where the SaCas9 is a nickase or induces a double-strand break, suitable comparison percentages compared to a wildtype are described herein.

[00222] Rapamycin treatments lasted 12 days. This was dosed at 200nM. This temporal and/or molar dosage is an example of an appropriate dose for Human embryonic kidney 293FT (HEK293FT) cell lines and this may also be used in other cell lines. This figure can be extrapolated out for therapeutic use *in vivo* into, for example, mg/kg. However, it is also envisaged that the standard dosage for administering rapamycin to a subject is used here as well. By the "standard dosage", it is meant the dosage under rapamycin's normal therapeutic use or primary indication (i.e. the dose used when rapamycin is administered for use to prevent organ rejection).

[00223] Aspects of the invention, as particularly related to SaCas9 systems and other orthologus CRISPR-Cas systems, may be practiced using structural and functional comparisons to an SpCas9 system as used in the methods and systems further described in International Patent Application PCT/US14/70068 titled "CRISPR-CAS SYSTEMS AND METHODS FOR ALTERING EXPRESSION OF GENE PRODUCTS, STRUCTURAL INFORMATION AND INDUCIBLE MODULAR CAS ENZYMES" filed on December 12, 2014, which claims priority to US provisional patent application Serial Nos. 61/915,267, filed Dec 12 2013 and US 61/939,228 filed on February 12, 2014, each of which is incorporated herein by reference in its entirety.

[00224] Further to using split CRISPR-Cas systems (e.g. SaCas9 split systems) as inducbile systems, other inducible systems which may be used in the practice of the inventions are further described in International Patent Application PCT/US13/051418 filed on July 21, 2013 and published on June 19, 2014 (Publication No. WO2014/018423) which claims priority to US

provisional patent application Serial Nos. 61/675,778 filed July 25, 2012, 61/721,283 filed November 1, 2012, 61/736,465 filed December 12, 2012, 61/794,458 filed March 15, 2013 and 61/835,973 filed June 17, 2013 titled INDUCIBLE DNA BINDING PROTEINS AND GENOME PERTURBATION TOOLS AND APPLICATIONS THEREOF.

[00225] In one aspect the invention provides a non-naturally occurring or engineered CRISPR-Cas system which may comprise at least one switch wherein the activity of said CRISPR-Cas system is controlled by contact with at least one inducer energy source as to the switch. In an embodiment of the invention the control as to the at least one switch or the activity of said CRISPR-Cas system may be activated, enhanced, terminated or repressed. The contact with the at least one inducer energy source may result in a first effect and a second effect. The first effect may be one or more of nuclear import, nuclear export, recruitment of a secondary component (such as an effector molecule), conformational change (of protein, DNA or RNA), cleavage, release of cargo (such as a caged molecule or a co-factor), association or dissociation. The second effect may be one or more of activation, enhancement, termination or repression of the control as to the at least one switch or the activity of said CRISPR- Cas system. In one embodiment the first effect and the second effect may occur in a cascade.

[00226] In another aspect of the invention the CRISPR-Cas system may further comprise at least one nuclear localization signal (NLS), nuclear export signal (NES), functional domain, flexible linker, mutation, deletion, alteration or truncation. The one or more of the NLS, the NES or the functional domain may be conditionally activated or inactivated. In another embodiment, the mutation may be one or more of a mutation in a transcription factor homology region, a mutation in a DNA binding domain (such as mutating basic residues of a basic helix loop helix), a mutation in an endogenous NLS or a mutation in an endogenous NES. The invention comprehends that the inducer energy source may be heat, ultrasound, electromagnetic energy or chemical. In a preferred embodiment of the invention, the inducer energy source may be an antibiotic, a small molecule, a hormone, a hormone derivative, a steroid or a steroid derivative. In a more preferred embodiment, the inducer energy source maybe abscisic acid (ABA), doxycycline (DOX), cumate, rapamycin, 4-hydroxytamoxifen (4-HT), estrogen or ecdysone. The invention provides that the at least one switch may be selected from the group consisting of antibiotic based inducible systems, electromagnetic energy based inducible systems, small molecule based inducible systems, nuclear receptor based inducible systems and hormone based inducible systems. In a more preferred

embodiment the at least one switch may be selected from the group consisting of tetracycline (Tet)/DOX inducible systems, light inducible systems, ABA inducible systems, cumate repressor/operator systems, 4-HT/estrogen inducible systems, ecdysone-based inducible systems and FKBP12/FRAP (FKBP12-rapamycin complex) inducible systems. Aspects of functional domains are described herein. In one aspect of the invention the inducer energy source is electromagnetic energy. The electromagnetic energy may be a component of visible light having a wavelength in the range of 450nm-700nm. In a preferred embodiment the component of visible light may have a wavelength in the range of 450nm-500nm and may be blue light. The blue light may have an intensity of at least 0.2m W/cm <2>, or more preferably at least 4mW/cm^2. In another embodiment, the component of visible light may have a wavelength in the range of 620-700nm and is red light.

[00227] In aspects of the invention, wherein the inducer energy source is light, methods and systems described in "Optical control of mammalian endogenous transcription and epigenetic states." Konermann S, Brigham MD, Trevino AE, Hsu PD, Heidenreich M, Cong L, Platt RJ, Scott DA, Church GM, Zhang F. Nature. Aug 22;500(7463):472-6, incorporated herein by reference in its entirety, may be used to generate SaCas9 systems which may be optically controlled. Furthermore, photoactivatable SaCas9 systems may be made in accordance with the techniques described in "CRISPR-Cas9-based photoactivatable transcription system". Nihongaki Y, Yamamoto S, Kawano F, Suzuki H, Sato M. Chem Biol. 2015 Feb 19;22(2):169-74, incorporated herein by reference in its entirety. Nihongaki et al. relates to an engineered photoactivatable SpCas9 (paSpCas9) that allows for the optogentic control of CRISPR-SpCas9 in human cells, wherein the paSpCas9 consists of split SpCas9 fragments and photoinducible dimerization domains named Magnets (pMag and nMag). Blue light irradiation induces heterodimerization between pMag and nMag, which enables split Cas9 fragments to reassociate, thereby reconstituting RNA-guided nuclease activity When the paSpCas9 is expressed in human embryonic kidney 293T cells, it induces targeted genome sequence modifications through both nonhomologous end joining and homology-directed repair pathways and genome editing activity can be switched off simply by extinguishing the light. The magnets were fused to N713 and C714 positions of SpCas9 and with the structural information of SaCas9 provided herein, Applicants can arrive at an SaCas9 with fusions to photoinducible dimerizations domains at corresponding amino

acid locations or at compatible locations which still allow for the SaCas9 enzyme to function in a photoinducible manner, preferably in a physiologically relevant environment.

[00228] In certain aspects, the Cas9 enzymes according to the present invention may provide increased specificity of targeting by combination with heterologous, non-Cas9 domains or other functional domains. Such heterologous domains may be prokaryotic or eukaryotic in origin, and in one embodiment may comprise heterologous DNA-cleaving domains. The domains may cleave double stranded or single stranded DNA, on one or two strands.

[00229] In this context, "in combination with" may signify a protein fusion, for example where a domain is attached to the N or C terminus of a protein, added internally with a protein structure, or used to replace an existing protein domain. However, alternative means of physical coupling of protein domains are also envisaged, such as attachment by non-covalent interactions including biotin/avidin systems, and the like.

[00230] In certain embodiments, the heterologous domain may be a restriction enzyme cleavage domain. Such domains are for example provided in combination with Cas9 in which the DNA cleavage (or catalytic) domain has been inactivated, such that the restriction enzyme domain is responsible for the DNA cleavage activity of the combined enzyme.

[00231] For example, restriction enzyme domains may be used which are active when present as dimers, such that two domains are required. In this embodiment, Cas9 enzymes are targeted to two adjacent spacer regions in the genome, which are close enough that the two restriction enzyme domains can cooperate and cleave DNA. In this manner, off-target activity is eliminated, as two target sites are required in close proximity before the enzyme can exert any cleavage activity. Specificity of targeting is thus increased significantly.

[00232] For example, restriction endonuclease (RE) domains may be fused to a catalytically inactive Cas9. On such RE is Fok1 which is a homodimeric enzyme, requiring two copies of the Fok1 monomer to form an active enzyme. The Fok1 domain can be fused to the N-terminus or the C-terminus of Cas9. Another RE is PvuI. Fusion to the N-terminus provides superior activity, since the N-terminus protrudes beyond the RuvC domain of Cas9, which interacts with the sgRNA:DNA duplex formed by Cas9; therefore, N-terminal fusion allows greater flexibility for Fok1 activity in the combined protein. Nuclear localization signal(s) (NLS) may also be provided, and are located for example N-terminal to the Fok1 domain. Here, as in general, one or more NLSs may be used. Two NLSs or even three or more NLSs may be used and these may be

homogenous (i.e. the same signal with a similar or identical sequence) or heterogeneous (i.e. different signals with different sequences).

[00233] Target sites, defined by the presence of a PAM sequence and regions complementary to the selected sgRNA, can be up to 50 nucleotides apart (i.e. offset as described herein), for example also preferably between 5 and 43 nucleotides apart, for instance about 15 or about 25 nucleotides apart, in order for cleavage to occur; however, the exact length of the spacer in between cleavage sites is dependent on the linker length selected to join or associate the Cas9 with the functional domain.

[00234] The domains may be linked using any suitable linker, but for example are linked using one or more copies of the sequence Gly-Gly-Ser (GSS). For example, 1, 2, 3, 4, 5, 6, 8 or more copies may be used. Other potential linkers include SGSETPGTSESATPES, MKIIEQLPSA, VRHKLKRVGS, VPFLLEPDNINGKTC, GHGTGSTGSGSS, MSRPDPA, GSAGSAAGSGEF, SGSETPGTSESA, GGSM and SGSETPGTSESATPEGGSGGS, as well as multiples thereof. The linkers should be sufficiently long and flexible to permit the Fok1 domains to align with the DNA for optimal cleavage, which is believed to be 1.5 to 2.5 helical turns apart. The NLS is in turn linked to the Fok1 domain via a linker, which may be GGS or a multiple thereof. The guide RNAs which target the Cas9/Fok1 fusion to the DNA to be cleaved should be oriented such that the PAM is distal to the cleaved spacer in both instances. This means that the sgRNA molecules will align in opposite orientations along the DNA strand to be cleaved. This provides a further level of specificity, since PAM sequences need to be present in the correct orientation in target DNA. For example, see Guilinger et al., (2014) Nature Biotechnology 32:577.

[00235] In some embodiments, domains which may be fused or linked to a catalytically inactive Cas9 (e.g. dCas9) include the functional domains that may be selected from the group consisting of: transposase domain, integrase domain, recombinase domain, resolvase domain, invertase domain, protease domain, DNA methyltransferase domain, DNA hydroxylmethylase domain, DNA demethylase domain, histone acetylase domain, histone deacetylases domain, nuclease domain, repressor domain, activator domain, nuclear-localization signal domains, transcription-regulatory protein (or transcription complex recruiting) domain, cellular uptake activity associated domain, nucleic acid binding domain, antibody presentation domain, histone modifying enzymes, recruiter of histone modifying enzymes; inhibitor of histone modifying enzymes, histone methyltransferase, histone demethylase, histone kinase, histone phosphatase,

histone ribosylase, histone deribosylase, histone ubiquitinase, histone deubiquitinase, histone biotinase and histone tail protease.

[00236] In another embodiment, the inserted domain may comprise an intein domain which excises to reconstitute the activity of one or more domains of Cas9, and is subject to influence from an external activator or repressor.

[00237] Because the specificity of Cas9 is imperfect, with off-target effects being observable in many instances in the absence of suitable precautions being taken, techniques which increase the on target/off target cleavage ratio of Cas9 are advantageous. The use of Fok1-dCas9 fusions, as well as small-molecule regulated split Cas9 approaches (Zetsche, B., Volz, S.E. & Zhang, F. Nat. Biotechnol. 33, 139–142 (2015)) and truncated guide RNAs (Fu, Y., Sander, J.D., Reyon, D., Cascio, V.M. & Joung, J.K. Nat. Biotechnol. 32, 279–284 (2014)), paired Cas9 nickases (Ran, F.A. et al. Cell 154, 1380–1389 (2013); Mali, P. *et al. Nat. Biotechnol.* **31**, 833–838 (2013)) can increase the specificity of Cas9 by proportionally reducing the level of off-target enzyme activity, compared to on-target activity. However, the regulation of wild-type Cas9 using exogenous molecules does not appear to be possible.

[00238] In embodiments, an intein domain can be used to regulate the activity of a modified Cas9 enzyme. Inteins are protein domains which can be inserted into heterologous proteins such that they undergo splicing to excise themselves from their integration site, splicing together the remaining segments of the heterologous protein. A wide variety of inteins is known in the art; an extensive database of inteins is available (Perler, F. B. (2002). InBase, the Intein Database. Nucleic Acids Res. 30, 383-384).

[00239] Inteins that undergo protein splicing only in the presence of 4-hydroxytamoxifen (4-HT) are known (Buskirk, A.R., Ong, Y.C., Gartner, Z.J. & Liu, D.R. *Proc. Natl. Acad. Sci. USA* **101**, 10505–10510 (2004)). These inteins were developed by inserting the human estrogen receptor ligand-binding domain into the *M. tuberculosis* RecA intein and evolving the resulting inactive fusion protein into a conditionally active intein that requires the presence of 4-HT. Subsequent evolution at 37 °C yielded a second-generation intein, 37R3-2, with improved splicing properties in mammalian cells (Peck, S.H., Chen, I. & Liu, D.R. *Chem. Biol.* **18**, 619–630 (2011)). The 37R3-2 intein has been inserted into Cas9 at a location that disrupts Cas9 activity until protein splicing has taken place, which results in conditionally active Cas9 nucleases that are active only

in the presence of 4-HT (Davis et al., "Small molecule–triggered Cas9 protein with improved genome-editing specificity." Nat Chem Biol. 2015 May;11(5):316-8).

[00240] The domain may be inserted at any suitable site, including for example at Ala127, Thr146, Ser219, Thr333, Thr519, Cys574, Ser1006 and/or Ser1159 of spCas9. Preferred insertion points include Ser219 and Cys574. Sites of interest for SaCas9 include, without limitation, L70, H80, A91, S142, A258, D309, A711, L842. Intein-modified Cas9 exhibits an on-target cleavage activity similar to wild-type Cas9 in the presence of 4-HT. However, on-target/off-target indel modification ratios for intein-Cas9 fusions are on average sixfold higher and as much as 25-fold higher than those of wild-type Cas9.

[00241] In some embodiments, it may be necessary to further engineer the intein domain to prevent activation by endogenous potential activators, such as steroids. For example, 37R3-2 is susceptible to activation by endogenous β-estradiol. In order to minimse activation by unwanted signals, the intein can be further modified and/or evolved to resist activation except by the intended activator. For example, a mutation in the estrogen receptor ligand-binding domain (G521R) renders the domain more specific for 4-HT. This mutation slightly reduces affinity for 4-HT but almost abolishes affinity for β-estradiol.

[00242] In a further example, the intein may be photosensitive, with protein splicing induced by light treatment. In one example, a photocaged cysteine amino acid residue can be genetically introduced into a *Nostoc punctiforme* (*Npu*) DnaE intein. A light-induced photochemical reaction can to reactivate the intein and trigger protein splicing (Wen et al., *J. Am. Chem. Soc.*, (2015), *137* (6), pp 2155–2158). Such an approach permits optical control of gene editing by Cas9.

[00243] Inteins may also be used to provide temporal control of Cas9 activity, effectively allowing the user to switch Cas9 activity on or off at will, by administering an activator such as 4-HT. Alternatively, inteins may be used to make Cas9 responsive to endogenous signals which are under the control of other processes in a cell or organism.

[00244] Furthermore, any of these residues in SaCas9, or corresponding positions in ortholog Cas9s, are envisaged to be suitable sites for creation of single lobed mutant Cas9s. For example, deletion of one lobe may mean that the amino acid sequence or polynucleotide encoding it starts or stops at one of these bridge helix (residues 41–73) and/or a linker loop (residues 426–434) residues. For example, to create a single-lobed (REC-lobed) modified SaCas9, deletion of the NUC lobe could be achieved by deletion of residues 1-40 with the first amino acid occurring in the

bridge helix (at any one of residues 41–73) and then ending in the linker loop (at any one of residues 426–434). To create a single-lobed (NUC-lobed) modified SaCas9, deletion of the REC lobe could be achieved by retention of residues 1-40 in a first part, and deletion of some or all of the bridge helix (any one of residues 41–73) and then re-starting in a second ending in the linker loop (at any one of residues 426–434) followed by retention of residues 435–1053. Accordingly, provided are single-lobed modified SaCas9s. In some embodiments, the single-lobed modified SaCas9 lacks a NUC lobe. In other embodiments, the single-lobed modified SaCas9 lacks a REC lobe.

[00245] It is also envisaged that either or both of the bridge helix (residues 41–73) and/or a linker loop (residues 426–434) may be engineered to further reduce the number of amino acids in a modified Cas9, or that these are suitable regions for functionalization, for example by linkage, fusion or tethering to a functional domain. Accordingly, in one aspect, the present invention provides a modified Cas9, preferably a modified SaCa9, wherein all or part of bridge helix (residues 41–73) have been replaced with a linker. In one aspect, the present invention provides a modified SaCa9, wherein all or part of linker loop (residues 426–434) have been replaced with a linker. In one aspect, the present invention provides a modified SaCa9, wherein all or part of bridge helix (residues 41–73) have been replaced with a linker and all or part of linker loop (residues 426–434) have been replaced with a linker. Suitable examples of linkers include Gly-Ser linkers described herein.

[00246] In one aspect, the present invention provides a modified SaCa9, wherein the bridge helix (residues 41–73) and/or the linker loop (residues 426–434) has been functionalized or comprises a functionalization, for example by linkage, fusion or tethering to a functional domain.

[00247] The repeat (G21–G34) and anti-repeat (C39–C54) regions form a distorted duplex (referred to as a repeat:anti-repeat duplex) via 13 Watson-Crick base pairs (Figures 2A and 2B). What is particularly interesting is that the unpaired nucleotides (C30, A43, U44 and C45) form an internal loop, which is stabilized by a hydrogen bonding-interaction between the O2 of U44 and the N4 of C45 (see Figure 2C). The repeat:anti-repeat duplex is recognized by the REC and WED domains (described herein). Indeed, a GAU insertion into the repeat region, which would disrupt the internal loop, reduced the Cas9-mediated DNA cleavage (Figure 2E), confirming the functional importance of the distorted structure of the repeat:anti-repeat duplex. Thus, it is clear that the internal loop comprising unpaired nucleotides, specifically C30, A43, U44 and C45 in the

crRNA:tracrRNA repeat:anti-repeat duplex in Sa or corresponding residues in, or corresponding residues in a chimeric or sgRNA, can be maintained to retain or increase cutting activity. However, it is also envisaged that disruption such a loop, for example by insertion of additional residues, preferably GAU, can reduce or destroy cutting activity. Guides that recruit the Cas9 to a genomic locus, but tamper with or hamper DNA cutting or achieve no cutting (i.e. dead guides) are useful, especially with WT Cas9. Their use in combination with WT Cas9 is beneficial since one can simultaneously use them in a knock down (cutting) application along with (i.e. at the same time as) activation from binding, allowing a single Cas9 to be delivered together with different guides with different effects. Alternatively, dCas9 (deadCas9s) can be used in place of the WT Cas9 and disruptive guide arrangement.

[00248] In terms of recognition of the crRNA:tracrRNA scaffolds, the repeat:anti-repeat duplex is recognized by the REC and WED domains, primarily through interactions between the sugar–phosphate backbone and protein (see Figure 3). Consistent with Applicants' data showing that the sgRNA containing the fully-paired repeat:anti-repeat duplex fails to support Cas9-catalyzed DNA cleavage (Figure 2E), the internal loop (C30, U44 and C45) is extensively recognized by the WED domain (Figure 4B). The 2′ OH and O2 of C30 hydrogen bond with Tyr868 and Lys867, respectively, and the phosphate groups of U31, C45 and U46 interact with Lys870, Arg792 and Lys881, respectively. These structural observations explain the structure-dependent recognition of the repeat:anti-repeat duplex by SaCas9.

[00249] Accordingly, it is envisaged that one or more of Tyr868, Lys867, Lys870, Arg792 and Lys881 of Sa or corresponding residues in orthologs may be mutated to increase or disrupt (reduce) stabilization of the guide's internal loop (comprising unpaired nucleotides, specifically C30, A43, U44 and C45 in the crRNA:tracrRNA repeat:anti-repeat duplex in Sa or corresponding residues in, or corresponding residues in a chimeric or sgRNA), as required.

[00250] Corresponding residues, domains, regions etc in Cas9 orthologs can be identified by the methods of Zhang et al., 2012 (Nature; 490(7421): 556-60) and Chen et al., 2015 (PLoS Comput Biol; 11(5): e1004248). These two groups describe a computational protein-protein interaction (PPI) method to predict interactions mediated by domain-motif interfaces. PrePPI (Predicting PPI), a structure based PPI prediction method, combines structural evidence with non-structural evidence using a Bayesian statistical framework. The method involves taking a pair a query proteins and using structural alignment to identify structural representatives that correspond

to either their experimentally determined structures or homology models. Structural alignment is further used to identify both close and remote structural neighbours by considering global and local geometric relationships. Whenever two neighbours of the structural representatives form a complex reported in the Protein Data Bank, this defines a template for modelling the interaction between the two query proteins. Models of the complex are created by superimposing the representative structures on their corresponding structural neighbour in the template. This approach is further described in Dey et al., 2013 (Prot Sci; 22: 359-66).

[00251] Thus, any of the herein described improved functionalities of a CRISPR enzyme may be made to any CRISPR enzyme, such as a Cas9 enzyme. Cas9 enzymes described herein are derived e.g. from Cas9 enzymes from *S. pyogenes* and *S. aureus*. However, it will be appreciated that any of the functionalities described herein may be engineered into Cas9 enzymes from other orthologs, incuding chimeric enzymes comprising fragments from multiple orthologs. Examples of such orthologs are described elsewhere herein.

[00252] As in SpCas9, the sgRNA lacking stem loop 2 supported Cas9-catalyzed DNA cleavage *in vitro* but not *in vivo* (see Figures 13C and 13D), suggesting that the SaCas9 sgRNA contains stem loop 2, which is important for *in vivo* function. Accordingly, provided is an sgRNA, suitable for use with SaCas9, comprising secondary structure consisting of or corresponding to stem loop 2.

[00253] In Sp, the tetraloop and stem loop 2 of the SpCas9 sgRNA are exposed to the solvent (Anders et al., 2014; Nishimasu et al., 2014) (see Figure 13A). Thus, these two loops are available for the fusion of RNA aptamers, and the three components system consisting of (1) catalytically inactive SpCas9 (D10A/N863A) fused with a VP64 transcriptional activator domain, (2) a MS2 bacteriophage coat protein fused with p65 and HSF1 transcriptional activator domains, and (3) the engineered sgRNA fused to MS2-interacting RNA aptamers can induce the RNA-guided transcriptional activation of target endogenous loci (Konermann et al., 2015).

[00254] Applicants examined whether tetraloop and stem loop 2 of the SaCas9 sgRNA are available for the MS2-interacting aptamer fusion, Applicants co-expressed in HEK293F cells the three components:

(1) dSpCas9 (deadCas9 bearing both D10A/N863A mutations)–VP64 or
dSaCas9 (dead Cas9 bearing both D10A/N580A mutations)–VP64,

(2) its engineered sgRNA (i.e. the engineered sgRNA fused to MS2-interacting RNA aptamers to induce the RNA-guided transcriptional activation of target endogenous loci, per Konermann et al., 2015), and

(3) MS2–p65–HSF1, i.e. a MS2 bacteriophage coat protein fused with p65 and HSF1 transcriptional activator domains.

[00255] Transcription activation of the target genes (ASCL1 and MYOD1) was found at levels comparable to those of the dSpCas9-based activator. These results indicate that the SaCas9 sgRNA has solvent-exposed stem loop 2. Furthermore, Applicants have demonstrated that the engineered SaCas9 sgRNA can recruit multiple MS2-fused proteins. Accordingly, in one aspect, the present invention provides for the loops (e.g. tetraloop or stemloop) of the sgRNA being extended, without colliding with the Cas9 protein by the insertion of distinct RNA loop(s) or disctinct sequence(s) that may recruit adaptor proteins that can bind to the distinct RNA loop(s) or distinct sequence(s). In a particular embodiment of the invention, stem loop 2 (SL2) of SaCas9 may be modified or engineered to recruit proteins to enable specific functionality. The adaptor proteins may include but are not limited to orthogonal RNA-binding protein / aptamer combinations that exist within the diversity of bacteriophage coat proteins. A list of such coat proteins includes, but is not limited to MS2, PP7, Qβ, F2, GA, fr, JP501, M12, R17, BZ13, JP34, JP500, KU1, M11, MX1, TW18, VK, SP, FI, ID2, NL95, TW19, AP205, ϕCb5, ϕCb8r, ϕCb12r, ϕCb23r, 7s, PRR1. These adaptor proteins or orthogonal RNA binding proteins can further recruit effector proteins or fusions which comprise one or more functional domains. In some embodiments, the functional domain may be selected from the group consisting of: transposase domain, integrase domain, recombinase domain, resolvase domain, invertase domain, protease domain, DNA methyltransferase domain, DNA hydroxylmethylase domain, DNA demethylase domain, histone acetylase domain, histone deacetylases domain, nuclease domain, repressor domain, activator domain, nuclear-localization signal domains, transcription-regulatory protein (or transcription complex recruiting) domain, cellular uptake activity associated domain, nucleic acid binding domain, antibody presentation domain, histone modifying enzymes, recruiter of histone modifying enzymes; inhibitor of histone modifying enzymes, histone methyltransferase, histone demethylase, histone kinase, histone phosphatase, histone ribosylase, histone deribosylase, histone ubiquitinase, histone deubiquitinase, histone biotinase and histone tail protease.

[00256] In some preferred embodiments, the functional domain is a transcriptional activation domain, preferably VP64. In some embodiments, the functional domain is a transcription repression domain, preferably KRAB. In some embodiments, the transcription repression domain is SID, or concatemers of SID (eg SID4X). In some embodiments, the functional domain is an epigenetic modifying domain, such that an epigenetic modifying enzyme is provided. In some embodiments, the functional domain is an activation domain, which may be the P65 activation domain.

[00257] The sugar–phosphate backbone of the PAM-distal region (A3–U6) of the sgRNA interacts with the REC lobe (Thr238, Tyr239, Lys248, Tyr256, Arg314, Asn394 and Gln414) (see Figure 3). Accordingly, it is envisaged that one or more of these residues in Sa or corresponding residues in orthologs may be mutated to increase or disrupt (reduce) stabilization of the guide's PAM-distal region (A3–U6), as required.,

[00258] The phosphate backbone of the sgRNA seed region (C13–C20) is extensively recognized by the bridge helix (Ans44, Arg48, Arg51, Arg55, Arg59 and Arg60) and the REC lobe (Arg116, Gly117, Arg165, Gly166, Asn169 and Arg209) (see Figures 3 and 4A). In addition, the 2′ OH groups of C15, U16, U17 and G19 interact with the REC lobe (Gly166, Arg208, Arg209 and Tyr211). Accordingly, it is envisaged that one or more of these residues in Sa or corresponding residues in orthologs may be mutated to increase or disrupt (reduce) stabilization of the guide's seed region (C13–C20), as required.

[00259] In addition, the sugar–phosphate backbone of the target DNA strand interacts with the REC lobe (Tyr211, Trp229, Tyr230, Gly235, Arg245, Gly391, Thr392, Ans412, Arg654 and Arg661) and the RuvC domain (Leu446, Tyr651 and Arg654) (Figure 3). Accordingly, it is envisaged that one or more of these residues in Sa or corresponding residues in orthologs may be mutated to increase or disrupt (reduce) stabilization of the target DNA strand, as required.

[00260] The sgRNA's Stem Loop 1 (SL1) (part of the tracrRNA) interacts with the bridge helix and REC lobe, specifically Arg47, Arg54, Arg55, Arg58 and Arg59 (BH) and Arg209, Gly216 and Ser219 (REC) and also including Arg47, Arg54, Arg55, Arg58 Arg59, Arg209, Gly216, Ser219, His64, Glu213, Arg209, Asn780/Arg781, Leu783, Lys906, Lys57, Leu783, Arg452, Lys459, Arg774, and Arg781. Accordingly, it is envisaged that one or more of these residues in Sa or corresponding residues in orthologs may be mutated to increase or disrupt (reduce) stabilization of the guide's stem loop 1, as required.

[00261] Arg1015, Asn985, Asn985, Asn986, Arg991, Asn985/Asn986/Arg991, Glu993, Arg1015 and Tyr789, Tyr882, Lys886, Ans888, Ala889, Leu909 are all involved in recognition of the NNGRRT PAM by the SaCas9 system. Accordingly, it is envisaged that one or more of these residues in Sa or corresponding residues in orthologs may be mutated to increase or disrupt (reduce) PAM recognition, as required. In particular, mutation of the Asn985/Asn986/Arg991 cluster or any one of Asn985, Asn986 and/or Arg991 is envisaged to be useful in accepting PAMs that do not have purines at positions 4 and 5 (corresponding to NNGRRT). Together, these structural findings demonstrated that distinct PAM specificities of Cas9 orthologs are primarily defined by their structurally diverse PI domains. This allows for PAM swapping as first shown by Nishimasu (2014), where the PI domain of SpCas9 was swapped with StCas9. It is envisaged that the prevent invention will provide useful variants in which domains or subdomains are exchanged between or among Cas9 variants.

[00262] In an aspect, therefore, provided is a modified Cas9 comprising the PI domain of SaCas9. In some embodiments, one or more of Arg1015, Asn985, Asn985, Asn986, Arg991, Asn985/Asn986/Arg991, Glu993, Arg1015 and Tyr789, Tyr882, Lys886, Ans888, Ala889 and/or Leu909 are mutated, optionally to Ala or a similar amino acid, in the SaCas9 PI domain.

[00263] Further aspects of the invention encompass mutagenizing SaCas9 to arrive at new variants that can target different PAMs and expand our targeting ability. In embodiments of the invention, a non-screening approach may be used. In one embodiment, the PI domain of SaCas9 may be replaced with other DNA-binding domains from TALEs or ZFNs. In another embodiment, C-terminal truncations/replacements may be performed with SaCas9 to determine which parts are important and to assess any effects on cutting efficiency.

[00264] In other embodiments of the invention, screening approaches may be used. In one such screen, residues which interact with the PAM as decribed herein may be mutagenized. The number of residues to be varied in such a screen can be, for example, 1, 2, 3, 4 or more, or up to 3, or up to 4. In one embodiment, a directed evolution screen may be performed in bacteria to select for efficient cutters (e.g. a semi-randomly generated SaCas9 library). Region(s) of interest in SaCas9 may be PCR mutagenized to generate a diverse library of SaCas9 mutants, and then efficient cutters in bacteria may be selected. In another embodiment, a PAM screen in the drug resistance model used for the GeCKO and SAM papers referenced herein with A375 cells and vemurafenib/PLX may be conducted. A few residues are initially mutated and an oligo library

synthesized by Agilent or BTL will allow for the screen of effective mutants. In certain embodiments, target genes are designed or selected so as to have non-canonical PAMs so that wild type SaCas9 would not cut but a mutant Cas9 would potentially cut. This approach will allow for immediately assessing cutting efficiency in a mammalian system, as opposed to having to confirm whether results carry over from bacteria to mammals.

[00265] Asp786 and Thr787 are in the phosphate lock loop. The SaCas9 T787A mutant showed reduced DNA cleavage activity (see Figure 5C), confirming the functional significance of Thr787 in the phosphate lock loop. Accordingly, it is envisaged that one or more of these residues in Sa or corresponding residues in orthologues may be mutated to increase or disrupt (reduce) stabilization of the guide via the phosphate lock, as required. Provided, therefore, in one aspect, is a modified SaCas9 comprising a T787 mutation, preferably T787A. Modified Cas9 orthologues with corresponding mutations are also provided. These are useful where it is beneficial to reduce DNA cleavage activity, for example in reducing off-target effects or when the Cas9 or guide is functionalized with a functional domain, for example a deadCas9, or in this case nearly deadCas9.

[00266] The catalytic residues of SaCas9 are Asp10, Glu477, His701 and Asp704. Mutation thereof is therefore envisaged to remove or reduce catalytic activity, as seen with D10A. In one aspect, the present invention provides a modified SaCa9, comprising a mutation at Glu477, preferably E477A. In one aspect, the present invention provides a modified SaCa9, comprising a mutation at His701, preferably H701A. In one aspect, the present invention provides a modified SaCa9, comprising a mutation at Asp704, preferably D704A. Such mutants may be useful nickases or deadCas9s if combined with an HNH domain mutant.

[00267] In one aspect, the present invention provides a modified SaCa9, comprising mutations at D10 and Glu477, preferably D10A and Glu477A. In one aspect, the present invention provides a modified SaCa9, comprising mutations at D10 and His701, preferably D10A and His701A. In one aspect, the present invention provides a modified SaCa9, comprising mutations at D10 and Asp704, preferably D10A and Asp704A. In one aspect, the present invention provides a modified SaCa9, comprising mutations at Glu477 and 701, preferably Glu477A and H701A. In one aspect, the present invention provides a modified SaCa9, comprising mutations at Glu477 and Asp704, preferably Glu477A and Asp704A. In one aspect, the present invention provides a modified SaCa9, comprising mutations at D10 and Asp704 and H701, preferably Asp704A and H701A. Such mutants may be useful nickases or deadCas9s if combined with an HNH domain mutant.

[00268] The catalytic residues of SaCas9 are Asp556, His557 and Asn580. The D556A, H557A and N580A mutants of SaCas9 showed almost no DNA cleavage activities. These observations indicated that the SaCas9 HNH domain cleaves the target DNA strand through a one-metal ion mechanism as in other aab-metal endonucleases (Biertumpfel et al., 2007).

[00269] Mutation thereof is therefore envisaged to remove or reduce catalytic activity, as seen with N580A. In one aspect, the present invention provides a modified SaCa9, comprising a mutation at D556, preferably D556A. In one aspect, the present invention provides a modified SaCa9, comprising a mutation at H557, preferably H557A. Such mutants may be useful nickases or deadCas9s if combined with a RuvC domain mutant.

[00270] In one aspect of the invention, nickase mutations can be identified by sequence homology with respect to known Type II CRISPR enzymes and nuclease domains. In certain embodiments, the nuclease domains are of known structure. In another aspect, mutations of the invention are identfied from the SaCas9 structure by proximity to the nuclease catalytic sites. In certain embodiments, the mutation position comprise one or more of E477, N580, D10, H701, D704, and H557. In certain embodiments, the mutation are E477A, N580D, N580A, D10A, H701A, D704A, or H557A. In ceratin embodiments, combinations of the mutations are useful to create a dead Cas9 protein. Examples of such combinations include, without limitation, D10A and N580A.

[00271] Taken with SpCas9, the SaCas9 structure provided herein further allows identification of mutations in Cas9 orthologs. Thus, modified Cas9 orthologs may comprise mutations at positions coinciding with, e.g., E477, N580, D10, H701, D704, and H557 including, but not limited to mutations coinciding with E477A, N580D, N580A, D10A, H701A, D704A, or H557A of SaCas9 or similar (i.e., conservative) changes.

[00272] In one aspect, the present invention provides a modified SaCa9, comprising mutations at N580 and D556, preferably N580A and D556A. In one aspect, the present invention provides a modified SaCa9, comprising mutations at N580 and H557, preferably N580A and H557A. Such mutants may be useful nickases, or deadCas9s when combined with a RuvC domain mutant.

[00273] Interestingly, Asn863 is oriented away from the active site in the ternary and quaternary complex structures of SpCas9 (see Figure 6B). This may explain the provision of 3' overhangs in the target strand seen with N863A mutant nickases. In order for HDR to proceed, the broken DNA ends need to be resected to generate a 3' overhang, which will in turn inhibit

NHEJ. HDR in mammalian cells proceeds via the generation of 3' overhangs followed by strand invasion of a homologous locus by the 3' end.

[00274] Applicants' structural observations demonstrate that the Cas9 orthologs recognize their cognate crRNA:tracrRNA in an orthogonal manner, using a combination of the structurally diverse REC and WED domains. This suggests that the REC and/or the WED domain can be swapped in and out of different Cas9s, especially between closesly related Cas9s. This may allow the user to tailor a Cas9 to different tracrs. For example, it might be useful to swap in spCas9 WED and/or REC domains into saCas9, thereby allowing use of sp-specific tracrs with the modified SaCas9. This may reduce or destroy cutting activity, which can be beneficial

[00275] In an aspect, therefore, provided is a modified SaCas9 comprising a WED domain from an ortholog Cas9. In an aspect, therefore, provided is a modified SaCas9 comprising a REC domain from an ortholog Cas9, for example SpCas9. In an aspect, therefore, provided is a modified SaCas9 comprising a WED domain and a REC domain from an ortholog Cas9, for example SpCas9.

[00276] In an aspect, also provided is a modified Cas9 form a non-Sa ortholog, such as spCas9, comprising a WED domain from SaCas9. In an aspect, also provided is a modified Cas9 form a non-Sa ortholog, such as spCas9, comprising a REC domain from SaCas9. In an aspect, also provided is a modified Cas9 form a non-Sa ortholog, such as spCas9, comprising a WED domain and a REC domain from SaCas9.

[00277] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at N985, optionally N985A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00278] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at N986, optionally N986A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00279] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at R991, optionally R991A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00280] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at E993, optionally E993A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00281] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at R1015, optionally R1015A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00282] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at T787, optionally T787A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00283] Any combination of these of these single mutants is possible a double or even triple mutants.

[00284] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at N985, optionally N985A, and a mutation at N986, optionally N986A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00285] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at N985, optionally N985A, and a mutation at R991, optionally R991A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00286] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at N986, optionally N986A, and a mutation R991, optionally R991A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00287] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at N985, optionally N985A, and a mutation at R1015, optionally R1015A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00288] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at N986, optionally N986A, and a mutation at R1015, optionally R1015A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00289] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at R991, optionally R991A, and a mutation at R1015, optionally R1015A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00290] In an aspect, the present invention provides a modified Cas9 enzyme as herein described comprising a mutation at E993, optionally E993A, and a mutation at R1015, optionally R1015A, in SaCas9 or a corresponding residue in an ortholog of SaCas9.

[00291] The sgRNA or modifications thereto shown in these figures are preferred in some embodiments. Corresponding structures, especially secondary structures, will be apparent, even if

the primary sequence differs. Although packing constrains are pertinent, these are less keenly felt with the sgRNA, being a polynucleotide, compared to say the CRISPR enzyme. As such, as far as packaging goes, there is less restriction on the use of longer sgRNAs. A +73 architecture is used as the starting point of the present modification. However, Applicants may use +85 or longer architectures (especially those in which stem loop 2 has not been truncated). In some embodiments, the sgRNA comprises, before or after modification, at least 3 loops. Examples are the tetraloop, the stem loop 1 and stem loop 2. In some embodiments, the sgRNA comprises, before or after modification, at least 4 loops. Examples are the tetraloop, the stem loop 1, stem loop 2, and stem loop 3. The herein-cited materials, based on the crystal structure of sgRNA in complex with the SaCas9 and target DNA provides further detail on these loops and Applicants also exemplify the sequences discussed above, so the skilled person will be able to determine these loops or refer to the literature.

[00292] The modifications of the invention are therefore preferably made to an sgRNA as discussed herein. The modifications to the sgRNA are such that the architecture of the sgRNA is altered. By architecture, Applicants mean the primary structure (i.e. the sequence) and also, particularly preferably, the resulting secondary structure of the sgRNA.

[00293] In some aspects, the system may further comprise a CRISPR enzyme as defined herein, which is preferably a Cas9. The optimized guides provide herein may be used with a range of CRISPR enzymes including wildtype (wt) nucleases, as well as nickases and deadCas9s as discussed herein. In preferred embodiments the Cas 9 is a SaCas9 enzyme.

[00294] In some aspects, the cell is a eukaryotic cell, for instance a mammalian cell and preferably a mouse or human cell, including stem cell lines. As such, also provided is a model organism, preferably an ape, rat or mouse, transformed with above system. The cell line or mode may be prepared, for instance by injecting or otherwise introducing the system into a fertilized zygote to thereby achieve heritable gene modification (see the review by Hsu et al. (Cell 157, June 5, 2014)). The model may constitutively express the CRISPR enzyme when transfected. Progeny of the model are also envisaged.

[00295] In some aspects, the invention also provides a method of modifying a genomic locus of interest to alter gene expression in a cell by introducing into the cell the composition comprising an optimized and/or modified Sa sgRNA and a SaCas9 enzyme. This may include a method of treating a subject with a condition correctable by genome editing. Such conditions are numerous,

and are further discussed herein, but may include conditions resulting from SNPs or trinucleotide repeat disorders. The system may also be used to transform and thereby modify the genome of, somatic tissue.

[00296] These methods may preferably be ex vivo, for example, creating a modified cell line. Another example is Chimeric Antigen Receptor (CAR)T cells which can be modified ex vivo and re-infused into a patient to target cancers. Thus, methods of treating suitable cancers are provided. Such methods may include delivering CRISPR-Cas complex(es) in a manner analogous to delivery of RNA or siRNA to a cancer cell to stop tumor growth herein discussed, or for RNA, e.g., sgRNA of the invention can be used in cancer modeling, e.g., with a Cas9 mouse; see, e.g., herein-cited Platt et al.

[00297] An engineered, programmable, non-naturally occurring Type II Cas (CRISPR-Cas) system that alters expression of at least one gene product in a eukaryotic cell containing and expressing a DNA molecule having a target sequence and encoding said gene product, wherein the CRISPR-Cas system comprises a CRISPR enzyme of and the present guide, preferably an optimized and/or modified Sa sgRNA and a SaCas9 enzyme.

[00298] Also provided is a polynucleotide comprising a regulatory element operable in a eukaryotic cell operably linked to a nucleotide sequence comprising the present modified guide RNA. Also provided is a vector comprising the present guide. Ideally, this guide is operably linked to a regulatory element operable in a eukaryotic cell. Also provided is a vector comprising a regulatory element operable in a eukaryotic cell operably linked to at least one nucleotide sequence encoding the present modified guide RNA (preferably a Sa sgRNA).

[00299] Further provided is a vector comprising:

a) a first regulatory element operable in a eukaryotic cell operably linked to at least one nucleotide sequence encoding the present CRISPR-Cas system guide RNA that hybridizes with the target sequence, and

b) a second regulatory element operable in a eukaryotic cell operably linked to a nucleotide sequence encoding a CRISPR enzyme,

wherein said CRISPR-Cas system further comprises one or more nuclear localization signal(s) (NLS(s)), and components (a) and (b) are located on same or different vectors of the system;

whereby said guide RNA targets the target sequence and said CRISPR enzyme binds to and optionally cleaves the DNA molecule; and

whereby expression of said at least one gene product is altered, wherein the guide RNA is preferably an optimized and/or modified Sa sgRNA and the CRISPR enzyme is a SaCas9 enzyme.

[00300] Also provided is a method of altering expression of at least one gene product in a eukaryotic cell containing and expressing a DNA molecule having a target sequence and encoding said gene product comprising introducing into said eukaryotic cell an engineered, non-naturally occurring Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR)-CRISPR associated (Cas) system comprising one or more vectors comprising:

a) a first regulatory element operable in a eukaryotic cell operably linked to at least one nucleotide sequence encoding the present guide RNA that hybridizes with the target sequence, and

b) a second regulatory element operable in a eukaryotic cell operably linked to a nucleotide sequence encoding a CRISPR enzyme,

wherein said CRISPR-Cas system further comprises one or more nuclear localization signal(s) (NLS(s)), and components (a) and (b) are located on same or different vectors of the system; and

whereby said guide RNA targets the target sequence and said CRISPR enzyme binds to and optionally cleaves the DNA molecule. The method may further comprise inserting DNA into a cleaved strand of the DNA molecule. Optionally, expression of said at least one gene product is altered. The CRISPR-Cas system preferably comprises an optimized and/or modified Sa sgRNA and a SaCas9 enzyme.

[00301] Provided is a CRISPR-Cas system-mediated genome targeting method in a eukaryotic cell containing a DNA molecule having a target sequence comprising introducing into said eukaryotic cell an engineered, non-naturally occurring CRISPR-Cas system comprising one or more vectors comprising:

a) a first regulatory element operable in a eukaryotic cell operably linked to at least one nucleotide sequence encoding the present CRISPR-Cas system guide RNA that hybridizes with the target sequence, and

b) a second regulatory element operable in a eukaryotic cell operably linked to a nucleotide sequence encoding a CRISPR enzyme,

wherein said CRISPR-Cas system further comprises one or more nuclear localization signal(s) (NLS(s)), and components (a) and (b) are located on same or different vectors of the system;

the method further comprising inserting DNA into a cleaved strand of the DNA molecule;

whereby there is CRISPR-Cas system-mediated genome targeting through said CRISPR-Cas system acting as to the DNA molecule comprising said guide RNA directing sequence-specific binding of the CRISPR-Cas system, whereby there is genome editing. The CRISPR-Cas system preferably comprises an optimized and/or modified Sa sgRNA and a SaCas9 enzyme.

[00302] In general, as the guide is modified, it is not envisaged that the CRISPR enzyme and said guide naturally occur together.

[00303] The present guides may also be used in accordance with the approach taken in Konermann *et al.* Nature 10 Dec 2014 (Genome-scale transcriptional activation with an engineered CRISPR-Cas9 complex). In these instances, it will be appreciated that the present modification will be in addition to and should interfere with the modification to at least one loop of the sgRNA (by the insertion of distinct RNA sequence(s) that bind to one or more adaptor proteins) as used by Konermann. Accordingly, in an aspect the invention provides a non-naturally occurring or engineered composition comprising the present modified guide RNA (sgRNA) comprising a guide sequence capable of hybridizing to a target sequence in a genomic locus of interest in a cell, wherein at least one loop of the sgRNA is further modified by the insertion of distinct RNA sequence(s) that bind to one or more adaptor proteins, and wherein the adaptor protein is associated with one or more functional domains. And when there is more than one functional domain, the functional domains can be same or different, e.g., two of the same or two different activators or repressors. In an aspect the invention provides a non-naturally occurring or engineered CRISPR-Cas complex composition comprising the herein-mentioned sgRNA and a CRISPR enzyme. In an aspect the invention provides a herein-mentioned non-naturally occurring or engineered CRISPR-Cas complex composition wherein: the CRISPR enzyme comprises at least one mutation, such that the CRISPR enzyme has no more than 5% of the nuclease activity of the CRISPR enzyme not having the at least one mutation; and/or at least one or more nuclear localization sequences. In an aspect the invention provides the herein-mentioned sgRNA or the CRISPR-Cas complex wherein one or more adaptor proteins associated with one or more functional domains is present and bound to the distinct RNA sequence(s) inserted into the at least

one loop of the sgRNA. The CRISPR-Cas system as described herein preferably comprises an optimized and/or modified Sa sgRNA and a SaCas9 enzyme.

[00304] In an aspect the invention provides a non-naturally occurring or engineered composition comprising: one or more of the present modified guide RNA (sgRNA) comprising a guide sequence capable of hybridizing to a target sequence in a genomic locus of interest in a cell, a CRISPR enzyme comprising at least one or more nuclear localization sequences, wherein the CRISPR enzyme comprises at least one mutation, such that the CRISPR enzyme has no more than 5% of the nuclease activity of the CRISPR enzyme not having the at least one mutation, wherein at least one loop of at least one sgRNA is modified by the insertion of distinct RNA sequence(s) that bind to one or more adaptor proteins, and wherein the adaptor protein is associated with one or more functional domains. In an aspect the invention provides any herein-mentioned composition wherein the CRISPR enzyme has a diminished nuclease activity of at least 97%, or 100% as compared with the CRISPR enzyme not having the at least one mutation. The one or more mutations may include but are not limited to D10A, E477A, H701A and D704A mutations in the RuvC domain and/or D556A, H557 and N580A in the HNH domain of an SaCas9. Aspects of the invention also encompass at least one mutation in each of the catalytic domains (e.g. the HNH domain and the RuvC domain) of the Cas9 enzyme such that the resultant Cas9 enzyme is catalytically dead (dCas9).

[00305] In an aspect the invention provides any herein-mentioned composition wherein the CRISPR enzyme (e.g. a dCas9) is associated with one or more functional domains. In an aspect the invention provides any herein-mentioned composition wherein the one or more functional domains associated with the adaptor protein is a heterologous functional domain. In an aspect the invention provides any herein-mentioned composition wherein the one or more functional domains associated with the CRISPR enzyme is a heterologous functional domain.

[00306] In an aspect the invention provides a composition as herein discussed, wherein the adaptor protein is a fusion protein comprising the functional domain, the fusion protein optionally comprising a linker between the adaptor protein and the functional domain, the linker optionally including a GlySer linker.

[00307] In an aspect the invention provides a composition as herein discussed compositions, wherein the at least one loop of the sgRNA is not modified by the insertion of distinct RNA

sequence(s) that bind to one or more adaptor proteins and wherein, optionally one of the unmodified sgRNA loops is either one of the tetraloop or the stem loop 2.

[00308] In an aspect the invention provides a composition as herein discussed wherein the one or more functional domains associated with the adaptor protein is a transcriptional activation domain.

[00309] In an aspect the invention provides a composition as herein discussed wherein the one or more functional domains associated with the CRISPR enzyme is a transcriptional activation domain.

[00310] In an aspect the invention provides a composition as herein discussed wherein the one or more functional domains associated with the adaptor protein is a transcriptional activation domain comprising VP64, p65, MyoD1, HSF1, RTA or SET7/9. Other references herein to activation (or activator) domains in respect of those associated with the adaptor protein(s) include any known transcriptional activation domain and specifically VP64, p65, MyoD1, HSF1, RTA or SET7/9. In some embodiments, the one or more functional domains is an NLS (Nuclear Localization Sequence) or an NES (Nuclear Export Signal). In some embodiments, the one or more functional domains is a transcriptional activation domain comprising and a histone acetyltransferase.

[00311] In an aspect the invention provides a composition as herein discussed wherein the one or more functional domains associated with the CRISPR enzyme is a transcriptional activation domain comprising VP64, p65, MyoD1, HSF1, RTA or SET7/9. Other references herein to activation (or activator) domains in respect of those associated with the adaptor protein(s) include any known transcriptional activation domain and specifically VP64, p65, MyoD1, HSF1, RTA or SET7/9. In some embodiments, the one or more functional domains is an NLS (Nuclear Localization Sequence) or an NES (Nuclear Export Signal). In some embodiments, the one or more functional domains is a transcriptional activation domain comprising and a histone acetyltransferase.

[00312] In an aspect the invention provides a composition as herein discussed wherein the one or more functional domains associated with the adaptor protein is a transcriptional repressor domain. In an aspect the invention provides a composition as herein discussed wherein the one or more functional domains associated with the CRISPR enzyme is a transcriptional repressor domain. In an aspect the invention provides a composition as herein discussed wherein the

transcriptional repressor domain is a KRAB domain. In an aspect the invention provides a composition as herein discussed wherein the transcriptional repressor domain is a NuE domain, NcoR domain, SID domain or a SID4X domain.

[00313] In an aspect the invention provides a composition as herein discussed wherein the one or more functional domains associated with the adaptor protein have one or more activities comprising methylase activity, demethylase activity, transcription activation activity, transcription repression activity, transcription release factor activity, histone modification activity, RNA cleavage activity, DNA cleavage activity, DNA integration activity or nucleic acid binding activity.

[00314] In an aspect the invention provides a composition as herein discussed wherein the one or more functional domains associated with the CRISPR enzyme have one or more activities comprising methylase activity, demethylase activity, transcription activation activity, transcription repression activity, transcription release factor activity, histone modification activity, RNA cleavage activity, DNA cleavage activity, DNA integration activity, nucleic acid binding activity, or molecular switch activity or chemical inducibility or light inducibility.

[00315] Histone modifying domains are also preferred in some embodiments. Exemplary histone modifying domains are discussed below. Transposase domains, HR (Homologous Recombination) machinery domains, recombinase domains, and/or integrase domains are also preferred as the present functional domains. In some embodiments, DNA integration activity includes HR machinery domains, integrase domains, recombinase domains and/or transposase domains. Histone acetyltransferases are preferred in some embodiments.

[00316] Endogenous transcriptional repression is often mediated by chromatin modifying enzymes such as histone methyltransferases (HMTs) and deacetylases (HDACs). Repressive histone effector domains are known and an exemplary list is provided below. In the exemplary table, preference was given to proteins and functional truncations of small size to facilitate efficient viral packaging (for instance via AAV). In general, however, the domains may include HDACs, histone methyltransferases (HMTs), and histone acetyltransferase (HAT) inhibitors, as well as HDAC and HMT recruiting proteins. The functional domain may be or include, in some embodiments, HDAC Effector Domains, HDAC Recruiter Effector Domains, Histone Methyltransferase (HMT) Effector Domains, Histone Methyltransferase (HMT) Recruiter Effector Domains, or Histone Acetyltransferase Inhibitor Effector Domains.

Table 1 - HDAC Effector Domains								
Subtype/ Complex	Name	Substrate (if known)	Modification (if known)	Organism	Full size (aa)	Selected truncation (aa)	Final size (aa)	Catalytic domain
HDAC I	**HDAC8**	-	-	*X. laevis*	325	1-325	325	1-272: HDAC
HDAC I	**RPD3**	-	-	*S. cerevisiae*	433	19-340	322 (Vannier)	19-331: HDAC
HDAC IV	**MesoLo4**	-	-	*M. loti*	300	1-300 (Gregoretti)	300	-
HDAC IV	**HDAC11**	-	-	*H. sapiens*	347	1-347 (Gao)	347	14-326: HDAC
HD2	**HDT1**	-	-	*A. thaliana*	245	1-211 (Wu)	211	-
SIRT I	**SIRT3**	H3K9Ac H4K16Ac H3K56Ac	-	*H. sapiens*	399	143-399 (Scher)	257	126-382: SIRT
SIRT I	**HST2**	-	-	*C. albicans*	331	1-331 (Hnisz)	331	-
SIRT I	**CobB**	-	-	*E. coli (K12)*	242	1-242 (Landry)	242	-
SIRT I	**HST2**	-	-	*S. cerevisiae*	357	8-298 (Wilson)	291	-
SIRT III	**SIRT5**	H4K8Ac H4K16Ac	-	*H. sapiens*	310	37-310 (Gertz)	274	41-309: SIRT
SIRT III	**Sir2A**	-	-	*P. falciparum*	273	1-273 (Zhu)	273	19-273: SIRT
SIRT IV	**SIRT6**	H3K9Ac H3K56Ac	-	*H. sapiens*	355	1-289 (Tennen)	289	35-274: SIRT

[00317] Accordingly, the repressor domains of the present invention may be selected from histone methyltransferases (HMTs), histone deacetylases (HDACs), histone acetyltransferase (HAT) inhibitors, as well as HDAC and HMT recruiting proteins.

[00318] The HDAC domain may be any of those in the table above, namely: HDAC8, RPD3, MesoLo4, HDAC11, HDT1, SIRT3, HST2, CobB, HST2, SIRT5, Sir2A, or SIRT6.

[00319] In some embodiments, the functional domain may be a HDAC Recruiter Effector Domain. Preferred examples include those in the Table below, namely MeCP2, MBD2b, Sin3a, NcoR, SALL1, RCOR1. NcoR is exemplified in the present Examples and, although preferred, it is envisaged that others in the class will also be useful.

Table 2. HDAC Recruiter Effector Domains								
Subtype/ Complex	Name	Substrate (if known)	Modification (if known)	Organism	Full size (aa)	Selected truncation (aa)	Final size (aa)	Catalytic domain

Sin3a	**MeCP2**	-	-	*R. norvegicus*	492	207-492 (Nan)	286	-
Sin3a	**MBD2b**	-	-	*H. sapiens*	262	45-262 (Boeke)	218	-
Sin3a	**Sin3a**	-	-	*H. sapiens*	1273	524-851 (Laherty)	328	627-829: HDAC1 interaction
NcoR	**NcoR**	-	-	*H. sapiens*	2440	420-488 (Zhang)	69	-
NuRD	**SALL1**	-	-	*M. musculus*	1322	1-93 (Lauberth)	93	-
CoREST	**RCOR1**	-	-	*H. sapiens*	482	81-300 (Gu, Ouyang)	220	-

[00320] In some embodiments, the functional domain may be a Methyltransferase (HMT) Effector Domain. Preferred examples include those in the Table below, namely NUE, vSET, EHMT2/G9A, SUV39H1, dim-5, KYP, SUVR4, SET4, SET1, SETD8, and TgSET8. NUE is exemplified in the present Examples and, although preferred, it is envisaged that others in the class will also be useful.

Table 3. Histone Methyltransferase (HMT) Effector Domains

Subtype/ Complex	Name	Substrate (if known)	Modification (if known)	Organism	Full size (aa)	Selected truncation (aa)	Final size (aa)	Catalytic domain
SET	**NUE**	H2B, H3, H4	-	*C. trachomatis*	219	1-219 (Pennini)	219	-
SET	**vSET**	-	H3K27me3	*P. bursaria chlorella virus*	119	1-119 (Mujtaba)	119	4-112: SET2
SUV39 family	**EHMT 2/G9A**	H1.4K2, H3K9, H3K27	H3K9me1/2, H1K25me1	*M. musculus*	1263	969-1263 (Tachibana)	295	1025-1233: preSET, SET, postSET
SUV39	**SUV3 9H1**	-	H3K9me2/3	*H. sapiens*	412	79-412 (Snowden)	334	172-412: preSET, SET, postSET
Suvar3-9	**dim-5**	-	H3K9me3	*N. crassa*	331	1-331 (Rathert)	331	77-331: preSET, SET, postSET
Suvar3-9 (SUVH subfamily)	**KYP**	-	H3K9me1/2	*A. thaliana*	624	335-601	267 (Jackson)	-

Suvar3-9 (SUVR subfamily)	**SUVR 4**	H3K9me1	H3K9me2/3	*A. thaliana*	492	180-492	313 (Thorstensen)	192-462: preSET, SET, postSET
Suvar4-20	**SET4**	-	H4K20me3	*C. elegans*	288	1-288 (Vielle)	288	-
SET8	**SET1**	-	H4K20me1	*C. elegans*	242	1-242 (Vielle)	242	-
SET8	**SETD 8**	-	H4K20me1	*H. sapiens*	393	185-393	209 (Couture)	256-382: SET
SET8	**TgSE T8**	-	H4K20me1/2/3	*T. gondii*	1893	1590-1893 (Sautel)	304	1749-1884: SET

[00321] In some embodiments, the functional domain may be a Histone Methyltransferase (HMT) Recruiter Effector Domain. Preferred examples include those in the Table below, namely Hp1a, PHF19, and NIPP1.

Table 4. Histone Methyltransferase (HMT) Recruiter Effector Domains

Subtype/ Complex	Name	Substrate (if known)	Modification (if known)	Organism	Full size (aa)	Selected truncation (aa)	Final size (aa)	Catalytic domain
-	**Hp1a**	-	H3K9me3	*M. musculus*	191	73-191	119 (Hathaway)	121-179: chromoshadow
-	**PHF19**	-	H3K27me3	*H. sapiens*	580	(1-250) + GGSG linker + (500-580)	335 (Ballaré)	163-250: PHD2
-	**NIPP1**	-	H3K27me3	*H. sapiens*	351	1-329 (Jin)	329	310-329: EED

[00322] In some embodiment, the functional domain may be Histone Acetyltransferase Inhibitor Effector Domain. Preferred examples include SET/TAF-1β listed in the Table below.

Table 5. Histone Acetyltransferase Inhibitor Effector Domains

Subtype/ Complex	Name	Substrate (if known)	Modification (if known)	Organism	Full size (aa)	Selected truncation (aa)	Final size (aa)	Catalytic domain
-	**SET/TAF -1β**	-	-	*M. musculus*	289	1-289 (Cervoni)	289	-

[00323] It is also preferred to target endogenous (regulatory) control elements (such as enhancers and silencers) in addition to a promoter or promoter-proximal elements. Thus, the invention can also be used to target endogenous control elements (including enhancers and

silencers) in addition to targeting of the promoter. These control elements can be located upstream and downstream of the transcriptional start site (TSS), starting from 200bp from the TSS to 100kb away. Targeting of known control elements can be used to activate or repress the gene of interest. In some cases, a single control element can influence the transcription of multiple target genes. Targeting of a single control element could therefore be used to control the transcription of multiple genes simultaneously.

[00324] Targeting of putative control elements on the other hand (e.g. by tiling the region of the putative control element as well as 200bp up to 100kB around the element) can be used as a means to verify such elements (by measuring the transcription of the gene of interest) or to detect novel control elements (e.g. by tiling 100kb upstream and downstream of the TSS of the gene of interest). In addition, targeting of putative control elements can be useful in the context of understanding genetic causes of disease. Many mutations and common SNP variants associated with disease phenotypes are located outside coding regions. Targeting of such regions with either the activation or repression systems described herein can be followed by readout of transcription of either a) a set of putative targets (e.g. a set of genes located in closest proximity to the control element) or b) whole-transcriptome readout by e.g. RNAseq or microarray. This would allow for the identification of likely candidate genes involved in the disease phenotype. Such candidate genes could be useful as novel drug targets.

[00325] Histone acetyltransferase (HAT) inhibitors are mentioned herein. However, an alternative in some embodiments is for the one or more functional domains to comprise an acetyltransferase, preferably a histone acetyltransferase. These are useful in the field of epigenomics, for example in methods of interrogating the epigenome. Methods of interrogating the epigenome may include, for example, targeting epigenomic sequences. Targeting epigenomic sequences may include the guide being directed to an epigenomic target sequence. Epigenomic target sequence may include, in some embodiments, include a promoter, silencer or an enhancer sequence.

[00326] Use of a functional domain linked to a CRISPR-Cas enzyme as described herein, preferably a dead-Cas, more preferably a dead-Cas9, to target epigenomic sequences can be used to activate or repress promoters, silencer or enhancers.

[00327] Examples of acetyltransferases are known but may include, in some embodiments, histone acetyltransferases. In some embodiments, the histone acetyltransferase may comprise the

catalytic core of the human acetyltransferase p300 (As further described in "Epigenome editing by a CRISPR/Cas9-based acetyltransferase activates genes from promoters and enhancers". IB Hilton, AM D'Ippolito, CM Vockley, PI Thakore, GE Crawford, TE Reddy, and CA Gersbach. Nature Biotechnology 33(5):510-7 (2015), incorporated herein by reference in its entirety).

[00328] In some preferred embodiments, the functional domain is linked to a dead-Cas9 enzyme to target and activate epigenomic sequences such as promoters or enhancers. One or more guides directed to such promoters or enhancers may also be provided to direct the binding of the CRISPR enzyme to such promoters or enhancers.

[00329] The term "associated with" is used here in respect of how one molecule 'associates' with respect to another, for example between an adaptor protein and a functional domain, or between the CRISPR enzyme and a functional domain. In the case of such protein-protein interactions, this association may be viewed in terms of recognition in the way an antibody recognises an epitope. Alternatively, one protein may be associated with another protein via a fusion of the two, for instance one subunit being fused to another subunit. Fusion typically occurs by addition of the amino acid sequence of one to that of the other, for instance via splicing together of the nucleotide sequences that encode each protein or subunit. Alternatively, this may essentially be viewed as binding between two molecules or direct linkage, such as a fusion protein. In any event, the fusion protein may include a linker between the two subunits of interest (i.e. between the enzyme and the functional domain or between the adaptor protein and the functional domain). Thus, in some embodiments, the CRISPR enzyme or adaptor protein is associated with a functional domain by binding thereto. In other embodiments, the CRISPR enzyme or adaptor protein is associated with a functional domain because the two are fused together, optionally via an intermediate linker. Aspects of the linkers mentioned herein also encompass linkers between different segments of the sgRNA, e.g. between the repeat and anti-repeat sequences.

[00330] Attachment can be via a linker, e.g., a flexible glycine-serine (GlyGlyGlySer) or $(GGGS)_3$ or a rigid alpha-helical linker such as (Ala(GluAlaAlaAlaLys)Ala). Linkers such as $(GGGGS)_3$ are preferably used herein to separate protein or peptide domains. (GGGGS)3 is preferable because it is a relatively long linker (15 amino acids). The glycine residues are the most flexible and the serine residues enhance the chance that the linker is on the outside of the protein. $(GGGGS)_6$ $(GGGGS)_9$ or $(GGGGS)_{12}$ may preferably be used as alternatives. Other preferred alternatives are $(GGGGS)_1$, $(GGGGS)_2$, $(GGGGS)_4$, $(GGGGS)_5$, $(GGGGS)_7$,

$(GGGGS)_8$, $(GGGGS)_{10}$, or $(GGGGS)_{11}$. Alternative linkers are available, but highly flexible linkers are thought to work best to allow for maximum opportunity for the 2 parts of the Cas9 to come together and thus reconstitute Cas9 activity. One alternative is that the NLS of nucleoplasmin can be used as a linker. For example, a linker can also be used between the Cas9 and any functional domain. Again, a $(GGGGS)_3$ linker may be used here (or the 6, 9, or 12 repeat versions therefore) or the NLS of nucleoplasmin can be used as a linker between Cas9 and the functional domain.

[00331] In an aspect the invention provides a composition as herein discussed wherein the DNA cleavage activity is due to a nuclease. In an aspect the invention provides a composition as herein discussed wherein the nuclease comprises a Fok1 nuclease.

[00332] Preferably, the tracr sequence has one or more hairpins and is 30 or more nucleotides in length, 40 or more nucleotides in length, or 50 or more nucleotides in length, preferably 49-53 nucleotides in length. Preferably, the guide sequence is between 10 to 30 nucleotides in length, most preferably 20-24 nucleotides in length. The CRISPR/Cas enzyme is most preferably a Type II Cas9 enzyme, a SaCas9 enzyme is highly preferred in this invention. Chimeras, especially those that blend Sp, Sa, St or domains of other orthologs are also preferred.

[00333] In general, where a nucleotide or stretch of nucleotides is modified by replacement, then the same number of nucleotides should be inserted as removed. Thus, if one nucleotide is replaced, one is inserted, or if four nucleotides are replaced, four are inserted.

[00334] The number of stem loops in the optimized Sa sgRNA is preferably 2 (not including the tetraloop). The number of stem loops can be easily engineered in or out as desired by introducing or removing nucleotides which result in the desired secondary structure.

[00335] The tetraloop may be further engineered in view of Konermann et al ("Genome-scale transcriptional activation with an engineered CRISPR-Cas9 complex" Nature published online 10 Dec 2014). Particularly preferred are guides further modified in accordance with the Konermann Nature 10 Dec 2014 paper mentioned above. These guides are further modified so that protein-binding RNA portions (such as aptamers) are added to or replace the tetraloop and/or stemloop 2. Corresponding RNA-binding protein domains can be sued to then recognize the RNA and recruit functional domains, such as those described herein, to the guide. This is primarily for use with deadCas9s leading to transcriptional activation or repression or DNA cleavage through nucleases such as Fok1. The use of such guides in combination with deadCas9s is powerful, and it is

especially powerful if the Cas9 itself is also associated with its own functional domain, as discussed herein. When a deadCas9 (with or without its own associated functional domain) is induced to reconstitute in accordance with the present invention, i.e. is a split Cas9, then the tool is especially useful.

[00336] Konermann provides a guide RNA (sgRNA), also preferred for use in the present invention, comprising a guide sequence capable of hybridizing to a target sequence in a genomic locus of interest in a cell, wherein at least one loop of the sgRNA is further modified by the insertion of distinct RNA sequence(s) that bind to one or more adaptor proteins, and wherein the adaptor protein is associated with one or more functional domains. The CRISPR enzyme is preferably a deadCas9. It may comprise at least one mutation, such that the CRISPR enzyme has no more than 5% of the nuclease activity of the CRISPR enzyme not having the at least one mutation; and/or at least one or more nuclear localization sequences. Also provided is a non-naturally occurring or engineered composition comprising: one or more guide RNA (sgRNA) comprising a guide sequence capable of hybridizing to a target sequence in a genomic locus of interest in a cell, a CRISPR enzyme comprising at least one or more nuclear localization sequences, wherein the CRISPR enzyme comprises at least one mutation, such that the CRISPR enzyme has no more than 5% of the nuclease activity of the CRISPR enzyme not having the at least one mutation, wherein at least one loop of at least one sgRNA is modified by the insertion of distinct RNA sequence(s) that bind to one or more adaptor proteins, and wherein the adaptor protein is associated with one or more functional domains. The CRISPR-Cas system as described herein preferably comprises an optimized and/or modified Sa sgRNA and a SaCas9 enzyme.

[00337] The at least one loop of the sgRNA that is preferably modified by the insertion of distinct RNA sequence(s) that bind to one or more adaptor proteins is either one or both of the tetraloop or the stem loop 2. The insertion of distinct RNA sequence(s) that bind to one or more adaptor proteins is preferably an aptamer sequence or two or more aptamer sequences specific to the same or different adaptor protein(s). The adaptor protein preferably comprises MS2, PP7, Qβ, F2, GA, fr, JP501, M12, R17, BZ13, JP34, JP500, KU1, M11, MX1, TW18, VK, SP, FI, ID2, NL95, TW19, AP205, ϕCb5, ϕCb8r, ϕCb12r, ϕCb23r, 7s, PRR1.

[00338] The one or more functional domains may be transcriptional activation domain or a repressor domain. Although they may be different domains it is preferred that all the functional domains are either activator or repressor and that a mixture of the two is not used.

[00339] The transcriptional activation domain may comprise VP64, p65, MyoD1, HSF1, RTA or SET7/9.

[00340] The one or more functional domains associated with the Cas9 may be a transcriptional repressor domain. The transcriptional repressor domain may be a KRAB domain. The transcriptional repressor domain may be a NuE domain, NcoR domain, SID domain or a SID4X domain.

[00341] The one or more functional domains associated with the adaptor protein may have one or more activities comprising methylase activity, demethylase activity, transcription activation activity, transcription repression activity, transcription release factor activity, histone modification activity, RNA cleavage activity, DNA cleavage activity, DNA integration activity or nucleic acid binding activity.

[00342] Histone modifying domains are also preferred in some embodiments. Exemplary histone modifying domains are discussed below. Transposase domains, HR (Homologous Recombination) machinery domains, recombinase domains, and/or integrase domains are also preferred as the present functional domains. In some embodiments, DNA integration activity includes HR machinery domains, integrase domains, recombinase domains and/or transposase domains. The DNA cleavage activity may be due to a nuclease, for example a Fok1 nuclease.

[00343] The term "associated with" is used here in respect of how one molecule 'associates' with respect to another, for example between an adaptor protein and a functional domain, or between the CRISPR enzyme and a functional domain. In the case of such protein-protein interactions, this association may be viewed in terms of recognition in the way an antibody recognizes an epitope. Alternatively, one protein may be associated with another protein via a fusion of the two, for instance one subunit being fused to another subunit. Fusion typically occurs by addition of the amino acid sequence of one to that of the other, for instance via splicing together of the nucleotide sequences that encode each protein or subunit. Alternatively, this may essentially be viewed as binding between two molecules or direct linkage, such as a fusion protein. In any event, the fusion protein may include a linker between the two subunits of interest (i.e. between the enzyme and the functional domain or between the adaptor protein and the functional domain). Thus, in some embodiments, the CRISPR enzyme or adaptor protein is associated with a functional domain by binding thereto. In other embodiments, the CRISPR enzyme or adaptor

protein is associated with a functional domain because the two are fused together, optionally via an intermediate linker.

[00344] In an aspect, the invention provides a CRISPR-Cas system comprising the present guide together with a CRISPR-Cas enzyme, in particular Cas9. Thus, also provided is a non-naturally occurring or engineered composition comprising a CRISPR-Cas system, comprising the present guide and a CRISPR-Cas enzyme, in particular Cas9, especially Sa Cas9 or Sp Cas9.

[00345] In an aspect, the invention provides a non-naturally occurring or engineered composition comprising a CRISPR-Cas system comprising a guide RNA (sgRNA) comprising a guide sequence capable of hybridizing to a target sequence in a genomic locus of interest in a cell wherein architecture of the sgRNA is modified. The guide preferably also includes a tracr sequence and a tracr mate as described herein. The sgRNA typically includes a PAM-proximal region. It typically also include a repeat;anti-repeat duplex. These are most preferably retained but they can be modified, provided at 50% of binding specificity to the target is retained.

[00346] In general, the CRISPR-Cas or CRISPR system is as used in the foregoing documents, such as WO 2014/093622 (PCT/US2013/074667) and refers collectively to transcripts and other elements involved in the expression of or directing the activity of CRISPR-associated ("Cas") genes, including sequences encoding a Cas gene, a tracr (trans-activating CRISPR) sequence (e.g. tracrRNA or an active partial tracrRNA), a tracr-mate sequence (encompassing a "direct repeat" and a tracrRNA-processed partial direct repeat in the context of an endogenous CRISPR system), a guide sequence (also referred to as a "spacer" in the context of an endogenous CRISPR system), or "RNA(s)" as that term is herein used (e.g., RNA(s) to guide Cas9, e.g. CRISPR RNA and transactivating (tracr) RNA or a single guide RNA (sgRNA) (chimeric RNA)) or other sequences and transcripts from a CRISPR locus. In general, a CRISPR system is characterized by elements that promote the formation of a CRISPR complex at the site of a target sequence (also referred to as a protospacer in the context of an endogenous CRISPR system). In the context of formation of a CRISPR complex, "target sequence" refers to a sequence to which a guide sequence is designed to have complementarity, where hybridization between a target sequence and a guide sequence promotes the formation of a CRISPR complex. A target sequence may comprise any polynucleotide, such as DNA or RNA polynucleotides. In some embodiments, a target sequence is located in the nucleus or cytoplasm of a cell. In some embodiments, direct repeats may be identified in silico by searching for repetitive motifs that fulfill any or all of the following criteria:

1. found in a 2Kb window of genomic sequence flanking the type II CRISPR locus; 2. span from 20 to 50 bp; and 3. interspaced by 20 to 50 bp. In some embodiments, 2 of these criteria may be used, for instance 1 and 2, 2 and 3, or 1 and 3. In some embodiments, all 3 criteria may be used.

[00347] In embodiments of the invention the terms guide sequence and guide RNA are used interchangeably as in foregoing cited documents such as WO 2014/093622 (PCT/US2013/074667). In general, a guide sequence is any polynucleotide sequence having sufficient complementarity with a target polynucleotide sequence to hybridize with the target sequence and direct sequence-specific binding of a CRISPR complex to the target sequence. In some embodiments, the degree of complementarity between a guide sequence and its corresponding target sequence, when optimally aligned using a suitable alignment algorithm, is about or more than about 50%, 60%, 75%, 80%, 85%, 90%, 95%, 97.5%, 99%, or more. Optimal alignment may be determined with the use of any suitable algorithm for aligning sequences, non-limiting example of which include the Smith-Waterman algorithm, the Needleman-Wunsch algorithm, algorithms based on the Burrows-Wheeler Transform (e.g. the Burrows Wheeler Aligner), ClustalW, Clustal X, BLAT, Novoalign (Novocraft Technologies; available at www.novocraft.com), ELAND (Illumina, San Diego, CA), SOAP (available at soap.genomics.org.cn), and Maq (available at maq.sourceforge.net). In some embodiments, a guide sequence is about or more than about 5, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 35, 40, 45, 50, 75, or more nucleotides in length. In some embodiments, a guide sequence is less than about 75, 50, 45, 40, 35, 30, 25, 20, 15, 12, or fewer nucleotides in length. Preferably the guide sequence is 10 - 30 nucleotides long. The ability of a guide sequence to direct sequence-specific binding of a CRISPR complex to a target sequence may be assessed by any suitable assay. For example, the components of a CRISPR system sufficient to form a CRISPR complex, including the guide sequence to be tested, may be provided to a host cell having the corresponding target sequence, such as by transfection with vectors encoding the components of the CRISPR sequence, followed by an assessment of preferential cleavage within the target sequence, such as by Surveyor assay as described herein. Similarly, cleavage of a target polynucleotide sequence may be evaluated in a test tube by providing the target sequence, components of a CRISPR complex, including the guide sequence to be tested and a control guide sequence different from the test guide sequence, and comparing binding or rate of cleavage at the target sequence between the test and control guide sequence reactions. Other assays are possible,

and will occur to those skilled in the art. A guide sequence may be selected to target any target sequence. In some embodiments, the target sequence is a sequence within a genome of a cell. Exemplary target sequences include those that are unique in the target genome. For example, for the S. pyogenes Cas9, a unique target sequence in a genome may include a Cas9 target site of the form MMMMMMMMNNNNNNNNNNNNXGG where NNNNNNNNNNNNXGG (N is A, G, T, or C; and X can be anything) has a single occurrence in the genome. A unique target sequence in a genome may include an S. pyogenes Cas9 target site of the form MMMMMMMMMNNNNNNNNNNNXGG where NNNNNNNNNNNXGG (N is A, G, T, or C; and X can be anything) has a single occurrence in the genome. For the S. thermophilus CRISPR1 Cas9, a unique target sequence in a genome may include a Cas9 target site of the form MMMMMMMMNNNNNNNNNNNNNXXAGAAW where NNNNNNNNNNNNXXAGAAW (N is A, G, T, or C; X can be anything; and W is A or T) has a single occurrence in the genome. A unique target sequence in a genome may include an S. thermophilus CRISPR1 Cas9 target site of the form MMMMMMMMMNNNNNNNNNNNNXXAGAAW where NNNNNNNNNNNXXAGAAW (N is A, G, T, or C; X can be anything; and W is A or T) has a single occurrence in the genome. For the S. pyogenes Cas9, a unique target sequence in a genome may include a Cas9 target site of the form MMMMMMMMNNNNNNNNNNNNXGGXG where NNNNNNNNNNNNXGGXG (N is A, G, T, or C; and X can be anything) has a single occurrence in the genome. A unique target sequence in a genome may include an S. pyogenes Cas9 target site of the form MMMMMMMMMNNNNNNNNNNNXGGXG where NNNNNNNNNNNXGGXG (N is A, G, T, or C; and X can be anything) has a single occurrence in the genome. In each of these sequences "M" may be A, G, T, or C, and need not be considered in identifying a sequence as unique. In some embodiments, a guide sequence is selected to reduce the degree secondary structure within the guide sequence. In some embodiments, about or less than about 75%, 50%, 40%, 30%, 25%, 20%, 15%, 10%, 5%, 1%, or fewer of the nucleotides of the guide sequence participate in self-complementary base pairing when optimally folded. Optimal folding may be determined by any suitable polynucleotide folding algorithm. Some programs are based on calculating the minimal Gibbs free energy. An example of one such algorithm is mFold, as described by Zuker and Stiegler (Nucleic Acids Res. 9 (1981), 133-148). Another example folding algorithm is the online webserver RNAfold, developed at Institute for Theoretical Chemistry at the University of Vienna, using the centroid structure prediction algorithm (see e.g.

A.R. Gruber et al., 2008, Cell 106(1): 23-24; and PA Carr and GM Church, 2009, Nature Biotechnology 27(12): 1151-62).

[00348] In general, a tracr mate sequence includes any sequence that has sufficient complementarity with a tracr sequence to promote one or more of: (1) excision of a guide sequence flanked by tracr mate sequences in a cell containing the corresponding tracr sequence; and (2) formation of a CRISPR complex at a target sequence, wherein the CRISPR complex comprises the tracr mate sequence hybridized to the tracr sequence. In general, degree of complementarity is with reference to the optimal alignment of the tracr mate sequence and tracr sequence, along the length of the shorter of the two sequences. Optimal alignment may be determined by any suitable alignment algorithm, and may further account for secondary structures, such as self-complementarity within either the tracr sequence or tracr mate sequence. In some embodiments, the degree of complementarity between the tracr sequence and tracr mate sequence along the length of the shorter of the two when optimally aligned is about or more than about 25%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 95%, 97.5%, 99%, or higher. In some embodiments, the tracr sequence is about or more than about 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 25, 30, 40, 50, or more nucleotides in length. In some embodiments, the tracr sequence and tracr mate sequence are contained within a single transcript, such that hybridization between the two produces a transcript having a secondary structure, such as a hairpin. In an embodiment of the invention, the transcript or transcribed polynucleotide sequence has at least two or more hairpins. In preferred embodiments, the transcript has two, three, four or five hairpins. In a further embodiment of the invention, the transcript has at most five hairpins. In a hairpin structure the portion of the sequence 5' of the final "N" and upstream of the loop corresponds to the tracr mate sequence, and the portion of the sequence 3' of the loop corresponds to the tracr sequence Further non-limiting examples of single polynucleotides comprising a guide sequence, a tracr mate sequence, and a tracr sequence are as follows (listed 5' to 3'), where "N" represents a base of a guide sequence, the first block of lower case letters represent the tracr mate sequence, and the second block of lower case letters represent the tracr sequence, and the final poly-T sequence represents the transcription terminator: (1) NNNNNNNNNNNNNNNNNNNNgtttttgtactctcaagatttaGAAAtaaatcttgcagaagctacaaagataa ggcttcatgccgaaatcaacaccctgtcattttatggcagggtgttttcgttatttaaTTTTTT; (2) NNNNNNNNNNNNNNNNNNNNgtttttgtactctcaGAAAtgcagaagctacaaagataaggcttcatgccg

aaatcaacaccctgtcattttatggcagggtgttttcgttatttaaTTTTTT; (3)

NNNNNNNNNNNNNNNNNNNgtttttgtactctcaGAAAtgcagaagctacaaagataaggcttcatgccg

aaatcaacaccctgtcattttatggcagggtgtTTTTTT; (4)

NNNNNNNNNNNNNNNNNNNgttttagagctaGAAAtagcaagttaaaataaggctagtccgttatcaactt

gaaaaagtggcaccgagtcggtgcTTTTTT; (5)

NNNNNNNNNNNNNNNNNNNgttttagagctaGAAATAGcaagttaaaataaggctagtccgttatcaac

ttgaaaaagtgTTTTTTT; and (6)

NNNNNNNNNNNNNNNNNNNgttttagagctagAAATAGcaagttaaaataaggctagtccgttatcaTT

TTTTTT. In some embodiments, sequences (1) to (3) are used in combination with Cas9 from S. thermophilus CRISPR1. In some embodiments, sequences (4) to (6) are used in combination with Cas9 from S. pyogenes. In some embodiments, the tracr sequence is a separate transcript from a transcript comprising the tracr mate sequence.

[00349] In some embodiments, candidate tracrRNA may be subsequently predicted by sequences that fulfill any or all of the following criteria: 1. sequence homology to direct repeats (motif search in Geneious with up to 18-bp mismatches); 2. presence of a predicted Rho-independent transcriptional terminator in direction of transcription; and 3. stable hairpin secondary structure between tracrRNA and direct repeat. In some embodiments, 2 of these criteria may be used, for instance 1 and 2, 2 and 3, or 1 and 3. In some embodiments, all 3 criteria may be used.

[00350] In some embodiments, chimeric synthetic guide RNAs (sgRNAs) designs may incorporate at least 12 bp of duplex structure between the direct repeat and tracrRNA.

[00351] For minimization of toxicity and off-target effect, it will be important to control the concentration of CRISPR enzyme mRNA and guide RNA delivered. Optimal concentrations of CRISPR enzyme mRNA and guide RNA can be determined by testing different concentrations in a cellular or non-human eukaryote animal model and using deep sequencing the analyze the extent of modification at potential off-target genomic loci. For example, for the guide sequence targeting 5'-GAGTCCGAGCAGAAGAAGAA-3' in the EMX1 gene of the human genome, deep sequencing can be used to assess the level of modification at the following two off-target loci, 1: 5'-GAGTCCTAGCAGGAGAAGAA-3' and 2: 5'-GAGTCTAAGCAGAAGAAGAA-3'. The concentration that gives the highest level of on-target modification while minimizing the level of off-target modification should be chosen for *in vivo* delivery. Alternatively, to minimize the level of toxicity and off-target effect, CRISPR enzyme nickase mRNA (for example S. pyogenes Cas9

with the D10A mutation) can be delivered with a pair of guide RNAs targeting a site of interest. The two guide RNAs need to be spaced as follows. Guide sequences and strategies to mimize toxicity and off-target effects can be as in WO 2014/093622 (PCT/US2013/074667).

[00352] The CRISPR system is derived advantageously from a type II CRISPR system. In some embodiments, one or more elements of a CRISPR system is derived from a particular organism comprising an endogenous CRISPR system, such as Streptococcus pyogenes. In preferred embodiments of the invention, the CRISPR system is a type II CRISPR system and the Cas enzyme is Cas9, which catalyzes DNA cleavage. Non-limiting examples of Cas proteins include Cas1, Cas1B, Cas2, Cas3, Cas4, Cas5, Cas6, Cas7, Cas8, Cas9 (also known as Csn1 and Csx12), Cas10, Csy1, Csy2, Csy3, Cse1, Cse2, Csc1, Csc2, Csa5, Csn2, Csm2, Csm3, Csm4, Csm5, Csm6, Cmr1, Cmr3, Cmr4, Cmr5, Cmr6, Csb1, Csb2, Csb3, Csx17, Csx14, Csx10, Csx16, CsaX, Csx3, Csx1, Csx15, Csf1, Csf2, Csf3, Csf4, homologues thereof, or modified versions thereof.

[00353] In some embodiments, the unmodified CRISPR enzyme has DNA cleavage activity, such as Cas9. In some embodiments, the CRISPR enzyme directs cleavage of one or both strands at the location of a target sequence, such as within the target sequence and/or within the complement of the target sequence. In some embodiments, the CRISPR enzyme directs cleavage of one or both strands within about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 50, 100, 200, 500, or more base pairs from the first or last nucleotide of a target sequence. In some embodiments, a vector encodes a CRISPR enzyme that is mutated to with respect to a corresponding wild-type enzyme such that the mutated CRISPR enzyme lacks the ability to cleave one or both strands of a target polynucleotide containing a target sequence. For example, an aspartate-to-alanine substitution (D10A) in the RuvC I catalytic domain of Cas9 from S. pyogenes converts Cas9 from a nuclease that cleaves both strands to a nickase (cleaves a single strand). Other examples of mutations that render Cas9 a nickase include, without limitation, H840A, N854A, and N863A. As a further example, two or more catalytic domains of Cas9 (RuvC I, RuvC II, and RuvC III or the HNH domain) may be mutated to produce a mutated Cas9 substantially lacking all DNA cleavage activity. In some embodiments, a D10A mutation is combined with one or more of H840A, N854A, or N863A mutations to produce a Cas9 enzyme substantially lacking all DNA cleavage activity. In some embodiments, a CRISPR enzyme is considered to substantially lack all DNA cleavage activity when the DNA cleavage activity of the mutated enzyme is about no more than

25%, 10%, 5%, 1%, 0.1%, 0.01%, or less of the DNA cleavage activity of the non-mutated form of the enzyme; an example can be when the DNA cleavage activity of the mutated form is nil or negligible as compared with the non-mutated form. Where the enzyme is not SpCas9, mutations may be made at any or all residues corresponding to positions 10, 762, 840, 854, 863 and/or 986 of SpCas9 (which may be ascertained for instance by standard sequence comparison tools). In particular, any or all of the following mutations are preferred in SpCas9: D10A, E762A, H840A, N854A, N863A and/or D986A; as well as conservative substitution for any of the replacement amino acids is also envisaged. The same (or conservative substitutions of these mutations) at corresponding positions in other Cas9s are also preferred. Particularly preferred are D10 and H840 in SpCas9. However, in other Cas9s, residues corresponding to SpCas9 D10 and H840 are also preferred.

[00354] Orthologs of SpCas9 can be used in the practice of the invention. A Cas enzyme may be identified Cas9 as this can refer to the general class of enzymes that share homology to the biggest nuclease with multiple nuclease domains from the type II CRISPR system. Type II CRISPR-Cas9 enzymes, are large multidomain proteins sufficient for targeting and cleaving DNA. Orthologs of Cas9 also refer to enzymes of Class 2 CRISPR-Cas systems. Class 2 is an evolutionary classification which encompasses single-subunit effector complexes. Most preferably, the Cas9 enzyme is from, or is derived from, spCas9 (S. pyogenes Cas9) or saCas9 (S. aureus Cas9). StCas9" refers to wild type Cas9 from S. thermophilus, the protein sequence of which is given in the SwissProt database under accession number G3ECR1. Similarly, S pyogenes Cas9 or spCas9 is included in SwissProt under accession number Q99ZW2. By derived, Applicants mean that the derived enzyme is largely based, in the sense of having a high degree of sequence homology with, a wildtype enzyme, but that it has been mutated (modified) in some way as described herein. It will be appreciated that the terms Cas and CRISPR enzyme are generally used herein interchangeably, unless otherwise apparent. As mentioned above, many of the residue numberings used herein refer to the Cas9 enzyme from the type II CRISPR locus in Streptococcus pyogenes. However, it will be appreciated that this invention includes many more Cas9s from other species of microbes, such as SpCas9, SaCa9, St1Cas9 and so forth. Enzymatic action by Cas9 derived from Streptococcus pyogenes or any closely related Cas9 generates double stranded breaks at target site sequences which hybridize to 20 nucleotides of the guide sequence and that have a protospacer-adjacent motif (PAM) sequence (examples include NGG/NRG or a PAM that

can be determined as described herein) following the 20 nucleotides of the target sequence. CRISPR activity through Cas9 for site-specific DNA recognition and cleavage is defined by the guide sequence, the tracr sequence that hybridizes in part to the guide sequence and the PAM sequence. More aspects of the CRISPR system are described in Karginov and Hannon, The CRISPR system: small RNA-guided defence in bacteria and archaea, Mole Cell 2010, January 15; 37(1): 7. The type II CRISPR locus from Streptococcus pyogenes SF370, which contains a cluster of four genes Cas9, Cas1, Cas2, and Csn1, as well as two non-coding RNA elements, tracrRNA and a characteristic array of repetitive sequences (direct repeats) interspaced by short stretches of non-repetitive sequences (spacers, about 30bp each). In this system, targeted DNA double-strand break (DSB) is generated in four sequential steps. First, two non-coding RNAs, the pre-crRNA array and tracrRNA, are transcribed from the CRISPR locus. Second, tracrRNA hybridizes to the direct repeats of pre-crRNA, which is then processed into mature crRNAs containing individual spacer sequences. Third, the mature crRNA:tracrRNA complex directs Cas9 to the DNA target consisting of the protospacer and the corresponding PAM via heteroduplex formation between the spacer region of the crRNA and the protospacer DNA. Finally, Cas9 mediates cleavage of target DNA upstream of PAM to create a DSB within the protospacer. A pre-crRNA array consisting of a single spacer flanked by two direct repeats (DRs) is also encompassed by the term "tracr-mate sequences"). In certain embodiments, Cas9 may be constitutively present or inducibly present or conditionally present or administered or delivered. Cas9 optimization may be used to enhance function or to develop new functions, one can generate chimeric Cas9 proteins. And Cas9 may be used as a generic DNA binding protein.

[00355] In an aspect, the CRISPR enzyme comprises H840A, or D10A and H840A, or D10A and N863A, according to SpCas9 protein or any corresponding ortholog. N580 in Sa corresponds to N863 in Sp Cas9. Accordingly, in an aspect, the CRISPR enzyme comprises: N580A according to SaCas9 protein or any corresponding ortholog; or D10A according to SpCas9 protein, or any corresponding ortholog, and N580A according to SaCas9 protein.

[00356] Typically, in the context of an endogenous CRISPR system, formation of a CRISPR complex (comprising a guide sequence hybridized to a target sequence and complexed with one or more Cas proteins) results in cleavage of one or both strands in or near (e.g. within 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 50, or more base pairs from) the target sequence. Without wishing to be bound by theory, the tracr sequence, which may comprise or consist of all or a portion of a wild-type tracr

sequence (e.g. about or more than about 20, 26, 32, 45, 48, 54, 63, 67, 85, or more nucleotides of a wild-type tracr sequence), may also form part of a CRISPR complex, such as by hybridization along at least a portion of the tracr sequence to all or a portion of a tracr mate sequence that is operably linked to the guide sequence.

[00357] An example of a codon optimized sequence, is in this instance a sequence optimized for expression in a eukaryote, e.g., humans (i.e. being optimized for expression in humans), or for another eukaryote, animal or mammal as herein discussed; see, e.g., SaCas9 human codon optimized sequence in WO 2014/093622 (PCT/US2013/074667). Whilst this is preferred, it will be appreciated that other examples are possible and codon optimization for a host species other than human, or for codon optimization for specific organs is known. In some embodiments, an enzyme coding sequence encoding a CRISPR enzyme is codon optimized for expression in particular cells, such as eukaryotic cells. The eukaryotic cells may be those of or derived from a particular organism, such as a mammal, including but not limited to human, or non-human eukaryote or animal or mammal as herein discussed, e.g., mouse, rat, rabbit, dog, livestock, or non-human mammal or primate. In some embodiments, processes for modifying the germ line genetic identity of human beings and/or processes for modifying the genetic identity of animals which are likely to cause them suffering without any substantial medical benefit to man or animal, and also animals resulting from such processes, may be excluded. In general, codon optimization refers to a process of modifying a nucleic acid sequence for enhanced expression in the host cells of interest by replacing at least one codon (e.g. about or more than about 1, 2, 3, 4, 5, 10, 15, 20, 25, 50, or more codons) of the native sequence with codons that are more frequently or most frequently used in the genes of that host cell while maintaining the native amino acid sequence. Various species exhibit particular bias for certain codons of a particular amino acid. Codon bias (differences in codon usage between organisms) often correlates with the efficiency of translation of messenger RNA (mRNA), which is in turn believed to be dependent on, among other things, the properties of the codons being translated and the availability of particular transfer RNA (tRNA) molecules. The predominance of selected tRNAs in a cell is generally a reflection of the codons used most frequently in peptide synthesis. Accordingly, genes can be tailored for optimal gene expression in a given organism based on codon optimization. Codon usage tables are readily available, for example, at the "Codon Usage Database" available at www.kazusa.orjp/codon/ and these tables can be adapted in a number of ways. See Nakamura, Y., et al. "Codon usage tabulated

from the international DNA sequence databases: status for the year 2000" Nucl. Acids Res. 28:292 (2000). Computer algorithms for codon optimizing a particular sequence for expression in a particular host cell are also available, such as Gene Forge (Aptagen; Jacobus, PA), are also available. In some embodiments, one or more codons (e.g. 1, 2, 3, 4, 5, 10, 15, 20, 25, 50, or more, or all codons) in a sequence encoding a CRISPR enzyme correspond to the most frequently used codon for a particular amino acid.

[00358] In some embodiments, a vector encodes a CRISPR enzyme comprising one or more nuclear localization sequences (NLSs), such as about or more than about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, or more NLSs. In some embodiments, the CRISPR enzyme comprises about or more than about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, or more NLSs at or near the amino-terminus, about or more than about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, or more NLSs at or near the carboxy-terminus, or a combination of these (e.g. zero or at least one or more NLS at the amino-terminus and zero or at one or more NLS at the carboxy terminus). When more than one NLS is present, each may be selected independently of the others, such that a single NLS may be present in more than one copy and/or in combination with one or more other NLSs present in one or more copies. In a preferred embodiment of the invention, the CRISPR enzyme comprises at most 6 NLSs. In some embodiments, an NLS is considered near the N- or C-terminus when the nearest amino acid of the NLS is within about 1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 40, 50, or more amino acids along the polypeptide chain from the N- or C-terminus. Non-limiting examples of NLSs include an NLS sequence derived from: the NLS of the SV40 virus large T-antigen, having the amino acid sequence PKKKRKV; the NLS from nucleoplasmin (e.g. the nucleoplasmin bipartite NLS with the sequence KRPAATKKAGQAKKKK); the c-myc NLS having the amino acid sequence PAAKRVKLD or RQRRNELKRSP; the hRNPA1 M9 NLS having the sequence NQSSNFGPMKGGNFGGRSSGPYGGGGQYFAKPRNQGGY; the sequence RMRIZFKNKGKDTAELRRRRVEVSVELRKAKKDEQILKRRNV of the IBB domain from importin-alpha; the sequences VSRKRPRP and PPKKARED of the myoma T protein; the sequence POPKKKPL of human p53; the sequence SALIKKKKKMAP of mouse c-abl IV; the sequences DRLRR and PKQKKRK of the influenza virus NS1; the sequence RKLKKKIKKL of the Hepatitis virus delta antigen; the sequence REKKKFLKRR of the mouse Mx1 protein; the sequence KRKGDEVDGVDEVAKKKSKK of the human poly(ADP-ribose) polymerase; and the sequence RKCLQAGMNLEARKTKK of the steroid hormone receptors (human) glucocorticoid.

In general, the one or more NLSs are of sufficient strength to drive accumulation of the CRISPR enzyme in a detectable amount in the nucleus of a eukaryotic cell. In general, strength of nuclear localization activity may derive from the number of NLSs in the CRISPR enzyme, the particular NLS(s) used, or a combination of these factors. Detection of accumulation in the nucleus may be performed by any suitable technique. For example, a detectable marker may be fused to the CRISPR enzyme, such that location within a cell may be visualized, such as in combination with a means for detecting the location of the nucleus (e.g. a stain specific for the nucleus such as DAPI). Cell nuclei may also be isolated from cells, the contents of which may then be analyzed by any suitable process for detecting protein, such as immunohistochemistry, Western blot, or enzyme activity assay. Accumulation in the nucleus may also be determined indirectly, such as by an assay for the effect of CRISPR complex formation (e.g. assay for DNA cleavage or mutation at the target sequence, or assay for altered gene expression activity affected by CRISPR complex formation and/or CRISPR enzyme activity), as compared to a control no exposed to the CRISPR enzyme or complex, or exposed to a CRISPR enzyme lacking the one or more NLSs.

[00359] Aspects of the invention relate to the expression of the gene product being decreased or a template polynucleotide being further introduced into the DNA molecule encoding the gene product or an intervening sequence being excised precisely by allowing the two 5' overhangs to reanneal and ligate or the activity or function of the gene product being altered or the expression of the gene product being increased. In an embodiment of the invention, the gene product is a protein. Only sgRNA pairs creating 5' overhangs with less than 8bp overlap between the guide sequences (offset greater than -8 bp) were able to mediate detectable indel formation. Importantly, each guide used in these assays is able to efficiently induce indels when paired with wildtype Cas9, indicating that the relative positions of the guide pairs are the most important parameters in predicting double nicking activity. Since Cas9n and Cas9H840A nick opposite strands of DNA, substitution of Cas9n with Cas9H840A with a given sgRNA pair should have resulted in the inversion of the overhang type; but no indel formation is observed as with Cas9H840A indicating that Cas9H840A is a CRISPR enzyme substantially lacking all DNA cleavage activity (which is when the DNA cleavage activity of the mutated enzyme is about no more than 25%, 10%, 5%, 1%, 0.1%, 0.01%, or less of the DNA cleavage activity of the non-mutated form of the enzyme; whereby an example can be when the DNA cleavage activity of the mutated form is nil or negligible as compared with the non-mutated form, e.g., when no indel formation is observed as

with Cas9H840A in the eukaryotic system in contrast to the biochemical or prokaryotic systems). Nonetheless, a pair of sgRNAs that will generate a 5' overhang with Cas9n should in principle generate the corresponding 3' overhang instead, and double nicking. Therefore, sgRNA pairs that lead to the generation of a 3' overhang with Cas9n can be used with another mutated Cas9 to generate a 5' overhang, and double nicking. Accordingly, in some embodiments, a recombination template is also provided. A recombination template may be a component of another vector as described herein, contained in a separate vector, or provided as a separate polynucleotide. In some embodiments, a recombination template is designed to serve as a template in homologous recombination, such as within or near a target sequence nicked or cleaved by a CRISPR enzyme as a part of a CRISPR complex. A template polynucleotide may be of any suitable length, such as about or more than about 10, 15, 20, 25, 50, 75, 100, 150, 200, 500, 1000, or more nucleotides in length. In some embodiments, the template polynucleotide is complementary to a portion of a polynucleotide comprising the target sequence. When optimally aligned, a template polynucleotide might overlap with one or more nucleotides of a target sequences (e.g. about or more than about 1, 5, 10, 15, 20, or more nucleotides). In some embodiments, when a template sequence and a polynucleotide comprising a target sequence are optimally aligned, the nearest nucleotide of the template polynucleotide is within about 1, 5, 10, 15, 20, 25, 50, 75, 100, 200, 300, 400, 500, 1000, 5000, 10000, or more nucleotides from the target sequence.

[00360] In some embodiments, one or more vectors driving expression of one or more elements of a CRISPR system are introduced into a host cell such that expression of the elements of the CRISPR system direct formation of a CRISPR complex at one or more target sites. For example, a Cas enzyme, a guide sequence linked to a tracr-mate sequence, and a tracr sequence could each be operably linked to separate regulatory elements on separate vectors. Or, RNA(s) of the CRISPR System can be delivered to a transgenic Cas9 animal or mammal, e.g., an animal or mammal that constitutively or inducibly or conditionally expresses Cas9; or an animal or mammal that is otherwise expressing Cas9 or has cells containing Cas9, such as by way of prior administration thereto of a vector or vectors that code for and express *in vivo* Cas9. Alternatively, two or more of the elements expressed from the same or different regulatory elements, may be combined in a single vector, with one or more additional vectors providing any components of the CRISPR system not included in the first vector. CRISPR system elements that are combined in a single vector may be arranged in any suitable orientation, such as one element located 5' with respect to

("upstream" of) or 3' with respect to ("downstream" of) a second element. The coding sequence of one element may be located on the same or opposite strand of the coding sequence of a second element, and oriented in the same or opposite direction. In some embodiments, a single promoter drives expression of a transcript encoding a CRISPR enzyme and one or more of the guide sequence, tracr mate sequence (optionally operably linked to the guide sequence), and a tracr sequence embedded within one or more intron sequences (e.g. each in a different intron, two or more in at least one intron, or all in a single intron). In some embodiments, the CRISPR enzyme, guide sequence, tracr mate sequence, and tracr sequence are operably linked to and expressed from the same promoter. Delivery vehicles, vectors, particles, nanoparticles, formulations and components thereof for expression of one or more elements of a CRISPR system are as used in the foregoing documents, such as WO 2014/093622 (PCT/US2013/074667). In some embodiments, a vector comprises one or more insertion sites, such as a restriction endonuclease recognition sequence (also referred to as a "cloning site"). In some embodiments, one or more insertion sites (e.g. about or more than about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, or more insertion sites) are located upstream and/or downstream of one or more sequence elements of one or more vectors. In some embodiments, a vector comprises an insertion site upstream of a tracr mate sequence, and optionally downstream of a regulatory element operably linked to the tracr mate sequence, such that following insertion of a guide sequence into the insertion site and upon expression the guide sequence directs sequence-specific binding of a CRISPR complex to a target sequence in a eukaryotic cell. In some embodiments, a vector comprises two or more insertion sites, each insertion site being located between two tracr mate sequences so as to allow insertion of a guide sequence at each site. In such an arrangement, the two or more guide sequences may comprise two or more copies of a single guide sequence, two or more different guide sequences, or combinations of these. When multiple different guide sequences are used, a single expression construct may be used to target CRISPR activity to multiple different, corresponding target sequences within a cell. For example, a single vector may comprise about or more than about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, or more guide sequences. In some embodiments, about or more than about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, or more such guide-sequence-containing vectors may be provided, and optionally delivered to a cell. In some embodiments, a vector comprises a regulatory element operably linked to an enzyme-coding sequence encoding a CRISPR enzyme, such as a Cas protein. CRISPR enzyme or CRISPR enzyme mRNA or CRISPR guide RNA or RNA(s) can be

delivered separately; and advantageously at least one of these is delivered via a particle or nanoparticle complex. CRISPR enzyme mRNA can be delivered prior to the guide RNA to give time for CRISPR enzyme to be expressed. CRISPR enzyme mRNA might be administered 1-12 hours (preferably around 2-6 hours) prior to the administration of guide RNA. Alternatively, CRISPR enzyme mRNA and guide RNA can be administered together. Advantageously, a second booster dose of guide RNA can be administered 1-12 hours (preferably around 2-6 hours) after the initial administration of CRISPR enzyme mRNA + guide RNA. Additional administrations of CRISPR enzyme mRNA and/or guide RNA might be useful to achieve the most efficient levels of genome modification.

[00361] In one aspect, the invention provides methods for using one or more elements of a CRISPR system. The CRISPR complex of the invention provides an effective means for modifying a target polynucleotide. The CRISPR complex of the invention has a wide variety of utility including modifying (e.g., deleting, inserting, translocating, inactivating, activating) a target polynucleotide in a multiplicity of cell types. As such the CRISPR complex of the invention has a broad spectrum of applications in, e.g., gene therapy, drug screening, disease diagnosis, and prognosis. An exemplary CRISPR complex comprises a CRISPR enzyme complexed with a guide sequence hybridized to a target sequence within the target polynucleotide. The guide sequence is linked to a tracr mate sequence, which in turn hybridizes to a tracr sequence. In one embodiment, this invention provides a method of cleaving a target polynucleotide. The method comprises modifying a target polynucleotide using a CRISPR complex that binds to the target polynucleotide and effect cleavage of said target polynucleotide. Typically, the CRISPR complex of the invention, when introduced into a cell, creates a break (e.g., a single or a double strand break) in the genome sequence. For example, the method can be used to cleave a disease gene in a cell. The break created by the CRISPR complex can be repaired by a repair processes such as the error prone non-homologous end joining (NHEJ) pathway or the high fidelity homology-directed repair (HDR). During these repair process, an exogenous polynucleotide template can be introduced into the genome sequence. In some methods, the HDR process is used modify genome sequence. For example, an exogenous polynucleotide template comprising a sequence to be integrated flanked by an upstream sequence and a downstream sequence is introduced into a cell. The upstream and downstream sequences share sequence similarity with either side of the site of integration in the chromosome. Where desired, a donor polynucleotide can be DNA, e.g., a DNA plasmid, a

bacterial artificial chromosome (BAC), a yeast artificial chromosome (YAC), a viral vector, a linear piece of DNA, a PCR fragment, a naked nucleic acid, or a nucleic acid complexed with a delivery vehicle such as a liposome or poloxamer. The exogenous polynucleotide template comprises a sequence to be integrated (e.g., a mutated gene). The sequence for integration may be a sequence endogenous or exogenous to the cell. Examples of a sequence to be integrated include polynucleotides encoding a protein or a non-coding RNA (e.g., a microRNA). Thus, the sequence for integration may be operably linked to an appropriate control sequence or sequences. Alternatively, the sequence to be integrated may provide a regulatory function. The upstream and downstream sequences in the exogenous polynucleotide template are selected to promote recombination between the chromosomal sequence of interest and the donor polynucleotide. The upstream sequence is a nucleic acid sequence that shares sequence similarity with the genome sequence upstream of the targeted site for integration. Similarly, the downstream sequence is a nucleic acid sequence that shares sequence similarity with the chromosomal sequence downstream of the targeted site of integration. The upstream and downstream sequences in the exogenous polynucleotide template can have 75%, 80%, 85%, 90%, 95%, or 100% sequence identity with the targeted genome sequence. Preferably, the upstream and downstream sequences in the exogenous polynucleotide template have about 95%, 96%, 97%, 98%, 99%, or 100% sequence identity with the targeted genome sequence. In some methods, the upstream and downstream sequences in the exogenous polynucleotide template have about 99% or 100% sequence identity with the targeted genome sequence. An upstream or downstream sequence may comprise from about 20 bp to about 2500 bp, for example, about 50, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300, 2400, or 2500 bp. In some methods, the exemplary upstream or downstream sequence have about 200 bp to about 2000 bp, about 600 bp to about 1000 bp, or more particularly about 700 bp to about 1000 bp. In some methods, the exogenous polynucleotide template may further comprise a marker. Such a marker may make it easy to screen for targeted integrations. Examples of suitable markers include restriction sites, fluorescent proteins, or selectable markers. The exogenous polynucleotide template of the invention can be constructed using recombinant techniques (see, for example, Sambrook et al., 2001 and Ausubel et al., 1996). In a method for modifying a target polynucleotide by integrating an exogenous polynucleotide template, a double stranded break is introduced into the genome sequence by the CRISPR complex, the break is repaired via

homologous recombination an exogenous polynucleotide template such that the template is integrated into the genome. The presence of a double-stranded break facilitates integration of the template. In other embodiments, this invention provides a method of modifying expression of a polynucleotide in a eukaryotic cell. The method comprises increasing or decreasing expression of a target polynucleotide by using a CRISPR complex that binds to the polynucleotide. In some methods, a target polynucleotide can be inactivated to effect the modification of the expression in a cell. For example, upon the binding of a CRISPR complex to a target sequence in a cell, the target polynucleotide is inactivated such that the sequence is not transcribed, the coded protein is not produced, or the sequence does not function as the wild-type sequence does. For example, a protein or microRNA coding sequence may be inactivated such that the protein or microRNA or pre-microRNA transcript is not produced. In some methods, a control sequence can be inactivated such that it no longer functions as a control sequence. As used herein, "control sequence" refers to any nucleic acid sequence that effects the transcription, translation, or accessibility of a nucleic acid sequence. Examples of a control sequence include, a promoter, a transcription terminator, and an enhancer are control sequences. The target polynucleotide of a CRISPR complex can be any polynucleotide endogenous or exogenous to the eukaryotic cell. For example, the target polynucleotide can be a polynucleotide residing in the nucleus of the eukaryotic cell. The target polynucleotide can be a sequence coding a gene product (e.g., a protein) or a non-coding sequence (e.g., a regulatory polynucleotide or a junk DNA). Examples of target polynucleotides include a sequence associated with a signaling biochemical pathway, e.g., a signaling biochemical pathway-associated gene or polynucleotide. Examples of target polynucleotides include a disease associated gene or polynucleotide. A "disease-associated" gene or polynucleotide refers to any gene or polynucleotide which is yielding transcription or translation products at an abnormal level or in an abnormal form in cells derived from a disease-affected tissues compared with tissues or cells of a non disease control. It may be a gene that becomes expressed at an abnormally high level; it may be a gene that becomes expressed at an abnormally low level, where the altered expression correlates with the occurrence and/or progression of the disease. A disease-associated gene also refers to a gene possessing mutation(s) or genetic variation that is directly responsible or is in linkage disequilibrium with a gene(s) that is responsible for the etiology of a disease. In preferred embodiments of the invention the disease associate gene may be a gene associated

withCancer; Thalassemia, Sickle Cell Anemia (based on a point mutation); and ophthalmic disease – for example Leber Congenital Amaurosis (LCA)-causing Splice Defect.

[00362] The transcribed or translated products may be known or unknown, and may be at a normal or abnormal level. The target polynucleotide of a CRISPR complex can be any polynucleotide endogenous or exogenous to the eukaryotic cell. For example, the target polynucleotide can be a polynucleotide residing in the nucleus of the eukaryotic cell. The target polynucleotide can be a sequence coding a gene product (e.g., a protein) or a non-coding sequence (e.g., a regulatory polynucleotide or a junk DNA). Without wishing to be bound by theory, it is believed that the target sequence should be associated with a PAM (protospacer adjacent motif); that is, a short sequence recognized by the CRISPR complex. The precise sequence and length requirements for the PAM differ depending on the CRISPR enzyme used, but PAMs are typically 2-5 base pair sequences adjacent the protospacer (that is, the target sequence). Examples of PAM sequences are given in the examples section below, and the skilled person will be able to identify further PAM sequences for use with a given CRISPR enzyme. In some embodiments, the method comprises allowing a CRISPR complex to bind to the target polynucleotide to effect cleavage of said target polynucleotide thereby modifying the target polynucleotide, wherein the CRISPR complex comprises a CRISPR enzyme complexed with a guide sequence hybridized to a target sequence within said target polynucleotide, wherein said guide sequence is linked to a tracr mate sequence which in turn hybridizes to a tracr sequence. In one aspect, the invention provides a method of modifying expression of a polynucleotide in a eukaryotic cell. In some embodiments, the method comprises allowing a CRISPR complex to bind to the polynucleotide such that said binding results in increased or decreased expression of said polynucleotide; wherein the CRISPR complex comprises a CRISPR enzyme complexed with a guide sequence hybridized to a target sequence within said polynucleotide, wherein said guide sequence is linked to a tracr mate sequence which in turn hybridizes to a tracr sequence. Similar considerations and conditions apply as above for methods of modifying a target polynucleotide. In fact, these sampling, culturing and re-introduction options apply across the aspects of the present invention.

[00363] As described herein elsewhere, it will also be apparent that in certain embodiments "modified", "altered", "manipulated" or like terms corresponds to alterations of target loci such as the activation or repression of the transcription of a gene, methylation or demethylation of CpG sites and the like, which may not require point mutations, deletions, substitutions, or insertions of

one or more nucleotides at target loci. Furthermore as described herein elsewhere, it will also be apparent that reference to a CRISPR-Cas enzyme as "altering" or "modifying" or "manipulating" one or more target polynucleotide loci encompasses direct alteration or modification, e.g. via the catalytic activity of the enzyme itself but also indirect alteration or modification, e.g. via a catalytic activity associated with the CRISPR-Cas enzyme such as a heterologous functional domain, e.g. a transcriptional activation domain or e.g. via a catalytic activity of one or more heterologous functional domains associated with the guide RNA via a protein-binding aptamer, e.g. a transcriptional activation domain. In addition, as it will be appreciated it is intended that the one or more target polynucleotide loci which are "altered" or "modified" by the action of the CRISPR-Cas enzyme may be comprised in or adjacent the polynucleotide sequence complementary to the guide sequence portion of a guide RNA, e.g. in emboodiments wherein the alteration or modification is effected by the catalytic activity of the CRISPR-Cas enzyme itself, e.g. cleavage of DNA by the nuclease activity of the CRISPR-Cas enzyme. However, also encompassed are embodiments wherein one or more target loci to be "altered" or "modified" are at a location distinct from the sequence complementary to the guide sequence portion of the guide RNA, e.g. in emboodiments wherein the alteration or modification is effected via a heterologous functional domain associated with the CRISPR-Cas enzyme and/or guide RNA, e.g. activation or repression of the transcription of a gene. As such, "alteration" or "modification" (or analogous terms) of a target locus means via direct or indirect action of the CRISPR-Cas enzyme, and furthermore the "target locus" to be altered or modified and the "target sequence" which is complementary to the guide sequence portion of the guide RNA may or may not be the same.

[00364] In one aspect, the invention provides for methods of modifying a target polynucleotide in a eukaryotic cell, which may be *in vivo*, ex vivo or *in vitro*. In some embodiments, the method comprises sampling a cell or population of cells from a human or non-human animal, and modifying the cell or cells. Culturing may occur at any stage ex vivo. The cell or cells may even be re-introduced into the non-human animal or plant. For re-introduced cells it is particularly preferred that the cells are stem cells.

[00365] Indeed, in any aspect of the invention, the CRISPR complex may comprise a CRISPR enzyme complexed with a guide sequence hybridized to a target sequence, wherein said guide sequence may be linked to a tracr mate sequence which in turn may hybridize to a tracr sequence.

[00366] The invention relates to the engineering and optimization of systems, methods and compositions used for the control of gene expression involving sequence targeting, such as genome perturbation or gene-editing, that relate to the CRISPR-Cas system and components thereof. In advantageous embodiments, the Cas enzyme is Cas9. An advantage of the present methods is that the CRISPR system minimizes or avoids off-target binding and its resulting side effects. This is achieved using systems arranged to have a high degree of sequence specificity for the target DNA.

Delivery generally

[00367] Vector delivery, e.g., plasmid, viral delivery: The CRISPR enzyme, for instance a Cas9, and/or any of the present RNAs, for instance a guide RNA, can be delivered using any suitable vector, e.g., plasmid or viral vectors, such as adeno associated virus (AAV), lentivirus, adenovirus or other viral vector types, or combinations thereof. Cas9 and one or more guide RNAs can be packaged into one or more vectors, e.g., plasmid or viral vectors. In some embodiments, the vector, e.g., plasmid or viral vector is delivered to the tissue of interest by, for example, an intramuscular injection, while other times the delivery is via intravenous, transdermal, intranasal, oral, mucosal, or other delivery methods. Such delivery may be either via a single dose, or multiple doses. One skilled in the art understands that the actual dosage to be delivered herein may vary greatly depending upon a variety of factors, such as the vector choice, the target cell, organism, or tissue, the general condition of the subject to be treated, the degree of transformation/modification sought, the administration route, the administration mode, the type of transformation/modification sought, etc.

[00368] Such a dosage may further contain, for example, a carrier (water, saline, ethanol, glycerol, lactose, sucrose, calcium phosphate, gelatin, dextran, agar, pectin, peanut oil, sesame oil, etc.), a diluent, a pharmaceutically-acceptable carrier (e.g., phosphate-buffered saline), a pharmaceutically-acceptable excipient, and/or other compounds known in the art. The dosage may further contain one or more pharmaceutically acceptable salts such as, for example, a mineral acid salt such as a hydrochloride, a hydrobromide, a phosphate, a sulfate, etc.; and the salts of organic acids such as acetates, propionates, malonates, benzoates, etc. Additionally, auxiliary substances, such as wetting or emulsifying agents, pH buffering substances, gels or gelling materials, flavorings, colorants, microspheres, polymers, suspension agents, etc. may also be present herein. In addition, one or more other conventional pharmaceutical ingredients, such as preservatives,

humectants, suspending agents, surfactants, antioxidants, anticaking agents, fillers, chelating agents, coating agents, chemical stabilizers, etc. may also be present, especially if the dosage form is a reconstitutable form. Suitable exemplary ingredients include microcrystalline cellulose, carboxymethylcellulose sodium, polysorbate 80, phenylethyl alcohol, chlorobutanol, potassium sorbate, sorbic acid, sulfur dioxide, propyl gallate, the parabens, ethyl vanillin, glycerin, phenol, parachlorophenol, gelatin, albumin and a combination thereof. A thorough discussion of pharmaceutically acceptable excipients is available in REMINGTON'S PHARMACEUTICAL SCIENCES (Mack Pub. Co., N.J. 1991) which is incorporated by reference herein.

[00369] In an embodiment herein the delivery is via an adenovirus, which may be at a single booster dose containing at least 1 x 10^5 particles (also referred to as particle units, pu) of adenoviral vector. In an embodiment herein, the dose preferably is at least about 1 x 10^6 particles (for example, about 1 x 10^6-1 x 10^{12} particles), more preferably at least about 1 x 10^7 particles, more preferably at least about 1 x 10^8 particles (e.g., about 1 x 10^8-1 x 10^{11} particles or about 1 x 10^8-1 x 10^{12} particles), and most preferably at least about 1 x 10^0 particles (e.g., about 1 x 10^9-1 x 10^{10} particles or about 1 x 10^9-1 x 10^{12} particles), or even at least about 1 x 10^{10} particles (e.g., about 1 x 10^{10}-1 x 10^{12} particles) of the adenoviral vector. Alternatively, the dose comprises no more than about 1 x 10^{14} particles, preferably no more than about 1 x 10^{13} particles, even more preferably no more than about 1 x 10^{12} particles, even more preferably no more than about 1 x 10^{11} particles, and most preferably no more than about 1 x 10^{10} particles (e.g., no more than about 1 x 10^9 articles). Thus, the dose may contain a single dose of adenoviral vector with, for example, about 1 x 10^6 particle units (pu), about 2 x 10^6 pu, about 4 x 10^6 pu, about 1 x 10^7 pu, about 2 x 10^7 pu, about 4 x 10^7 pu, about 1 x 10^8 pu, about 2 x 10^8 pu, about 4 x 10^8 pu, about 1 x 10^9 pu, about 2 x 10^9 pu, about 4 x 10^9 pu, about 1 x 10^{10} pu, about 2 x 10^{10} pu, about 4 x 10^{10} pu, about 1 x 10^{11} pu, about 2 x 10^{11} pu, about 4 x 10^{11} pu, about 1 x 10^{12} pu, about 2 x 10^{12} pu, or about 4 x 10^{12} pu of adenoviral vector. See, for example, the adenoviral vectors in U.S. Patent No. 8,454,972 B2 to Nabel, et. al., granted on June 4, 2013; incorporated by reference herein, and the dosages at col 29, lines 36-58 thereof. In an embodiment herein, the adenovirus is delivered via multiple doses.

[00370] In an embodiment herein, the delivery is via an AAV. A therapeutically effective dosage for *in vivo* delivery of the AAV to a human is believed to be in the range of from about 20 to about 50 ml of saline solution containing from about 1 x 10^{10} to about 1 x 10^{10} functional

AAV/ml solution. The dosage may be adjusted to balance the therapeutic benefit against any side effects. In an embodiment herein, the AAV dose is generally in the range of concentrations of from about 1 x 10^5 to 1 x 10^{50} genomes AAV, from about 1 x 10^8 to 1 x 10^{20} genomes AAV, from about 1 x 10^{10} to about 1 x 10^{16} genomes, or about 1 x 10^{11} to about 1 x 10^{16} genomes AAV. A human dosage may be about 1 x 10^{13} genomes AAV. Such concentrations may be delivered in from about 0.001 ml to about 100 ml, about 0.05 to about 50 ml, or about 10 to about 25 ml of a carrier solution. Other effective dosages can be readily established by one of ordinary skill in the art through routine trials establishing dose response curves. See, for example, U.S. Patent No. 8,404,658 B2 to Hajjar, et al., granted on March 26, 2013, at col. 27, lines 45-60.

[00371] In an embodiment herein the delivery is via a plasmid. In such plasmid compositions, the dosage should be a sufficient amount of plasmid to elicit a response. For instance, suitable quantities of plasmid DNA in plasmid compositions can be from about 0.1 to about 2 mg, or from about 1 μg to about 10 μg per 70 kg individual. Plasmids of the invention will generally comprise (i) a promoter; (ii) a sequence encoding a CRISPR enzyme, operably linked to said promoter; (iii) a selectable marker; (iv) an origin of replication; and (v) a transcription terminator downstream of and operably linked to (ii). The plasmid can also encode the RNA components of a CRISPR complex, but one or more of these may instead be encoded on a different vector.

[00372] The doses herein are based on an average 70 kg individual. The frequency of administration is within the ambit of the medical or veterinary practitioner (e.g., physician, veterinarian), or scientist skilled in the art. It is also noted that mice used in experiments are typically about 20g and from mice experiments one can scale up to a 70 kg individual.

[00373] In some embodiments the RNA molecules of the invention are delivered in liposome or lipofectin formulations and the like and can be prepared by methods well known to those skilled in the art. Such methods are described, for example, in U.S. Pat. Nos. 5,593,972, 5,589,466, and 5,580,859, which are herein incorporated by reference. Delivery systems aimed specifically at the enhanced and improved delivery of siRNA into mammalian cells have been developed, (see, for example, Shen et al FEBS Let. 2003, 539:111-114; Xia et al., Nat. Biotech. 2002, 20:1006-1010; Reich et al., Mol. Vision. 2003, 9: 210-216; Sorensen et al., J. Mol. Biol. 2003, 327: 761-766; Lewis et al., Nat. Gen. 2002, 32: 107-108 and Simeoni et al., NAR 2003, 31, 11: 2717-2724) and may be applied to the present invention. siRNA has recently been successfully used for inhibition

of gene expression in primates (see for example. Tolentino et al., Retina 24(4):660 which may also be applied to the present invention.

[00374] Indeed, RNA delivery is a useful method of *in vivo* delivery. It is possible to deliver Cas9 and gRNA (and, for instance, HR repair template) into cells using liposomes or particle or nanoparticles. Thus delivery of the CRISPR enzyme, such as a Cas9 and/or delivery of the RNAs of the invention may be in RNA form and via microvesicles, liposomes or particle or nanoparticles. For example, Cas9 mRNA and gRNA can be packaged into liposomal particles for delivery *in vivo*. Liposomal transfection reagents such as lipofectamine from Life Technologies and other reagents on the market can effectively deliver RNA molecules into the liver.

[00375] Means of delivery of RNA also preferred include delivery of RNA via particles or nanoparticles (Cho, S., Goldberg, M., Son, S., Xu, Q., Yang, F., Mei, Y., Bogatyrev, S., Langer, R. and Anderson, D., Lipid-like nanoparticles for small interfering RNA delivery to endothelial cells, Advanced Functional Materials, 19: 3112-3118, 2010) or exosomes (Schroeder, A., Levins, C., Cortez, C., Langer, R., and Anderson, D., Lipid-based nanotherapeutics for siRNA delivery, Journal of Internal Medicine, 267: 9-21, 2010, PMID: 20059641). Indeed, exosomes have been shown to be particularly useful in delivery siRNA, a system with some parallels to the CRISPR system. For instance, El-Andaloussi S, et al. ("Exosome-mediated delivery of siRNA *in vitro* and *in vivo*." Nat Protoc. 2012 Dec;7(12):2112-26. doi: 10.1038/nprot.2012.131. Epub 2012 Nov 15.) describe how exosomes are promising tools for drug delivery across different biological barriers and can be harnessed for delivery of siRNA *in vitro* and *in vivo*. Their approach is to generate targeted exosomes through transfection of an expression vector, comprising an exosomal protein fused with a peptide ligand. The exosomes are then purify and characterized from transfected cell supernatant, then RNA is loaded into the exosomes. Delivery or administration according to the invention can be performed with exosomes, in particular but not limited to the brain. Vitamin E (α-tocopherol) may be conjugated with CRISPR Cas and delivered to the brain along with high density lipoprotein (HDL), for example in a similar manner as was done by Uno et al. (HUMAN GENE THERAPY 22:711–719 (June 2011)) for delivering short-interfering RNA (siRNA) to the brain. Mice were infused via Osmotic minipumps (model 1007D; Alzet, Cupertino, CA) filled with phosphate-buffered saline (PBS) or free TocsiBACE or Toc-siBACE/HDL and connected with Brain Infusion Kit 3 (Alzet). A brain-infusion cannula was placed about 0.5mm posterior to the bregma at midline for infusion into the dorsal third ventricle. Uno et al. found that as little as 3

nmol of Toc-siRNA with HDL could induce a target reduction in comparable degree by the same ICV infusion method. A similar dosage of CRISPR Cas conjugated to α-tocopherol and co-administered with HDL targeted to the brain may be contemplated for humans in the present invention, for example, about 3 nmol to about 3 μmol of CRISPR Cas targeted to the brain may be contemplated. Zou et al. ((HUMAN GENE THERAPY 22:465-475 (April 2011)) describes a method of lentiviral-mediated delivery of short-hairpin RNAs targeting PKCγ for *in vivo* gene silencing in the spinal cord of rats. Zou et al. administered about 10 μl of a recombinant lentivirus having a titer of 1 x 10^9 transducing units (TU)/ml by an intrathecal catheter. A similar dosage of CRISPR Cas expressed in a lentiviral vector targeted to the brain may be contemplated for humans in the present invention, for example, about 10-50 ml of CRISPR Cas targeted to the brain in a lentivirus having a titer of 1 x 10^9 transducing units (TU)/ml may be contemplated.

[00376] In terms of local delivery to the brain, this can be achieved in various ways. For instance, material can be delivered intrastriatally e.g. by injection. Injection can be performed stereotactically via a craniotomy.

[00377] Enhancing NHEJ or HR efficiency is also helpful for delivery. It is preferred that NHEJ efficiency is enhanced by co-expressing end-processing enzymes such as Trex2 (Dumitrache et al. Genetics. 2011 August; 188(4): 787–797). It is preferred that HR efficiency is increased by transiently inhibiting NHEJ machineries such as Ku70 and Ku86. HR efficiency can also be increased by co-expressing prokaryotic or eukaryotic homologous recombination enzymes such as RecBCD, RecA.

Packaging and Promoters generally

[00378] Ways to package Cas9 coding nucleic acid molecules, e.g., DNA, into vectors, e.g., viral vectors, to mediate genome modification *in vivo* include:

- To achieve NHEJ-mediated gene knockout:
- Single virus vector:
- Vector containing two or more expression cassettes:
- Promoter-Cas9 coding nucleic acid molecule -terminator
- Promoter-gRNA1-terminator
- Promoter-gRNA2-terminator
- Promoter-gRNA(N)-terminator (up to size limit of vector)
- Double virus vector:

- Vector 1 containing one expression cassette for driving the expression of Cas9
- Promoter-Cas9 coding nucleic acid molecule-terminator
- Vector 2 containing one more expression cassettes for driving the expression of one or more guideRNAs
- Promoter-gRNA1-terminator
- Promoter-gRNA(N)-terminator (up to size limit of vector)
- To mediate homology-directed repair.
- In addition to the single and double virus vector approaches described above, an additional vector may be used to deliver a homology-direct repair template.

[00379] The promoter used to drive Cas9 coding nucleic acid molecule expression can include:

— AAV ITR can serve as a promoter: this is advantageous for eliminating the need for an additional promoter element (which can take up space in the vector). The additional space freed up can be used to drive the expression of additional elements (gRNA, etc.). Also, ITR activity is relatively weaker, so can be used to reduce potential toxicity due to over expression of Cas9.

— For ubiquitous expression, any of the following promoters may be used: CMV, CAG, CBh, PGK, SV40, Ferritin heavy or light chains, and so forth.

[00380] For brain or other CNS expression, can use promoters: Synapsin1 for all neurons, CaMKIIalpha for excitatory neurons, GAD67 or GAD65 or VGAT for GABAergic neurons, etc. For liver expression, one can use the Albumin promoter. For lung expression, one can use the use SP-B. For endothelial cells, one can use the use ICAM. For hematopoietic cells one can use the use IFNbeta or CD45. For Osteoblasts can one can use the OG-2.

[00381] The promoter used to drive guide RNA can include:

— Pol III promoters such as U6 or H1

— Use of Pol II promoter and intronic cassettes to express gRNA

Adeno associated virus (AAV)

[00382] Cas9 and one or more guide RNA can be delivered using adeno associated virus (AAV), lentivirus, adenovirus or other plasmid or viral vector types, in particular, using formulations and doses from, for example, US Patents Nos. 8,454,972 (formulations, doses for adenovirus), 8,404,658 (formulations, doses for AAV) and 5,846,946 (formulations, doses for DNA plasmids) and from clinical trials and publications regarding the clinical trials involving lentivirus, AAV and adenovirus. For examples, for AAV, the route of administration, formulation

and dose can be as in US Patent No. 8,454,972 and as in clinical trials involving AAV. For Adenovirus, the route of administration, formulation and dose can be as in US Patent No. 8,404,658 and as in clinical trials involving adenovirus. For plasmid delivery, the route of administration, formulation and dose can be as in US Patent No 5,846,946 and as in clinical studies involving plasmids. Doses may be based on or extrapolated to an average 70 kg individual (e.g. a male adult human), and can be adjusted for patients, subjects, mammals of different weight and species. Frequency of administration is within the ambit of the medical or veterinary practitioner (e.g., physician, veterinarian), depending on usual factors including the age, sex, general health, other conditions of the patient or subject and the particular condition or symptoms being addressed. The viral vectors can be injected into the tissue of interest. For cell-type specific genome modification, the expression of Cas9 can be driven by a cell-type specific promoter. For example, liver-specific expression might use the Albumin promoter and neuron-specific expression (e.g. for targeting CNS disorders) might use the Synapsin I promoter.

[00383] In terms of *in vivo* delivery, AAV is advantageous over other viral vectors for a couple of reasons:

[00384] Low toxicity (this may be due to the purification method not requiring ultra centrifugation of cell particles that can activate the immune response)

[00385] Low probability of causing insertional mutagenesis because it doesn't integrate into the host genome.

[00386] AAV has a packaging limit of 4.5 or 4.75 Kb. This means that Cas9 as well as a promoter and transcription terminator have to be all fit into the same viral vector. Constructs larger than 4.5 or 4.75 Kb will lead to significantly reduced virus production. SpCas9 is quite large, the gene itself is over 4.1 Kb, which makes it difficult for packing into AAV. Therefore embodiments of the invention include utilizing homologs of Cas9 that are shorter. For example:

Species	Cas9 Size
Corynebacter diphtheriae	3252
Eubacterium ventriosum	3321
Streptococcus pasteurianus	3390
Lactobacillus farciminis	3378
Sphaerochaeta globus	3537
Azospirillum B510	3504
Gluconacetobacter diazotrophicus	3150
Neisseria cinerea	3246
Roseburia intestinalis	3420

Parvibaculum lavamentivorans	3111
Staphylococcus aureus	3159
Nitratifractor salsuginis DSM 16511	3396
Campylobacter lari CF89-12	3009
Streptococcus thermophilus LMD-9	3396

[00387] These species are therefore, in general, preferred Cas9 species.

[00388] As to AAV, the AAV can be AAV1, AAV2, AAV5 or any combination thereof. One can select the AAV of the AAV with regard to the cells to be targeted; e.g., one can select AAV serotypes 1, 2, 5 or a hybrid capsid AAV1, AAV2, AAV5 or any combination thereof for targeting brain or neuronal cells; and one can select AAV4 for targeting cardiac tissue. AAV8 is useful for delivery to the liver. The herein promoters and vectors are preferred individually. A tabulation of certain AAV serotypes as to these cells (see Grimm, D. et al, J. Virol. 82: 5887-5911 (2008)) is as follows:

Table 6. Exemplary AAV Serotypes

Cell Line	AAV-1	AAV-2	AAV-3	AAV-4	AAV-5	AAV-6	AAV-8	AAV-9
Huh-7	13	100	2.5	0.0	0.1	10	0.7	0.0
HEK293	25	100	2.5	0.1	0.1	5	0.7	0.1
HeLa	3	100	2.0	0.1	6.7	1	0.2	0.1
HepG2	3	100	16.7	0.3	1.7	5	0.3	ND
Hep1A	20	100	0.2	1.0	0.1	1	0.2	0.0
911	17	100	11	0.2	0.1	17	0.1	ND
CHO	100	100	14	1.4	333	50	10	1.0
COS	33	100	33	3.3	5.0	14	2.0	0.5
MeWo	10	100	20	0.3	6.7	10	1.0	0.2
NIH3T3	10	100	2.9	2.9	0.3	10	0.3	ND
A549	14	100	20	ND	0.5	10	0.5	0.1
HT1180	20	100	10	0.1	0.3	33	0.5	0.1
Monocytes	1111	100	ND	ND	125	1429	ND	ND
Immature DC	2500	100	ND	ND	222	2857	ND	ND
Mature DC	2222	100	ND	ND	333	3333	ND	ND

Lentivirus

[00389] Lentiviruses are complex retroviruses that have the ability to infect and express their genes in both mitotic and post-mitotic cells. The most commonly known lentivirus is the human

immunodeficiency virus (HIV), which uses the envelope glycoproteins of other viruses to target a broad range of cell types.

[00390] Lentiviruses may be prepared as follows. After cloning pCasES10 (which contains a lentiviral transfer plasmid backbone), HEK293FT at low passage (p=5) were seeded in a T-75 flask to 50% confluence the day before transfection in DMEM with 10% fetal bovine serum and without antibiotics. After 20 hours, media was changed to OptiMEM (serum-free) media and transfection was done 4 hours later. Cells were transfected with 10 μg of lentiviral transfer plasmid (pCasES10) and the following packaging plasmids: 5 μg of pMD2.G (VSV-g pseudotype), and 7.5ug of psPAX2 (gag/pol/rev/tat). Transfection was done in 4mL OptiMEM with a cationic lipid delivery agent (50uL Lipofectamine 2000 and 100ul Plus reagent). After 6 hours, the media was changed to antibiotic-free DMEM with 10% fetal bovine serum. These methods use serum during cell culture, but serum-free methods are preferred.

[00391] Lentivirus may be purified as follows. Viral supernatants were harvested after 48 hours. Supernatants were first cleared of debris and filtered through a 0.45um low protein binding (PVDF) filter. They were then spun in a ultracentrifuge for 2 hours at 24,000 rpm. Viral pellets were resuspended in 50ul of DMEM overnight at 4C. They were then aliquotted and immediately frozen at -80°C.

[00392] In another embodiment, minimal non-primate lentiviral vectors based on the equine infectious anemia virus (EIAV) are also contemplated, especially for ocular gene therapy (see, e.g., Balagaan, J Gene Med 2006; 8: 275 – 285). In another embodiment, RetinoStat®, an equine infectious anemia virus-based lentiviral gene therapy vector that expresses angiostatic proteins endostatin and angiostatin that is delivered via a subretinal injection for the treatment of the web form of age-related macular degeneration is also contemplated (see, e.g., Binley et al., HUMAN GENE THERAPY 23:980–991 (September 2012)) and this vector may be modified for the CRISPR-Cas system of the present invention.

[00393] In another embodiment, self-inactivating lentiviral vectors with an siRNA targeting a common exon shared by HIV tat/rev, a nucleolar-localizing TAR decoy, and an anti–CCR5-specific hammerhead ribozyme (see, e.g., DiGiusto et al. (2010) Sci Transl Med 2:36ra43) may be used/and or adapted to the CRISPR-Cas system of the present invention. A minimum of 2.5 × 106 CD34+ cells per kilogram patient weight may be collected and prestimulated for 16 to 20 hours in X-VIVO 15 medium (Lonza) containing 2 μmol/L-glutamine, stem cell factor (100 ng/ml), Flt-3

ligand (Flt-3L) (100 ng/ml), and thrombopoietin (10 ng/ml) (CellGenix) at a density of 2 × 106 cells/ml. Prestimulated cells may be transduced with lentiviral at a multiplicity of infection of 5 for 16 to 24 hours in 75-cm2 tissue culture flasks coated with fibronectin (25 mg/cm2) (RetroNectin,Takara Bio Inc.).

[00394] Lentiviral vectors have been disclosed as in the treatment for Parkinson's Disease, see, e.g., US Patent Publication No. 20120295960 and US Patent Nos. 7303910 and 7351585. Lentiviral vectors have also been disclosed for the treatment of ocular diseases, see e.g., US Patent Publication Nos. 20060281180, 20090007284, US20110117189; US20090017543; US20070054961, US20100317109. Lentiviral vectors have also been disclosed for delivery to the brain, see, e.g., US Patent Publication Nos. US20110293571; US20110293571, US20040013648, US20070025970, US20090111106 and US Patent No. US7259015.

RNA delivery

[00395] RNA delivery: The CRISPR enzyme, for instance a Cas9, and/or any of the present RNAs, for instance a guide RNA, can also be delivered in the form of RNA. Cas9 mRNA can be generated using *in vitro* transcription. For example, Cas9 mRNA can be synthesized using a PCR cassette containing the following elements: T7_promoter-kozak sequence (GCCACC)-Cas9-3' UTR from beta globin-polyA tail (a string of 120 or more adenines). The cassette can be used for transcription by T7 polymerase. Guide RNAs can also be transcribed using *in vitro* transcription from a cassette containing T7_promoter-GG-guide RNA sequence.

[00396] To enhance expression and reduce possible toxicity, the CRISPR enzyme-coding sequence and/or the guide RNA can be modified to include one or more modified nucleoside e.g. using pseudo-U or 5-Methyl-C.

[00397] mRNA delivery methods are especially promising for liver delivery currently.

[00398] Much clinical work on RNA delivery has focused on RNAi or antisense, but these systems can be adapted for delivery of RNA for implementing the present invention. References below to RNAi etc. should be read accordingly.

Nanoparticles

[00399] Nanoparticles are a type of particle.

[00400] CRISPR enzyme mRNA and guide RNA may be delivered simultaneously using nanoparticles or lipid envelopes.

[00401] For example, Su X, Fricke J, Kavanagh DG, Irvine DJ ("*In vitro* and *in vivo* mRNA delivery using lipid-enveloped pH-responsive polymer nanoparticles" Mol Pharm. 2011 Jun 6;8(3):774-87. doi: 10.1021/mp100390w. Epub 2011 Apr 1) describes biodegradable core-shell structured nanoparticles with a poly(β-amino ester) (PBAE) core enveloped by a phospholipid bilayer shell. These were developed for *in vivo* mRNA delivery. The pH-responsive PBAE component was chosen to promote endosome disruption, while the lipid surface layer was selected to minimize toxicity of the polycation core. Such are, therefore, preferred for delivering RNA of the present invention.

[00402] In one embodiment, nanoparticles based on self assembling bioadhesive polymers are contemplated, which may be applied to oral delivery of peptides, intravenous delivery of peptides and nasal delivery of peptides, all to the brain. Other embodiments, such as oral absorption and ocular delivery of hydrophobic drugs are also contemplated. The molecular envelope technology involves an engineered polymer envelope which is protected and delivered to the site of the disease (see, e.g., Mazza, M. et al. ACSNano, 2013. 7(2): 1016-1026; Siew, A., et al. Mol Pharm, 2012. 9(1):14-28; Lalatsa, A., et al. J Contr Rel, 2012. 161(2):523-36; Lalatsa, A., et al., Mol Pharm, 2012. 9(6):1665-80; Lalatsa, A., et al. Mol Pharm, 2012. 9(6):1764-74; Garrett, N.L., et al. J Biophotonics, 2012. 5(5-6):458-68; Garrett, N.L., et al. J Raman Spect, 2012. 43(5):681-688; Ahmad, S., et al. J Royal Soc Interface 2010. 7:S423-33; Uchegbu, I.F. Expert Opin Drug Deliv, 2006. 3(5):629-40; Qu, X.,et al. Biomacromolecules, 2006. 7(12):3452-9 and Uchegbu, I.F., et al. Int J Pharm, 2001. 224:185-199). Doses of about 5 mg/kg are contemplated, with single or multiple doses, depending on the target tissue.

[00403] In one embodiment, nanoparticles that can deliver RNA to a cancer cell to stop tumor growth developed by Dan Anderson's lab at MIT may be used/and or adapted to the CRISPR Cas system of the present invention. In particular, the Anderson lab developed fully automated, combinatorial systems for the synthesis, purification, characterization, and formulation of new biomaterials and nanoformulations. See, e.g., Alabi et al., Proc Natl Acad Sci U S A. 2013 Aug 6;110(32):12881-6; Zhang et al., Adv Mater. 2013 Sep 6;25(33):4641-5; Jiang et al., Nano Lett. 2013 Mar 13;13(3):1059-64; Karagiannis et al., ACS Nano. 2012 Oct 23;6(10):8484-7; Whitehead et al., ACS Nano. 2012 Aug 28;6(8):6922-9 and Lee et al., Nat Nanotechnol. 2012 Jun 3;7(6):389-93.

[00404] US patent application 20110293703 relates to lipidoid compounds are also particularly useful in the administration of polynucleotides, which may be applied to deliver the CRISPR Cas system of the present invention. In one aspect, the aminoalcohol lipidoid compounds are combined with an agent to be delivered to a cell or a subject to form microparticles, nanoparticles, liposomes, or micelles. The agent to be delivered by the particles, liposomes, or micelles may be in the form of a gas, liquid, or solid, and the agent may be a polynucleotide, protein, peptide, or small molecule. The minoalcohol lipidoid compounds may be combined with other aminoalcohol lipidoid compounds, polymers (synthetic or natural), surfactants, cholesterol, carbohydrates, proteins, lipids, etc. to form the particles. These particles may then optionally be combined with a pharmaceutical excipient to form a pharmaceutical composition.

[00405] US Patent Publication No. 20110293703 also provides methods of preparing the aminoalcohol lipidoid compounds. One or more equivalents of an amine are allowed to react with one or more equivalents of an epoxide-terminated compound under suitable conditions to form an aminoalcohol lipidoid compound of the present invention. In certain embodiments, all the amino groups of the amine are fully reacted with the epoxide-terminated compound to form tertiary amines. In other embodiments, all the amino groups of the amine are not fully reacted with the epoxide-terminated compound to form tertiary amines thereby resulting in primary or secondary amines in the aminoalcohol lipidoid compound. These primary or secondary amines are left as is or may be reacted with another electrophile such as a different epoxide-terminated compound. As will be appreciated by one skilled in the art, reacting an amine with less than excess of epoxide-terminated compound will result in a plurality of different aminoalcohol lipidoid compounds with various numbers of tails. Certain amines may be fully functionalized with two epoxide-derived compound tails while other molecules will not be completely functionalized with epoxide-derived compound tails. For example, a diamine or polyamine may include one, two, three, or four epoxide-derived compound tails off the various amino moieties of the molecule resulting in primary, secondary, and tertiary amines. In certain embodiments, all the amino groups are not fully functionalized. In certain embodiments, two of the same types of epoxide-terminated compounds are used. In other embodiments, two or more different epoxide-terminated compounds are used. The synthesis of the aminoalcohol lipidoid compounds is performed with or without solvent, and the synthesis may be performed at higher temperatures ranging from 30-100 °C., preferably at approximately 50-90 °C. The prepared aminoalcohol lipidoid compounds may be

optionally purified. For example, the mixture of aminoalcohol lipidoid compounds may be purified to yield an aminoalcohol lipidoid compound with a particular number of epoxide-derived compound tails. Or the mixture may be purified to yield a particular stereo- or regioisomer. The aminoalcohol lipidoid compounds may also be alkylated using an alkyl halide (e.g., methyl iodide) or other alkylating agent, and/or they may be acylated.

[00406] US Patent Publication No. 20110293703 also provides libraries of aminoalcohol lipidoid compounds prepared by the inventive methods. These aminoalcohol lipidoid compounds may be prepared and/or screened using high-throughput techniques involving liquid handlers, robots, microtiter plates, computers, etc. In certain embodiments, the aminoalcohol lipidoid compounds are screened for their ability to transfect polynucleotides or other agents (e.g., proteins, peptides, small molecules) into the cell.

[00407] US Patent Publication No. 20130302401 relates to a class of poly(beta-amino alcohols) (PBAAs) has been prepared using combinatorial polymerization. The inventive PBAAs may be used in biotechnology and biomedical applications as coatings (such as coatings of films or multilayer films for medical devices or implants), additives, materials, excipients, non-biofouling agents, micropatterning agents, and cellular encapsulation agents. When used as surface coatings, these PBAAs elicited different levels of inflammation, both *in vitro* and *in vivo*, depending on their chemical structures. The large chemical diversity of this class of materials allowed us to identify polymer coatings that inhibit macrophage activation *in vitro*. Furthermore, these coatings reduce the recruitment of inflammatory cells, and reduce fibrosis, following the subcutaneous implantation of carboxylated polystyrene microparticles. These polymers may be used to form polyelectrolyte complex capsules for cell encapsulation. The invention may also have many other biological applications such as antimicrobial coatings, DNA or siRNA delivery, and stem cell tissue engineering. The teachings of US Patent Publication No. 20130302401 may be applied to the CRISPR Cas system of the present invention.

[00408] In another embodiment, lipid nanoparticles (LNPs) are contemplated. An antitransthyretin small interfering RNA has been encapsulated in lipid nanoparticles and delivered to humans (see, e.g., Coelho et al., N Engl J Med 2013;369:819-29), and such a ssystem may be adapted and applied to the CRISPR Cas system of the present invention. Doses of about 0.01 to about 1 mg per kg of body weight administered intravenously are contemplated. Medications to reduce the risk of infusion-related reactions are contemplated, such as dexamethasone,

acetampinophen, diphenhydramine or cetirizine, and ranitidine are contemplated. Multiple doses of about 0.3 mg per kilogram every 4 weeks for five doses are also contemplated.

[00409] LNPs have been shown to be highly effective in delivering siRNAs to the liver (see, e.g., Tabernero et al., Cancer Discovery, April 2013, Vol. 3, No. 4, pages 363-470) and are therefore contemplated for delivering RNA encoding CRISPR Cas to the liver. A dosage of about four doses of 6 mg/kg of the LNP every two weeks may be contemplated. Tabernero et al. demonstrated that tumor regression was observed after the first 2 cycles of LNPs dosed at 0.7 mg/kg, and by the end of 6 cycles the patient had achieved a partial response with complete regression of the lymph node metastasis and substantial shrinkage of the liver tumors. A complete response was obtained after 40 doses in this patient, who has remained in remission and completed treatment after receiving doses over 26 months. Two patients with RCC and extrahepatic sites of disease including kidney, lung, and lymph nodes that were progressing following prior therapy with VEGF pathway inhibitors had stable disease at all sites for approximately 8 to 12 months, and a patient with PNET and liver metastases continued on the extension study for 18 months (36 doses) with stable disease.

[00410] However, the charge of the LNP must be taken into consideration. As cationic lipids combined with negatively charged lipids to induce nonbilayer structures that facilitate intracellular delivery. Because charged LNPs are rapidly cleared from circulation following intravenous injection, ionizable cationic lipids with pKa values below 7 were developed (see, e.g., Rosin et al, Molecular Therapy, vol. 19, no. 12, pages 1286-2200, Dec. 2011). Negatively charged polymers such as RNA may be loaded into LNPs at low pH values (e.g., pH 4) where the ionizable lipids display a positive charge. However, at physiological pH values, the LNPs exhibit a low surface charge compatible with longer circulation times. Four species of ionizable cationic lipids have been focused upon, namely 1,2-dilineoyl-3-dimethylammonium-propane (DLinDAP), 1,2-dilinoleyloxy-3-N,N-dimethylaminopropane (DLinDMA), 1,2-dilinoleyloxy-keto-N,N-dimethyl-3-aminopropane (DLinKDMA), and 1,2-dilinoleyl-4-(2-dimethylaminoethyl)-[1,3]-dioxolane (DLinKC2-DMA). It has been shown that LNP siRNA systems containing these lipids exhibit remarkably different gene silencing properties in hepatocytes *in vivo*, with potencies varying according to the series DLinKC2-DMA>DLinKDMA>DLinDMA>>DLinDAP employing a Factor VII gene silencing model (see, e.g., Rosin et al, Molecular Therapy, vol. 19, no. 12, pages

1286-2200, Dec. 2011). A dosage of 1 μg/ml of LNP or CRISPR-Cas RNA in or associated with the LNP may be contemplated, especially for a formulation containing DLinKC2-DMA.

[00411] Preparation of LNPs and CRISPR Cas encapsulation may be used/and or adapted from Rosin et al, Molecular Therapy, vol. 19, no. 12, pages 1286-2200, Dec. 2011). The cationic lipids 1,2-dilineoyl-3-dimethylammonium-propane (DLinDAP), 1,2-dilinoleyloxy-3-N,N-dimethylaminopropane (DLinDMA), 1,2-dilinoleyloxyketo-N,N-dimethyl-3-aminopropane (DLinK-DMA), 1,2-dilinoleyl-4-(2-dimethylaminoethyl)-[1,3]-dioxolane (DLinKC2-DMA), (3-o-[2″-(methoxypolyethyleneglycol 2000) succinoyl]-1,2-dimyristoyl-sn-glycol (PEG-S-DMG), and R-3-[(ω-methoxy-poly(ethylene glycol)2000) carbamoyl]-1,2-dimyristyloxlpropyl-3-amine (PEG-C-DOMG) may be provided by Tekmira Pharmaceuticals (Vancouver, Canada) or synthesized. Cholesterol may be purchased from Sigma (St Louis, MO). The specific CRISPR Cas RNA may be encapsulated in LNPs containing DLinDAP, DLinDMA, DLinK-DMA, and DLinKC2-DMA (cationic lipid:DSPC:CHOL: PEGS-DMG or PEG-C-DOMG at 40:10:40:10 molar ratios). When required, 0.2% SP-DiOC18 (Invitrogen, Burlington, Canada) may be incorporated to assess cellular uptake, intracellular delivery, and biodistribution. Encapsulation may be performed by dissolving lipid mixtures comprised of cationic lipid:DSPC:cholesterol:PEG-c-DOMG (40:10:40:10 molar ratio) in ethanol to a final lipid concentration of 10 mmol/l. This ethanol solution of lipid may be added drop-wise to 50 mmol/l citrate, pH 4.0 to form multilamellar vesicles to produce a final concentration of 30% ethanol vol/vol. Large unilamellar vesicles may be formed following extrusion of multilamellar vesicles through two stacked 80 nm Nuclepore polycarbonate filters using the Extruder (Northern Lipids, Vancouver, Canada). Encapsulation may be achieved by adding RNA dissolved at 2 mg/ml in 50 mmol/l citrate, pH 4.0 containing 30% ethanol vol/vol drop-wise to extruded preformed large unilamellar vesicles and incubation at 31 °C for 30 minutes with constant mixing to a final RNA/lipid weight ratio of 0.06/1 wt/wt. Removal of ethanol and neutralization of formulation buffer were performed by dialysis against phosphate-buffered saline (PBS), pH 7.4 for 16 hours using Spectra/Por 2 regenerated cellulose dialysis membranes. Nanoparticle size distribution may be determined by dynamic light scattering using a NICOMP 370 particle sizer, the vesicle/intensity modes, and Gaussian fitting (Nicomp Particle Sizing, Santa Barbara, CA). The particle size for all three LNP systems may be ~70 nm in diameter. RNA encapsulation efficiency may be determined by removal of free RNA using VivaPureD MiniH columns (Sartorius Stedim Biotech) from samples collected before and after

dialysis. The encapsulated RNA may be extracted from the eluted nanoparticles and quantified at 260 nm. RNA to lipid ratio was determined by measurement of cholesterol content in vesicles using the Cholesterol E enzymatic assay from Wako Chemicals USA (Richmond, VA). In conjunction with the herein discussion of LNPs and PEG lipids, PEGylated liposomes or LNPs are likewise suitable for delivery of a CRISPR-Cas system or components thereof.

[00412] Preparation of large LNPs may be used/and or adapted from Rosin et al, Molecular Therapy, vol. 19, no. 12, pages 1286-2200, Dec. 2011. A lipid premix solution (20.4 mg/ml total lipid concentration) may be prepared in ethanol containing DLinKC2-DMA, DSPC, and cholesterol at 50:10:38.5 molar ratios. Sodium acetate may be added to the lipid premix at a molar ratio of 0.75:1 (sodium acetate:DLinKC2-DMA). The lipids may be subsequently hydrated by combining the mixture with 1.85 volumes of citrate buffer (10 mmol/l, pH 3.0) with vigorous stirring, resulting in spontaneous liposome formation in aqueous buffer containing 35% ethanol. The liposome solution may be incubated at 37 °C to allow for time-dependent increase in particle size. Aliquots may be removed at various times during incubation to investigate changes in liposome size by dynamic light scattering (Zetasizer Nano ZS, Malvern Instruments, Worcestershire, UK). Once the desired particle size is achieved, an aqueous PEG lipid solution (stock = 10 mg/ml PEG-DMG in 35% (vol/vol) ethanol) may be added to the liposome mixture to yield a final PEG molar concentration of 3.5% of total lipid. Upon addition of PEG-lipids, the liposomes should their size, effectively quenching further growth. RNA may then be added to the empty liposomes at an RNA to total lipid ratio of approximately 1:10 (wt:wt), followed by incubation for 30 minutes at 37 °C to form loaded LNPs. The mixture may be subsequently dialyzed overnight in PBS and filtered with a 0.45-μm syringe filter.

[00413] Spherical Nucleic Acid (SNA™) constructs and other nanoparticles (particularly gold nanoparticles) are also contemplated as a means to delivery CRISPR-Cas system to intended targets. Significant data show that AuraSense Therapeutics' Spherical Nucleic Acid (SNA™) constructs, based upon nucleic acid-functionalized gold nanoparticles, are useful.

[00414] Literature that may be employed in conjunction with herein teachings include: Cutler et al., J. Am. Chem. Soc. 2011 133:9254-9257, Hao et al., Small. 2011 7:3158-3162, Zhang et al., ACS Nano. 2011 5:6962-6970, Cutler et al., J. Am. Chem. Soc. 2012 134:1376-1391, Young et al., Nano Lett. 2012 12:3867-71, Zheng et al., Proc. Natl. Acad. Sci. USA. 2012 109:11975-80, Mirkin, Nanomedicine 2012 7:635-638 Zhang et al., J. Am. Chem. Soc. 2012 134:16488-1691,

Weintraub, Nature 2013 495:S14-S16, Choi et al., Proc. Natl. Acad. Sci. USA. 2013 110(19):7625-7630, Jensen et al., Sci. Transl. Med. 5, 209ra152 (2013) and Mirkin, et al., Small, 10:186-192.

[00415] Self-assembling nanoparticles with RNA may be constructed with polyethyleneimine (PEI) that is PEGylated with an Arg-Gly-Asp (RGD) peptide ligand attached at the distal end of the polyethylene glycol (PEG). This system has been used, for example, as a means to target tumor neovasculature expressing integrins and deliver siRNA inhibiting vascular endothelial growth factor receptor-2 (VEGF R2) expression and thereby achieve tumor angiogenesis (see, e.g., Schiffelers et al., Nucleic Acids Research, 2004, Vol. 32, No. 19). Nanoplexes may be prepared by mixing equal volumes of aqueous solutions of cationic polymer and nucleic acid to give a net molar excess of ionizable nitrogen (polymer) to phosphate (nucleic acid) over the range of 2 to 6. The electrostatic interactions between cationic polymers and nucleic acid resulted in the formation of polyplexes with average particle size distribution of about 100 nm, hence referred to here as nanoplexes. A dosage of about 100 to 200 mg of CRISPR Cas is envisioned for delivery in the self-assembling nanoparticles of Schiffelers et al.

[00416] The nanoplexes of Bartlett et al. (PNAS, September 25, 2007,vol. 104, no. 39) may also be applied to the present invention. The nanoplexes of Bartlett et al. are prepared by mixing equal volumes of aqueous solutions of cationic polymer and nucleic acid to give a net molar excess of ionizable nitrogen (polymer) to phosphate (nucleic acid) over the range of 2 to 6. The electrostatic interactions between cationic polymers and nucleic acid resulted in the formation of polyplexes with average particle size distribution of about 100 nm, hence referred to here as nanoplexes. The DOTA-siRNA of Bartlett et al. was synthesized as follows: 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid mono(N-hydroxysuccinimide ester) (DOTA-NHSester) was ordered from Macrocyclics (Dallas, TX). The amine modified RNA sense strand with a 100-fold molar excess of DOTA-NHS-ester in carbonate buffer (pH 9) was added to a microcentrifuge tube. The contents were reacted by stirring for 4 h at room temperature. The DOTA-RNAsense conjugate was ethanol-precipitated, resuspended in water, and annealed to the unmodified antisense strand to yield DOTA-siRNA. All liquids were pretreated with Chelex-100 (Bio-Rad, Hercules, CA) to remove trace metal contaminants. Tf-targeted and nontargeted siRNA nanoparticles may be formed by using cyclodextrin-containing polycations. Typically, nanoparticles were formed in water at a charge ratio of 3 (+/-) and an siRNA concentration of 0.5

g/liter. One percent of the adamantane-PEG molecules on the surface of the targeted nanoparticles were modified with Tf (adamantane-PEG-Tf). The nanoparticles were suspended in a 5% (wt/vol) glucose carrier solution for injection.

[00417] Davis et al. (Nature, Vol 464, 15 April 2010) conducts a RNA clinical trial that uses a targeted nanoparticle-delivery system (clinical trial registration number NCT00689065). Patients with solid cancers refractory to standard-of-care therapies are administered doses of targeted nanoparticles on days 1, 3, 8 and 10 of a 21-day cycle by a 30-min intravenous infusion. The nanoparticles consist of a synthetic delivery system containing: (1) a linear, cyclodextrin-based polymer (CDP), (2) a human transferrin protein (TF) targeting ligand displayed on the exterior of the nanoparticle to engage TF receptors (TFR) on the surface of the cancer cells, (3) a hydrophilic polymer (polyethylene glycol (PEG) used to promote nanoparticle stability in biological fluids), and (4) siRNA designed to reduce the expression of the RRM2 (sequence used in the clinic was previously denoted siR2B+5). The TFR has long been known to be upregulated in malignant cells, and RRM2 is an established anti-cancer target. These nanoparticles (clinical version denoted as CALAA-01) have been shown to be well tolerated in multi-dosing studies in non-human primates. Although a single patient with chronic myeloid leukaemia has been administered siRNAby liposomal delivery, Davis et al.'s clinical trial is the initial human trial to systemically deliver siRNA with a targeted delivery system and to treat patients with solid cancer. To ascertain whether the targeted delivery system can provide effective delivery of functional siRNA to human tumours, Davis et al. investigated biopsies from three patients from three different dosing cohorts; patients A, B and C, all of whom had metastatic melanoma and received CALAA-01 doses of 18, 24 and 30 mg m^{-2} siRNA, respectively. Similar doses may also be contemplated for the CRISPR Cas system of the present invention. The delivery of the invention may be achieved with nanoparticles containing a linear, cyclodextrin-based polymer (CDP), a human transferrin protein (TF) targeting ligand displayed on the exterior of the nanoparticle to engage TF receptors (TFR) on the surface of the cancer cells and/or a hydrophilic polymer (for example, polyethylene glycol (PEG) used to promote nanoparticle stability in biological fluids).

[00418] In terms of this invention, it is preferred to have one or more components of CRISPR complex, e.g., CRISPR enzyme or mRNA or guide RNA delivered using nanoparticles or lipid envelopes. Other delivery systems or vectors are may be used in conjunction with the nanoparticle aspects of the invention.

[00419] In general, a "nanoparticle" refers to any particle having a diameter of less than 1000 nm. In certain preferred embodiments, nanoparticles of the invention have a greatest dimension (e.g., diameter) of 500 nm or less. In other preferred embodiments, nanoparticles of the invention have a greatest dimension ranging between 25 nm and 200 nm. In other preferred embodiments, nanoparticles of the invention have a greatest dimension of 100 nm or less. In other preferred embodiments, nanoparticles of the invention have a greatest dimension ranging between 35 nm and 60 nm.

[00420] Nanoparticles encompassed in the present invention may be provided in different forms, e.g., as solid nanoparticles (e.g., metal such as silver, gold, iron, titanium), non-metal, lipid-based solids, polymers), suspensions of nanoparticles, or combinations thereof. Metal, dielectric, and semiconductor nanoparticles may be prepared, as well as hybrid structures (e.g., core–shell nanoparticles). Nanoparticles made of semiconducting material may also be labeled quantum dots if they are small enough (typically sub 10 nm) that quantization of electronic energy levels occurs. Such nanoscale particles are used in biomedical applications as drug carriers or imaging agents and may be adapted for similar purposes in the present invention.

[00421] Semi-solid and soft nanoparticles have been manufactured, and are within the scope of the present invention. A prototype nanoparticle of semi-solid nature is the liposome. Various types of liposome nanoparticles are currently used clinically as delivery systems for anticancer drugs and vaccines. Nanoparticles with one half hydrophilic and the other half hydrophobic are termed Janus particles and are particularly effective for stabilizing emulsions. They can self-assemble at water/oil interfaces and act as solid surfactants.

[00422] US Patent No. 8,709,843, incorporated herein by reference, provides a drug delivery system for targeted delivery of therapeutic agent-containing particles to tissues, cells, and intracellular compartments. The invention provides targeted particles comprising comprising polymer conjugated to a surfactant, hydrophilic polymer or lipid.

[00423] US Patent No. 6,007,845, incorporated herein by reference, provides particles which have a core of a multiblock copolymer formed by covalently linking a multifunctional compound with one or more hydrophobic polymers and one or more hydrophilic polymers, and conatin a biologically active material.

[00424] US Patent No. 5,855,913, incorporated herein by reference, provides a particulate composition having aerodynamically light particles having a tap density of less than 0.4 g/cm3

with a mean diameter of between 5 μm and 30 μm, incorporating a surfactant on the surface thereof for drug delivery to the pulmonary system.

[00425] US Patent No. 5,985,309, incorporated herein by reference, provides particles incorporating a surfactant and/or a hydrophilic or hydrophobic complex of a positively or negatively charged therapeutic or diagnostic agent and a charged molecule of opposite charge for delivery to the pulmonary system.

[00426] US. Patent No. 5,543,158, incorporated herein by reference, provides biodegradable injectable nanoparticles having a biodegradable solid core containing a biologically active material and poly(alkylene glycol) moieties on the surface.

[00427] WO2012135025 (also published as US20120251560), incorporated herein by reference, describes conjugated polyethyleneimine (PEI) polymers and conjugated aza-macrocycles (collectively referred to as "conjugated lipomer" or "lipomers"). In certain embodiments, it can envisioned that such conjugated lipomers can be used in the context of the CRISPR-Cas system to achieve *in vitro*, ex vivo and *in vivo* genomic perturbations to modify gene expression, including modulation of protein expression.

[00428] In one embodiment, the nanoparticle may be epoxide-modified lipid–polymer, advantageously 7C1 (see, e.g., James E. Dahlman and Carmen Barnes et al. Nature Nanotechnology (2014) published online 11 May 2014, doi:10.1038/nnano.2014.84). C71 was synthesized by reacting C15 epoxide-terminated lipids with PEI600 at a 14:1 molar ratio, and was formulated with C14PEG2000 to produce nanoparticles (diameter between 35 and 60 nm) that were stable in PBS solution for at least 40 days.

[00429] An epoxide-modified lipid-polymer may be utilized to deliver the CRISPR-Cas system of the present invention to pulmonary, cardiovascular or renal cells, however, one of skill in the art may adapt the system to deliver to other target organs. Dosage ranging from about 0.05 to about 0.6 mg/kg are envisioned. Dosages over several days or weeks are also envisioned, with a total dosage of about 2 mg/kg.

Particle delivery systems and/or formulations:

[00430] Several types of particle delivery systems and/or formulations are known to be useful in a diverse spectrum of biomedical applications. In general, a particle is defined as a small object that behaves as a whole unit with respect to its transport and properties. Particles are further classified according to diameter Coarse particles cover a range between 2,500 and 10,000

nanometers. Fine particles are sized between 100 and 2,500 nanometers. Ultrafine particles, or nanoparticles, are generally between 1 and 100 nanometers in size. The basis of the 100-nm limit is the fact that novel properties that differentiate particles from the bulk material typically develop at a critical length scale of under 100 nm.

[00431] As used herein, a particle delivery system/formulation is defined as any biological delivery system/formulation which includes a particle in accordance with the present invention. A particle in accordance with the present invention is any entity having a greatest dimension (e.g. diameter) of less than 100 microns (μm). In some embodiments, inventive particles have a greatest dimension of less than 10 μm. In some embodiments, inventive particles have a greatest dimension of less than 2000 nanometers (nm). In some embodiments, inventive particles have a greatest dimension of less than 1000 nanometers (nm). In some embodiments, inventive particles have a greatest dimension of less than 900 nm, 800 nm, 700 nm, 600 nm, 500 nm, 400 nm, 300 nm, 200 nm, or 100 nm. Typically, inventive particles have a greatest dimension (e.g., diameter) of 500 nm or less. In some embodiments, inventive particles have a greatest dimension (e.g., diameter) of 250 nm or less. In some embodiments, inventive particles have a greatest dimension (e.g., diameter) of 200 nm or less. In some embodiments, inventive particles have a greatest dimension (e.g., diameter) of 150 nm or less. In some embodiments, inventive particles have a greatest dimension (e.g., diameter) of 100 nm or less. Smaller particles, e.g., having a greatest dimension of 50 nm or less are used in some embodiments of the invention. In some embodiments, inventive particles have a greatest dimension ranging between 25 nm and 200 nm.

[00432] Particle characterization (including e.g., characterizing morphology, dimension, etc.) is done using a variety of different techniques. Common techniques are electron microscopy (TEM, SEM), atomic force microscopy (AFM), dynamic light scattering (DLS), X-ray photoelectron spectroscopy (XPS), powder X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), matrix-assisted laser desorption/ionization time-of-flight mass spectrometry(MALDI-TOF), ultraviolet-visible spectroscopy, dual polarisation interferometry and nuclear magnetic resonance (NMR). Characterization (dimension measurements) may be made as to native particles (i.e., preloading) or after loading of the cargo (herein cargo refers to e.g., one or more components of CRISPR-Cas system e.g., CRISPR enzyme or mRNA or guide RNA, or any combination thereof, and may include additional carriers and/or excipients) to provide particles of an optimal size for delivery for any *in vitro*, *ex vivo* and/or *in vivo* application of the present invention. In

certain preferred embodiments, particle dimension (e.g., diameter) characterization is based on measurements using dynamic laser scattering (DLS). Mention is made of US Patent No. 8,709,843; US Patent No. 6,007,845; US Patent No. 5,855,913; US Patent No. 5,985,309; US. Patent No. 5,543,158; and the publication by James E. Dahlman and Carmen Barnes et al. Nature Nanotechnology (2014) published online 11 May 2014, doi:10.1038/nnano.2014.84, concerning particles, methods of making and using them and measurements thereof.

[00433] Particles delivery systems within the scope of the present invention may be provided in any form, including but not limited to solid, semi-solid, emulsion, or colloidal particles. As such any of the delivery systems described herein, including but not limited to, e.g., lipid-based systems, liposomes, micelles, microvesicles, exosomes, or gene gun may be provided as particle delivery systems within the scope of the present invention.

Exosomes

[00434] Exosomes are endogenous nano-vesicles that transport RNAs and proteins, and which can deliver RNA to the brain and other target organs. To reduce immunogenicity, Alvarez-Erviti et al. (2011, Nat Biotechnol 29: 341) used self-derived dendritic cells for exosome production. Targeting to the brain was achieved by engineering the dendritic cells to express Lamp2b, an exosomal membrane protein, fused to the neuron-specific RVG peptide. Purified exosomes were loaded with exogenous RNA by electroporation. Intravenously injected RVG-targeted exosomes delivered GAPDH siRNA specifically to neurons, microglia, oligodendrocytes in the brain, resulting in a specific gene knockdown. Pre-exposure to RVG exosomes did not attenuate knockdown, and non-specific uptake in other tissues was not observed. The therapeutic potential of exosome-mediated siRNA delivery was demonstrated by the strong mRNA (60%) and protein (62%) knockdown of BACE1, a therapeutic target in Alzheimer's disease.

[00435] To obtain a pool of immunologically inert exosomes, Alvarez-Erviti et al. harvested bone marrow from inbred C57BL/6 mice with a homogenous major histocompatibility complex (MHC) haplotype. As immature dendritic cells produce large quantities of exosomes devoid of T-cell activators such as MHC-II and CD86, Alvarez-Erviti et al. selected for dendritic cells with granulocyte/macrophage-colony stimulating factor (GM-CSF) for 7 d. Exosomes were purified from the culture supernatant the following day using well-established ultracentrifugation protocols. The exosomes produced were physically homogenous, with a size distribution peaking at 80 nm in diameter as determined by nanoparticle tracking analysis (NTA) and electron

microscopy. Alvarez-Erviti et al. obtained 6-12 μg of exosomes (measured based on protein concentration) per 10^6 cells.

[00436] Next, Alvarez-Erviti et al. investigated the possibility of loading modified exosomes with exogenous cargoes using electroporation protocols adapted for nanoscale applications. As electroporation for membrane particles at the nanometer scale is not well-characterized, nonspecific Cy5-labeled RNA was used for the empirical optimization of the electroporation protocol. The amount of encapsulated RNA was assayed after ultracentrifugation and lysis of exosomes. Electroporation at 400 V and 125 μF resulted in the greatest retention of RNA and was used for all subsequent experiments.

[00437] Alvarez-Erviti et al. administered 150 μg of each BACE1 siRNA encapsulated in 150 μg of RVG exosomes to normal C57BL/6 mice and compared the knockdown efficiency to four controls: untreated mice, mice injected with RVG exosomes only, mice injected with BACE1 siRNA complexed to an *in vivo* cationic liposome reagent and mice injected with BACE1 siRNA complexed to RVG-9R, the RVG peptide conjugated to 9 D-arginines that electrostatically binds to the siRNA. Cortical tissue samples were analyzed 3 d after administration and a significant protein knockdown (45%, $P < 0.05$, versus 62%, $P < 0.01$) in both siRNA-RVG-9R-treated and siRNARVG exosome-treated mice was observed, resulting from a significant decrease in BACE1 mRNA levels (66% [+ or -] 15%, $P < 0.001$ and 61% [+ or -] 13% respectively, $P < 0.01$). Moreover, Applicants demonstrated a significant decrease (55%, $P < 0.05$) in the total [beta]-amyloid 1-42 levels, a main component of the amyloid plaques in Alzheimer's pathology, in the RVG-exosome-treated animals. The decrease observed was greater than the β-amyloid 1-40 decrease demonstrated in normal mice after intraventricular injection of BACE1 inhibitors. Alvarez-Erviti et al. carried out 5'-rapid amplification of cDNA ends (RACE) on BACE1 cleavage product, which provided evidence of RNAi-mediated knockdown by the siRNA.

[00438] Finally, Alvarez-Erviti et al. investigated whether RNA-RVG exosomes induced immune responses *in vivo* by assessing IL-6, IP-10, TNFα and IFN-α serum concentrations. Following exosome treatment, nonsignificant changes in all cytokines were registered similar to siRNA-transfection reagent treatment in contrast to siRNA-RVG-9R, which potently stimulated IL-6 secretion, confirming the immunologically inert profile of the exosome treatment. Given that exosomes encapsulate only 20% of siRNA, delivery with RVG-exosome appears to be more efficient than RVG-9R delivery as comparable mRNA knockdown and greater protein knockdown

was achieved with fivefold less siRNA without the corresponding level of immune stimulation. This experiment demonstrated the therapeutic potential of RVG-exosome technology, which is potentially suited for long-term silencing of genes related to neurodegenerative diseases. The exosome delivery system of Alvarez-Erviti et al. may be applied to deliver the CRISPR-Cas system of the present invention to therapeutic targets, especially neurodegenerative diseases. A dosage of about 100 to 1000 mg of CRISPR Cas encapsulated in about 100 to 1000 mg of RVG exosomes may be contemplated for the present invention.

[00439] El-Andaloussi et al. (Nature Protocols 7,2112–2126(2012)) discloses how exosomes derived from cultured cells can be harnessed for delivery of RNA *in vitro* and *in vivo*. This protocol first describes the generation of targeted exosomes through transfection of an expression vector, comprising an exosomal protein fused with a peptide ligand. Next, El-Andaloussi et al. explain how to purify and characterize exosomes from transfected cell supernatant. Next, El-Andaloussi et al. detail crucial steps for loading RNA into exosomes. Finally, El-Andaloussi et al. outline how to use exosomes to efficiently deliver RNA *in vitro* and *in vivo* in mouse brain. Examples of anticipated results in which exosome-mediated RNA delivery is evaluated by functional assays and imaging are also provided. The entire protocol takes ~3 weeks. Delivery or administration according to the invention may be performed using exosomes produced from self-derived dendritic cells. From the herein teachings, this can be employed in the practice of the invention

[00440] In another embodiment, the plasma exosomes of Wahlgren et al. (Nucleic Acids Research, 2012, Vol. 40, No. 17 e130) are contemplated. Exosomes are nano-sized vesicles (30–90nm in size) produced by many cell types, including dendritic cells (DC), B cells, T cells, mast cells, epithelial cells and tumor cells. These vesicles are formed by inward budding of late endosomes and are then released to the extracellular environment upon fusion with the plasma membrane. Because exosomes naturally carry RNA between cells, this property may be useful in gene therapy, and from this disclosure can be employed in the practice of the instant invention.

[00441] Exosomes from plasma can be prepared by centrifugation of buffy coat at 900g for 20 min to isolate the plasma followed by harvesting cell supernatants, centrifuging at 300g for 10 min to eliminate cells and at 16 500g for 30 min followed by filtration through a 0.22 mm filter. Exosomes are pelleted by ultracentrifugation at 120 000g for70 min. Chemical transfection of siRNA into exosomes is carried out according to the manufacturer's instructions in RNAi

Human/Mouse Starter Kit (Quiagen, Hilden, Germany). siRNA is added to 100 ml PBS at a final concentration of 2 mmol/ml. After adding HiPerFect transfection reagent, the mixture is incubated for 10 min at RT. In order to remove the excess of micelles, the exosomes are re-isolated using aldehyde/sulfate latex beads. The chemical transfection of CRISPR Cas into exosomes may be conducted similarly to siRNA. The exosomes may be co-cultured with monocytes and lymphocytes isolated from the peripheral blood of healthy donors. Therefore, it may be contemplated that exosomes containing CRISPR Cas may be introduced to monocytes and lymphocytes of and autologously reintroduced into a human. Accordingly, delivery or administration according to the invention may beperformed using plasma exosomes.

Liposomes

[00442] Delivery or administration according to the invention can be performed with liposomes. Liposomes are spherical vesicle structures composed of a uni- or multilamellar lipid bilayer surrounding internal aqueous compartments and a relatively impermeable outer lipophilic phospholipid bilayer. Liposomes have gained considerable attention as drug delivery carriers because they are biocompatible, nontoxic, can deliver both hydrophilic and lipophilic drug molecules, protect their cargo from degradation by plasma enzymes, and transport their load across biological membranes and the blood brain barrier (BBB) (see, e.g., Spuch and Navarro, Journal of Drug Delivery, vol. 2011, Article ID 469679, 12 pages, 2011. doi:10.1155/2011/469679 for review).

[00443] Liposomes can be made from several different types of lipids; however, phospholipids are most commonly used to generate liposomes as drug carriers. Although liposome formation is spontaneous when a lipid film is mixed with an aqueous solution, it can also be expedited by applying force in the form of shaking by using a homogenizer, sonicator, or an extrusion apparatus (see, e.g., Spuch and Navarro, Journal of Drug Delivery, vol. 2011, Article ID 469679, 12 pages, 2011. doi:10.1155/2011/469679 for review).

[00444] Several other additives may be added to liposomes in order to modify their structure and properties. For instance, either cholesterol or sphingomyelin may be added to the liposomal mixture in order to help stabilize the liposomal structure and to prevent the leakage of the liposomal inner cargo. Further, liposomes are prepared from hydrogenated egg phosphatidylcholine or egg phosphatidylcholine, cholesterol, and dicetyl phosphate, and their mean vesicle sizes were adjusted to about 50 and 100 nm. (see, e.g., Spuch and Navarro, Journal

of Drug Delivery, vol. 2011, Article ID 469679, 12 pages, 2011. doi:10.1155/2011/469679 for review).

[00445] A liposome formulation may be mainly comprised of natural phospholipids and lipids such as 1,2-distearoryl-sn-glycero-3-phosphatidyl choline (DSPC), sphingomyelin, egg phosphatidylcholines and monosialoganglioside. Since this formulation is made up of phospholipids only, liposomal formulations have encountered many challenges, one of the ones being the instability in plasma. Several attempts to overcome these challenges have been made, specifically in the manipulation of the lipid membrane. One of these attempts focused on the manipulation of cholesterol. Addition of cholesterol to conventional formulations reduces rapid release of the encapsulated bioactive compound into the plasma or 1,2-dioleoyl-sn-glycero-3-phosphoethanolamine (DOPE) increases the stability (see, e.g., Spuch and Navarro, Journal of Drug Delivery, vol. 2011, Article ID 469679, 12 pages, 2011. doi:10.1155/2011/469679 for review).

[00446] In a particularly advantageous embodiment, Trojan Horse liposomes (also known as Molecular Trojan Horses) are desirable and protocols may be found at http://cshprotocols.cshlp.org/content/2010/4/pdb.prot5407.long. These particles allow delivery of a transgene to the entire brain after an intravascular injection. Without being bound by limitation, it is believed that neutral lipid particles with specific antibodies conjugated to surface allow crossing of the blood brain barrier via endocytosis. Applicant postulates utilizing Trojan Horse Liposomes to deliver the CRISPR family of nucleases to the brain via an intravascular injection, which would allow whole brain transgenic animals without the need for embryonic manipulation. About 1-5 g of DNA or RNA may be contemplated for *in vivo* administration in liposomes.

[00447] In another embodiment, the CRISPR Cas system may be administered in liposomes, such as a stable nucleic-acid-lipid particle (SNALP) (see, e.g., Morrissey et al., Nature Biotechnology, Vol. 23, No. 8, August 2005). Daily intravenous injections of about 1, 3 or 5 mg/kg/day of a specific CRISPR Cas targeted in a SNALP are contemplated. The daily treatment may be over about three days and then weekly for about five weeks. In another embodiment, a specific CRISPR Cas encapsulated SNALP) administered by intravenous injection to at doses of about 1 or 2.5 mg/kg are also contemplated (see, e.g., Zimmerman et al., Nature Letters, Vol. 441, 4 May 2006). The SNALP formulation may contain the lipids 3-N-[(wmethoxypoly(ethylene glycol) 2000) carbamoyl] -1,2-dimyristyloxy-propylamine (PEG-C-DMA), 1,2-dilinoleyloxy-

N,N-dimethyl-3-aminopropane (DLinDMA), 1,2-distearoyl-sn-glycero-3-phosphocholine (DSPC) and cholesterol, in a 2:40:10:48 molar per cent ratio (see, e.g., Zimmerman et al., Nature Letters, Vol. 441, 4 May 2006).

[00448] In another embodiment, stable nucleic-acid-lipid particles (SNALPs) have proven to be effective delivery molecules to highly vascularized HepG2-derived liver tumors but not in poorly vascularized HCT-116 derived liver tumors (see, e.g., Li, Gene Therapy (2012) 19, 775–780). The SNALP liposomes may be prepared by formulating D-Lin-DMA and PEG-C-DMA with distearoylphosphatidylcholine (DSPC), Cholesterol and siRNA using a 25:1 lipid/siRNA ratio and a 48/40/10/2 molar ratio of Cholesterol/D-Lin-DMA/DSPC/PEG-C-DMA. The resulted SNALP liposomes are about 80–100 nm in size.

[00449] In yet another embodiment, a SNALP may comprise synthetic cholesterol (Sigma-Aldrich, St Louis, MO, USA), dipalmitoylphosphatidylcholine (Avanti Polar Lipids, Alabaster, AL, USA), 3-N-[(w-methoxy poly(ethylene glycol)2000)carbamoyl]-1,2-dimyrestyloxypropylamine, and cationic 1,2-dilinoleyloxy-3-N,Ndimethylaminopropane (see, e.g., Geisbert et al., Lancet 2010; 375: 1896-905). A dosage of about 2 mg/kg total CRISPR Cas per dose administered as, for example, a bolus intravenous infusion may be contemplated.

[00450] In yet another embodiment, a SNALP may comprise synthetic cholesterol (Sigma-Aldrich), 1,2-distearoyl-sn-glycero-3-phosphocholine (DSPC; Avanti Polar Lipids Inc.), PEG-cDMA, and 1,2-dilinoleyloxy-3-(N;N-dimethyl)aminopropane (DLinDMA) (see, e.g., Judge, J. Clin. Invest. 119:661-673 (2009)). Formulations used for *in vivo* studies may comprise a final lipid/RNA mass ratio of about 9:1.

[00451] The safety profile of RNAi nanomedicines has been reviewed by Barros and Gollob of Alnylam Pharmaceuticals (see, e.g., Advanced Drug Delivery Reviews 64 (2012) 1730–1737). The stable nucleic acid lipid particle (SNALP) is comprised of four different lipids — an ionizable lipid (DLinDMA) that is cationic at low pH, a neutral helper lipid, cholesterol, and a diffusible polyethylene glycol (PEG)-lipid. The particle is approximately 80 nm in diameter and is charge-neutral at physiologic pH. During formulation, the ionizable lipid serves to condense lipid with the anionic RNA during particle formation. When positively charged under increasingly acidic endosomal conditions, the ionizable lipid also mediates the fusion of SNALP with the endosomal membrane enabling release of RNA into the cytoplasm. The PEG-lipid stabilizes the particle and

reduces aggregation during formulation, and subsequently provides a neutral hydrophilic exterior that improves pharmacokinetic properties.

[00452] To date, two clinical programs have been initiated using SNALP formulations with RNA. Tekmira Pharmaceuticals recently completed a phase I single-dose study of SNALP-ApoB in adult volunteers with elevated LDL cholesterol. ApoB is predominantly expressed in the liver and jejunum and is essential for the assembly and secretion of VLDL and LDL. Seventeen subjects received a single dose of SNALP-ApoB (dose escalation across 7 dose levels). There was no evidence of liver toxicity (anticipated as the potential dose-limiting toxicity based on preclinical studies). One (of two) subjects at the highest dose experienced flu-like symptoms consistent with immune system stimulation, and the decision was made to conclude the trial.

[00453] Alnylam Pharmaceuticals has similarly advanced ALN-TTR01, which employs the SNALP technology described above and targets hepatocyte production of both mutant and wild-type TTR to treat TTR amyloidosis (ATTR). Three ATTR syndromes have been described: familial amyloidotic polyneuropathy (FAP) and familial amyloidotic cardiomyopathy (FAC) — both caused by autosomal dominant mutations in TTR; and senile systemic amyloidosis (SSA) cause by wildtype TTR. A placebo-controlled, single dose-escalation phase I trial of ALN-TTR01 was recently completed in patients with ATTR. ALN-TTR01 was administered as a 15-minute IV infusion to 31 patients (23 with study drug and 8 with placebo) within a dose range of 0.01 to 1.0 mg/kg (based on siRNA). Treatment was well tolerated with no significant increases in liver function tests. Infusion-related reactions were noted in 3 of 23 patients at≥0.4 mg/kg; all responded to slowing of the infusion rate and all continued on study. Minimal and transient elevations of serum cytokines IL-6, IP-10 and IL-1ra were noted in two patients at the highest dose of 1 mg/kg (as anticipated from preclinical and NHP studies). Lowering of serum TTR, the expected pharmacodynamics effect of ALN-TTR01, was observed at 1 mg/kg.

[00454] In yet another embodiment, a SNALP may be made by solubilizing a cationic lipid, DSPC, cholesterol and PEG-lipid e.g., in ethanol, e.g., at a molar ratio of 40:10:40:10, respectively (see, Semple et al., Nature Niotechnology, Volume 28 Number 2 February 2010, pp. 172-177). The lipid mixture was added to an aqueous buffer (50 mM citrate, pH 4) with mixing to a final ethanol and lipid concentration of 30% (vol/vol) and 6.1 mg/ml, respectively, and allowed to equilibrate at 22 °C for 2 min before extrusion. The hydrated lipids were extruded through two stacked 80 nm pore-sized filters (Nuclepore) at 22 °C using a Lipex Extruder (Northern Lipids)

until a vesicle diameter of 70–90 nm, as determined by dynamic light scattering analysis, was obtained. This generally required 1–3 passes. The siRNA (solubilized in a 50 mM citrate, pH 4 aqueous solution containing 30% ethanol) was added to the pre-equilibrated (35 °C) vesicles at a rate of ~5 ml/min with mixing. After a final target siRNA/lipid ratio of 0.06 (wt/wt) was reached, the mixture was incubated for a further 30 min at 35 °C to allow vesicle reorganization and encapsulation of the siRNA. The ethanol was then removed and the external buffer replaced with PBS (155 mM NaCl, 3 mM Na_2HPO_4, 1 mM KH_2PO_4, pH 7.5) by either dialysis or tangential flow diafiltration. siRNA were encapsulated in SNALP using a controlled step-wise dilution method process. The lipid constituents of KC2-SNALP were DLin-KC2-DMA (cationic lipid), dipalmitoylphosphatidylcholine (DPPC; Avanti Polar Lipids), synthetic cholesterol (Sigma) and PEG-C-DMA used at a molar ratio of 57.1:7.1:34.3:1.4. Upon formation of the loaded particles, SNALP were dialyzed against PBS and filter sterilized through a 0.2 μm filter before use. Mean particle sizes were 75–85 nm and 90–95% of the siRNA was encapsulated within the lipid particles. The final siRNA/lipid ratio in formulations used for *in vivo* testing was ~0.15 (wt/wt). LNP-siRNA systems containing Factor VII siRNA were diluted to the appropriate concentrations in sterile PBS immediately before use and the formulations were administered intravenously through the lateral tail vein in a total volume of 10 ml/kg. This method and these delivery systems may be extrapolated to the CRISPR Cas system of the present invention.

Other Lipids

[00455] Other cationic lipids, such as amino lipid 2,2-dilinoleyl-4-dimethylaminoethyl-[1,3]-dioxolane (DLin-KC2-DMA) may be utilized to encapsulate CRISPR Cas or components thereof or nucleic acid molecule(s) coding therefor e.g., similar to SiRNA (see, e.g., Jayaraman, Angew. Chem. Int. Ed. 2012, 51, 8529 –8533), and hence may be employed in the practice of the invention. A preformed vesicle with the following lipid composition may be contemplated: amino lipid, distearoylphosphatidylcholine (DSPC), cholesterol and (R)-2,3-bis(octadecyloxy) propyl-1-(methoxy poly(ethylene glycol)2000)propylcarbamate (PEG-lipid) in the molar ratio 40/10/40/10, respectively, and a FVII siRNA/total lipid ratio of approximately 0.05 (w/w). To ensure a narrow particle size distribution in the range of 70–90 nm and a low polydispersity index of 0.11±0.04 (n=56), the particles may be extruded up to three times through 80 nm membranes prior to adding the CRISPR Cas RNA. Particles containing the highly potent amino lipid 16 may be used, in

which the molar ratio of the four lipid components 16, DSPC, cholesterol and PEG-lipid (50/10/38.5/1.5) which may be further optimized to enhance *in vivo* activity.

[00456] Michael S D Kormann et al. ("Expression of therapeutic proteins after delivery of chemically modified mRNA in mice: Nature Biotechnology, Volume:29, Pages: 154–157 (2011)) describes the use of lipid envelopes to deliver RNA. Use of lipid envelopes is also preferred in the present invention.

[00457] In another embodiment, lipids may be formulated with the CRISPR Cas system of the present invention to form lipid nanoparticles (LNPs). Lipids include, but are not limited to, DLin-KC2-DMA4, C12-200 and colipids disteroylphosphatidyl choline, cholesterol, and PEG-DMG may be formulated with CRISPR Cas instead of siRNA (see, e.g., Novobrantseva, Molecular Therapy–Nucleic Acids (2012) 1, e4; doi:10.1038/mtna.2011.3) using a spontaneous vesicle formation procedure. The component molar ratio may be about 50/10/38.5/1.5 (DLin-KC2-DMA or C12-200/disteroylphosphatidyl choline/cholesterol/PEG-DMG). The final lipid:siRNA weight ratio may be ~12:1 and 9:1 in the case of DLin-KC2-DMA and C12-200 lipid nanoparticles (LNPs), respectively. The formulations may have mean particle diameters of ~80 nm with >90% entrapment efficiency. A 3 mg/kg dose may be contemplated.

[00458] Tekmira has a portfolio of approximately 95 patent families, in the U.S. and abroad, that are directed to various aspects of LNPs and LNP formulations (see, e.g., U.S. Pat. Nos. 7,982,027; 7,799,565; 8,058,069; 8,283,333; 7,901,708; 7,745,651; 7,803,397; 8,101,741; 8,188,263; 7,915,399; 8,236,943 and 7,838,658 and European Pat. Nos 1766035; 1519714; 1781593 and 1664316), all of which may be used and/or adapted to the present invention.

[00459] The CRISPR Cas system or components thereof or nucleic acid molecule(s) coding therefor may be delivered encapsulated in PLGA Microspheres such as that further described in US published applications 20130252281 and 20130245107 and 20130244279 (assigned to Moderna Therapeutics) which relate to aspects of formulation of compositions comprising modified nucleic acid molecules which may encode a protein, a protein precursor, or a partially or fully processed form of the protein or a protein precursor. The formulation may have a molar ratio 50:10:38.5:1.5-3.0 (cationic lipid:fusogenic lipid:cholesterol:PEG lipid). The PEG lipid may be selected from, but is not limited to PEG-c-DOMG, PEG-DMG. The fusogenic lipid may be DSPC. See also, Schrum et al., Delivery and Formulation of Engineered Nucleic Acids, US published application 20120251618.

[00460] Nanomerics' technology addresses bioavailability challenges for a broad range of therapeutics, including low molecular weight hydrophobic drugs, peptides, and nucleic acid based therapeutics (plasmid, siRNA, miRNA). Specific administration routes for which the technology has demonstrated clear advantages include the oral route, transport across the blood-brain-barrier, delivery to solid tumours, as well as to the eye. See, e.g., Mazza et al., 2013, ACS Nano. 2013 Feb 26;7(2):1016-26; Uchegbu and Siew, 2013, J Pharm Sci. 102(2):305-10 and Lalatsa et al., 2012, J Control Release. 2012 Jul 20; 161(2):523-36.

[00461] US Patent Publication No. 20050019923 describes cationic dendrimers for delivering bioactive molecules, such as polynucleotide molecules, peptides and polypeptides and/or pharmaceutical agents, to a mammalian body. The dendrimers are suitable for targeting the delivery of the bioactive molecules to, for example, the liver, spleen, lung, kidney or heart (or even the brain). Dendrimers are synthetic 3-dimensional macromolecules that are prepared in a step-wise fashion from simple branched monomer units, the nature and functionality of which can be easily controlled and varied. Dendrimers are synthesised from the repeated addition of building blocks to a multifunctional core (divergent approach to synthesis), or towards a multifunctional core (convergent approach to synthesis) and each addition of a 3-dimensional shell of building blocks leads to the formation of a higher generation of the dendrimers. Polypropylenimine dendrimers start from a diaminobutane core to which is added twice the number of amino groups by a double Michael addition of acrylonitrile to the primary amines followed by the hydrogenation of the nitriles. This results in a doubling of the amino groups. Polypropylenimine dendrimers contain 100% protonable nitrogens and up to 64 terminal amino groups (generation 5, DAB 64). Protonable groups are usually amine groups which are able to accept protons at neutral pH. The use of dendrimers as gene delivery agents has largely focused on the use of the polyamidoamine. and phosphorous containing compounds with a mixture of amine/amide or N--P(O_2)S as the conjugating units respectively with no work being reported on the use of the lower generation polypropylenimine dendrimers for gene delivery. Polypropylenimine dendrimers have also been studied as pH sensitive controlled release systems for drug delivery and for their encapsulation of guest molecules when chemically modified by peripheral amino acid groups. The cytotoxicity and interaction of polypropylenimine dendrimers with DNA as well as the transfection efficacy of DAB 64 has also been studied.

[00462] US Patent Publication No. 20050019923 is based upon the observation that, contrary to earlier reports, cationic dendrimers, such as polypropylenimine dendrimers, display suitable properties, such as specific targeting and low toxicity, for use in the targeted delivery of bioactive molecules, such as genetic material. In addition, derivatives of the cationic dendrimer also display suitable properties for the targeted delivery of bioactive molecules. See also, Bioactive Polymers, US published application 20080267903, which discloses "Various polymers, including cationic polyamine polymers and dendrimeric polymers, are shown to possess anti-proliferative activity, and may therefore be useful for treatment of disorders characterised by undesirable cellular proliferation such as neoplasms and tumours, inflammatory disorders (including autoimmune disorders), psoriasis and atherosclerosis. The polymers may be used alone as active agents, or as delivery vehicles for other therapeutic agents, such as drug molecules or nucleic acids for gene therapy. In such cases, the polymers' own intrinsic anti-tumour activity may complement the activity of the agent to be delivered." The disclosures of these patent publications may be employed in conjunction with herein teachings for delivery of CRISPR Cas system(s) or component(s) thereof or nucleic acid molecule(s) coding therefor.

Supercharged proteins

[00463] Supercharged proteins are a class of engineered or naturally occurring proteins with unusually high positive or negative net theoretical charge and may be employed in delivery of CRISPR Cas system(s) or component(s) thereof or nucleic acid molecule(s) coding therefor. Both supernegatively and superpositively charged proteins exhibit a remarkable ability to withstand thermally or chemically induced aggregation. Superpositively charged proteins are also able to penetrate mammalian cells. Associating cargo with these proteins, such as plasmid DNA, RNA, or other proteins, can enable the functional delivery of these macromolecules into mammalian cells both *in vitro* and *in vivo*. David Liu's lab reported the creation and characterization of supercharged proteins in 2007 (Lawrence et al., 2007, Journal of the American Chemical Society 129, 10110–10112).

[00464] The nonviral delivery of RNA and plasmid DNA into mammalian cells are valuable both for research and therapeutic applications (Akinc et al., 2010, Nat. Biotech. 26, 561–569). Purified +36 GFP protein (or other superpositively charged protein) is mixed with RNAs in the appropriate serum-free media and allowed to complex prior addition to cells. Inclusion of serum at this stage inhibits formation of the supercharged protein-RNA complexes and reduces the

effectiveness of the treatment. The following protocol has been found to be effective for a variety of cell lines (McNaughton et al., 2009, Proc. Natl. Acad. Sci. USA 106, 6111–6116). However, pilot experiments varying the dose of protein and RNA should be performed to optimize the procedure for specific cell lines.

(1) One day before treatment, plate 1 x 10^5 cells per well in a 48-well plate.

(2) On the day of treatment, dilute purified +36 GFP protein in serumfree media to a final concentration 200nM. Add RNA to a final concentration of 50nM. Vortex to mix and incubate at room temperature for 10min.

(3) During incubation, aspirate media from cells and wash once with PBS.

(4) Following incubation of +36 GFP and RNA, add the protein-RNA complexes to cells.

(5) Incubate cells with complexes at 37 °C for 4h.

(6) Following incubation, aspirate the media and wash three times with 20 U/mL heparin PBS. Incubate cells with serum-containing media for a further 48h or longer depending upon the assay for activity.

(7) Analyze cells by immunoblot, qPCR, phenotypic assay, or other appropriate method.

[00465] David Liu's lab has further found +36 GFP to be an effective plasmid delivery reagent in a range of cells. As plasmid DNA is a larger cargo than siRNA, proportionately more +36 GFP protein is required to effectively complex plasmids. For effective plasmid delivery Applicants have developed a variant of +36 GFP bearing a C-terminal HA2 peptide tag, a known endosome-disrupting peptide derived from the influenza virus hemagglutinin protein. The following protocol has been effective in a variety of cells, but as above it is advised that plasmid DNA and supercharged protein doses be optimized for specific cell lines and delivery applications.

(1) One day before treatment, plate 1 x 10^5 per well in a 48-well plate.

(2) On the day of treatment, dilute purified þ36 GFP protein in serumfree media to a final concentration 2 mM. Add 1mg of plasmid DNA. Vortex to mix and incubate at room temperature for 10min.

(3) During incubation, aspirate media from cells and wash once with PBS.

(4) Following incubation of þ36 GFP and plasmid DNA, gently add the protein-DNA complexes to cells.

(5) Incubate cells with complexes at 37 C for 4h.

(6) Following incubation, aspirate the media and wash with PBS. Incubate cells in serum-containing media and incubate for a further 24–48h.

(7) Analyze plasmid delivery (e.g., by plasmid-driven gene expression) as appropriate.

[00466] See also, e.g., McNaughton et al., Proc. Natl. Acad. Sci. USA 106, 6111-6116 (2009); Cronican et al., ACS Chemical Biology 5, 747-752 (2010); Cronican et al., Chemistry & Biology 18, 833-838 (2011); Thompson et al., Methods in Enzymology 503, 293-319 (2012); Thompson, D.B., et al., Chemistry & Biology 19 (7), 831-843 (2012). The methods of the super charged proteins may be used and/or adapted for delivery of the CRISPR Cas system of the present invention. These systems of Dr. Lui and documents herein in inconjunction with herein teachints can be employed in the delivery of CRISPR Cas system(s) or component(s) thereof or nucleic acid molecule(s) coding therefor.

Implantable devices

[00467] In another embodiment, implantable devices are also contemplated for delivery of the CRISPR Cas system or component(s) thereof or nucleic acid molecule(s) coding therefor. For example, US Patent Publication 20110195123 discloses an implantable medical device which elutes a drug locally and in prolonged period is provided, including several types of such a device, the treatment modes of implementation and methods of implantation. The device comprising of polymeric substrate, such as a matrix for example, that is used as the device body, and drugs, and in some cases additional scaffolding materials, such as metals or additional polymers, and materials to enhance visibility and imaging. An implantable delivery device can be advantageous in providing release locally and over a prolonged period, where drug is released directly to the extracellular matrix (ECM) of the diseased area such as tumor, inflammation, degeneration or for symptomatic objectives, or to injured smooth muscle cells, or for prevention. One kind of drug is RNA, as disclosed above, and this system may be used/and or adapted to the CRISPR Cas system of the present invention. The modes of implantation in some embodiments are existing implantation procedures that are developed and used today for other treatments, including brachytherapy and needle biopsy. In such cases the dimensions of the new implant described in this invention are similar to the original implant. Typically a few devices are implanted during the same treatment procedure.

[00468] As described in US Patent Publication 20110195123, there is provided a drug delivery implantable or insertable system, including systems applicable to a cavity such as the abdominal cavity and/or any other type of administration in which the drug delivery system is not anchored or attached, comprising a biostable and/or degradable and/or bioabsorbable polymeric substrate, which may for example optionally be a matrix. It should be noted that the term "insertion" also includes implantation. The drug delivery system is preferably implemented as a "Loder" as described in US Patent Publication 20110195123.

[00469] The polymer or plurality of polymers are biocompatible, incorporating an agent and/or plurality of agents, enabling the release of agent at a controlled rate, wherein the total volume of the polymeric substrate, such as a matrix for example, in some embodiments is optionally and preferably no greater than a maximum volume that permits a therapeutic level of the agent to be reached. As a non-limiting example, such a volume is preferably within the range of 0.1 m^3 to 1000 mm^3, as required by the volume for the agent load. The Loder may optionally be larger, for example when incorporated with a device whose size is determined by functionality, for example and without limitation, a knee joint, an intra-uterine or cervical ring and the like.

[00470] The drug delivery system (for delivering the composition) is designed in some embodiments to preferably employ degradable polymers, wherein the main release mechanism is bulk erosion; or in some embodiments, non degradable, or slowly degraded polymers are used, wherein the main release mechanism is diffusion rather than bulk erosion, so that the outer part functions as membrane, and its internal part functions as a drug reservoir, which practically is not affected by the surroundings for an extended period (for example from about a week to about a few months). Combinations of different polymers with different release mechanisms may also optionally be used. The concentration gradient at the surface is preferably maintained effectively constant during a significant period of the total drug releasing period, and therefore the diffusion rate is effectively constant (termed "zero mode" diffusion). By the term "constant" it is meant a diffusion rate that is preferably maintained above the lower threshold of therapeutic effectiveness, but which may still optionally feature an initial burst and/or may fluctuate, for example increasing and decreasing to a certain degree. The diffusion rate is preferably so maintained for a prolonged period, and it can be considered constant to a certain level to optimize the therapeutically effective period, for example the effective silencing period.

[00471] The drug delivery system optionally and preferably is designed to shield the nucleotide based therapeutic agent from degradation, whether chemical in nature or due to attack from enzymes and other factors in the body of the subject.

[00472] The drug delivery system as described in US Patent Publication 20110195123 is optionally associated with sensing and/or activation appliances that are operated at and/or after implantation of the device, by non and/or minimally invasive methods of activation and/or acceleration/deceleration, for example optionally including but not limited to thermal heating and cooling, laser beams, and ultrasonic, including focused ultrasound and/or RF (radiofrequency) methods or devices.

[00473] According to some embodiments of US Patent Publication 20110195123, the site for local delivery may optionally include target sites characterized by high abnormal proliferation of cells, and suppressed apoptosis, including tumors, active and or chronic inflammation and infection including autoimmune diseases states, degenerating tissue including muscle and nervous tissue, chronic pain, degenerative sites, and location of bone fractures and other wound locations for enhancement of regeneration of tissue, and injured cardiac, smooth and striated muscle.

[00474] The site for implantation of the composition, or target site, preferably features a radius, area and/or volume that is sufficiently small for targeted local delivery. For example, the target site optionally has a diameter in a range of from about 0.1 mm to about 5 cm.

[00475] The location of the target site is preferably selected for maximum therapeutic efficacy. For example, the composition of the drug delivery system (optionally with a device for implantation as described above) is optionally and preferably implanted within or in the proximity of a tumor environment, or the blood supply associated thereof.

[00476] For example the composition (optionally with the device) is optionally implanted within or in the proximity to pancreas, prostate, breast, liver, via the nipple, within the vascular system and so forth.

[00477] The target location is optionally selected from the group consisting of (as non-limiting examples only, as optionally any site within the body may be suitable for implanting a Loder): 1. brain at degenerative sites like in Parkinson or Alzheimer disease at the basal ganglia, white and gray matter; 2. spine as in the case of amyotrophic lateral sclerosis (ALS); 3. uterine cervix to prevent HPV infection; 4. active and chronic inflammatory joints; 5. dermis as in the case of psoriasis; 6. sympathetic and sensoric nervous sites for analgesic effect; 7. Intra osseous

implantation; 8. acute and chronic infection sites; 9. Intra vaginal; 10. Inner ear--auditory system, labyrinth of the inner ear, vestibular system; 11. Intra tracheal; 12. Intra-cardiac; coronary, epicardiac; 13. urinary bladder; 14. biliary system; 15. parenchymal tissue including and not limited to the kidney, liver, spleen; 16. lymph nodes; 17. salivary glands; 18. dental gums; 19. Intra-articular (into joints); 20. Intra-ocular; 21. Brain tissue; 22. Brain ventricles; 23. Cavities, including abdominal cavity (for example but without limitation, for ovary cancer); 24. Intra esophageal and 25. Intra rectal.

[00478] Optionally insertion of the system (for example a device containing the composition) is associated with injection of material to the ECM at the target site and the vicinity of that site to affect local pH and/or temperature and/or other biological factors affecting the diffusion of the drug and/or drug kinetics in the ECM, of the target site and the vicinity of such a site.

[00479] Optionally, according to some embodiments, the release of said agent could be associated with sensing and/or activation appliances that are operated prior and/or at and/or after insertion, by non and/or minimally invasive and/or else methods of activation and/or acceleration/deceleration, including laser beam, radiation, thermal heating and cooling, and ultrasonic, including focused ultrasound and/or RF (radiofrequency) methods or devices, and chemical activators.

[00480] According to other embodiments of US Patent Publication 20110195123, the drug preferably comprises a RNA, for example for localized cancer cases in breast, pancreas, brain, kidney, bladder, lung, and prostate as described below. Although exemplified with RNAi, many drugs are applicable to be encapsulated in Loder, and can be used in association with this invention, as long as such drugs can be encapsulated with the Loder substrate, such as a matrix for example, and this system may be used and/or adapted to deliver the CRISPR Cas system of the present invention.

[00481] As another example of a specific application, neuro and muscular degenerative diseases develop due to abnormal gene expression. Local delivery of RNAs may have therapeutic properties for interfering with such abnormal gene expression. Local delivery of anti apoptotic, anti inflammatory and anti degenerative drugs including small drugs and macromolecules may also optionally be therapeutic. In such cases the Loder is applied for prolonged release at constant rate and/or through a dedicated device that is implanted separately. All of this may be used and/or adapted to the CRISPR Cas system of the present invention.

[00482] As yet another example of a specific application, psychiatric and cognitive disorders are treated with gene modifiers. Gene knockdown is a treatment option. Loders locally delivering agents to central nervous system sites are therapeutic options for psychiatric and cognitive disorders including but not limited to psychosis, bi-polar diseases, neurotic disorders and behavioral maladies. The Loders could also deliver locally drugs including small drugs and macromolecules upon implantation at specific brain sites. All of this may be used and/or adapted to the CRISPR Cas system of the present invention.

[00483] As another example of a specific application, silencing of innate and/or adaptive immune mediators at local sites enables the prevention of organ transplant rejection. Local delivery of RNAs and immunomodulating reagents with the Loder implanted into the transplanted organ and/or the implanted site renders local immune suppression by repelling immune cells such as CD8 activated against the transplanted organ. All of this may be used/and or adapted to the CRISPR Cas system of the present invention.

[00484] As another example of a specific application, vascular growth factors including VEGFs and angiogenin and others are essential for neovascularization. Local delivery of the factors, peptides, peptidomimetics, or suppressing their repressors is an important therapeutic modality; silencing the repressors and local delivery of the factors, peptides, macromolecules and small drugs stimulating angiogenesis with the Loder is therapeutic for peripheral, systemic and cardiac vascular disease.

[00485] The method of insertion, such as implantation, may optionally already be used for other types of tissue implantation and/or for insertions and/or for sampling tissues, optionally without modifications, or alternatively optionally only with non-major modifications in such methods. Such methods optionally include but are not limited to brachytherapy methods, biopsy, endoscopy with and/or without ultrasound, such as ERCP, stereotactic methods into the brain tissue, Laparoscopy, including implantation with a laparoscope into joints, abdominal organs, the bladder wall and body cavities.

Patient-specific screening methods

[00486] A CRISPR-Cas system that targets nucleotide, e.g., trinucleotide repeats can be used to screen patients or patent samples for the presence of such repeats. The repeats can be the target of the RNA of the CRISPR-Cas system, and if there is binding thereto by the CRISPR-Cas system, that binding can be detected, to thereby indicate that such a repeat is present. Thus, a CRISPR-

Cas system can be used to screen patients or patient samples for the presence of the repeat. The patient can then be administered suitable compound(s) to address the condition; or, can be administed a CRISPR-Cas system to bind to and cause insertion, deletion or mutation and alleviate the condition.

Nucleic acids, amino acids and proteins, Regulatory sequences, Vectors, etc

[00487] Nucleic acids, amino acids and proteins: The invention uses nucleic acids to bind target DNA sequences. This is advantageous as nucleic acids are much easier and cheaper to produce than proteins, and the specificity can be varied according to the length of the stretch where homology is sought. Complex 3-D positioning of multiple fingers, for example is not required. The terms "polynucleotide", "nucleotide", "nucleotide sequence", "nucleic acid" and "oligonucleotide" are used interchangeably. They refer to a polymeric form of nucleotides of any length, either deoxyribonucleotides or ribonucleotides, or analogs thereof. Polynucleotides may have any three dimensional structure, and may perform any function, known or unknown. The following are non-limiting examples of polynucleotides: coding or non-coding regions of a gene or gene fragment, loci (locus) defined from linkage analysis, exons, introns, messenger RNA (mRNA), transfer RNA, ribosomal RNA, short interfering RNA (siRNA), short-hairpin RNA (shRNA), micro-RNA (miRNA), ribozymes, cDNA, recombinant polynucleotides, branched polynucleotides, plasmids, vectors, isolated DNA of any sequence, isolated RNA of any sequence, nucleic acid probes, and primers. The term also encompasses nucleic-acid-like structures with synthetic backbones, see, e.g., Eckstein, 1991; Baserga et al., 1992; Milligan, 1993; WO 97/03211; WO 96/39154; Mata, 1997; Strauss-Soukup, 1997; and Samstag, 1996. A polynucleotide may comprise one or more modified nucleotides, such as methylated nucleotides and nucleotide analogs. If present, modifications to the nucleotide structure may be imparted before or after assembly of the polymer. The sequence of nucleotides may be interrupted by non-nucleotide components. A polynucleotide may be further modified after polymerization, such as by conjugation with a labeling component. As used herein the term "wild type" is a term of the art understood by skilled persons and means the typical form of an organism, strain, gene or characteristic as it occurs in nature as distinguished from mutant or variant forms. A "wild type" can be a base line. As used herein the term "variant" should be taken to mean the exhibition of qualities that have a pattern that deviates from what occurs in nature. The terms "non-naturally occurring" or "engineered" are used interchangeably and indicate the involvement of the hand of

man. The terms, when referring to nucleic acid molecules or polypeptides mean that the nucleic acid molecule or the polypeptide is at least substantially free from at least one other component with which they are naturally associated in nature and as found in nature. "Complementarity" refers to the ability of a nucleic acid to form hydrogen bond(s) with another nucleic acid sequence by either traditional Watson-Crick base pairing or other non-traditional types. A percent complementarity indicates the percentage of residues in a nucleic acid molecule which can form hydrogen bonds (e.g., Watson-Crick base pairing) with a second nucleic acid sequence (e.g., 5, 6, 7, 8, 9, 10 out of 10 being 50%, 60%, 70%, 80%, 90%, and 100% complementary). "Perfectly complementary" means that all the contiguous residues of a nucleic acid sequence will hydrogen bond with the same number of contiguous residues in a second nucleic acid sequence. "Substantially complementary" as used herein refers to a degree of complementarity that is at least 60%, 65%, 70%, 75%, 80%, 85%, 90%, 95%, 97%, 98%, 99%, or 100% over a region of 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 30, 35, 40, 45, 50, or more nucleotides, or refers to two nucleic acids that hybridize under stringent conditions. As used herein, "stringent conditions" for hybridization refer to conditions under which a nucleic acid having complementarity to a target sequence predominantly hybridizes with the target sequence, and substantially does not hybridize to non-target sequences. Stringent conditions are generally sequence-dependent, and vary depending on a number of factors. In general, the longer the sequence, the higher the temperature at which the sequence specifically hybridizes to its target sequence. Non-limiting examples of stringent conditions are described in detail in Tijssen (1993), Laboratory Techniques In Biochemistry And Molecular Biology-Hybridization With Nucleic Acid Probes Part I, Second Chapter "Overview of principles of hybridization and the strategy of nucleic acid probe assay", Elsevier, N.Y. Where reference is made to a polynucleotide sequence, then complementary or partially complementary sequences are also envisaged. These are preferably capable of hybridising to the reference sequence under highly stringent conditions. Generally, in order to maximize the hybridization rate, relatively low-stringency hybridization conditions are selected: about 20 to 25° C lower than the thermal melting point (T_m). The T_m is the temperature at which 50% of specific target sequence hybridizes to a perfectly complementary probe in solution at a defined ionic strength and pH. Generally, in order to require at least about 85% nucleotide complementarity of hybridized sequences, highly stringent washing conditions are selected to be about 5 to 15° C lower than the T_m . In order to require at least about 70%

nucleotide complementarity of hybridized sequences, moderately-stringent washing conditions are selected to be about 15 to 30° C lower than the T_m . Highly permissive (very low stringency) washing conditions may be as low as 50° C below the T_m , allowing a high level of mis-matching between hybridized sequences. Those skilled in the art will recognize that other physical and chemical parameters in the hybridization and wash stages can also be altered to affect the outcome of a detectable hybridization signal from a specific level of homology between target and probe sequences. Preferred highly stringent conditions comprise incubation in 50% formamide, 5×SSC, and 1% SDS at 42° C, or incubation in 5×SSC and 1% SDS at 65° C, with wash in 0.2×SSC and 0.1% SDS at 65° C. "Hybridization" refers to a reaction in which one or more polynucleotides react to form a complex that is stabilized via hydrogen bonding between the bases of the nucleotide residues. The hydrogen bonding may occur by Watson Crick base pairing, Hoogstein binding, or in any other sequence specific manner. The complex may comprise two strands forming a duplex structure, three or more strands forming a multi stranded complex, a single self-hybridizing strand, or any combination of these. A hybridization reaction may constitute a step in a more extensive process, such as the initiation of PCR, or the cleavage of a polynucleotide by an enzyme. A sequence capable of hybridizing with a given sequence is referred to as the "complement" of the given sequence. As used herein, the term "genomic locus" or "locus" (plural loci) is the specific location of a gene or DNA sequence on a chromosome. A "gene" refers to stretches of DNA or RNA that encode a polypeptide or an RNA chain that has functional role to play in an organism and hence is the molecular unit of heredity in living organisms. For the purpose of this invention it may be considered that genes include regions which regulate the production of the gene product, whether or not such regulatory sequences are adjacent to coding and/or transcribed sequences. Accordingly, a gene includes, but is not necessarily limited to, promoter sequences, terminators, translational regulatory sequences such as ribosome binding sites and internal ribosome entry sites, enhancers, silencers, insulators, boundary elements, replication origins, matrix attachment sites and locus control regions. As used herein, "expression of a genomic locus" or "gene expression" is the process by which information from a gene is used in the synthesis of a functional gene product. The products of gene expression are often proteins, but in non-protein coding genes such as rRNA genes or tRNA genes, the product is functional RNA. The process of gene expression is used by all known life - eukaryotes (including multicellular organisms), prokaryotes (bacteria and archaea) and viruses to generate functional

products to survive. As used herein "expression" of a gene or nucleic acid encompasses not only cellular gene expression, but also the transcription and translation of nucleic acid(s) in cloning systems and in any other context. As used herein, "expression" also refers to the process by which a polynucleotide is transcribed from a DNA template (such as into and mRNA or other RNA transcript) and/or the process by which a transcribed mRNA is subsequently translated into peptides, polypeptides, or proteins. Transcripts and encoded polypeptides may be collectively referred to as "gene product." If the polynucleotide is derived from genomic DNA, expression may include splicing of the mRNA in a eukaryotic cell. The terms "polypeptide", "peptide" and "protein" are used interchangeably herein to refer to polymers of amino acids of any length. The polymer may be linear or branched, it may comprise modified amino acids, and it may be interrupted by non amino acids. The terms also encompass an amino acid polymer that has been modified; for example, disulfide bond formation, glycosylation, lipidation, acetylation, phosphorylation, or any other manipulation, such as conjugation with a labeling component. As used herein the term "amino acid" includes natural and/or unnatural or synthetic amino acids, including glycine and both the D or L optical isomers, and amino acid analogs and peptidomimetics. As used herein, the term "domain" or "protein domain" refers to a part of a protein sequence that may exist and function independently of the rest of the protein chain. As described in aspects of the invention, sequence identity is related to sequence homology. Homology comparisons may be conducted by eye, or more usually, with the aid of readily available sequence comparison programs. These commercially available computer programs may calculate percent (%) homology between two or more sequences and may also calculate the sequence identity shared by two or more amino acid or nucleic acid sequences. In some preferred embodiments, the capping region of the dTALEs described herein have sequences that are at least 95% identical or share identity to the capping region amino acid sequences provided herein. Sequence homologies may be generated by any of a number of computer programs known in the art, for example BLAST or FASTA, etc. A suitable computer program for carrying out such an alignment is the GCG Wisconsin Bestfit package (University of Wisconsin, U.S.A; Devereux et al., 1984, Nucleic Acids Research 12:387). Examples of other software than may perform sequence comparisons include, but are not limited to, the BLAST package (see Ausubel et al., 1999 ibid – Chapter 18), FASTA (Atschul et al., 1990, J. Mol. Biol., 403-410) and the GENEWORKS suite of comparison tools. Both BLAST and FASTA are available for offline and

online searching (see Ausubel et al., 1999 ibid, pages 7-58 to 7-60). However it is preferred to use the GCG Bestfit program. Percentage (%) sequence homology may be calculated over contiguous sequences, i.e., one sequence is aligned with the other sequence and each amino acid or nucleotide in one sequence is directly compared with the corresponding amino acid or nucleotide in the other sequence, one residue at a time. This is called an "ungapped" alignment. Typically, such ungapped alignments are performed only over a relatively short number of residues. Although this is a very simple and consistent method, it fails to take into consideration that, for example, in an otherwise identical pair of sequences, one insertion or deletion may cause the following amino acid residues to be put out of alignment, thus potentially resulting in a large reduction in % homology when a global alignment is performed. Consequently, most sequence comparison methods are designed to produce optimal alignments that take into consideration possible insertions and deletions without unduly penalizing the overall homology or identity score. This is achieved by inserting "gaps" in the sequence alignment to try to maximize local homology or identity. However, these more complex methods assign "gap penalties" to each gap that occurs in the alignment so that, for the same number of identical amino acids, a sequence alignment with as few gaps as possible - reflecting higher relatedness between the two compared sequences - may achieve a higher score than one with many gaps. "Affinity gap costs" are typically used that charge a relatively high cost for the existence of a gap and a smaller penalty for each subsequent residue in the gap. This is the most commonly used gap scoring system. High gap penalties may, of course, produce optimized alignments with fewer gaps. Most alignment programs allow the gap penalties to be modified. However, it is preferred to use the default values when using such software for sequence comparisons. For example, when using the GCG Wisconsin Bestfit package the default gap penalty for amino acid sequences is -12 for a gap and -4 for each extension. Calculation of maximum % homology therefore first requires the production of an optimal alignment, taking into consideration gap penalties. A suitable computer program for carrying out such an alignment is the GCG Wisconsin Bestfit package (Devereux et al., 1984 *Nuc. Acids Research* 12 p387). Examples of other software than may perform sequence comparisons include, but are not limited to, the BLAST package (see Ausubel et al., 1999 *Short Protocols in Molecular Biology*, 4th Ed. – Chapter 18), FASTA (Altschul et al., 1990 *J. Mol. Biol.* 403-410) and the GENEWORKS suite of comparison tools. Both BLAST and FASTA are available for offline and online searching (see Ausubel et al., 1999, *Short Protocols in Molecular Biology*, pages 7-58 to 7-60). However, for

some applications, it is preferred to use the GCG Bestfit program. A new tool, called BLAST 2 Sequences is also available for comparing protein and nucleotide sequences (see *FEMS Microbiol Lett.* 1999 174(2): 247-50; *FEMS Microbiol Lett.* 1999 177(1): 187-8 and the website of the National Center for Biotechnology information at the website of the National Institutes for Health). Although the final % homology may be measured in terms of identity, the alignment process itself is typically not based on an all-or-nothing pair comparison. Instead, a scaled similarity score matrix is generally used that assigns scores to each pair-wise comparison based on chemical similarity or evolutionary distance. An example of such a matrix commonly used is the BLOSUM62 matrix - the default matrix for the BLAST suite of programs. GCG Wisconsin programs generally use either the public default values or a custom symbol comparison table, if supplied (see user manual for further details). For some applications, it is preferred to use the public default values for the GCG package, or in the case of other software, the default matrix, such as BLOSUM62. Alternatively, percentage homologies may be calculated using the multiple alignment feature in DNASIS™ (Hitachi Software), based on an algorithm, analogous to CLUSTAL (Higgins DG & Sharp PM (1988), *Gene* 73(1), 237-244). Once the software has produced an optimal alignment, it is possible to calculate % homology, preferably % sequence identity. The software typically does this as part of the sequence comparison and generates a numerical result. The sequences may also have deletions, insertions or substitutions of amino acid residues which produce a silent change and result in a functionally equivalent substance. Deliberate amino acid substitutions may be made on the basis of similarity in amino acid properties (such as polarity, charge, solubility, hydrophobicity, hydrophilicity, and/or the amphipathic nature of the residues) and it is therefore useful to group amino acids together in functional groups. Amino acids may be grouped together based on the properties of their side chains alone. However, it is more useful to include mutation data as well. The sets of amino acids thus derived are likely to be conserved for structural reasons. These sets may be described in the form of a Venn diagram (Livingstone C.D. and Barton G.J. (1993) "Protein sequence alignments: a strategy for the hierarchical analysis of residue conservation" *Comput. Appl. Biosci.* 9: 745-756) (Taylor W.R. (1986) "The classification of amino acid conservation" *J. Theor. Biol.* 119; 205-218). Conservative substitutions may be made, for example according to the table below which describes a generally accepted Venn diagram grouping of amino acids.

Set		Sub-set	
Hydrophobic	F W Y H K M I L V A G C	Aromatic	F W Y H
		Aliphatic	I L V
Polar	W Y H K R E D C S T N Q	Charged	H K R E D
		Positively charged	H K R
		Negatively charged	E D
Small	V C A G S P T N D	Tiny	A G S

[00488] Embodiments of the invention include sequences (both polynucleotide or polypeptide) which may comprise homologous substitution (substitution and replacement are both used herein to mean the interchange of an existing amino acid residue or nucleotide, with an alternative residue or nucleotide) that may occur i.e., like-for-like substitution in the case of amino acids such as basic for basic, acidic for acidic, polar for polar, etc. Non-homologous substitution may also occur i.e., from one class of residue to another or alternatively involving the inclusion of unnatural amino acids such as ornithine (hereinafter referred to as Z), diaminobutyric acid ornithine (hereinafter referred to as B), norleucine ornithine (hereinafter referred to as O), pyriylalanine, thienylalanine, naphthylalanine and phenylglycine. Variant amino acid sequences may include suitable spacer groups that may be inserted between any two amino acid residues of the sequence including alkyl groups such as methyl, ethyl or propyl groups in addition to amino acid spacers such as glycine or β-alanine residues. A further form of variation, which involves the presence of one or more amino acid residues in peptoid form, may be well understood by those skilled in the art. For the avoidance of doubt, "the peptoid form" is used to refer to variant amino acid residues wherein the α-carbon substituent group is on the residue's nitrogen atom rather than the α-carbon. Processes for preparing peptides in the peptoid form are known in the art, for example Simon RJ et al., *PNAS* (1992) 89(20), 9367-9371 and Horwell DC, *Trends Biotechnol.* (1995) 13(4), 132-134.

[00489] For purpose of this invention, amplification means any method employing a primer and a polymerase capable of replicating a target sequence with reasonable fidelity. Amplification may be carried out by natural or recombinant DNA polymerases such as TaqGold™, T7 DNA

polymerase, Klenow fragment of E.coli DNA polymerase, and reverse transcriptase. A preferred amplification method is PCR.

[00490] In certain aspects the invention involves vectors. A used herein, a "vector" is a tool that allows or facilitates the transfer of an entity from one environment to another. It is a replicon, such as a plasmid, phage, or cosmid, into which another DNA segment may be inserted so as to bring about the replication of the inserted segment. Generally, a vector is capable of replication when associated with the proper control elements. In general, the term "vector" refers to a nucleic acid molecule capable of transporting another nucleic acid to which it has been linked. Vectors include, but are not limited to, nucleic acid molecules that are single-stranded, double-stranded, or partially double-stranded; nucleic acid molecules that comprise one or more free ends, no free ends (e.g. circular); nucleic acid molecules that comprise DNA, RNA, or both; and other varieties of polynucleotides known in the art. One type of vector is a "plasmid," which refers to a circular double stranded DNA loop into which additional DNA segments can be inserted, such as by standard molecular cloning techniques. Another type of vector is a viral vector, wherein virally-derived DNA or RNA sequences are present in the vector for packaging into a virus (e.g. retroviruses, replication defective retroviruses, adenoviruses, replication defective adenoviruses, and adeno-associated viruses (AAVs)). Viral vectors also include polynucleotides carried by a virus for transfection into a host cell. Certain vectors are capable of autonomous replication in a host cell into which they are introduced (e.g. bacterial vectors having a bacterial origin of replication and episomal mammalian vectors). Other vectors (e.g., non-episomal mammalian vectors) are integrated into the genome of a host cell upon introduction into the host cell, and thereby are replicated along with the host genome. Moreover, certain vectors are capable of directing the expression of genes to which they are operatively-linked. Such vectors are referred to herein as "expression vectors." Common expression vectors of utility in recombinant DNA techniques are often in the form of plasmids.

[00491] Recombinant expression vectors can comprise a nucleic acid of the invention in a form suitable for expression of the nucleic acid in a host cell, which means that the recombinant expression vectors include one or more regulatory elements, which may be selected on the basis of the host cells to be used for expression, that is operatively-linked to the nucleic acid sequence to be expressed. Within a recombinant expression vector, "operably linked" is intended to mean that the nucleotide sequence of interest is linked to the regulatory element(s) in a manner that allows

for expression of the nucleotide sequence (e.g. in an *in vitro* transcription/translation system or in a host cell when the vector is introduced into the host cell). With regards to recombination and cloning methods, mention is made of U.S. patent application 10/815,730, published September 2, 2004 as US 2004-0171156 A1, the contents of which are herein incorporated by reference in their entirety.

[00492] Aspects of the invention relate to bicistronic vectors for chimeric RNA and Cas9. Bicistronic expression vectors for chimeric RNA and Cas9 are preferred. In general and particularly in this embodiment Cas9 is preferably driven by the CBh promoter. The chimeric RNA may preferably be driven by a Pol III promoter, such as a U6 promoter. Ideally the two are combined. The chimeric guide RNA typically consists of a 20bp guide sequence (Ns) and this may be joined to the tracr sequence (running from the first "U" of the lower strand to the end of the transcript). The tracr sequence may be truncated at various positions as indicated. The guide and tracr sequences are separated by the tracr-mate sequence, which may be GUUUUAGAGCUA. This may be followed by the loop sequence GAAA as shown. Both of these are preferred examples. Applicants have demonstrated Cas9-mediated indels at the human *EMX1* and *PVALB* loci by SURVEYOR assays. ChiRNAs are indicated by their "+n" designation, and crRNA refers to a hybrid RNA where guide and tracr sequences are expressed as separate transcripts. Throughout this application, chimeric RNA may also be called single guide, or synthetic guide RNA (sgRNA). The loop is preferably GAAA, but it is not limited to this sequence or indeed to being only 4bp in length. Indeed, preferred loop forming sequences for use in hairpin structures are four nucleotides in length, and most preferably have the sequence GAAA. However, longer or shorter loop sequences may be used, as may alternative sequences. The sequences preferably include a nucleotide triplet (for example, AAA), and an additional nucleotide (for example C or G). Examples of loop forming sequences include CAAA and AAAG. In practicing any of the methods disclosed herein, a suitable vector can be introduced to a cell or an embryo via one or more methods known in the art, including without limitation, microinjection, electroporation, sonoporation, biolistics, calcium phosphate-mediated transfection, cationic transfection, liposome transfection, dendrimer transfection, heat shock transfection, nucleofection transfection, magnetofection, lipofection, impalefection, optical transfection, proprietary agent-enhanced uptake of nucleic acids, and delivery via liposomes, immunoliposomes, virosomes, or artificial virions. In some methods, the vector is introduced into an embryo by microinjection. The vector

or vectors may be microinjected into the nucleus or the cytoplasm of the embryo. In some methods, the vector or vectors may be introduced into a cell by nucleofection.

[00493] The term "regulatory element" is intended to include promoters, enhancers, internal ribosomal entry sites (IRES), and other expression control elements (e.g. transcription termination signals, such as polyadenylation signals and poly-U sequences). Such regulatory elements are described, for example, in Goeddel, GENE EXPRESSION TECHNOLOGY: METHODS IN ENZYMOLOGY 185, Academic Press, San Diego, Calif. (1990). Regulatory elements include those that direct constitutive expression of a nucleotide sequence in many types of host cell and those that direct expression of the nucleotide sequence only in certain host cells (e.g., tissue-specific regulatory sequences). A tissue-specific promoter may direct expression primarily in a desired tissue of interest, such as muscle, neuron, bone, skin, blood, specific organs (e.g. liver, pancreas), or particular cell types (e.g. lymphocytes). Regulatory elements may also direct expression in a temporal-dependent manner, such as in a cell-cycle dependent or developmental stage-dependent manner, which may or may not also be tissue or cell-type specific. In some embodiments, a vector comprises one or more pol III promoter (e.g. 1, 2, 3, 4, 5, or more pol III promoters), one or more pol II promoters (e.g. 1, 2, 3, 4, 5, or more pol II promoters), one or more pol I promoters (e.g. 1, 2, 3, 4, 5, or more pol I promoters), or combinations thereof. Examples of pol III promoters include, but are not limited to, U6 and H1 promoters. Examples of pol II promoters include, but are not limited to, the retroviral Rous sarcoma virus (RSV) LTR promoter (optionally with the RSV enhancer), the cytomegalovirus (CMV) promoter (optionally with the CMV enhancer) [see, e.g., Boshart et al, Cell, 41:521-530 (1985)], the SV40 promoter, the dihydrofolate reductase promoter, the β-actin promoter, the phosphoglycerol kinase (PGK) promoter, and the EF1α promoter. Also encompassed by the term "regulatory element" are enhancer elements, such as WPRE; CMV enhancers; the R-U5' segment in LTR of HTLV-I (Mol. Cell. Biol., Vol. 8(1), p. 466-472, 1988); SV40 enhancer; and the intron sequence between exons 2 and 3 of rabbit β-globin (Proc. Natl. Acad. Sci. USA., Vol. 78(3), p. 1527-31, 1981). It will be appreciated by those skilled in the art that the design of the expression vector can depend on such factors as the choice of the host cell to be transformed, the level of expression desired, etc. A vector can be introduced into host cells to thereby produce transcripts, proteins, or peptides, including fusion proteins or peptides, encoded by nucleic acids as described herein (e.g., clustered regularly interspersed short palindromic repeats (CRISPR) transcripts, proteins, enzymes, mutant

forms thereof, fusion proteins thereof, etc.). With regards to regulatory sequences, mention is made of U.S. patent application 10/491,026, the contents of which are incorporated by reference herein in their entirety. With regards to promoters, mention is made of PCT publication WO 2011/028929 and U.S. application 12/511,940, the contents of which are incorporated by reference herein in their entirety.

[00494] Vectors can be designed for expression of CRISPR transcripts (e.g. nucleic acid transcripts, proteins, or enzymes) in prokaryotic or eukaryotic cells. For example, CRISPR transcripts can be expressed in bacterial cells such as Escherichia coli, insect cells (using baculovirus expression vectors), yeast cells, or mammalian cells. Suitable host cells are discussed further in Goeddel, GENE EXPRESSION TECHNOLOGY: METHODS IN ENZYMOLOGY 185, Academic Press, San Diego, Calif. (1990). Alternatively, the recombinant expression vector can be transcribed and translated *in vitro*, for example using T7 promoter regulatory sequences and T7 polymerase.

[00495] Vectors may be introduced and propagated in a prokaryote or prokaryotic cell. In some embodiments, a prokaryote is used to amplify copies of a vector to be introduced into a eukaryotic cell or as an intermediate vector in the production of a vector to be introduced into a eukaryotic cell (e.g. amplifying a plasmid as part of a viral vector packaging system). In some embodiments, a prokaryote is used to amplify copies of a vector and express one or more nucleic acids, such as to provide a source of one or more proteins for delivery to a host cell or host organism. Expression of proteins in prokaryotes is most often carried out in Escherichia coli with vectors containing constitutive or inducible promoters directing the expression of either fusion or non-fusion proteins. Fusion vectors add a number of amino acids to a protein encoded therein, such as to the amino terminus of the recombinant protein. Such fusion vectors may serve one or more purposes, such as: (i) to increase expression of recombinant protein; (ii) to increase the solubility of the recombinant protein; and (iii) to aid in the purification of the recombinant protein by acting as a ligand in affinity purification. Often, in fusion expression vectors, a proteolytic cleavage site is introduced at the junction of the fusion moiety and the recombinant protein to enable separation of the recombinant protein from the fusion moiety subsequent to purification of the fusion protein. Such enzymes, and their cognate recognition sequences, include Factor Xa, thrombin and enterokinase. Example fusion expression vectors include pGEX (Pharmacia Biotech Inc; Smith and Johnson, 1988. *Gene* 67: 31-40), pMAL (New England Biolabs, Beverly, Mass.) and pRIT5

(Pharmacia, Piscataway, N.J.) that fuse glutathione S-transferase (GST), maltose E binding protein, or protein A, respectively, to the target recombinant protein. Examples of suitable inducible non-fusion E. coli expression vectors include pTrc (Amrann et al., (1988) Gene 69:301-315) and pET 11d (Studier et al., GENE EXPRESSION TECHNOLOGY: METHODS IN ENZYMOLOGY 185, Academic Press, San Diego, Calif. (1990) 60-89). In some embodiments, a vector is a yeast expression vector. Examples of vectors for expression in yeast Saccharomyces cerivisae include pYepSec1 (Baldari, et al., 1987. EMBO J. 6: 229-234), pMFa (Kuijan and Herskowitz, 1982. Cell 30: 933-943), pJRY88 (Schultz et al., 1987. Gene 54: 113-123), pYES2 (Invitrogen Corporation, San Diego, Calif.), and picZ (InVitrogen Corp, San Diego, Calif.). In some embodiments, a vector drives protein expression in insect cells using baculovirus expression vectors. Baculovirus vectors available for expression of proteins in cultured insect cells (e.g., SF9 cells) include the pAc series (Smith, et al., 1983. Mol. Cell. Biol. 3: 2156-2165) and the pVL series (Lucklow and Summers, 1989. Virology 170: 31-39).

[00496] In some embodiments, a vector is capable of driving expression of one or more sequences in mammalian cells using a mammalian expression vector. Examples of mammalian expression vectors include pCDM8 (Seed, 1987. Nature 329: 840) and pMT2PC (Kaufman, et al., 1987. EMBO J. 6: 187-195). When used in mammalian cells, the expression vector's control functions are typically provided by one or more regulatory elements. For example, commonly used promoters are derived from polyoma, adenovirus 2, cytomegalovirus, simian virus 40, and others disclosed herein and known in the art. For other suitable expression systems for both prokaryotic and eukaryotic cells see, e.g., Chapters 16 and 17 of Sambrook, et al., MOLECULAR CLONING: A LABORATORY MANUAL. 2nd ed., Cold Spring Harbor Laboratory, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1989.

[00497] In some embodiments, the recombinant mammalian expression vector is capable of directing expression of the nucleic acid preferentially in a particular cell type (e.g., tissue-specific regulatory elements are used to express the nucleic acid). Tissue-specific regulatory elements are known in the art. Non-limiting examples of suitable tissue-specific promoters include the albumin promoter (liver-specific; Pinkert, et al., 1987. *Genes Dev.* 1: 268-277), lymphoid-specific promoters (Calame and Eaton, 1988. *Adv. Immunol.* 43: 235-275), in particular promoters of T cell receptors (Winoto and Baltimore, 1989. *EMBO J.* 8: 729-733) and immunoglobulins (Baneiji, et al., 1983. *Cell* 33: 729-740; Queen and Baltimore, 1983. *Cell* 33: 741-748), neuron-specific

promoters (e.g., the neurofilament promoter; Byrne and Ruddle, 1989. *Proc. Natl. Acad. Sci. USA* 86: 5473-5477), pancreas-specific promoters (Edlund, et al., 1985. *Science* 230: 912-916), and mammary gland-specific promoters (e.g., milk whey promoter; U.S. Pat. No. 4,873,316 and European Application Publication No. 264,166). Developmentally-regulated promoters are also encompassed, e.g., the murine hox promoters (Kessel and Gruss, 1990. *Science* 249: 374-379) and the α-fetoprotein promoter (Campes and Tilghman, 1989. *Genes Dev.* 3: 537-546). With regards to these prokaryotic and eukaryotic vectors, mention is made of U.S. Patent 6,750,059, the contents of which are incorporated by reference herein in their entirety. Other embodiments of the invention may relate to the use of viral vectors, with regards to which mention is made of U.S. Patent application 13/092,085, the contents of which are incorporated by reference herein in their entirety. Tissue-specific regulatory elements are known in the art and in this regard, mention is made of U.S. Patent 7,776,321, the contents of which are incorporated by reference herein in their entirety. In some embodiments, a regulatory element is operably linked to one or more elements of a CRISPR system so as to drive expression of the one or more elements of the CRISPR system. In general, CRISPRs (Clustered Regularly Interspaced Short Palindromic Repeats), also known as SPIDRs (SPacer Interspersed Direct Repeats), constitute a family of DNA loci that are usually specific to a particular bacterial species. The CRISPR locus comprises a distinct class of interspersed short sequence repeats (SSRs) that were recognized in E. coli (Ishino et al., J. Bacteriol., 169:5429-5433 [1987]; and Nakata et al., J. Bacteriol., 171:3553-3556 [1989]), and associated genes. Similar interspersed SSRs have been identified in Haloferax mediterranei, Streptococcus pyogenes, Anabaena, and Mycobacterium tuberculosis (See, Groenen et al., Mol. Microbiol., 10:1057-1065 [1993]; Hoe et al., Emerg. Infect. Dis., 5:254-263 [1999]; Masepohl et al., Biochim. Biophys. Acta 1307:26-30 [1996]; and Mojica et al., Mol. Microbiol., 17:85-93 [1995]). The CRISPR loci typically differ from other SSRs by the structure of the repeats, which have been termed short regularly spaced repeats (SRSRs) (Janssen et al., OMICS J. Integ. Biol., 6:23-33 [2002]; and Mojica et al., Mol. Microbiol., 36:244-246 [2000]). In general, the repeats are short elements that occur in clusters that are regularly spaced by unique intervening sequences with a substantially constant length (Mojica et al., [2000], supra). Although the repeat sequences are highly conserved between strains, the number of interspersed repeats and the sequences of the spacer regions typically differ from strain to strain (van Embden et al., J. Bacteriol., 182:2393-2401 [2000]). CRISPR loci have been identified in more than 40 prokaryotes (See e.g., Jansen et

al., Mol. Microbiol., 43:1565-1575 [2002]; and Mojica et al., [2005]) including, but not limited to Aeropyrum, Pyrobaculum, Sulfolobus, Archaeoglobus, Halocarcula, Methanobacterium, Methanococcus, Methanosarcina, Methanopyrus, Pyrococcus, Picrophilus, Thermoplasma, Corynebacterium, Mycobacterium, Streptomyces, Aquifex, Porphyromonas, Chlorobium, Thermus, Bacillus, Listeria, Staphylococcus, Clostridium, Thermoanaerobacter, Mycoplasma, Fusobacterium, Azarcus, Chromobacterium, Neisseria, Nitrosomonas, Desulfovibrio, Geobacter, Myxococcus, Campylobacter, Wolinella, Acinetobacter, Erwinia, Escherichia, Legionella, Methylococcus, Pasteurella, Photobacterium, Salmonella, Xanthomonas, Yersinia, Treponema, and Thermotoga.

[00498] In some embodiments, the CRISPR enzyme is part of a fusion protein comprising one or more heterologous protein domains (e.g. about or more than about 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, or more domains in addition to the CRISPR enzyme). A CRISPR enzyme fusion protein may comprise any additional protein sequence, and optionally a linker sequence between any two domains. Examples of protein domains that may be fused to a CRISPR enzyme include, without limitation, epitope tags, reporter gene sequences, and protein domains having one or more of the following activities: methylase activity, demethylase activity, transcription activation activity, transcription repression activity, transcription release factor activity, histone modification activity, RNA cleavage activity and nucleic acid binding activity. Non-limiting examples of epitope tags include histidine (His) tags, V5 tags, FLAG tags, influenza hemagglutinin (HA) tags, Myc tags, VSV-G tags, and thioredoxin (Trx) tags. Examples of reporter genes include, but are not limited to, glutathione-S-transferase (GST), horseradish peroxidase (HRP), chloramphenicol acetyltransferase (CAT) beta-galactosidase, beta-glucuronidase, luciferase, green fluorescent protein (GFP), HcRed, DsRed, cyan fluorescent protein (CFP), yellow fluorescent protein (YFP), and autofluorescent proteins including blue fluorescent protein (BFP). A CRISPR enzyme may be fused to a gene sequence encoding a protein or a fragment of a protein that bind DNA molecules or bind other cellular molecules, including but not limited to maltose binding protein (MBP), S-tag, Lex A DNA binding domain (DBD) fusions, GAL4 DNA binding domain fusions, and herpes simplex virus (HSV) BP16 protein fusions. Additional domains that may form part of a fusion protein comprising a CRISPR enzyme are described in US20110059502, incorporated herein by reference. In some embodiments, a tagged CRISPR enzyme is used to identify the location of a target sequence.

[00499] In some embodiments, a CRISPR enzyme may form a component of an inducible system. The inducible nature of the system would allow for spatiotemporal control of gene editing or gene expression using a form of energy. The form of energy may include but is not limited to electromagnetic radiation, sound energy, chemical energy and thermal energy. Examples of inducible system include tetracycline inducible promoters (Tet-On or Tet-Off), small molecule two-hybrid transcription activations systems (FKBP, ABA, etc), or light inducible systems (Phytochrome, LOV domains, or cryptochrome).In one embodiment, the CRISPR enzyme may be a part of a Light Inducible Transcriptional Effector (LITE) to direct changes in transcriptional activity in a sequence-specific manner. The components of a light may include a CRISPR enzyme, a light-responsive cytochrome heterodimer (e.g. from Arabidopsis thaliana), and a transcriptional activation/repression domain. Further examples of inducible DNA binding proteins and methods for their use are provided in US 61/736465 and US 61/721,283, which is hereby incorporated by reference in its entirety.

[00500] The practice of the present invention employs, unless otherwise indicated, conventional techniques of immunology, biochemistry, chemistry, molecular biology, microbiology, cell biology, genomics and recombinant DNA, which are within the skill of the art. See Sambrook, Fritsch and Maniatis, MOLECULAR CLONING: A LABORATORY MANUAL, 2nd edition (1989); CURRENT PROTOCOLS IN MOLECULAR BIOLOGY (F. M. Ausubel, et al. eds., (1987)); the series METHODS IN ENZYMOLOGY (Academic Press, Inc.): PCR 2: A PRACTICAL APPROACH (M.J. MacPherson, B.D. Hames and G.R. Taylor eds. (1995)), Harlow and Lane, eds. (1988) ANTIBODIES, A LABORATORY MANUAL, and ANIMAL CELL CULTURE (R.I. Freshney, ed. (1987)).

Modifying a target

[00501] In one aspect, the invention provides for methods of modifying a target polynucleotide in a eukaryotic cell, which may be *in vivo, ex vivo* or *in vitro*. In some embodiments, the method comprises sampling a cell or population of cells from a human or non-human animal, and modifying the cell or cells. Culturing may occur at any stage *ex vivo*. The cell or cells may even be re-introduced into the non-human animal or plant. For re-introduced cells it is particularly preferred that the cells are stem cells.

[00502] In some embodiments, the method comprises allowing a CRISPR complex to bind to the target polynucleotide to effect cleavage of said target polynucleotide thereby modifying the

target polynucleotide, wherein the CRISPR complex comprises a CRISPR enzyme complexed with a guide sequence hybridized or hybridizable to a target sequence within said target polynucleotide, wherein said guide sequence is linked to a tracr mate sequence which in turn hybridizes to a tracr sequence.

[00503] In one aspect, the invention provides a method of modifying expression of a polynucleotide in a eukaryotic cell. In some embodiments, the method comprises allowing a CRISPR complex to bind to the polynucleotide such that said binding results in increased or decreased expression of said polynucleotide; wherein the CRISPR complex comprises a CRISPR enzyme complexed with a guide sequence hybridized or hybridizable to a target sequence within said polynucleotide, wherein said guide sequence is linked to a tracr mate sequence which in turn hybridizes to a tracr sequence. Similar considerations and conditions apply as above for methods of modifying a target polynucleotide. In fact, these sampling, culturing and re-introduction options apply across the aspects of the present invention.

[00504] Indeed, in any aspect of the invention, the CRISPR complex may comprise a CRISPR enzyme complexed with a guide sequence hybridized or hybridizable to a target sequence, wherein said guide sequence may be linked to a tracr mate sequence which in turn may hybridize to a tracr sequence. Similar considerations and conditions apply as above for methods of modifying a target polynucleotide.

Kits

[00505] In one aspect, the invention provides kits containing any one or more of the elements disclosed in the above methods and compositions. Elements may be provided individually or in combinations, and may be provided in any suitable container, such as a vial, a bottle, or a tube. In some embodiments, the kit includes instructions in one or more languages, for example in more than one language.

[00506] In some embodiments, a kit comprises one or more reagents for use in a process utilizing one or more of the elements described herein. Reagents may be provided in any suitable container. For example, a kit may provide one or more reaction or storage buffers. Reagents may be provided in a form that is usable in a particular assay, or in a form that requires addition of one or more other components before use (e.g. in concentrate or lyophilized form). A buffer can be any buffer, including but not limited to a sodium carbonate buffer, a sodium bicarbonate buffer, a borate buffer, a Tris buffer, a MOPS buffer, a HEPES buffer, and combinations thereof. In some

embodiments, the buffer is alkaline. In some embodiments, the buffer has a pH from about 7 to about 10. In some embodiments, the kit comprises one or more oligonucleotides corresponding to a guide sequence for insertion into a vector so as to operably link the guide sequence and a regulatory element. In some embodiments, the kit comprises a homologous recombination template polynucleotide. In some embodiments, the kit comprises one or more of the vectors and/or one or more of the polynucleotides described herein. The kit may advantageously allows to provide all elements of the systems of the invention.

CRISPR enzyme mRNA and guide RNA

[00507] CRISPR enzyme mRNA and guide RNA might also be delivered separately. CRISPR enzyme mRNA can be delivered prior to the guide RNA to give time for CRISPR enzyme to be expressed. CRISPR enzyme mRNA might be administered 1-12 hours (preferably around 2-6 hours) prior to the administration of guide RNA.

[00508] Alternatively, CRISPR enzyme mRNA and guide RNA can be administered together. Advantageously, a second booster dose of guide RNA can be administered 1-12 hours (preferably around 2-6 hours) after the initial administration of CRISPR enzyme mRNA + guide RNA.

[00509] Additional administrations of CRISPR enzyme mRNA and/or guide RNA might be useful to achieve the most efficient levels of genome modification.

[00510] For minimization of toxicity and off-target effect, it will be important to control the concentration of CRISPR enzyme mRNA and guide RNA delivered. Optimal concentrations of CRISPR enzyme mRNA and guide RNA can be determined by testing different concentrations in a cellular or animal model and using deep sequencing the analyze the extent of modification at potential off-target genomic loci. For example, for the guide sequence targeting 5'-GAGTCCGAGCAGAAGAAGAA-3' in the EMX1 gene of the human genome, deep sequencing can be used to assess the level of modification at the following two off-target loci, 1: 5'-GAGTCCTAGCAGGAGAAGAA-3' and 2: 5'-GAGTCTAAGCAGAAGAAGAA-3'. The concentration that gives the highest level of on-target modification while minimizing the level of off-target modification should be chosen for *in vivo* delivery.

Uses of the Crystals, Crystal Structure and Atomic Structure Co-Ordinates:

[00511] The crystals of SaCas9, and particularly the atomic structure co-ordinates obtained therefrom, have a wide variety of uses. The crystals and structure co-ordinates are particularly useful for identifying compounds (nucleic acid molecules) that bind to CRISPR-Cas9, and

CRISPR-Cas9s that can bind to particular compounds (nucleic acid molecules). Thus, the structure co-ordinates described herein can be used as phasing models in determining the crystal structures of additional synthetic or mutated CRISPR-Cas9s, Cas9s, nickases, binding domains and may be used as the basis of the rational design of optimized CRISPR-Cas systems. The provision of the crystal structure of CRISPR-SaCas9 complexed with a nucleic acid molecule as in the herein-cited materials provide the skilled artisan with a detailed insight into the mechanisms of action of CRISPR-SaCas9. This insight provides a means to design modified CRISPR-SaCas9s, such as by attaching thereto a functional group, such as a repressor or activator. In a particular embodiment of the invention, modifications to permit such attachments may be made to the solvent-exposed stem loop 2 of SaCas9. Attachment can be via a linker, e.g., a flexible glycine-serine (GlyGlyGlySer) or $(GGGS)_3$ or a rigid alpha-helical linker such as (Ala(GluAlaAlaAlaLys)Ala). In addition to the flexible loop there is also a nuclease or H3 region, an H2 region and a helical region. By "helix" or "helical", is meant a helix as known in the art, including, but not limited to an alpha-helix. Additionally, the term helix or helical may also be used to indicate a C-terminal helical element with an N-terminal turn.

[00512] The provision of the crystal structure of CRISPR-Cas9 complexed with a nucleic acid molecule allows a novel approach for drug or compound discovery, identification, and design for compounds that can bind to CRISPR-SaCas9 and thus the invention provides tools useful in diagnosis, treatment, or prevention of conditions or diseases of multicellular organisms, e.g., algae, plants, invertebrates, fish, amphibians, reptiles, avians, mammals; for example domesticated plants, animals (e.g., production animals such as swine, bovine, chicken; companion animal such as felines, canines, rodents (rabbit, gerbil, hamster); laboratory animals such as mouse, rat), and humans. Accordingly, the invention provides a computer-based method of rational design of one or more orthologous CRISPR-Cas9 complexes. This rational design can comprise: providing the structure of the CRISPR-Cas9 complex as defined by some or all (e.g., at least 2 or more, e.g., at least 5, advantageously at least 10, more advantageously at least 50 and even more advantageously at least 100 atoms of the structure) co-ordinates in the herein-cited materials; providing a structure of a desired nucleic acid molecule as to which a CRISPR-Cas9 complex is desired; and fitting the structure of the CRISPR-Cas9 complex as defined by some or all co-ordinates in the herein-cited materials to the desired nucleic acid molecule, including in said fitting obtaining putative modification(s) of the CRISPR-Cas9 complex as defined by some or all co-ordinates in the herein-

cited materials for said desired nucleic acid molecule to bind for CRISPR-Cas9 complex(es) involving the desired nucleic acid molecule. The method or fitting of the method may use the co-ordinates of atoms of interest of the CRISPR-Cas9 complex as defined by some or all co-ordinates in the herein-cited materials which are in the vicinity of the active site or binding region (e.g., at least 2 or more, e.g., at least 5, advantageously at least 10, more advantageously at least 50 and even more advantageously at least 100 atoms of the structure) in order to model the vicinity of the active site or binding region. These co-ordinates may be used to define a space which is then screened "in silico" against a desired or candidate nucleic acid molecule. Thus, the invention provides a computer-based method of rational design of CRISPR-Cas9 complexes. This method may include: providing the co-ordinates of at least two atoms of the herein-cited materials e ("selected co-ordinates"); providing the structure of a candidate or desired nucleic acid molecule; and fitting the structure of the candidate to the selected co-ordinates. In this fashion, the skilled person may also fit a functional group and a candidate or desired nucleic acid molecule. For example, providing the structure of the CRISPR-Cas9 complex as defined by some or all (e.g., at least 2 or more, e.g., at least 5, advantageously at least 10, more advantageously at least 50 and even more advantageously at least 100 atoms of the structure) co-ordinates in the herein-cited materials; providing a structure of a desired nucleic acid molecule as to which a CRISPR-Cas9 complex is desired; fitting the structure of the CRISPR-Cas9 complex as defined by some or all co-ordinates in the herein-cited materials to the desired nucleic acid molecule, including in said fitting obtaining putative modification(s) of the CRISPR-Cas9 complex as defined by some or all co-ordinates in the herein-cited materials for said desired nucleic acid molecule to bind for CRISPR-Cas9 complex(es) involving the desired nucleic acid molecule; selecting putative fit CRISPR-Cas9—desired nucleic acid molecule complex(es), fitting such putative fit CRISPR-Cas9—desired nucleic acid molecule complex(es) to the functional group (e.g., activator, repressor), e.g., as to locations for situating the functional group (e.g., positions within the flexible loop) and/or putative modifications of the putative fit CRISPR-Cas9—desired nucleic acid molecule complex(es) for creating locations for situating the functional group. As alluded to, the invention can be practiced using co-ordinates in the herein-cited materials which are in the vicinity of the active site or binding region; and therefore, the methods of the invention can employ a sub-domain of interest of the CRISPR-SaCas9 complex. Methods of the invention can be practiced using coordinates of a domain or sub-domain. The methods can optionally include synthesizing

the candidate or desired nucleic acid molecule and/or the CRISPR-Cas9 systems from the "in silico" output and testing binding and/or activity of "wet" or actual a functional group linked to a "wet" or actual CRISPR-Cas9 system bound to a "wet" or actual candidate or desired nucleic acid molecule. The methods can include synthesizing the CRISPR-Cas9 systems (including a functional group) from the "in silico" output and testing binding and/or activity of "wet" or actual a functional group linked to a "wet" or actual CRISPR-Cas9 system bound to an *in vivo* "wet" or actual candidate or desired nucleic acid molecule, e.g., contacting "wet" or actual CRISPR-Cas9 system including a functional group from the "in silico" output with a cell containing the desired or candidate nucleic acid molecule. These methods can include observing the cell or an organism containing the cell for a desired reaction, e.g., reduction of symptoms or condition or disease. The step of providing the structure of a candidate nucleic acid molecule may involve selecting the compound by computationally screening a database containing nucleic acid molecule data, e.g., such data as to conditions or diseases. A 3-D descriptor for binding of the candidate nucleic acid molecule may be derived from geometric and functional constraints derived from the architecture and chemical nature of the CRISPR-Cas9 complex or domains or regions thereof from the crystal structure of herein-cited materials. In effect, the descriptor can be a type of virtual modification(s) of the CRISPR-SaCas9 complex crystal structure herein for binding the CRISPR-SaCas9 system to the candidate or desired nucleic acid molecule. The descriptor may then be used to interrogate the nucleic acid molecule database to ascertain those nucleic acid molecules of the database that have putatively good binding to the descriptor. The herein "wet" steps can then be performed using the descriptor and nucleic acid molecules that have putatively good binding.

[00513] "Fitting" can mean determining, by automatic or semi-automatic means, interactions between at least one atom of the candidate and at least one atom of the CRISPR-Cas9 complex and calculating the extent to which such an interaction is stable. Interactions can include attraction, repulsion, brought about by charge, steric considerations, and the like. A "sub-domain" can mean at least one, e.g., one, two, three, or four, complete element(s) of secondary structure. Particular regions or domains of the CRISPR-Cas9 include those identified in the herein-cited materials.

[00514] In any event, the determination of the three-dimensional structure of CRISPR-Cas 9 (*S. aureus* Cas9) complex provides a basis for the rational design of new and specific, optimized SaCas enzymes and guide scaffolds, as well as the design of CRISPR-SaCas9 systems with new functionality, such as by way of modification of the CRISPR-SaCas9 system to bind to various

nucleic acid molecules or other modifying components, by way of modification of the CRISPR-Cas9 system to have linked thereto to any one or more of various functional groups that may interact with each other, with the CRISPR-SaCas9 (e.g., an inducible system that provides for self-activation and/or self-termination of function), with the nucleic acid molecule nucleic acid molecules (e.g., the functional group may be a regulatory or functional domain which may be selected from the group consisting of a transcriptional repressor, a transcriptional activator, a nuclease domain, a DNA methyl transferase, a protein acetyltransferase, a protein deacetylase, a protein methyltransferase, a protein deaminase, a protein kinase, and a protein phosphatase; and, in some aspects, the functional domain is an epigenetic regulator; see, e.g., Zhang et al., US Patent No. 8,507,272, and it is again mentioned that it and all documents cited herein and all appln cited documents are hereby incorporated herein by reference), by way of modification of Cas9, by way of novel nickases). Indeed, the herewith CRISPR-Cas9 (*S. aureus* Cas9) crystal structure has a multitude of uses. For example, from knowing the three-dimensional structure of CRISPR-Cas9 (*S. aureus* Cas9) crystal structure, computer modelling programs may be used to design or identify different molecules expected to interact with possible or confirmed sites such as binding sites or other structural or functional features of the CRISPR-Cas9 system (e.g., *S. aureus* Cas9). Compound that potentially bind ("binder") can be examined through the use of computer modeling using a docking program. Docking programs are known; for example GRAM, DOCK or AUTODOCK (see Walters et al. Drug Discovery Today, vol. 3, no. 4 (1998), 160-178, and Dunbrack et al. Folding and Design 2 (1997), 27-42). This procedure can include computer fitting of potential binders ascertain how well the shape and the chemical structure of the potential binder will bind to a CRISPR-Cas9 system (e.g., *S. aureus* Cas9). Computer-assisted, manual examination of the active site or binding site of a CRISPR-Cas9 system (e.g., *S. aureus* Cas9) may be performed. Programs such as GRID (P. Goodford, J. Med. Chem, 1985, 28, 849-57)—a program that determines probable interaction sites between molecules with various functional groups—may also be used to analyze the active site or binding site to predict partial structures of binding compounds. Computer programs can be employed to estimate the attraction, repulsion or steric hindrance of the two binding partners, e.g., CRISPR-Cas9 system (e.g., *S. aureus* Cas9) and a candidate nucleic acid molecule or a nucleic acid molecule and a candidate CRISPR-Cas9 system (e.g., *S. aureus* Cas9); and the CRISPR-Cas9 crystral structure (*S. aureus* Cas9) herewith enables such methods. Generally, the tighter the fit, the fewer the steric hindrances, and the greater

the attractive forces, the more potent the potential binder, since these properties are consistent with a tighter binding constant. Furthermore, the more specificity in the design of a candidate CRISPR-Cas9 system (e.g., *S. aureus* Cas9), the more likely it is that it will not interact with off-target molecules as well. Also, "wet" methods are enabled by the instant invention.

[00515] The invention further involves, in place of or in addition to "in silico" methods, other "wet" methods, including high throughput screening of a binder (e.g., target nucleic acid molecule) and a candidate CRISPR-Cas9 system (e.g., *S. aureus* Cas9), or a candidate binder (e.g., target nucleic acid molecule) and a CRISPR-Cas9 system (e.g., *S. aureus* Cas9) or a candidate binder (e.g., target nucleic acid molecule) and a candidate CRISPR-Cas9 system (e.g., an orthologous CRISPR-Cas9 or the foregoing CRISPR-SaCas9 system(s) with or without one or more functional group(s)), to select compounds with binding activity. Those pairs of binder and CRISPR-Cas9 system which show binding activity may be selected and further crystallized with the CRISPR-Cas9 crystal having a structure herein, e.g., by co-crystallization or by soaking, for X-ray analysis. The resulting X-ray structure may be compared with that of the herein-cited materials for a variety of purposes, e.g., for areas of overlap. Having designed, identified, or selected possible pairs of binder and CRISPR-Cas9 system by determining those which have favorable fitting properties, e.g., predicted strong attraction based on the pairs of binder and CRISPR-Cas9 crystral structure data herein, these possible pairs can then be screened by "wet" methods for activity.

[00516] Consequently, in an aspect the invention can involve: obtaining or synthesizing the possible pairs; and contacting a binder (e.g., target nucleic acid molecule) and a candidate CRISPR-Cas9 system (e.g., *S. aureus* Cas9), or a candidate binder (e.g., target nucleic acid molecule) and a CRISPR-Cas9 system (e.g., *S. aureus s* Cas9), or a candidate binder (e.g., target nucleic acid molecule) and a candidate CRISPR-Cas9 system (e.g., an orthologous CRISPR-Cas9 or the foregoing CRISPR-SaCas9 system(s) with or without one or more functional group(s)) to determine ability to bind. In the latter step, the contacting is advantageously under conditions to determine function. Instead of, or in addition to, performing such an assay, the invention may comprise: obtaining or synthesizing complex(es) from said contacting and analyzing the complex(es), e.g., by X-ray diffraction or NMR or other means, to determine the ability to bind or interact. Detailed structural information can then be obtained about the binding, and in light of this information, adjustments can be made to the structure or functionality of a candidate CRISPR-

Cas9 system or components thereof. These steps may be repeated and re-repeated as necessary. Alternatively or additionally, potential CRISPR-Cas9 systems from or in the foregoing methods can be with nucleic acid molecules *in vivo*, including without limitation by way of administration to an organism (including non-human animal and human) to ascertain or confirm function, including whether a desired outcome (e.g., reduction of symptoms, treatment) results therefrom.

[00517] The invention further involves a method of determining three dimensional structures of orthologous or variant CRISPR-cas systems or complex(es) of unknown structure by using the structural co-ordinates of the herein-cited materials. For example, if X-ray crystallographic or NMR spectroscopic data are provided for a CRISPR-cas system or complex of unknown crystal structure, the structure of a CRISPR-SaCas9 complex as defined in the herein-cited materials as well as the structural comparative information obtained against *S. pyogenes* Cas9 crystallographic information may be used to interpret that data to provide a likely structure for the unknown system or complex by such techniques as by phase modeling in the case of X-ray crystallography. Thus, an inventive method can comprise: aligning a representation of the CRISPR-cas system or complex having an unknown crystral structure with an analogous representation of the CRISPR-cas(9) system and complex of the crystal structure herein to match homologous or analogous regions (e.g., homologous or analogous sequences); modeling the structure of the matched homologous or analogous regions (e.g., sequences) of the CRISPR-cas system or complex of unknown crystal structure based on the structure as defined in the herein-cited materials of the corresponding regions (e.g., sequences); and, determining a conformation (e.g. taking into consideration favorable interactions should be formed so that a low energy conformation is formed) for the unknown crystal structure which substantially preserves the structure of said matched homologous regions.

[00518] "Homologous regions" describes, for example as to amino acids, amino acid residues in two sequences that are identical or have similar, e.g., aliphatic, aromatic, polar, negatively charged, or positively charged, side-chain chemical groups. Homologous regions as ot nucleic acid molecules can include at least 85% or 86% or 87% or 88% or 89% or 90% or 91% or 92% or 93% or 94% or 95% or 96% or 97% or 98% or 99% homology or identity. Identical and similar regions are sometimes described as being respectively "invariant" and "conserved" by those skilled in the art. Advantageously, the first and third steps are performed by computer modeling. Homology modeling is a technique that is well known to those skilled in the art (see, e.g., Greer,

Science vol. 228 (1985) 1055, and Blundell et al. Eur J Biochem vol 172 (1988), 513). The computer representation of the conserved regions of the CRISPR-Cas9 crystral structure herein and those of a CRISPR-cas system of unknown crystral structure aid in the prediction and determination of the crystral structure of the CRISPR-cas system of unknown crystal structure. Further still, the aspects of the invention which employ the CRISPR-Cas9 crystral structure in silico may be equally applied to new CRISPR-cas crystral structures divined by using the herein CRISPR-Cas9 crystral structure. In this fashion, a library of CRISPR-cas crystral structures can be obtained. Rational CRISPR-cas system design is thus provided by the instant invention. For instance, having determined a conformation or crystral structure of a CRISPR-cas system or complex, by the methods described herein, such a conformation may be used in a computer-based methods herein for determining the conformation or crystal structure of other CRISPR-cas systems or complexes whose crystral structures are yet unkown. Data from all of these crystal structures can be in a database, and the herein methods can be more robust by having herein comparisons involving the herein crystral structure or portions thereof be with respect to one or more crystal structures in the library. The invention further provides systems, such as computer systems, intended to generate structures and/or perform rational design of a CRISPR-cas system or complex. The system can contain: atomic co-ordinate data according to the herein-cited materials or be derived therefrom e.g., by modeling, said data defining the three-dimensional structure of a CRISPR-cas system or complex or at least one domain or sub-domain thereof, or structure factor data therefor, said structure factor data being derivable from the atomic co-ordinate data of the herein-cited materials.

[00519] The invention also involves computer readable media with: atomic co-ordinate data according to the herein-cited materials or derived therefrom e.g., by homology modeling, said data defining the three-dimensional structure of a CRISPR-cas system or complex or at least one domain or sub-domain thereof, or structure factor data therefor, said structure factor data being derivable from the atomic co-ordinate data of the herein-cited materials. "Computer readable media" refers to any media which can be read and accessed directly by a computer, and includes, but is not limited to: magnetic storage media; optical storage media; electrical storage media; cloud storage and hybrids of these categories. By providing such computer readable media, the atomic co-ordinate data can be routinely accessed for modeling or other "in silico" methods. The invention further comprehends methods of doing business by providing access to such computer

readable media, for instance on a subscription basis, via the Internet or a global communication/computer network; or, the computer system can be available to a user, on a subscription basis. A "computer system" refers to the hardware means, software means and data storage means used to analyze the atomic co-ordinate data of the present invention. The minimum hardware means of computer-based systems of the invention may comprise a central processing unit (CPU), input means, output means, and data storage means. Desirably, a display or monitor is provided to visualize structure data. The invention further comprehends methods of transmitting information obtained in any method or step thereof described herein or any information described herein, e.g., via telecommunications, telephone, mass communications, mass media, presentations, internet, email, etc. The crystal structures of the invention can be analyzed to generate Fourier electron density map(s) of CRISPR-cas systems or complexes; advantageously, the three-dimensional structure being as defined by the atomic co-ordinate data according to the herein-cited materials. Fourier electron density maps can be calculated based on X-ray diffraction patterns. These maps can then be used to determine aspects of binding or other interactions. Electron density maps can be calculated using known programs such as those from the CCP4 computer package (Collaborative Computing Project, No. 4. The CCP4 Suite: Programs for Protein Crystallography, Acta Crystallographica, D50, 1994, 760-763). For map visualization and model building programs such as "QUANTA" (1994, San Diego, Calif.: Molecular Simulations, Jones et al., Acta Crystallography A47 (1991), 110-119) can be used.

[00520] The Crystal Structure Coordinates (see herein-cited materials) gives atomic co-ordinate data for a CRISPR-Cas9 (*S. aureus*), and lists each atom by a unique number; the chemical element and its position for each amino acid residue (as determined by electron density maps and antibody sequence comparisons), the amino acid residue in which the element is located, the chain identifier, the number of the residue, co-ordinates (e.g., X, Y, Z) which define with respect to the crystallographic axes the atomic position (in angstroms) of the respective atom, the occupancy of the atom in the respective position, "B", isotropic displacement parameter (in angstroms^2) which accounts for movement of the atom around its atomic center, and atomic number. See also the herein-cited materials.

[00521] A further aspect of the invention provides for chimeric Cas9 proteins and methods of generating chimeric Cas9 proteins. Chimeric Cas9 proteins are proteins that comprise fragments that originate from different Cas9 orthologs. For instance, a domain of a first Cas9 ortholog may

be replaced with the equivalent domain of a second Cas9 ortholog to generate a resultant Cas9 chimeric protein. These chimeric Cas9 proteins may have a higher specificity or a higher efficiency than the original specificity or efficiency of either of the individual Cas9 enzymes from which the chimeric protein was generated, or may have other advantages, such as reduced size. These chimeric proteins may also comprise one or more mutations or may be linked to one or more functional domains. Therefore, aspects of the invention relate to a chimeric Cas enzyme wherein the enzyme comprises one or more domains or fragments of domains from a first Cas ortholog and one or more domains or fragments of domains from a second Cas ortholog. In a further embodiment the first or second Cas ortholog is selected from a genus belonging to the group consisting of *Corynebacter, Sutterella, Legionella, Treponema, Filifactor, Eubacterium, Streptococcus, Lactobacillus, Mycoplasma, Bacteroides, Flaviivola, Flavobacterium, Sphaerochaeta, Azospirillum, Gluconacetobacter, Neisseria, Roseburia, Parvibaculum, Staphylococcus, Nitratifractor, Mycoplasma* and *Campylobacter*.

[00522] Identification of domains suitable for adding, interchanging or modifying in a chimeric, truncated or otherwise modified protein can be achieved by sequence comparison and/or comparison of crystal structure data, for example as provided herein. Interaction between domains should, where possible, be conserved in order to promote protein functionality. Methods for predicting protein domain interaction based on the structural data as provided herein are available to those skilled in the art. . Also, the structural information provided guides development of Cas9 chimeras having domains or subdomains from one or more sources. For a review, see Petery and Honig, (2014) Annu Rev Biophys. 43;193-210.

[00523] The development of reliable computational approaches to identify protein-protein interactions is based on criteria such as sequence orthology (Matthews LR, Vaglio P, Reboul J, Ge H, Davis BP, Garrels J, et al. Identification of potential interaction networks using sequence-based searches for conserved protein-protein interactions or "interologs". Genome Res. 2001; 11: 2120–2126. PMID: 11731503), similarity in evolutionary history (de Juan D, Pazos F, Valencia A. Emerging methods in protein co-evolution. Nat Rev Genet. 2013; 14: 249–261. doi: 10.1038/nrg3414 PMID: 23458856), genomic context (Dandekar T, Snel B, Huynen M, Bork P. Conservation of gene order: a fingerprint of proteins that physically interact. Trends Biochem Sci. 1998; 23: 324–328. PMID: 9787636), and literature curation (Reguly T, Breitkreutz A, Boucher L, Breitkreutz BJ, Hon GC, Myers CL, et al. Comprehensive curation and analysis of global

interaction networks in Saccharomyces cerevisiae. J Biol. 2006; 5: 11. PMID: 16762047). Predictions based on detailed structural modeling of PPIs have also been developed (Mosca R, Ceol A, Aloy P. Interactome3D: adding structural details to protein networks. Nat Methods. 2013; 10: 47–53. doi: 10.1038/nmeth.2289 PMID: 23399932) and recent approaches that combine low resolution structural modeling with non-structural information have begun to expand the applicability of structure to a genome-wide scale. Interactions determined by HT experiments and computationally have been deposited in databases such as STRING (Franceschini A, Szklarczyk D, Frankild S, Kuhn M, Simonovic M, Roth A, et al. STRING v9.1: protein- protein interaction networks, with increased coverage and integration. Nucleic Acids Res. 2013; 41: D808–D815. doi: 10.1093/nar/gks1094 PMID: 23203871) and PrePPI (Zhang et al., (2012) Nature 490:556-60).

[00524] A Bayesian network can be used to classify objects into binary categories (e.g., two proteins do or do not share a GO annotation, they do or do not physically interact, etc.). Membership in a category is quantified using a ''likelihood ratio'' (LR), which reflects the increase/decrease in the probability that an object belongs to a category after learning that it has a particular characteristic, or ''clue''

[00525] A distinct advantage of Bayesian approaches is that even if a particular clue is not a strong indicator of membership in a category on its own (e.g., remote structural similarity), different clues can be combined to yield a reliable classifier (in some implementations this can be accomplished in practice by simply multiplying the LRs generated by different clues).

[00526] For example, interactions can be predicted according to the method of Zhang et al., *supra*, in which a combination of structural and non-structural clues are integrated using a Bayesian approach and used to create an algorithm (PrePPI) and thus construct a database which can be used to predict interactions between proteins.

[00527] A development of this technique employs databases such as the eukaryotic linear motif resource (ELM; Dinkel H, Van Roey K, Michael S, Davey NE, Weatheritt RJ, Born D, et al. The eukaryotic linear motif resource ELM: 10 years and counting. Nucleic Acids Res. 2014; 42: D259–D266. doi: 10.1093/nar/ gkt1047 PMID: 24214962), which provide consensus sequence patterns for peptide motifs binding to many different PRD families. Methods such as iELM have been developed to make new predictions based on such information (Weatheritt RJ, Luck K, Petsalaki E, Davey NE, Gibson TJ. The identification of short linear motif-mediated interfaces

within the human interactome. Bioinformatics. 2012; 28: 976–982. doi: 10.1093/bioinformatics/bts072 PMID: 22328783).

[00528] Chen et al., PLOS Computational Biology (2015) DOI:10.1371, provide a computational framework to predict interactions mediated by domain-motif interfaces. The method uses a Bayesian approach to integrate knowledge from the ELM database, domain-peptide structures from the PDB, and non-structural information.

[00529] The method is incorporated into PrePPI and can be employed to predict protein-protein interactions very broadly at the domain/motif level.

[00530] Unlike certain protein families, Cas9 orthologs may share relatively little sequence homology, yet maintain similarity of structure. Structural similarity can be studied and exploited, for example using the methods described above, to provide information on domain-domain and domain-motif interactions involving saCas9 and saCas9 orthologs.

[00531] Structural similarity can also be used as an indicator of function, which can be assessed using a "structural BLAST" approach as described by Dey et al., (2013) Protein Science 22:359-366, based on the PrePPI algorithm. Protein domains from Cas9 orthologs can be compared using the BLAST approach to identify structural neighbors in any given homolog. These can then be visualized and filtered using a number of different properties (e.g., interaction with guide RNA or PAM sequence), to identify domains of similar function. Properties of one Cas9 homolog that determine function (catalytic residues, biophysical properties, conservation) can be displayed and compared to the same properties in other homologs to determine if they are consistent with the known function of the selected domain.

[00532] Knowledge of the structure/function relationships of Cas9 orthologs and Cas9 ortholog domains permits synthetic Cas9 enzymes to be constructed, in which one or more domains is added, removed or mutated.

[00533] Removal of domains is advantageous because the overall size of the Cas9 enzyme can thus be reduced. Size is a limitation in packaging and delivery of CRISPR/Cas9 systems using a variety of vectors, including viral vectors as described above.

[00534] Therefore, in some embodiments, the invention provides a Cas9 enzyme in which one or more domains are truncated or deleted. The crystal structure of saCas9 reveals that the REC2 domain of SpCas9 is lacking (Figure 7B). It is known that spCas9 is functional without the REC2 domain, and the SaCas9 data confirms the possibility for rational design of engineered Cas9

enzymes to be produced which are reduced in size compared to wild-type enzymes, by removal of domains, or parts thereof, which are identified as functionally redundant.

[00535] Similarly, it is apparent from the data presented herein that the PAM specificity of Cas9 enzymes is dictated by the structurally diverse PI domains. Mutation, truncation or replacement of the PI domain in a Cas9 enzyme can be employed to alter the PAM specificity thereof, either to a known PAM specificity from another Cas9 enzyme, or to a novel specificity which can be provided by rational design and selection of mutated Cas9 PI domains. For example, PI domains can be selected for any desired PAM by selecting a library of dCas9 proteins comprising targeted variation in the PI domain which have been fused to a transcriptional activator by their ability to promote or repress transcription from a promoter or other regulatory element which is operationally coupled to an enhancer which comprises or is adjacent to the desired PAM sequence. This PAM screening could also occur in a bacterial system on the basis of antibiotic resistance. In a recent report, PAM specificity of SaCas9 was investigated by mutagenizing the PAM interacting domain of wild type SaCas9 and selecting for activity against a PAM target site on a plasmid encoding an inducible toxic gene (Kleinstiver et al., 2015, Nature 2015, doi: 10.1038/nature14592 [Epub ahead of print]). For example, the authors identified SaCas9 variants with amino acid substitutions at D1135, R1335 and T1337 with activity against an NGA PAM, that could discriminate against an NGG PAM, and also defined global PAM specificity profiles of the variants. The authors also identified an SaCas9 variant with reduced activity against off-target sites with non-canonical NAG or NGA PAMs.

[00536] In particular embodiments of the invention, the conformational variations in the crystal structures of the CRISPR-SaCas9 system or of components of the CRISPR-SaCas9 provide important and critical information about the flexibility or movement of protein structure regions relative to nucleotide (RNA or DNA) structure regions that may be important for CRISPR-SaCas system function. The SaCas9 crystal coordinates and information disclosed provide an understanding of mechanisms governing CRISPR-SaCas9 function and guide alteration of CRISPR-SaCas9 structural components. Further, the SaCas9 structural information provides guidance for altering SaCas9 orthologs, as well as for incorporating aspects of such orthologs into modified SaCas9 proteins. In some embodiments, guidance is based on the structure of CRISPR-SaCas9 as disclosed herein. In some embodiments, guidance is obtained by comparing aspects of the structures of SaCas9 with those of SpCas9. In some embodiments, guidance is obtained by

comparing aspects of the structure of SaCas9 with those of an ortholog, such as, without limitation, AnCas9. In some embodiments, guidance is obtained by examining sequence alignments between or among Cas9 orthologs in view of structural information provided herein. Exemplary aligned sequences can be found, e.g., in Chylinski et al., 2014, Nucleic Acids Research 42:6091, supplemental Fig. 1. Thus, the structural information provided for Cas9 (e.g. *S. aureus* Cas9) as the CRISPR enzyme in the present application may be used to further engineer and optimize the CRISPR-Cas system and this may be extrapolated to interrogate structure-function relationships in other orthologous or variant CRISPR enzyme systems as well.

[00537] An aspect of the invention is the realization that among Cas9 orthologs there is a high degree of conservation of domain structure as well as flexibility of domain positioning. For example, sequence alignment provides evidence of conservation of amino acids on the basis of binding interactions or enzymatic function. Even where there is a question of structural similarity, perhaps due to dissimilar environments of such conserved amino acids in view of little or no homology elsewhere, it is understood from the structural information provided for SaCas9 herein that there is extensive preservation of, e.g., alpha helical domain structure between SaCas9 and SpCas9, and among Cas9 proteins in general. Further, there is flexibility in the positioning of such domains, evidenced, for example, by domain location in the crystal (compare SaCas9 and SpCas9 in Fig. 7), conformational changes triggered by non-target DNA binding to RuvC, and conserved guide-RNA-induced conformational rearrangement.

[00538] Thus, modifications made to one Cas9 enzyme can be expected to apply to other Cas9 enzymes as well. Furthermore, complementary portions of different Cas9 orthologs may can be mixed and matched. For example, recognition domain may be substituted one for another, catalytic domains may be substituted one for another, and the like.

[00539] SaCas9 domain structures disclosed herein, and further by comparison to SpCas9 inform mixing of domains among orthologs, for example, but not limited to Cas9 from Corynebacter, Sutterella, Legionella, Treponema, Filifactor, Eubacterium, Lactobacillus, Mycoplasma, Bacteroides, Flaviivola, Flavobacterium, Sphaerochaeta, Azospirillum, Gluconacetobacter, Neisseria, Roseburia, Parvibaculum, Nitratifactor, and Campylobacter. Non-limiting examples further include Actinomyces coleocanis, Coriobacterium glomerans, Streptococcus mutans Streptococcus thermophiles, Oenococcus kitaharae, Fructobacillus fructosus, Staphylococcus pseudintermedius, Planococcus antarcticus.

[00540] An aspect of the invention relates to both crystal structures of *S. aureus* Cas9 in complex with sgRNA and its target DNA at 2.6 and 2.8 Å resolution when the target DNA contains the 5′-TTGAAT-3′ PAM or 5′-TTGGGT-3′ PAM sequences. The structure revealed a bilobed architecture composed of target recognition (REC) and nuclease (NUC) lobes, accommodating a sgRNA:DNA duplex in a central channel between the REC and NUC lobes. The recognition lobe is essential for sgRNA and DNA binding and the nuclease lobe contains the HNH and RuvC nuclease domains, which are properly positioned for the cleavage of complementary and non-complementary strands of the target DNA, respectively as well as the Wedge (WED) domain and the PAM interacting (PI) domain. This high-resolution structure and the functional analyses provided herein elucidate the molecular mechanism of RNA-guided DNA targeting by the CRISPR-SaCas9 system, and provides an abundance of information for generating optimized CRISPR-Cas systems and components thereof.

[00541] In particular embodiments of the invention, the crystal structure provides a critical step towards understanding the molecular mechanism of RNA-guided DNA targeting by SaCas9. The structural and functional analyses herein provide a useful scaffold for rational engineering of Cas9-based genome modulating technologies and may provide guidance as to Cas9-mediated recognition of PAM sequences on the target DNA or mismatch tolerance between the sgRNA:DNA duplex. Aspects of the invention also relate to truncation mutants, e.g. an *S. aureus* Cas9 truncation mutant may facilitate packaging of Cas9 into size-constrained viral vectors for *in vivo* and therapeutic applications

[00542] Similarly, future engineering of the PAM Interacting (PI) domain may allow programing of PAM specificity, improve target site recognition fidelity, and increase the versatility of the Cas9 genome engineering platform.

[00543] The invention comprehends optimized functional CRISPR-Cas enzyme systems. In particular the CRISPR enzyme (e.g. SaCas9) comprises one or more mutations that converts it to a DNA binding protein to which functional domains exhibiting a function of interest may be recruited or appended or inserted or attached. In certain embodiments, the CRISPR enzyme (e.g. SaCas9) comprises one or more mutations that reduce or eliminate a nuclease activity. In SaCas9, such mutations include, without limitation, amino acid substitutions or deletions at D10, E477, H701, and D704 of the RuvC domain and D556, H557, and N580 of the HNH domain. In general, envisioned substitutions replace acidic, basic, or polar amino acids at those positions with amino

acids having different or no charge, preferably amino acids that retain DNA binding capacity of the Cas9. Examples of such substitutions include, but are not limited to D10A, E477A, H701A and D704A mutations in the RuvC domain and/or D556A, H557A and N580A in the HNH domain and/or the one or more other mutations is in a RuvC or HNH domain of the CRISPR enzyme (e.g. SaCas9) or is a mutation as otherwise as discussed herein. Mutations can also be made at neighboring residues, e.g., at amino acids near those indicated above that participate in the nuclease acrivity. In some embodiments, only HNH is inactivated, and in other embodiments, only RuvC is inactivated (producing Cas9 nickases which cleave only one DNA strand). In some embodiments, two Cas9 variants (each a different nickase) are used to increase specificity, two nickase variants are used to cleave DNA at a target (where both nickases cleave a DNA strand, while miminizing or eliminating off-target modifications where only one DNA strand is cleaved and subsequently repaired. It is expected that the same or similarly located amino acids can be mutated in Type II CRISPR orthologs with similar effect. In some embodiments, the CRISPR enzyme has one or more mutations in a catalytic domain, wherein when transcribed, the tracr mate sequence hybridizes to the tracr sequence and the guide sequence directs sequence-specific binding of a CRISPR complex to the target sequence, and wherein the enzyme further comprises a functional domain.

[00544] The invention contemplates a strategy for the modification of SaCas9 and orthologs intended to generate modified variant Cas9 enzymes which show improved target specificity. The same rationale can be applied to any Cas9 ortholog. This improved specificity may be achieved in variants which show reduced activity towards non-target (off-target) loci whilst at the same time maintaining appropriate activity towards the intended target locus. Activity in the assays described below relates to nuclease activity manifest by cleavage of DNA as measured by the formation of INDELS. Such activity is expected to relate to the ability of the CRISPR complex (that is to say the complex between the Cas9 enzyme and guide RNA) to bind to the relevant site on DNA. Thus, a reduction in activity toward a non-target site may be expected to arise from reduced binding of the CRISPR complex at that site. Modified Cas9 enzymes which show reduced activity towards non-target loci compared to unmodified (e.g. wild-type) enzymes may therefore be expected to bind less well to non-target sites. Nishimasu et al. (Cell, 2014, 156(5), pp935-49) reports the crystal structure at 2.5Å resolution of an SpCas9 variant enzyme in complex with a single-guide RNA (sgRNA) of 98 nucleotides in length and a stretch of target DNA

comprising 23 nucleotides in length. Based on these structural data, the inventors identified a positively-charged region situated between the RuvC-III and HNH domains. The inventors inferred that the groove may accommodate the non-target strand following disruption of normal Watson-Crick base-paring upon binding of the Cas9 enzyme to a relevant region of DNA. Positively charges residues of this region of Cas9 may act to stabilize the interaction between enzyme and DNA by interacting with the negatively-charged phosphodiester backbone of the non-target strand of DNA. The inventors hypothesize that by substitution of positively charged residues of Cas9, interactions with the non-target strand may be disrupted. Sufficient disruption of this interaction may maintain appropriate activity towards target sites but reduce the activity of the enzyme towards non-target sites (which will ordinarily be expected to have weaker interactions with the guide sequence on account of one or more mismatches compared the target sequence). The inventors surprisingly discovered that modification of Cas9 can indeed reduce off-target activity. The same or similar mutations and modifications are useful to increase specificity of Cas9 orthologs as well.

[00545] The invention contemplates domain truncation, domain swapping, and/or domain removal. According to the invention, modified CRISPR enzymes bearing functional domains are contemplated. Accordingly, enzyme fragments that bind to sgRNA:target heteroduplexes and lacking endonuclease activity, for example deleted for the portion that interacts with the 5' end of sgRNA are contemplated. Non-limiting examples further include Actinomyces coleocanis, Coriobacterium glomerans, Streptococcus mutans Streptococcus thermophiles, Oenococcus kitaharae, Fructobacillus fructosus, Staphylococcus pseudintermedius, Planococcus antarcticus.

[00546] The structural information provided herein allows for interrogation of sgRNA (or chimeric RNA) interaction with the target DNA and the CRISPR enzyme (e.g. Cas9) permitting engineering or alteration of sgRNA structure to optimize functionality of the entire CRISPR-Cas system. For example, loops of the sgRNA may be extended, without colliding with the Cas9 protein by the insertion of distinct RNA loop(s) or disctinct sequence(s) that may recruit adaptor proteins that can bind to the distinct RNA loop(s) or distinct sequence(s). In a particular embodiment of the invention, stem loop 2 of SaCas9 may be modified or engineered to recruit proteins to enable specific functionality. The adaptor proteins may include but are not limited to orthogonal RNA-binding protein / aptamer combinations that exist within the diversity of bacteriophage coat proteins. A list of such coat proteins includes, but is not limited to MS2, PP7,

Qβ, F2, GA, fr, JP501, M12, R17, BZ13, JP34, JP500, KU1, M11, MX1, TW18, VK, SP, FI, ID2, NL95, TW19, AP205, ϕCb5, ϕCb8r, ϕCb12r, ϕCb23r, 7s, PRR1. These adaptor proteins or orthogonal RNA binding proteins can further recruit effector proteins or fusions which comprise one or more functional domains. In some embodiments, the functional domain may be selected from the group consisting of: transposase domain, integrase domain, recombinase domain, resolvase domain, invertase domain, protease domain, DNA methyltransferase domain, DNA hydroxylmethylase domain, DNA demethylase domain, histone acetylase domain, histone deacetylases domain, nuclease domain, repressor domain, activator domain, nuclear-localization signal domains, transcription-regulatory protein (or transcription complex recruiting) domain, cellular uptake activity associated domain, nucleic acid binding domain, antibody presentation domain, histone modifying enzymes, recruiter of histone modifying enzymes; inhibitor of histone modifying enzymes, histone methyltransferase, histone demethylase, histone kinase, histone phosphatase, histone ribosylase, histone deribosylase, histone ubiquitinase, histone deubiquitinase, histone biotinase and histone tail protease.

[00547] In some preferred embodiments, the functional domain is a transcriptional activation domain, preferably VP64. In some embodiments, the functional domain is a transcription repression domain, preferably KRAB. In some embodiments, the transcription repression domain is SID, or concatemers of SID (eg SID4X). In some embodiments, the functional domain is an epigenetic modifying domain, such that an epigenetic modifying enzyme is provided. In some embodiments, the functional domain is an activation domain, which may be the P65 activation domain.

[00548] The invention provides assays and systems for modulating multiple targets in gene regulation circuits/pathways. In an embodiment of the invention, the expression of two or more genes is modulated, for example modulating one element of a circuit/pathway with a CRISPR-Cas9 system based on a first Cas9 enzyme and a modulating a second element of a circuit/pathway with a CRISPR-Cas9 system based on a second Cas9 enzyme. In certain embodiments, the first Cas9 is SpCas9 and the second Cas9 is SaCas. In certain embodiments, one CRISPR-Cas9 system comprises an activator of a circuit/pathway element. In certain embodiments, one CRISPR-Cas9 system comprises a repressor of a circuit/pathway element. In certain embodiments two CRISPR-Cas9 systems are employed, each comprising an activator of circuit/pathway element. In certain embodiments two CRISPR-Cas9 systems are employed, each comprising a repressor of

circuit/pathway element. In certain embodiments two CRISPR-Cas9 systems are employed, one comprising an activator of circuit/pathway element and the second comprising a repressor of a circuit/pathway element.

[00549] The invention provides compositions and methods for treating viral infections, including curing or suppressing infections comprising latent viral reservoirs. In certain embodiments, CRISPR/Cas9 systems of the invention are useful to cleave viral DNA, for example targeting regions of the HBV genome, the HIV genome, or other virus of interest. In certain embodiments, a CRISPR/Cas system of the invention is used to cleave and inactivate a chromosomally integrated retroviral genome. In certain embodiments, a CRISPR/Cas9 system of the invention is used to cleave covalently closed circular DNA (cccDNA) which arises during propagation and is required for transcription of certain viruses.

[00550] The invention will now be further described by way of the following non-limiting examples.

EXAMPLES

[00551] The following examples are given for the purpose of illustrating various embodiments of the invention and are not meant to limit the present invention in any fashion. The present examples, along with the methods described herein are presently representative of preferred embodiments, are exemplary, and are not intended as limitations on the scope of the invention. Changes therein and other uses which are encompassed within the spirit of the invention as defined by the scope of the claims will occur to those skilled in the art.

Example 1: Crystal Structure of Staphylococcus aureus Cas9

[00552] The RNA-guided Cas9 endonucleases from type II CRISPR (clustered regularly interspaced short palindromic repeat)-Cas systems have been harnessed for a variety of genome engineering applications (Cong et al., 2013; Esvelt et al., 2013; Hsu et al., 2013; Jinek et al., 2013; Mali et al., 2013). Cas9 binds dual guide RNAs, CRISPR RNA (crRNA) and *trans*-activating crRNA (tracrRNA), and cleaves the target double-stranded DNA complementary to the crRNA guide sequence(Gasiunas et al., 2012; Jinek et al., 2012). In the reconstituted systems, an artificial fusion of the crRNA and tracrRNA, known as a single guide RNA (sgRNA), can also mediate Cas9-catalyzed DNA cleavage (Cong et al., 2013; Jinek et al., 2012). Cas9 contains two endonuclease domains, HNH and RuvC, which cleave the DNA strands complementary (target

DNA strand) and non-complementary (non-target DNA strand) to the crRNA, respectively. (Gasiunas et al., 2012; Jinek et al., 2012) Cas9-catalyzed DNA cleavage further requires the presence of a unique, short sequence, known as a protospacer-adjacent motif (PAM), immediately downstream of the target DNA sequence. PAM sequences are variable among orthologous CRISPR-Cas9 systems, and the widely used Cas9 from *Streptococcus pyogenes* (SpCas9) recognizes a 5′-NGG-3′ PAM (N represents any nucleotide) on the non-target DNA strand.

[00553] The crystal structures of SpCas9 alone and in complex with its sgRNA and single-stranded, target DNA revealed that Cas9 adopts a bilobed architecture consisting of recognition (REC) and nuclease (NUC) lobes, and provided insights into the RNA-guided DNA cleavage mechanism (Jinek et al., 2014; Nishimasu et al., 2014). In addition, the crystal structure of SpCas9 in complex with its sgRNA and target DNA containing the 5′-NGG-3′ PAM revealed the PAM-dependent DNA targeting mechanism (Anders et al., 2014). The structural information has already facilitated rational design of Cas9 variants and sgRNA scaffolds with expanded capabilities (Konermann et al., 2015; Wright et al., 2015; Zalatan et al., 2015; Zetsche et al., 2015).

[00554] Recently, Ran et al. (2015) reported that a small Cas9 from *Staphylococcus aureus* (SaCas9) can be harnessed for eukaryotic genome editing. Although several Cas9 orthologs can cleave DNA targets *in vitro*, only SaCas9 and SpCas9 exhibit robust activities in different mammalian cell types. SaCas9 shares only 17% sequence identity with SpCas9, highlighting the structural and functional variations among orthologous CRISPR-Cas9 systems. SaCas9 (1053 amino acid residues) is significantly smaller than SpCas9 (1368 amino acid residues). Thus, SaCas9 can be packaged into adeno-associated virus vectors more readily than SpCas9, thereby enabling efficient genome editing in somatic tissue. In addition, SaCas9 recognizes a 5′-NNGRRT-3′ PAM (R represents a purine, A or G), which are different from the 5′-NGG-3′ PAM for SpCas9. However, the mechanism of action of SaCas9 remains elusive.

[00555] Applicants now provide the crystal structures of SaCas9 in complex with sgRNA and its target DNA containing the 5′-TTGAAT-3′ PAM or 5′-TTGGGT-3′ PAM at 2.6 and 2.8 Å resolution, respectively. Applicants' structural and functional data provided insights into the PAM-dependent, RNA-guided DNA cleavage mechanism of SaCas9. A structural comparison between SaCas9 and SpCas9 revealed notable differences in their REC lobe–sgRNA scaffold and PAM-interacting (PI) domain–PAM sequence interactions, highlighting conservation and divergence among orthologous CRISPR-Cas9 systems. A structural comparison of Cas9 orthologs

also revealed the flexible nature of the RuvC and HNH nuclease domains, and allowed the identification of a previously uncharacterized and evolutionarily divergent wedge (WED) domain. From a genome engineering perspective, Applicants' comparative study further facilitates the structure-guided engineering of this compact endonuclease, and paves the way for the rational design of Cas9 variants with expanded target space and improved target specificities.

[00556] The *S. aureus* Cas9 N580A/C946A mutant (residues 1–1053) was expressed in Escherichia coli Rosetta 2 (DE3) (Novagen) and purified by chromatography on Ni-NTA Superflow (QIAGEN), Mono S (GE Healthcare) and HiLoad Superdex 200 16/60 (GE Healthcare) columns. The SeMet-labeled protein was expressed in E. coli B834 (DE3), and was purified using a similar protocol as for the native protein. The 73-nt sgRNA was *in vitro* transcribed with T7 RNA polymerase and purified by 8% denaturing (7 M urea) polyacrylamide gel electrophoresis. The target DNAs were purchased from Sigma-Aldrich. The purified SaCas9 protein was mixed with the sgRNA, target DNA strand and non-target DNA strand (molar ratio, 1:1.5:2.3:3.4), and the SaCas9-sgRNA-target DNA complex was purified by gel filtration chromatography on a Superdex 200 Increase column (GE Healthcare).

[00557] The purified SaCas9-sgRNA-target DNA complex containing either the 5'-TTGAAT-3' PAM or the 5'-TTGGGT-3' PAM was crystallized at 20°C by the hanging-drop vapor diffusion method. Crystals were obtained by mixing 1 μl of the complex solution (A260 nm, 15) and 1 μl of the reservoir solution (10-12% PEG 4,000, 0.75 M NaCl, 0.15 M Na_2HPO_4 and 0.15 M NaN_3). The SeMet-labeled complex (containing the 5′-TTGAA-3′ PAM) was crystallized under similar conditions. X-ray diffraction data were collected at 100 K on the beamlines BL32XU and BL41XU at SPring-8 (Hyogo, Japan). The structure was determined by the Se-SAD method, using the 3 Å resolution data set from the SeMet-labeled crystal. The final models of the 5′-TTGAAT-3′ PAM complex (2.6 Å resolution) and the 5′-TTGGGT-3′ PAM complex (2.8 Å resolution) were refined using the native data sets.

[00558] About 24 h prior to transfection, the human embryonic kidney 293FT (Life Technologies) were seeded into 24-well plates (Corning) at a density of 250,000 cells/well, and transfected at 70–80% confluency using Lipofectamine 2000 (Life Technologies), according to the manufacturer's recommended protocol. A total of 600 ng DNA was used for each well on a 24-well plate. About 72 h after transfection, genomic DNA was extracted, and then genomic modifications were examined using the SURVEYOR assay and targeted deep sequencing, as previously described (Cong et al., 2013b).

Crystal structure of the SaCas9–sgRNA–target DNA quaternary complex

[00559] Applicants solved the crystal structures of SaCas9 (residues 1–1053; N580A/C946A) in complex with 73-nucleotide (nt) sgRNA, 28-nt complementary target DNA strand and 8-nt non-target DNA strand containing the 5′-TTGAAT-3′ PAM and 5′-TTGGGT-3′ PAM at 2.6 and 2.8 Å resolution, respectively (Figure 9 and Table 6). Applicants replaced a non-conserved cysteine residue (Cys946) with alanine for crystallization, since the C946A mutation did not affect the DNA cleavage activity *in vivo* (Figure 10). To prevent potential cleavage of the target DNA during crystallization, Applicants replaced the catalytic residue (Asn580) in the HNH domain with alanine. The two structures are virtually identical (root-mean-square deviation [rmsd] of 0.3 Å for the all Ca atoms). In this application, Applicants describe the quaternary complex structure containing the 5′-TTGAAT-3′ PAM, unless otherwise stated.

Table 6. Data collection and refinement statistics..

	TTGAAT PAM (Native)	TTGGGT PAM (Native)	TTGAAT PAM (SeMet)
Data collection			
Beamline	SPring-8 BL41XU	SPring-8 BL32XU	SPring-8 BL41XU
Wavelength (Å)	1.0000	1.0000	0.9791
Space group	$P2_12_12$	$P2_12_12$	$P2_12_12$
Cell dimensions			
a, *b*, *c* (Å)	67.6, 345.6, 98.1	67.4, 345.3, 97.8	67.9, 346.0, 98.3
α, β, γ (°)	90, 90, 90	90, 90, 90	90, 90, 90
Resolution (Å)*	49.4–2.6 (2.66–2.60)	48.9–2.8 (2.88–2.80)	49.4–3.0 (3.11–3.00)
R_{merge}	0.066 (0.806)	0.166 (1.09)	0.169 (2.00)
R_{pim}	0.028 (0.371)	0.068 (0.462)	0.046 (0.564)
$I/\sigma I$	14.6 (1.9)	7.8 (1.7)	17.8 (2.2)
Completeness (%)	99.4 (92.8)	100 (100)	99.9 (99.8)
Multiplicity	6.7 (5.6)	6.9 (6.6)	14.1 (13.4)
CC(1/2)	0.998 (0.833)	0.990 (0.659)	0.999 (0.786)
Refinement			
Resolution (Å)	50–2.6	50–2.8	
No. reflections	130,396	130,396	
R_{work}/ R_{free}	0.20 / 0.24	0.20 / 0.23	

No. atoms		
Protein	18,997	18,997
Nucleic acid	5,012	5,012
Solvent	144	144
B-factors (Å^2)		
Protein	80.2	80.2
Nucleic acid	82.4	82.4
Ion	51.4	51.4
Solvent	51.4	51.4
R.m.s. deviations		
Bond lengths (Å)	0.002	0.002
Bond angles (°)	0.526	0.526
Ramachandran plot (%)		
Favored region	97.0	97.0
Allowed region	3.0	3.0
Outlier region	0.0	0.0

*Values in parentheses are for the highest resolution shell.

[00560] The structure revealed that SaCas9 has a bilobed architecture consisting of a REC lobe (residues 41–425) and a NUC lobe (residues 1–40 and 435–1053). The two lobes are connected by an arginine-rich bridge helix (residues 41–73) and a linker loop (residues 426–434) (Figure 1). The NUC lobe consists of the RuvC (residues 1–40, 435–480 and 650–774), HNH (residues 520–628), WED (residues 788–909) and PI (residues 910–1053) domains (Figure 1). The RuvC and WED domains are connected by a phosphate lock loop (residues 775–787). The PI domain can be divided into a Topo-homology (TOPO) domain and a C-terminal domain as in SpCas9 (Jinek et al., 2014). The RuvC domain consists of three separate motifs (RuvC-I–III) and interacts with the HNH and PI domains. The HNH domain is connected to the RuvC-II and RuvC-III by L1 (residues 481–519) and L2 (residues 629–649) linker regions, respectively. The active site of the HNH domain is located away from the cleavage site in the target DNA strand (the phosphodiester linkage between dC3 and dA4), indicating that the herein described structure represents an inactive state, as in the case of the SpCas9–sgRNA–target DNA complex structures (Anders et al., 2014; Nishimasu et al., 2014). SpCas9 undergoes conformational rearrangements upon guide RNA binding, to form the central channel between the REC and NUC lobes (Anders et al., 2014;

Jiang et al., 2015; Jinek et al., 2014; Nishimasu et al., 2014). In the absence of the guide RNA, SpCas9 and AnCas9 adopt a closed conformation, where the active site of the HNH domain is covered by the RuvC domain (Figure 12). In contrast, the ternary and quaternary complex structures of SpCas9 adopt an open conformation and has the central channel, which accommodates the guide RNA–target DNA heteroduplex (referred to as a guide:target heteroduplex) (Figures 1E and 1F). The present quaternary complex structure of SaCas9 adopts a similar open conformation to form the central channel, which accommodates the guide:target heteroduplex (Figures 1C and 1D). Thus, these structural observations suggested that the guide RNA-induced conformational activation is conserved between SaCas9 and SpCas9.

Structure of the sgRNA–target DNA complex

[00561] The sgRNA consists of the guide region (G1–C20), repeat region (G21–G34), tetraloop (G35–A38), anti-repeat region (C39–C54), stem loop 1 (A56–G68) and single-stranded linker (U69–U73), with A55 connecting the anti-repeat region and stem loop 1 (Figures 2A–2D). No electron density was observed for U73 at the 3′ end, suggesting that U73 is disordered in the structure. The guide region (G1–C20) and the target DNA strand (dG1–dC20) form an RNA–DNA heteroduplex (referred to as a guide:target heteroduplex), whereas the target DNA strand (dC(−8)–dA(−1)) and the non-target DNA strand (dT1*–dG8*) form a PAM-containing duplex (referred to as a PAM duplex) (Figures 2A and 2B). The repeat (G21–G34) and anti-repeat (C39–C54) regions form a distorted duplex (referred to as a repeat:anti-repeat duplex) via 13 Watson-Crick base pairs (Figures 2A and 2B). The unpaired nucleotides (C30, A43, U44 and C45) form an internal loop, which is stabilized by a hydrogen bonding-interaction between the O2 of U44 and the N4 of C45 (Figure 2C). The repeat:anti-repeat duplex is recognized by the REC and WED domains (described below). Indeed, a GAU insertion into the repeat region, which would disrupt the internal loop, reduced the Cas9-mediated DNA cleavage (Figure 2E), confirming the functional importance of the distorted structure of the repeat:anti-repeat duplex.

[00562] Stem loop 1 is formed via three Watson-Crick base pairs (G57:C67–C59:G65) and two non-canonical base pairs (A56:G68 and A60:A63) (Figures 2A and 2D). U64 does not base pair with A60, and is flipped out of the stem loop (Figure 2D). The N1 and N6 of A63 hydrogen bond with the 2′ OH and N3 of A60, respectively. G68 stacks with G57:C67, with the G68 N2 interacting with the backbone phosphate group between A55 and A56. A55 adopts the syn

conformation, and its adenine base stacks with U69 (Figure 2D). In addition, the N1 of A55 hydrogen bonds with the 2′ OH of G68, stabilizing the basal region of stem loop 1. An adenosine nucleotide immediately after the repeat:anti-repeat duplex is highly conserved among CRISPR-Cas9 systems, and equivalent adenosine A51 in the SpCas9 crRNA:tracrRNA also adopts the syn conformation (Anders et al., 2014; Nishimasu et al., 2014) (Figure 13A), suggesting conserved key roles of an adenosine connecting the repeat:anti-repeat duplex and stem loop 1.

[00563] The SpCas9 sgRNA contains three stem loops (stem loops 1–3), which interact with Cas9 and contribute to the complex formation (Nishimasu et al., 2014) (Figures 2G and 13A). The sgRNA lacking stem loops 2 and 3 supports the Cas9-catalyzed DNA cleavage *in vitro* but not *in vivo*, indicating the importance of stem loops 2 and 3 for the cleavage activity *in vivo* (Hsu et al., 2013; Jinek et al., 2012; Nishimasu et al., 2014). The nucleotide sequence of the SaCas9 sgRNA indicated that it contains two stem loops (stem loops 1 and 2) based on its nucleotide sequence (Figure 13B). Truncation of putative stem loop 2 remarkably improved the quality of the crystals. As in SpCas9, the sgRNA lacking stem loop 2 supported Cas9-catalyzed DNA cleavage *in vitro* but not *in vivo* (Figures 13C and 13D), suggesting that secondary structures on the 3' tail of the SaCas9 sgRNA are important for *in vivo* function.

[00564] Tetraloop and stem loop 2 of the SpCas9 sgRNA are exposed to the solvent (Anders et al., 2014; Nishimasu et al., 2014) (Figure 13A). Thus, these two loops are available for the fusion of RNA aptamers, and the three components system consisting of (1) catalytically inactive SpCas9 (D10A/N863A) fused with a VP64 transcriptional activator domain, (2) a MS2 bacteriophage coat protein fused with p65 and HSF1 transcriptional activator domains, and (3) the engineered sgRNA fused to MS2-interacting RNA aptamers can induce the RNA-guided transcriptional activation of target endogenous loci (Konermann et al., 2015). To examine whether tetraloop and stem loop 2 of the SaCas9 sgRNA are available for the MS2-interacting aptamer fusion, Applicants co-expressed in HEK293F cells the three components, (1) dSpCas9 (D10A/N863A)–VP64 or dSaCas9 (D10A/N580A)–VP64, (2) its engineered sgRNA, and (3) MS2–p65–HSF1, and then monitored the transcriptional activation of two different endogenous genes (ASCL1 and MYOD1) (Figure 2F). The results showed that the dSaCas9-based activator induces the transcription activation of the ASCL1 and MYOD1 genes at levels comparable to those of the dSpCas9-based activator. These results indicate that the SaCas9 sgRNA has solvent-exposed stem loop 2, and demonstrate that the engineered SaCas9 sgRNA can recruit multiple MS2-fused proteins.

[00565] The sgRNAs used in Figure 2F were designed with the MS2 stem loop sequence inserted into the Tetraloop. The following table provides full sgRNA sequences and identifies each target guide sequence.

sgRNA Name	Target Guide Sequence	Full sgRNA sequence
a_ASCL1_24	GCGGGGCCAGGGCTGCGCGTGGGG	GCGGGGCCAGGGCTGCGCGTGGGGGTTTTAGTACTCTGGGCCAACATGAGGATCACCCATGTCTGCAGGGCCCAGAATCTACTAAAACAAGGCAAAATGCCGTGTTTATCTCGTCAACTTGTTGGCGAGATTTTTT
a_ASCL1_22	GGGGCCAGGGCTGCGCGTGGGG	GGGGCCAGGGCTGCGCGTGGGGGTTTTAGTACTCTGGGCCAACATGAGGATCACCCATGTCTGCAGGGCCCAGAATCTACTAAAACAAGGCAAAATGCCGTGTTTATCTCGTCAACTTGTTGGCGAGATTTTTT
a_ASCL1_21	GGGCCAGGGCTGCGCGTGGGG	GGGCCAGGGCTGCGCGTGGGGGTTTTAGTACTCTGGGCCAACATGAGGATCACCCATGTCTGCAGGGCCCAGAATCTACTAAAACAAGGCAAAATGCCGTGTTTATCTCGTCAACTTGTTGGCGAGATTTTTT
a_MYOD1_24	GCCCAGGCGGGCAGCTGGGGGAGG	GCCCAGGCGGGCAGCTGGGGGAGGGTTTTAGTACTCTGGGCCAACATGAGGATCACCCATGTCTGCAGGGCCCAGAATCTACTAAAACAAGGCAAAATGCCGTGTTTATCTCGTCAACTTGTTGGCGAGATTTTTT
a_MYOD1_22	CCAGGCGGGCAGCTGGGGGAGG	CCAGGCGGGCAGCTGGGGGAGGGTTTTAGTACTCTGGGCCAACATGAGGATCACCCATGTCTGCAGGGCCCAGAATCTACTAAAACAAGGCAAAATGCCGTGTTTATCTCGTCAACTTGTTGGCGAGATTTTTT
a_MYOD1_21G	GCAGGCGGGCAGCTGGGGGAGG	GCAGGCGGGCAGCTGGGGGAGGGTTTTAGTACTCTGGGCCAACATGAGGATCACCCATGTCTGCAGGGCCCAGAATCTACTAAAACAAGGCAAAATGCCGTGTTTATCTCGTCAACTTGTTGGCGAGATTTTTT

Recognition mechanism of the guide:target heteroduplex

[00566] The guide:target heteroduplex is accommodated in the central channel between the REC and NUC lobes (Figures 1D and 3). The sugar–phosphate backbone of the PAM-distal region (A3–U6) of the sgRNA interacts with the REC lobe (Thr238, Tyr239, Lys248, Tyr256, Arg314, Asn394 and Gln414) (Figure 3). In SpCas9 and SaCas9, the RNA–DNA base pairing in the 8 bp

PAM-proximal "seed" region in the guide:target heteroduplex is critical for Cas9-catalyzed DNA cleavage (Hsu et al., 2013; Jinek et al., 2012; Ran et al., 2015). Consistent with this, the phosphate backbone of the sgRNA seed region (C13–C20) is extensively recognized by the bridge helix (Asn44, Arg48, Arg51, Arg55, Arg59 and Arg60) and the REC lobe (Arg116, Gly117, Arg165, Gly166, Asn169 and Arg209), as in the case of SpCas9 (Figures 3 and 4A). In addition, the 2′ OH groups of C15, U16, U17 and G19 interact with the REC lobe (Gly166, Arg208, Arg209 and Tyr211). These structural findings suggest that the sgRNA binds to SaCas9, with its seed region pre-ordered in an A-form conformation for base-paring with the target DNA strand, as proposed for SpCas9 (Jiang et al., 2015). In addition, the sugar–phosphate backbone of the target DNA strand interacts with the REC lobe (Tyr211, Trp229, Tyr230, Gly235, Arg245, Gly391, Thr392, and Asn419) and the RuvC domain (Leu446, Tyr651 and Arg654) (Figure 3). Together, there structural findings explain the RNA-guided DNA targeting mechanism of SaCas9. Notably, the REC lobe of SaCas9 shares structural similarity with those of SpCas9 (PDB code 4UN3, 26% identity, rmsd of 1.9 Å for 177 equivalent Cα atoms) and AnCas9 (PDB ID 4OGE, 16% identity, rmsd of 3.2 Å for 167 equivalent Cα atoms) (Figures S6A and S6B), indicating that the Cas9 orthologs recognize the guide:target heteroduplex in a similar manner.

Recognition mechanism of the crRNA:tracrRNA scaffolds

[00567] The repeat:anti-repeat duplex is recognized by the REC and WED domains, primarily through interactions between the sugar–phosphate backbone and protein (Figure 3). Consistent with our data showing that the sgRNA containing the fully-paired repeat:anti-repeat duplex fails to support Cas9-catalyzed DNA cleavage (Figure 2E), the internal loop (C30, U44 and C45) is extensively recognized by the WED domain (Figure 4B). The 2′ OH and O2 of C30 hydrogen bond with Tyr868 and Lys867, respectively, and the phosphate groups of U31, C45 and U46 interact with Lys870, Arg792 and Lys881, respectively. These structural observations explain the structure-dependent recognition of the repeat:anti-repeat duplex by SaCas9.

[00568] Stem loop 1 is recognized by the bridge helix and REC lobe (Figure 3). The phosphate backbone of stem loop 1 interact with the bridge helix (Arg47, Arg54, Arg55, Arg58 and Arg59) and the REC lobe (Arg209, Gly216 and Ser219) (Figure 4C). The 2′ OH of A63 hydrogen bonds with His64. The flipped-out U64 is recognized by Glu213 and Arg209 via hydrogen-bonding and stacking interactions, respectively. A55 is extensively recognized by the phosphate lock loop (Figure 4D). The N6, N7 and 2′ OH of A55 hydrogen bond with Asn780/Arg781, Leu783 and

Lys906, respectively. Lys57 interacts with the phosphate group between C54 and A55, and the side chain of Leu783 form hydrophobic contacts with the adenine bases of A55 and A56. The phosphate backbone of the linker region electrostatically interacts with the RuvC domain (Arg452, Lys459 and Arg774) and the phosphate lock loop (Arg781), and the guanine base of G80 stacks with the side chain of Arg47 on the bridge helix (Figure 4D).

Recognition mechanism of the 5'-NNGRRT-3' PAM

[00569] SaCas9 recognizes the 5'-NNGRRN-3' PAM with a preference for a thymine base at the 6th position (Ran et al., 2015), which is distinct from the 5′-NGG-3′ PAM of SpCas9. In the present structures containing either the 5′-TTGAAT-3′ PAM or the 5′-TTGGGT-3′ PAM, the PAM duplex is sandwiched between the WED and PI domains, and the PAM in the non-target DNA strand is read out from the major groove side by the PI domain (Figures 5A and 5B). dT1* and dT2* form no direct contact with the protein (Figures 5A and 5B). Consistent with the observed requirement for the 3rd G in the 5'-NNGRRT-3' PAM, the O6 and N7 of dG3* forms bidentate hydrogen bonds with the side chain of Arg1015, which is anchored via salt bridges with Glu993 in both complexes (Figures 5A and 5B). In the 5'-TTGAAT-3' PAM complex, the N7 atoms of dA4* and dA5* form direct and water-mediated hydrogen bonds with Asn985 and Asn985/Asn986/Arg991, respectively (Figure 5A). In addition, the N6 of dA5* forms a water-mediated hydrogen bond with Asn985. Similarly, in the 5'-TTGGGT-3' PAM complex, the N7 atoms of dG4* and dG5* form direct and water-mediated hydrogen bonds with Asn985 and Asn985/Asn986/Arg991, respectively (Figure 5B). The O6 of dG5* forms a water-mediated hydrogen bond with Asn985. These structural findings explain the ability of SaCas9 to recognize the purine nucleotides at positions 4 and 5 in the 5'-NNGRRT-3' PAM. The O4 of dT6* hydrogen bonds with Arg991 (Figures 5A and 5B), explaining the preference of SaCas9 to the 6th T in the 5'-NNGRRT-3' PAM. Single alanine mutants of these PAM-interacting residues reduced cleavage activities *in vivo*, and double mutations abolished the activity (Figure 5C), confirming the importance of Asn985, Asn986, Arg991, Glu993 and Arg1015 for PAM recognition. In addition, the phosphate backbone of the PAM duplex is recognized from the minor groove side by the WED domain (Tyr789, Tyr882, Lys886, Ans888, Ala889 and Leu909) in a manner distinct from SpCas9 (Figure 3). Together, our structural and functional data reveal the mechanism of relaxed recognition of the 5'-NNGRRT-3' PAM by SaCas9.

Mechanism of target DNA unwinding

[00570] In the quaternary complex structure of SpCas9, Glu1108 and Ser1109 in the phosphate lock loop hydrogen bond with the phosphate group between dA(−1) and dT1 in the target DNA strand (referred to as +1 phosphate), and contribute to unwinding of the target DNA (Anders et al., 2014) (Figures 5F and 17). The present structure revealed that SaCas9 also has the phosphate lock loop, although the phosphate lock loops of SaCas9 and SpCas9 share limited sequence similarity (Figure 5E). In the present structure of SaCas9, the +1 phosphate between dA(−1) and dG1 in the target DNA strand hydrogen bonds with the main-chain amide groups of Asp786 and Thr787 and the side-chain Og atom of Thr787 in the phosphate lock loop. These interactions result in the rotation of the +1 phosphate, thereby facilitating base-pairing between dG1 in the target DNA strand and C20 in the sgRNA. Indeed, the SaCas9 T787A mutant showed reduced DNA cleavage activity (Figure 5C), confirming the functional significance of Thr787 in the phosphate lock loop. Together, these data indicated that the molecular mechanism of the target DNA unwinding is conserved among SaCas9 and SpCas9.

RuvC and HNH nuclease domains

[00571] The RuvC domain of SaCas9 has an RNase H fold, and shares structural similarity with those of SpCas9 (PDB code 4UN3, 25% identity, rmsd of 2.5 Å for 191 equivalent Ca atoms) and Actinomyces naeslundii Cas9 (AnCas9) (PDB code 4OGE, 17% identity, rmsd of 3.0 Å for 170 equivalent Ca atoms) (Figure 6A). The catalytic residues of SaCas9 (Asp10, Glu477, His701 and Asp704) are located at positions similar to those of SpCas9 (Asp10, Glu762, His983 and Asp986) and AnCas9 (Asp17, Glu505, His736 and Asp739) (Figure 6A). The D10A, E477A, H701A and D704A mutants of SaCas9 showed almost no DNA cleavage activities. These observations indicated that the SaCas9 RuvC domain cleaves the non-target DNA strand through a two-metal ion mechanism as in other endonucleases of the RNase H superfamily (Gorecka et al., 2013).

[00572] The HNH domain of SaCas9 has an aab-metal fold, and shares structural similarity with those of SpCas9 (PDB code 4UN3, 27% identity, rmsd of 1.8 Å for 93 equivalent Ca atoms) and AnCas9 (PDB code 4OGE, 18% identity, rmsd of 2.6 Å for 98 equivalent Ca atoms) (Figure 6B). The catalytic residues of SaCas9 (Asp556, His557 and Asn580) are located at positions similar to those of SpCas9 (Asp839, His840 and Asn863) and AnCas9 (Asp581, His582 and Asn606), although Asn863 is oriented away from the active site in the ternary and quaternary complex structures of SpCas9 (Figure 6B). The D556A, H557A and N580A mutants of SaCas9 showed almost no DNA cleavage activities). These observations indicated that the SaCas9 HNH

domain cleaves the target DNA strand through a one-metal ion mechanism as in other aab-metal endonucleases (Biertumpfel et al., 2007).

[00573] A structural comparison of SaCas9 with SpCas9 and AnCas9 revealed that the RuvC and HNH domains are connected by a-helical linker, L1 and L2, and that there are notable differences in the relative arrangements between the two nuclease domains (Figure 6C). A biochemical study suggested that the binding of the PAM duplex to SpCas9 facilitates the cleavage of the target DNA strand by the HNH domain (Sternberg et al., 2014). However, in the quaternary complex structures of SaCas9 and SpCas9, the HNH domains are located away from the cleavage site of the target DNA strand (Figure 6C). A structural comparison of SaCas9 with Thermus thermophilus RuvC in complex with a Holliday junction substrate (Gorecka et al., 2013) indicated steric clashes between the L1 linker and the modeled non-target DNA strand bound to the active site of the SaCas9 RuvC domain (Figure 16). These observations suggested that the binding of the non-target DNA strand to the RuvC domain may contribute to triggering a conformational change in the L1, thereby bringing the HNH domain to the scissile phosphate group in the target DNA strand.

Conserved mechanism of RNA-guided DNA targeting

[00574] Previous structural studies revealed that SpCas9 undergoes conformational rearrangements upon guide RNA binding, to form the central channel between the REC and NUC lobes (Anders et al., 2014; Jinek et al., 2014; Nishimasu et al., 2014). In the absence of the guide RNA, SpCas9 adopts a closed conformation, where the active site of the HNH domain is covered by the RuvC domain (Figure 18). In contrast, the ternary and quaternary complex structures of SpCas9 adopt an open conformation and have the central channel, which accommodates the guide:target heteroduplex (Figures 7A and 18). The quaternary complex structure of SaCas9 adopts an open conformation and has the central channel, which accommodates the guide:target heteroduplex (Figures 7A and 18). Thus, the guide RNA-induced conformational rearrangement is conserved among SaCas9 and SpCas9.

[00575] The REC lobes of SaCas9 and SpCas9 (PDB code 4UN3) share structural similarity (25% identity, rmsd of 2.9 Å for 353 equivalent Ca atoms), and recognize the guide:target heteroduplex in a similar manner (Figure 7B). In particular, the seed region of the sgRNA is commonly recognized by the arginine cluster on the bridge helix in SaCas9 and SpCas9 (Figure 7B). AnCas9 (PDB ID 4OGE) also has a REC lobe similar to those of SaCas9 and SpCas9

(Figures 14A and 14B). These observations suggested that the recognition mechanism of the guide:target heteroduplex is conserved among Cas9 orthologs.

Structural basis for the orthogonal recognition of sgRNA scaffolds

[00576] A comparison of the quaternary complex structures of SaCas9 and SpCas9 reveals that the structurally diverse REC and WED domains recognize the distinct structural features of the repeat:anti-repeat duplex, allowing cognate sgRNAs to be distinguished in an orthogonal manner (Figures 4E and 4F and 7A to 7D). The SpCas9 WED domain adopts a compact loop conformation (Nishimasu et al., 2014; Anders et al., 2014) (Figure 4F and Figure 14C). In contrast, the SaCas9 WED domain has a new fold comprising a twisted five-stranded β-sheet flanked by four α-helices (Figure 4F and Figure 14C). The AnCas9 WED domain has yet a different fold containing three antiparallel β-hairpins (Jinek et al., 2014) (Figure 14C). These structural differences in the WED domains are consistent with variations in sgRNA scaffolds among CRISPR-Cas9 systems (Fonfara et al., 2014; Briner et al., 2014; Ran et al., 2015).

[00577] The REC lobe also contributes to the orthogonal recognition of sgRNA scaffolds. Although the REC lobes of SaCas9 and SpCas9 share structural similarity, the SpCas9 REC lobe has four characteristic insertions (Ins 1–4), which are absent in the SaCas9 REC lobe (Figures 4E and 4F). Ins 2 (also known as the REC2 domain) forms no contact with the nucleic acids in the SpCas9 structures and is dispensable for DNA cleavage activity (Figures 4E) (Nishimasu et al., 2014), consistent with the absence of Ins2 in SaCas9 (Figures 4F). Ins 1 and 3 recognize the SpCas9-specific internal loop in the repeat:anti-repeat duplex (Figures 4E), while in SaCas9 the WED domain recognizes the internal loop in the repeat:anti-repeat duplex (Figures 4F), as described above. In addition, Ins 4 interacts with stem loop 1 of the SpCas9 sgRNA, which is shorter than that of the SaCas9 sgRNA (Figures 4E). Together, these structural observations demonstrate that the Cas9 orthologs recognize their cognate sgRNA in an orthogonal manner, using a combination of the structurally diverse REC and WED domains.

Structural basis for the distinct PAM specificities

[00578] A structural comparison of SaCas9, SpCas9 and AnCas9 revealed that, despite lacking sequence homology, their PI domains share a similar protein fold (Figures 5D and 5E, and Figure 14C). The PI domans consist of the Topo-homology domain, which comprises three-stranded anti-parallel β-sheet (β1–β3) flanked by several α helices, and the C-terminal domain, which comprises twisted six-stranded anti-parallel β-sheet (β4–β9) (the β7 in SpCas9 adopts a loop

conformation) (Figures 5D and 5E, and Figure 14C). In both SaCas9 and SpCas9, the major groove of the PAM duplex is read out by the β5–β7 region in their PI domains (Figures 5D and 5E). The 3rd G in the 5'-NNGRRT-3' PAM is recognized by Arg1015 in SaCas9 (Figure 5E), and the 3rd G in the 5'-NGG-3' PAM is recognized by Arg1335 in SpCas9 and in a similar manner (Figure 7C). However, there are also notable differences in the PI domains of SaCas9 and SpCas9, consistent with their distinct PAM specificities. Arg1333 of SpCas9, which recognizes the 2nd G in the NGG PAM, is replaced with Pro1013 in SaCas9 (Figures 5D and 5E). In addition, SpCas9 lacks amino acid residues equivalent to Asn985/Asn986 (β5) and Arg991 (β6) of SaCas9, because the β5–β6 region of SpCas9 is shorter than that of SaCas9 (Figures 5D and 5E). Moreover, Asn985, Asn986, Arg991 and Arg1015 in SaCas9 are replaced with Asp1030, Thr1031, Lys1034 and Lys1061 in AnCas9, respectively (Figure 14C), suggesting that the PAM for AnCas9 is different from those for SaCas9 and SpCas9. Together, these structural findings demonstrated that distinct PAM specificities of Cas9 orthologs are primarily defined by their structurally diverse PI domains.

Structure-guided engineering of SaCas9 transcription activators and inducible nucleases

[00579] Using the crystal structure of SaCas9, we conducted structure-guided engineering to further expand the CRISPR-Cas9 toolbox. Given the similarities in the overall domain organization of SaCas9 and SpCas9, we initially explored the feasibility of engineering the SaCas9 sgRNA to develop robust transcription activators. In the SpCas9 structure, the tetraloop and stem loop 2 of the sgRNA are exposed to solvent (Anders et al., 2014; Nishimasu et al., 2014) (Figure 2F) and permitted insertion of RNA aptamers into the sgRNA to create robust RNA-guided transcription activators (Konermann et al., 2015). To generate the SaCas9-based activator system, we created a catalytically inactive version of SaCas9 (dSaCas9) by introducing D10A and N580A mutations to inactivate the RuvC and HNH domains, respectively, and attached VP64 to the C-terminus of dSaCas9 (Figure 8A). The sgRNA scaffold was modified with the insertion of MS2 aptamer stem loop (MS2-SL) to allow recruitment of MS2-p65-HSF1 transcriptional activation modules (Figure 8A). To evaluate the dSaCas9-based activator design, we constructed a transcriptional activation reporter system consisting of tandem sgRNA target sites upstream of a minimal CMV promoter driving the expression of the fluorescent reporter gene *mKate2* (Zhang et al., 2011) (Figure 8B). We included an additional transcriptional termination signal upstream of the reporter cassette to reduce the background previously observed in a similar reporter design

(Cong et al., 2012) (Figure 8B). We observed robust activation of *mKate2* transcription when we expressed the engineered sgRNA complementary to the target sites, whereas the non-binding sgRNA had no detectable effect (Figure 8C). Based on a screening of different sgRNA designs with this reporter assay, we found that insertions of MS2-SL into the tetraloop and putative stem loop 2 are able to induce strong activation in our reporter system, whereas insertion of MS2-SL into stem loop 1 yielded modest activation, consistent with the structural data (Figure 8D). The single insertion of MS2-SL into the tetraloop was the simplest design that yielded strong transcriptional activation. Using this optimal sgRNA design, we further tested activation of endogenous targets in the human genome. We selected two guides each for the human *ASCL1* and *MYOD1* genomic loci, and demonstrated that the dSaCas9-based activator system was able to activate both genes to levels comparable to those of the dSpCas9-based activator (Konermann et al., 2013) (Figure 8E). Given that the sgRNAs for SaCas9 and SpCas9 are not interchangeable, the SaCas9-based transcription activator platform complement the SpCas9-based activator systems by allowing for independent activation of different sets of genes.

[00580] The SpCas9 structure also facilitated the rational design of split-Cas9s (Zetsche et al., 2015; Wright et al., 2015), which can be further engineered into an inducible system (Zetsche et al., 2015). Our SaCas9 structure reveals several flexible regions in SaCas9 that could likewise serve as potential split sites (Figure 8F). We created three versions of a split-SaCas9, two of which showed robust cleavage activity at the endogenous *EMX1* target locus (Figure 8G). Using the best split design, we then tested inducible schemes based on the abscisic acid (ABA) sensing system (Liang et al., 2011) as well as two versions of the rapamycin-inducible FKBP/FRB system (Banaszynski et al., 2005) (Figures 8H and 8I). All three systems were able to support inducible SaCas9 cleavage activity, demonstrating the possibility of an inducible, split-SaCas9 design; however, further optimization will increase its efficiency and reduce its background activity (Figure 8J).

Conclusion

[00581] The present structures of SaCas9 in complex with the sgRNA and the PAM-containing target DNA have provided mechanistic insights into the RNA-guided DNA targeting by SaCas9. A structural comparison of SaCas9 with SpCas9 (Anders et al., 2014; Jinek et al., 2014; Nishimasu et al., 2014) and AnCas9 (Jinek et al., 2014) illuminated conserved structural features

among the orthologous CRISPR-Cas9 systems. SaCas9 and SpCas9 both have the bilobed architecture consisting of the REC and NUC lobes, which is connected by the bridge helix. The guide:target heteroduplex is accommodated in the central channel between the two lobes. In addition, SaCas9 and SpCas9 have the phosphate lock loop, which participates in the local strand separation of the target DNA. A structural comparison of the Cas9 orthologs also revealed that the HNH and RuvC domains are connected the L1 and L2 linkers. It is likely that these linker regions play a role in the inactive-to-active conformational transition of the HNH domain during catalysis, although further structural and functional studies will be required to elucidate the activation mechanism of Cas9 endonucleases.

[00582] A structural comparison of the Cas9 orthologs also highlighted the structural diversity among the CRISPR-Cas9 systems. The REC lobe of SaCas9 lacks a region corresponding to the SpCas9 REC2 domain, providing a molecular framework for the rational design of smaller Cas9 proteins. The PI domains of SaCas9, SpCas9 and AnCas9 share a similar core structure, but contain diverse PAM-interacting residues, consistent with their distinct PAM specificities. Moreover, Applicants found that the structurally diverse WED domains participate in the recognition of the repeat:anti-repeat duplex, which is diverse in structure and sequence among the CRISPR-Cas9 systems, thereby explaining the orthogonal recognition of cognate crRNA:tracrRNA by Cas9 orthologs.

[00583] Applicants developed dSaCas9-based transcription activators, and demonstrated that the engineered SaCas9 sgRNA can serve as a platform for recruiting multiple MS2-fused proteins. These results have opened the possibility that the combinatorial use of dSaCas9- and dSpCas9-based transcription regulation systems enables simultaneous activation and repression of multiple target endogenous loci. Overall, the present structural information described herein will serve as a blueprint for further Cas9 engineering, such as the design of smaller Cas9 variants with expanded PAM specificities, which will enable more versatile genome engineering.

[00584] **REFERENCES**

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Example 2: SaCas9 Crystal

Sample Preparation. The gene encoding full-length *S. aureus* Cas9 (SaCas9; residues 1–1053) was cloned between the *Nde*I and *Xho*I sites of the modified pE-SUMO vector (LifeSensors), and the N580A/C946A mutations were introduced by a PCR-based method. The SaCas9 N580A/C946A mutant protein was expressed at 20°C in *Escherichia coli* Rosetta 2 (DE3) (Novagen), and was purified by chromatography on Ni-NTA Superflow resin (QIAGEN). The eluted protein was incubated overnight at 4°C with TEV protease to remove the His_6-SUMO-tag, and was further purified by chromatography on Ni-NTA, Mono S (GE Healthcare) and HiLoad Superdex 200 16/60 (GE Healthcare) columns. The SeMet-labeled SaCas9 N580A/C946A mutant protein was expressed in *E. coli* B834 (DE3), and was purified using a similar protocol to that for the native protein. The 73-nt sgRNA was transcribed *in vitro* with T7 RNA polymerase, using a double-stranded DNA template, which was generated by PCR using pairs of oligonucleotides. The transcribed RNA was purified by 8% denaturing (7 M urea) polyacrylamide gel electrophoresis. The 28-nt target and 8-nt non-target DNA strands were purchased from Sigma-Aldrich. The purified SaCas9 protein was mixed with sgRNA, target DNA strand and non-target DNA strand (containing either the 5′-TTGAAT-3′ PAM or the 5′-TTGGGT-3′ PAM) (molar ratio, 1:1.5:2.3:3.4), and then the SaCas9–sgRNA–target DNA complex was purified by gel filtration chromatography on a Superdex 200 Increase column (GE Healthcare), in a buffer consisting of 10 mM Tris-HCl, pH 8.0, 150 mM NaCl and 1 mM DTT. For *in vitro* cleavage assays, the wild-type SaCas9 protein was prepared using a similar protocol to that for the N580A/C946A mutant, except that the size-exclusion chromatography step was omitted.

[00585] Crystallography. The purified SaCas9–sgRNA–target DNA complex (containing either the 5′-TTGAAT-3′ PAM or the 5′-TTGGGT-3′ PAM) was crystallized at 20°C by the hanging-drop vapor diffusion method. Crystals were obtained by mixing 1 μl of complex solution ($A_{260\ nm}$ = 15) and 1 μl of reservoir solution (10–12% PEG 4,000, 0.75 M NaCl, 0.15 M Na_2HPO_4

and 0.15 M NaN_3). The SeMet-labeled complex (containing the 5′-TTGAAT-3′ PAM) was also crystallized under similar conditions. X-ray diffraction data were collected at 100 K on beamlines BL32XU and BL41XU at SPring-8 (Hyogo, Japan). The crystals were cryoprotected in reservoir solution supplemented with 25% ethylene glycol. X-ray diffraction data were processed using XDS (Kabsch, 2010) and AIMLESS (Evans and Murshudov, 2013). The structure was determined by the Se-SAD method, using PHENIX AutoSol (Adams et al., 2010). The model was automatically built using Buccaneer (Cowtan, 2006), followed by manual model building using COOT (Emsley and Cowtan, 2004) and structural refinement using PHENIX (Adams et al., 2010). The resulting model was refined, using the 2.6 Å resolution native data set (the 5′-TTGAAT-3′ PAM complex). The structure of the 5′-TTGGGT-3′ PAM complex was solved by molecular replacement with MOLREP (Vagin and Teplyakov, 2010).

Table 7 – Crystal Structure Data

```
REMARK Date 2015-01-14 Time 00:49:41 JST +0900 (1421164181.24 s)
REMARK PHENIX refinement
REMARK
REMARK ****************** INPUT FILES AND LABELS
*****************************
REMARK Reflections:
REMARK   file name      :
/net6/nisimasu/0SaCas9/modeling/phenix2/SaCas9_refine_8.mtz
REMARK   labels         : ['F-obs,SIGF-obs']
REMARK R-free flags:
REMARK   file name      :
/net6/nisimasu/0SaCas9/modeling/phenix2/SaCas9_refine_8.mtz
REMARK   label          : R-free-flags
REMARK   test_flag_value: 0
REMARK Model file name(s):
REMARK   /net6/nisimasu/0SaCas9/modeling/phenix2/SaCas9_refine_8-coot-17.pdb
REMARK
REMARK ******************* REFINEMENT SUMMARY: QUICK FACTS
******************
REMARK Start: r_work = 0.2874 r_free = 0.3032 bonds = 0.009 angles = 1.088
REMARK Final: r_work = 0.2103 r_free = 0.2583 bonds = 0.010 angles = 1.383
REMARK
*******************************************************************************
REMARK
REMARK ***************** REFINEMENT STATISTICS STEP BY STEP
*****************
REMARK leading digit, like 1_, means number of macro-cycle
REMARK 0    : statistics at the very beginning when nothing is done yet
REMARK 1_bss: bulk solvent correction and/or (anisotropic) scaling
REMARK 1_xyz: refinement of coordinates
```

```
REMARK 1_adp: refinement of ADPs (Atomic Displacement Parameters)
REMARK ------------------------------------------------------------------------
-
REMARK  stage        r-work r-free bonds angles b_min b_max b_ave n_water shift
REMARK        0    : 0.4940 0.4784 0.009  1.09   20.0 199.1  78.6    1       0.000
REMARK        1_bss: 0.2874 0.3032 0.009  1.09   23.1 202.2  81.7    1       0.000
REMARK 1_settarget: 0.2874 0.3032 0.009  1.09   23.1 202.2  81.7    1       0.000
REMARK 1_addcbetar: 0.2874 0.3032 0.009  1.09   23.1 202.2  81.7    1       0.000
REMARK    1_weight: 0.2874 0.3032 0.009  1.09   23.1 202.2  81.7    1       0.000
REMARK    1_xyzrec: 0.2708 0.3113 0.012  1.28   23.1 202.2  81.7    1       0.136
REMARK        1_adp: 0.2264 0.2706 0.012  1.28   27.2 248.7  88.4    1       0.136
REMARK        2_bss: 0.2208 0.2703 0.012  1.28   27.0 248.5  88.3    1       0.136
REMARK 2_settarget: 0.2208 0.2703 0.012  1.28   27.0 248.5  88.3    1       0.136
REMARK   2_realsrl: 0.2279 0.2753 0.012  1.75   27.0 248.5  88.3    1       0.205
REMARK    2_weight: 0.2279 0.2753 0.012  1.75   27.0 248.5  88.3    1       0.205
REMARK    2_xyzrec: 0.2189 0.2673 0.010  1.39   27.0 248.5  88.3    1       0.199
REMARK        2_adp: 0.2102 0.2603 0.010  1.39   24.2 252.5  91.3    1       0.199
REMARK        3_bss: 0.2098 0.2601 0.010  1.39   23.9 252.2  91.0    1       0.199
REMARK 3_settarget: 0.2098 0.2601 0.010  1.39   23.9 252.2  91.0    1       0.199
REMARK   3_realsrl: 0.2128 0.2630 0.010  1.64   23.9 252.2  91.0    1       0.212
REMARK    3_weight: 0.2128 0.2630 0.010  1.64   23.9 252.2  91.0    1       0.212
REMARK    3_xyzrec: 0.2073 0.2601 0.010  1.38   23.9 252.2  91.0    1       0.223
REMARK        3_adp: 0.2049 0.2589 0.010  1.38   29.4 260.7  91.8    1       0.223
REMARK          end: 0.2103 0.2583 0.010  1.38   29.4 260.7  91.8    1       0.223
REMARK ------------------------------------------------------------------------
-
REMARK MODEL CONTENT.
REMARK  ELEMENT         ATOM RECORD COUNT    OCCUPANCY SUM
REMARK        P                       106           106.00
REMARK        C                      6246          6246.00
REMARK        S                        14            14.00
REMARK        O                      2258          2258.00
REMARK        N                      1826          1826.00
REMARK    TOTAL                     10450         10450.00
REMARK ------------------------------------------------------------------------
REMARK r_free_flags.md5.hexdigest f7ca06bdd55f95d4c7ebbec297920195
REMARK
REMARK IF THIS FILE IS FOR PDB DEPOSITION: REMOVE ALL FROM THIS LINE UP.
REMARK   3
REMARK   3 REFINEMENT.
REMARK   3   PROGRAM     : PHENIX (phenix.refine: 1.9_1692)
REMARK   3   AUTHORS     : Adams,Afonine,Burnley,Chen,Davis,Echols,Gildea,
REMARK   3               : Gopal,Gros,Grosse-Kunstleve,Headd,Hung,Immormino,
REMARK   3               : Ioerger,McCoy,McKee,Moriarty,Pai,Read,Richardson,
REMARK   3               : Richardson,Romo,Sacchettini,Sauter,Smith,Storoni,
REMARK   3               : Terwilliger,Zwart
REMARK   3
REMARK   3  REFINEMENT TARGET : ML
REMARK   3
REMARK   3  DATA USED IN REFINEMENT.
REMARK   3   RESOLUTION RANGE HIGH (ANGSTROMS) : 2.596
REMARK   3   RESOLUTION RANGE LOW  (ANGSTROMS) : 48.550
REMARK   3   MIN(FOBS/SIGMA_FOBS)              : 1.36
REMARK   3   COMPLETENESS FOR RANGE        (%) : 98.90
```

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REMARK   3   NUMBER OF REFLECTIONS                    : 71455
REMARK   3   NUMBER OF REFLECTIONS (NON-ANOMALOUS) : 71455
REMARK   3
REMARK   3  FIT TO DATA USED IN REFINEMENT.
REMARK   3   R VALUE     (WORKING + TEST SET) : 0.2127
REMARK   3   R VALUE           (WORKING SET) : 0.2103
REMARK   3   FREE R VALUE                     : 0.2583
REMARK   3   FREE R VALUE TEST SET SIZE   (%) : 4.99
REMARK   3   FREE R VALUE TEST SET COUNT      : 3569
REMARK   3
REMARK   3  FIT TO DATA USED IN REFINEMENT (IN BINS).
REMARK   3   BIN  RESOLUTION RANGE  COMPL.    NWORK NFREE   RWORK  RFREE
REMARK   3     1 48.5583 -  7.5818    0.99     2976   154  0.1716 0.1965
REMARK   3     2  7.5818 -  6.0215    0.99     2833   149  0.2030 0.2575
REMARK   3     3  6.0215 -  5.2614    1.00     2799   147  0.1852 0.2131
REMARK   3     4  5.2614 -  4.7808    0.99     2759   144  0.1647 0.2270
REMARK   3     5  4.7808 -  4.4384    0.99     2766   143  0.1672 0.2257
REMARK   3     6  4.4384 -  4.1769    1.00     2753   144  0.1770 0.2433
REMARK   3     7  4.1769 -  3.9678    1.00     2722   145  0.1841 0.2324
REMARK   3     8  3.9678 -  3.7951    0.99     2735   143  0.2064 0.2508
REMARK   3     9  3.7951 -  3.6491    1.00     2759   146  0.2178 0.2789
REMARK   3    10  3.6491 -  3.5232    1.00     2710   143  0.2204 0.2515
REMARK   3    11  3.5232 -  3.4131    1.00     2716   143  0.2344 0.2573
REMARK   3    12  3.4131 -  3.3155    1.00     2751   145  0.2435 0.2972
REMARK   3    13  3.3155 -  3.2283    1.00     2693   142  0.2502 0.3111
REMARK   3    14  3.2283 -  3.1495    1.00     2733   145  0.2497 0.3062
REMARK   3    15  3.1495 -  3.0779    0.99     2684   141  0.2603 0.2985
REMARK   3    16  3.0779 -  3.0124    1.00     2760   145  0.2752 0.3415
REMARK   3    17  3.0124 -  2.9522    1.00     2697   143  0.2889 0.3971
REMARK   3    18  2.9522 -  2.8965    1.00     2710   142  0.3136 0.3650
REMARK   3    19  2.8965 -  2.8448    1.00     2684   143  0.3259 0.3700
REMARK   3    20  2.8448 -  2.7966    1.00     2717   142  0.3353 0.3851
REMARK   3    21  2.7966 -  2.7514    1.00     2731   143  0.3316 0.3995
REMARK   3    22  2.7514 -  2.7091    1.00     2641   139  0.3105 0.3617
REMARK   3    23  2.7091 -  2.6693    0.99     2738   146  0.3218 0.3694
REMARK   3    24  2.6693 -  2.6317    0.94     2532   131  0.3099 0.3570
REMARK   3    25  2.6317 -  2.5961    0.86     2287   121  0.3299 0.3677
REMARK   3
REMARK   3  BULK SOLVENT MODELLING.
REMARK   3   METHOD USED        : FLAT BULK SOLVENT MODEL
REMARK   3   SOLVENT RADIUS     : 1.11
REMARK   3   SHRINKAGE RADIUS   : 0.90
REMARK   3   GRID STEP FACTOR   : 4.00
REMARK   3
REMARK   3  ERROR ESTIMATES.
REMARK   3   COORDINATE ERROR (MAXIMUM-LIKELIHOOD BASED)     : 0.43
REMARK   3   PHASE ERROR (DEGREES, MAXIMUM-LIKELIHOOD BASED) : 29.27
REMARK   3
REMARK   3  STRUCTURE FACTORS CALCULATION ALGORITHM : FFT
REMARK   3
REMARK   3  DEVIATIONS FROM IDEAL VALUES.
REMARK   3                  RMSD     MAX   COUNT
REMARK   3   BOND      :  0.010   0.088  10861
REMARK   3   ANGLE     :  1.383  19.429  15201
```

```
REMARK   3   CHIRALITY :  0.056   0.331   1780
REMARK   3   PLANARITY :  0.006   0.109   1561
REMARK   3   DIHEDRAL  : 17.567 153.626   4299
REMARK   3   MIN NONBONDED DISTANCE : 2.079
REMARK   3
REMARK   3  MOLPROBITY STATISTICS.
REMARK   3   ALL-ATOM CLASHSCORE : 16.20
REMARK   3   RAMACHANDRAN PLOT:
REMARK   3     OUTLIERS : 1.17  %
REMARK   3     ALLOWED  : 5.53  %
REMARK   3     FAVORED  : 93.30 %
REMARK   3   ROTAMER OUTLIERS : 3.18 %
REMARK   3   CBETA DEVIATIONS : 0
REMARK   3
REMARK   3  ATOMIC DISPLACEMENT PARAMETERS.
REMARK   3   WILSON B : 74.31
REMARK   3   RMS(B_ISO_OR_EQUIVALENT_BONDED) : 8.53
REMARK   3   ATOMS          NUMBER OF ATOMS
REMARK   3                     ISO.  ANISO.
REMARK   3    ALL          :  10450   10449
REMARK   3    ALL (NO H)   :  10450   10449
REMARK   3    SOLVENT      :      1       0
REMARK   3    NON-SOLVENT  :  10449   10449
REMARK   3    HYDROGENS    :      0       0
REMARK   3
REMARK   3  TLS DETAILS.
REMARK   3   NUMBER OF TLS GROUPS: 13
REMARK   3   ORIGIN: CENTER OF MASS
REMARK   3   TLS GROUP : 1
REMARK   3    SELECTION: chain 'H' and (resid    1  through   33 )
REMARK   3    ORIGIN FOR THE GROUP (A):  34.7012  41.7715  73.6052
REMARK   3    T TENSOR
REMARK   3      T11:   0.4958 T22:   0.5536
REMARK   3      T33:   0.5099 T12:   0.0388
REMARK   3      T13:  -0.0861 T23:   0.0058
REMARK   3    L TENSOR
REMARK   3      L11:   0.1149 L22:   1.1068
REMARK   3      L33:   0.6875 L12:   0.1422
REMARK   3      L13:  -0.0385 L23:  -0.9531
REMARK   3    S TENSOR
REMARK   3      S11:   0.0883 S12:   0.0988 S13:   0.1095
REMARK   3      S21:  -0.3501 S22:  -0.1188 S23:  -0.2125
REMARK   3      S31:  -0.0183 S32:   0.1126 S33:  -0.0022
REMARK   3   TLS GROUP : 2
REMARK   3    SELECTION: chain 'H' and (resid   34  through   39 )
REMARK   3    ORIGIN FOR THE GROUP (A):  64.1228  10.9555  44.2540
REMARK   3    T TENSOR
REMARK   3      T11:   2.5160 T22:   2.0333
REMARK   3      T33:   2.4185 T12:   0.1791
REMARK   3      T13:   0.8076 T23:  -0.0651
REMARK   3    L TENSOR
REMARK   3      L11:   3.0205 L22:   1.3177
REMARK   3      L33:   7.9038 L12:   1.8061
REMARK   3      L13:  -4.7499 L23:  -3.1585
```

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REMARK   3    S TENSOR
REMARK   3      S11:   0.1045 S12:   1.0525 S13:   0.4169
REMARK   3      S21:  -1.0079 S22:  -0.3969 S23:  -0.5921
REMARK   3      S31:   0.0710 S32:   0.5791 S33:   0.2568
REMARK   3   TLS GROUP : 3
REMARK   3    SELECTION: chain 'H' and (resid   40  through   46 )
REMARK   3    ORIGIN FOR THE GROUP (A):  51.7737  11.1458  56.9326
REMARK   3    T TENSOR
REMARK   3      T11:   1.3442 T22:   0.9236
REMARK   3      T33:   0.9731 T12:   0.1604
REMARK   3      T13:   0.0591 T23:  -0.0063
REMARK   3    L TENSOR
REMARK   3      L11:   6.6466 L22:   5.7217
REMARK   3      L33:   0.5476 L12:  -0.4278
REMARK   3      L13:  -1.7626 L23:   0.7411
REMARK   3    S TENSOR
REMARK   3      S11:   0.1524 S12:   0.7343 S13:  -0.4646
REMARK   3      S21:  -1.0340 S22:  -0.2073 S23:   0.1578
REMARK   3      S31:   0.2134 S32:  -0.6838 S33:   0.1462
REMARK   3   TLS GROUP : 4
REMARK   3    SELECTION: chain 'H' and (resid   47  through   72 )
REMARK   3    ORIGIN FOR THE GROUP (A):  24.6885  31.3871  64.7336
REMARK   3    T TENSOR
REMARK   3      T11:   0.8056 T22:   0.6198
REMARK   3      T33:   0.5132 T12:   0.1484
REMARK   3      T13:  -0.2883 T23:  -0.0506
REMARK   3    L TENSOR
REMARK   3      L11:   0.1666 L22:   0.9354
REMARK   3      L33:   0.3553 L12:   0.2498
REMARK   3      L13:   0.0266 L23:  -0.3786
REMARK   3    S TENSOR
REMARK   3      S11:   0.2735 S12:   0.1201 S13:  -0.4204
REMARK   3      S21:  -0.8885 S22:  -0.2117 S23:   0.4935
REMARK   3      S31:   0.0013 S32:  -0.2598 S33:  -0.0116
REMARK   3   TLS GROUP : 5
REMARK   3    SELECTION: chain 'L' and (resid    1  through    8 )
REMARK   3    ORIGIN FOR THE GROUP (A):  37.2401  13.1150  91.9730
REMARK   3    T TENSOR
REMARK   3      T11:   0.3758 T22:   0.4680
REMARK   3      T33:   0.6285 T12:   0.0121
REMARK   3      T13:   0.0151 T23:  -0.0085
REMARK   3    L TENSOR
REMARK   3      L11:   0.0460 L22:   0.0195
REMARK   3      L33:   0.0135 L12:  -0.0553
REMARK   3      L13:  -0.0372 L23:  -0.0606
REMARK   3    S TENSOR
REMARK   3      S11:   0.0752 S12:   0.1365 S13:   0.1784
REMARK   3      S21:   0.1059 S22:  -0.1636 S23:   0.1098
REMARK   3      S31:   0.1010 S32:   0.3636 S33:   0.0000
REMARK   3   TLS GROUP : 6
REMARK   3    SELECTION: chain 'L' and (resid    9  through   13 )
REMARK   3    ORIGIN FOR THE GROUP (A):  37.1426  39.3687  75.8967
REMARK   3    T TENSOR
REMARK   3      T11:   0.6988 T22:   0.4997
```

```
REMARK   3      T33:   0.4883 T12:  -0.0403
REMARK   3      T13:  -0.1827 T23:   0.0101
REMARK   3    L TENSOR
REMARK   3      L11:   0.0167 L22:   0.0025
REMARK   3      L33:   0.0457 L12:  -0.0023
REMARK   3      L13:   0.0315 L23:  -0.0080
REMARK   3    S TENSOR
REMARK   3      S11:  -0.1824 S12:  -0.2092 S13:  -0.0020
REMARK   3      S21:  -0.0399 S22:  -0.1570 S23:  -0.1040
REMARK   3      S31:  -0.4704 S32:   0.0032 S33:   0.0001
REMARK   3   TLS GROUP : 7
REMARK   3    SELECTION: chain 'L' and (resid   14  through   23 )
REMARK   3    ORIGIN FOR THE GROUP (A):  24.4868  58.7788  84.3903
REMARK   3    T TENSOR
REMARK   3      T11:   0.8381 T22:   0.5245
REMARK   3      T33:   0.6035 T12:   0.0230
REMARK   3      T13:  -0.1359 T23:   0.0507
REMARK   3    L TENSOR
REMARK   3      L11:   0.0140 L22:   0.1455
REMARK   3      L33:   0.0541 L12:  -0.0200
REMARK   3      L13:  -0.0003 L23:  -0.0919
REMARK   3    S TENSOR
REMARK   3      S11:   0.1988 S12:   0.1538 S13:  -0.2144
REMARK   3      S21:   0.4454 S22:  -0.2288 S23:   0.0992
REMARK   3      S31:  -0.0644 S32:  -0.1644 S33:  -0.0000
REMARK   3   TLS GROUP : 8
REMARK   3    SELECTION: chain 'L' and (resid   24  through   28 )
REMARK   3    ORIGIN FOR THE GROUP (A):  18.2797  76.5743  97.2162
REMARK   3    T TENSOR
REMARK   3      T11:   1.3942 T22:   1.0685
REMARK   3      T33:   0.7391 T12:  -0.0209
REMARK   3      T13:  -0.0725 T23:   0.0177
REMARK   3    L TENSOR
REMARK   3      L11:   0.0007 L22:   0.0337
REMARK   3      L33:   0.0068 L12:   0.0009
REMARK   3      L13:   0.0025 L23:   0.0276
REMARK   3    S TENSOR
REMARK   3      S11:   0.0009 S12:   0.0778 S13:   0.0674
REMARK   3      S21:   0.3946 S22:   0.1177 S23:   0.3146
REMARK   3      S31:  -0.2438 S32:  -0.0560 S33:  -0.0002
REMARK   3   TLS GROUP : 9
REMARK   3    SELECTION: chain 'M' and (resid    5  through   12 )
REMARK   3    ORIGIN FOR THE GROUP (A):  34.1950  11.9866  89.0704
REMARK   3    T TENSOR
REMARK   3      T11:   0.3239 T22:   0.4002
REMARK   3      T33:   0.5412 T12:  -0.0372
REMARK   3      T13:  -0.0117 T23:  -0.0287
REMARK   3    L TENSOR
REMARK   3      L11:   0.0100 L22:   0.0141
REMARK   3      L33:   0.0076 L12:  -0.0247
REMARK   3      L13:  -0.0210 L23:   0.0122
REMARK   3    S TENSOR
REMARK   3      S11:   0.2711 S12:   0.0398 S13:  -0.3569
REMARK   3      S21:   0.1658 S22:  -0.3898 S23:   0.1666
```

```
REMARK   3      S31:   0.1717 S32:  -0.1092 S33:  -0.0000
REMARK   3   TLS GROUP : 10
REMARK   3    SELECTION: chain 'B' and (resid    2  through  435 )
REMARK   3    ORIGIN FOR THE GROUP (A):  24.2570  58.8007  72.0332
REMARK   3    T TENSOR
REMARK   3      T11:   0.6147 T22:   0.4927
REMARK   3      T33:   0.3936 T12:   0.0424
REMARK   3      T13:  -0.1024 T23:   0.0314
REMARK   3    L TENSOR
REMARK   3      L11:   0.3228 L22:   1.8145
REMARK   3      L33:   0.4569 L12:  -0.4825
REMARK   3      L13:  -0.0637 L23:  -0.0362
REMARK   3    S TENSOR
REMARK   3      S11:   0.0893 S12:   0.1128 S13:  -0.0129
REMARK   3      S21:  -0.5409 S22:  -0.1145 S23:   0.2032
REMARK   3      S31:  -0.2490 S32:  -0.0352 S33:  -0.0105
REMARK   3   TLS GROUP : 11
REMARK   3    SELECTION: chain 'B' and (resid  436  through  762 )
REMARK   3    ORIGIN FOR THE GROUP (A):  29.7930  52.4076 115.6673
REMARK   3    T TENSOR
REMARK   3      T11:   0.6393 T22:   0.5232
REMARK   3      T33:   0.4313 T12:   0.0602
REMARK   3      T13:   0.1780 T23:   0.0391
REMARK   3    L TENSOR
REMARK   3      L11:   0.9976 L22:   1.2454
REMARK   3      L33:   0.8606 L12:   0.0661
REMARK   3      L13:   0.4753 L23:   0.0557
REMARK   3    S TENSOR
REMARK   3      S11:  -0.1141 S12:  -0.0064 S13:  -0.0645
REMARK   3      S21:   0.3379 S22:   0.0617 S23:   0.2419
REMARK   3      S31:  -0.2688 S32:   0.0757 S33:  -0.4350
REMARK   3   TLS GROUP : 12
REMARK   3    SELECTION: chain 'B' and (resid  763  through  860 )
REMARK   3    ORIGIN FOR THE GROUP (A):  43.8607  19.2289  83.4350
REMARK   3    T TENSOR
REMARK   3      T11:   0.0765 T22:   0.4829
REMARK   3      T33:   0.3512 T12:  -0.0170
REMARK   3      T13:  -0.0146 T23:  -0.0196
REMARK   3    L TENSOR
REMARK   3      L11:  -0.1338 L22:   1.9076
REMARK   3      L33:   1.0521 L12:  -0.1927
REMARK   3      L13:  -0.5929 L23:  -0.3609
REMARK   3    S TENSOR
REMARK   3      S11:   0.1411 S12:  -0.3913 S13:  -0.0408
REMARK   3      S21:  -0.1737 S22:  -0.0825 S23:  -0.3113
REMARK   3      S31:  -0.0242 S32:   0.5189 S33:   0.0672
REMARK   3   TLS GROUP : 13
REMARK   3    SELECTION: chain 'B' and (resid  861  through 1053 )
REMARK   3    ORIGIN FOR THE GROUP (A):  23.4402  15.5175  87.1852
REMARK   3    T TENSOR
REMARK   3      T11:   0.0225 T22:   0.3013
REMARK   3      T33:   0.5914 T12:  -0.1383
REMARK   3      T13:  -0.1248 T23:   0.0123
REMARK   3    L TENSOR
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REMARK   3      L11:   0.1853 L22:   3.1346
REMARK   3      L33:   1.6416 L12:  -0.9087
REMARK   3      L13:   0.0773 L23:  -0.2163
REMARK   3    S TENSOR
REMARK   3      S11:   0.0861 S12:   0.0096 S13:  -0.1669
REMARK   3      S21:  -0.2195 S22:   0.1053 S23:   0.8621
REMARK   3      S31:   0.3433 S32:   0.0669 S33:   0.2222
REMARK   3
CRYST1   67.640  345.648   98.072  90.00  90.00  90.00 P 21 21 2
SCALE1      0.014784  0.000000  0.000000        0.00000
SCALE2      0.000000  0.002893  0.000000        0.00000
SCALE3      0.000000  0.000000  0.010197        0.00000
ATOM      1  P     G H   1      18.568  64.044 103.032  1.00145.51           P
ANISOU    1  P     G H   1    21027  16383  17876    617    272   -178       P
ATOM      2  OP3   G H   1      19.038  62.649 102.874  1.00138.36           O
ANISOU    2  OP3   G H   1    19894  15648  17030    543    117   -212       O
ATOM      3  OP1   G H   1      18.919  64.497 104.405  1.00138.79           O
ANISOU    3  OP1   G H   1    20459  15369  16905    548    305   -241       O
ATOM      4  O5'   G H   1      16.974  64.067 102.881  1.00113.23           O
ANISOU    4  O5'   G H   1    16876  12299  13846    835    433    -74       O
ATOM      5  C5'   G H   1      16.185  62.913 103.153  1.00102.58           C
ANISOU    5  C5'   G H   1    15361  11056  12558    920    429    -39       C
ATOM      6  C4'   G H   1      14.722  63.131 102.832  1.00 99.41           C
ANISOU    6  C4'   G H   1    14896  10654  12222   1121    581     84       C
ATOM      7  C3'   G H   1      14.432  63.699 101.451  1.00106.06           C
ANISOU    7  C3'   G H   1    15623  11539  13134   1177    603    162       C
ATOM      8  O3'   G H   1      14.420  62.722 100.423  1.00 96.27           O
ANISOU    8  O3'   G H   1    14105  10483  11989   1163    478    190       O
ATOM      9  C2'   G H   1      13.106  64.431 101.648  1.00113.54           C
ANISOU    9  C2'   G H   1    16652  12389  14100   1366    805    276       C
ATOM     10  O2'   G H   1      12.004  63.536 101.636  1.00107.91           O
ANISOU   10  O2'   G H   1    15751  11777  13474   1489    831    370       O
ATOM     11  C1'   G H   1      13.281  64.979 103.062  1.00110.99           C
ANISOU   11  C1'   G H   1    16624  11889  13659   1353    901    215       C
ATOM     12  O4'   G H   1      14.154  64.107 103.751  1.00103.92           O
ANISOU   12  O4'   G H   1    15728  11038  12718   1212    761    107       O
ATOM     13  N9    G H   1      13.912  66.311 103.035  1.00109.71           N
ANISOU   13  N9    G H   1    16699  11575  13412   1293    952    173       N
ATOM     14  C4    G H   1      13.392  67.490 102.549  1.00105.86           C
ANISOU   14  C4    G H   1    16306  10989  12929   1393   1093    248       C
ATOM     15  C5    G H   1      14.392  68.429 102.745  1.00107.18           C
ANISOU   15  C5    G H   1    16702  11028  12994   1269   1072    164       C
ATOM     16  N7    G H   1      15.509  67.858 103.331  1.00113.42           N
ANISOU   16  N7    G H   1    17534  11838  13722   1093    919     49       N
ATOM     17  C8    G H   1      15.180  66.605 103.480  1.00113.63           C
ANISOU   17  C8    G H   1    17363  12000  13810   1117    856     57       C
ATOM     18  N3    G H   1      12.168  67.661 102.002  1.00 93.74           N
ANISOU   18  N3    G H   1    14656   9478  11481   1569   1217    382       N
ATOM     19  C2    G H   1      11.984  68.921 101.641  1.00 93.51           C
ANISOU   19  C2    G H   1    14767   9331  11433   1625   1338    426       C
ATOM     20  N2    G H   1      10.827  69.295 101.084  1.00 93.50           N
ANISOU   20  N2    G H   1    14678   9332  11515   1795   1474    568       N
ATOM     21  N1    G H   1      12.912  69.924 101.800  1.00 98.72           N
ANISOU   21  N1    G H   1    15663   9857  11991   1516   1334    343       N
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ATOM     22  C6    G H   1      14.179  69.768 102.351  1.00101.61           C
ANISOU   22  C6    G H   1    16149  10195  12264   1328   1198    209       C
ATOM     23  O6    G H   1      14.952  70.730 102.453  1.00106.21           O
ANISOU   23  O6    G H   1    16944  10653  12759   1233   1195    151       O
ATOM     24  OP2   G H   1      19.136  64.807 101.892  1.00148.30           O
ANISOU   24  OP2   G H   1    21352  16744  18250    569    240   -165       O
ATOM     25  P     G H   2      15.027  63.097  98.983  1.00111.66           P
ANISOU   25  P     G H   2    15952  12499  13976   1100    399    195       P
ATOM     26  OP1   G H   2      15.233  61.895  98.139  1.00 87.74           O
ANISOU   26  OP1   G H   2    12667   9652  11019   1056    251    195       O
ATOM     27  O5'   G H   2      13.884  63.991  98.320  1.00113.22           O
ANISOU   27  O5'   G H   2    16146  12650  14224   1258    547    323       O
ATOM     28  C5'   G H   2      12.588  63.463  98.080  1.00100.63           C
ANISOU   28  C5'   G H   2    14391  11127  12715   1402    601    443       C
ATOM     29  C4'   G H   2      11.621  64.549  97.695  1.00 97.21           C
ANISOU   29  C4'   G H   2    14011  10609  12314   1543    764    564       C
ATOM     30  C3'   G H   2      12.023  65.396  96.503  1.00 97.51           C
ANISOU   30  C3'   G H   2    14039  10645  12365   1508    748    578       C
ATOM     31  O3'   G H   2      11.763  64.792  95.257  1.00 98.97           O
ANISOU   31  O3'   G H   2    13986  10979  12637   1512    652    643       O
ATOM     32  C2'   G H   2      11.248  66.682  96.736  1.00 96.86           C
ANISOU   32  C2'   G H   2    14122  10410  12272   1636    946    663       C
ATOM     33  O2'   G H   2       9.883  66.512  96.401  1.00 96.13           O
ANISOU   33  O2'   G H   2    13887  10361  12275   1794   1032    820       O
ATOM     34  C1'   G H   2      11.378  66.819  98.249  1.00102.27           C
ANISOU   34  C1'   G H   2    15030  10964  12865   1636   1027    594       C
ATOM     35  O4'   G H   2      11.515  65.513  98.778  1.00105.82           O
ANISOU   35  O4'   G H   2    15369  11516  13323   1588    919    545       O
ATOM     36  N9    G H   2      12.604  67.565  98.569  1.00 93.15           N
ANISOU   36  N9    G H   2    14088   9701  11602   1499    994    470       N
ATOM     37  C4    G H   2      12.782  68.907  98.366  1.00 88.44           C
ANISOU   37  C4    G H   2    13672   8970  10960   1507   1089    476       C
ATOM     38  C5    G H   2      14.080  69.168  98.751  1.00 86.17           C
ANISOU   38  C5    G H   2    13539   8623  10578   1340    997    347       C
ATOM     39  N7    G H   2      14.702  68.000  99.175  1.00 88.76           N
ANISOU   39  N7    G H   2    13776   9051  10899   1233    851    267       N
ATOM     40  C8    G H   2      13.797  67.067  99.035  1.00 85.06           C
ANISOU   40  C8    G H   2    13109   8696  10513   1334    854    338       C
ATOM     41  N3    G H   2      11.842  69.752  97.899  1.00 83.44           N
ANISOU   41  N3    G H   2    13052   8278  10372   1649   1238    594       N
ATOM     42  C2    G H   2      12.291  70.989  97.838  1.00 83.98           C
ANISOU   42  C2    G H   2    13324   8211  10375   1620   1304    566       C
ATOM     43  N2    G H   2      11.464  71.944  97.397  1.00 89.29           N
ANISOU   43  N2    G H   2    14034   8809  11084   1753   1458    677       N
ATOM     44  N1    G H   2      13.570  71.366  98.197  1.00 86.43           N
ANISOU   44  N1    G H   2    13807   8449  10584   1456   1219    437       N
ATOM     45  C6    G H   2      14.561  70.504  98.675  1.00 88.15           C
ANISOU   45  C6    G H   2    14005   8728  10759   1303   1059    324       C
ATOM     46  O6    G H   2      15.682  70.940  98.979  1.00 89.54           O
ANISOU   46  O6    G H   2    14341   8830  10849   1156    987    227       O
ATOM     47  OP2   G H   2      16.192  63.986  99.242  1.00121.58           O
ANISOU   47  OP2   G H   2    17407  13644  15144    971    379    106       O
ATOM     48  P     A H   3      12.688  65.190  94.012  1.00 93.81           P
ANISOU   48  P     A H   3    13290  10371  11983   1408    555    603       P
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ATOM     49  OP1   A H   3      12.303  64.349  92.847  1.00 88.47           O
ANISOU   49  OP1   A H   3    12371   9853  11391   1419    453    673       O
ATOM     50  OP2   A H   3      14.083  65.233  94.531  1.00 92.26           O
ANISOU   50  OP2   A H   3    13218  10134  11700   1255    475    457       O
ATOM     51  O5'   A H   3      12.235  66.673  93.656  1.00 95.55           O
ANISOU   51  O5'   A H   3    13634  10468  12203   1492    705    680       O
ATOM     52  C5'   A H   3      10.953  66.915  93.093  1.00 96.40           C
ANISOU   52  C5'   A H   3    13642  10591  12395   1637    799    835       C
ATOM     53  C4'   A H   3      10.912  68.243  92.382  1.00 94.96           C
ANISOU   53  C4'   A H   3    13542  10324  12213   1670    887    885       C
ATOM     54  C3'   A H   3      12.079  68.502  91.453  1.00 84.28           C
ANISOU   54  C3'   A H   3    12179   9010  10833   1534    771    803       C
ATOM     55  O3'   A H   3      11.902  67.919  90.180  1.00 79.99           O
ANISOU   55  O3'   A H   3    11419   8610  10362   1524    667    861       O
ATOM     56  C2'   A H   3      12.157  70.017  91.423  1.00 87.45           C
ANISOU   56  C2'   A H   3    12769   9261  11196   1564    900    817       C
ATOM     57  O2'   A H   3      11.146  70.549  90.580  1.00 82.35           O
ANISOU   57  O2'   A H   3    12039   8623  10629   1682    985    962       O
ATOM     58  C1'   A H   3      11.812  70.354  92.868  1.00 94.20           C
ANISOU   58  C1'   A H   3    13824   9975  11993   1628   1034    800       C
ATOM     59  O4'   A H   3      10.977  69.328  93.350  1.00 94.30           O
ANISOU   59  O4'   A H   3    13717  10059  12055   1705   1037    855       O
ATOM     60  N9    A H   3      13.023  70.411  93.715  1.00 92.76           N
ANISOU   60  N9    A H   3    13817   9723  11705   1491    975    649       N
ATOM     61  C4    A H   3      13.793  71.530  93.952  1.00 96.71           C
ANISOU   61  C4    A H   3    14540  10085  12121   1422   1013    583       C
ATOM     62  C5    A H   3      14.815  71.122  94.796  1.00 90.61           C
ANISOU   62  C5    A H   3    13867   9292  11269   1287    919    457       C
ATOM     63  N7    A H   3      14.679  69.776  95.090  1.00 78.46           N
ANISOU   63  N7    A H   3    12171   7875   9764   1278    831    441       N
ATOM     64  C8    A H   3      13.615  69.400  94.424  1.00 76.22           C
ANISOU   64  C8    A H   3    11702   7681   9575   1399    867    555       C
ATOM     65  N3    A H   3      13.603  72.773  93.462  1.00 91.13           N
ANISOU   65  N3    A H   3    13933   9281  11411   1471   1116    635       N
ATOM     66  C2    A H   3      14.549  73.600  93.900  1.00 93.71           C
ANISOU   66  C2    A H   3    14481   9482  11640   1370   1115    545       C
ATOM     67  N1    A H   3      15.586  73.351  94.714  1.00 95.28           N
ANISOU   67  N1    A H   3    14803   9645  11755   1230   1025    424       N
ATOM     68  C6    A H   3      15.752  72.102  95.186  1.00 90.15           C
ANISOU   68  C6    A H   3    14042   9096  11115   1185    925    378       C
ATOM     69  N6    A H   3      16.786  71.884  95.994  1.00 88.33           N
ANISOU   69  N6    A H   3    13932   8827  10803   1042    834    268       N
ATOM     70  P     A H   4      13.188  67.464  89.340  1.00 80.01           P
ANISOU   70  P     A H   4    11348   8709  10341   1369    498    760       P
ATOM     71  OP1   A H   4      12.654  66.702  88.178  1.00 79.02           O
ANISOU   71  OP1   A H   4    11006   8726  10292   1391    412    844       O
ATOM     72  OP2   A H   4      14.170  66.875  90.297  1.00 90.76           O
ANISOU   72  OP2   A H   4    12783  10066  11637   1261    425    626       O
ATOM     73  O5'   A H   4      13.810  68.835  88.804  1.00 93.58           O
ANISOU   73  O5'   A H   4    13197  10334  12025   1331    547    741       O
ATOM     74  C5'   A H   4      13.028  69.737  88.029  1.00 87.58           C
ANISOU   74  C5'   A H   4    12424   9539  11313   1426    641    858       C
ATOM     75  C4'   A H   4      13.739  71.041  87.761  1.00 80.70           C
ANISOU   75  C4'   A H   4    11707   8561  10393   1379    689    820       C
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ATOM     76  C3'   A H   4      15.194  70.938  87.336  1.00 81.31           C
ANISOU   76  C3'   A H   4    11791   8678  10424   1221    560    705       C
ATOM     77  O3'   A H   4      15.372  70.563  85.987  1.00 84.19           O
ANISOU   77  O3'   A H   4    11988   9166  10835   1188    463    735       O
ATOM     78  C2'   A H   4      15.715  72.326  87.667  1.00 88.68           C
ANISOU   78  C2'   A H   4    12942   9457  11294   1194    645    670       C
ATOM     79  O2'   A H   4      15.239  73.280  86.722  1.00 93.00           O
ANISOU   79  O2'   A H   4    13479   9976  11880   1259    717    760       O
ATOM     80  C1'   A H   4      15.013  72.573  89.004  1.00 89.23           C
ANISOU   80  C1'   A H   4    13165   9407  11333   1281    774    681       C
ATOM     81  O4'   A H   4      13.792  71.857  88.968  1.00 83.12           O
ANISOU   81  O4'   A H   4    12245   8705  10632   1402    810    780       O
ATOM     82  N9    A H   4      15.836  72.058  90.121  1.00 86.86           N
ANISOU   82  N9    A H   4    12964   9079  10960   1180    712    563       N
ATOM     83  C4    A H   4      16.849  72.717  90.778  1.00 81.61           C
ANISOU   83  C4    A H   4    12502   8300  10206   1073    703    469       C
ATOM     84  C5    A H   4      17.336  71.827  91.717  1.00 80.16           C
ANISOU   84  C5    A H   4    12334   8140   9984    998    626    387       C
ATOM     85  N7    A H   4      16.661  70.626  91.653  1.00 81.38           N
ANISOU   85  N7    A H   4    12298   8420  10200   1059    590    423       N
ATOM     86  C8    A H   4      15.792  70.808  90.694  1.00 86.61           C
ANISOU   86  C8    A H   4    12839   9131  10936   1163    639    528       C
ATOM     87  N3    A H   4      17.277  73.976  90.575  1.00 80.73           N
ANISOU   87  N3    A H   4    12547   8074  10052   1042    754    463       N
ATOM     88  C2    A H   4      18.267  74.289  91.414  1.00 79.54           C
ANISOU   88  C2    A H   4    12580   7829   9812    921    715    367       C
ATOM     89  N1    A H   4      18.836  73.538  92.363  1.00 88.93           N
ANISOU   89  N1    A H   4    13808   9026  10956    834    637    286       N
ATOM     90  C6    A H   4      18.378  72.277  92.543  1.00 89.78           C
ANISOU   90  C6    A H   4    13751   9252  11110    873    594    292       C
ATOM     91  N6    A H   4      18.940  71.521  93.484  1.00 89.28           N
ANISOU   91  N6    A H   4    13721   9199  11004    786    516    214       N
ATOM     92  P     A H   5      16.699  69.766  85.553  1.00 77.16           P
ANISOU   92  P     A H   5    11022   8376   9919   1042    303    633       P
ATOM     93  OP1   A H   5      16.547  69.360  84.122  1.00 78.32           O
ANISOU   93  OP1   A H   5    10999   8642  10118   1045    230    691       O
ATOM     94  OP2   A H   5      17.036  68.773  86.621  1.00 83.83           O
ANISOU   94  OP2   A H   5    11872   9245  10735    995    246    554       O
ATOM     95  O5'   A H   5      17.828  70.880  85.627  1.00 75.90           O
ANISOU   95  O5'   A H   5    11025   8115   9700    949    316    564       O
ATOM     96  C5'   A H   5      17.760  72.034  84.809  1.00 69.63           C
ANISOU   96  C5'   A H   5    10274   7267   8915    973    376    617       C
ATOM     97  C4'   A H   5      18.774  73.050  85.248  1.00 72.78           C
ANISOU   97  C4'   A H   5    10858   7547   9246    884    393    547       C
ATOM     98  C3'   A H   5      20.224  72.603  85.188  1.00 70.52           C
ANISOU   98  C3'   A H   5    10554   7312   8928    731    263    454       C
ATOM     99  O3'   A H   5      20.754  72.740  83.885  1.00 70.05           O
ANISOU   99  O3'   A H   5    10394   7326   8896    690    205    474       O
ATOM    100  C2'   A H   5      20.885  73.514  86.209  1.00 77.41           C
ANISOU  100  C2'   A H   5    11651   8034   9726    661    299    395       C
ATOM    101  O2'   A H   5      21.067  74.807  85.657  1.00 77.51           O
ANISOU  101  O2'   A H   5    11761   7963   9728    657    354    424       O
ATOM    102  C1'   A H   5      19.796  73.603  87.280  1.00 82.90           C
ANISOU  102  C1'   A H   5    12450   8641  10406    769    414    417       C
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ATOM    103  O4'   A H   5      18.560  73.372  86.646  1.00 79.31           O
ANISOU  103  O4'   A H   5    11865   8249  10021    904    473    514       O
ATOM    104  N9    A H   5      19.970  72.582  88.334  1.00 94.80           N
ANISOU  104  N9    A H   5    13956  10176  11889    730    360    354       N
ATOM    105  C4    A H   5      20.733  72.723  89.468  1.00 95.67           C
ANISOU  105  C4    A H   5    14232  10194  11924    633    336    274       C
ATOM    106  C5    A H   5      20.612  71.528  90.157  1.00 98.58           C
ANISOU  106  C5    A H   5    14527  10632  12298    629    284    240       C
ATOM    107  N7    A H   5      19.788  70.651  89.466  1.00 89.37           N
ANISOU  107  N7    A H   5    13153   9596  11207    721    274    298       N
ATOM    108  C8    A H   5      19.435  71.319  88.393  1.00 83.95           C
ANISOU  108  C8    A H   5    12421   8917  10558    776    318    366       C
ATOM    109  N3    A H   5      21.445  73.804  89.823  1.00 88.47           N
ANISOU  109  N3    A H   5    13518   9151  10946    553    353    240       N
ATOM    110  C2    A H   5      22.058  73.593  90.974  1.00 92.02           C
ANISOU  110  C2    A H   5    14095   9538  11330    460    309    168       C
ATOM    111  N1    A H   5      22.034  72.504  91.748  1.00101.62           N
ANISOU  111  N1    A H   5    15261  10808  12542    443    259    128       N
ATOM    112  C6    A H   5      21.316  71.429  91.371  1.00 97.55           C
ANISOU  112  C6    A H   5    14541  10427  12096    529    246    160       C
ATOM    113  N6    A H   5      21.319  70.359  92.171  1.00 80.42           N
ANISOU  113  N6    A H   5    12327   8307   9921    509    195    119       N
ATOM    114  P     U H   6      21.922  71.783  83.354  1.00 73.55           P
ANISOU  114  P     U H   6    10711   7891   9345    576     65    419       P
ATOM    115  OP1   U H   6      22.176  72.014  81.912  1.00 78.79           O
ANISOU  115  OP1   U H   6    11277   8620  10038    569     37    461       O
ATOM    116  O5'   U H   6      23.217  72.337  84.096  1.00 84.79           O
ANISOU  116  O5'   U H   6    12279   9227  10710    444     30    345       O
ATOM    117  C5'   U H   6      23.832  73.551  83.692  1.00 67.37           C
ANISOU  117  C5'   U H   6    10172   6943   8484    394     50    354       C
ATOM    118  C4'   U H   6      25.162  73.742  84.375  1.00 71.42           C
ANISOU  118  C4'   U H   6    10784   7404   8950    247    -21    290       C
ATOM    119  C3'   U H   6      26.084  72.527  84.354  1.00 74.94           C
ANISOU  119  C3'   U H   6    11096   7966   9413    158   -141    249       C
ATOM    120  O3'   U H   6      26.838  72.428  83.166  1.00 75.65           O
ANISOU  120  O3'   U H   6    11064   8142   9536    114   -197    272       O
ATOM    121  C2'   U H   6      26.939  72.738  85.590  1.00 78.57           C
ANISOU  121  C2'   U H   6    11700   8334   9817     39   -183    194       C
ATOM    122  O2'   U H   6      27.930  73.731  85.346  1.00 77.96           O
ANISOU  122  O2'   U H   6    11710   8191   9719    -63   -210    201       O
ATOM    123  C1'   U H   6      25.918  73.322  86.559  1.00 76.25           C
ANISOU  123  C1'   U H   6    11577   7915   9480    118    -79    190       C
ATOM    124  O4'   U H   6      24.948  74.006  85.791  1.00 73.15           O
ANISOU  124  O4'   U H   6    11179   7503   9112    238     21    251       O
ATOM    125  N1    U H   6      25.249  72.279  87.381  1.00 73.46           N
ANISOU  125  N1    U H   6    11184   7598   9127    171    -75    164       N
ATOM    126  C6    U H   6      23.915  71.936  87.220  1.00 78.35           C
ANISOU  126  C6    U H   6    11737   8252   9781    317      3    205       C
ATOM    127  C5    U H   6      23.300  71.011  87.977  1.00 81.69           C
ANISOU  127  C5    U H   6    12124   8707  10207    365      6    189       C
ATOM    128  C4    U H   6      24.033  70.332  89.013  1.00 85.17           C
ANISOU  128  C4    U H   6    12600   9147  10612    265    -72    119       C
ATOM    129  N3    U H   6      25.349  70.728  89.121  1.00 80.44           N
ANISOU  129  N3    U H   6    12069   8512   9981    119   -148     83       N
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ATOM    130  C2    U H   6      26.007  71.668  88.371  1.00 75.09           C
ANISOU  130  C2    U H   6    11427   7802   9303     65   -155    105       C
ATOM    131  O2    U H   6      27.186  71.917  88.578  1.00 77.71           O
ANISOU  131  O2    U H   6    11812   8106   9610    -71   -233     80       O
ATOM    132  O4    U H   6      23.610  69.461  89.788  1.00 88.32           O
ANISOU  132  O4    U H   6    12973   9574  11010    293    -79     96       O
ATOM    133  OP2   U H   6      21.616  70.395  83.791  1.00 76.52           O
ANISOU  133  OP2   U H   6    10979   8358   9736    591      9    397       O
ATOM    134  P     U H   7      27.373  71.001  82.660  1.00 82.86           P
ANISOU  134  P     U H   7    11788   9209  10486     84   -290    258       P
ATOM    135  OP1   U H   7      27.930  71.137  81.282  1.00 75.96           O
ANISOU  135  OP1   U H   7    10815   8404   9643     70   -313    296       O
ATOM    136  O5'   U H   7      28.558  70.661  83.663  1.00 78.21           O
ANISOU  136  O5'   U H   7    11241   8600   9874    -51   -371    206       O
ATOM    137  C5'   U H   7      29.686  71.509  83.788  1.00 70.22           C
ANISOU  137  C5'   U H   7    10317   7519   8842   -168   -406    208       C
ATOM    138  C4'   U H   7      30.556  71.069  84.936  1.00 76.07           C
ANISOU  138  C4'   U H   7    11104   8238   9562   -288   -484    166       C
ATOM    139  C3'   U H   7      30.967  69.603  84.946  1.00 70.53           C
ANISOU  139  C3'   U H   7    10239   7664   8896   -309   -558    148       C
ATOM    140  O3'   U H   7      32.049  69.312  84.087  1.00 66.31           O
ANISOU  140  O3'   U H   7     9582   7211   8403   -371   -615    180       O
ATOM    141  C2'   U H   7      31.301  69.373  86.405  1.00 81.67           C
ANISOU  141  C2'   U H   7    11750   9013  10270   -396   -604    103       C
ATOM    142  O2'   U H   7      32.572  69.934  86.690  1.00 81.25           O
ANISOU  142  O2'   U H   7    11760   8907  10206   -542   -672    117       O
ATOM    143  C1'   U H   7      30.229  70.216  87.093  1.00 84.94           C
ANISOU  143  C1'   U H   7    12341   9301  10631   -327   -514     87       C
ATOM    144  O4'   U H   7      29.842  71.233  86.190  1.00 78.30           O
ANISOU  144  O4'   U H   7    11533   8422   9794   -265   -444    128       O
ATOM    145  N1    U H   7      29.044  69.403  87.439  1.00 85.45           N
ANISOU  145  N1    U H   7    12361   9406  10701   -210   -469     66       N
ATOM    146  C6    U H   7      27.968  69.281  86.597  1.00 73.39           C
ANISOU  146  C6    U H   7    10749   7931   9204    -74   -401     99       C
ATOM    147  C5    U H   7      26.896  68.551  86.914  1.00 71.13           C
ANISOU  147  C5    U H   7    10417   7681   8928     26   -366     94       C
ATOM    148  C4    U H   7      26.832  67.852  88.157  1.00 79.11           C
ANISOU  148  C4    U H   7    11465   8679   9915      1   -393     46       C
ATOM    149  N3    U H   7      27.948  68.015  88.953  1.00 80.47           N
ANISOU  149  N3    U H   7    11727   8797  10052   -138   -460      9       N
ATOM    150  C2    U H   7      29.067  68.761  88.652  1.00 83.69           C
ANISOU  150  C2    U H   7    12182   9165  10451   -249   -503     20       C
ATOM    151  O2    U H   7      30.021  68.877  89.395  1.00 84.30           O
ANISOU  151  O2    U H   7    12337   9194  10500   -378   -571     -2       O
ATOM    152  O4    U H   7      25.881  67.156  88.526  1.00 86.42           O
ANISOU  152  O4    U H   7    12348   9637  10850     88   -365     43       O
ATOM    153  OP2   U H   7      26.311  70.005  82.948  1.00 85.12           O
ANISOU  153  OP2   U H   7    12001   9553  10787    177   -276    254       O
ATOM    154  P     A H   8      32.202  67.837  83.469  1.00 84.18           P
ANISOU  154  P     A H   8    11648   9624  10711   -337   -654    179       P
ATOM    155  OP1   A H   8      33.245  67.823  82.430  1.00 82.99           O
ANISOU  155  OP1   A H   8    11398   9536  10598   -382   -682    225       O
ATOM    156  OP2   A H   8      30.850  67.361  83.087  1.00 95.92           O
ANISOU  156  OP2   A H   8    13089  11155  12200   -200   -599    172       O
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ATOM    157  O5'   A H   8      32.742  66.980  84.698  1.00 95.69           O
ANISOU  157  O5'   A H   8    13101  11091  12165   -422   -726    139       O
ATOM    158  C5'   A H   8      33.933  67.343  85.378  1.00 78.45           C
ANISOU  158  C5'   A H   8    10975   8855   9976   -566   -793    149       C
ATOM    159  C4'   A H   8      34.133  66.505  86.614  1.00 85.29           C
ANISOU  159  C4'   A H   8    11849   9726  10833   -627   -852    108       C
ATOM    160  C3'   A H   8      33.954  65.011  86.416  1.00 88.92           C
ANISOU  160  C3'   A H   8    12144  10311  11329   -571   -873     90       C
ATOM    161  O3'   A H   8      35.122  64.433  85.879  1.00 98.82           O
ANISOU  161  O3'   A H   8    13265  11648  12634   -635   -927    130       O
ATOM    162  C2'   A H   8      33.586  64.523  87.814  1.00 82.03           C
ANISOU  162  C2'   A H   8    11340   9403  10426   -595   -899     36       C
ATOM    163  O2'   A H   8      34.732  64.409  88.638  1.00 83.39           O
ANISOU  163  O2'   A H   8    11531   9553  10601   -741   -985     43       O
ATOM    164  C1'   A H   8      32.751  65.691  88.326  1.00 95.71           C
ANISOU  164  C1'   A H   8    13262  11006  12100   -562   -834     19       C
ATOM    165  O4'   A H   8      33.164  66.853  87.634  1.00 89.31           O
ANISOU  165  O4'   A H   8    12507  10140  11285   -590   -812     61       O
ATOM    166  N9    A H   8      31.315  65.483  88.064  1.00 99.93           N
ANISOU  166  N9    A H   8    13783  11558  12628   -410   -753      4       N
ATOM    167  C4    A H   8      30.480  64.804  88.899  1.00 91.19           C
ANISOU  167  C4    A H   8    12688  10454  11504   -356   -740    -35       C
ATOM    168  C5    A H   8      29.235  64.834  88.302  1.00 91.88           C
ANISOU  168  C5    A H   8    12748  10562  11601   -215   -662    -19       C
ATOM    169  N7    A H   8      29.296  65.537  87.096  1.00 82.13           N
ANISOU  169  N7    A H   8    11488   9335  10384   -185   -629     25       N
ATOM    170  C8    A H   8      30.550  65.897  86.994  1.00 86.81           C
ANISOU  170  C8    A H   8    12091   9914  10979   -301   -682     35       C
ATOM    171  N3    A H   8      30.825  64.233  90.057  1.00 88.29           N
ANISOU  171  N3    A H   8    12352  10073  11120   -429   -795    -73       N
ATOM    172  C2    A H   8      29.763  63.656  90.616  1.00 96.08           C
ANISOU  172  C2    A H   8    13341  11070  12095   -340   -759   -102       C
ATOM    173  N1    A H   8      28.495  63.598  90.182  1.00 92.74           N
ANISOU  173  N1    A H   8    12890  10667  11681   -199   -683    -88       N
ATOM    174  C6    A H   8      28.194  64.180  89.005  1.00 87.85           C
ANISOU  174  C6    A H   8    12237  10061  11082   -135   -635    -44       C
ATOM    175  N6    A H   8      26.929  64.097  88.600  1.00 81.63           N
ANISOU  175  N6    A H   8    11416   9293  10307     -3   -567    -18       N
ATOM    176  P     G H   9      35.130  62.926  85.352  1.00 94.59           P
ANISOU  176  P     G H   9    12553  11248  12140   -576   -941    124       P
ATOM    177  OP1   G H   9      36.464  62.666  84.746  1.00116.41           O
ANISOU  177  OP1   G H   9    15208  14069  14954   -646   -977    183       O
ATOM    178  O5'   G H   9      35.011  62.106  86.692  1.00 84.74           O
ANISOU  178  O5'   G H   9    11317   9999  10880   -616   -991     75       O
ATOM    179  C5'   G H   9      34.299  60.899  86.695  1.00 82.63           C
ANISOU  179  C5'   G H   9    10962   9812  10620   -532   -987     39       C
ATOM    180  C4'   G H   9      34.080  60.413  88.086  1.00 72.82           C
ANISOU  180  C4'   G H   9     9767   8542   9357   -572  -1027     -9       C
ATOM    181  C3'   G H   9      33.343  59.100  88.131  1.00 78.00           C
ANISOU  181  C3'   G H   9    10327   9286  10025   -488  -1029    -45       C
ATOM    182  O3'   G H   9      34.218  58.010  88.004  1.00 82.19           O
ANISOU  182  O3'   G H   9    10724   9905  10598   -531  -1083    -33       O
ATOM    183  C2'   G H   9      32.588  59.174  89.443  1.00 93.31           C
ANISOU  183  C2'   G H   9    12375  11157  11922   -486  -1028    -93       C
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ATOM    184  O2'   G H   9      33.458  58.942  90.539  1.00 98.52           O
ANISOU  184  O2'   G H   9    13061  11792  12581   -610  -1099   -106       O
ATOM    185  C1'   G H   9      32.191  60.643  89.444  1.00 91.51           C
ANISOU  185  C1'   G H   9    12301  10814  11653   -476   -969    -83       C
ATOM    186  O4'   G H   9      33.217  61.344  88.786  1.00 81.03           O
ANISOU  186  O4'   G H   9    10972   9473  10344   -549   -984    -37       O
ATOM    187  N9    G H   9      30.965  60.855  88.656  1.00 84.22           N
ANISOU  187  N9    G H   9    11372   9902  10725   -338   -892    -74       N
ATOM    188  C4    G H   9      29.702  60.397  88.932  1.00 87.07           C
ANISOU  188  C4    G H   9    11729  10277  11077   -234   -855    -94       C
ATOM    189  C5    G H   9      28.929  60.867  87.887  1.00 84.39           C
ANISOU  189  C5    G H   9    11376   9945  10743   -135   -792    -58       C
ATOM    190  N7    G H   9      29.684  61.602  86.985  1.00 88.36           N
ANISOU  190  N7    G H   9    11879  10439  11256   -175   -788    -24       N
ATOM    191  C8    G H   9      30.891  61.558  87.477  1.00 81.97           C
ANISOU  191  C8    G H   9    11077   9619  10450   -294   -847    -33       C
ATOM    192  N3    G H   9      29.329  59.658  90.002  1.00 84.16           N
ANISOU  192  N3    G H   9    11368   9913  10697   -233   -877   -133       N
ATOM    193  C2    G H   9      28.038  59.380  89.975  1.00 85.35           C
ANISOU  193  C2    G H   9    11505  10079  10847   -116   -829   -130       C
ATOM    194  N2    G H   9      27.520  58.649  90.968  1.00 83.58           N
ANISOU  194  N2    G H   9    11281   9862  10613    -97   -841   -163       N
ATOM    195  N1    G H   9      27.178  59.801  88.978  1.00 88.39           N
ANISOU  195  N1    G H   9    11870  10473  11242    -13   -768    -88       N
ATOM    196  C6    G H   9      27.552  60.569  87.871  1.00 77.23           C
ANISOU  196  C6    G H   9    10454   9054   9837    -16   -746    -51       C
ATOM    197  O6    G H   9      26.737  60.919  87.018  1.00 81.69           O
ANISOU  197  O6    G H   9    11001   9626  10410     74   -695    -10       O
ATOM    198  OP2   G H   9      33.946  62.616  84.544  1.00 60.18           O
ANISOU  198  OP2   G H   9     8157   6935   7773   -436   -880    109       O
ATOM    199  P     G H  10      33.963  56.960  86.824  1.00110.95           P
ANISOU  199  P     G H  10    14227  13661  14268   -433  -1064    -23       P
ATOM    200  OP1   G H  10      35.215  56.172  86.668  1.00 93.96           O
ANISOU  200  OP1   G H  10    11962  11574  12162   -500  -1108      7       O
ATOM    201  O5'   G H  10      32.783  56.076  87.429  1.00 70.73           O
ANISOU  201  O5'   G H  10     9124   8595   9155   -358  -1068    -76       O
ATOM    202  C5'   G H  10      32.913  55.578  88.745  1.00 61.80           C
ANISOU  202  C5'   G H  10     8009   7452   8021   -418  -1117   -112       C
ATOM    203  C4'   G H  10      31.588  55.258  89.379  1.00 72.23           C
ANISOU  203  C4'   G H  10     9368   8762   9314   -339  -1100   -155       C
ATOM    204  C3'   G H  10      30.730  54.202  88.710  1.00 71.07           C
ANISOU  204  C3'   G H  10     9122   8705   9178   -233  -1094   -160       C
ATOM    205  O3'   G H  10      31.210  52.890  88.926  1.00 70.60           O
ANISOU  205  O3'   G H  10     8956   8725   9144   -258  -1149   -177       O
ATOM    206  C2'   G H  10      29.380  54.468  89.352  1.00 69.90           C
ANISOU  206  C2'   G H  10     9049   8510   9001   -160  -1058   -179       C
ATOM    207  O2'   G H  10      29.384  54.012  90.692  1.00 60.69           O
ANISOU  207  O2'   G H  10     7908   7326   7825   -204  -1093   -219       O
ATOM    208  C1'   G H  10      29.378  55.997  89.396  1.00 68.13           C
ANISOU  208  C1'   G H  10     8957   8178   8750   -177  -1005   -161       C
ATOM    209  O4'   G H  10      30.724  56.421  89.412  1.00 69.23           O
ANISOU  209  O4'   G H  10     9111   8296   8899   -289  -1036   -151       O
ATOM    210  N9    G H  10      28.714  56.582  88.218  1.00 68.03           N
ANISOU  210  N9    G H  10     8944   8168   8738    -90   -948   -121       N
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ATOM    211  C4    G H  10      27.383  56.515  87.952  1.00 65.58           C
ANISOU  211  C4    G H  10    8629   7866   8423     20   -908   -104        C
ATOM    212  C5    G H  10      27.209  57.182  86.769  1.00 65.83           C
ANISOU  212  C5    G H  10    8659   7894   8457     63   -869    -60        C
ATOM    213  N7    G H  10      28.410  57.665  86.287  1.00 68.85           N
ANISOU  213  N7    G H  10    9047   8268   8845    -15   -880    -53        N
ATOM    214  C8    G H  10      29.279  57.275  87.182  1.00 68.94           C
ANISOU  214  C8    G H  10    9058   8276   8859   -105   -928    -86        C
ATOM    215  N3    G H  10      26.483  55.899  88.731  1.00 73.68           N
ANISOU  215  N3    G H  10    9647   8901   9445     70   -910   -121        N
ATOM    216  C2    G H  10      25.277  55.991  88.231  1.00 69.23           C
ANISOU  216  C2    G H  10    9071   8347   8888    174   -869    -81        C
ATOM    217  N2    G H  10      24.276  55.430  88.923  1.00 71.31           N
ANISOU  217  N2    G H  10    9320   8620   9154    235   -864    -81        N
ATOM    218  N1    G H  10      24.989  56.646  87.056  1.00 73.24           N
ANISOU  218  N1    G H  10    9576   8853   9400    221   -831    -32        N
ATOM    219  C6    G H  10      25.912  57.291  86.235  1.00 69.24           C
ANISOU  219  C6    G H  10    9082   8335   8892    170   -827    -21        C
ATOM    220  O6    G H  10      25.581  57.866  85.189  1.00 65.13           O
ANISOU  220  O6    G H  10    8560   7812   8375    216   -792     24        O
ATOM    221  OP2   G H  10      33.427  57.671  85.637  1.00110.34           O
ANISOU  221  OP2   G H  10   14171  13575  14178   -353  -1002      3        O
ATOM    222  P     U H  11      31.108  51.792  87.758  1.00 71.16           P
ANISOU  222  P     U H  11    8907   8898   9232   -189  -1155   -163        P
ATOM    223  OP1   U H  11      32.023  50.647  87.991  1.00 68.20           O
ANISOU  223  OP1   U H  11    8436   8588   8888   -241  -1206   -171        O
ATOM    224  O5'   U H  11      29.615  51.270  87.924  1.00 64.97           O
ANISOU  224  O5'   U H  11    8121   8134   8429    -92  -1152   -183        O
ATOM    225  C5'   U H  11      29.118  50.921  89.199  1.00 49.81           C
ANISOU  225  C5'   U H  11    6223   6198   6503   -100  -1175   -219        C
ATOM    226  C4'   U H  11      27.624  50.769  89.174  1.00 59.89           C
ANISOU  226  C4'   U H  11    7508   7480   7766      3  -1154   -213        C
ATOM    227  C3'   U H  11      27.033  50.023  87.984  1.00 59.69           C
ANISOU  227  C3'   U H  11    7404   7530   7745     80  -1165   -186        C
ATOM    228  O3'   U H  11      27.190  48.603  88.051  1.00 43.10           O
ANISOU  228  O3'   U H  11    5211   5509   5655     76  -1224   -208        O
ATOM    229  C2'   U H  11      25.592  50.522  88.009  1.00 61.85           C
ANISOU  229  C2'   U H  11    7720   7772   8009    168  -1126   -155        C
ATOM    230  O2'   U H  11      24.876  49.948  89.092  1.00 64.21           O
ANISOU  230  O2'   U H  11    8011   8076   8312    190  -1145   -174        O
ATOM    231  C1'   U H  11      25.808  52.000  88.341  1.00 63.47           C
ANISOU  231  C1'   U H  11    8037   7878   8202    142  -1065   -148        C
ATOM    232  O4'   U H  11      27.004  52.083  89.094  1.00 66.74           O
ANISOU  232  O4'   U H  11    8476   8266   8615     40  -1088   -187        O
ATOM    233  N1    U H  11      25.965  52.775  87.090  1.00 67.39           N
ANISOU  233  N1    U H  11    8548   8363   8695    159  -1029   -108        N
ATOM    234  C6    U H  11      27.208  53.133  86.651  1.00 65.85           C
ANISOU  234  C6    U H  11    8357   8162   8502     88  -1032   -112        C
ATOM    235  C5    U H  11      27.407  53.776  85.510  1.00 65.22           C
ANISOU  235  C5    U H  11    8285   8076   8419    102  -1002    -76        C
ATOM    236  C4    U H  11      26.312  54.109  84.675  1.00 68.87           C
ANISOU  236  C4    U H  11    8754   8538   8874    190   -969    -31        C
ATOM    237  N3    U H  11      25.086  53.712  85.155  1.00 78.71           N
ANISOU  237  N3    U H  11    9991   9793  10123    256   -973    -22        N
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ATOM    238  C2    U H  11      24.833  53.045  86.330  1.00 74.10           C
ANISOU  238  C2    U H  11    9395   9216   9543    249   -999    -57       C
ATOM    239  O2    U H  11      23.688  52.725  86.658  1.00 62.27           O
ANISOU  239  O2    U H  11    7882   7727   8051    316   -997    -36       O
ATOM    240  O4    U H  11      26.398  54.697  83.605  1.00 81.98           O
ANISOU  240  O4    U H  11   10425  10194  10531    206   -942      5       O
ATOM    241  OP2   U H  11      31.208  52.533  86.480  1.00 74.79           O
ANISOU  241  OP2   U H  11    9380   9349   9687   -156  -1109   -122       O
ATOM    242  P     G H  12      27.221  47.666  86.736  1.00 52.19           P
ANISOU  242  P     G H  12    6289   6738   6804    115  -1249   -188       P
ATOM    243  OP1   G H  12      27.584  46.278  87.159  1.00 55.25           O
ANISOU  243  OP1   G H  12    6600   7190   7203     93  -1306   -221       O
ATOM    244  O5'   G H  12      25.718  47.677  86.183  1.00 56.60           O
ANISOU  244  O5'   G H  12    6853   7304   7346    208  -1246   -149       O
ATOM    245  C5'   G H  12      24.659  47.159  86.968  1.00 48.01           C
ANISOU  245  C5'   G H  12    5747   6230   6265    248  -1272   -150       C
ATOM    246  C4'   G H  12      23.322  47.484  86.370  1.00 61.23           C
ANISOU  246  C4'   G H  12    7432   7899   7935    329  -1258    -89       C
ATOM    247  C3'   G H  12      23.098  46.982  84.956  1.00 60.39           C
ANISOU  247  C3'   G H  12    7295   7841   7811    359  -1290    -51       C
ATOM    248  O3'   G H  12      22.652  45.638  84.943  1.00 54.97           O
ANISOU  248  O3'   G H  12    6547   7219   7120    374  -1362    -54       O
ATOM    249  C2'   G H  12      22.064  47.950  84.424  1.00 67.21           C
ANISOU  249  C2'   G H  12    8195   8667   8675    418  -1251     19       C
ATOM    250  O2'   G H  12      20.789  47.612  84.924  1.00 73.97           O
ANISOU  250  O2'   G H  12    9021   9534   9548    473  -1273     60       O
ATOM    251  C1'   G H  12      22.490  49.253  85.091  1.00 67.76           C
ANISOU  251  C1'   G H  12    8335   8657   8753    396  -1176      2       C
ATOM    252  O4'   G H  12      23.171  48.920  86.274  1.00 68.83           O
ANISOU  252  O4'   G H  12    8470   8787   8896    343  -1186    -61       O
ATOM    253  N9    G H  12      23.374  50.089  84.240  1.00 69.18           N
ANISOU  253  N9    G H  12    8556   8809   8920    364  -1138      3       N
ATOM    254  C4    G H  12      22.979  50.916  83.206  1.00 56.88           C
ANISOU  254  C4    G H  12    7029   7228   7355    400  -1103     59       C
ATOM    255  C5    G H  12      24.149  51.492  82.737  1.00 62.73           C
ANISOU  255  C5    G H  12    7800   7948   8088    349  -1074     39       C
ATOM    256  N7    G H  12      25.276  51.045  83.453  1.00 57.74           N
ANISOU  256  N7    G H  12    7153   7326   7462    280  -1093    -20       N
ATOM    257  C8    G H  12      24.756  50.221  84.332  1.00 67.07           C
ANISOU  257  C8    G H  12    8299   8532   8651    291  -1130    -41       C
ATOM    258  N3    G H  12      21.706  51.095  82.776  1.00 62.23           N
ANISOU  258  N3    G H  12    7700   7906   8038    468  -1101    128       N
ATOM    259  C2    G H  12      21.663  51.963  81.763  1.00 65.67           C
ANISOU  259  C2    G H  12    8170   8316   8466    483  -1065    172       C
ATOM    260  N2    G H  12      20.522  52.302  81.144  1.00 49.15           N
ANISOU  260  N2    G H  12    6074   6220   6382    543  -1060    253       N
ATOM    261  N1    G H  12      22.761  52.584  81.242  1.00 59.71           N
ANISOU  261  N1    G H  12    7451   7538   7698    438  -1033    148       N
ATOM    262  C6    G H  12      24.065  52.411  81.653  1.00 65.57           C
ANISOU  262  C6    G H  12    8196   8281   8438    369  -1035     85       C
ATOM    263  O6    G H  12      24.965  53.049  81.065  1.00 78.14           O
ANISOU  263  O6    G H  12    9815   9851  10022    335  -1004     83       O
ATOM    264  OP2   G H  12      28.066  48.254  85.694  1.00 54.58           O
ANISOU  264  OP2   G H  12    6605   7030   7103     95  -1215   -163       O
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ATOM    265  P     C H  13      22.816  44.718  83.637  1.00 59.60           P
ANISOU  265  P     C H  13    7113   7860   7674    378  -1412    -41        P
ATOM    266  OP1   C H  13      22.629  43.299  84.096  1.00 61.35           O
ANISOU  266  OP1   C H  13    7278   8137   7894    374  -1485    -66        O
ATOM    267  O5'   C H  13      21.665  45.231  82.666  1.00 69.19           O
ANISOU  267  O5'   C H  13    8351   9063   8876    432  -1415     41        O
ATOM    268  C5'   C H  13      20.288  45.132  82.984  1.00 64.14           C
ANISOU  268  C5'   C H  13    7686   8430   8255    481  -1444    100        C
ATOM    269  C4'   C H  13      19.466  45.862  81.946  1.00 65.39           C
ANISOU  269  C4'   C H  13    7870   8568   8406    520  -1434    186        C
ATOM    270  C3'   C H  13      19.809  45.520  80.509  1.00 65.87           C
ANISOU  270  C3'   C H  13    7959   8650   8420    504  -1468    199        C
ATOM    271  O3'   C H  13      19.192  44.337  80.045  1.00 70.62           O
ANISOU  271  O3'   C H  13    8538   9300   8996    508  -1561    229        O
ATOM    272  C2'   C H  13      19.400  46.774  79.752  1.00 61.09           C
ANISOU  272  C2'   C H  13    7393   8000   7817    530  -1418    265        C
ATOM    273  O2'   C H  13      18.008  46.808  79.545  1.00 75.53           O
ANISOU  273  O2'   C H  13    9199   9837   9664    573  -1456    362        O
ATOM    274  C1'   C H  13      19.765  47.854  80.752  1.00 64.32           C
ANISOU  274  C1'   C H  13    7820   8357   8262    531  -1331    234        C
ATOM    275  O4'   C H  13      19.756  47.274  82.038  1.00 68.89           O
ANISOU  275  O4'   C H  13    8362   8948   8864    525  -1344    189        O
ATOM    276  N1    C H  13      21.112  48.396  80.487  1.00 69.63           N
ANISOU  276  N1    C H  13    8533   9004   8919    487  -1278    177        N
ATOM    277  C6    C H  13      22.230  47.957  81.133  1.00 68.54           C
ANISOU  277  C6    C H  13    8384   8875   8781    438  -1275     99        C
ATOM    278  C5    C H  13      23.431  48.496  80.859  1.00 71.93           C
ANISOU  278  C5    C H  13    8844   9282   9204    397  -1229     67        C
ATOM    279  C4    C H  13      23.476  49.519  79.860  1.00 62.49           C
ANISOU  279  C4    C H  13    7694   8052   7996    409  -1184    108        C
ATOM    280  N4    C H  13      24.608  50.115  79.502  1.00 50.56           N
ANISOU  280  N4    C H  13    6210   6519   6482    372  -1138     89        N
ATOM    281  N3    C H  13      22.384  49.920  79.220  1.00 65.17           N
ANISOU  281  N3    C H  13    8047   8383   8331    456  -1188    176        N
ATOM    282  C2    C H  13      21.192  49.387  79.518  1.00 70.87           C
ANISOU  282  C2    C H  13    8736   9128   9064    495  -1235    216        C
ATOM    283  O2    C H  13      20.156  49.754  78.951  1.00 75.37           O
ANISOU  283  O2    C H  13    9309   9690   9637    536  -1242    293        O
ATOM    284  OP2   C H  13      24.044  45.072  82.885  1.00 49.64           O
ANISOU  284  OP2   C H  13    5879   6585   6396    342  -1373    -60        O
ATOM    285  P     G H  14      19.922  43.458  78.931  1.00 61.52           P
ANISOU  285  P     G H  14    7424   8173   7779    477  -1603    200        P
ATOM    286  OP1   G H  14      19.014  42.362  78.520  1.00 65.13           O
ANISOU  286  OP1   G H  14    7871   8667   8208    481  -1708    246        O
ATOM    287  O5'   G H  14      19.985  44.420  77.660  1.00 60.19           O
ANISOU  287  O5'   G H  14    7318   7969   7582    483  -1564    246        O
ATOM    288  C5'   G H  14      18.777  44.787  77.009  1.00 51.47           C
ANISOU  288  C5'   G H  14    6222   6858   6476    508  -1602    345        C
ATOM    289  C4'   G H  14      18.970  45.805  75.921  1.00 51.69           C
ANISOU  289  C4'   G H  14    6307   6850   6482    511  -1554    380        C
ATOM    290  C3'   G H  14      20.055  45.513  74.904  1.00 55.02           C
ANISOU  290  C3'   G H  14    6795   7270   6841    483  -1539    335        C
ATOM    291  O3'   G H  14      19.691  44.521  73.956  1.00 54.74           O
ANISOU  291  O3'   G H  14    6805   7255   6740    471  -1625    364        O
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ATOM    292  C2'   G H  14      20.287  46.890  74.312  1.00 51.03           C
ANISOU  292  C2'   G H  14    6325   6721   6342    491  -1463    363       C
ATOM    293  O2'   G H  14      19.194  47.231  73.481  1.00 63.69           O
ANISOU  293  O2'   G H  14    7949   8317   7935    507  -1506    459       O
ATOM    294  C1'   G H  14      20.211  47.761  75.570  1.00 54.10           C
ANISOU  294  C1'   G H  14    6666   7086   6803    507  -1402    349       C
ATOM    295  O4'   G H  14      19.365  47.090  76.485  1.00 60.67           O
ANISOU  295  O4'   G H  14    7442   7945   7665    522  -1456    363       O
ATOM    296  N9    G H  14      21.562  47.913  76.152  1.00 61.97           N
ANISOU  296  N9    G H  14    7663   8073   7810    479  -1338    263       N
ATOM    297  C4    G H  14      22.503  48.771  75.656  1.00 60.66           C
ANISOU  297  C4    G H  14    7535   7876   7638    463  -1268    248       C
ATOM    298  C5    G H  14      23.632  48.596  76.423  1.00 66.64           C
ANISOU  298  C5    G H  14    8272   8635   8413    431  -1235    178       C
ATOM    299  N7    G H  14      23.401  47.632  77.398  1.00 68.20           N
ANISOU  299  N7    G H  14    8422   8864   8626    426  -1283    144       N
ATOM    300  C8    G H  14      22.165  47.246  77.196  1.00 67.12           C
ANISOU  300  C8    G H  14    8277   8745   8481    457  -1342    195       C
ATOM    301  N3    G H  14      22.305  49.622  74.630  1.00 64.70           N
ANISOU  301  N3    G H  14    8090   8361   8133    476  -1241    300       N
ATOM    302  C2    G H  14      23.376  50.345  74.354  1.00 60.47           C
ANISOU  302  C2    G H  14    7580   7798   7596    456  -1173    274       C
ATOM    303  N2    G H  14      23.332  51.218  73.351  1.00 62.66           N
ANISOU  303  N2    G H  14    7902   8049   7857    465  -1140    319       N
ATOM    304  N1    G H  14      24.561  50.256  75.041  1.00 64.85           N
ANISOU  304  N1    G H  14    8116   8352   8170    422  -1136    211       N
ATOM    305  C6    G H  14      24.780  49.388  76.111  1.00 63.68           C
ANISOU  305  C6    G H  14    7923   8231   8042    405  -1165    160       C
ATOM    306  O6    G H  14      25.881  49.407  76.651  1.00 52.16           O
ANISOU  306  O6    G H  14    6447   6768   6602    368  -1133    116       O
ATOM    307  OP2   G H  14      21.314  43.249  79.424  1.00 63.02           O
ANISOU  307  OP2   G H  14    7610   8363   7970    443  -1556    109       O
ATOM    308  P     C H  15      20.832  43.776  73.103  1.00 65.11           P
ANISOU  308  P     C H  15    8192   8569   7978    449  -1612    306       P
ATOM    309  OP1   C H  15      20.304  42.708  72.219  1.00 49.29           O
ANISOU  309  OP1   C H  15    6253   6577   5897    435  -1708    338       O
ATOM    310  O5'   C H  15      21.354  44.922  72.125  1.00 62.19           O
ANISOU  310  O5'   C H  15    7879   8160   7590    453  -1535    325       O
ATOM    311  C5'   C H  15      20.458  45.581  71.243  1.00 58.97           C
ANISOU  311  C5'   C H  15    7508   7733   7165    459  -1563    411       C
ATOM    312  C4'   C H  15      21.098  46.766  70.555  1.00 57.34           C
ANISOU  312  C4'   C H  15    7341   7491   6956    463  -1475    416       C
ATOM    313  C3'   C H  15      22.304  46.445  69.694  1.00 57.99           C
ANISOU  313  C3'   C H  15    7497   7562   6975    453  -1427    371       C
ATOM    314  O3'   C H  15      21.935  45.946  68.426  1.00 60.53           O
ANISOU  314  O3'   C H  15    7914   7875   7209    445  -1482    412       O
ATOM    315  C2'   C H  15      23.047  47.772  69.653  1.00 64.85           C
ANISOU  315  C2'   C H  15    8355   8401   7882    459  -1324    364       C
ATOM    316  O2'   C H  15      22.475  48.657  68.720  1.00 65.24           O
ANISOU  316  O2'   C H  15    8448   8425   7915    465  -1323    433       O
ATOM    317  C1'   C H  15      22.786  48.312  71.061  1.00 70.21           C
ANISOU  317  C1'   C H  15    8945   9082   8647    464  -1307    349       C
ATOM    318  O4'   C H  15      21.603  47.708  71.536  1.00 67.33           O
ANISOU  318  O4'   C H  15    8547   8742   8295    472  -1392    382       O
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ATOM    319  N1    C H  15      23.907  47.937  71.942  1.00 68.66           N
ANISOU  319  N1    C H  15     8711   8899   8479    449  -1264    272       N
ATOM    320  C6    C H  15      23.833  46.879  72.807  1.00 70.79           C
ANISOU  320  C6    C H  15     8937   9202   8760    443  -1311    233       C
ATOM    321  C5    C H  15      24.882  46.534  73.569  1.00 60.36           C
ANISOU  321  C5    C H  15     7577   7891   7465    424  -1275    171       C
ATOM    322  C4    C H  15      26.074  47.299  73.411  1.00 58.17           C
ANISOU  322  C4    C H  15     7306   7591   7205    409  -1189    155       C
ATOM    323  N4    C H  15      27.169  47.015  74.113  1.00 51.13           N
ANISOU  323  N4    C H  15     6372   6710   6346    384  -1155    109       N
ATOM    324  N3    C H  15      26.155  48.318  72.557  1.00 62.73           N
ANISOU  324  N3    C H  15     7927   8137   7771    416  -1144    193       N
ATOM    325  C2    C H  15      25.095  48.653  71.803  1.00 62.01           C
ANISOU  325  C2    C H  15     7875   8034   7650    437  -1178    248       C
ATOM    326  O2    C H  15      25.153  49.599  71.018  1.00 59.12           O
ANISOU  326  O2    C H  15     7548   7639   7275    443  -1138    285       O
ATOM    327  OP2   C H  15      21.868  43.375  74.077  1.00 57.05           O
ANISOU  327  OP2   C H  15     7126   7564   6988    441  -1566    220       O
ATOM    328  P     U H  16      22.831  44.846  67.674  1.00 73.62           P
ANISOU  328  P     U H  16     9666   9530   8778    439  -1474    365       P
ATOM    329  OP1   U H  16      22.164  44.529  66.382  1.00 84.58           O
ANISOU  329  OP1   U H  16    11168  10895  10072    424  -1544    423       O
ATOM    330  O5'   U H  16      24.126  45.670  67.304  1.00 60.52           O
ANISOU  330  O5'   U H  16     8021   7847   7128    452  -1348    337       O
ATOM    331  C5'   U H  16      23.948  46.821  66.506  1.00 65.96           C
ANISOU  331  C5'   U H  16     8743   8507   7812    454  -1316    388       C
ATOM    332  C4'   U H  16      25.250  47.470  66.223  1.00 63.51           C
ANISOU  332  C4'   U H  16     8440   8178   7512    465  -1201    362       C
ATOM    333  C3'   U H  16      26.342  46.519  65.797  1.00 66.94           C
ANISOU  333  C3'   U H  16     8932   8612   7891    475  -1153    320       C
ATOM    334  O3'   U H  16      26.216  46.184  64.421  1.00 79.37           O
ANISOU  334  O3'   U H  16    10638  10158   9361    481  -1164    350       O
ATOM    335  C2'   U H  16      27.604  47.289  66.175  1.00 63.01           C
ANISOU  335  C2'   U H  16     8372   8110   7458    481  -1042    298       C
ATOM    336  O2'   U H  16      27.911  48.256  65.195  1.00 65.02           O
ANISOU  336  O2'   U H  16     8678   8335   7693    489   -982    337       O
ATOM    337  C1'   U H  16      27.151  48.020  67.448  1.00 68.68           C
ANISOU  337  C1'   U H  16     8983   8842   8272    464  -1063    291       C
ATOM    338  O4'   U H  16      25.747  48.068  67.436  1.00 65.34           O
ANISOU  338  O4'   U H  16     8567   8421   7839    462  -1151    328       O
ATOM    339  N1    U H  16      27.582  47.319  68.675  1.00 61.26           N
ANISOU  339  N1    U H  16     7964   7930   7381    453  -1069    239       N
ATOM    340  C6    U H  16      26.772  46.449  69.341  1.00 63.21           C
ANISOU  340  C6    U H  16     8186   8203   7628    450  -1153    222       C
ATOM    341  C5    U H  16      27.191  45.792  70.425  1.00 68.13           C
ANISOU  341  C5    U H  16     8741   8853   8293    439  -1158    175       C
ATOM    342  C4    U H  16      28.518  45.985  70.922  1.00 64.02           C
ANISOU  342  C4    U H  16     8170   8334   7821    427  -1080    146       C
ATOM    343  N3    U H  16      29.278  46.873  70.194  1.00 52.92           N
ANISOU  343  N3    U H  16     6790   6901   6415    430  -1001    173       N
ATOM    344  C2    U H  16      28.862  47.561  69.081  1.00 61.66           C
ANISOU  344  C2    U H  16     7969   7981   7478    445   -990    216       C
ATOM    345  O2    U H  16      29.563  48.334  68.463  1.00 69.06           O
ANISOU  345  O2    U H  16     8925   8896   8417    448   -919    240       O
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ATOM    346  O4    U H  16      28.986  45.451  71.927  1.00 66.73           O
ANISOU  346  O4    U H  16     8447   8700   8208    410  -1083    108       O
ATOM    347  OP2   U H  16      23.157  43.737  68.594  1.00 63.90           O
ANISOU  347  OP2   U H  16     8390   8328   7560    437  -1494    305       O
ATOM    348  P     U H  17      27.093  45.029  63.740  1.00 72.54           P
ANISOU  348  P     U H  17     9875   9278   8408    501  -1121    319       P
ATOM    349  OP1   U H  17      27.043  45.193  62.270  1.00 85.03           O
ANISOU  349  OP1   U H  17    11601  10818   9890    507  -1106    359       O
ATOM    350  O5'   U H  17      28.582  45.473  64.093  1.00 65.94           O
ANISOU  350  O5'   U H  17     8972   8446   7637    522   -989    293       O
ATOM    351  C5'   U H  17      29.647  44.558  64.231  1.00 46.79           C
ANISOU  351  C5'   U H  17     6552   6026   5202    545   -923    259       C
ATOM    352  C4'   U H  17      30.931  45.309  64.467  1.00 60.37           C
ANISOU  352  C4'   U H  17     8194   7747   6996    556   -807    265       C
ATOM    353  C3'   U H  17      32.165  44.438  64.627  1.00 70.63           C
ANISOU  353  C3'   U H  17     9480   9054   8304    584   -723    247       C
ATOM    354  O3'   U H  17      32.733  44.054  63.389  1.00 81.13           O
ANISOU  354  O3'   U H  17    10934  10346   9545    627   -644    270       O
ATOM    355  C2'   U H  17      33.078  45.292  65.495  1.00 68.20           C
ANISOU  355  C2'   U H  17     9034   8765   8113    566   -663    256       C
ATOM    356  O2'   U H  17      33.729  46.293  64.740  1.00 75.53           O
ANISOU  356  O2'   U H  17     9979   9669   9048    578   -577    301       O
ATOM    357  C1'   U H  17      32.066  45.963  66.420  1.00 70.27           C
ANISOU  357  C1'   U H  17     9226   9044   8431    523   -756    239       C
ATOM    358  O4'   U H  17      30.841  46.045  65.721  1.00 74.16           O
ANISOU  358  O4'   U H  17     9805   9521   8852    525   -829    252       O
ATOM    359  N1    U H  17      31.870  45.149  67.642  1.00 65.87           N
ANISOU  359  N1    U H  17     8592   8521   7915    504   -815    195       N
ATOM    360  C6    U H  17      30.730  44.429  67.890  1.00 66.45           C
ANISOU  360  C6    U H  17     8690   8607   7951    499   -917    172       C
ATOM    361  C5    U H  17      30.572  43.683  68.980  1.00 64.59           C
ANISOU  361  C5    U H  17     8385   8402   7753    484   -967    134       C
ATOM    362  C4    U H  17      31.621  43.597  69.944  1.00 66.70           C
ANISOU  362  C4    U H  17     8552   8691   8101    468   -919    115       C
ATOM    363  N3    U H  17      32.734  44.327  69.629  1.00 61.15           N
ANISOU  363  N3    U H  17     7829   7972   7432    470   -823    146       N
ATOM    364  C2    U H  17      32.927  45.101  68.524  1.00 66.80           C
ANISOU  364  C2    U H  17     8610   8658   8113    489   -767    186       C
ATOM    365  O2    U H  17      33.970  45.705  68.348  1.00 77.61           O
ANISOU  365  O2    U H  17     9948  10018   9523    488   -683    218       O
ATOM    366  O4    U H  17      31.616  42.942  70.992  1.00 61.24           O
ANISOU  366  O4    U H  17     7791   8028   7450    451   -959     81       O
ATOM    367  OP2   U H  17      26.670  43.736  64.321  1.00 73.36           O
ANISOU  367  OP2   U H  17     9978   9404   8492    492  -1201    288       O
ATOM    368  P     G H  18      33.423  42.615  63.255  1.00 78.63           P
ANISOU  368  P     G H  18    10675  10022   9179    668   -592    251       P
ATOM    369  OP1   G H  18      33.579  42.304  61.810  1.00 87.49           O
ANISOU  369  OP1   G H  18    11972  11090  10178    711   -532    275       O
ATOM    370  O5'   G H  18      34.867  42.852  63.897  1.00 57.96           O
ANISOU  370  O5'   G H  18     7926   7426   6670    682   -479    270       O
ATOM    371  C5'   G H  18      35.618  43.990  63.509  1.00 60.45           C
ANISOU  371  C5'   G H  18     8206   7732   7031    688   -392    319       C
ATOM    372  C4'   G H  18      36.795  44.222  64.408  1.00 68.99           C
ANISOU  372  C4'   G H  18     9137   8843   8234    677   -326    343       C
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ATOM    373  C3'   G H  18      37.720  43.033  64.573  1.00 68.08           C
ANISOU  373  C3'   G H  18    9008   8733   8126    717   -253    350       C
ATOM    374  O3'   G H  18      38.672  43.008  63.544  1.00 68.81           O
ANISOU  374  O3'   G H  18    9163   8794   8187    778   -118    408       O
ATOM    375  C2'   G H  18      38.341  43.260  65.944  1.00 72.52           C
ANISOU  375  C2'   G H  18    9394   9339   8821    670   -266    355       C
ATOM    376  O2'   G H  18      39.435  44.160  65.880  1.00 73.15           O
ANISOU  376  O2'   G H  18    9393   9418   8980    664   -178    425       O
ATOM    377  C1'   G H  18      37.199  43.938  66.693  1.00 75.56           C
ANISOU  377  C1'   G H  18    9742   9740   9227    607   -394    308       C
ATOM    378  O4'   G H  18      36.341  44.529  65.743  1.00 65.71           O
ANISOU  378  O4'   G H  18    8602   8463   7901    617   -420    308       O
ATOM    379  N9    G H  18      36.419  42.977  67.494  1.00 77.32           N
ANISOU  379  N9    G H  18    9954   9987   9438    591   -491    247       N
ATOM    380  C4    G H  18      36.800  42.461  68.711  1.00 72.64           C
ANISOU  380  C4    G H  18    9249   9430   8922    562   -515    228       C
ATOM    381  C5    G H  18      35.780  41.637  69.080  1.00 73.96           C
ANISOU  381  C5    G H  18    9448   9608   9044    556   -611    172       C
ATOM    382  N7    G H  18      34.769  41.628  68.121  1.00 72.07           N
ANISOU  382  N7    G H  18    9337   9342   8703    577   -653    162       N
ATOM    383  C8    G H  18      35.192  42.440  67.195  1.00 70.40           C
ANISOU  383  C8    G H  18    9172   9102   8474    596   -579    206       C
ATOM    384  N3    G H  18      37.944  42.742  69.361  1.00 77.94           N
ANISOU  384  N3    G H  18    9804  10117   9693    538   -460    266       N
ATOM    385  C2    G H  18      38.030  42.102  70.508  1.00 79.95           C
ANISOU  385  C2    G H  18    9971  10404  10002    507   -508    238       C
ATOM    386  N2    G H  18      39.124  42.266  71.280  1.00 71.80           N
ANISOU  386  N2    G H  18    8818   9392   9072    471   -472    279       N
ATOM    387  N1    G H  18      37.059  41.255  70.974  1.00 74.11           N
ANISOU  387  N1    G H  18    9256   9680   9223    503   -599    174       N
ATOM    388  C6    G H  18      35.882  40.962  70.312  1.00 70.43           C
ANISOU  388  C6    G H  18    8904   9198   8658    528   -658    140       C
ATOM    389  O6    G H  18      35.073  40.185  70.817  1.00 74.18           O
ANISOU  389  O6    G H  18    9386   9691   9109    519   -743     92       O
ATOM    390  OP2   G H  18      32.670  41.700  64.134  1.00 78.29           O
ANISOU  390  OP2   G H  18   10600  10007   9139    643   -700    205       O
ATOM    391  P     G H  19      38.954  41.671  62.728  1.00 68.03           P
ANISOU  391  P     G H  19    9203   8659   7984    853    -41    408       P
ATOM    392  OP1   G H  19      39.803  42.092  61.568  1.00 70.50           O
ANISOU  392  OP1   G H  19    9587   8932   8267    913    101    477       O
ATOM    393  O5'   G H  19      39.946  40.862  63.669  1.00 61.24           O
ANISOU  393  O5'   G H  19    8220   7832   7218    866     12    424       O
ATOM    394  C5'   G H  19      41.218  41.407  63.955  1.00 57.83           C
ANISOU  394  C5'   G H  19    7655   7418   6900    870    112    502       C
ATOM    395  C4'   G H  19      41.795  40.934  65.268  1.00 72.40           C
ANISOU  395  C4'   G H  19    9339   9310   8860    836     93    507       C
ATOM    396  C3'   G H  19      41.936  39.439  65.500  1.00 71.15           C
ANISOU  396  C3'   G H  19    9208   9151   8672    879    114    484       C
ATOM    397  O3'   G H  19      43.028  38.861  64.799  1.00 73.20           O
ANISOU  397  O3'   G H  19    9504   9383   8925    964    275    557       O
ATOM    398  C2'   G H  19      42.094  39.380  67.014  1.00 68.54           C
ANISOU  398  C2'   G H  19    8703   8877   8463    808     34    470       C
ATOM    399  O2'   G H  19      43.406  39.761  67.400  1.00 59.64           O
ANISOU  399  O2'   G H  19    7432   7770   7459    799    120    564       O
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ATOM    400  C1'   G H  19      41.122  40.476  67.461  1.00 68.18           C
ANISOU  400  C1'   G H  19    8632   8846   8428    730    -93    422       C
ATOM    401  O4'   G H  19      40.984  41.380  66.387  1.00 74.18           O
ANISOU  401  O4'   G H  19    9479   9572   9136    750    -52    448       O
ATOM    402  N9    G H  19      39.822  39.867  67.741  1.00 74.65           N
ANISOU  402  N9    G H  19    9521   9670   9175    712   -215    331       N
ATOM    403  C4    G H  19      39.525  39.221  68.902  1.00 77.85           C
ANISOU  403  C4    G H  19    9846  10111   9623    673   -299    285       C
ATOM    404  C5    G H  19      38.242  38.741  68.733  1.00 69.24           C
ANISOU  404  C5    G H  19    8857   9012   8440    673   -398    216       C
ATOM    405  N7    G H  19      37.748  39.079  67.478  1.00 71.25           N
ANISOU  405  N7    G H  19    9256   9224   8592    706   -380    222       N
ATOM    406  C8    G H  19      38.732  39.730  66.914  1.00 74.80           C
ANISOU  406  C8    G H  19    9690   9657   9072    732   -266    288       C
ATOM    407  N3    G H  19      40.348  39.116  69.967  1.00 80.80           N
ANISOU  407  N3    G H  19   10071  10520  10110    638   -290    311       N
ATOM    408  C2    G H  19      39.763  38.436  70.950  1.00 69.89           C
ANISOU  408  C2    G H  19    8647   9167   8740    604   -387    251       C
ATOM    409  N2    G H  19      40.409  38.221  72.088  1.00 65.83           N
ANISOU  409  N2    G H  19    7995   8689   8328    560   -400    266       N
ATOM    410  N1    G H  19      38.504  37.909  70.891  1.00 65.65           N
ANISOU  410  N1    G H  19    8199   8627   8118    606   -483    178       N
ATOM    411  C6    G H  19      37.655  38.014  69.798  1.00 64.18           C
ANISOU  411  C6    G H  19    8160   8404   7819    638   -499    160       C
ATOM    412  O6    G H  19      36.533  37.512  69.863  1.00 58.02           O
ANISOU  412  O6    G H  19    7443   7625   6975    630   -598    106       O
ATOM    413  OP2   G H  19      37.655  40.983  62.519  1.00 69.12           O
ANISOU  413  OP2   G H  19    9467   8781   8013    841   -156    342       O
ATOM    414  P     C H  20      43.133  37.261  64.640  1.00 75.33           P
ANISOU  414  P     C H  20    9866   9629   9125   1033    327    536       P
ATOM    415  OP1   C H  20      44.173  36.925  63.634  1.00 75.98           O
ANISOU  415  OP1   C H  20   10022   9665   9180   1135    514    620       O
ATOM    416  O5'   C H  20      43.638  36.761  66.068  1.00 71.67           O
ANISOU  416  O5'   C H  20    9215   9224   8793    991    291    544       O
ATOM    417  C5'   C H  20      43.153  35.540  66.616  1.00 73.16           C
ANISOU  417  C5'   C H  20    9429   9420   8947    992    227    478       C
ATOM    418  C4'   C H  20      43.161  35.534  68.128  1.00 69.21           C
ANISOU  418  C4'   C H  20    8745   8984   8566    910    125    458       C
ATOM    419  C3'   C H  20      42.993  34.172  68.768  1.00 59.28           C
ANISOU  419  C3'   C H  20    7483   7741   7300    920     89    413       C
ATOM    420  O3'   C H  20      44.210  33.457  68.816  1.00 61.22           O
ANISOU  420  O3'   C H  20    7667   7985   7608    977    222    493       O
ATOM    421  C2'   C H  20      42.438  34.513  70.142  1.00 56.56           C
ANISOU  421  C2'   C H  20    7002   7454   7036    818    -62    361       C
ATOM    422  O2'   C H  20      43.479  34.958  70.991  1.00 66.43           O
ANISOU  422  O2'   C H  20    8070   8742   8430    775    -32    434       O
ATOM    423  C1'   C H  20      41.543  35.706  69.820  1.00 60.67           C
ANISOU  423  C1'   C H  20    7573   7965   7515    775   -142    326       C
ATOM    424  O4'   C H  20      42.049  36.311  68.653  1.00 65.96           O
ANISOU  424  O4'   C H  20    8317   8595   8150    827    -29    387       O
ATOM    425  N1    C H  20      40.142  35.294  69.548  1.00 74.12           N
ANISOU  425  N1    C H  20    9408   9652   9101    772   -250    237       N
ATOM    426  C6    C H  20      39.627  35.468  68.296  1.00 70.37           C
ANISOU  426  C6    C H  20    9100   9129   8508    813   -229    231       C
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ATOM    427  C5    C H  20      38.377  35.114  68.014  1.00 76.53           C
ANISOU  427  C5    C H  20    9999   9894   9186    802   -334    166       C
ATOM    428  C4    C H  20      37.596  34.546  69.056  1.00 71.70           C
ANISOU  428  C4    C H  20    9329   9320   8594    754   -463    106       C
ATOM    429  N4    C H  20      36.337  34.169  68.844  1.00 61.63           N
ANISOU  429  N4    C H  20    8155   8033   7227    739   -576     54       N
ATOM    430  N3    C H  20      38.074  34.380  70.275  1.00 71.82           N
ANISOU  430  N3    C H  20    9186   9383   8720    720   -478    105       N
ATOM    431  C2    C H  20      39.338  34.742  70.553  1.00 69.06           C
ANISOU  431  C2    C H  20    8723   9046   8470    725   -378    169       C
ATOM    432  O2    C H  20      39.787  34.580  71.692  1.00 68.08           O
ANISOU  432  O2    C H  20    8455   8964   8447    684   -401    174       O
ATOM    433  OP2   C H  20      41.745  36.744  64.454  1.00 74.27           O
ANISOU  433  OP2   C H  20    9877   9477   8867   1015    201    434       O
ATOM    434  P     G H  21      44.220  31.876  68.538  1.00 68.43           P
ANISOU  434  P     G H  21    8691   8867   8443   1056    278    468       P
ATOM    435  OP1   G H  21      45.603  31.370  68.754  1.00 72.61           O
ANISOU  435  OP1   G H  21    9110   9404   9075   1108    422    574       O
ATOM    436  O5'   G H  21      43.209  31.297  69.631  1.00 69.60           O
ANISOU  436  O5'   G H  21    8800   9055   8588    983    104    367       O
ATOM    437  C5'   G H  21      43.521  31.270  71.023  1.00 48.30           C
ANISOU  437  C5'   G H  21    5906   6421   6023    914     38    374       C
ATOM    438  C4'   G H  21      42.410  30.583  71.776  1.00 64.03           C
ANISOU  438  C4'   G H  21    7916   8438   7976    867   -113    271       C
ATOM    439  C3'   G H  21      41.983  29.247  71.195  1.00 61.48           C
ANISOU  439  C3'   G H  21    7754   8073   7532    934    -97    225       C
ATOM    440  O3'   G H  21      42.798  28.182  71.626  1.00 60.53           O
ANISOU  440  O3'   G H  21    7572   7960   7465    973    -23    260       O
ATOM    441  C2'   G H  21      40.548  29.123  71.663  1.00 62.32           C
ANISOU  441  C2'   G H  21    7900   8198   7580    872   -277    124       C
ATOM    442  O2'   G H  21      40.503  28.728  73.015  1.00 65.81           O
ANISOU  442  O2'   G H  21    8192   8698   8113    815   -361     98       O
ATOM    443  C1'   G H  21      40.077  30.564  71.578  1.00 62.93           C
ANISOU  443  C1'   G H  21    7951   8285   7672    818   -334    122       C
ATOM    444  O4'   G H  21      41.206  31.390  71.704  1.00 65.00           O
ANISOU  444  O4'   G H  21    8094   8562   8042    813   -239    204       O
ATOM    445  N9    G H  21      39.431  30.830  70.284  1.00 68.77           N
ANISOU  445  N9    G H  21    8879   8970   8281    853   -326    108       N
ATOM    446  C4    G H  21      38.219  30.289  69.910  1.00 73.53           C
ANISOU  446  C4    G H  21    9624   9549   8764    848   -430     43       C
ATOM    447  C5    G H  21      37.970  30.781  68.652  1.00 74.94           C
ANISOU  447  C5    G H  21    9957   9675   8844    878   -392     58       C
ATOM    448  N7    G H  21      39.013  31.625  68.250  1.00 73.75           N
ANISOU  448  N7    G H  21    9756   9515   8749    907   -261    128       N
ATOM    449  C8    G H  21      39.868  31.620  69.250  1.00 65.12           C
ANISOU  449  C8    G H  21    8485   8470   7789    890   -227    160       C
ATOM    450  N3    G H  21      37.451  29.449  70.640  1.00 65.11           N
ANISOU  450  N3    G H  21    8545   8508   7684    815   -547    -16       N
ATOM    451  C2    G H  21      36.328  29.083  70.022  1.00 60.66           C
ANISOU  451  C2    G H  21    8139   7912   6998    811   -638    -58       C
ATOM    452  N2    G H  21      35.429  28.271  70.588  1.00 67.21           N
ANISOU  452  N2    G H  21    8976   8760   7799    778   -766   -110       N
ATOM    453  N1    G H  21      35.994  29.503  68.785  1.00 59.13           N
ANISOU  453  N1    G H  21    8105   7663   6698    834   -616    -44       N
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ATOM    454  C6    G H  21      36.756  30.371  68.020  1.00 67.11           C
ANISOU  454  C6    G H  21     9135   8647   7717    869   -494     10       C
ATOM    455  O6    G H  21      36.319  30.657  66.917  1.00 59.28           O
ANISOU  455  O6    G H  21     8301   7605   6618    884   -491     16       O
ATOM    456  OP2   G H  21      43.541  31.659  67.244  1.00 72.90           O
ANISOU  456  OP2   G H  21     9492   9365   8843   1114    302    427       O
ATOM    457  P     U H  22      43.108  26.965  70.638  1.00 69.96           P
ANISOU  457  P     U H  22     8942   9087   8553   1084    104    272       P
ATOM    458  OP1   U H  22      44.285  26.244  71.183  1.00 64.76           O
ANISOU  458  OP1   U H  22     8159   8446   8001   1122    213    348       O
ATOM    459  O5'   U H  22      41.827  26.037  70.759  1.00 74.95           O
ANISOU  459  O5'   U H  22     9699   9707   9070   1062    -36    163       O
ATOM    460  C5'   U H  22      41.421  25.535  72.014  1.00 64.04           C
ANISOU  460  C5'   U H  22     8195   8384   7753    999   -160    114       C
ATOM    461  C4'   U H  22      40.094  24.850  71.908  1.00 58.94           C
ANISOU  461  C4'   U H  22     7688   7722   6985    978   -297     21       C
ATOM    462  C3'   U H  22      39.978  23.828  70.795  1.00 64.32           C
ANISOU  462  C3'   U H  22     8603   8321   7516   1057   -230      8       C
ATOM    463  O3'   U H  22      40.522  22.577  71.154  1.00 72.79           O
ANISOU  463  O3'   U H  22     9667   9387   8605   1103   -171     15       O
ATOM    464  C2'   U H  22      38.479  23.792  70.542  1.00 66.44           C
ANISOU  464  C2'   U H  22     9000   8575   7667   1005   -399    -70       C
ATOM    465  O2'   U H  22      37.810  23.089  71.585  1.00 57.50           O
ANISOU  465  O2'   U H  22     7792   7492   6564    952   -537   -125       O
ATOM    466  C1'   U H  22      38.129  25.261  70.707  1.00 61.23           C
ANISOU  466  C1'   U H  22     8242   7955   7066    944   -460    -62       C
ATOM    467  O4'   U H  22      39.076  25.828  71.586  1.00 63.51           O
ANISOU  467  O4'   U H  22     8319   8300   7512    927   -403    -15       O
ATOM    468  N1    U H  22      38.174  26.011  69.443  1.00 69.51           N
ANISOU  468  N1    U H  22     9429   8948   8034    979   -388    -31       N
ATOM    469  C6    U H  22      39.190  26.888  69.135  1.00 67.89           C
ANISOU  469  C6    U H  22     9156   8741   7897   1010   -254     38       C
ATOM    470  C5    U H  22      39.180  27.598  67.996  1.00 71.68           C
ANISOU  470  C5    U H  22     9761   9173   8303   1038   -195     65       C
ATOM    471  C4    U H  22      38.092  27.461  67.067  1.00 74.21           C
ANISOU  471  C4    U H  22    10292   9439   8467   1031   -275     22       C
ATOM    472  N3    U H  22      37.114  26.568  67.452  1.00 80.82           N
ANISOU  472  N3    U H  22    11183  10281   9245    994   -414    -41       N
ATOM    473  C2    U H  22      37.095  25.829  68.611  1.00 76.77           C
ANISOU  473  C2    U H  22    10543   9819   8808    969   -474    -71       C
ATOM    474  O2    U H  22      36.199  25.054  68.896  1.00 64.50           O
ANISOU  474  O2    U H  22     9042   8267   7198    936   -600   -122       O
ATOM    475  O4    U H  22      37.968  28.058  65.996  1.00 74.05           O
ANISOU  475  O4    U H  22    10401   9370   8365   1051   -236     41       O
ATOM    476  OP2   U H  22      43.118  27.501  69.256  1.00 85.34           O
ANISOU  476  OP2   U H  22    11055  10970  10399   1141    194    297       O
ATOM    477  P     U H  23      41.318  21.729  70.065  1.00 75.29           P
ANISOU  477  P     U H  23    10162   9614   8832   1221     15     61       P
ATOM    478  OP1   U H  23      41.848  20.524  70.743  1.00 80.00           O
ANISOU  478  OP1   U H  23    10698  10221   9479   1253     57     69       O
ATOM    479  O5'   U H  23      40.203  21.325  69.007  1.00 72.91           O
ANISOU  479  O5'   U H  23    10139   9233   8329   1227    -58     -6       O
ATOM    480  C5'   U H  23      39.128  20.487  69.376  1.00 61.71           C
ANISOU  480  C5'   U H  23     8790   7818   6840   1178   -219    -84       C
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ATOM    481  C4'   U H  23      38.178  20.281  68.224  1.00 67.31           C
ANISOU  481  C4'   U H  23    9770   8445   7359   1179   -281   -124       C
ATOM    482  C3'   U H  23      38.817  19.905  66.896  1.00 75.56           C
ANISOU  482  C3'   U H  23   11050   9382   8279   1279   -107    -87       C
ATOM    483  O3'   U H  23      39.154  18.537  66.804  1.00 79.27           O
ANISOU  483  O3'   U H  23   11641   9793   8684   1342    -36    -95       O
ATOM    484  C2'   U H  23      37.760  20.327  65.886  1.00 73.30           C
ANISOU  484  C2'   U H  23   10971   9040   7838   1239   -208   -118       C
ATOM    485  O2'   U H  23      36.720  19.358  65.820  1.00 76.40           O
ANISOU  485  O2'   U H  23   11522   9397   8108   1197   -355   -178       O
ATOM    486  C1'   U H  23      37.208  21.600  66.539  1.00 74.59           C
ANISOU  486  C1'   U H  23   10932   9296   8113   1151   -333   -123       C
ATOM    487  O4'   U H  23      37.470  21.516  67.932  1.00 63.14           O
ANISOU  487  O4'   U H  23    9231   7939   6823   1118   -372   -129       O
ATOM    488  N1    U H  23      37.852  22.812  65.980  1.00 72.09           N
ANISOU  488  N1    U H  23   10575   8977   7838   1179   -217    -66       N
ATOM    489  C6    U H  23      38.911  23.437  66.587  1.00 74.27           C
ANISOU  489  C6    U H  23   10635   9310   8274   1200   -109    -11       C
ATOM    490  C5    U H  23      39.503  24.520  66.071  1.00 66.48           C
ANISOU  490  C5    U H  23    9614   8320   7326   1223     -8     46       C
ATOM    491  C4    U H  23      39.061  25.067  64.837  1.00 68.74           C
ANISOU  491  C4    U H  23   10091   8542   7484   1232     -1     47       C
ATOM    492  N3    U H  23      38.006  24.379  64.271  1.00 80.75           N
ANISOU  492  N3    U H  23   11830  10007   8845   1210   -111     -9       N
ATOM    493  C2    U H  23      37.378  23.266  64.785  1.00 72.41           C
ANISOU  493  C2    U H  23   10813   8951   7746   1181   -222    -63       C
ATOM    494  O2    U H  23      36.452  22.708  64.240  1.00 80.28           O
ANISOU  494  O2    U H  23   12007   9894   8600   1154   -326   -103       O
ATOM    495  O4    U H  23      39.548  26.062  64.289  1.00 62.11           O
ANISOU  495  O4    U H  23    9234   7696   6669   1254     88     98       O
ATOM    496  OP2   U H  23      42.240  22.649  69.357  1.00 83.45           O
ANISOU  496  OP2   U H  23   11182  10626   9901   1271    169    146       O
ATOM    497  P     U H  24      40.303  18.084  65.777  1.00 71.66           P
ANISOU  497  P     U H  24   10847   8729   7653   1476    213    -32       P
ATOM    498  OP1   U H  24      40.807  16.772  66.264  1.00 80.95           O
ANISOU  498  OP1   U H  24   12024   9889   8846   1530    280    -31       O
ATOM    499  O5'   U H  24      39.573  17.900  64.375  1.00 78.14           O
ANISOU  499  O5'   U H  24   12010   9432   8246   1487    190    -64       O
ATOM    500  C5'   U H  24      38.477  17.020  64.245  1.00 83.14           C
ANISOU  500  C5'   U H  24   12829  10022   8739   1434     31   -135       C
ATOM    501  C4'   U H  24      37.696  17.311  62.998  1.00 78.75           C
ANISOU  501  C4'   U H  24   12545   9379   7998   1409    -28   -153       C
ATOM    502  C3'   U H  24      38.458  17.230  61.689  1.00 85.13           C
ANISOU  502  C3'   U H  24   13598  10066   8680   1516    180   -109       C
ATOM    503  O3'   U H  24      38.632  15.902  61.242  1.00 82.79           O
ANISOU  503  O3'   U H  24   13548   9662   8247   1581    254   -125       O
ATOM    504  C2'   U H  24      37.602  18.090  60.766  1.00 84.65           C
ANISOU  504  C2'   U H  24   13684   9973   8507   1453     77   -119       C
ATOM    505  O2'   U H  24      36.426  17.400  60.372  1.00 89.44           O
ANISOU  505  O2'   U H  24   14521  10518   8945   1380   -102   -173       O
ATOM    506  C1'   U H  24      37.175  19.199  61.720  1.00 86.01           C
ANISOU  506  C1'   U H  24   13549  10280   8849   1363    -59   -122       C
ATOM    507  O4'   U H  24      37.217  18.674  63.031  1.00 79.63           O
ANISOU  507  O4'   U H  24   12526   9557   8173   1338   -121   -144       O
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ATOM    508  N1    U H  24      38.077  20.364  61.674  1.00 86.29           N
ANISOU  508  N1    U H  24    13418  10360   9009   1406     83    -60       N
ATOM    509  C6    U H  24      39.081  20.491  62.600  1.00 86.03           C
ANISOU  509  C6    U H  24    13127  10402   9158   1445    188    -20       C
ATOM    510  C5    U H  24      39.912  21.530  62.625  1.00 87.16           C
ANISOU  510  C5    U H  24    13108  10588   9422   1475    304     44       C
ATOM    511  C4    U H  24      39.756  22.571  61.666  1.00 89.55           C
ANISOU  511  C4    U H  24    13502  10860   9664   1471    325     66       C
ATOM    512  N3    U H  24      38.726  22.373  60.772  1.00 87.42           N
ANISOU  512  N3    U H  24    13490  10516   9210   1433    219     21       N
ATOM    513  C2    U H  24      37.859  21.319  60.720  1.00 84.40           C
ANISOU  513  C2    U H  24    13281  10087   8701   1396     92    -39       C
ATOM    514  O2    U H  24      36.970  21.233  59.893  1.00 97.98           O
ANISOU  514  O2    U H  24    15227  11740  10261   1354     -9    -66       O
ATOM    515  O4    U H  24      40.456  23.583  61.588  1.00 90.87           O
ANISOU  515  O4    U H  24    13538  11060   9928   1493    424    126       O
ATOM    516  OP2   U H  24      41.182  19.268  65.594  1.00 72.81           O
ANISOU  516  OP2   U H  24    10856   8905   7904   1506    342     46       O
ATOM    517  P     U H  25      40.023  15.452  60.588  1.00 95.57           P
ANISOU  517  P     U H  25    15284  11189   9840   1740    552    -59       P
ATOM    518  OP1   U H  25      40.012  13.966  60.529  1.00 96.48           O
ANISOU  518  OP1   U H  25    15602  11216   9841   1784    580    -91       O
ATOM    519  O5'   U H  25      39.937  16.014  59.101  1.00 91.30           O
ANISOU  519  O5'   U H  25    15019  10541   9130   1770    625    -40       O
ATOM    520  C5'   U H  25      38.809  15.727  58.290  1.00 95.31           C
ANISOU  520  C5'   U H  25    15824  10962   9429   1699    471    -96       C
ATOM    521  C4'   U H  25      38.730  16.654  57.109  1.00 99.89           C
ANISOU  521  C4'   U H  25    16563  11483   9907   1703    516    -69       C
ATOM    522  C3'   U H  25      40.022  16.839  56.328  1.00103.30           C
ANISOU  522  C3'   U H  25    17078  11842  10328   1850    809      5       C
ATOM    523  O3'   U H  25      40.265  15.806  55.392  1.00108.86           O
ANISOU  523  O3'   U H  25    18141  12388  10833   1936    938      1       O
ATOM    524  C2'   U H  25      39.823  18.199  55.685  1.00107.17           C
ANISOU  524  C2'   U H  25    17548  12354  10818   1813    788     31       C
ATOM    525  O2'   U H  25      38.953  18.095  54.568  1.00111.45           O
ANISOU  525  O2'   U H  25    18426  12786  11134   1764    693     -4       O
ATOM    526  C1'   U H  25      39.094  18.945  56.799  1.00105.67           C
ANISOU  526  C1'   U H  25    17042  12316  10792   1687    568      2       C
ATOM    527  O4'   U H  25      38.403  17.989  57.571  1.00102.56           O
ANISOU  527  O4'   U H  25    16635  11944  10390   1624    408    -58       O
ATOM    528  N1    U H  25      40.032  19.665  57.688  1.00103.06           N
ANISOU  528  N1    U H  25    16360  12101  10697   1723    671     57       N
ATOM    529  C6    U H  25      40.524  19.101  58.847  1.00 84.61           C
ANISOU  529  C6    U H  25    13805   9836   8508   1741    692     61       C
ATOM    530  C5    U H  25      41.371  19.752  59.645  1.00 81.76           C
ANISOU  530  C5    U H  25    13135   9574   8354   1762    773    118       C
ATOM    531  C4    U H  25      41.781  21.088  59.304  1.00 86.63           C
ANISOU  531  C4    U H  25    13643  10227   9046   1766    839    175       C
ATOM    532  N3    U H  25      41.256  21.589  58.138  1.00 87.65           N
ANISOU  532  N3    U H  25    13998  10284   9023   1754    819    164       N
ATOM    533  C2    U H  25      40.395  20.941  57.293  1.00 98.93           C
ANISOU  533  C2    U H  25    15744  11609  10236   1732    738    108       C
ATOM    534  O2    U H  25      39.983  21.456  56.270  1.00 96.06           O
ANISOU  534  O2    U H  25    15568  11183   9746   1716    722    108       O
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ATOM    535  O4    U H  25      42.548  21.801  59.944  1.00 87.75           O
ANISOU  535  O4    U H  25    13518  10454   9371   1776    906    235       O
ATOM    536  OP2   U H  25      41.120  16.164  61.298  1.00 97.09           O
ANISOU  536  OP2   U H  25    15157  11479  10253   1787    687     14       O
ATOM    537  P     A H  26      41.772  15.373  55.037  1.00 96.10           P
ANISOU  537  P     A H  26    16576  10699   9239   2121   1273     81       P
ATOM    538  OP1   A H  26      41.653  14.165  54.187  1.00110.31           O
ANISOU  538  OP1   A H  26    18781  12328  10803   2178   1340     52       O
ATOM    539  OP2   A H  26      42.601  15.337  56.268  1.00 91.58           O
ANISOU  539  OP2   A H  26    15643  10246   8908   2160   1347    126       O
ATOM    540  O5'   A H  26      42.328  16.567  54.141  1.00107.47           O
ANISOU  540  O5'   A H  26    18027  12123  10683   2174   1419    150       O
ATOM    541  C5'   A H  26      41.716  16.893  52.906  1.00110.64           C
ANISOU  541  C5'   A H  26    18736  12422  10880   2144   1377    128       C
ATOM    542  C4'   A H  26      42.300  18.150  52.316  1.00110.68           C
ANISOU  542  C4'   A H  26    18662  12448  10943   2188   1505    199       C
ATOM    543  C3'   A H  26      43.816  18.239  52.310  1.00 98.69           C
ANISOU  543  C3'   A H  26    17021  10928   9548   2349   1808    304       C
ATOM    544  O3'   A H  26      44.393  17.499  51.247  1.00 97.23           O
ANISOU  544  O3'   A H  26    17175  10579   9187   2484   2034    336       O
ATOM    545  C2'   A H  26      44.047  19.738  52.216  1.00 96.70           C
ANISOU  545  C2'   A H  26    16555  10766   9422   2322   1815    357       C
ATOM    546  O2'   A H  26      43.813  20.187  50.893  1.00 94.25           O
ANISOU  546  O2'   A H  26    16526  10352   8932   2336   1857    361       O
ATOM    547  C1'   A H  26      42.920  20.268  53.104  1.00109.85           C
ANISOU  547  C1'   A H  26    18011  12556  11170   2151   1512    283       C
ATOM    548  O4'   A H  26      41.880  19.313  53.080  1.00109.73           O
ANISOU  548  O4'   A H  26    18211  12483  10999   2077   1337    194       O
ATOM    549  N9    A H  26      43.367  20.448  54.501  1.00111.81           N
ANISOU  549  N9    A H  26    17870  12948  11665   2132   1487    307       N
ATOM    550  C4    A H  26      43.973  21.559  55.036  1.00103.18           C
ANISOU  550  C4    A H  26    16462  11967  10776   2126   1526    372       C
ATOM    551  C5    A H  26      44.224  21.266  56.360  1.00101.96           C
ANISOU  551  C5    A H  26    16026  11916  10799   2099   1477    374       C
ATOM    552  N7    A H  26      43.790  19.984  56.660  1.00111.33           N
ANISOU  552  N7    A H  26    17340  13060  11902   2094   1414    311       N
ATOM    553  C8    A H  26      43.294  19.545  55.529  1.00113.52           C
ANISOU  553  C8    A H  26    17972  13208  11952   2113   1421    274       C
ATOM    554  N3    A H  26      44.265  22.704  54.408  1.00106.94           N
ANISOU  554  N3    A H  26    16910  12450  11272   2138   1593    425       N
ATOM    555  C2    A H  26      44.849  23.570  55.233  1.00108.02           C
ANISOU  555  C2    A H  26    16708  12706  11627   2120   1606    483       C
ATOM    556  N1    A H  26      45.157  23.430  56.524  1.00105.72           N
ANISOU  556  N1    A H  26    16129  12519  11520   2090   1561    494       N
ATOM    557  C6    A H  26      44.848  22.265  57.129  1.00101.68           C
ANISOU  557  C6    A H  26    15650  12000  10984   2079   1496    439       C
ATOM    558  N6    A H  26      45.150  22.136  58.419  1.00104.40           N
ANISOU  558  N6    A H  26    15709  12447  11509   2045   1448    450       N
ATOM    559  P     G H  27      45.950  17.087  51.255  1.00114.42           P
ANISOU  559  P     G H  27    19287  12723  11463   2675   2371    451       P
ATOM    560  OP1   G H  27      46.193  16.381  49.969  1.00118.95           O
ANISOU  560  OP1   G H  27    20294  13104  11797   2792   2561    462       O
ATOM    561  O5'   G H  27      46.732  18.476  51.226  1.00101.10           O
ANISOU  561  O5'   G H  27    17328  11129   9955   2707   2481    552       O
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ATOM    562  C5'   G H  27      46.747  19.273  50.057  1.00 96.25           C
ANISOU  562  C5'   G H  27    16893  10449   9230   2732   2554    579       C
ATOM    563  C4'   G H  27      47.470  20.573  50.281  1.00104.48           C
ANISOU  563  C4'   G H  27    17618  11603  10477   2745   2628    675       C
ATOM    564  C3'   G H  27      48.895  20.477  50.797  1.00107.15           C
ANISOU  564  C3'   G H  27    17710  11986  11015   2876   2871    807       C
ATOM    565  O3'   G H  27      49.825  20.153  49.785  1.00101.08           O
ANISOU  565  O3'   G H  27    17157  11090  10158   3050   3171    901       O
ATOM    566  C2'   G H  27      49.113  21.863  51.387  1.00114.87           C
ANISOU  566  C2'   G H  27    18322  13115  12209   2801   2794    859       C
ATOM    567  O2'   G H  27      49.375  22.811  50.364  1.00117.23           O
ANISOU  567  O2'   G H  27    18710  13375  12456   2841   2898    914       O
ATOM    568  C1'   G H  27      47.736  22.156  51.984  1.00115.25           C
ANISOU  568  C1'   G H  27    18312  13240  12238   2615   2461    726       C
ATOM    569  O4'   G H  27      46.792  21.362  51.291  1.00109.41           O
ANISOU  569  O4'   G H  27    17934  12382  11253   2588   2372    625       O
ATOM    570  N9    G H  27      47.710  21.811  53.417  1.00112.62           N
ANISOU  570  N9    G H  27    17689  13023  12080   2551   2342    706       N
ATOM    571  C4    G H  27      48.177  22.596  54.451  1.00109.29           C
ANISOU  571  C4    G H  27    16884  12743  11899   2503   2303    762       C
ATOM    572  C5    G H  27      47.968  21.842  55.585  1.00112.53           C
ANISOU  572  C5    G H  27    17152  13213  12391   2454   2193    718       C
ATOM    573  N7    G H  27      47.393  20.617  55.274  1.00111.60           N
ANISOU  573  N7    G H  27    17313  12996  12093   2473   2166    638       N
ATOM    574  C8    G H  27      47.264  20.640  53.977  1.00111.26           C
ANISOU  574  C8    G H  27    17582  12833  11860   2529   2256    634       C
ATOM    575  N3    G H  27      48.709  23.836  54.353  1.00101.98           N
ANISOU  575  N3    G H  27    15775  11879  11095   2500   2355    844       N
ATOM    576  C2    G H  27      49.056  24.324  55.536  1.00 97.55           C
ANISOU  576  C2    G H  27    14863  11448  10755   2437   2285    882       C
ATOM    577  N2    G H  27      49.604  25.543  55.655  1.00 99.65           N
ANISOU  577  N2    G H  27    14908  11787  11166   2418   2313    966       N
ATOM    578  N1    G H  27      48.886  23.651  56.711  1.00101.19           N
ANISOU  578  N1    G H  27    15167  11974  11308   2384   2175    842       N
ATOM    579  C6    G H  27      48.339  22.379  56.842  1.00113.89           C
ANISOU  579  C6    G H  27    16946  13526  12799   2389   2122    758       C
ATOM    580  O6    G H  27      48.227  21.857  57.963  1.00120.13           O
ANISOU  580  O6    G H  27    17567  14387  13691   2337   2022    729       O
ATOM    581  OP2   G H  27      46.314  16.392  52.514  1.00116.54           O
ANISOU  581  OP2   G H  27    19304  13075  11901   2685   2365    459       O
ATOM    582  P     U H  28      51.105  19.240  50.105  1.00119.17           P
ANISOU  582  P     U H  28    19377  13349  12552   3220   3448   1019       P
ATOM    583  OP1   U H  28      51.756  18.942  48.800  1.00129.78           O
ANISOU  583  OP1   U H  28    21042  14531  13737   3389   3735   1092       O
ATOM    584  O5'   U H  28      52.091  20.202  50.894  1.00110.97           O
ANISOU  584  O5'   U H  28    17891  12462  11810   3228   3514   1154       O
ATOM    585  C5'   U H  28      52.489  21.446  50.350  1.00107.53           C
ANISOU  585  C5'   U H  28    17367  12057  11432   3240   3582   1233       C
ATOM    586  C4'   U H  28      53.016  22.356  51.426  1.00113.50           C
ANISOU  586  C4'   U H  28    17674  12981  12468   3173   3518   1314       C
ATOM    587  C3'   U H  28      54.061  21.767  52.359  1.00126.16           C
ANISOU  587  C3'   U H  28    19019  14641  14276   3247   3651   1431       C
ATOM    588  O3'   U H  28      55.355  21.640  51.805  1.00139.75           O
ANISOU  588  O3'   U H  28    20743  16304  16052   3426   3970   1605       O
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ATOM    589  C2'   U H  28      53.984  22.714  53.542  1.00124.29           C
ANISOU  589  C2'   U H  28    18387  14576  14262   3100   3449   1437       C
ATOM    590  O2'   U H  28      54.589  23.962  53.228  1.00115.42           O
ANISOU  590  O2'   U H  28    17107  13501  13247   3107   3520   1547       O
ATOM    591  C1'   U H  28      52.472  22.911  53.639  1.00123.99           C
ANISOU  591  C1'   U H  28    18466  14554  14090   2939   3150   1249       C
ATOM    592  O4'   U H  28      51.943  22.726  52.335  1.00116.70           O
ANISOU  592  O4'   U H  28    17926  13496  12918   2985   3198   1187       O
ATOM    593  N1    U H  28      51.887  21.913  54.566  1.00122.95           N
ANISOU  593  N1    U H  28    18311  14447  13955   2875   2999   1152       N
ATOM    594  C6    U H  28      51.293  20.745  54.156  1.00116.90           C
ANISOU  594  C6    U H  28    17855  13571  12991   2907   2993   1058       C
ATOM    595  C5    U H  28      50.798  19.851  55.019  1.00117.47           C
ANISOU  595  C5    U H  28    17892  13670  13070   2849   2857    977       C
ATOM    596  C4    U H  28      50.881  20.076  56.430  1.00110.46           C
ANISOU  596  C4    U H  28    16640  12929  12400   2754   2719    985       C
ATOM    597  N3    U H  28      51.499  21.257  56.770  1.00114.10           N
ANISOU  597  N3    U H  28    16815  13489  13047   2725   2736   1081       N
ATOM    598  C2    U H  28      52.018  22.194  55.912  1.00119.25           C
ANISOU  598  C2    U H  28    17490  14118  13700   2780   2869   1167       C
ATOM    599  O2    U H  28      52.546  23.215  56.317  1.00115.99           O
ANISOU  599  O2    U H  28    16810  13799  13461   2743   2865   1252       O
ATOM    600  O4    U H  28      50.465  19.328  57.318  1.00103.92           O
ANISOU  600  O4    U H  28    15745  12139  11600   2696   2591    918       O
ATOM    601  OP2   U H  28      50.711  18.152  51.038  1.00114.25           O
ANISOU  601  OP2   U H  28    18718  12747  11944   3174   3329    945       O
ATOM    602  P     A H  29      56.299  20.424  52.277  1.00130.00           P
ANISOU  602  P     A H  29    19449  15038  14906   3562   4177   1711       P
ATOM    603  OP1   A H  29      57.404  20.317  51.285  1.00131.12           O
ANISOU  603  OP1   A H  29    19715  15076  15027   3763   4522   1874       O
ATOM    604  OP2   A H  29      55.429  19.251  52.579  1.00122.46           O
ANISOU  604  OP2   A H  29    18689  14031  13810   3520   4048   1560       O
ATOM    605  O5'   A H  29      56.906  20.909  53.670  1.00135.08           O
ANISOU  605  O5'   A H  29    19616  15853  15854   3482   4094   1807       O
ATOM    606  C5'   A H  29      57.471  22.204  53.824  1.00131.40           C
ANISOU  606  C5'   A H  29    18875  15487  15565   3441   4092   1920       C
ATOM    607  C4'   A H  29      57.672  22.536  55.280  1.00125.35           C
ANISOU  607  C4'   A H  29    17710  14877  15042   3316   3927   1954       C
ATOM    608  C3'   A H  29      58.320  21.443  56.109  1.00121.57           C
ANISOU  608  C3'   A H  29    17095  14413  14683   3375   4016   2031       C
ATOM    609  O3'   A H  29      59.726  21.406  55.997  1.00122.61           O
ANISOU  609  O3'   A H  29    17073  14541  14973   3515   4286   2258       O
ATOM    610  C2'   A H  29      57.830  21.749  57.513  1.00118.73           C
ANISOU  610  C2'   A H  29    16451  14195  14466   3190   3734   1957       C
ATOM    611  O2'   A H  29      58.568  22.825  58.071  1.00113.73           O
ANISOU  611  O2'   A H  29    15483  13674  14057   3130   3715   2094       O
ATOM    612  C1'   A H  29      56.406  22.221  57.231  1.00118.91           C
ANISOU  612  C1'   A H  29    16658  14212  14313   3062   3490   1752       C
ATOM    613  O4'   A H  29      56.384  22.744  55.918  1.00116.55           O
ANISOU  613  O4'   A H  29    16587  13825  13872   3134   3607   1763       O
ATOM    614  N9    A H  29      55.425  21.116  57.312  1.00119.98           N
ANISOU  614  N9    A H  29    17022  14288  14277   3039   3379   1587       N
ATOM    615  C4    A H  29      54.902  20.550  58.456  1.00112.03           C
ANISOU  615  C4    A H  29    15890  13349  13325   2937   3190   1499       C
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ATOM    616  C5    A H  29      54.023  19.560  58.035  1.00115.43           C
ANISOU  616  C5    A H  29    16632  13684  13542   2952   3142   1360       C
ATOM    617  N7    A H  29      53.999  19.498  56.647  1.00114.36           N
ANISOU  617  N7    A H  29    16822  13416  13213   3058   3296   1359       N
ATOM    618  C8    A H  29      54.835  20.438  56.270  1.00117.05           C
ANISOU  618  C8    A H  29    17036  13780  13658   3109   3435   1494       C
ATOM    619  N3    A H  29      55.178  20.892  59.727  1.00 99.41           N
ANISOU  619  N3    A H  29    13949  11882  11941   2838   3071   1541       N
ATOM    620  C2    A H  29      54.484  20.139  60.570  1.00 96.12           C
ANISOU  620  C2    A H  29    13517  11496  11508   2759   2903   1426       C
ATOM    621  N1    A H  29      53.610  19.155  60.317  1.00103.63           N
ANISOU  621  N1    A H  29    14730  12371  12274   2766   2839   1290       N
ATOM    622  C6    A H  29      53.344  18.832  59.041  1.00108.14           C
ANISOU  622  C6    A H  29    15647  12809  12631   2859   2951   1252       C
ATOM    623  N6    A H  29      52.464  17.849  58.836  1.00107.86           N
ANISOU  623  N6    A H  29    15872  12696  12412   2851   2870   1120       N
ATOM    624  P     C H  30      60.461  19.983  56.018  1.00128.39           P
ANISOU  624  P     C H  30    17876  15193  15713   3681   4525   2353       P
ATOM    625  OP1   C H  30      59.596  19.079  55.215  1.00131.15           O
ANISOU  625  OP1   C H  30    18647  15403  15783   3736   4539   2189       O
ATOM    626  O5'   C H  30      60.373  19.510  57.533  1.00139.26           O
ANISOU  626  O5'   C H  30    18976  16684  17254   3565   4343   2328       O
ATOM    627  C5'   C H  30      60.958  20.262  58.587  1.00132.75           C
ANISOU  627  C5'   C H  30    17747  16003  16687   3462   4247   2443       C
ATOM    628  C4'   C H  30      60.527  19.709  59.921  1.00125.04           C
ANISOU  628  C4'   C H  30    16603  15113  15795   3336   4036   2357       C
ATOM    629  C3'   C H  30      60.889  18.251  60.161  1.00134.74           C
ANISOU  629  C3'   C H  30    17892  16284  17020   3449   4178   2393       C
ATOM    630  O3'   C H  30      62.211  18.105  60.656  1.00144.00           O
ANISOU  630  O3'   C H  30    18785  17503  18426   3522   4352   2627       O
ATOM    631  C2'   C H  30      59.805  17.771  61.127  1.00129.27           C
ANISOU  631  C2'   C H  30    17189  15644  16282   3299   3897   2198       C
ATOM    632  O2'   C H  30      60.126  18.112  62.470  1.00125.89           O
ANISOU  632  O2'   C H  30    16393  15356  16083   3171   3748   2259       O
ATOM    633  C1'   C H  30      58.599  18.608  60.691  1.00116.26           C
ANISOU  633  C1'   C H  30    15705  13997  14474   3182   3685   2014       C
ATOM    634  O4'   C H  30      59.080  19.742  60.005  1.00114.02           O
ANISOU  634  O4'   C H  30    15381  13717  14227   3207   3775   2114       O
ATOM    635  N1    C H  30      57.630  17.893  59.815  1.00111.07           N
ANISOU  635  N1    C H  30    15445  13214  13542   3226   3676   1847       N
ATOM    636  C6    C H  30      57.501  18.214  58.490  1.00109.90           C
ANISOU  636  C6    C H  30    15574  12961  13222   3309   3796   1834       C
ATOM    637  C5    C H  30      56.608  17.598  57.696  1.00109.57           C
ANISOU  637  C5    C H  30    15903  12803  12927   3334   3772   1687       C
ATOM    638  C4    C H  30      55.768  16.604  58.273  1.00103.73           C
ANISOU  638  C4    C H  30    15256  12054  12103   3271   3611   1543       C
ATOM    639  N4    C H  30      54.862  15.961  57.531  1.00 95.98           N
ANISOU  639  N4    C H  30    14641  10957  10871   3282   3569   1402       N
ATOM    640  N3    C H  30      55.865  16.291  59.564  1.00105.47           N
ANISOU  640  N3    C H  30    15204  12381  12491   3193   3495   1549       N
ATOM    641  C2    C H  30      56.773  16.925  60.350  1.00107.61           C
ANISOU  641  C2    C H  30    15108  12765  13012   3168   3523   1696       C
ATOM    642  O2    C H  30      56.886  16.646  61.541  1.00102.50           O
ANISOU  642  O2    C H  30    14214  12213  12518   3093   3415   1707       O
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ATOM    643  OP2   C H  30      61.903  20.151  55.725  1.00141.93           O
ANISOU  643  OP2   C H  30    19437  16900  17590   3832   4816   2608        O
ATOM    644  P     U H  31      63.143  16.893  60.166  1.00133.30           P
ANISOU  644  P     U H  31    17540  16038  17068   3746   4686   2777        P
ATOM    645  OP1   U H  31      64.030  16.554  61.311  1.00138.11           O
ANISOU  645  OP1   U H  31    17800  16743  17935   3728   4705   2943        O
ATOM    646  OP2   U H  31      63.746  17.222  58.853  1.00129.72           O
ANISOU  646  OP2   U H  31    17259  15485  16545   3911   4956   2895        O
ATOM    647  O5'   U H  31      62.115  15.705  59.933  1.00112.33           O
ANISOU  647  O5'   U H  31    15229  13281  14172   3769   4631   2564        O
ATOM    648  C5'   U H  31      62.504  14.369  60.190  1.00125.48           C
ANISOU  648  C5'   U H  31    16939  14889  15847   3880   4776   2611        C
ATOM    649  C4'   U H  31      61.591  13.690  61.182  1.00126.26           C
ANISOU  649  C4'   U H  31    17020  15037  15915   3746   4522   2434        C
ATOM    650  O4'   U H  31      60.260  14.250  61.084  1.00116.83           O
ANISOU  650  O4'   U H  31    15968  13861  14561   3594   4248   2210        O
ATOM    651  C3'   U H  31      61.400  12.201  60.934  1.00132.83           C
ANISOU  651  C3'   U H  31    18122  15748  16599   3864   4640   2371        C
ATOM    652  O3'   U H  31      62.404  11.412  61.529  1.00138.38           O
ANISOU  652  O3'   U H  31    18634  16466  17477   3959   4811   2542        O
ATOM    653  C2'   U H  31      60.014  11.922  61.475  1.00121.75           C
ANISOU  653  C2'   U H  31    16819  14375  15067   3700   4325   2125        C
ATOM    654  O2'   U H  31      60.047  11.762  62.883  1.00119.50           O
ANISOU  654  O2'   U H  31    16215  14221  14969   3579   4153   2131        O
ATOM    655  C1'   U H  31      59.295  13.222  61.136  1.00117.07           C
ANISOU  655  C1'   U H  31    16243  13827  14411   3573   4139   2027        C
ATOM    656  N1    U H  31      58.602  13.194  59.823  1.00117.09           N
ANISOU  656  N1    U H  31    16654  13693  14141   3630   4183   1910        N
ATOM    657  C2    U H  31      57.733  12.169  59.465  1.00114.35           C
ANISOU  657  C2    U H  31    16642  13239  13568   3645   4135   1751        C
ATOM    658  N3    U H  31      57.147  12.330  58.236  1.00116.79           N
ANISOU  658  N3    U H  31    17310  13428  13636   3681   4164   1662        N
ATOM    659  C4    U H  31      57.302  13.379  57.352  1.00117.70           C
ANISOU  659  C4    U H  31    17483  13523  13713   3703   4233   1707        C
ATOM    660  C5    U H  31      58.196  14.402  57.794  1.00115.58           C
ANISOU  660  C5    U H  31    16852  13374  13689   3688   4280   1867        C
ATOM    661  C6    U H  31      58.790  14.272  58.984  1.00112.21           C
ANISOU  661  C6    U H  31    16076  13062  13498   3650   4250   1961        C
ATOM    662  O2    U H  31      57.484  11.183  60.133  1.00113.85           O
ANISOU  662  O2    U H  31    16576  13178  13505   3627   4069   1694        O
ATOM    663  O4    U H  31      56.688  13.356  56.283  1.00120.09           O
ANISOU  663  O4    U H  31    18137  13709  13781   3729   4245   1612        O
ATOM    664  P     C H  32      63.517  10.754  60.589  1.00144.13           P
ANISOU  664  P     C H  32    19511  17059  18193   4216   5218   2736        P
ATOM    665  OP1   C H  32      64.781  10.754  61.373  1.00147.06           O
ANISOU  665  OP1   C H  32    19496  17520  18860   4256   5345   2986        O
ATOM    666  OP2   C H  32      63.455  11.451  59.275  1.00142.50           O
ANISOU  666  OP2   C H  32    19550  16761  17832   4292   5339   2731        O
ATOM    667  O5'   C H  32      62.995   9.262  60.356  1.00153.55           O
ANISOU  667  O5'   C H  32    21039  18119  19185   4304   5277   2608        O
ATOM    668  C5'   C H  32      61.879   8.733  61.066  1.00149.95           C
ANISOU  668  C5'   C H  32    20638  17696  18640   4157   4996   2394        C
ATOM    669  C4'   C H  32      61.098   7.753  60.222  1.00148.08           C
ANISOU  669  C4'   C H  32    20865  17293  18108   4231   5037   2232        C
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ATOM    670  O4'   C H  32      59.891   8.385  59.719  1.00139.55           O
ANISOU  670  O4'   C H  32    19997  16198  16829   4104   4810   2032        O
ATOM    671  C3'   C H  32      61.810   7.242  58.977  1.00158.76           C
ANISOU  671  C3'   C H  32    22516  18467  19337   4468   5404   2345        C
ATOM    672  O3'   C H  32      62.677   6.154  59.266  1.00170.36           O
ANISOU  672  O3'   C H  32    23940  19889  20901   4619   5637   2485        O
ATOM    673  C2'   C H  32      60.656   6.891  58.042  1.00148.35           C
ANISOU  673  C2'   C H  32    21669  17009  17688   4453   5320   2128        C
ATOM    674  O2'   C H  32      60.105   5.626  58.374  1.00146.06           O
ANISOU  674  O2'   C H  32    21556  16655  17284   4449   5255   2010        O
ATOM    675  C1'   C H  32      59.636   7.970  58.396  1.00136.77           C
ANISOU  675  C1'   C H  32    20088  15664  16213   4228   4969   1976        C
ATOM    676  N1    C H  32      59.722   9.164  57.522  1.00133.77           N
ANISOU  676  N1    C H  32    19755  15278  15795   4234   5014   2012        N
ATOM    677  C2    C H  32      59.058   9.173  56.294  1.00139.13           C
ANISOU  677  C2    C H  32    20853  15814  16196   4267   5037   1898        C
ATOM    678  N3    C H  32      59.112  10.274  55.498  1.00135.93           N
ANISOU  678  N3    C H  32    20489  15404  15754   4268   5071   1927        N
ATOM    679  C4    C H  32      59.799  11.347  55.900  1.00129.05           C
ANISOU  679  C4    C H  32    19256  14664  15114   4236   5080   2064        C
ATOM    680  C5    C H  32      60.482  11.377  57.154  1.00132.04           C
ANISOU  680  C5    C H  32    19207  15186  15775   4194   5048   2184        C
ATOM    681  C6    C H  32      60.411  10.278  57.923  1.00132.77           C
ANISOU  681  C6    C H  32    19265  15282  15898   4193   5015   2152        C
ATOM    682  O2    C H  32      58.444   8.155  55.961  1.00144.89           O
ANISOU  682  O2    C H  32    21913  16423  16717   4294   5025   1776        O
ATOM    683  N4    C H  32      59.829  12.409  55.093  1.00121.38           N
ANISOU  683  N4    C H  32    18338  13683  14099   4237   5113   2089        N
ATOM    684  P     U H  33      63.837   5.698  58.245  1.00176.68           P
ANISOU  684  P     U H  33    24904  20540  21687   4810   5976   2694        P
ATOM    685  OP1   U H  33      63.733   4.218  58.157  1.00177.43           O
ANISOU  685  OP1   U H  33    25255  20505  21653   4869   6034   2651        O
ATOM    686  OP2   U H  33      65.137   6.312  58.614  1.00175.29           O
ANISOU  686  OP2   U H  33    24339  20461  21803   4830   6088   2960        O
ATOM    687  O5'   U H  33      63.421   6.331  56.851  1.00157.06           O
ANISOU  687  O5'   U H  33    22768  17938  18970   4848   6028   2621        O
ATOM    688  C5'   U H  33      63.816   5.700  55.654  1.00165.20           C
ANISOU  688  C5'   U H  33    24155  18775  19840   4971   6226   2687        C
ATOM    689  C4'   U H  33      62.858   4.600  55.289  1.00169.79           C
ANISOU  689  C4'   U H  33    25151  19217  20146   4966   6156   2490        C
ATOM    690  O4'   U H  33      61.501   5.077  55.492  1.00161.83           O
ANISOU  690  O4'   U H  33    24229  18266  18992   4839   5904   2243        O
ATOM    691  C3'   U H  33      62.923   4.172  53.830  1.00181.79           C
ANISOU  691  C3'   U H  33    27125  20517  21431   5067   6311   2503        C
ATOM    692  O3'   U H  33      63.860   3.122  53.618  1.00186.78           O
ANISOU  692  O3'   U H  33    27831  21033  22104   5193   6525   2670        O
ATOM    693  C2'   U H  33      61.481   3.801  53.503  1.00177.88           C
ANISOU  693  C2'   U H  33    27001  19944  20642   4978   6109   2234        C
ATOM    694  O2'   U H  33      61.177   2.488  53.948  1.00180.18           O
ANISOU  694  O2'   U H  33    27418  20179  20865   4973   6066   2163        O
ATOM    695  C1'   U H  33      60.711   4.798  54.367  1.00167.81           C
ANISOU  695  C1'   U H  33    25460  18858  19443   4841   5876   2100        C
ATOM    696  N1    U H  33      60.480   6.089  53.674  1.00167.57           N
ANISOU  696  N1    U H  33    25461  18851  19359   4812   5851   2078        N
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ATOM    697  C2    U H  33      59.635   6.122  52.586  1.00172.16           C
ANISOU  697  C2    U H  33    26464  19296  19654   4785   5786   1937       C
ATOM    698  N3    U H  33      59.494   7.370  52.015  1.00169.46           N
ANISOU  698  N3    U H  33    26110  18990  19286   4757   5768   1931       N
ATOM    699  C4    U H  33      60.069   8.562  52.407  1.00160.02           C
ANISOU  699  C4    U H  33    24542  17948  18312   4753   5805   2045       C
ATOM    700  C5    U H  33      60.929   8.446  53.542  1.00154.12           C
ANISOU  700  C5    U H  33    23370  17331  17856   4775   5862   2191       C
ATOM    701  C6    U H  33      61.090   7.248  54.115  1.00157.84           C
ANISOU  701  C6    U H  33    23839  17772  18360   4801   5880   2201       C
ATOM    702  O2    U H  33      59.065   5.129  52.156  1.00173.50           O
ANISOU  702  O2    U H  33    26987  19323  19611   4779   5742   1832       O
ATOM    703  O4    U H  33      59.823   9.593  51.777  1.00158.77           O
ANISOU  703  O4    U H  33    24437  17800  18088   4725   5781   2020       O
ATOM    704  P     G H  34      65.314   3.421  52.996  1.00210.56           P
ANISOU  704  P     G H  34    27665  23389  28950   2451   8133  -1721       P
ATOM    705  OP1   G H  34      66.094   2.162  53.034  1.00217.02           O
ANISOU  705  OP1   G H  34    28456  24291  29713   2879   8595  -1574       O
ATOM    706  OP2   G H  34      65.901   4.651  53.577  1.00210.12           O
ANISOU  706  OP2   G H  34    27166  23578  29092   2117   7925  -1449       O
ATOM    707  O5'   G H  34      64.983   3.724  51.480  1.00219.92           O
ANISOU  707  O5'   G H  34    29228  24498  29832   2459   8222  -1790       O
ATOM    708  C5'   G H  34      63.924   3.029  50.843  1.00222.88           C
ANISOU  708  C5'   G H  34    30113  24628  29945   2504   8232  -2159       C
ATOM    709  C4'   G H  34      63.590   3.657  49.529  1.00227.59           C
ANISOU  709  C4'   G H  34    30940  25270  30263   2398   8209  -2154       C
ATOM    710  O4'   G H  34      62.710   4.782  49.770  1.00219.19           O
ANISOU  710  O4'   G H  34    29805  24171  29306   2105   7771  -2193       O
ATOM    711  C3'   G H  34      64.798   4.213  48.782  1.00236.87           C
ANISOU  711  C3'   G H  34    31912  26683  31403   2494   8469  -1770       C
ATOM    712  O3'   G H  34      65.327   3.372  47.736  1.00239.56           O
ANISOU  712  O3'   G H  34    32529  27046  31447   2762   8934  -1740       O
ATOM    713  C2'   G H  34      64.340   5.573  48.236  1.00235.52           C
ANISOU  713  C2'   G H  34    31718  26563  31204   2232   8188  -1684       C
ATOM    714  O2'   G H  34      64.267   5.619  46.837  1.00247.50           O
ANISOU  714  O2'   G H  34    33502  28157  32380   2284   8351  -1662       O
ATOM    715  C1'   G H  34      62.944   5.786  48.810  1.00215.25           C
ANISOU  715  C1'   G H  34    29280  23811  28695   2032   7787  -1961       C
ATOM    716  N9    G H  34      62.838   7.117  49.414  1.00191.37           N
ANISOU  716  N9    G H  34    26011  20761  25940   1796   7526  -1796       N
ATOM    717  C8    G H  34      63.153   7.567  50.675  1.00184.14           C
ANISOU  717  C8    G H  34    24805  19797  25362   1628   7393  -1730       C
ATOM    718  N7    G H  34      62.964   8.858  50.813  1.00183.77           N
ANISOU  718  N7    G H  34    24701  19680  25442   1392   7258  -1590       N
ATOM    719  C5    G H  34      62.527   9.284  49.562  1.00183.33           C
ANISOU  719  C5    G H  34    24863  19655  25138   1466   7301  -1515       C
ATOM    720  C4    G H  34      62.461   8.216  48.691  1.00184.15           C
ANISOU  720  C4    G H  34    25160  19868  24941   1688   7442  -1645       C
ATOM    721  N1    G H  34      61.779  10.515  47.734  1.00180.96           N
ANISOU  721  N1    G H  34    24820  19438  24499   1511   7336  -1260       N
ATOM    722  C2    G H  34      61.760   9.382  46.949  1.00181.15           C
ANISOU  722  C2    G H  34    24997  19621  24211   1678   7436  -1416       C
ATOM    723  N3    G H  34      62.098   8.185  47.391  1.00177.99           N
ANISOU  723  N3    G H  34    24608  19203  23815   1769   7521  -1628       N
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ATOM    724  C6    G H  34      62.158  10.572  49.078  1.00179.62           C
ANISOU  724  C6    G H  34    24462  19125  24660   1355   7267  -1318       C
ATOM    725  O6    G H  34      62.137  11.656  49.680  1.00172.90           O
ANISOU  725  O6    G H  34    23555  18110  24030   1141   7227  -1192       O
ATOM    726  N2    G H  34      61.366   9.527  45.673  1.00177.57           N
ANISOU  726  N2    G H  34    24714  19343  23414   1738   7487  -1335       N
ATOM    727  P     G H  35      64.463   2.568  46.640  1.00225.57           P
ANISOU  727  P     G H  35    31369  25113  29224   2753   9096  -2093       P
ATOM    728  OP1   G H  35      63.064   2.281  47.054  1.00216.53           O
ANISOU  728  OP1   G H  35    30466  23804  28001   2525   8764  -2491       O
ATOM    729  OP2   G H  35      65.334   1.415  46.299  1.00234.38           O
ANISOU  729  OP2   G H  35    32694  26156  30202   3105   9702  -2032       O
ATOM    730  O5'   G H  35      64.451   3.531  45.362  1.00218.33           O
ANISOU  730  O5'   G H  35    30495  24384  28075   2616   9037  -1942       O
ATOM    731  C5'   G H  35      65.649   3.980  44.723  1.00219.45           C
ANISOU  731  C5'   G H  35    30443  24714  28226   2769   9310  -1572       C
ATOM    732  C4'   G H  35      65.401   5.262  43.956  1.00221.21           C
ANISOU  732  C4'   G H  35    30584  25095  28371   2562   9068  -1418       C
ATOM    733  O4'   G H  35      64.587   6.149  44.775  1.00220.52           O
ANISOU  733  O4'   G H  35    30309  24955  28525   2323   8602  -1457       O
ATOM    734  C3'   G H  35      66.621   6.108  43.609  1.00225.03           C
ANISOU  734  C3'   G H  35    30739  25787  28975   2628   9221   -996       C
ATOM    735  O3'   G H  35      67.322   5.694  42.452  1.00232.58           O
ANISOU  735  O3'   G H  35    31877  26842  29652   2826   9635   -878       O
ATOM    736  C2'   G H  35      66.029   7.507  43.502  1.00222.32           C
ANISOU  736  C2'   G H  35    30282  25480  28708   2360   8857   -902       C
ATOM    737  O2'   G H  35      65.288   7.653  42.300  1.00221.11           O
ANISOU  737  O2'   G H  35    30431  25388  28194   2310   8830   -978       O
ATOM    738  C1'   G H  35      65.048   7.481  44.657  1.00222.39           C
ANISOU  738  C1'   G H  35    30270  25306  28922   2211   8507  -1138       C
ATOM    739  N9    G H  35      65.707   7.845  45.931  1.00224.51           N
ANISOU  739  N9    G H  35    30157  25566  29579   2131   8431   -996       N
ATOM    740  C8    G H  35      66.627   7.103  46.647  1.00226.34           C
ANISOU  740  C8    G H  35    30161  25882  29955   2278   8628   -914       C
ATOM    741  N7    G H  35      67.028   7.669  47.748  1.00223.22           N
ANISOU  741  N7    G H  35    29407  25553  29853   2084   8478   -778       N
ATOM    742  C5    G H  35      66.355   8.880  47.756  1.00215.68           C
ANISOU  742  C5    G H  35    28506  24471  28970   1796   8210   -793       C
ATOM    743  C6    G H  35      66.405   9.931  48.702  1.00205.92           C
ANISOU  743  C6    G H  35    27064  23188  27991   1449   8023   -706       C
ATOM    744  O6    G H  35      67.067  10.003  49.745  1.00199.18           O
ANISOU  744  O6    G H  35    25891  22462  27327   1265   8004   -610       O
ATOM    745  N1    G H  35      65.569  10.974  48.323  1.00208.68           N
ANISOU  745  N1    G H  35    27628  23335  28327   1301   7886   -718       N
ATOM    746  C2    G H  35      64.793  11.002  47.189  1.00212.34           C
ANISOU  746  C2    G H  35    28379  23753  28548   1469   7882   -762       C
ATOM    747  N2    G H  35      64.055  12.105  47.002  1.00213.09           N
ANISOU  747  N2    G H  35    28605  23691  28668   1350   7780   -677       N
ATOM    748  N3    G H  35      64.736  10.028  46.299  1.00215.13           N
ANISOU  748  N3    G H  35    28895  24220  28624   1719   8005   -860       N
ATOM    749  C4    G H  35      65.541   9.006  46.645  1.00218.68           C
ANISOU  749  C4    G H  35    29221  24770  29098   1866   8185   -892       C
ATOM    750  P     A H  36      68.829   6.205  42.213  1.00259.37           P
ANISOU  750  P     A H  36    34898  30484  33165   2976   9904   -414       P
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ATOM    751  OP1   A H  36      69.209   5.905  40.807  1.00260.71           O
ANISOU  751  OP1   A H  36    35357  30715  32986   3136  10275   -352        O
ATOM    752  OP2   A H  36      69.659   5.724  43.348  1.00259.61           O
ANISOU  752  OP2   A H  36    34573  30596  33473   3140  10036   -237        O
ATOM    753  O5'   A H  36      68.743   7.788  42.354  1.00234.92           O
ANISOU  753  O5'   A H  36    31514  27493  30253   2664   9543   -225        O
ATOM    754  C5'   A H  36      69.418   8.462  43.405  1.00230.75           C
ANISOU  754  C5'   A H  36    30535  27088  30053   2509   9423      6        C
ATOM    755  C4'   A H  36      70.083   9.710  42.895  1.00229.71           C
ANISOU  755  C4'   A H  36    30208  27136  29936   2332   9441    325        C
ATOM    756  O4'   A H  36      70.240   9.611  41.458  1.00229.97           O
ANISOU  756  O4'   A H  36    30480  27231  29668   2512   9680    392        O
ATOM    757  C3'   A H  36      69.316  11.006  43.099  1.00229.42           C
ANISOU  757  C3'   A H  36    30214  26940  30016   1996   9128    290        C
ATOM    758  O3'   A H  36      69.507  11.536  44.403  1.00230.98           O
ANISOU  758  O3'   A H  36    30138  27123  30502   1702   8961    330        O
ATOM    759  C2'   A H  36      69.862  11.902  41.989  1.00228.32           C
ANISOU  759  C2'   A H  36    30081  26936  29736   1962   9289    565        C
ATOM    760  O2'   A H  36      71.098  12.483  42.380  1.00229.29           O
ANISOU  760  O2'   A H  36    29836  27296  29988   1778   9414    873        O
ATOM    761  C1'   A H  36      70.145  10.890  40.874  1.00228.16           C
ANISOU  761  C1'   A H  36    30247  27028  29417   2307   9573    548        C
ATOM    762  N9    A H  36      69.128  10.861  39.797  1.00223.84           N
ANISOU  762  N9    A H  36    30083  26388  28577   2363   9517    380        N
ATOM    763  C8    A H  36      68.555   9.741  39.242  1.00222.20           C
ANISOU  763  C8    A H  36    30211  26135  28080   2524   9609    112        C
ATOM    764  N7    A H  36      67.703   9.990  38.277  1.00222.35           N
ANISOU  764  N7    A H  36    30486  26193  27805   2465   9519     40        N
ATOM    765  C5    A H  36      67.725  11.375  38.167  1.00223.48           C
ANISOU  765  C5    A H  36    30453  26374  28086   2333   9387    308        C
ATOM    766  C6    A H  36      67.039  12.273  37.321  1.00223.76           C
ANISOU  766  C6    A H  36    30584  26490  27946   2270   9281    445        C
ATOM    767  N6    A H  36      66.162  11.897  36.385  1.00225.78           N
ANISOU  767  N6    A H  36    31088  26897  27803   2284   9235    332        N
ATOM    768  N1    A H  36      67.284  13.593  37.465  1.00223.29           N
ANISOU  768  N1    A H  36    30359  26378  28103   2169   9255    730        N
ATOM    769  C2    A H  36      68.160  13.980  38.399  1.00223.95           C
ANISOU  769  C2    A H  36    30206  26368  28519   2049   9304    829        C
ATOM    770  N3    A H  36      68.864  13.236  39.250  1.00224.96           N
ANISOU  770  N3    A H  36    30161  26506  28807   2052   9356    737        N
ATOM    771  C4    A H  36      68.605  11.924  39.087  1.00223.87           C
ANISOU  771  C4    A H  36    30181  26390  28488   2245   9404    491        C
ATOM    772  P     A H  37      68.278  12.147  45.244  1.00227.79           P
ANISOU  772  P     A H  37    29880  26390  30282   1454   8628    102        P
ATOM    773  OP1   A H  37      68.586  12.003  46.690  1.00224.01           O
ANISOU  773  OP1   A H  37    29126  25939  30048   1240   8516     62        O
ATOM    774  OP2   A H  37      67.009  11.586  44.721  1.00227.10           O
ANISOU  774  OP2   A H  37    30134  26125  30029   1660   8499   -163        O
ATOM    775  O5'   A H  37      68.315  13.699  44.892  1.00227.55           O
ANISOU  775  O5'   A H  37    29904  26271  30285   1179   8654    312        O
ATOM    776  C5'   A H  37      67.125  14.466  44.898  1.00224.25           C
ANISOU  776  C5'   A H  37    29751  25543  29913   1110   8504    232        C
ATOM    777  C4'   A H  37      66.712  14.854  43.502  1.00225.19           C
ANISOU  777  C4'   A H  37    30086  25689  29789   1310   8596    366        C
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ATOM    778  O4'   A H  37      67.088  13.825  42.555  1.00226.50           O
ANISOU  778  O4'   A H  37    30261  26108  29692   1584   8710    335       O
ATOM    779  C3'   A H  37      65.221  15.020  43.289  1.00224.92           C
ANISOU  779  C3'   A H  37    30293  25485  29680   1432   8414    275       C
ATOM    780  O3'   A H  37      64.761  16.276  43.744  1.00230.45           O
ANISOU  780  O3'   A H  37    31089  25903  30567   1265   8430    418       O
ATOM    781  C2'   A H  37      65.064  14.816  41.784  1.00222.02           C
ANISOU  781  C2'   A H  37    30047  25355  28956   1668   8508    382       C
ATOM    782  O2'   A H  37      65.348  16.013  41.078  1.00221.58           O
ANISOU  782  O2'   A H  37    30026  25291  28875   1638   8691    708       O
ATOM    783  C1'   A H  37      66.167  13.799  41.484  1.00225.08           C
ANISOU  783  C1'   A H  37    30326  25959  29237   1757   8669    316       C
ATOM    784  N9    A H  37      65.663  12.421  41.293  1.00224.28           N
ANISOU  784  N9    A H  37    30365  25934  28917   1925   8609     24       N
ATOM    785  C8    A H  37      65.933  11.306  42.048  1.00220.90           C
ANISOU  785  C8    A H  37    29889  25471  28572   1978   8618   -201       C
ATOM    786  N7    A H  37      65.360  10.208  41.620  1.00220.69           N
ANISOU  786  N7    A H  37    30103  25476  28272   2099   8631   -456       N
ATOM    787  C5    A H  37      64.669  10.617  40.489  1.00224.40           C
ANISOU  787  C5    A H  37    30752  26080  28428   2089   8591   -391       C
ATOM    788  C6    A H  37      63.855   9.920  39.574  1.00225.95           C
ANISOU  788  C6    A H  37    31235  26433  28182   2092   8581   -574       C
ATOM    789  N6    A H  37      63.589   8.614  39.653  1.00222.36           N
ANISOU  789  N6    A H  37    31016  25944  27528   2098   8651   -912       N
ATOM    790  N1    A H  37      63.314  10.623  38.556  1.00231.90           N
ANISOU  790  N1    A H  37    32039  27407  28667   2056   8524   -384       N
ATOM    791  C2    A H  37      63.583  11.934  38.473  1.00234.30           C
ANISOU  791  C2    A H  37    32158  27693  29172   2072   8521    -36       C
ATOM    792  N3    A H  37      64.327  12.700  39.271  1.00232.05           N
ANISOU  792  N3    A H  37    31670  27199  29300   2044   8566    126       N
ATOM    793  C4    A H  37      64.852  11.974  40.273  1.00226.92           C
ANISOU  793  C4    A H  37    30935  26407  28877   2027   8579    -71       C
ATOM    794  P     A H  38      64.177  16.441  45.231  1.00241.65           P
ANISOU  794  P     A H  38    32525  27009  32282   1061   8266    239       P
ATOM    795  OP1   A H  38      65.093  17.347  45.971  1.00241.79           O
ANISOU  795  OP1   A H  38    32485  26877  32508    666   8445    342       O
ATOM    796  OP2   A H  38      63.862  15.097  45.782  1.00237.69           O
ANISOU  796  OP2   A H  38    31935  26601  31775   1161   8031    -77       O
ATOM    797  O5'   A H  38      62.814  17.221  44.989  1.00223.74           O
ANISOU  797  O5'   A H  38    30491  24526  29994   1214   8240    376       O
ATOM    798  C5'   A H  38      62.798  18.373  44.163  1.00227.04           C
ANISOU  798  C5'   A H  38    31050  24874  30342   1278   8495    725       C
ATOM    799  C4'   A H  38      62.102  18.126  42.845  1.00229.74           C
ANISOU  799  C4'   A H  38    31416  25527  30347   1621   8447    883       C
ATOM    800  O4'   A H  38      62.712  17.030  42.116  1.00233.72           O
ANISOU  800  O4'   A H  38    31803  26395  30604   1687   8382    730       O
ATOM    801  C3'   A H  38      60.640  17.733  42.903  1.00226.80           C
ANISOU  801  C3'   A H  38    31076  25242  29854   1826   8203    842       C
ATOM    802  O3'   A H  38      59.798  18.826  43.215  1.00226.91           O
ANISOU  802  O3'   A H  38    31222  24984  30010   1921   8325   1122       O
ATOM    803  C2'   A H  38      60.414  17.153  41.510  1.00230.46           C
ANISOU  803  C2'   A H  38    31498  26185  29881   2019   8146    918       C
ATOM    804  O2'   A H  38      60.258  18.192  40.556  1.00233.12           O
ANISOU  804  O2'   A H  38    31880  26607  30087   2183   8363   1356       O
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ATOM    805  C1'   A H  38      61.751  16.452  41.250  1.00234.03           C
ANISOU  805  C1'   A H  38    31885  26740  30297   1903   8232    726       C
ATOM    806  N9    A H  38      61.670  14.988  41.459  1.00232.77           N
ANISOU  806  N9    A H  38    31704  26734  30003   1890   8042    340       N
ATOM    807  C8    A H  38      61.987  14.226  42.560  1.00230.71           C
ANISOU  807  C8    A H  38    31385  26313  29962   1780   7945     32       C
ATOM    808  N7    A H  38      61.791  12.938  42.400  1.00227.15           N
ANISOU  808  N7    A H  38    30992  26022  29292   1828   7856   -256       N
ATOM    809  C5    A H  38      61.295  12.841  41.107  1.00227.16           C
ANISOU  809  C5    A H  38    31106  26333  28873   1915   7876   -158       C
ATOM    810  C6    A H  38      60.879  11.746  40.328  1.00224.56           C
ANISOU  810  C6    A H  38    30937  26282  28105   1914   7851   -374       C
ATOM    811  N6    A H  38      60.901  10.481  40.758  1.00221.79           N
ANISOU  811  N6    A H  38    30704  25871  27694   1868   7838   -747       N
ATOM    812  N1    A H  38      60.438  11.996  39.073  1.00225.80           N
ANISOU  812  N1    A H  38    31155  26786  27851   1932   7875   -186       N
ATOM    813  C2    A H  38      60.416  13.262  38.639  1.00227.61           C
ANISOU  813  C2    A H  38    31275  27061  28145   2023   7933    225       C
ATOM    814  N3    A H  38      60.780  14.372  39.277  1.00229.34           N
ANISOU  814  N3    A H  38    31388  26973  28778   2064   8008    457       N
ATOM    815  C4    A H  38      61.214  14.092  40.520  1.00230.05           C
ANISOU  815  C4    A H  38    31436  26736  29238   1973   7969    228       C
ATOM    816  P     C H  39      58.203  18.706  43.070  1.00229.51           P
ANISOU  816  P     C H  39    31535  25505  30163   2200   8135   1270       P
ATOM    817  OP1   C H  39      57.857  19.107  41.682  1.00232.06           O
ANISOU  817  OP1   C H  39    31817  26215  30139   2456   8245   1678       O
ATOM    818  OP2   C H  39      57.599  19.442  44.213  1.00229.21           O
ANISOU  818  OP2   C H  39    31632  25003  30456   2191   8226   1341       O
ATOM    819  O5'   C H  39      57.890  17.149  43.240  1.00207.32           O
ANISOU  819  O5'   C H  39    28602  23005  27164   2130   7748    836       O
ATOM    820  C5'   C H  39      57.095  16.467  42.280  1.00207.38           C
ANISOU  820  C5'   C H  39    28534  23543  26717   2255   7559    872       C
ATOM    821  C4'   C H  39      57.266  14.969  42.355  1.00204.27           C
ANISOU  821  C4'   C H  39    28134  23336  26142   2094   7338    392       C
ATOM    822  O4'   C H  39      58.637  14.630  42.667  1.00201.91           O
ANISOU  822  O4'   C H  39    27852  22808  26055   1963   7477    162       O
ATOM    823  C3'   C H  39      56.453  14.258  43.421  1.00203.13           C
ANISOU  823  C3'   C H  39    27986  23098  26098   2019   7065     86       C
ATOM    824  O3'   C H  39      55.122  14.036  42.991  1.00208.78           O
ANISOU  824  O3'   C H  39    28646  24230  26449   2084   6859    203       O
ATOM    825  C2'   C H  39      57.238  12.968  43.657  1.00195.56           C
ANISOU  825  C2'   C H  39    27079  22107  25119   1864   7029   -376       C
ATOM    826  O2'   C H  39      56.871  11.969  42.718  1.00190.70           O
ANISOU  826  O2'   C H  39    26546  21908  24002   1812   6958   -538       O
ATOM    827  C1'   C H  39      58.680  13.405  43.367  1.00196.39           C
ANISOU  827  C1'   C H  39    27166  22068  25387   1855   7314   -267       C
ATOM    828  N1    C H  39      59.518  13.565  44.581  1.00189.84           N
ANISOU  828  N1    C H  39    26270  20859  25002   1732   7371   -388       N
ATOM    829  C2    C H  39      59.897  12.430  45.316  1.00185.38           C
ANISOU  829  C2    C H  39    25675  20237  24525   1661   7292   -743       C
ATOM    830  N3    C H  39      60.677  12.592  46.415  1.00185.64           N
ANISOU  830  N3    C H  39    25584  20030  24920   1524   7335   -800       N
ATOM    831  C4    C H  39      61.092  13.809  46.785  1.00184.10           C
ANISOU  831  C4    C H  39    25346  19635  24968   1386   7459   -571       C
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ATOM    832  C5    C H  39      60.733  14.975  46.047  1.00184.66           C
ANISOU  832  C5    C H  39    25523  19672  24967   1450   7591   -243       C
ATOM    833  C6    C H  39      59.958  14.806  44.966  1.00186.55           C
ANISOU  833  C6    C H  39    25833  20173  24875   1660   7539   -139       C
ATOM    834  O2    C H  39      59.502  11.304  44.960  1.00181.05           O
ANISOU  834  O2    C H  39    25222  19873  23695   1700   7210   -986       O
ATOM    835  N4    C H  39      61.859  13.913  47.878  1.00180.11           N
ANISOU  835  N4    C H  39    24708  18977  24749   1160   7489   -641       N
ATOM    836  P     A H  40      53.903  14.025  44.036  1.00203.00           P
ANISOU  836  P     A H  40    31511  25661  19957   3180   1255    102       P
ATOM    837  OP1   A H  40      53.064  15.229  43.802  1.00198.93           O
ANISOU  837  OP1   A H  40    30968  25421  19194   3429    998    530       O
ATOM    838  OP2   A H  40      54.442  13.754  45.396  1.00202.82           O
ANISOU  838  OP2   A H  40    31149  25202  20711   2993   1427     53       O
ATOM    839  O5'   A H  40      53.052  12.760  43.584  1.00182.18           O
ANISOU  839  O5'   A H  40    28883  23316  17021   2988    826   -437       O
ATOM    840  C5'   A H  40      52.486  11.893  44.550  1.00178.18           C
ANISOU  840  C5'   A H  40    28000  22679  17020   2726    561   -744       C
ATOM    841  C4'   A H  40      52.982  10.480  44.384  1.00177.39           C
ANISOU  841  C4'   A H  40    27953  22416  17029   2485    706  -1259       C
ATOM    842  O4'   A H  40      54.428  10.472  44.249  1.00172.85           O
ANISOU  842  O4'   A H  40    27588  21513  16573   2509   1283  -1192       O
ATOM    843  C3'   A H  40      52.717   9.550  45.556  1.00174.03           C
ANISOU  843  C3'   A H  40    27126  21715  17282   2212    594  -1495       C
ATOM    844  O3'   A H  40      51.391   9.048  45.569  1.00180.56           O
ANISOU  844  O3'   A H  40    27739  22790  18075   2101     92  -1764       O
ATOM    845  C2'   A H  40      53.785   8.478  45.378  1.00164.00           C
ANISOU  845  C2'   A H  40    25967  20134  16210   2051    981  -1825       C
ATOM    846  O2'   A H  40      53.396   7.533  44.391  1.00159.50           O
ANISOU  846  O2'   A H  40    25547  19784  15272   1946    830  -2334       O
ATOM    847  C1'   A H  40      54.960   9.307  44.846  1.00166.67           C
ANISOU  847  C1'   A H  40    26632  20373  16322   2256   1449  -1525       C
ATOM    848  N9    A H  40      55.862   9.710  45.938  1.00152.62           N
ANISOU  848  N9    A H  40    24659  18173  15158   2256   1763  -1219       N
ATOM    849  C8    A H  40      55.765  10.819  46.737  1.00143.73           C
ANISOU  849  C8    A H  40    23356  17003  14253   2381   1728   -793       C
ATOM    850  N7    A H  40      56.707  10.890  47.642  1.00139.20           N
ANISOU  850  N7    A H  40    22617  16044  14231   2339   2015   -660       N
ATOM    851  C5    A H  40      57.464   9.748  47.425  1.00144.21           C
ANISOU  851  C5    A H  40    23313  16435  15044   2183   2250   -982       C
ATOM    852  C4    A H  40      56.953   9.006  46.379  1.00150.22           C
ANISOU  852  C4    A H  40    24283  17443  15350   2123   2122  -1344       C
ATOM    853  N1    A H  40      59.119   8.073  47.591  1.00145.84           N
ANISOU  853  N1    A H  40    23473  16020  15921   1939   2765  -1371       N
ATOM    854  C2    A H  40      58.519   7.461  46.560  1.00146.80           C
ANISOU  854  C2    A H  40    23800  16402  15574   1885   2646  -1720       C
ATOM    855  N3    A H  40      57.435   7.846  45.888  1.00150.89           N
ANISOU  855  N3    A H  40    24463  17376  15494   1967   2311  -1751       N
ATOM    856  C6    A H  40      58.608   9.242  48.059  1.00143.53           C
ANISOU  856  C6    A H  40    23098  15909  15526   2085   2573  -1013       C
ATOM    857  N6    A H  40      59.200   9.862  49.087  1.00136.36           N
ANISOU  857  N6    A H  40    21975  14762  15075   2130   2683   -726       N
ATOM    858  P     G H  41      50.216   9.877  46.291  1.00211.32           P
ANISOU  858  P     G H  41    31322  26839  22131   2172   -298  -1471       P
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ATOM    859  OP1   G H  41      49.205  10.227  45.263  1.00214.05           O
ANISOU  859  OP1   G H  41    31779  27661  21890   2315   -736  -1529        O
ATOM    860  OP2   G H  41      50.821  10.958  47.114  1.00211.25           O
ANISOU  860  OP2   G H  41    31248  26610  22406   2299    -19   -980        O
ATOM    861  O5'   G H  41      49.570   8.818  47.287  1.00173.42           O
ANISOU  861  O5'   G H  41    26117  21846  17928   1890   -471  -1766        O
ATOM    862  C5'   G H  41      50.153   8.570  48.556  1.00174.21           C
ANISOU  862  C5'   G H  41    26004  21550  18639   1761   -196  -1630        C
ATOM    863  C4'   G H  41      51.014   7.327  48.559  1.00176.91           C
ANISOU  863  C4'   G H  41    26387  21589  19241   1575     91  -1939        C
ATOM    864  O4'   G H  41      52.364   7.673  48.139  1.00171.55           O
ANISOU  864  O4'   G H  41    26009  20764  18410   1692    507  -1796        O
ATOM    865  C3'   G H  41      51.198   6.669  49.923  1.00176.80           C
ANISOU  865  C3'   G H  41    26056  21211  19909   1388    220  -1887        C
ATOM    866  O3'   G H  41      50.132   5.795  50.281  1.00184.95           O
ANISOU  866  O3'   G H  41    26794  22245  21233   1198    -42  -2152        O
ATOM    867  C2'   G H  41      52.545   5.972  49.789  1.00168.95           C
ANISOU  867  C2'   G H  41    25204  19889  19101   1326    628  -1991        C
ATOM    868  O2'   G H  41      52.412   4.742  49.094  1.00169.61           O
ANISOU  868  O2'   G H  41    25307  19930  19207   1162    614  -2479        O
ATOM    869  C1'   G H  41      53.312   6.959  48.903  1.00169.14           C
ANISOU  869  C1'   G H  41    25588  20038  18639   1552    827  -1816        C
ATOM    870  N9    G H  41      54.106   7.926  49.696  1.00165.51           N
ANISOU  870  N9    G H  41    25097  19400  18388   1678   1061  -1378        N
ATOM    871  C8    G H  41      54.085   9.302  49.631  1.00160.16           C
ANISOU  871  C8    G H  41    24505  18879  17469   1895   1061  -1026        C
ATOM    872  N7    G H  41      54.910   9.879  50.469  1.00153.32           N
ANISOU  872  N7    G H  41    23545  17770  16938   1947   1300   -747        N
ATOM    873  C5    G H  41      55.526   8.826  51.133  1.00153.04           C
ANISOU  873  C5    G H  41    23368  17423  17357   1768   1440   -888        C
ATOM    874  C4    G H  41      55.037   7.617  50.662  1.00161.87           C
ANISOU  874  C4    G H  41    24487  18571  18444   1603   1316  -1258        C
ATOM    875  N1    G H  41      56.828   7.503  52.527  1.00148.55           N
ANISOU  875  N1    G H  41    22521  16284  17638   1554   1717   -911        N
ATOM    876  C2    G H  41      56.283   6.357  51.991  1.00156.96           C
ANISOU  876  C2    G H  41    23594  17369  18675   1401   1619  -1252        C
ATOM    877  N3    G H  41      55.368   6.364  51.040  1.00162.81           N
ANISOU  877  N3    G H  41    24469  18413  18979   1412   1413  -1469        N
ATOM    878  C6    G H  41      56.520   8.811  52.158  1.00144.05           C
ANISOU  878  C6    G H  41    22073  15960  16700   1739   1661   -720        C
ATOM    879  O6    G H  41      57.096   9.755  52.729  1.00131.44           O
ANISOU  879  O6    G H  41    20417  14277  15246   1854   1788   -452        O
ATOM    880  N2    G H  41      56.717   5.176  52.472  1.00155.47           N
ANISOU  880  N2    G H  41    23245  16868  18959   1238   1733  -1371        N
ATOM    881  P     A H  42      48.773   6.383  50.917  1.00194.91           P
ANISOU  881  P     A H  42    27772  23700  22586   1212   -395  -2000        P
ATOM    882  OP1   A H  42      48.213   5.405  51.887  1.00192.53           O
ANISOU  882  OP1   A H  42    27120  23170  22861    987   -416  -2119        O
ATOM    883  OP2   A H  42      47.886   6.802  49.804  1.00200.33           O
ANISOU  883  OP2   A H  42    28555  24782  22778   1323   -765  -2164        O
ATOM    884  O5'   A H  42      49.256   7.714  51.647  1.00177.51           O
ANISOU  884  O5'   A H  42    25600  21480  20367   1387   -240  -1492        O
ATOM    885  C5'   A H  42      49.572   7.732  53.029  1.00173.20           C
ANISOU  885  C5'   A H  42    24851  20691  20266   1315    -59  -1250        C
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ATOM    886  C4'   A H  42      50.425   6.557  53.450  1.00172.59           C
ANISOU  886  C4'   A H  42    24745  20279  20553   1155    198  -1362       C
ATOM    887  O4'   A H  42      51.789   6.745  52.996  1.00169.19           O
ANISOU  887  O4'   A H  42    24575  19714  19996   1254    493  -1296       O
ATOM    888  C3'   A H  42      50.517   6.368  54.958  1.00168.73           C
ANISOU  888  C3'   A H  42    24009  19585  20515   1061    309  -1123       C
ATOM    889  O3'   A H  42      49.509   5.493  55.432  1.00168.59           O
ANISOU  889  O3'   A H  42    23726  19519  20809    883    175  -1270       O
ATOM    890  C2'   A H  42      51.926   5.836  55.186  1.00163.89           C
ANISOU  890  C2'   A H  42    23488  18668  20114   1041    622  -1062       C
ATOM    891  O2'   A H  42      51.959   4.425  55.056  1.00163.75           O
ANISOU  891  O2'   A H  42    23385  18425  20407    865    688  -1317       O
ATOM    892  C1'   A H  42      52.699   6.469  54.030  1.00164.84           C
ANISOU  892  C1'   A H  42    23922  18864  19846   1202    735  -1106       C
ATOM    893  N9    A H  42      53.306   7.755  54.399  1.00156.58           N
ANISOU  893  N9    A H  42    22942  17852  18697   1378    847   -779       N
ATOM    894  C8    A H  42      53.000   8.964  53.822  1.00147.49           C
ANISOU  894  C8    A H  42    21918  16943  17178   1557    767   -661       C
ATOM    895  N7    A H  42      53.674   9.968  54.306  1.00136.80           N
ANISOU  895  N7    A H  42    20566  15528  15882   1684    927   -393       N
ATOM    896  C5    A H  42      54.475   9.368  55.259  1.00137.20           C
ANISOU  896  C5    A H  42    20493  15314  16322   1583   1083   -348       C
ATOM    897  C4    A H  42      54.271   8.002  55.336  1.00148.41           C
ANISOU  897  C4    A H  42    21837  16614  17937   1403   1043   -550       C
ATOM    898  N1    A H  42      56.061   9.079  56.964  1.00135.51           N
ANISOU  898  N1    A H  42    20074  14719  16696   1530   1331   -122       N
ATOM    899  C2    A H  42      55.756   7.768  56.928  1.00143.19           C
ANISOU  899  C2    A H  42    20997  15596  17814   1372   1284   -278       C
ATOM    900  N3    A H  42      54.883   7.123  56.153  1.00145.83           N
ANISOU  900  N3    A H  42    21376  16026  18005   1288   1159   -515       N
ATOM    901  C6    A H  42      55.419   9.913  56.118  1.00132.46           C
ANISOU  901  C6    A H  42    19815  14556  15958   1640   1254   -143       C
ATOM    902  N6    A H  42      55.681  11.211  56.113  1.00128.42           N
ANISOU  902  N6    A H  42    19331  14104  15358   1802   1331     27       N
ATOM    903  P     A H  43      48.274   6.058  56.283  1.00178.28           P
ANISOU  903  P     A H  43    24699  20899  22140    866    -10  -1121       P
ATOM    904  OP1   A H  43      47.728   7.263  55.597  1.00178.44           O
ANISOU  904  OP1   A H  43    24803  21222  21772   1034   -226  -1088       O
ATOM    905  OP2   A H  43      47.370   4.920  56.589  1.00173.07           O
ANISOU  905  OP2   A H  43    23777  20116  21867    665    -78  -1327       O
ATOM    906  O5'   A H  43      48.956   6.520  57.642  1.00160.54           O
ANISOU  906  O5'   A H  43    22403  18542  20055    895    207   -746       O
ATOM    907  C5'   A H  43      49.922   5.704  58.289  1.00152.96           C
ANISOU  907  C5'   A H  43    21439  17313  19367    820    437   -645       C
ATOM    908  C4'   A H  43      50.817   6.535  59.169  1.00150.92           C
ANISOU  908  C4'   A H  43    21226  17049  19067    927    577   -331       C
ATOM    909  C3'   A H  43      50.110   7.562  60.040  1.00151.81           C
ANISOU  909  C3'   A H  43    21209  17363  19109    970    503   -153       C
ATOM    910  O3'   A H  43      49.544   6.996  61.211  1.00156.93           O
ANISOU  910  O3'   A H  43    21654  17968  20006    839    539    -39       O
ATOM    911  C2'   A H  43      51.205   8.593  60.303  1.00139.11           C
ANISOU  911  C2'   A H  43    19716  15770  17370   1121    621     25       C
ATOM    912  O2'   A H  43      52.080   8.174  61.342  1.00125.39           O
ANISOU  912  O2'   A H  43    17932  13888  15821   1084    756    196       O
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ATOM    913  C1'   A H  43      51.969   8.567  58.977  1.00141.71           C
ANISOU  913  C1'   A H  43    20275  16025  17543   1211    673   -110       C
ATOM    914  O4'   A H  43      51.710   7.327  58.349  1.00148.77           O
ANISOU  914  O4'   A H  43    21182  16811  18533   1088    641   -332       O
ATOM    915  N9    A H  43      51.539   9.652  58.081  1.00138.60           N
ANISOU  915  N9    A H  43    19985  15833  16844   1355    575   -139       N
ATOM    916  C4    A H  43      52.171  10.860  57.962  1.00134.14           C
ANISOU  916  C4    A H  43    19510  15301  16158   1524    680      7       C
ATOM    917  C5    A H  43      51.440  11.572  57.030  1.00137.23           C
ANISOU  917  C5    A H  43    19972  15887  16281   1636    542    -16       C
ATOM    918  N7    A H  43      50.364  10.819  56.572  1.00140.58           N
ANISOU  918  N7    A H  43    20345  16422  16646   1535    314   -209       N
ATOM    919  C8    A H  43      50.461   9.691  57.231  1.00141.32           C
ANISOU  919  C8    A H  43    20335  16358  17002   1361    361   -290       C
ATOM    920  N3    A H  43      53.276  11.259  58.615  1.00124.19           N
ANISOU  920  N3    A H  43    18245  13904  15039   1576    867    143       N
ATOM    921  C2    A H  43      53.605  12.495  58.241  1.00124.28           C
ANISOU  921  C2    A H  43    18322  13957  14940   1745    952    240       C
ATOM    922  N1    A H  43      53.005  13.310  57.361  1.00120.76           N
ANISOU  922  N1    A H  43    17954  13666  14261   1873    883    268       N
ATOM    923  C6    A H  43      51.898  12.869  56.727  1.00129.55           C
ANISOU  923  C6    A H  43    19083  14947  15193   1829    655    152       C
ATOM    924  N6    A H  43      51.302  13.681  55.854  1.00133.43           N
ANISOU  924  N6    A H  43    19646  15615  15437   1976    546    213       N
ATOM    925  P     U H  44      48.198   7.603  61.845  1.00124.44           P
ANISOU  925  P     U H  44    17341  14040  15901    804    446     -4       P
ATOM    926  OP1   U H  44      47.711   6.664  62.883  1.00120.98           O
ANISOU  926  OP1   U H  44    16726  13492  15750    649    551     95       O
ATOM    927  O5'   U H  44      48.712   8.910  62.574  1.00137.19           O
ANISOU  927  O5'   U H  44    18990  15793  17342    928    516    188       O
ATOM    928  C5'   U H  44      47.786   9.838  63.106  1.00126.38           C
ANISOU  928  C5'   U H  44    17474  14598  15947    941    480    219       C
ATOM    929  C4'   U H  44      48.445  11.156  63.375  1.00113.87           C
ANISOU  929  C4'   U H  44    15943  13112  14209   1082    542    310       C
ATOM    930  C3'   U H  44      47.481  12.262  63.753  1.00126.48           C
ANISOU  930  C3'   U H  44    17372  14867  15817   1111    520    304       C
ATOM    931  O3'   U H  44      48.116  13.154  64.651  1.00121.48           O
ANISOU  931  O3'   U H  44    16720  14295  15141   1166    655    385       O
ATOM    932  C2'   U H  44      47.219  12.965  62.431  1.00130.05           C
ANISOU  932  C2'   U H  44    17882  15364  16166   1249    374    235       C
ATOM    933  O2'   U H  44      46.856  14.322  62.569  1.00138.25           O
ANISOU  933  O2'   U H  44    18809  16499  17220   1355    392    279       O
ATOM    934  C1'   U H  44      48.561  12.821  61.728  1.00124.71           C
ANISOU  934  C1'   U H  44    17449  14584  15352   1344    433    256       C
ATOM    935  O4'   U H  44      49.110  11.594  62.169  1.00116.76           O
ANISOU  935  O4'   U H  44    16487  13448  14430   1223    501    258       O
ATOM    936  N1    U H  44      48.436  12.746  60.270  1.00130.43           N
ANISOU  936  N1    U H  44    18318  15327  15913   1431    297    170       N
ATOM    937  C6    U H  44      47.633  11.781  59.713  1.00136.08           C
ANISOU  937  C6    U H  44    19004  16058  16641   1330    126      9       C
ATOM    938  C5    U H  44      47.477  11.650  58.395  1.00143.18           C
ANISOU  938  C5    U H  44    20041  17023  17337   1401    -30   -114       C
ATOM    939  C4    U H  44      48.163  12.548  57.516  1.00149.37           C
ANISOU  939  C4    U H  44    21036  17857  17859   1600     14    -18       C
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ATOM    940  N3    U H  44      48.956  13.491  58.147  1.00142.61           N
ANISOU  940  N3    U H  44    20182  16934  17069   1693    227    171       N
ATOM    941  C2    U H  44      49.136  13.652  59.498  1.00132.01           C
ANISOU  941  C2    U H  44    18676  15530  15951   1614    357    244       C
ATOM    942  O2    U H  44      49.859  14.520  59.962  1.00124.64           O
ANISOU  942  O2    U H  44    17735  14551  15072   1700    521    354       O
ATOM    943  O4    U H  44      48.103  12.531  56.282  1.00155.31           O
ANISOU  943  O4    U H  44    21962  18709  18342   1693   -107    -95       O
ATOM    944  OP2   U H  44      47.268   8.076  60.789  1.00126.92           O
ANISOU  944  OP2   U H  44    17636  14500  16086    848    232   -208       O
ATOM    945  P     C H  45      47.454  13.366  66.085  1.00101.67           P
ANISOU  945  P     C H  45    14033  11907  12692   1060    769    415       P
ATOM    946  OP1   C H  45      46.328  14.326  65.936  1.00101.53           O
ANISOU  946  OP1   C H  45    13835  11971  12770   1086    743    335       O
ATOM    947  O5'   C H  45      48.624  14.009  66.944  1.00 84.32           O
ANISOU  947  O5'   C H  45    11882   9765  10391   1121    883    458       O
ATOM    948  C5'   C H  45      49.416  13.187  67.768  1.00 83.97           C
ANISOU  948  C5'   C H  45    11913   9714  10278   1064    927    568       C
ATOM    949  C4'   C H  45      50.872  13.533  67.665  1.00 82.49           C
ANISOU  949  C4'   C H  45    11827   9465  10052   1176    926    575       C
ATOM    950  C3'   C H  45      51.220  15.002  67.646  1.00 81.52           C
ANISOU  950  C3'   C H  45    11636   9392   9946   1289    977    456       C
ATOM    951  O3'   C H  45      51.116  15.577  68.929  1.00 81.92           O
ANISOU  951  O3'   C H  45    11566   9631   9928   1245   1045    396       O
ATOM    952  C2'   C H  45      52.640  14.988  67.072  1.00 86.95           C
ANISOU  952  C2'   C H  45    12441   9912  10685   1397    975    471       C
ATOM    953  O2'   C H  45      53.605  14.675  68.070  1.00 98.86           O
ANISOU  953  O2'   C H  45    13942  11458  12163   1380    963    511       O
ATOM    954  C1'   C H  45      52.562  13.807  66.089  1.00 80.46           C
ANISOU  954  C1'   C H  45    11761   8936   9875   1367    916    541       C
ATOM    955  O4'   C H  45      51.429  13.039  66.428  1.00 80.25           O
ANISOU  955  O4'   C H  45    11681   8986   9826   1236    874    577       O
ATOM    956  N1    C H  45      52.451  14.249  64.684  1.00 82.04           N
ANISOU  956  N1    C H  45    12049   9042  10079   1471    913    488       N
ATOM    957  C6    C H  45      51.265  14.370  64.024  1.00 91.01           C
ANISOU  957  C6    C H  45    13160  10246  11173   1462    835    452       C
ATOM    958  C5    C H  45      51.234  14.793  62.753  1.00 87.16           C
ANISOU  958  C5    C H  45    12775   9714  10626   1580    810    436       C
ATOM    959  C4    C H  45      52.472  15.112  62.128  1.00 88.52           C
ANISOU  959  C4    C H  45    13092   9741  10800   1705    928    460       C
ATOM    960  N4    C H  45      52.486  15.535  60.861  1.00 99.90           N
ANISOU  960  N4    C H  45    14670  11152  12136   1836    942    480       N
ATOM    961  N3    C H  45      53.632  15.005  62.774  1.00 80.11           N
ANISOU  961  N3    C H  45    12025   8569   9844   1703   1031    473       N
ATOM    962  C2    C H  45      53.642  14.568  64.053  1.00 86.36           C
ANISOU  962  C2    C H  45    12702   9432  10679   1590    996    485       C
ATOM    963  O2    C H  45      54.672  14.426  64.727  1.00 89.80           O
ANISOU  963  O2    C H  45    13116   9803  11198   1591   1037    505       O
ATOM    964  OP2   C H  45      47.180  11.996  66.601  1.00 89.83           O
ANISOU  964  OP2   C H  45    12524  10347  11260    911    801    484       O
ATOM    965  P     U H  46      50.268  16.916  69.162  1.00 78.45           P
ANISOU  965  P     U H  46    10942   9295   9569   1258   1143    236       P
ATOM    966  OP1   U H  46      50.229  17.105  70.637  1.00 79.67           O
ANISOU  966  OP1   U H  46    11016   9671   9586   1171   1224    159       O
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ATOM    967  O5'   U H  46      51.244  18.052  68.673  1.00 77.60           O
ANISOU  967  O5'   U H  46    10806   9078   9601   1408   1187    135       O
ATOM    968  C5'   U H  46      52.462  18.267  69.351  1.00 77.62           C
ANISOU  968  C5'   U H  46    10803   9104   9585   1437   1198     59       C
ATOM    969  C4'   U H  46      53.411  19.049  68.494  1.00 78.83           C
ANISOU  969  C4'   U H  46    10951   9045   9953   1587   1255     12       C
ATOM    970  C3'   U H  46      52.845  20.305  67.883  1.00 91.60           C
ANISOU  970  C3'   U H  46    12438  10582  11783   1678   1379    -54       C
ATOM    971  O3'   U H  46      52.777  21.364  68.812  1.00115.20           O
ANISOU  971  O3'   U H  46    15204  13664  14902   1657   1491   -275       O
ATOM    972  C2'   U H  46      53.810  20.552  66.746  1.00 88.83           C
ANISOU  972  C2'   U H  46    12185   9982  11583   1830   1439     24       C
ATOM    973  O2'   U H  46      55.027  21.054  67.274  1.00 88.76           O
ANISOU  973  O2'   U H  46    12082   9898  11746   1870   1512   -122       O
ATOM    974  C1'   U H  46      54.049  19.120  66.254  1.00 83.64           C
ANISOU  974  C1'   U H  46    11760   9291  10729   1787   1310    177       C
ATOM    975  O4'   U H  46      53.806  18.264  67.342  1.00 84.30           O
ANISOU  975  O4'   U H  46    11835   9553  10642   1643   1205    171       O
ATOM    976  N1    U H  46      53.134  18.753  65.151  1.00 86.43           N
ANISOU  976  N1    U H  46    12231   9626  10983   1807   1250    300       N
ATOM    977  C6    U H  46      51.950  18.089  65.349  1.00 88.73           C
ANISOU  977  C6    U H  46    12510  10059  11146   1691   1133    325       C
ATOM    978  C5    U H  46      51.122  17.782  64.342  1.00 91.11           C
ANISOU  978  C5    U H  46    12883  10355  11380   1710   1037    391       C
ATOM    979  C4    U H  46      51.447  18.137  62.996  1.00 90.53           C
ANISOU  979  C4    U H  46    12947  10166  11284   1865   1055    466       C
ATOM    980  N3    U H  46      52.650  18.798  62.879  1.00 90.66           N
ANISOU  980  N3    U H  46    12994  10035  11417   1979   1223    474       N
ATOM    981  C2    U H  46      53.519  19.130  63.890  1.00 88.44           C
ANISOU  981  C2    U H  46    12601   9718  11285   1954   1323    382       C
ATOM    982  O2    U H  46      54.560  19.723  63.700  1.00 90.37           O
ANISOU  982  O2    U H  46    12841   9801  11695   2057   1471    366       O
ATOM    983  O4    U H  46      50.759  17.911  61.994  1.00 97.07           O
ANISOU  983  O4    U H  46    13859  11026  11996   1905    938    516       O
ATOM    984  OP2   U H  46      49.061  16.983  68.289  1.00 78.67           O
ANISOU  984  OP2   U H  46    10914   9265   9710   1256   1112    248       O
ATOM    985  P     A H  47      51.673  22.515  68.638  1.00 83.57           P
ANISOU  985  P     A H  47    12306   9774   9672    880   1062   1219       P
ATOM    986  OP1   A H  47      51.326  23.015  69.997  1.00 79.85           O
ANISOU  986  OP1   A H  47    11604   9444   9292    720   1030   1331       O
ATOM    987  OP2   A H  47      50.672  22.062  67.638  1.00 78.88           O
ANISOU  987  OP2   A H  47    11866   9093   9011    988    888   1022       O
ATOM    988  O5'   A H  47      52.475  23.680  67.934  1.00 94.02           O
ANISOU  988  O5'   A H  47    13842  11109  10771    989   1221   1248       O
ATOM    989  C5'   A H  47      51.904  24.348  66.841  1.00 94.47           C
ANISOU  989  C5'   A H  47    14143  11142  10609   1129   1149   1103       C
ATOM    990  C4'   A H  47      52.947  24.799  65.865  1.00 92.94           C
ANISOU  990  C4'   A H  47    14179  10885  10248   1259   1326   1112       C
ATOM    991  C3'   A H  47      52.376  25.665  64.764  1.00 91.56           C
ANISOU  991  C3'   A H  47    14267  10698   9826   1399   1256    973       C
ATOM    992  O3'   A H  47      52.351  27.009  65.161  1.00 95.99           O
ANISOU  992  O3'   A H  47    14825  11380  10266   1373   1290   1040       O
ATOM    993  C2'   A H  47      53.276  25.389  63.580  1.00 93.53           C
ANISOU  993  C2'   A H  47    14750  10819   9970   1539   1394    932       C
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ATOM    994  O2'   A H  47      54.452  26.177  63.679  1.00 95.77           O
ANISOU  994  O2'   A H  47    15066  11143  10178   1547   1607   1068       O
ATOM    995  C1'   A H  47      53.618  23.912  63.804  1.00 94.14           C
ANISOU  995  C1'   A H  47    14704  10801  10265   1495   1413    950       C
ATOM    996  O4'   A H  47      53.513  23.654  65.186  1.00 96.46           O
ANISOU  996  O4'   A H  47    14701  11187  10763   1327   1386   1071       O
ATOM    997  N9    A H  47      52.678  22.992  63.132  1.00 87.95           N
ANISOU  997  N9    A H  47    14003   9915   9500   1550   1232    776       N
ATOM    998  C4    A H  47      52.441  22.810  61.792  1.00 89.89           C
ANISOU  998  C4    A H  47    14521  10042   9590   1698   1186    619       C
ATOM    999  C5    A H  47      51.484  21.810  61.710  1.00 85.89           C
ANISOU  999  C5    A H  47    13973   9472   9187   1678    993    503       C
ATOM   1000  N7    A H  47      51.126  21.361  62.971  1.00 92.75           N
ANISOU 1000  N7    A H  47    14546  10421  10275   1524    922    586       N
ATOM   1001  C8    A H  47      51.864  22.086  63.775  1.00 89.50           C
ANISOU 1001  C8    A H  47    14010  10113   9884   1453   1070    747       C
ATOM   1002  N3    A H  47      53.002  23.471  60.768  1.00 97.67           N
ANISOU 1002  N3    A H  47    15765  10981  10363   1830   1300    583       N
ATOM   1003  C2    A H  47      52.516  23.026  59.610  1.00 96.63           C
ANISOU 1003  C2    A H  47    15862  10727  10125   1945   1203    415       C
ATOM   1004  N1    A H  47      51.601  22.078  59.379  1.00 93.38           N
ANISOU 1004  N1    A H  47    15449  10241   9788   1941   1015    290       N
ATOM   1005  C6    A H  47      51.052  21.437  60.430  1.00 85.64           C
ANISOU 1005  C6    A H  47    14199   9313   9026   1807    903    332       C
ATOM   1006  N6    A H  47      50.139  20.497  60.200  1.00 91.02           N
ANISOU 1006  N6    A H  47    14878   9921   9784   1801    712    211       N
ATOM   1007  P     C H  48      50.943  27.745  65.308  1.00 88.10           P
ANISOU 1007  P     C H  48    13819  10465   9188   1362   1090    946       P
ATOM   1008  OP1   C H  48      49.906  26.685  65.400  1.00 91.88           O
ANISOU 1008  OP1   C H  48    14200  10899   9812   1328    895    842       O
ATOM   1009  O5'   C H  48      50.822  28.468  63.890  1.00 83.44           O
ANISOU 1009  O5'   C H  48    13548   9818   8336   1537   1078    818       O
ATOM   1010  C5'   C H  48      51.982  29.026  63.280  1.00 85.91           C
ANISOU 1010  C5'   C H  48    14033  10103   8505   1620   1276    874       C
ATOM   1011  C4'   C H  48      51.874  29.085  61.777  1.00 88.52           C
ANISOU 1011  C4'   C H  48    14670  10323   8639   1790   1250    723       C
ATOM   1012  C3'   C H  48      50.514  29.461  61.226  1.00 83.74           C
ANISOU 1012  C3'   C H  48    14176   9722   7920   1849   1028    565       C
ATOM   1013  O3'   C H  48      50.313  30.857  61.229  1.00 84.44           O
ANISOU 1013  O3'   C H  48    14313   9903   7866   1863   1024    577       O
ATOM   1014  C2'   C H  48      50.528  28.854  59.833  1.00 83.42           C
ANISOU 1014  C2'   C H  48    14396   9530   7772   1989    999    419       C
ATOM   1015  O2'   C H  48      51.196  29.709  58.932  1.00 87.22           O
ANISOU 1015  O2'   C H  48    15108   9984   8047   2100   1121    410       O
ATOM   1016  C1'   C H  48      51.377  27.600  60.043  1.00 88.03           C
ANISOU 1016  C1'   C H  48    14884  10029   8533   1954   1116    478       C
ATOM   1017  O4'   C H  48      52.142  27.785  61.211  1.00 95.41           O
ANISOU 1017  O4'   C H  48    15593  11058   9600   1835   1259    659       O
ATOM   1018  N1    C H  48      50.563  26.382  60.233  1.00 89.95           N
ANISOU 1018  N1    C H  48    15013  10216   8949   1905    945    397       N
ATOM   1019  C6    C H  48      50.248  25.950  61.498  1.00 83.36           C
ANISOU 1019  C6    C H  48    13882   9459   8332   1756    891    482       C
ATOM   1020  C5    C H  48      49.528  24.834  61.691  1.00 81.14           C
ANISOU 1020  C5    C H  48    13491   9127   8211   1708    738    414       C
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ATOM   1021  C4    C H  48      49.105  24.120  60.532  1.00 91.45           C
ANISOU 1021  C4    C H  48    15004  10294   9451   1815    632    252       C
ATOM   1022  N4    C H  48      48.383  23.001  60.647  1.00 86.22           N
ANISOU 1022  N4    C H  48    14250   9572   8938   1772    474    179       N
ATOM   1023  N3    C H  48      49.418  24.537  59.299  1.00102.46           N
ANISOU 1023  N3    C H  48    16692  11609  10628   1958    686    169       N
ATOM   1024  C2    C H  48      50.152  25.662  59.113  1.00 96.02           C
ANISOU 1024  C2    C H  48    15983  10847   9653   2007    845    239       C
ATOM   1025  O2    C H  48      50.464  26.070  57.983  1.00 96.64           O
ANISOU 1025  O2    C H  48    16336  10855   9529   2137    901    166       O
ATOM   1026  OP2   C H  48      51.045  28.708  66.438  1.00 82.55           O
ANISOU 1026  OP2   C H  48    12959   9907   8500   1246   1144   1084       O
ATOM   1027  P     U H  49      48.830  31.448  61.317  1.00 86.04           P
ANISOU 1027  P     U H  49    14521  10175   7997   1866    803    486       P
ATOM   1028  OP1   U H  49      48.038  30.694  62.310  1.00 88.28           O
ANISOU 1028  OP1   U H  49    14543  10498   8503   1741    670    496       O
ATOM   1029  O5'   U H  49      48.233  31.106  59.887  1.00 84.48           O
ANISOU 1029  O5'   U H  49    14584   9851   7662   2008    668    300       O
ATOM   1030  C5'   U H  49      48.764  31.719  58.725  1.00 81.78           C
ANISOU 1030  C5'   U H  49    14381   9430   7263   2088    722    241       C
ATOM   1031  C4'   U H  49      48.131  31.157  57.479  1.00 91.66           C
ANISOU 1031  C4'   U H  49    15881  10556   8390   2209    584     78       C
ATOM   1032  C3'   U H  49      46.619  31.088  57.491  1.00 91.77           C
ANISOU 1032  C3'   U H  49    15925  10595   8347   2222    333    -34       C
ATOM   1033  O3'   U H  49      46.031  32.342  57.222  1.00 93.25           O
ANISOU 1033  O3'   U H  49    16064  10831   8536   2214    246    -55       O
ATOM   1034  C2'   U H  49      46.329  30.027  56.437  1.00 94.95           C
ANISOU 1034  C2'   U H  49    16549  10849   8679   2317    233   -182       C
ATOM   1035  O2'   U H  49      46.425  30.578  55.137  1.00 99.38           O
ANISOU 1035  O2'   U H  49    17258  11322   9179   2391    216   -241       O
ATOM   1036  C1'   U H  49      47.499  29.061  56.646  1.00 96.35           C
ANISOU 1036  C1'   U H  49    16669  10963   8978   2290    423   -106       C
ATOM   1037  O4'   U H  49      48.538  29.778  57.280  1.00 96.68           O
ANISOU 1037  O4'   U H  49    16629  11092   9012   2253    639     49       O
ATOM   1038  N1    U H  49      47.118  27.911  57.497  1.00100.40           N
ANISOU 1038  N1    U H  49    16931  11473   9744   2178    339    -85       N
ATOM   1039  C6    U H  49      47.398  27.875  58.844  1.00100.25           C
ANISOU 1039  C6    U H  49    16621  11560   9909   2044    414     58       C
ATOM   1040  C5    U H  49      47.063  26.851  59.639  1.00 95.14           C
ANISOU 1040  C5    U H  49    15745  10913   9492   1938    340     81       C
ATOM   1041  C4    U H  49      46.374  25.730  59.086  1.00 96.99           C
ANISOU 1041  C4    U H  49    16030  11033   9789   1963    175    -49       C
ATOM   1042  N3    U H  49      46.122  25.824  57.729  1.00100.46           N
ANISOU 1042  N3    U H  49    16768  11368  10035   2098    105   -190       N
ATOM   1043  C2    U H  49      46.456  26.863  56.885  1.00 99.01           C
ANISOU 1043  C2    U H  49    16827  11180   9612   2208    178   -217       C
ATOM   1044  O2    U H  49      46.191  26.866  55.689  1.00 87.40           O
ANISOU 1044  O2    U H  49    15622   9609   7976   2320    104   -345       O
ATOM   1045  O4    U H  49      46.012  24.733  59.710  1.00 97.62           O
ANISOU 1045  O4    U H  49    15918  11101  10073   1873     93    -42       O
ATOM   1046  OP2   U H  49      48.959  32.920  61.467  1.00 90.53           O
ANISOU 1046  OP2   U H  49    14950  10822   8625   1806    821    502       O
ATOM   1047  P     A H  50      44.488  32.613  57.553  1.00 91.47           P
ANISOU 1047  P     A H  50    15786  10673   8296   2197      8   -127       P
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ATOM   1048  OP1   A H  50      44.161  34.000  57.119  1.00 92.38           O
ANISOU 1048  OP1   A H  50    15865  10818   8417   2199    -22   -134       O
ATOM   1049  OP2   A H  50      44.247  32.236  58.963  1.00 79.58           O
ANISOU 1049  OP2   A H  50    14093   9278   6866   2102      2    -41       O
ATOM   1050  O5'   A H  50      43.720  31.653  56.540  1.00 76.62           O
ANISOU 1050  O5'   A H  50    14114   8666   6332   2289   -184   -290       O
ATOM   1051  C5'   A H  50      43.626  31.998  55.168  1.00 78.76           C
ANISOU 1051  C5'   A H  50    14547   8832   6546   2367   -233   -370       C
ATOM   1052  C4'   A H  50      42.919  30.935  54.368  1.00 84.87           C
ANISOU 1052  C4'   A H  50    15493   9485   7267   2430   -416   -515       C
ATOM   1053  C3'   A H  50      41.457  30.703  54.712  1.00 79.35           C
ANISOU 1053  C3'   A H  50    14745   8822   6584   2411   -681   -604       C
ATOM   1054  O3'   A H  50      40.631  31.618  54.026  1.00 79.24           O
ANISOU 1054  O3'   A H  50    14750   8806   6550   2437   -809   -643       O
ATOM   1055  C2'   A H  50      41.220  29.259  54.277  1.00 83.61           C
ANISOU 1055  C2'   A H  50    15385   9234   7148   2433   -795   -716       C
ATOM   1056  O2'   A H  50      40.900  29.197  52.899  1.00 88.62           O
ANISOU 1056  O2'   A H  50    16234   9746   7694   2513   -898   -818       O
ATOM   1057  C1'   A H  50      42.595  28.620  54.491  1.00 81.19           C
ANISOU 1057  C1'   A H  50    15060   8887   6900   2417   -549   -635       C
ATOM   1058  O4'   A H  50      43.551  29.653  54.576  1.00 89.52           O
ANISOU 1058  O4'   A H  50    16145  10009   7860   2438   -337   -532       O
ATOM   1059  N9    A H  50      42.688  27.826  55.726  1.00 87.56           N
ANISOU 1059  N9    A H  50    15556   9747   7966   2286   -516   -542       N
ATOM   1060  C4    A H  50      42.290  26.531  55.910  1.00 95.72           C
ANISOU 1060  C4    A H  50    16481  10711   9177   2231   -626   -584       C
ATOM   1061  C5    A H  50      42.614  26.223  57.214  1.00 87.94           C
ANISOU 1061  C5    A H  50    15199   9814   8400   2106   -535   -456       C
ATOM   1062  N7    A H  50      43.209  27.298  57.847  1.00 79.23           N
ANISOU 1062  N7    A H  50    14021   8832   7251   2081   -372   -334       N
ATOM   1063  C8    A H  50      43.238  28.224  56.920  1.00 85.60           C
ANISOU 1063  C8    A H  50    15074   9622   7827   2193   -366   -391       C
ATOM   1064  N3    A H  50      41.699  25.725  55.017  1.00105.14           N
ANISOU 1064  N3    A H  50    17828  11775  10345   2281   -792   -720       N
ATOM   1065  C2    A H  50      41.452  24.528  55.549  1.00 89.16           C
ANISOU 1065  C2    A H  50    15627   9717   8533   2197   -860   -719       C
ATOM   1066  N1    A H  50      41.711  24.091  56.778  1.00 78.20           N
ANISOU 1066  N1    A H  50    13948   8405   7361   2078   -786   -606       N
ATOM   1067  C6    A H  50      42.308  24.929  57.650  1.00 83.34           C
ANISOU 1067  C6    A H  50    14455   9184   8028   2027   -620   -469       C
ATOM   1068  N6    A H  50      42.558  24.501  58.887  1.00 83.42           N
ANISOU 1068  N6    A H  50    14179   9267   8250   1902   -552   -353       N
ATOM   1069  P     A H  51      39.204  32.040  54.606  1.00 95.29           P
ANISOU 1069  P     A H  51    16650  10929   8627   2399  -1029   -676       P
ATOM   1070  OP1   A H  51      38.569  33.057  53.714  1.00 97.00           O
ANISOU 1070  OP1   A H  51    16916  11124   8818   2439  -1112   -707       O
ATOM   1071  OP2   A H  51      39.428  32.343  56.042  1.00105.63           O
ANISOU 1071  OP2   A H  51    17754  12384   9996   2317   -933   -565       O
ATOM   1072  O5'   A H  51      38.340  30.717  54.463  1.00 80.63           O
ANISOU 1072  O5'   A H  51    14859   8995   6783   2408  -1267   -803       O
ATOM   1073  C5'   A H  51      37.826  30.330  53.208  1.00 69.24           C
ANISOU 1073  C5'   A H  51    13588   7418   5302   2469  -1414   -914       C
ATOM   1074  C4'   A H  51      37.171  28.977  53.275  1.00 76.10           C
ANISOU 1074  C4'   A H  51    14464   8213   6237   2448  -1612  -1016       C
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ATOM   1075  C3'   A H  51      36.107  28.827  54.340  1.00 89.76           C
ANISOU 1075  C3'   A H  51    15882  10038   8185   2339  -1765   -979       C
ATOM   1076  O3'   A H  51      34.855  29.355  53.978  1.00 95.34           O
ANISOU 1076  O3'   A H  51    16620  10757   8849   2367  -2000  -1048       O
ATOM   1077  C2'   A H  51      36.099  27.331  54.599  1.00 86.86           C
ANISOU 1077  C2'   A H  51    15402   9595   8007   2269  -1811   -998       C
ATOM   1078  O2'   A H  51      35.424  26.648  53.554  1.00 80.92           O
ANISOU 1078  O2'   A H  51    14835   8707   7202   2321  -2019  -1134       O
ATOM   1079  C1'   A H  51      37.582  27.014  54.487  1.00 79.77           C
ANISOU 1079  C1'   A H  51    14598   8652   7061   2293  -1548   -948       C
ATOM   1080  O4'   A H  51      38.159  27.984  53.637  1.00 77.16           O
ANISOU 1080  O4'   A H  51    14530   8305   6484   2404  -1442   -966       O
ATOM   1081  N9    A H  51      38.273  27.074  55.788  1.00 81.19           N
ANISOU 1081  N9    A H  51    14513   8944   7392   2195  -1357   -801       N
ATOM   1082  C4    A H  51      38.455  26.042  56.672  1.00 82.65           C
ANISOU 1082  C4    A H  51    14466   9135   7803   2089  -1324   -743       C
ATOM   1083  C5    A H  51      39.193  26.568  57.715  1.00 80.03           C
ANISOU 1083  C5    A H  51    13954   8921   7533   2021  -1125   -600       C
ATOM   1084  N7    A H  51      39.476  27.899  57.491  1.00 89.35           N
ANISOU 1084  N7    A H  51    15250  10167   8530   2084  -1035   -570       N
ATOM   1085  C8    A H  51      38.906  28.155  56.338  1.00 82.57           C
ANISOU 1085  C8    A H  51    14634   9232   7506   2187  -1177   -693       C
ATOM   1086  N3    A H  51      38.016  24.778  56.555  1.00 84.82           N
ANISOU 1086  N3    A H  51    14700   9318   8210   2054  -1457   -808       N
ATOM   1087  C2    A H  51      38.385  24.060  57.616  1.00 88.30           C
ANISOU 1087  C2    A H  51    14890   9799   8863   1944  -1372   -716       C
ATOM   1088  N1    A H  51      39.085  24.433  58.697  1.00 85.50           N
ANISOU 1088  N1    A H  51    14338   9555   8593   1867  -1186   -574       N
ATOM   1089  C6    A H  51      39.509  25.715  58.777  1.00 83.07           C
ANISOU 1089  C6    A H  51    14083   9337   8144   1903  -1058   -512       C
ATOM   1090  N6    A H  51      40.214  26.101  59.839  1.00 80.80           N
ANISOU 1090  N6    A H  51    13611   9156   7935   1822   -878   -369       N
ATOM   1091  P     A H  52      33.989  29.993  55.152  1.00 90.27           P
ANISOU 1091  P     A H  52    15677  10265   8356   2282  -2069   -971       P
ATOM   1092  OP1   A H  52      32.765  30.665  54.641  1.00 83.74           O
ANISOU 1092  OP1   A H  52    14914   9444   7461   2331  -2297  -1041       O
ATOM   1093  OP2   A H  52      34.981  30.747  55.977  1.00 83.24           O
ANISOU 1093  OP2   A H  52    14690   9486   7451   2252  -1810   -842       O
ATOM   1094  O5'   A H  52      33.553  28.713  55.989  1.00 85.80           O
ANISOU 1094  O5'   A H  52    14847   9695   8059   2164  -2152   -954       O
ATOM   1095  C5'   A H  52      32.630  27.795  55.439  1.00 83.12           C
ANISOU 1095  C5'   A H  52    14542   9256   7785   2163  -2394  -1058       C
ATOM   1096  C4'   A H  52      32.442  26.596  56.330  1.00 80.02           C
ANISOU 1096  C4'   A H  52    13892   8866   7647   2045  -2427  -1024       C
ATOM   1097  C3'   A H  52      31.947  26.869  57.737  1.00 76.20           C
ANISOU 1097  C3'   A H  52    13067   8527   7359   1933  -2419   -921       C
ATOM   1098  O3'   A H  52      30.549  27.110  57.788  1.00 80.02           O
ANISOU 1098  O3'   A H  52    13453   9041   7911   1919  -2656   -960       O
ATOM   1099  C2'   A H  52      32.384  25.606  58.460  1.00 81.93           C
ANISOU 1099  C2'   A H  52    13613   9231   8284   1832  -2354   -876       C
ATOM   1100  O2'   A H  52      31.551  24.517  58.084  1.00 83.10           O
ANISOU 1100  O2'   A H  52    13754   9285   8537   1811  -2578   -966       O
ATOM   1101  C1'   A H  52      33.759  25.379  57.831  1.00 80.00           C
ANISOU 1101  C1'   A H  52    13587   8905   7904   1896  -2152   -879       C
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ATOM   1102  O4'   A H  52      33.711  25.923  56.534  1.00 83.25           O
ANISOU 1102  O4'   A H  52    14310   9238   8082   2024  -2210   -975       O
ATOM   1103  N9    A H  52      34.821  26.081  58.572  1.00 84.91           N
ANISOU 1103  N9    A H  52    14133   9627   8503   1871  -1890   -754       N
ATOM   1104  C4    A H  52      35.449  25.670  59.729  1.00 83.71           C
ANISOU 1104  C4    A H  52    13746   9541   8519   1763  -1736   -638       C
ATOM   1105  C5    A H  52      36.360  26.661  60.048  1.00 77.05           C
ANISOU 1105  C5    A H  52    12924   8778   7573   1777  -1518   -544       C
ATOM   1106  N7    A H  52      36.310  27.685  59.118  1.00 84.10           N
ANISOU 1106  N7    A H  52    14059   9659   8237   1894  -1531   -599       N
ATOM   1107  C8    A H  52      35.390  27.294  58.259  1.00 83.98           C
ANISOU 1107  C8    A H  52    14164   9555   8190   1946  -1754   -724       C
ATOM   1108  N3    A H  52      35.236  24.541  60.418  1.00 85.68           N
ANISOU 1108  N3    A H  52    13788   9778   8988   1660  -1788   -617       N
ATOM   1109  C2    A H  52      36.020  24.465  61.492  1.00 88.42           C
ANISOU 1109  C2    A H  52    13944  10202   9450   1568  -1602   -490       C
ATOM   1110  N1    A H  52      36.941  25.338  61.922  1.00 90.64           N
ANISOU 1110  N1    A H  52    14220  10564   9655   1566  -1385   -386       N
ATOM   1111  C6    A H  52      37.131  26.468  61.203  1.00 80.22           C
ANISOU 1111  C6    A H  52    13111   9255   8113   1671  -1338   -411       C
ATOM   1112  N6    A H  52      38.042  27.335  61.628  1.00 80.98           N
ANISOU 1112  N6    A H  52    13204   9431   8134   1666  -1128   -306       N
ATOM   1113  P     A H  53      29.899  27.923  59.014  1.00 76.55           P
ANISOU 1113  P     A H  53    12728   8760   7598   1843  -2650   -865       P
ATOM   1114  OP1   A H  53      28.454  28.149  58.779  1.00 73.60           O
ANISOU 1114  OP1   A H  53    12307   8389   7268   1856  -2909   -924       O
ATOM   1115  OP2   A H  53      30.751  29.091  59.337  1.00 89.44           O
ANISOU 1115  OP2   A H  53    14398  10484   9102   1870  -2423   -781       O
ATOM   1116  O5'   A H  53      29.975  26.879  60.209  1.00 86.46           O
ANISOU 1116  O5'   A H  53    13689  10053   9109   1703  -2607   -792       O
ATOM   1117  C5'   A H  53      29.130  25.747  60.208  1.00 74.37           C
ANISOU 1117  C5'   A H  53    12054   8459   7745   1649  -2811   -847       C
ATOM   1118  C4'   A H  53      29.224  24.988  61.497  1.00 66.66           C
ANISOU 1118  C4'   A H  53    10777   7544   7005   1511  -2745   -759       C
ATOM   1119  C3'   A H  53      29.104  25.809  62.764  1.00 69.36           C
ANISOU 1119  C3'   A H  53    10877   8042   7436   1433  -2635   -643       C
ATOM   1120  O3'   A H  53      27.763  26.095  63.097  1.00 71.27           O
ANISOU 1120  O3'   A H  53    10962   8337   7782   1405  -2819   -655       O
ATOM   1121  C2'   A H  53      29.817  24.926  63.769  1.00 74.99           C
ANISOU 1121  C2'   A H  53    11396   8778   8318   1315  -2495   -557       C
ATOM   1122  O2'   A H  53      29.003  23.808  64.082  1.00 85.90           O
ANISOU 1122  O2'   A H  53    12608  10127   9905   1235  -2668   -585       O
ATOM   1123  C1'   A H  53      30.988  24.430  62.926  1.00 78.23           C
ANISOU 1123  C1'   A H  53    12042   9080   8603   1382  -2380   -592       C
ATOM   1124  O4'   A H  53      30.536  24.374  61.599  1.00 80.40           O
ANISOU 1124  O4'   A H  53    12564   9244   8739   1492  -2544   -719       O
ATOM   1125  N9    A H  53      32.101  25.394  62.970  1.00 83.91           N
ANISOU 1125  N9    A H  53    12866   9850   9164   1425  -2142   -522       N
ATOM   1126  C4    A H  53      33.103  25.485  63.906  1.00 77.24           C
ANISOU 1126  C4    A H  53    11897   9078   8374   1350  -1916   -400       C
ATOM   1127  C5    A H  53      33.866  26.570  63.537  1.00 69.20           C
ANISOU 1127  C5    A H  53    11051   8088   7155   1429  -1760   -372       C
ATOM   1128  N7    A H  53      33.363  27.147  62.393  1.00 76.23           N
ANISOU 1128  N7    A H  53    12171   8926   7868   1552  -1881   -476       N
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ATOM   1129  C8    A H  53      32.315  26.425  62.095  1.00 83.52           C
ANISOU 1129  C8    A H  53    13057   9790   8885   1544  -2109   -562       C
ATOM   1130  N3    A H  53      33.295  24.689  64.960  1.00 67.00           N
ANISOU 1130  N3    A H  53    10361   7814   7280   1223  -1864   -321       N
ATOM   1131  C2    A H  53      34.365  25.087  65.631  1.00 70.44           C
ANISOU 1131  C2    A H  53    10746   8316   7702   1179  -1636   -206       C
ATOM   1132  N1    A H  53      35.204  26.097  65.391  1.00 75.29           N
ANISOU 1132  N1    A H  53    11506   8964   8139   1242  -1465   -163       N
ATOM   1133  C6    A H  53      34.972  26.888  64.329  1.00 74.16           C
ANISOU 1133  C6    A H  53    11599   8786   7792   1371  -1521   -247       C
ATOM   1134  N6    A H  53      35.796  27.915  64.092  1.00 69.68           N
ANISOU 1134  N6    A H  53    11177   8253   7045   1433  -1353   -202       N
ATOM   1135  P     C H  54      27.390  27.343  64.040  1.00 74.84           P
ANISOU 1135  P     C H  54    11245   8937   8252   1374  -2741   -566       P
ATOM   1136  OP1   C H  54      25.935  27.158  64.342  1.00 70.15           O
ANISOU 1136  OP1   C H  54    10466   8365   7822   1332  -2963   -590       O
ATOM   1137  O5'   C H  54      28.247  27.075  65.359  1.00 77.35           O
ANISOU 1137  O5'   C H  54    11355   9338   8696   1250  -2522   -441       O
ATOM   1138  C5'   C H  54      27.653  26.459  66.488  1.00 64.13           C
ANISOU 1138  C5'   C H  54     9386   7722   7260   1119  -2567   -385       C
ATOM   1139  C4'   C H  54      28.616  26.341  67.631  1.00 61.43           C
ANISOU 1139  C4'   C H  54     8892   7453   6997   1011  -2342   -264       C
ATOM   1140  C3'   C H  54      28.921  27.605  68.411  1.00 57.47           C
ANISOU 1140  C3'   C H  54     8331   7075   6432    990  -2169   -166       C
ATOM   1141  O3'   C H  54      27.920  27.940  69.340  1.00 59.33           O
ANISOU 1141  O3'   C H  54     8337   7402   6805    916  -2229   -125       O
ATOM   1142  C2'   C H  54      30.223  27.225  69.084  1.00 56.87           C
ANISOU 1142  C2'   C H  54     8205   7018   6386    909  -1950    -68       C
ATOM   1143  O2'   C H  54      29.980  26.288  70.119  1.00 64.80           O
ANISOU 1143  O2'   C H  54     8952   8049   7619    770  -1970    -13       O
ATOM   1144  C1'   C H  54      30.925  26.491  67.950  1.00 56.29           C
ANISOU 1144  C1'   C H  54     8354   6815   6219    992  -1961   -144       C
ATOM   1145  O4'   C H  54      29.919  25.934  67.139  1.00 64.87           O
ANISOU 1145  O4'   C H  54     9496   7818   7333   1045  -2199   -261       O
ATOM   1146  N1    C H  54      31.703  27.464  67.158  1.00 62.12           N
ANISOU 1146  N1    C H  54     9345   7541   6716   1107  -1841   -154       N
ATOM   1147  C6    C H  54      31.309  27.944  65.946  1.00 66.42           C
ANISOU 1147  C6    C H  54    10120   8024   7093   1241  -1954   -259       C
ATOM   1148  C5    C H  54      32.040  28.871  65.312  1.00 73.04           C
ANISOU 1148  C5    C H  54    11177   8860   7715   1337  -1833   -259       C
ATOM   1149  C4    C H  54      33.217  29.337  65.957  1.00 67.54           C
ANISOU 1149  C4    C H  54    10458   8228   6976   1295  -1587   -144       C
ATOM   1150  N4    C H  54      33.993  30.256  65.404  1.00 67.67           N
ANISOU 1150  N4    C H  54    10678   8247   6786   1382  -1455   -133       N
ATOM   1151  N3    C H  54      33.594  28.887  67.134  1.00 69.89           N
ANISOU 1151  N3    C H  54    10533   8585   7438   1164  -1482    -40       N
ATOM   1152  C2    C H  54      32.853  27.961  67.766  1.00 59.95           C
ANISOU 1152  C2    C H  54     9058   7329   6392   1067  -1603    -43       C
ATOM   1153  O2    C H  54      33.187  27.523  68.877  1.00 54.94           O
ANISOU 1153  O2    C H  54     8214   6748   5911    940  -1510     55       O
ATOM   1154  OP2   C H  54      27.807  28.660  63.471  1.00 64.22           O
ANISOU 1154  OP2   C H  54    10107   7617   6677   1481  -2644   -568       O
ATOM   1155  P     A H  55      26.990  29.236  69.133  1.00 62.92           P
ANISOU 1155  P     A H  55     8825   7913   7170    992  -2304   -150       P
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ATOM   1156  OP1   A H  55      27.110  29.674  67.728  1.00 61.40           O
ANISOU 1156  OP1   A H  55     8922   7639   6767   1142  -2370   -244       O
ATOM   1157  OP2   A H  55      27.244  30.242  70.181  1.00 76.01           O
ANISOU 1157  OP2   A H  55    10372   9691   8816    935  -2125    -42       O
ATOM   1158  O5'   A H  55      25.546  28.619  69.367  1.00 73.22           O
ANISOU 1158  O5'   A H  55     9935   9211   8674    947  -2532   -191       O
ATOM   1159  C5'   A H  55      25.023  28.448  70.669  1.00 54.94           C
ANISOU 1159  C5'   A H  55     7332   6983   6558    819  -2510   -113       C
ATOM   1160  C4'   A H  55      25.750  27.398  71.468  1.00 48.31           C
ANISOU 1160  C4'   A H  55     6356   6145   5854    693  -2409    -47       C
ATOM   1161  C3'   A H  55      25.148  25.996  71.464  1.00 61.82           C
ANISOU 1161  C3'   A H  55     7941   7790   7756    631  -2583    -92       C
ATOM   1162  O3'   A H  55      25.653  25.193  70.417  1.00 84.73           O
ANISOU 1162  O3'   A H  55    11033  10573  10590    695  -2645   -171       O
ATOM   1163  C2'   A H  55      25.528  25.436  72.823  1.00 61.50           C
ANISOU 1163  C2'   A H  55     7664   7816   7889    473  -2457     15       C
ATOM   1164  O2'   A H  55      26.818  24.850  72.755  1.00 79.43           O
ANISOU 1164  O2'   A H  55    10019  10042  10119    451  -2320     45       O
ATOM   1165  C1'   A H  55      25.601  26.692  73.693  1.00 56.96           C
ANISOU 1165  C1'   A H  55     7017   7361   7265    443  -2296    105       C
ATOM   1166  O4'   A H  55      25.712  27.807  72.851  1.00 56.43           O
ANISOU 1166  O4'   A H  55     7165   7288   6986    576  -2277     64       O
ATOM   1167  N9    A H  55      24.451  26.898  74.596  1.00 56.30           N
ANISOU 1167  N9    A H  55     6696   7355   7339    369  -2363    138       N
ATOM   1168  C4    A H  55      23.129  27.183  74.294  1.00 61.81           C
ANISOU 1168  C4    A H  55     7343   8053   8087    421  -2544     79       C
ATOM   1169  C5    A H  55      22.479  27.308  75.513  1.00 68.63           C
ANISOU 1169  C5    A H  55     7956   9008   9113    311  -2513    152       C
ATOM   1170  N7    A H  55      23.373  27.117  76.559  1.00 66.58           N
ANISOU 1170  N7    A H  55     7599   8803   8897    190  -2320    254       N
ATOM   1171  C8    A H  55      24.520  26.891  75.962  1.00 53.96           C
ANISOU 1171  C8    A H  55     6182   7148   7171    231  -2240    244       C
ATOM   1172  N3    A H  55      22.556  27.293  73.085  1.00 58.16           N
ANISOU 1172  N3    A H  55     7039   7517   7541    546  -2720    -25       N
ATOM   1173  C2    A H  55      21.255  27.559  73.202  1.00 68.71           C
ANISOU 1173  C2    A H  55     8249   8880   8978    555  -2868    -46       C
ATOM   1174  N1    A H  55      20.506  27.715  74.301  1.00 64.86           N
ANISOU 1174  N1    A H  55     7513   8476   8653    463  -2854     19       N
ATOM   1175  C6    A H  55      21.096  27.587  75.503  1.00 66.13           C
ANISOU 1175  C6    A H  55     7528   8709   8890    337  -2672    118       C
ATOM   1176  N6    A H  55      20.348  27.729  76.608  1.00 62.80           N
ANISOU 1176  N6    A H  55     6866   8369   8628    243  -2653    181       N
ATOM   1177  P     A H  56      24.639  24.569  69.349  1.00 65.89           P
ANISOU 1177  P     A H  56     8728   8081   8226    765  -2919   -295       P
ATOM   1178  OP1   A H  56      25.381  24.152  68.142  1.00 69.91           O
ANISOU 1178  OP1   A H  56     9508   8471   8583    859  -2929   -375       O
ATOM   1179  OP2   A H  56      23.615  25.625  69.206  1.00 97.72           O
ANISOU 1179  OP2   A H  56    12748  12163  12216    825  -3017   -315       O
ATOM   1180  O5'   A H  56      24.020  23.287  70.083  1.00 63.53           O
ANISOU 1180  O5'   A H  56     8178   7774   8186    636  -3034   -280       O
ATOM   1181  C5'   A H  56      24.157  21.980  69.540  1.00 71.00           C
ANISOU 1181  C5'   A H  56     9177   8607   9192    626  -3142   -342       C
ATOM   1182  C4'   A H  56      23.126  21.023  70.094  1.00 79.45           C
ANISOU 1182  C4'   A H  56    10011   9676  10501    525  -3316   -345       C
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ATOM   1183  C3'   A H  56      21.837  20.892  69.285  1.00 79.34           C
ANISOU 1183  C3'   A H  56    10032   9602  10512    585  -3590   -440       C
ATOM   1184  O3'   A H  56      21.941  19.972  68.209  1.00 81.70           O
ANISOU 1184  O3'   A H  56    10514   9764  10766    636  -3727   -538       O
ATOM   1185  C2'   A H  56      20.811  20.501  70.347  1.00 67.85           C
ANISOU 1185  C2'   A H  56     8263   8216   9302    465  -3680   -388       C
ATOM   1186  O2'   A H  56      20.911  19.130  70.704  1.00 63.07           O
ANISOU 1186  O2'   A H  56     7540   7561   8862    365  -3728   -383       O
ATOM   1187  C1'   A H  56      21.287  21.331  71.526  1.00 67.57           C
ANISOU 1187  C1'   A H  56     8087   8311   9275    401  -3447   -274       C
ATOM   1188  O4'   A H  56      22.685  21.492  71.394  1.00 84.47           O
ANISOU 1188  O4'   A H  56    10386  10440  11270    426  -3242   -247       O
ATOM   1189  N9    A H  56      20.684  22.671  71.496  1.00 70.07           N
ANISOU 1189  N9    A H  56     8416   8699   9508    469  -3445   -266       N
ATOM   1190  C4    A H  56      19.493  23.061  72.063  1.00 83.73           C
ANISOU 1190  C4    A H  56     9948  10498  11368    436  -3538   -242       C
ATOM   1191  C5    A H  56      19.351  24.402  71.746  1.00 84.78           C
ANISOU 1191  C5    A H  56    10189  10674  11349    534  -3493   -245       C
ATOM   1192  N7    A H  56      20.424  24.846  70.982  1.00 82.85           N
ANISOU 1192  N7    A H  56    10208  10389  10880    625  -3379   -272       N
ATOM   1193  C8    A H  56      21.184  23.782  70.858  1.00 67.35           C
ANISOU 1193  C8    A H  56     8289   8361   8942    583  -3353   -284       C
ATOM   1194  N3    A H  56      18.647  22.315  72.789  1.00 86.58           N
ANISOU 1194  N3    A H  56    10058  10879  11957    331  -3643   -216       N
ATOM   1195  C2    A H  56      17.612  23.056  73.184  1.00 87.89           C
ANISOU 1195  C2    A H  56    10086  11116  12192    334  -3696   -193       C
ATOM   1196  N1    A H  56      17.337  24.348  72.957  1.00 78.09           N
ANISOU 1196  N1    A H  56     8920   9921  10830    424  -3662   -192       N
ATOM   1197  C6    A H  56      18.212  25.060  72.224  1.00 76.16           C
ANISOU 1197  C6    A H  56     8931   9653  10354    526  -3561   -219       C
ATOM   1198  N6    A H  56      17.963  26.345  71.989  1.00 71.12           N
ANISOU 1198  N6    A H  56     8372   9058   9591    616  -3526   -219       N
ATOM   1199  P     G H  57      21.967  20.477  66.680  1.00 82.08           P
ANISOU 1199  P     G H  57    10891   9716  10580    793  -3820   -645       P
ATOM   1200  OP1   G H  57      22.811  19.524  65.919  1.00 99.76           O
ANISOU 1200  OP1   G H  57    13325  11830  12750    821  -3807   -705       O
ATOM   1201  O5'   G H  57      20.478  20.230  66.216  1.00 91.97           O
ANISOU 1201  O5'   G H  57    12093  10927  11925    805  -4120   -713       O
ATOM   1202  C5'   G H  57      19.662  21.315  65.851  1.00 91.13           C
ANISOU 1202  C5'   G H  57    12023  10857  11744    881  -4214   -732       C
ATOM   1203  C4'   G H  57      18.737  21.695  66.968  1.00 89.35           C
ANISOU 1203  C4'   G H  57    11497  10750  11703    801  -4233   -654       C
ATOM   1204  C3'   G H  57      17.555  22.527  66.507  1.00 95.06           C
ANISOU 1204  C3'   G H  57    12226  11487  12407    873  -4410   -686       C
ATOM   1205  O3'   G H  57      16.474  21.710  66.112  1.00104.46           O
ANISOU 1205  O3'   G H  57    13354  12605  13730    851  -4681   -740       O
ATOM   1206  C2'   G H  57      17.280  23.432  67.697  1.00 90.38           C
ANISOU 1206  C2'   G H  57    11405  11038  11899    824  -4270   -586       C
ATOM   1207  O2'   G H  57      16.588  22.730  68.713  1.00 95.35           O
ANISOU 1207  O2'   G H  57    11736  11713  12779    699  -4324   -533       O
ATOM   1208  C1'   G H  57      18.699  23.708  68.170  1.00 74.82           C
ANISOU 1208  C1'   G H  57     9497   9112   9820    806  -3984   -528       C
ATOM   1209  O4'   G H  57      19.442  22.541  67.911  1.00 81.85           O
ANISOU 1209  O4'   G H  57    10462   9917  10720    772  -3974   -558       O
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ATOM   1210  N9    G H  57      19.303  24.778  67.351  1.00 69.23           N
ANISOU 1210  N9    G H  57    9053   8392   8859    932  -3897   -559       N
ATOM   1211  C4    G H  57      18.927  26.089  67.292  1.00 63.72           C
ANISOU 1211  C4    G H  57    8386   7758   8067   1004  -3872   -543       C
ATOM   1212  C5    G H  57      19.760  26.668  66.352  1.00 72.00           C
ANISOU 1212  C5    G H  57    9725   8760   8873   1113  -3795   -587       C
ATOM   1213  N7    G H  57      20.652  25.750  65.821  1.00 72.90           N
ANISOU 1213  N7    G H  57    9990   8782   8927   1114  -3766   -629       N
ATOM   1214  C8    G H  57      20.339  24.644  66.445  1.00 77.91           C
ANISOU 1214  C8    G H  57   10425   9409   9768   1006  -3829   -611       C
ATOM   1215  N3    G H  57      17.941  26.660  68.006  1.00 64.48           N
ANISOU 1215  N3    G H  57    8271   7940   8289    972  -3911   -495       N
ATOM   1216  C2    G H  57      17.807  27.948  67.714  1.00 63.51           C
ANISOU 1216  C2    G H  57    8248   7857   8027   1064  -3872   -493       C
ATOM   1217  N2    G H  57      16.853  28.648  68.348  1.00 66.36           N
ANISOU 1217  N2    G H  57    8423   8298   8493   1050  -3899   -447       N
ATOM   1218  N1    G H  57      18.585  28.633  66.796  1.00 54.76           N
ANISOU 1218  N1    G H  57    7425   6709   6672   1176  -3801   -534       N
ATOM   1219  C6    G H  57      19.615  28.045  66.053  1.00 76.61           C
ANISOU 1219  C6    G H  57   10412   9389   9306   1207  -3756   -584       C
ATOM   1220  O6    G H  57      20.289  28.689  65.241  1.00 77.90           O
ANISOU 1220  O6    G H  57   10828   9520   9249   1307  -3688   -618       O
ATOM   1221  OP2   G H  57      22.260  21.940  66.582  1.00 80.67           O
ANISOU 1221  OP2   G H  57   10815   9611  10225    875  -3687   -618       O
ATOM   1222  P     G H  58      15.777  21.951  64.693  1.00 97.13           P
ANISOU 1222  P     G H  58   12654  11572  12678    955  -4857   -833       P
ATOM   1223  OP1   G H  58      15.223  20.684  64.164  1.00 97.72           O
ANISOU 1223  OP1   G H  58   12742  11532  12854    908  -5013   -887       O
ATOM   1224  O5'   G H  58      14.581  22.902  65.104  1.00 81.91           O
ANISOU 1224  O5'   G H  58   10552   9731  10840    949  -4846   -778       O
ATOM   1225  C5'   G H  58      14.460  24.175  64.517  1.00 82.73           C
ANISOU 1225  C5'   G H  58   10802   9852  10779   1061  -4843   -795       C
ATOM   1226  C4'   G H  58      13.871  25.164  65.475  1.00 94.82           C
ANISOU 1226  C4'   G H  58   12116  11512  12401   1037  -4741   -709       C
ATOM   1227  C3'   G H  58      13.144  26.314  64.796  1.00102.33           C
ANISOU 1227  C3'   G H  58   13161  12462  13257   1134  -4796   -727       C
ATOM   1228  O3'   G H  58      11.799  26.000  64.477  1.00116.47           O
ANISOU 1228  O3'   G H  58   14861  14208  15186   1105  -4939   -738       O
ATOM   1229  C2'   G H  58      13.322  27.446  65.793  1.00 99.04           C
ANISOU 1229  C2'   G H  58   12611  12181  12837   1137  -4631   -646       C
ATOM   1230  O2'   G H  58      12.493  27.244  66.927  1.00101.88           O
ANISOU 1230  O2'   G H  58   12661  12619  13428   1030  -4587   -570       O
ATOM   1231  C1'   G H  58      14.763  27.200  66.221  1.00101.17           C
ANISOU 1231  C1'   G H  58   12944  12478  13018   1125  -4503   -631       C
ATOM   1232  O4'   G H  58      14.945  25.804  66.221  1.00 97.94           O
ANISOU 1232  O4'   G H  58   12500  12002  12712   1046  -4564   -656       O
ATOM   1233  N9    G H  58      15.703  27.760  65.225  1.00 89.87           N
ANISOU 1233  N9    G H  58   11834  10998  11317   1245  -4473   -688       N
ATOM   1234  C4    G H  58      15.825  29.083  64.838  1.00 77.02           C
ANISOU 1234  C4    G H  58   10350   9403   9513   1347  -4405   -687       C
ATOM   1235  C5    G H  58      16.818  29.092  63.874  1.00 80.99           C
ANISOU 1235  C5    G H  58   11152   9830   9792   1423  -4350   -746       C
ATOM   1236  N7    G H  58      17.307  27.798  63.658  1.00 78.42           N
ANISOU 1236  N7    G H  58   10870   9423   9504   1372  -4381   -784       N
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ATOM   1237  C8    G H  58      16.624  27.046  64.478  1.00 75.26           C
ANISOU 1237  C8    G H  58    10202   9051   9341   1267  -4456   -748       C
ATOM   1238  N3    G H  58      15.127  30.135  65.331  1.00 77.09           N
ANISOU 1238  N3    G H  58    10231   9498   9564   1368  -4385   -636       N
ATOM   1239  C2    G H  58      15.467  31.287  64.758  1.00 84.10           C
ANISOU 1239  C2    G H  58    11317  10393  10244   1474  -4317   -649       C
ATOM   1240  N2    G H  58      14.853  32.420  65.135  1.00 80.06           N
ANISOU 1240  N2    G H  58    10714   9958   9747   1509  -4286   -604       N
ATOM   1241  N1    G H  58      16.430  31.410  63.778  1.00 81.85           N
ANISOU 1241  N1    G H  58    11334  10039   9725   1554  -4266   -707       N
ATOM   1242  C6    G H  58      17.176  30.341  63.273  1.00 80.99           C
ANISOU 1242  C6    G H  58    11362   9842   9570   1536  -4274   -758       C
ATOM   1243  O6    G H  58      18.029  30.560  62.401  1.00 84.05           O
ANISOU 1243  O6    G H  58    12023  10170   9741   1615  -4214   -806       O
ATOM   1244  OP2   G H  58      16.716  22.708  63.828  1.00 97.83           O
ANISOU 1244  OP2   G H  58    13046  11629  12496   1082  -4805   -882       O
ATOM   1245  P     C H  59      11.392  25.557  62.984  1.00101.17           P
ANISOU 1245  P     C H  59    13157  12121  13163   1165  -5138   -833       P
ATOM   1246  OP1   C H  59       9.926  25.740  62.917  1.00 99.32           O
ANISOU 1246  OP1   C H  59    12782  11886  13070   1145  -5245   -811       O
ATOM   1247  O5'   C H  59      12.109  26.627  62.052  1.00112.29           O
ANISOU 1247  O5'   C H  59    14859  13505  14302   1300  -5111   -882       O
ATOM   1248  C5'   C H  59      11.358  27.540  61.269  1.00104.36           C
ANISOU 1248  C5'   C H  59    13951  12474  13226   1379  -5192   -903       C
ATOM   1249  C4'   C H  59      11.251  28.894  61.928  1.00104.51           C
ANISOU 1249  C4'   C H  59    13870  12615  13225   1415  -5066   -837       C
ATOM   1250  C3'   C H  59      11.045  30.060  60.977  1.00107.91           C
ANISOU 1250  C3'   C H  59    14498  13017  13487   1529  -5100   -869       C
ATOM   1251  O3'   C H  59       9.698  30.199  60.564  1.00119.28           O
ANISOU 1251  O3'   C H  59    15864  14420  15037   1527  -5249   -869       O
ATOM   1252  C2'   C H  59      11.553  31.234  61.795  1.00 95.39           C
ANISOU 1252  C2'   C H  59    12852  11557  11836   1563  -4916   -806       C
ATOM   1253  O2'   C H  59      10.618  31.564  62.806  1.00101.69           O
ANISOU 1253  O2'   C H  59    13360  12448  12831   1507  -4892   -728       O
ATOM   1254  C1'   C H  59      12.765  30.608  62.475  1.00 90.65           C
ANISOU 1254  C1'   C H  59    12241  10992  11210   1517  -4788   -790       C
ATOM   1255  O4'   C H  59      12.484  29.230  62.631  1.00 98.09           O
ANISOU 1255  O4'   C H  59    13073  11883  12315   1423  -4881   -804       O
ATOM   1256  N1    C H  59      13.974  30.739  61.628  1.00 94.56           N
ANISOU 1256  N1    C H  59    13048  11430  11453   1600  -4736   -849       N
ATOM   1257  C6    C H  59      14.581  29.597  61.171  1.00 63.15           C
ANISOU 1257  C6    C H  59     9189   7361   7442   1578  -4786   -905       C
ATOM   1258  C5    C H  59      15.658  29.648  60.389  1.00 66.80           C
ANISOU 1258  C5    C H  59     9936   7764   7679   1653  -4733   -959       C
ATOM   1259  C4    C H  59      16.158  30.938  60.037  1.00 79.33           C
ANISOU 1259  C4    C H  59    11695   9386   9060   1750  -4613   -954       C
ATOM   1260  N4    C H  59      17.241  31.017  59.255  1.00 89.53           N
ANISOU 1260  N4    C H  59    13272  10620  10127   1821  -4534  -1003       N
ATOM   1261  N3    C H  59      15.580  32.075  60.465  1.00 70.07           N
ANISOU 1261  N3    C H  59    10409   8300   7914   1770  -4566   -900       N
ATOM   1262  C2    C H  59      14.492  32.008  61.279  1.00 87.23           C
ANISOU 1262  C2    C H  59    12294  10533  10318   1699  -4628   -847       C
ATOM   1263  O2    C H  59      13.949  33.050  61.696  1.00 96.28           O
ANISOU 1263  O2    C H  59    13334  11757  11492   1721  -4583   -798       O
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ATOM   1264  OP2   C H  59      11.992  24.261  62.622  1.00 91.47           O
ANISOU 1264  OP2   C H  59    12029  10797  11929   1129  -5197   -887       O
ATOM   1265  P     A H  60       9.283  30.013  59.022  1.00101.52           P
ANISOU 1265  P     A H  60    13860  12024  12687   1585  -5435   -953       P
ATOM   1266  OP1   A H  60       7.837  30.359  58.974  1.00102.94           O
ANISOU 1266  OP1   A H  60    13888  12209  13017   1571  -5554   -920       O
ATOM   1267  OP2   A H  60       9.803  28.728  58.502  1.00106.87           O
ANISOU 1267  OP2   A H  60    14670  12598  13339   1554  -5507  -1016       O
ATOM   1268  O5'   A H  60      10.068  31.160  58.255  1.00 86.86           O
ANISOU 1268  O5'   A H  60    12277  10158  10568   1705  -5357   -988       O
ATOM   1269  C5'   A H  60       9.884  32.521  58.619  1.00 91.46           C
ANISOU 1269  C5'   A H  60    12804  10832  11113   1757  -5262   -938       C
ATOM   1270  C4'   A H  60      11.105  33.319  58.267  1.00 97.02           C
ANISOU 1270  C4'   A H  60    13746  11549  11568   1844  -5114   -961       C
ATOM   1271  C3'   A H  60      11.400  33.396  56.783  1.00102.42           C
ANISOU 1271  C3'   A H  60    14753  12106  12056   1923  -5189  -1045       C
ATOM   1272  O3'   A H  60      10.730  34.474  56.189  1.00117.33           O
ANISOU 1272  O3'   A H  60    16702  13984  13894   1988  -5238  -1045       O
ATOM   1273  C2'   A H  60      12.910  33.545  56.719  1.00105.45           C
ANISOU 1273  C2'   A H  60    15335  12501  12232   1968  -5011  -1064       C
ATOM   1274  O2'   A H  60      13.289  34.902  56.889  1.00110.96           O
ANISOU 1274  O2'   A H  60    16082  13277  12803   2034  -4861  -1029       O
ATOM   1275  C1'   A H  60      13.351  32.770  57.948  1.00 96.45           C
ANISOU 1275  C1'   A H  60    13990  11439  11219   1882  -4930  -1017       C
ATOM   1276  O4'   A H  60      12.258  32.663  58.827  1.00100.59           O
ANISOU 1276  O4'   A H  60    14211  12029  11981   1809  -4992   -958       O
ATOM   1277  N9    A H  60      13.871  31.427  57.660  1.00 93.52           N
ANISOU 1277  N9    A H  60    13698  10982  10851   1841  -4984  -1068       N
ATOM   1278  C4    A H  60      15.023  31.176  56.966  1.00 95.17           C
ANISOU 1278  C4    A H  60    14174  11123  10861   1892  -4916  -1123       C
ATOM   1279  C5    A H  60      15.173  29.799  57.010  1.00 94.29           C
ANISOU 1279  C5    A H  60    14039  10950  10839   1828  -4995  -1154       C
ATOM   1280  N7    A H  60      14.146  29.194  57.733  1.00 84.32           N
ANISOU 1280  N7    A H  60    12494   9718   9828   1733  -5103  -1116       N
ATOM   1281  C8    A H  60      13.405  30.211  58.110  1.00 88.24           C
ANISOU 1281  C8    A H  60    12853  10293  10380   1746  -5086  -1064       C
ATOM   1282  N3    A H  60      15.824  32.083  56.363  1.00 84.11           N
ANISOU 1282  N3    A H  60    13008   9716   9234   1983  -4790  -1141       N
ATOM   1283  C2    A H  60      16.840  31.461  55.768  1.00 85.17           C
ANISOU 1283  C2    A H  60    13363   9771   9228   2008  -4744  -1195       C
ATOM   1284  N1    A H  60      17.124  30.152  55.729  1.00 95.85           N
ANISOU 1284  N1    A H  60    14730  11056  10633   1959  -4810  -1231       N
ATOM   1285  C6    A H  60      16.297  29.278  56.350  1.00 96.51           C
ANISOU 1285  C6    A H  60    14573  11149  10947   1867  -4943  -1213       C
ATOM   1286  N6    A H  60      16.573  27.974  56.299  1.00 96.24           N
ANISOU 1286  N6    A H  60    14555  11043  10969   1816  -5010  -1250       N
ATOM   1287  P     A H  61       9.862  34.243  54.874  1.00107.37           P
ANISOU 1287  P     A H  61    15583  12586  12626   2011  -5452  -1105       P
ATOM   1288  OP1   A H  61      10.095  32.895  54.303  1.00 99.11           O
ANISOU 1288  OP1   A H  61    14647  11427  11582   1973  -5557  -1166       O
ATOM   1289  OP2   A H  61       8.493  34.702  55.219  1.00111.41           O
ANISOU 1289  OP2   A H  61    15872  13140  13318   1989  -5553  -1052       O
ATOM   1290  O5'   A H  61      10.537  35.237  53.853  1.00116.89           O
ANISOU 1290  O5'   A H  61    17089  13746  13580   2117  -5382  -1147       O
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ATOM   1291  C5'   A H  61      11.117  34.727  52.671  1.00110.06           C
ANISOU 1291  C5'   A H  61    16509  12751  12558   2152  -5427  -1226       C
ATOM   1292  C4'   A H  61      12.572  35.065  52.598  1.00104.80           C
ANISOU 1292  C4'   A H  61    16032  12102  11684   2205  -5220  -1241       C
ATOM   1293  C3'   A H  61      13.176  34.875  51.219  1.00114.62           C
ANISOU 1293  C3'   A H  61    17604  13209  12736   2264  -5239  -1318       C
ATOM   1294  O3'   A H  61      14.262  35.772  51.050  1.00116.59           O
ANISOU 1294  O3'   A H  61    18018  13490  12790   2333  -5031  -1313       O
ATOM   1295  C2'   A H  61      13.681  33.444  51.263  1.00127.14           C
ANISOU 1295  C2'   A H  61    19220  14735  14350   2213  -5270  -1354       C
ATOM   1296  O2'   A H  61      14.743  33.176  50.370  1.00138.58           O
ANISOU 1296  O2'   A H  61    20958  16091  15606   2265  -5193  -1411       O
ATOM   1297  C1'   A H  61      14.102  33.291  52.728  1.00112.22           C
ANISOU 1297  C1'   A H  61    17094  12982  12562   2157  -5137  -1291       C
ATOM   1298  O4'   A H  61      13.286  34.172  53.480  1.00104.24           O
ANISOU 1298  O4'   A H  61    15860  12080  11668   2146  -5134  -1225       O
ATOM   1299  N9    A H  61      13.845  31.944  53.233  1.00109.29           N
ANISOU 1299  N9    A H  61    16573  12593  12358   2070  -5237  -1295       N
ATOM   1300  C4    A H  61      14.678  30.868  53.147  1.00105.18           C
ANISOU 1300  C4    A H  61    16149  12016  11797   2047  -5213  -1334       C
ATOM   1301  C5    A H  61      13.988  29.820  53.749  1.00107.29           C
ANISOU 1301  C5    A H  61    16200  12285  12281   1954  -5339  -1320       C
ATOM   1302  N7    A H  61      12.743  30.224  54.206  1.00108.65           N
ANISOU 1302  N7    A H  61    16139  12514  12628   1917  -5432  -1270       N
ATOM   1303  C8    A H  61      12.710  31.494  53.873  1.00114.10           C
ANISOU 1303  C8    A H  61    16915  13235  13202   1991  -5370  -1259       C
ATOM   1304  N3    A H  61      15.900  30.843  52.586  1.00 98.55           N
ANISOU 1304  N3    A H  61    15561  11127  10755   2104  -5085  -1373       N
ATOM   1305  C2    A H  61      16.414  29.611  52.689  1.00 95.21           C
ANISOU 1305  C2    A H  61    15162  10654  10360   2061  -5104  -1403       C
ATOM   1306  N1    A H  61      15.879  28.503  53.243  1.00 95.08           N
ANISOU 1306  N1    A H  61    14958  10631  10539   1972  -5228  -1399       N
ATOM   1307  C6    A H  61      14.635  28.574  53.790  1.00104.85           C
ANISOU 1307  C6    A H  61    15938  11918  11981   1913  -5347  -1355       C
ATOM   1308  N6    A H  61      14.084  27.483  54.341  1.00103.36           N
ANISOU 1308  N6    A H  61    15553  11722  11995   1819  -5456  -1344       N
ATOM   1309  P     A H  62      14.142  36.928  49.954  1.00129.00           P
ANISOU 1309  P     A H  62    19794  15007  14214   2417  -5027  -1334       P
ATOM   1310  OP1   A H  62      13.980  38.251  50.608  1.00133.18           O
ANISOU 1310  OP1   A H  62    20201  15655  14746   2443  -4916  -1273       O
ATOM   1311  OP2   A H  62      13.139  36.467  48.965  1.00138.00           O
ANISOU 1311  OP2   A H  62    21005  16024  15405   2412  -5266  -1381       O
ATOM   1312  O5'   A H  62      15.571  36.933  49.280  1.00130.39           O
ANISOU 1312  O5'   A H  62    20242  15126  14175   2471  -4852  -1368       O
ATOM   1313  C5'   A H  62      16.020  38.103  48.629  1.00136.59           C
ANISOU 1313  C5'   A H  62    21194  15902  14801   2545  -4730  -1365       C
ATOM   1314  C4'   A H  62      17.332  38.575  49.183  1.00135.92           C
ANISOU 1314  C4'   A H  62    21137  15897  14607   2564  -4461  -1327       C
ATOM   1315  C3'   A H  62      18.162  39.330  48.166  1.00141.44           C
ANISOU 1315  C3'   A H  62    22087  16535  15119   2637  -4323  -1342       C
ATOM   1316  O3'   A H  62      19.004  40.251  48.834  1.00137.58           O
ANISOU 1316  O3'   A H  62    21555  16152  14567   2651  -4084  -1283       O
ATOM   1317  C2'   A H  62      18.993  38.231  47.535  1.00146.34           C
ANISOU 1317  C2'   A H  62    22887  17052  15662   2638  -4302  -1388       C
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ATOM   1318  O2'   A H  62      20.190  38.682  46.938  1.00151.76           O
ANISOU 1318  O2'   A H  62    23767  17708  16188   2690  -4099  -1381        O
ATOM   1319  C1'   A H  62      19.250  37.305  48.724  1.00144.57           C
ANISOU 1319  C1'   A H  62    22483  16904  15542   2571  -4275  -1367        C
ATOM   1320  O4'   A H  62      18.122  37.423  49.571  1.00132.11           O
ANISOU 1320  O4'   A H  62    20657  15408  14132   2524  -4405  -1338        O
ATOM   1321  N9    A H  62      19.328  35.905  48.320  1.00163.68           N
ANISOU 1321  N9    A H  62    24985  19223  17984   2545  -4388  -1422        N
ATOM   1322  C4    A H  62      20.235  35.353  47.446  1.00175.28           C
ANISOU 1322  C4    A H  62    26689  20586  19325   2578  -4320  -1462        C
ATOM   1323  C5    A H  62      19.897  34.014  47.355  1.00178.16           C
ANISOU 1323  C5    A H  62    27050  20876  19767   2534  -4482  -1509        C
ATOM   1324  N7    A H  62      18.801  33.732  48.163  1.00178.59           N
ANISOU 1324  N7    A H  62    26859  20990  20007   2470  -4646  -1495        N
ATOM   1325  C8    A H  62      18.498  34.885  48.711  1.00171.51           C
ANISOU 1325  C8    A H  62    25833  20201  19133   2481  -4581  -1442        C
ATOM   1326  N3    A H  62      21.238  35.976  46.797  1.00177.15           N
ANISOU 1326  N3    A H  62    27113  20795  19402   2638  -4134  -1452        N
ATOM   1327  C2    A H  62      21.902  35.120  46.027  1.00175.15           C
ANISOU 1327  C2    A H  62    27053  20429  19065   2655  -4118  -1493        C
ATOM   1328  N1    A H  62      21.702  33.811  45.848  1.00176.35           N
ANISOU 1328  N1    A H  62    27240  20500  19266   2622  -4256  -1544        N
ATOM   1329  C6    A H  62      20.685  33.213  46.508  1.00175.49           C
ANISOU 1329  C6    A H  62    26939  20420  19321   2559  -4447  -1555        C
ATOM   1330  N6    A H  62      20.485  31.906  46.324  1.00173.62           N
ANISOU 1330  N6    A H  62    26732  20098  19140   2521  -4587  -1604        N
ATOM   1331  P     A H  63      18.533  41.771  48.932  1.00147.77           P
ANISOU 1331  P     A H  63    22791  17509  15845   2687  -4041  -1243        P
ATOM   1332  OP1   A H  63      17.134  41.831  48.418  1.00136.72           O
ANISOU 1332  OP1   A H  63    21362  16057  14529   2692  -4288  -1274        O
ATOM   1333  OP2   A H  63      19.603  42.596  48.322  1.00155.29           O
ANISOU 1333  OP2   A H  63    23923  18439  16640   2739  -3837  -1231        O
ATOM   1334  O5'   A H  63      18.473  42.046  50.501  1.00138.26           O
ANISOU 1334  O5'   A H  63    21328  16462  14742   2638  -3949  -1174        O
ATOM   1335  C5'   A H  63      17.225  42.025  51.185  1.00128.97           C
ANISOU 1335  C5'   A H  63    19933  15344  13728   2603  -4111  -1155        C
ATOM   1336  C4'   A H  63      17.399  41.985  52.681  1.00111.36           C
ANISOU 1336  C4'   A H  63    17472  13251  11589   2549  -4007  -1087        C
ATOM   1337  C3'   A H  63      18.828  42.186  53.189  1.00 97.56           C
ANISOU 1337  C3'   A H  63    15773  11563   9731   2544  -3745  -1047        C
ATOM   1338  O3'   A H  63      18.771  42.780  54.484  1.00 92.80           O
ANISOU 1338  O3'   A H  63    14969  11098   9193   2512  -3641   -971        O
ATOM   1339  C2'   A H  63      19.296  40.755  53.381  1.00 96.20           C
ANISOU 1339  C2'   A H  63    15595  11358   9597   2496  -3776  -1071        C
ATOM   1340  O2'   A H  63      20.384  40.619  54.273  1.00 94.95           O
ANISOU 1340  O2'   A H  63    15389  11281   9407   2461  -3575  -1019        O
ATOM   1341  C1'   A H  63      18.022  40.130  53.934  1.00 94.76           C
ANISOU 1341  C1'   A H  63    15196  11199   9611   2444  -3992  -1070        C
ATOM   1342  O4'   A H  63      16.979  40.682  53.174  1.00106.40           O
ANISOU 1342  O4'   A H  63    16704  12619  11105   2483  -4146  -1098        O
ATOM   1343  N9    A H  63      17.961  38.672  53.896  1.00 85.87           N
ANISOU 1343  N9    A H  63    14048  10012   8567   2395  -4119  -1109        N
ATOM   1344  C4    A H  63      17.037  37.942  54.600  1.00 80.58           C
ANISOU 1344  C4    A H  63    13148   9372   8095   2328  -4275  -1095        C
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ATOM   1345  C5    A H  63      17.348  36.618  54.364  1.00 80.95           C
ANISOU 1345  C5    A H  63    13246   9344   8166   2292  -4347  -1140       C
ATOM   1346  N7    A H  63      18.456  36.522  53.529  1.00 73.46           N
ANISOU 1346  N7    A H  63    12560   8318   7032   2341  -4234  -1182       N
ATOM   1347  C8    A H  63      18.798  37.770  53.285  1.00 75.69           C
ANISOU 1347  C8    A H  63    12935   8633   7191   2399  -4095  -1159       C
ATOM   1348  N3    A H  63      16.034  38.421  55.355  1.00 72.42           N
ANISOU 1348  N3    A H  63    11885   8421   7209   2302  -4339  -1044       N
ATOM   1349  C2    A H  63      15.330  37.417  55.872  1.00 74.80           C
ANISOU 1349  C2    A H  63    11992   8724   7703   2229  -4482  -1040       C
ATOM   1350  N1    A H  63      15.501  36.095  55.739  1.00 81.72           N
ANISOU 1350  N1    A H  63    12880   9535   8634   2181  -4566  -1078       N
ATOM   1351  C6    A H  63      16.523  35.660  54.974  1.00 83.31           C
ANISOU 1351  C6    A H  63    13327   9653   8673   2214  -4505  -1132       C
ATOM   1352  N6    A H  63      16.696  34.351  54.835  1.00 90.46           N
ANISOU 1352  N6    A H  63    14252  10488   9629   2170  -4590  -1172       N
ATOM   1353  P     U H  64      19.009  44.350  54.704  1.00 87.41           P
ANISOU 1353  P     U H  64    14296  10486   8428   2551  -3468   -919       P
ATOM   1354  OP1   U H  64      17.909  44.768  55.609  1.00 91.91           O
ANISOU 1354  OP1   U H  64    14641  11146   9135   2532  -3556   -874       O
ATOM   1355  O5'   U H  64      20.372  44.445  55.527  1.00 77.57           O
ANISOU 1355  O5'   U H  64    13041   9321   7113   2516  -3207   -858       O
ATOM   1356  C5'   U H  64      21.583  43.959  54.971  1.00 80.13           C
ANISOU 1356  C5'   U H  64    13533   9582   7330   2519  -3084   -879       C
ATOM   1357  C4'   U H  64      22.787  44.435  55.743  1.00 84.04           C
ANISOU 1357  C4'   U H  64    14004  10161   7766   2488  -2818   -805       C
ATOM   1358  C3'   U H  64      22.853  44.039  57.208  1.00 84.25           C
ANISOU 1358  C3'   U H  64    13825  10305   7882   2416  -2770   -738       C
ATOM   1359  O3'   U H  64      23.317  42.709  57.393  1.00 76.67           O
ANISOU 1359  O3'   U H  64    12858   9321   6951   2376  -2799   -753       O
ATOM   1360  C2'   U H  64      23.764  45.112  57.795  1.00 85.25           C
ANISOU 1360  C2'   U H  64    13940  10511   7940   2399  -2511   -660       C
ATOM   1361  O2'   U H  64      25.122  44.863  57.448  1.00 85.70           O
ANISOU 1361  O2'   U H  64    14123  10530   7911   2388  -2335   -650       O
ATOM   1362  C1'   U H  64      23.315  46.337  57.005  1.00 81.25           C
ANISOU 1362  C1'   U H  64    13522   9968   7381   2463  -2522   -681       C
ATOM   1363  O4'   U H  64      22.800  45.881  55.773  1.00 83.77           O
ANISOU 1363  O4'   U H  64    13975  10170   7684   2515  -2700   -766       O
ATOM   1364  N1    U H  64      22.264  47.124  57.695  1.00 77.63           N
ANISOU 1364  N1    U H  64    12914   9588   6992   2467  -2587   -649       N
ATOM   1365  C6    U H  64      20.927  46.974  57.418  1.00 68.21           C
ANISOU 1365  C6    U H  64    11666   8369   5882   2498  -2821   -692       C
ATOM   1366  C5    U H  64      19.976  47.680  58.026  1.00 67.23           C
ANISOU 1366  C5    U H  64    11401   8312   5831   2506  -2878   -659       C
ATOM   1367  C4    U H  64      20.323  48.659  58.999  1.00 73.98           C
ANISOU 1367  C4    U H  64    12173   9270   6665   2486  -2693   -581       C
ATOM   1368  N3    U H  64      21.679  48.765  59.222  1.00 74.55           N
ANISOU 1368  N3    U H  64    12312   9362   6651   2449  -2464   -543       N
ATOM   1369  C2    U H  64      22.681  48.048  58.615  1.00 77.42           C
ANISOU 1369  C2    U H  64    12804   9659   6952   2436  -2400   -571       C
ATOM   1370  O2    U H  64      23.858  48.206  58.870  1.00 85.30           O
ANISOU 1370  O2    U H  64    13837  10678   7893   2398  -2194   -527       O
ATOM   1371  O4    U H  64      19.528  49.371  59.622  1.00 77.39           O
ANISOU 1371  O4    U H  64    12482   9768   7155   2498  -2723   -544       O
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ATOM   1372  OP2   U H  64      19.267  45.015  53.391  1.00 96.22           O
ANISOU 1372  OP2   U H  64    15640  11506   9412   2618  -3445   -962       O
ATOM   1373  P     G H  65      22.978  41.916  58.749  1.00 87.48           P
ANISOU 1373  P     G H  65    13994  10784   8459   2300  -2858   -704       P
ATOM   1374  OP1   G H  65      23.447  42.745  59.898  1.00 80.22           O
ANISOU 1374  OP1   G H  65    12960   9989   7530   2261  -2661   -607       O
ATOM   1375  O5'   G H  65      21.382  41.880  58.813  1.00 69.21           O
ANISOU 1375  O5'   G H  65    11533   8471   6292   2305  -3104   -730       O
ATOM   1376  C5'   G H  65      20.647  41.030  57.939  1.00 73.94           C
ANISOU 1376  C5'   G H  65    12181   8964   6950   2320  -3328   -811       C
ATOM   1377  C4'   G H  65      19.206  40.887  58.366  1.00 74.78           C
ANISOU 1377  C4'   G H  65    12075   9096   7240   2295  -3533   -807       C
ATOM   1378  C3'   G H  65      18.978  40.230  59.720  1.00 78.18           C
ANISOU 1378  C3'   G H  65    12245   9620   7839   2214  -3553   -747       C
ATOM   1379  O3'   G H  65      19.132  41.116  60.817  1.00 68.77           O
ANISOU 1379  O3'   G H  65    10923   8551   6653   2199  -3402   -659       O
ATOM   1380  C2'   G H  65      17.570  39.663  59.588  1.00 78.13           C
ANISOU 1380  C2'   G H  65    12088   9574   8024   2191  -3800   -778       C
ATOM   1381  O2'   G H  65      16.601  40.684  59.797  1.00 68.15           O
ANISOU 1381  O2'   G H  65    10716   8357   6820   2218  -3838   -747       O
ATOM   1382  C1'   G H  65      17.551  39.231  58.116  1.00 77.71           C
ANISOU 1382  C1'   G H  65    12267   9377   7882   2236  -3916   -872       C
ATOM   1383  O4'   G H  65      18.506  40.021  57.429  1.00 76.65           O
ANISOU 1383  O4'   G H  65    12370   9218   7536   2302  -3753   -886       O
ATOM   1384  N9    G H  65      17.921  37.803  57.956  1.00 71.57           N
ANISOU 1384  N9    G H  65    11516   8533   7144   2191  -3988   -914       N
ATOM   1385  C4    G H  65      17.322  36.681  58.530  1.00 71.08           C
ANISOU 1385  C4    G H  65    11253   8472   7281   2112  -4127   -910       C
ATOM   1386  C5    G H  65      18.071  35.601  58.086  1.00 68.11           C
ANISOU 1386  C5    G H  65    11011   8016   6851   2099  -4137   -960       C
ATOM   1387  N7    G H  65      19.101  36.007  57.249  1.00 69.31           N
ANISOU 1387  N7    G H  65    11438   8117   6781   2168  -4006   -993       N
ATOM   1388  C8    G H  65      18.971  37.313  57.195  1.00 71.73           C
ANISOU 1388  C8    G H  65    11770   8472   7012   2218  -3919   -964       C
ATOM   1389  N3    G H  65      16.242  36.654  59.355  1.00 77.44           N
ANISOU 1389  N3    G H  65    11786   9341   8296   2058  -4221   -864       N
ATOM   1390  C2    G H  65      15.919  35.419  59.731  1.00 78.56           C
ANISOU 1390  C2    G H  65    11779   9462   8608   1978  -4331   -870       C
ATOM   1391  N2    G H  65      14.869  35.246  60.552  1.00 82.72           N
ANISOU 1391  N2    G H  65    12024  10044   9363   1912  -4413   -823       N
ATOM   1392  N1    G H  65      16.604  34.277  59.345  1.00 66.19           N
ANISOU 1392  N1    G H  65    10327   7818   7005   1956  -4357   -919       N
ATOM   1393  C6    G H  65      17.725  34.287  58.502  1.00 71.07           C
ANISOU 1393  C6    G H  65    11232   8369   7401   2018  -4265   -968       C
ATOM   1394  O6    G H  65      18.300  33.232  58.179  1.00 73.19           O
ANISOU 1394  O6    G H  65    11598   8565   7646   1999  -4293  -1013       O
ATOM   1395  OP2   G H  65      23.493  40.532  58.553  1.00 80.90           O
ANISOU 1395  OP2   G H  65    13212   9889   7637   2274  -2907   -741       O
ATOM   1396  P     C H  66      19.707  40.556  62.214  1.00 74.74           P
ANISOU 1396  P     C H  66    11501   9408   7489   2117  -3299   -581       P
ATOM   1397  OP1   C H  66      19.923  41.726  63.109  1.00 79.38           O
ANISOU 1397  OP1   C H  66    12020  10108   8032   2119  -3124   -496       O
ATOM   1398  O5'   C H  66      18.509  39.692  62.824  1.00 79.13           O
ANISOU 1398  O5'   C H  66    11787   9976   8302   2054  -3502   -576       O
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ATOM   1399  C5'   C H  66      17.337  40.319  63.324  1.00 70.82           C
ANISOU 1399  C5'   C H  66    10544   8977   7388   2055  -3574   -542       C
ATOM   1400  C4'   C H  66      16.341  39.319  63.860  1.00 69.33           C
ANISOU 1400  C4'   C H  66    10098   8786   7458   1977  -3742   -538       C
ATOM   1401  C3'   C H  66      16.821  38.472  65.012  1.00 70.48           C
ANISOU 1401  C3'   C H  66    10044   8985   7752   1843  -3596   -478       C
ATOM   1402  O3'   C H  66      16.814  39.164  66.240  1.00 70.90           O
ANISOU 1402  O3'   C H  66     9914   9149   7878   1786  -3411   -387       O
ATOM   1403  C2'   C H  66      15.869  37.286  64.962  1.00 79.88           C
ANISOU 1403  C2'   C H  66    11074  10123   9154   1789  -3822   -513       C
ATOM   1404  O2'   C H  66      14.590  37.657  65.458  1.00 99.76           O
ANISOU 1404  O2'   C H  66    13373  12684  11847   1781  -3925   -481       O
ATOM   1405  C1'   C H  66      15.737  37.089  63.460  1.00 71.28           C
ANISOU 1405  C1'   C H  66    10234   8914   7937   1876  -4000   -611       C
ATOM   1406  O4'   C H  66      15.993  38.339  62.848  1.00 77.72           O
ANISOU 1406  O4'   C H  66    11245   9730   8555   1973  -3917   -621       O
ATOM   1407  N1    C H  66      16.689  36.091  62.923  1.00 69.44           N
ANISOU 1407  N1    C H  66    10165   8605   7612   1865  -4000   -663       N
ATOM   1408  C6    C H  66      17.734  36.506  62.143  1.00 83.68           C
ANISOU 1408  C6    C H  66    12251  10370   9173   1939  -3892   -696       C
ATOM   1409  C5    C H  66      18.624  35.640  61.629  1.00 86.10           C
ANISOU 1409  C5    C H  66    12719  10605   9391   1936  -3877   -742       C
ATOM   1410  C4    C H  66      18.443  34.257  61.910  1.00 82.25           C
ANISOU 1410  C4    C H  66    12095  10077   9080   1844  -3963   -755       C
ATOM   1411  N4    C H  66      19.302  33.369  61.390  1.00 80.70           N
ANISOU 1411  N4    C H  66    12053   9801   8810   1837  -3934   -801       N
ATOM   1412  N3    C H  66      17.427  33.831  62.676  1.00 75.49           N
ANISOU 1412  N3    C H  66    10960   9259   8464   1766  -4069   -722       N
ATOM   1413  C2    C H  66      16.538  34.728  63.185  1.00 69.35           C
ANISOU 1413  C2    C H  66    10027   8558   7767   1777  -4094   -676       C
ATOM   1414  O2    C H  66      15.597  34.372  63.891  1.00 74.51           O
ANISOU 1414  O2    C H  66    10421   9246   8643   1706  -4178   -642       O
ATOM   1415  OP2   C H  66      20.829  39.599  61.929  1.00 79.24           O
ANISOU 1415  OP2   C H  66    12201   9928   7978   2096  -3239   -605       O
ATOM   1416  P     C H  67      17.904  38.780  67.344  1.00 72.41           P
ANISOU 1416  P     C H  67    10012   9406   8097   1667  -3159   -311       P
ATOM   1417  OP1   C H  67      17.909  39.877  68.352  1.00 55.36           O
ANISOU 1417  OP1   C H  67     7746   7351   5938   1644  -2972   -226       O
ATOM   1418  O5'   C H  67      17.270  37.478  68.011  1.00 73.11           O
ANISOU 1418  O5'   C H  67     9841   9489   8447   1551  -3261   -301       O
ATOM   1419  C5'   C H  67      15.948  37.534  68.521  1.00 79.49           C
ANISOU 1419  C5'   C H  67    10417  10330   9457   1527  -3381   -281       C
ATOM   1420  C4'   C H  67      15.474  36.188  68.986  1.00 72.98           C
ANISOU 1420  C4'   C H  67     9383   9487   8860   1420  -3488   -280       C
ATOM   1421  C3'   C H  67      16.395  35.468  69.936  1.00 66.44           C
ANISOU 1421  C3'   C H  67     8457   8699   8089   1294  -3305   -222       C
ATOM   1422  O3'   C H  67      16.350  35.970  71.248  1.00 73.76           O
ANISOU 1422  O3'   C H  67     9190   9730   9106   1212  -3127   -129       O
ATOM   1423  C2'   C H  67      15.933  34.022  69.811  1.00 68.77           C
ANISOU 1423  C2'   C H  67     8640   8930   8559   1229  -3486   -261       C
ATOM   1424  O2'   C H  67      14.733  33.805  70.535  1.00 83.39           O
ANISOU 1424  O2'   C H  67    10220  10820  10643   1168  -3583   -229       O
ATOM   1425  C1'   C H  67      15.605  33.947  68.330  1.00 65.88           C
ANISOU 1425  C1'   C H  67     8491   8458   8081   1347  -3705   -362       C
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ATOM   1426  O4'   C H  67      15.375  35.270  67.871  1.00 77.67           O
ANISOU 1426  O4'   C H  67    10109   9969   9431   1458  -3696   -369       O
ATOM   1427  N1    C H  67      16.674  33.307  67.530  1.00 66.11           N
ANISOU 1427  N1    C H  67     8750   8408   7962   1369  -3687   -417       N
ATOM   1428  C6    C H  67      17.434  34.039  66.654  1.00 67.76           C
ANISOU 1428  C6    C H  67     9237   8584   7923   1474  -3622   -453       C
ATOM   1429  C5    C H  67      18.362  33.452  65.879  1.00 64.33           C
ANISOU 1429  C5    C H  67     9015   8070   7356   1501  -3607   -506       C
ATOM   1430  C4    C H  67      18.528  32.032  66.008  1.00 69.50           C
ANISOU 1430  C4    C H  67     9594   8672   8139   1416  -3663   -523       C
ATOM   1431  N4    C H  67      19.454  31.389  65.281  1.00 64.69           N
ANISOU 1431  N4    C H  67     9188   7981   7412   1439  -3639   -573       N
ATOM   1432  N3    C H  67      17.781  31.308  66.852  1.00 68.34           N
ANISOU 1432  N3    C H  67     9176   8556   8233   1312  -3735   -489       N
ATOM   1433  C2    C H  67      16.840  31.908  67.619  1.00 67.46           C
ANISOU 1433  C2    C H  67     8852   8526   8253   1286  -3750   -436       C
ATOM   1434  O2    C H  67      16.142  31.238  68.408  1.00 71.54           O
ANISOU 1434  O2    C H  67     9116   9072   8995   1188  -3813   -402       O
ATOM   1435  OP2   C H  67      19.153  38.347  66.652  1.00 53.90           O
ANISOU 1435  OP2   C H  67     7898   7002   5581   1688  -3088   -347       O
ATOM   1436  P     G H  68      17.583  35.658  72.207  1.00 71.96           P
ANISOU 1436  P     G H  68     8923   9555   8863   1097  -2882    -55       P
ATOM   1437  OP1   G H  68      17.295  36.324  73.503  1.00 59.79           O
ANISOU 1437  OP1   G H  68     7188   8118   7413   1023  -2727     36       O
ATOM   1438  O5'   G H  68      17.509  34.081  72.392  1.00 66.06           O
ANISOU 1438  O5'   G H  68     8043   8763   8294    997  -2985    -70       O
ATOM   1439  C5'   G H  68      16.885  33.476  73.510  1.00 57.81           C
ANISOU 1439  C5'   G H  68     6714   7768   7484    873  -2987    -15       C
ATOM   1440  C4'   G H  68      17.223  32.004  73.525  1.00 67.40           C
ANISOU 1440  C4'   G H  68     7875   8929   8806    788  -3051    -32       C
ATOM   1441  C3'   G H  68      18.650  31.665  73.920  1.00 68.53           C
ANISOU 1441  C3'   G H  68     8086   9084   8870    719  -2850     15       C
ATOM   1442  O3'   G H  68      18.822  31.612  75.321  1.00 65.59           O
ANISOU 1442  O3'   G H  68     7506   8798   8617    584  -2687    113       O
ATOM   1443  C2'   G H  68      18.889  30.332  73.236  1.00 60.32           C
ANISOU 1443  C2'   G H  68     7103   7945   7870    709  -2985    -49       C
ATOM   1444  O2'   G H  68      18.346  29.287  74.024  1.00 72.19           O
ANISOU 1444  O2'   G H  68     8361   9460   9608    587  -3052    -22       O
ATOM   1445  C1'   G H  68      18.072  30.492  71.951  1.00 60.00           C
ANISOU 1445  C1'   G H  68     7202   7826   7769    839  -3215   -150       C
ATOM   1446  O4'   G H  68      17.104  31.485  72.181  1.00 60.17           O
ANISOU 1446  O4'   G H  68     7138   7904   7820    880  -3249   -133       O
ATOM   1447  N9    G H  68      18.916  30.921  70.817  1.00 56.09           N
ANISOU 1447  N9    G H  68     7012   7270   7029    955  -3186   -207       N
ATOM   1448  C4    G H  68      19.799  30.129  70.102  1.00 61.22           C
ANISOU 1448  C4    G H  68     7834   7835   7592    972  -3190   -255       C
ATOM   1449  C5    G H  68      20.376  30.961  69.157  1.00 60.53           C
ANISOU 1449  C5    G H  68     8015   7716   7267   1094  -3145   -295       C
ATOM   1450  N7    G H  68      19.858  32.243  69.269  1.00 67.05           N
ANISOU 1450  N7    G H  68     8839   8606   8033   1152  -3121   -274       N
ATOM   1451  C8    G H  68      19.013  32.183  70.281  1.00 52.97           C
ANISOU 1451  C8    G H  68     6789   6890   6447   1067  -3140   -220       C
ATOM   1452  N3    G H  68      20.048  28.810  70.309  1.00 70.41           N
ANISOU 1452  N3    G H  68     8917   8955   8882    886  -3224   -259       N
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ATOM   1453  C2    G H  68      20.966  28.320  69.458  1.00 77.74           C
ANISOU 1453  C2    G H  68    10063   9796   9680    934  -3207   -310       C
ATOM   1454  N2    G H  68      21.334  27.028  69.499  1.00 70.36           N
ANISOU 1454  N2    G H  68     9091   8802   8842    866  -3236   -323       N
ATOM   1455  N1    G H  68      21.602  29.063  68.484  1.00 75.88           N
ANISOU 1455  N1    G H  68    10102   9522   9206   1054  -3157   -353       N
ATOM   1456  C6    G H  68      21.359  30.430  68.272  1.00 67.25           C
ANISOU 1456  C6    G H  68     9094   8478   7979   1140  -3123   -347       C
ATOM   1457  O6    G H  68      21.980  31.010  67.374  1.00 65.61           O
ANISOU 1457  O6    G H  68     9141   8231   7559   1244  -3079   -387       O
ATOM   1458  OP2   G H  68      18.825  35.850  71.361  1.00 52.59           O
ANISOU 1458  OP2   G H  68     6752   7056   6173   1166  -2798    -86       O
ATOM   1459  P     U H  69      19.230  32.947  76.087  1.00 56.69           P
ANISOU 1459  P     U H  69     6388   7767   7385    576  -2460    195       P
ATOM   1460  OP1   U H  69      17.986  33.566  76.602  1.00 63.11           O
ANISOU 1460  OP1   U H  69     7033   8634   8312    579  -2509    212       O
ATOM   1461  O5'   U H  69      20.086  32.446  77.332  1.00 57.37           O
ANISOU 1461  O5'   U H  69     6343   7910   7547    416  -2268    294       O
ATOM   1462  C5'   U H  69      19.582  31.412  78.169  1.00 47.61           C
ANISOU 1462  C5'   U H  69     4863   6687   6541    288  -2320    325       C
ATOM   1463  C4'   U H  69      20.547  31.045  79.264  1.00 57.30           C
ANISOU 1463  C4'   U H  69     6004   7963   7806    144  -2127    421       C
ATOM   1464  C3'   U H  69      21.240  32.205  79.960  1.00 63.60           C
ANISOU 1464  C3'   U H  69     6852   8840   8473    119  -1896    506       C
ATOM   1465  O3'   U H  69      21.502  31.834  81.308  1.00 51.27           O
ANISOU 1465  O3'   U H  69     5105   7341   7036    -46  -1765    604       O
ATOM   1466  C2'   U H  69      22.555  32.289  79.211  1.00 62.68           C
ANISOU 1466  C2'   U H  69     6973   8680   8162    178  -1814    494       C
ATOM   1467  O2'   U H  69      23.609  32.907  79.918  1.00 60.30           O
ANISOU 1467  O2'   U H  69     6716   8437   7759    114  -1587    589       O
ATOM   1468  C1'   U H  69      22.842  30.815  78.957  1.00 53.48           C
ANISOU 1468  C1'   U H  69     5768   7445   7107    128  -1910    466       C
ATOM   1469  O4'   U H  69      21.601  30.223  78.713  1.00 58.75           O
ANISOU 1469  O4'   U H  69     6314   8081   7929    142  -2119    401       O
ATOM   1470  N1    U H  69      23.683  30.561  77.785  1.00 56.64           N
ANISOU 1470  N1    U H  69     6401   7762   7359    225  -1935    405       N
ATOM   1471  C6    U H  69      23.268  30.847  76.512  1.00 53.88           C
ANISOU 1471  C6    U H  69     6224   7348   6900    374  -2078    303       C
ATOM   1472  C5    U H  69      24.057  30.610  75.456  1.00 67.49           C
ANISOU 1472  C5    U H  69     8167   8992   8482    460  -2090    248       C
ATOM   1473  C4    U H  69      25.361  30.051  75.632  1.00 59.75           C
ANISOU 1473  C4    U H  69     7238   7994   7470    401  -1949    297       C
ATOM   1474  N3    U H  69      25.672  29.792  76.935  1.00 61.17           N
ANISOU 1474  N3    U H  69     7226   8243   7774    252  -1820    402       N
ATOM   1475  C2    U H  69      24.917  30.018  78.041  1.00 53.10           C
ANISOU 1475  C2    U H  69     5986   7301   6887    156  -1804    459       C
ATOM   1476  O2    U H  69      25.301  29.736  79.159  1.00 62.62           O
ANISOU 1476  O2    U H  69     7042   8560   8190     18  -1684    553       O
ATOM   1477  O4    U H  69      26.202  29.787  74.763  1.00 74.31           O
ANISOU 1477  O4    U H  69     9274   9767   9193    470  -1931    258       O
ATOM   1478  OP2   U H  69      20.083  33.605  75.061  1.00 63.05           O
ANISOU 1478  OP2   U H  69     7480   8533   7944    695  -2413    154       O
ATOM   1479  P     G H  70      20.328  31.876  82.395  1.00 53.72           P
ANISOU 1479  P     G H  70     5158   7714   7539   -136  -1781    645       P
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ATOM   1480  OP1   G H  70      20.738  31.367  83.707  1.00 50.84           O
ANISOU 1480  OP1   G H  70    4626   7402   7289   -312  -1649    744        O
ATOM   1481  O5'   G H  70      20.148  33.428  82.630  1.00 71.45           O
ANISOU 1481  O5'   G H  70    7471  10022   9654    -77  -1656    674        O
ATOM   1482  C5'   G H  70      21.115  34.151  83.350  1.00 47.00           C
ANISOU 1482  C5'   G H  70    4437   6983   6439   -140  -1432    762        C
ATOM   1483  C4'   G H  70      20.625  35.539  83.589  1.00 50.54           C
ANISOU 1483  C4'   G H  70    4916   7484   6801    -83  -1350    778        C
ATOM   1484  C3'   G H  70      19.405  35.644  84.490  1.00 51.80           C
ANISOU 1484  C3'   G H  70    4851   7692   7139   -143  -1365    803        C
ATOM   1485  O3'   G H  70      19.749  35.640  85.865  1.00 51.89           O
ANISOU 1485  O3'   G H  70    4738   7769   7208   -303  -1191    906        O
ATOM   1486  C2'   G H  70      18.761  36.938  84.027  1.00 52.62           C
ANISOU 1486  C2'   G H  70    5046   7807   7139     -7  -1372    768        C
ATOM   1487  O2'   G H  70      19.461  38.037  84.584  1.00 68.67           O
ANISOU 1487  O2'   G H  70    7180   9894   9018    -29  -1162    836        O
ATOM   1488  C1'   G H  70      19.041  36.890  82.521  1.00 61.93           C
ANISOU 1488  C1'   G H  70    6432   8911   8186    142  -1510    675        C
ATOM   1489  O4'   G H  70      20.176  36.073  82.324  1.00 58.59           O
ANISOU 1489  O4'   G H  70    6088   8456   7717     91  -1482    685        O
ATOM   1490  N9    G H  70      17.924  36.292  81.781  1.00 66.55           N
ANISOU 1490  N9    G H  70    6943   9441   8900    216  -1748    591        N
ATOM   1491  C4    G H  70      16.761  36.898  81.398  1.00 74.28           C
ANISOU 1491  C4    G H  70    7889  10417   9918    316  -1860    547        C
ATOM   1492  C5    G H  70      16.028  35.923  80.758  1.00 77.98           C
ANISOU 1492  C5    G H  70    8285  10824  10521    344  -2086    479        C
ATOM   1493  N7    G H  70      16.716  34.722  80.763  1.00 84.24           N
ANISOU 1493  N7    G H  70    9066  11584  11358    261  -2109    478        N
ATOM   1494  C8    G H  70      17.835  34.984  81.382  1.00 72.94           C
ANISOU 1494  C8    G H  70    7695  10193   9824    188  -1903    547        C
ATOM   1495  N3    G H  70      16.432  38.184  81.604  1.00 84.18           N
ANISOU 1495  N3    G H  70    9180  11713  11093    376  -1767    568        N
ATOM   1496  C2    G H  70      15.241  38.478  81.102  1.00 77.32           C
ANISOU 1496  C2    G H  70    8259  10823  10297    473  -1921    518        C
ATOM   1497  N2    G H  70      14.767  39.720  81.224  1.00 85.56           N
ANISOU 1497  N2    G H  70    9328  11900  11282    545  -1853    532        N
ATOM   1498  N1    G H  70      14.436  37.580  80.456  1.00 72.89           N
ANISOU 1498  N1    G H  70    7617  10203   9874    505  -2152    453        N
ATOM   1499  C6    G H  70      14.751  36.247  80.232  1.00 75.97           C
ANISOU 1499  C6    G H  70    7976  10548  10342    443  -2254    428        C
ATOM   1500  O6    G H  70      13.950  35.509  79.651  1.00 84.31           O
ANISOU 1500  O6    G H  70    8962  11550  11521    473  -2469    370        O
ATOM   1501  OP2   G H  70      19.119  31.301  81.766  1.00 65.62           O
ANISOU 1501  OP2   G H  70    6583   9171   9178    -76  -2016    561        O
ATOM   1502  P     U H  71      18.773  34.938  86.932  1.00 64.49           P
ANISOU 1502  P     U H  71    6054   9397   9052   -431  -1223    941        P
ATOM   1503  OP1   U H  71      19.377  34.857  88.281  1.00 59.40           O
ANISOU 1503  OP1   U H  71    5320   8812   8439   -605  -1036   1050        O
ATOM   1504  O5'   U H  71      17.589  35.974  87.081  1.00 77.15           O
ANISOU 1504  O5'   U H  71    7600  11033  10680   -356  -1224    927        O
ATOM   1505  C5'   U H  71      17.867  37.327  87.387  1.00 67.83           C
ANISOU 1505  C5'   U H  71    6533   9897   9341   -324  -1055    967        C
ATOM   1506  C4'   U H  71      16.629  38.154  87.232  1.00 68.36           C
ANISOU 1506  C4'   U H  71    6550   9973   9449   -221  -1107    931        C
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ATOM   1507  C3'   U H  71      15.402  37.593  87.931  1.00 67.38           C
ANISOU 1507  C3'   U H  71     6164   9867   9572   -288  -1175    941       C
ATOM   1508  O3'   U H  71      15.404  37.916  89.312  1.00 62.64           O
ANISOU 1508  O3'   U H  71     5452   9331   9017   -421   -985   1031       O
ATOM   1509  C2'   U H  71      14.262  38.213  87.142  1.00 66.39           C
ANISOU 1509  C2'   U H  71     6039   9716   9470   -130  -1310    873       C
ATOM   1510  O2'   U H  71      14.085  39.560  87.558  1.00 69.07           O
ANISOU 1510  O2'   U H  71     6431  10098   9715    -89  -1157    907       O
ATOM   1511  C1'   U H  71      14.843  38.232  85.723  1.00 68.57           C
ANISOU 1511  C1'   U H  71     6539   9931   9584      2  -1429    796       C
ATOM   1512  O4'   U H  71      16.250  38.205  85.836  1.00 70.99           O
ANISOU 1512  O4'   U H  71     6994  10245   9734    -56  -1295    834       O
ATOM   1513  N1    U H  71      14.440  37.086  84.876  1.00 78.39           N
ANISOU 1513  N1    U H  71     7736  11109  10939     36  -1663    724       N
ATOM   1514  C6    U H  71      14.909  35.817  85.104  1.00 78.17           C
ANISOU 1514  C6    U H  71     7636  11064  11002    -74  -1701    735       C
ATOM   1515  C5    U H  71      14.582  34.778  84.321  1.00 84.15           C
ANISOU 1515  C5    U H  71     8365  11757  11850    -45  -1911    669       C
ATOM   1516  C4    U H  71      13.733  34.952  83.186  1.00 79.18           C
ANISOU 1516  C4    U H  71     7787  11073  11223    102  -2114    584       C
ATOM   1517  N3    U H  71      13.312  36.253  82.984  1.00 78.68           N
ANISOU 1517  N3    U H  71     7797  11031  11066    209  -2069    579       N
ATOM   1518  C2    U H  71      13.626  37.336  83.779  1.00 80.10           C
ANISOU 1518  C2    U H  71     8003  11277  11155    186  -1850    645       C
ATOM   1519  O2    U H  71      13.208  38.445  83.525  1.00 78.47           O
ANISOU 1519  O2    U H  71     7864  11081  10871    288  -1826    635       O
ATOM   1520  O4    U H  71      13.383  34.060  82.415  1.00 89.46           O
ANISOU 1520  O4    U H  71     9079  12312  12601    134  -2317    521       O
ATOM   1521  OP2   U H  71      18.260  33.700  86.292  1.00 83.51           O
ANISOU 1521  OP2   U H  71     8378  11744  11607   -412  -1438    872       O
ATOM   1522  P     U H  72      14.707  36.961  90.394  1.00 67.32           P
ANISOU 1522  P     U H  72     5773   9949   9856   -573   -994   1076       P
ATOM   1523  OP1   U H  72      14.759  35.553  89.965  1.00 68.48           O
ANISOU 1523  OP1   U H  72     5844  10051  10123   -608  -1165   1039       O
ATOM   1524  O5'   U H  72      13.173  37.401  90.327  1.00 93.64           O
ANISOU 1524  O5'   U H  72     8968  13284  13326   -485  -1078   1042       O
ATOM   1525  C5'   U H  72      12.313  37.206  91.441  1.00102.70           C
ANISOU 1525  C5'   U H  72     9953  14443  14627   -574   -998   1060       C
ATOM   1526  C4'   U H  72      10.877  37.290  91.011  1.00106.91           C
ANISOU 1526  C4'   U H  72    10372  14951  15299   -467  -1140   1001       C
ATOM   1527  C3'   U H  72      10.057  36.014  91.161  1.00 99.04           C
ANISOU 1527  C3'   U H  72     9319  13882  14429   -499  -1226    907       C
ATOM   1528  O3'   U H  72       9.520  35.844  92.460  1.00 75.37           O
ANISOU 1528  O3'   U H  72     6269  10883  11487   -595  -1069    907       O
ATOM   1529  C2'   U H  72       8.998  36.178  90.083  1.00104.44           C
ANISOU 1529  C2'   U H  72     9941  14545  15196   -354  -1437    855       C
ATOM   1530  O2'   U H  72       8.019  37.096  90.535  1.00108.28           O
ANISOU 1530  O2'   U H  72    10327  15062  15752   -312  -1372    881       O
ATOM   1531  C1'   U H  72       9.805  36.857  88.969  1.00111.10           C
ANISOU 1531  C1'   U H  72    10882  15406  15926   -250  -1542    885       C
ATOM   1532  O4'   U H  72      10.854  37.569  89.588  1.00106.92           O
ANISOU 1532  O4'   U H  72    10445  14931  15247   -312  -1333    960       O
ATOM   1533  N1    U H  72      10.418  35.902  88.001  1.00125.96           N
ANISOU 1533  N1    U H  72    12862  17232  17765   -230  -1705    827       N
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ATOM   1534  C6    U H  72      10.673  34.571  88.292  1.00133.24           C
ANISOU 1534  C6    U H  72    13796  18111  18718   -330  -1696    783       C
ATOM   1535  C5    U H  72      11.230  33.707  87.431  1.00129.11           C
ANISOU 1535  C5    U H  72    13360  17536  18159   -312  -1831    735       C
ATOM   1536  C4    U H  72      11.599  34.138  86.116  1.00113.92           C
ANISOU 1536  C4    U H  72    11543  15590  16153   -182  -2005    717       C
ATOM   1537  N3    U H  72      11.318  35.474  85.872  1.00122.60           N
ANISOU 1537  N3    U H  72    12711  16712  17158    -72  -1963    724       N
ATOM   1538  C2    U H  72      10.744  36.392  86.736  1.00125.35           C
ANISOU 1538  C2    U H  72    12963  17118  17545    -86  -1821    778       C
ATOM   1539  O2    U H  72      10.555  37.556  86.404  1.00123.92           O
ANISOU 1539  O2    U H  72    12889  16944  17251     26  -1775    766       O
ATOM   1540  O4    U H  72      12.113  33.423  85.249  1.00 89.43           O
ANISOU 1540  O4    U H  72     8541  12432  13007   -153  -2136    668       O
ATOM   1541  OP2   U H  72      15.269  37.318  91.725  1.00 47.74           O
ANISOU 1541  OP2   U H  72     3267   7529   7342   -723   -764   1176       O
TER
ATOM   1542  O5'  DC L   1      25.781   2.828  97.154  1.00 90.80           O
ANISOU 1542  O5'  DC L   1    11326  10001  13173    372    488   -967       O
ATOM   1543  C5'  DC L   1      26.762   3.782  97.487  1.00 78.29           C
ANISOU 1543  C5'  DC L   1     9687   8492  11567    316    475   -914       C
ATOM   1544  C4'  DC L   1      27.912   3.129  98.228  1.00 74.06           C
ANISOU 1544  C4'  DC L   1     9174   8043  10920    350    474   -904       C
ATOM   1545  C3'  DC L   1      29.043   4.069  98.538  1.00 72.60           C
ANISOU 1545  C3'  DC L   1     8932   7951  10704    298    458   -844       C
ATOM   1546  O3'  DC L   1      28.797   4.646  99.771  1.00 78.21           O
ANISOU 1546  O3'  DC L   1     9673   8579  11465    211    486   -876       O
ATOM   1547  C2'  DC L   1      30.266   3.148  98.594  1.00 67.63           C
ANISOU 1547  C2'  DC L   1     8307   7447   9942    375    442   -817       C
ATOM   1548  C1'  DC L   1      29.897   2.038  97.617  1.00 69.82           C
ANISOU 1548  C1'  DC L   1     8604   7738  10187    476    432   -831       C
ATOM   1549  O4'  DC L   1      28.495   2.078  97.423  1.00 71.40           O
ANISOU 1549  O4'  DC L   1     8834   7807  10487    457    451   -883       O
ATOM   1550  N1   DC L   1      30.536   2.148  96.285  1.00 76.84           N
ANISOU 1550  N1   DC L   1     9419   8747  11029    530    392   -764       N
ATOM   1551  C6   DC L   1      29.758   2.406  95.199  1.00 81.52           C
ANISOU 1551  C6   DC L   1     9981   9308  11684    541    381   -760       C
ATOM   1552  C5   DC L   1      30.282   2.488  93.972  1.00 71.58           C
ANISOU 1552  C5   DC L   1     8657   8154  10387    592    346   -701       C
ATOM   1553  C4   DC L   1      31.677   2.288  93.845  1.00 67.45           C
ANISOU 1553  C4   DC L   1     8098   7775   9754    634    320   -643       C
ATOM   1554  N4   DC L   1      32.250   2.336  92.632  1.00 51.48           N
ANISOU 1554  N4   DC L   1     6012   5862   7687    689    285   -582       N
ATOM   1555  N3   DC L   1      32.454   2.037  94.909  1.00 69.67           N
ANISOU 1555  N3   DC L   1     8409   8089   9973    623    331   -646       N
ATOM   1556  C2   DC L   1      31.910   1.955  96.146  1.00 67.21           C
ANISOU 1556  C2   DC L   1     8163   7671   9701    571    367   -707       C
ATOM   1557  O2   DC L   1      32.593   1.722  97.154  1.00 65.30           O
ANISOU 1557  O2   DC L   1     7951   7456   9405    559    378   -712       O
ATOM   1558  P    DT L   2      29.341   6.111 100.082  1.00 76.60           P
ANISOU 1558  P    DT L   2     9405   8403  11296    115    477   -828       P
ATOM   1559  OP1  DT L   2      28.860   6.366 101.456  1.00 67.89           O
ANISOU 1559  OP1  DT L   2     8359   7190  10244     41    513   -881       O
ATOM   1560  O5'  DT L   2      30.941   5.937 100.111  1.00 65.96           O
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ANISOU 1560  O5'  DT L   2     8020   7215   9827    152    450   -768       O
ATOM   1561  C5'  DT L   2       31.532   5.116 101.147  1.00 66.79           C
ANISOU 1561  C5'  DT L   2     8182   7342   9854    176    465   -792       C
ATOM   1562  C4'  DT L   2       33.042   5.250 101.175  1.00 65.22           C
ANISOU 1562  C4'  DT L   2     7934   7290   9555    191    438   -728       C
ATOM   1563  C3'  DT L   2       33.566   6.663 101.364  1.00 65.60           C
ANISOU 1563  C3'  DT L   2     7916   7370   9637    101    426   -679       C
ATOM   1564  O3'  DT L   2       34.647   6.633 102.254  1.00 70.34           O
ANISOU 1564  O3'  DT L   2     8521   8041  10163     88    425   -661       O
ATOM   1565  C2'  DT L   2       33.995   7.092  99.959  1.00 59.44           C
ANISOU 1565  C2'  DT L   2     7052   6689   8845    133    388   -609       C
ATOM   1566  C1'  DT L   2       34.355   5.774  99.295  1.00 67.42           C
ANISOU 1566  C1'  DT L   2     8080   7775   9760    249    374   -605       C
ATOM   1567  O4'  DT L   2       33.601   4.770  99.932  1.00 64.08           O
ANISOU 1567  O4'  DT L   2     7746   7258   9342    277    405   -679       O
ATOM   1568  N1   DT L   2       34.033   5.710  97.844  1.00 70.53           N
ANISOU 1568  N1   DT L   2     8430   8199  10168    303    350   -577       N
ATOM   1569  C6   DT L   2       32.730   5.932  97.419  1.00 70.36           C
ANISOU 1569  C6   DT L   2     8421   8065  10248    283    363   -614       C
ATOM   1570  C5   DT L   2       32.357   5.867  96.120  1.00 69.72           C
ANISOU 1570  C5   DT L   2     8303   8005  10185    330    343   -594       C
ATOM   1571  C7   DT L   2       30.935   6.124  95.686  1.00 51.01           C
ANISOU 1571  C7   DT L   2     5945   5511   7925    306    358   -635       C
ATOM   1572  C4   DT L   2       33.372   5.539  95.130  1.00 75.96           C
ANISOU 1572  C4   DT L   2     9038   8940  10882    407    306   -529       C
ATOM   1573  N3   DT L   2       34.648   5.331  95.642  1.00 70.63           N
ANISOU 1573  N3   DT L   2     8356   8370  10110    423    295   -494       N
ATOM   1574  C2   DT L   2       35.033   5.395  96.955  1.00 60.91           C
ANISOU 1574  C2   DT L   2     7161   7120   8860    374    315   -515       C
ATOM   1575  O2   DT L   2       36.169   5.208  97.294  1.00 67.87           O
ANISOU 1575  O2   DT L   2     8032   8102   9654    392    304   -480       O
ATOM   1576  O4   DT L   2       33.117   5.450  93.918  1.00 69.86           O
ANISOU 1576  O4   DT L   2     8231   8196  10119    456    286   -507       O
ATOM   1577  OP2  DT L   2       28.955   6.956  98.922  1.00 86.25           O
ANISOU 1577  OP2  DT L   2    10558   9630  12582     98    457   -790       O
ATOM   1578  P    DA L   3       35.383   7.981 102.697  1.00 73.34           P
ANISOU 1578  P    DA L   3     8842   8463  10562     -4    414   -612       P
ATOM   1579  OP1  DA L   3       34.377   9.065 102.806  1.00 67.92           O
ANISOU 1579  OP1  DA L   3     8145   7662  10001    -94    430   -633       O
ATOM   1580  OP2  DA L   3       36.234   7.614 103.851  1.00 82.14           O
ANISOU 1580  OP2  DA L   3     9992   9618  11602    -10    424   -620       O
ATOM   1581  O5'  DA L   3       36.358   8.303 101.474  1.00 63.18           O
ANISOU 1581  O5'  DA L   3     7464   7322   9219     36    370   -527       O
ATOM   1582  C5'  DA L   3       37.525   7.592 101.346  1.00 59.25           C
ANISOU 1582  C5'  DA L   3     6956   6951   8603    106    350   -489       C
ATOM   1583  C4'  DA L   3       38.251   8.002 100.110  1.00 55.19           C
ANISOU 1583  C4'  DA L   3     6356   6558   8057    139    310   -411       C
ATOM   1584  C3'  DA L   3       38.681   9.469 100.057  1.00 61.94           C
ANISOU 1584  C3'  DA L   3     7134   7444   8957     53    294   -357       C
ATOM   1585  O3'  DA L   3       40.101   9.497 100.035  1.00 70.44           O
ANISOU 1585  O3'  DA L   3     8166   8662   9937     75    268   -294       O
ATOM   1586  C2'  DA L   3       38.072  10.002  98.748  1.00 65.85           C
ANISOU 1586  C2'  DA L   3     7572   7929   9518     60    277   -331       C
ATOM   1587  C1'  DA L   3       37.748   8.721  98.000  1.00 72.21           C
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ANISOU 1587  C1'  DA L   3     8413   8747  10278    166    274   -352       C
ATOM   1588  O4'  DA L   3      37.396   7.799  98.988  1.00 72.65           O
ANISOU 1588  O4'  DA L   3     8557   8734  10313    181    304   -418       O
ATOM   1589  N9   DA L   3      36.617   8.805  97.100  1.00 65.93           N
ANISOU 1589  N9   DA L   3     7612   7877   9562    177    276   -371       N
ATOM   1590  C4   DA L   3      36.593   8.426  95.791  1.00 61.87           C
ANISOU 1590  C4   DA L   3     7063   7421   9025    253    252   -342       C
ATOM   1591  C5   DA L   3      35.300   8.626  95.365  1.00 64.54           C
ANISOU 1591  C5   DA L   3     7413   7647   9461    235    266   -380       C
ATOM   1592  N7   DA L   3      34.514   9.102  96.396  1.00 75.56           N
ANISOU 1592  N7   DA L   3     8852   8917  10939    150    299   -434       N
ATOM   1593  C8   DA L   3      35.344   9.177  97.412  1.00 68.53           C
ANISOU 1593  C8   DA L   3     7975   8065  10000    120    304   -427       C
ATOM   1594  N3   DA L   3      37.622   7.978  95.061  1.00 67.86           N
ANISOU 1594  N3   DA L   3     7782   8316   9686    328    221   -285       N
ATOM   1595  C2   DA L   3      37.244   7.741  93.807  1.00 68.15           C
ANISOU 1595  C2   DA L   3     7791   8371   9731    387    203   -269       C
ATOM   1596  N1   DA L   3      36.037   7.880  93.255  1.00 66.61           N
ANISOU 1596  N1   DA L   3     7604   8080   9626    380    213   -302       N
ATOM   1597  C6   DA L   3      35.027   8.333  94.021  1.00 59.99           C
ANISOU 1597  C6   DA L   3     6804   7105   8883    302    244   -358       C
ATOM   1598  N6   DA L   3      33.838   8.474  93.477  1.00 62.10           N
ANISOU 1598  N6   DA L   3     7079   7279   9238    294    254   -390       N
ATOM   1599  P    DT L   4      40.938  10.829  99.742  1.00 67.19           P
ANISOU 1599  P    DT L   4     7660   8331   9536     15    240   -218       P
ATOM   1600  OP1  DT L   4      42.338  10.462 100.071  1.00 75.69           O
ANISOU 1600  OP1  DT L   4     8723   9537  10498     48    222   -174       O
ATOM   1601  O5'  DT L   4      40.896  10.949  98.163  1.00 73.40           O
ANISOU 1601  O5'  DT L   4     8381   9180  10328     69    210   -167       O
ATOM   1602  C5'  DT L   4      41.537   9.978  97.433  1.00 67.16           C
ANISOU 1602  C5'  DT L   4     7584   8493   9441    171    188   -138       C
ATOM   1603  C4'  DT L   4      41.391  10.233  95.969  1.00 65.35           C
ANISOU 1603  C4'  DT L   4     7290   8308   9230    212    161    -92       C
ATOM   1604  C3'  DT L   4      41.978  11.533  95.494  1.00 61.89           C
ANISOU 1604  C3'  DT L   4     6759   7935   8820    158    136    -21       C
ATOM   1605  O3'  DT L   4      43.136  11.227  94.716  1.00 64.78           O
ANISOU 1605  O3'  DT L   4     7073   8451   9088    230    101     49       O
ATOM   1606  C2'  DT L   4      40.847  12.167  94.639  1.00 57.22           C
ANISOU 1606  C2'  DT L   4     6140   7265   8338    133    138    -31       C
ATOM   1607  C1'  DT L   4      39.923  10.984  94.434  1.00 55.14           C
ANISOU 1607  C1'  DT L   4     5948   6930   8073    202    155    -93       C
ATOM   1608  O4'  DT L   4      40.010  10.294  95.624  1.00 64.80           O
ANISOU 1608  O4'  DT L   4     7246   8117   9258    198    179   -142       O
ATOM   1609  N1   DT L   4      38.502  11.303  94.236  1.00 70.81           N
ANISOU 1609  N1   DT L   4     7952   8781  10171    165    176   -143       N
ATOM   1610  C6   DT L   4      37.738  11.713  95.314  1.00 75.47           C
ANISOU 1610  C6   DT L   4     8590   9245  10838     82    210   -200       C
ATOM   1611  C5   DT L   4      36.428  11.984  95.225  1.00 73.14           C
ANISOU 1611  C5   DT L   4     8319   8824  10648     45    231   -248       C
ATOM   1612  C7   DT L   4      35.633  12.452  96.401  1.00 58.14           C
ANISOU 1612  C7   DT L   4     6469   6790   8830    -45    268   -308       C
ATOM   1613  C4   DT L   4      35.789  11.819  93.945  1.00 71.13           C
ANISOU 1613  C4   DT L   4     8039   8564  10424     97    219   -240       C
ATOM   1614  N3   DT L   4      36.614  11.374  92.928  1.00 57.91           N
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ANISOU 1614  N3   DT L   4     6319   7019   8665    181    185   -184       N
ATOM   1615  C2   DT L   4      37.949  11.094  93.009  1.00 61.39           C
ANISOU 1615  C2   DT L   4     6736   7590   9001    219    163   -134       C
ATOM   1616  O2   DT L   4      38.602  10.729  92.047  1.00 64.65           O
ANISOU 1616  O2   DT L   4     7107   8111   9346    293    134    -84       O
ATOM   1617  O4   DT L   4      34.590  12.046  93.779  1.00 62.10           O
ANISOU 1617  O4   DT L   4     6913   7308   9372     68    237   -281       O
ATOM   1618  OP2  DT L   4      40.319  12.038 100.305  1.00 65.73           O
ANISOU 1618  OP2  DT L   4     7465   8049   9459    -96    257   -236       O
ATOM   1619  P    DT L   5      44.183  12.387  94.361  1.00 81.32           P
ANISOU 1619  P    DT L   5     9072  10653  11174    188     70    135       P
ATOM   1620  OP1  DT L   5      45.500  11.719  94.265  1.00 88.73           O
ANISOU 1620  OP1  DT L   5     9996  11731  11986    258     47    185       O
ATOM   1621  O5'  DT L   5      43.694  12.868  92.923  1.00 79.74           O
ANISOU 1621  O5'  DT L   5     8807  10461  11029    210     50    170       O
ATOM   1622  C5'  DT L   5      43.449  11.904  91.957  1.00 70.86           C
ANISOU 1622  C5'  DT L   5     7694   9364   9865    308     40    167       C
ATOM   1623  C4'  DT L   5      42.832  12.507  90.721  1.00 69.05           C
ANISOU 1623  C4'  DT L   5     7408   9123   9707    312     26    192       C
ATOM   1624  C3'  DT L   5      43.265  13.935  90.382  1.00 64.47           C
ANISOU 1624  C3'  DT L   5     6735   8585   9174    244      7    257       C
ATOM   1625  O3'  DT L   5      44.080  13.879  89.225  1.00 78.18           O
ANISOU 1625  O3'  DT L   5     8403  10451  10849    312    -30    331       O
ATOM   1626  C2'  DT L   5      41.940  14.685  90.110  1.00 55.74           C
ANISOU 1626  C2'  DT L   5     5625   7356   8198    184     25    222       C
ATOM   1627  C1'  DT L   5      40.906  13.563  90.061  1.00 63.93           C
ANISOU 1627  C1'  DT L   5     6741   8305   9243    239     46    150       C
ATOM   1628  O4'  DT L   5      41.412  12.535  90.857  1.00 66.98           O
ANISOU 1628  O4'  DT L   5     7191   8715   9542    279     54    123       O
ATOM   1629  N1   DT L   5      39.611  13.913  90.646  1.00 58.39           N
ANISOU 1629  N1   DT L   5     6087   7449   8651    168     80     81       N
ATOM   1630  C6   DT L   5      39.567  14.283  91.968  1.00 48.84           C
ANISOU 1630  C6   DT L   5     4915   6174   7468     88    105     46       C
ATOM   1631  C5   DT L   5      38.445  14.601  92.604  1.00 57.72           C
ANISOU 1631  C5   DT L   5     6085   7158   8687     21    137    -17       C
ATOM   1632  C7   DT L   5      38.433  15.018  94.049  1.00 39.11           C
ANISOU 1632  C7   DT L   5     3770   4733   6359    -66    163    -53       C
ATOM   1633  C4   DT L   5      37.210  14.506  91.874  1.00 59.57           C
ANISOU 1633  C4   DT L   5     6331   7306   8998     36    146    -50       C
ATOM   1634  N3   DT L   5      37.319  14.116  90.547  1.00 67.62           N
ANISOU 1634  N3   DT L   5     7311   8399   9985    119    120    -13       N
ATOM   1635  C2   DT L   5      38.469  13.802  89.879  1.00 61.33           C
ANISOU 1635  C2   DT L   5     6466   7745   9090    188     87     51       C
ATOM   1636  O2   DT L   5      38.480  13.455  88.691  1.00 64.20           O
ANISOU 1636  O2   DT L   5     6797   8166   9431    261     65     81       O
ATOM   1637  O4   DT L   5      36.151  14.776  92.392  1.00 57.17           O
ANISOU 1637  O4   DT L   5     6068   6873   8782    -21    176   -106       O
ATOM   1638  OP2  DT L   5      43.993  13.522  95.294  1.00 66.56           O
ANISOU 1638  OP2  DT L   5     7195   8714   9382     73     87    122       O
ATOM   1639  P    DC L   6      44.561  15.208  88.478  1.00 76.68           P
ANISOU 1639  P    DC L   6     8108  10328  10698    270    -56    409       P
ATOM   1640  OP1  DC L   6      45.609  14.794  87.513  1.00 75.09           O
ANISOU 1640  OP1  DC L   6     7855  10274  10401    358    -92    480       O
ATOM   1641  O5'  DC L   6      43.333  15.604  87.570  1.00 72.26           O
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ANISOU 1641  O5'  DC L   6     7530   9686  10239    263    -51    390       O
ATOM   1642  C5'  DC L   6      43.082  14.904  86.398  1.00 58.04           C
ANISOU 1642  C5'  DC L   6     5721   7919   8412    355    -66    400       C
ATOM   1643  C4'  DC L   6      41.913  15.529  85.691  1.00 61.18           C
ANISOU 1643  C4'  DC L   6     6096   8230   8920    325    -59    383       C
ATOM   1644  C3'  DC L   6      42.153  16.966  85.275  1.00 58.03           C
ANISOU 1644  C3'  DC L   6     5605   7859   8583    258    -73    443       C
ATOM   1645  O3'  DC L   6      42.305  16.986  83.891  1.00 45.90           O
ANISOU 1645  O3'  DC L   6     4007   6400   7033    323   -101    495       O
ATOM   1646  C2'  DC L   6      40.893  17.745  85.762  1.00 40.11           C
ANISOU 1646  C2'  DC L   6     3358   5440   6443    164    -41    388       C
ATOM   1647  C1'  DC L   6      39.946  16.639  86.157  1.00 54.46           C
ANISOU 1647  C1'  DC L   6     5270   7158   8263    198    -15    305       C
ATOM   1648  O4'  DC L   6      40.758  15.570  86.564  1.00 60.99           O
ANISOU 1648  O4'  DC L   6     6140   8055   8978    262    -21    303       O
ATOM   1649  N1   DC L   6      38.988  16.965  87.276  1.00 52.75           N
ANISOU 1649  N1   DC L   6     5114   6796   8132    110     24    233       N
ATOM   1650  C6   DC L   6      39.445  17.047  88.536  1.00 55.45           C
ANISOU 1650  C6   DC L   6     5491   7126   8453     58     38    216       C
ATOM   1651  C5   DC L   6      38.630  17.281  89.549  1.00 41.18           C
ANISOU 1651  C5   DC L   6     3739   5191   6715    -15     72    152       C
ATOM   1652  C4   DC L   6      37.250  17.429  89.260  1.00 60.41           C
ANISOU 1652  C4   DC L   6     6197   7506   9250    -37     93    104       C
ATOM   1653  N4   DC L   6      36.382  17.664  90.242  1.00 43.84           N
ANISOU 1653  N4   DC L   6     4155   5277   7226   -109    127     41       N
ATOM   1654  N3   DC L   6      36.781  17.350  88.024  1.00 64.13           N
ANISOU 1654  N3   DC L   6     6634   7988   9744     13     79    121       N
ATOM   1655  C2   DC L   6      37.622  17.105  87.009  1.00 57.17           C
ANISOU 1655  C2   DC L   6     5697   7236   8790     88     44    184       C
ATOM   1656  O2   DC L   6      37.225  17.023  85.847  1.00 60.56           O
ANISOU 1656  O2   DC L   6     6093   7680   9236    137     30    201       O
ATOM   1657  OP2  DC L   6      44.764  16.286  89.502  1.00 63.22           O
ANISOU 1657  OP2  DC L   6     6390   8588   9044    160    -44    410       O
ATOM   1658  P    DA L   7      42.814  18.301  83.154  1.00 56.77           P
ANISOU 1658  P    DA L   7     5276   7846   8448    284   -125    575       P
ATOM   1659  OP1  DA L   7      43.309  17.935  81.812  1.00 75.41           O
ANISOU 1659  OP1  DA L   7     7583  10318  10750    379   -158    634       O
ATOM   1660  OP2  DA L   7      43.593  19.067  84.159  1.00 66.40           O
ANISOU 1660  OP2  DA L   7     6478   9088   9663    204   -122    597       O
ATOM   1661  O5'  DA L   7      41.498  19.155  82.914  1.00 59.95           O
ANISOU 1661  O5'  DA L   7     5668   8127   8984    216   -104    543       O
ATOM   1662  C5'  DA L   7      40.401  18.594  82.311  1.00 40.16           C
ANISOU 1662  C5'  DA L   7     3195   5548   6516    258    -94    498       C
ATOM   1663  C4'  DA L   7      39.226  19.563  82.361  1.00 49.76           C
ANISOU 1663  C4'  DA L   7     4403   6642   7864    173    -71    466       C
ATOM   1664  C3'  DA L   7      39.593  21.042  82.183  1.00 45.85           C
ANISOU 1664  C3'  DA L   7     3819   6175   7426     96    -80    526       C
ATOM   1665  O3'  DA L   7      38.567  21.636  81.539  1.00 61.43           O
ANISOU 1665  O3'  DA L   7     5768   8076   9498     69    -71    515       O
ATOM   1666  C2'  DA L   7      39.613  21.528  83.630  1.00 54.35           C
ANISOU 1666  C2'  DA L   7     4934   7183   8534     -1    -55    491       C
ATOM   1667  C1'  DA L   7      38.391  20.778  84.171  1.00 63.61           C
ANISOU 1667  C1'  DA L   7     6200   8221   9746     -2    -22    400       C
ATOM   1668  O4'  DA L   7      38.521  19.469  83.645  1.00 56.59           O
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ANISOU 1668  O4'  DA L   7     5347   7381   8775    107    -34    390       O
ATOM   1669  N9   DA L   7      38.349  20.747  85.634  1.00 66.05           N
ANISOU 1669  N9   DA L   7     6575   8460  10062    -66      5    350       N
ATOM   1670  C4   DA L   7      37.249  20.662  86.454  1.00 53.93           C
ANISOU 1670  C4   DA L   7     5111   6782   8596   -118     41    273       C
ATOM   1671  C5   DA L   7      37.740  20.728  87.739  1.00 50.00           C
ANISOU 1671  C5   DA L   7     4650   6272   8075   -170     54    254       C
ATOM   1672  N7   DA L   7      39.104  20.835  87.737  1.00 56.01           N
ANISOU 1672  N7   DA L   7     5366   7164   8753   -152     28    317       N
ATOM   1673  C8   DA L   7      39.416  20.856  86.469  1.00 64.13           C
ANISOU 1673  C8   DA L   7     6330   8279   9757    -91     -1    373       C
ATOM   1674  N3   DA L   7      35.971  20.543  86.096  1.00 65.53           N
ANISOU 1674  N3   DA L   7     6609   8147  10143   -118     59    225       N
ATOM   1675  C2   DA L   7      35.191  20.493  87.164  1.00 54.32           C
ANISOU 1675  C2   DA L   7     5260   6604   8775   -176     94    156       C
ATOM   1676  N1   DA L   7      35.528  20.520  88.452  1.00 58.35           N
ANISOU 1676  N1   DA L   7     5814   7087   9269   -228    111    130       N
ATOM   1677  C6   DA L   7      36.817  20.647  88.780  1.00 49.89           C
ANISOU 1677  C6   DA L   7     4712   6124   8121   -227     91    179       C
ATOM   1678  N6   DA L   7      37.159  20.689  90.065  1.00 53.81           N
ANISOU 1678  N6   DA L   7     5251   6594   8600   -279    107    153       N
ATOM   1679  P    DA L   8      38.731  22.394  80.145  1.00 63.51           P
ANISOU 1679  P    DA L   8     5930   8414   9788     90    -98    587       P
ATOM   1680  OP1  DA L   8      39.918  23.250  80.149  1.00 63.95           O
ANISOU 1680  OP1  DA L   8     5910   8574   9816     60   -120    663       O
ATOM   1681  OP2  DA L   8      38.511  21.353  79.101  1.00 68.31           O
ANISOU 1681  OP2  DA L   8     6549   9058  10346    200   -114    584       O
ATOM   1682  O5'  DA L   8      37.419  23.314  80.169  1.00 70.25           O
ANISOU 1682  O5'  DA L   8     6780   9133  10778      6    -70    550       O
ATOM   1683  C5'  DA L   8      36.168  22.676  80.256  1.00 50.21           C
ANISOU 1683  C5'  DA L   8     4313   6478   8285     18    -45    475       C
ATOM   1684  C4'  DA L   8      35.138  23.504  81.002  1.00 58.50           C
ANISOU 1684  C4'  DA L   8     5387   7389   9452    -88    -10    427       C
ATOM   1685  C3'  DA L   8      35.210  25.011  80.825  1.00 59.22           C
ANISOU 1685  C3'  DA L   8     5396   7481   9621   -172    -11    474       C
ATOM   1686  O3'  DA L   8      33.883  25.494  80.524  1.00 50.09           O
ANISOU 1686  O3'  DA L   8     4244   6211   8577   -214     12    439       O
ATOM   1687  C2'  DA L   8      35.680  25.494  82.199  1.00 39.54           C
ANISOU 1687  C2'  DA L   8     2928   4964   7131   -257      4    462       C
ATOM   1688  C1'  DA L   8      35.100  24.435  83.118  1.00 39.30           C
ANISOU 1688  C1'  DA L   8     3004   4845   7082   -244     29    381       C
ATOM   1689  O4'  DA L   8      35.227  23.245  82.415  1.00 44.83           O
ANISOU 1689  O4'  DA L   8     3726   5601   7705   -135     12    379       O
ATOM   1690  N9   DA L   8      35.828  24.306  84.375  1.00 54.64           N
ANISOU 1690  N9   DA L   8     4987   6800   8975   -279     36    368       N
ATOM   1691  C4   DA L   8      35.319  24.041  85.631  1.00 45.13           C
ANISOU 1691  C4   DA L   8     3864   5491   7793   -329     68    299       C
ATOM   1692  C5   DA L   8      36.404  24.033  86.483  1.00 53.13           C
ANISOU 1692  C5   DA L   8     4882   6567   8737   -346     61    318       C
ATOM   1693  N7   DA L   8      37.567  24.256  85.789  1.00 46.69           N
ANISOU 1693  N7   DA L   8     3991   5893   7857   -308     26    397       N
ATOM   1694  C8   DA L   8      37.181  24.424  84.550  1.00 46.73           C
ANISOU 1694  C8   DA L   8     3945   5916   7892   -270     12    425       C
ATOM   1695  N3   DA L   8      34.054  23.860  85.969  1.00 52.13           N
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ANISOU 1695  N3   DA L   8     4812   6242   8753   -356     99    229       N
ATOM   1696  C2   DA L   8      33.929  23.650  87.274  1.00 50.89           C
ANISOU 1696  C2   DA L   8     4725   6015   8597   -402    124    177       C
ATOM   1697  N1   DA L   8      34.863  23.618  88.208  1.00 61.78           N
ANISOU 1697  N1   DA L   8     6118   7440   9916   -424    122    186       N
ATOM   1698  C6   DA L   8      36.143  23.812  87.843  1.00 57.06           C
ANISOU 1698  C6   DA L   8     5457   6979   9244   -398     90    257       C
ATOM   1699  N6   DA L   8      37.086  23.776  88.776  1.00 45.83           N
ANISOU 1699  N6   DA L   8     4048   5605   7761   -420     87    266       N
ATOM   1700  P    DG L   9      33.397  25.644  79.005  1.00 53.25           P
ANISOU 1700  P    DG L   9     6558   7067   6609    -85   -679    287       P
ATOM   1701  OP1  DG L   9      31.973  26.033  79.075  1.00 59.41           O
ANISOU 1701  OP1  DG L   9     7394   7848   7332     30   -725    151       O
ATOM   1702  O5'  DG L   9      34.232  26.845  78.430  1.00 55.50           O
ANISOU 1702  O5'  DG L   9     6981   7246   6859   -154   -769    313       O
ATOM   1703  C5'  DG L   9      34.128  28.116  79.034  1.00 39.82           C
ANISOU 1703  C5'  DG L   9     5113   5227   4789   -143   -893    257       C
ATOM   1704  C4'  DG L   9      35.203  29.043  78.524  1.00 49.87           C
ANISOU 1704  C4'  DG L   9     6492   6411   6047   -232   -959    315       C
ATOM   1705  C3'  DG L   9      34.987  30.495  78.890  1.00 48.16           C
ANISOU 1705  C3'  DG L   9     6422   6139   5738   -213  -1096    243       C
ATOM   1706  O3'  DG L   9      36.017  30.911  79.689  1.00 57.78           O
ANISOU 1706  O3'  DG L   9     7647   7366   6943   -293  -1141    317       O
ATOM   1707  C2'  DG L   9      35.012  31.238  77.555  1.00 52.76           C
ANISOU 1707  C2'  DG L   9     7130   6609   6306   -220  -1138    217       C
ATOM   1708  C1'  DG L   9      35.753  30.278  76.657  1.00 52.99           C
ANISOU 1708  C1'  DG L   9     7077   6632   6424   -283  -1031    315       C
ATOM   1709  O4'  DG L   9      35.306  29.006  77.069  1.00 58.06           O
ANISOU 1709  O4'  DG L   9     7572   7369   7117   -245   -928    323       O
ATOM   1710  N9   DG L   9      35.401  30.513  75.279  1.00 53.55           N
ANISOU 1710  N9   DG L   9     7225   6621   6501   -260  -1030    275       N
ATOM   1711  C4   DG L   9      36.071  31.305  74.388  1.00 57.66           C
ANISOU 1711  C4   DG L   9     7853   7044   7011   -318  -1080    303       C
ATOM   1712  C5   DG L   9      35.314  31.294  73.238  1.00 53.63           C
ANISOU 1712  C5   DG L   9     7389   6481   6506   -260  -1063    237       C
ATOM   1713  N7   DG L   9      34.174  30.529  73.412  1.00 60.17           N
ANISOU 1713  N7   DG L   9     8143   7372   7345   -167  -1006    168       N
ATOM   1714  C8   DG L   9      34.255  30.104  74.640  1.00 53.93           C
ANISOU 1714  C8   DG L   9     7264   6670   6557   -169   -990    191       C
ATOM   1715  N3   DG L   9      37.240  31.938  74.617  1.00 63.51           N
ANISOU 1715  N3   DG L   9     8641   7751   7741   -412  -1132    380       N
ATOM   1716  C2   DG L   9      37.667  32.581  73.548  1.00 60.87           C
ANISOU 1716  C2   DG L   9     8407   7320   7402   -451  -1167    393       C
ATOM   1717  N2   DG L   9      38.801  33.262  73.607  1.00 66.51           N
ANISOU 1717  N2   DG L   9     9179   7988   8104   -543  -1222    466       N
ATOM   1718  N1   DG L   9      36.981  32.641  72.356  1.00 70.67           N
ANISOU 1718  N1   DG L   9     9704   8502   8647   -400  -1156    331       N
ATOM   1719  C6   DG L   9      35.769  32.007  72.105  1.00 65.46           C
ANISOU 1719  C6   DG L   9     8998   7876   7998   -302  -1103    249       C
ATOM   1720  O6   DG L   9      35.236  32.103  70.992  1.00 78.08           O
ANISOU 1720  O6   DG L   9    10651   9415   9600   -263  -1096    199       O
ATOM   1721  OP2  DG L   9      33.841  24.469  78.244  1.00 46.33           O
ANISOU 1721  OP2  DG L   9     5576   6206   5823   -123   -558    367       O
ATOM   1722  P    DC L  10      35.994  32.387  80.308  1.00 67.85           P
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ANISOU 1722  P    DC L  10     9061   8595   8124   -289  -1284    261       P
ATOM   1723  OP1  DC L  10       36.904  32.267  81.491  1.00 64.41           O
ANISOU 1723  OP1  DC L  10     8561   8219   7694   -359  -1288    344       O
ATOM   1724  O5'  DC L  10       36.706  33.256  79.191  1.00 65.01           O
ANISOU 1724  O5'  DC L  10     8825   8120   7756   -352  -1337    289       O
ATOM   1725  C5'  DC L  10       38.057  33.030  78.934  1.00 62.83           C
ANISOU 1725  C5'  DC L  10     8517   7827   7530   -462  -1302    413       C
ATOM   1726  C4'  DC L  10       38.688  34.241  78.304  1.00 57.32           C
ANISOU 1726  C4'  DC L  10     7964   7022   6792   -517  -1396    423       C
ATOM   1727  C3'  DC L  10       38.295  35.586  78.918  1.00 60.24           C
ANISOU 1727  C3'  DC L  10     8465   7358   7067   -483  -1531    340       C
ATOM   1728  O3'  DC L  10       39.425  36.162  79.496  1.00 81.12           O
ANISOU 1728  O3'  DC L  10    11138   9988   9694   -573  -1586    417       O
ATOM   1729  C2'  DC L  10       37.807  36.407  77.726  1.00 51.88           C
ANISOU 1729  C2'  DC L  10     7542   6196   5974   -448  -1587    268       C
ATOM   1730  C1'  DC L  10       38.343  35.614  76.544  1.00 65.82           C
ANISOU 1730  C1'  DC L  10     9254   7935   7819   -496  -1490    342       C
ATOM   1731  O4'  DC L  10       38.303  34.295  76.934  1.00 62.76           O
ANISOU 1731  O4'  DC L  10     8710   7641   7496   -491  -1378    387       O
ATOM   1732  N1   DC L  10       37.536  35.704  75.357  1.00 70.88           N
ANISOU 1732  N1   DC L  10     9955   8518   8460   -436  -1482    269       N
ATOM   1733  C6   DC L  10       36.336  35.059  75.303  1.00 67.44           C
ANISOU 1733  C6   DC L  10     9465   8127   8032   -338  -1432    189       C
ATOM   1734  C5   DC L  10       35.593  35.117  74.199  1.00 59.78           C
ANISOU 1734  C5   DC L  10     8548   7103   7062   -281  -1422    122       C
ATOM   1735  C4   DC L  10       36.113  35.870  73.094  1.00 54.45           C
ANISOU 1735  C4   DC L  10     7986   6323   6380   -329  -1466    139       C
ATOM   1736  N4   DC L  10       35.426  35.973  71.978  1.00 68.06           N
ANISOU 1736  N4   DC L  10     9767   7988   8103   -277  -1460     75       N
ATOM   1737  N3   DC L  10       37.285  36.483  73.145  1.00 63.26           N
ANISOU 1737  N3   DC L  10     9152   7395   7489   -425  -1514    218       N
ATOM   1738  C2   DC L  10       38.028  36.407  74.268  1.00 67.41           C
ANISOU 1738  C2   DC L  10     9623   7977   8014   -481  -1523    285       C
ATOM   1739  O2   DC L  10       39.119  36.962  74.370  1.00 70.50           O
ANISOU 1739  O2   DC L  10    10058   8331   8399   -570  -1567    359       O
ATOM   1740  OP2  DC L  10       34.635  32.953  80.331  1.00 60.86           O
ANISOU 1740  OP2  DC L  10     8253   7698   7174   -179  -1345    123       O
ATOM   1741  P    DC L  11       39.299  37.375  80.540  1.00 92.19           P
ANISOU 1741  P    DC L  11    12640  11382  11007   -559  -1715    363       P
ATOM   1742  OP1  DC L  11       40.262  36.988  81.594  1.00 90.70           O
ANISOU 1742  OP1  DC L  11    12361  11259  10841   -633  -1693    461       O
ATOM   1743  O5'  DC L  11       39.831  38.659  79.739  1.00 74.66           O
ANISOU 1743  O5'  DC L  11    10580   9042   8743   -607  -1814    362       O
ATOM   1744  C5'  DC L  11       40.995  38.568  78.930  1.00 70.28           C
ANISOU 1744  C5'  DC L  11    10029   8438   8238   -706  -1783    466       C
ATOM   1745  C4'  DC L  11       41.085  39.771  78.020  1.00 80.77           C
ANISOU 1745  C4'  DC L  11    11519   9652   9520   -718  -1875    429       C
ATOM   1746  C3'  DC L  11       40.470  41.050  78.598  1.00 81.98           C
ANISOU 1746  C3'  DC L  11    11801   9772   9576   -666  -2007    330       C
ATOM   1747  O3'  DC L  11       41.340  42.140  78.442  1.00 92.58           O
ANISOU 1747  O3'  DC L  11    13258  11037  10883   -739  -2098    366       O
ATOM   1748  C2'  DC L  11       39.207  41.250  77.788  1.00 75.39           C
ANISOU 1748  C2'  DC L  11    11030   8897   8716   -566  -2019    212       C
ATOM   1749  C1'  DC L  11       39.574  40.592  76.481  1.00 80.48           C
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ANISOU 1749  C1'  DC L  11    11642   9504   9431   -601  -1933    268       C
ATOM   1750  O4'  DC L  11      40.367  39.492  76.806  1.00 83.70           O
ANISOU 1750  O4'  DC L  11    11908   9981   9912   -664  -1833    377       O
ATOM   1751  N1   DC L  11      38.407  40.110  75.763  1.00 77.92           N
ANISOU 1751  N1   DC L  11    11304   9181   9121   -508  -1884    184       N
ATOM   1752  C6   DC L  11      37.407  39.469  76.424  1.00 83.89           C
ANISOU 1752  C6   DC L  11    11980  10018   9875   -423  -1844    121       C
ATOM   1753  C5   DC L  11      36.328  39.030  75.781  1.00 73.57           C
ANISOU 1753  C5   DC L  11    10660   8713   8579   -337  -1800     43       C
ATOM   1754  C4   DC L  11      36.256  39.277  74.392  1.00 82.83           C
ANISOU 1754  C4   DC L  11    11907   9799   9764   -337  -1798     27       C
ATOM   1755  N4   DC L  11      35.192  38.869  73.695  1.00 84.56           N
ANISOU 1755  N4   DC L  11    12119  10016   9995   -253  -1756    -50       N
ATOM   1756  N3   DC L  11      37.237  39.914  73.742  1.00 83.23           N
ANISOU 1756  N3   DC L  11    12038   9770   9816   -421  -1837     89       N
ATOM   1757  C2   DC L  11      38.331  40.344  74.429  1.00 72.77           C
ANISOU 1757  C2   DC L  11    10723   8446   8479   -508  -1881    168       C
ATOM   1758  O2   DC L  11      39.275  40.930  73.901  1.00 78.76           O
ANISOU 1758  O2   DC L  11    11551   9134   9238   -589  -1919    229       O
ATOM   1759  OP2  DC L  11      37.871  37.694  80.799  1.00 81.68           O
ANISOU 1759  OP2  DC L  11    11353  10065   9619   -441  -1759    228       O
ATOM   1760  P    DA L  12      40.925  43.579  79.035  1.00110.78           P
ANISOU 1760  P    DA L  12    15707  13299  13087   -703  -2244    278       P
ATOM   1761  OP1  DA L  12      42.183  44.219  79.498  1.00113.86           O
ANISOU 1761  OP1  DA L  12    16136  13664  13462   -806  -2303    364       O
ATOM   1762  OP2  DA L  12      39.764  43.430  79.960  1.00 91.47           O
ANISOU 1762  OP2  DA L  12    13228  10923  10603   -603  -2255    182       O
ATOM   1763  O5'  DA L  12      40.436  44.376  77.751  1.00 96.33           O
ANISOU 1763  O5'  DA L  12    14013  11362  11226   -670  -2297    206       O
ATOM   1764  C5'  DA L  12      41.376  44.748  76.773  1.00 91.33           C
ANISOU 1764  C5'  DA L  12    13441  10646  10613   -753  -2307    274       C
ATOM   1765  C4'  DA L  12      40.691  45.445  75.617  1.00103.41           C
ANISOU 1765  C4'  DA L  12    15097  12084  12112   -702  -2355    189       C
ATOM   1766  C3'  DA L  12      39.471  46.289  75.968  1.00109.34           C
ANISOU 1766  C3'  DA L  12    15945  12820  12780   -600  -2448     52       C
ATOM   1767  O3'  DA L  12      39.832  47.612  76.482  1.00126.87           O
ANISOU 1767  O3'  DA L  12    18290  14990  14925   -629  -2577     36       O
ATOM   1768  C2'  DA L  12      38.833  46.396  74.600  1.00 95.18           C
ANISOU 1768  C2'  DA L  12    14217  10955  10992   -554  -2437     -8       C
ATOM   1769  C1'  DA L  12      39.113  45.041  73.974  1.00 85.43           C
ANISOU 1769  C1'  DA L  12    12850   9760   9852   -579  -2299     66       C
ATOM   1770  O4'  DA L  12      40.160  44.451  74.708  1.00 93.98           O
ANISOU 1770  O4'  DA L  12    13829  10902  10977   -662  -2250    179       O
ATOM   1771  N9   DA L  12      37.921  44.253  74.069  1.00 73.38           N
ANISOU 1771  N9   DA L  12    11248   8294   8338   -479  -2236     -9       N
ATOM   1772  C4   DA L  12      36.896  44.258  73.173  1.00 71.40           C
ANISOU 1772  C4   DA L  12    11041   8008   8081   -399  -2227    -99       C
ATOM   1773  C5   DA L  12      35.921  43.454  73.718  1.00 65.75           C
ANISOU 1773  C5   DA L  12    10231   7376   7376   -315  -2170   -154       C
ATOM   1774  N7   DA L  12      36.314  42.988  74.966  1.00 63.81           N
ANISOU 1774  N7   DA L  12     9887   7218   7141   -341  -2147   -103       N
ATOM   1775  C8   DA L  12      37.496  43.515  75.130  1.00 67.35           C
ANISOU 1775  C8   DA L  12    10373   7633   7585   -439  -2190    -19       C
ATOM   1776  N3   DA L  12      36.864  44.878  71.985  1.00 77.61           N
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ANISOU 1776  N3   DA L  12    11936   8697   8856   -403  -2263   -124       N
ATOM   1777  C2   DA L  12      35.726  44.612  71.350  1.00 82.69           C
ANISOU 1777  C2   DA L  12    12585   9334   9499   -311  -2235   -214       C
ATOM   1778  N1   DA L  12      34.697  43.856  71.744  1.00 74.58           N
ANISOU 1778  N1   DA L  12    11474   8380   8481   -224  -2179   -276       N
ATOM   1779  C6   DA L  12      34.758  43.254  72.944  1.00 62.80           C
ANISOU 1779  C6   DA L  12     9875   6985   7001   -223  -2145   -248       C
ATOM   1780  N6   DA L  12      33.734  42.499  73.336  1.00 71.32           N
ANISOU 1780  N6   DA L  12    10870   8138   8089   -136  -2090   -310       N
ATOM   1781  P    DA L  13      38.699  48.737  76.807  1.00123.15           P
ANISOU 1781  P    DA L  13    17948  14487  14359   -533  -2695   -105       P
ATOM   1782  OP1  DA L  13      39.414  49.885  77.405  1.00123.70           O
ANISOU 1782  OP1  DA L  13    18115  14515  14369   -591  -2808    -84       O
ATOM   1783  OP2  DA L  13      37.558  48.146  77.537  1.00104.21           O
ANISOU 1783  OP2  DA L  13    15472  12172  11950   -434  -2661   -183       O
ATOM   1784  O5'  DA L  13      38.126  49.197  75.366  1.00113.95           O
ANISOU 1784  O5'  DA L  13    16888  13225  13183   -494  -2716   -171       O
ATOM   1785  C5'  DA L  13      38.760  50.251  74.652  1.00 97.63           C
ANISOU 1785  C5'  DA L  13    14954  11055  11086   -551  -2796   -154       C
ATOM   1786  C4'  DA L  13      38.249  50.405  73.223  1.00 79.94           C
ANISOU 1786  C4'  DA L  13    12785   8736   8854   -517  -2788   -204       C
ATOM   1787  C3'  DA L  13      36.986  51.201  73.103  1.00 84.43           C
ANISOU 1787  C3'  DA L  13    13462   9268   9351   -412  -2869   -344       C
ATOM   1788  O3'  DA L  13      37.323  52.565  73.137  1.00 97.47           O
ANISOU 1788  O3'  DA L  13    15260  10840  10933   -441  -2995   -364       O
ATOM   1789  C2'  DA L  13      36.461  50.768  71.734  1.00 81.26           C
ANISOU 1789  C2'  DA L  13    13064   8823   8987   -376  -2807   -374       C
ATOM   1790  C1'  DA L  13      36.821  49.281  71.722  1.00 80.15           C
ANISOU 1790  C1'  DA L  13    12754   8761   8938   -404  -2666   -288       C
ATOM   1791  O4'  DA L  13      37.952  49.133  72.593  1.00 88.23           O
ANISOU 1791  O4'  DA L  13    13718   9827   9980   -494  -2660   -184       O
ATOM   1792  N9   DA L  13      35.738  48.404  72.204  1.00 79.57           N
ANISOU 1792  N9   DA L  13    12581   8774   8878   -311  -2600   -351       N
ATOM   1793  C4   DA L  13      34.519  48.131  71.599  1.00 81.35           C
ANISOU 1793  C4   DA L  13    12812   8997   9102   -212  -2572   -448       C
ATOM   1794  C5   DA L  13      33.867  47.249  72.455  1.00 82.36           C
ANISOU 1794  C5   DA L  13    12821   9226   9245   -153  -2511   -472       C
ATOM   1795  N7   DA L  13      34.650  46.983  73.565  1.00 73.98           N
ANISOU 1795  N7   DA L  13    11684   8230   8196   -212  -2501   -394       N
ATOM   1796  C8   DA L  13      35.733  47.686  73.368  1.00 74.54           C
ANISOU 1796  C8   DA L  13    11825   8238   8257   -304  -2555   -325       C
ATOM   1797  N3   DA L  13      34.046  48.610  70.434  1.00 75.22           N
ANISOU 1797  N3   DA L  13    12133   8136   8310   -180  -2599   -506       N
ATOM   1798  C2   DA L  13      32.824  48.115  70.175  1.00 81.85           C
ANISOU 1798  C2   DA L  13    12942   9003   9153    -79  -2557   -595       C
ATOM   1799  N1   DA L  13      32.075  47.262  70.897  1.00 80.70           N
ANISOU 1799  N1   DA L  13    12687   8953   9023    -12  -2496   -629       N
ATOM   1800  C6   DA L  13      32.570  46.802  72.069  1.00 80.25           C
ANISOU 1800  C6   DA L  13    12534   8978   8980    -47  -2471   -569       C
ATOM   1801  N6   DA L  13      31.829  45.949  72.801  1.00 55.68           N
ANISOU 1801  N6   DA L  13     9312   5962   5883     18  -2411   -602       N
ATOM   1802  P    DG L  14      36.491  53.553  74.075  1.00 96.52           P
ANISOU 1802  P    DG L  14    12983  11380  12310    766  -2555    569       P
ATOM   1803  OP1  DG L  14      37.287  54.789  74.173  1.00117.52           O
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ANISOU 1803  OP1  DG L  14    15718  14034  14901    785  -2579    648       O
ATOM   1804  O5'  DG L  14      35.186  53.801  73.210  1.00 87.34           O
ANISOU 1804  O5'  DG L  14    11697  10331  11158    851  -2466    475       O
ATOM   1805  C5'  DG L  14      35.314  54.333  71.936  1.00 78.91           C
ANISOU 1805  C5'  DG L  14    10507   9377  10099    965  -2477    449       C
ATOM   1806  C4'  DG L  14      34.054  54.102  71.157  1.00 78.85           C
ANISOU 1806  C4'  DG L  14    10370   9465  10126   1029  -2405    349       C
ATOM   1807  C3'  DG L  14      32.799  54.662  71.785  1.00 78.71           C
ANISOU 1807  C3'  DG L  14    10407   9439  10059   1004  -2292    324       C
ATOM   1808  O3'  DG L  14      32.658  56.046  71.504  1.00 77.93           O
ANISOU 1808  O3'  DG L  14    10320   9395   9893   1064  -2247    344       O
ATOM   1809  C2'  DG L  14      31.731  53.844  71.071  1.00 86.00           C
ANISOU 1809  C2'  DG L  14    11193  10435  11048   1044  -2249    221       C
ATOM   1810  C1'  DG L  14      32.432  52.489  70.875  1.00 82.48           C
ANISOU 1810  C1'  DG L  14    10700   9959  10681   1018  -2339    212       C
ATOM   1811  O4'  DG L  14      33.804  52.692  71.119  1.00 81.06           O
ANISOU 1811  O4'  DG L  14    10592   9726  10483    995  -2427    296       O
ATOM   1812  N9   DG L  14      31.953  51.475  71.781  1.00 74.88           N
ANISOU 1812  N9   DG L  14     9791   8913   9747    922  -2321    194       N
ATOM   1813  C4   DG L  14      30.719  50.900  71.765  1.00 67.53           C
ANISOU 1813  C4   DG L  14     8804   8005   8850    916  -2251    116       C
ATOM   1814  C5   DG L  14      30.707  50.014  72.812  1.00 66.80           C
ANISOU 1814  C5   DG L  14     8799   7808   8776    810  -2260    130       C
ATOM   1815  N7   DG L  14      31.918  50.033  73.483  1.00 71.10           N
ANISOU 1815  N7   DG L  14     9453   8264   9298    750  -2335    216       N
ATOM   1816  C8   DG L  14      32.624  50.920  72.838  1.00 68.75           C
ANISOU 1816  C8   DG L  14     9132   8019   8970    820  -2369    252       C
ATOM   1817  N3   DG L  14      29.742  51.170  70.876  1.00 67.89           N
ANISOU 1817  N3   DG L  14     8732   8156   8908    998  -2189     42       N
ATOM   1818  C2   DG L  14      28.651  50.453  71.117  1.00 72.29           C
ANISOU 1818  C2   DG L  14     9260   8708   9499    967  -2130    -21       C
ATOM   1819  N2   DG L  14      27.571  50.601  70.338  1.00 65.52           N
ANISOU 1819  N2   DG L  14     8290   7947   8659   1037  -2064    -99       N
ATOM   1820  N1   DG L  14      28.545  49.543  72.139  1.00 79.27           N
ANISOU 1820  N1   DG L  14    10224   9491  10404    863  -2133    -13       N
ATOM   1821  C6   DG L  14      29.548  49.255  73.051  1.00 70.06           C
ANISOU 1821  C6   DG L  14     9180   8216   9226    778  -2197     62       C
ATOM   1822  O6   DG L  14      29.350  48.422  73.935  1.00 80.93           O
ANISOU 1822  O6   DG L  14    10621   9507  10622    687  -2193     63       O
ATOM   1823  OP2  DG L  14      36.065  52.864  75.311  1.00 95.10           O
ANISOU 1823  OP2  DG L  14    12909  11094  12130    653  -2528    573       O
ATOM   1824  P    DC L  15      31.827  56.980  72.520  1.00 80.35           P
ANISOU 1824  P    DC L  15    10751   9657  10120   1017  -2147    366       P
ATOM   1825  OP1  DC L  15      32.012  58.395  72.138  1.00 76.93           O
ANISOU 1825  OP1  DC L  15    10330   9280   9621   1084  -2126    399       O
ATOM   1826  O5'  DC L  15      30.297  56.564  72.275  1.00 69.38           O
ANISOU 1826  O5'  DC L  15     9277   8322   8762   1036  -2052    269       O
ATOM   1827  C5'  DC L  15      29.678  56.827  71.052  1.00 47.49           C
ANISOU 1827  C5'  DC L  15     6357   5675   6012   1143  -2019    201       C
ATOM   1828  C4'  DC L  15      28.268  56.287  71.060  1.00 73.12           C
ANISOU 1828  C4'  DC L  15     9544   8947   9290   1137  -1934    118       C
ATOM   1829  C3'  DC L  15      27.395  56.770  72.208  1.00 80.66           C
ANISOU 1829  C3'  DC L  15    10621   9839  10188   1069  -1839    132       C
ATOM   1830  O3'  DC L  15      26.819  58.041  71.911  1.00 76.40           O
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ANISOU 1830  O3'  DC L  15    10074   9365   9588   1132  -1765    129       O
ATOM   1831  C2'  DC L  15      26.329  55.681  72.265  1.00 83.40           C
ANISOU 1831  C2'  DC L  15    10905  10188  10596   1041  -1794     54       C
ATOM   1832  C1'  DC L  15      27.105  54.434  71.823  1.00 75.60           C
ANISOU 1832  C1'  DC L  15     9847   9191   9686   1034  -1894     40       C
ATOM   1833  O4'  DC L  15      28.321  54.862  71.252  1.00 72.18           O
ANISOU 1833  O4'  DC L  15     9399   8781   9242   1082  -1976     88       O
ATOM   1834  N1   DC L  15      27.407  53.507  72.920  1.00 60.17           N
ANISOU 1834  N1   DC L  15     7994   7118   7750    922  -1924     70       N
ATOM   1835  C6   DC L  15      28.588  53.606  73.598  1.00 60.94           C
ANISOU 1835  C6   DC L  15     8206   7129   7819    864  -1995    155       C
ATOM   1836  C5   DC L  15      28.886  52.749  74.585  1.00 56.90           C
ANISOU 1836  C5   DC L  15     7786   6510   7325    761  -2025    183       C
ATOM   1837  C4   DC L  15      27.919  51.751  74.899  1.00 58.12           C
ANISOU 1837  C4   DC L  15     7912   6643   7527    716  -1980    121       C
ATOM   1838  N4   DC L  15      28.146  50.881  75.874  1.00 60.37           N
ANISOU 1838  N4   DC L  15     8285   6823   7830    615  -2006    144       N
ATOM   1839  N3   DC L  15      26.759  51.656  74.241  1.00 58.96           N
ANISOU 1839  N3   DC L  15     7907   6834   7661    773  -1911     39       N
ATOM   1840  C2   DC L  15      26.477  52.521  73.245  1.00 58.68           C
ANISOU 1840  C2   DC L  15     7780   6907   7609    875  -1882     11       C
ATOM   1841  O2   DC L  15      25.419  52.469  72.614  1.00 66.80           O
ANISOU 1841  O2   DC L  15     8703   8015   8662    930  -1819    -63       O
ATOM   1842  OP2  DC L  15      32.177  56.513  73.884  1.00 62.52           O
ANISOU 1842  OP2  DC L  15     8643   7266   7846    895  -2166    421       O
ATOM   1843  P    DG L  16      26.089  58.891  73.065  1.00 67.59           P
ANISOU 1843  P    DG L  16     9100   8188   8393   1073  -1668    161       P
ATOM   1844  OP1  DG L  16      25.831  60.249  72.535  1.00 72.48           O
ANISOU 1844  OP1  DG L  16     9698   8885   8955   1154  -1618    166       O
ATOM   1845  O5'  DG L  16      24.692  58.130  73.248  1.00 66.22           O
ANISOU 1845  O5'  DG L  16     8878   8022   8262   1049  -1586     82       O
ATOM   1846  C5'  DG L  16      23.652  58.385  72.331  1.00 59.77           C
ANISOU 1846  C5'  DG L  16     7932   7314   7462   1134  -1519      7       C
ATOM   1847  C4'  DG L  16      22.401  57.615  72.681  1.00 62.87           C
ANISOU 1847  C4'  DG L  16     8299   7696   7893   1095  -1446    -57       C
ATOM   1848  C3'  DG L  16      21.859  57.864  74.069  1.00 55.43           C
ANISOU 1848  C3'  DG L  16     7508   6655   6898   1002  -1374    -22       C
ATOM   1849  O3'  DG L  16      21.069  59.031  74.038  1.00 65.49           O
ANISOU 1849  O3'  DG L  16     8796   7976   8113   1045  -1280    -27       O
ATOM   1850  C2'  DG L  16      21.004  56.612  74.265  1.00 63.31           C
ANISOU 1850  C2'  DG L  16     8456   7634   7964    958  -1346    -87       C
ATOM   1851  C1'  DG L  16      21.910  55.540  73.646  1.00 67.93           C
ANISOU 1851  C1'  DG L  16     8961   8226   8622    966  -1457   -100       C
ATOM   1852  O4'  DG L  16      22.658  56.190  72.631  1.00 75.40           O
ANISOU 1852  O4'  DG L  16     9838   9252   9559   1055  -1509    -87       O
ATOM   1853  N9   DG L  16      22.838  54.987  74.620  1.00 68.18           N
ANISOU 1853  N9   DG L  16     9114   8141   8651    869  -1523    -37       N
ATOM   1854  C4   DG L  16      22.587  53.966  75.504  1.00 63.13           C
ANISOU 1854  C4   DG L  16     8531   7413   8043    775  -1519    -42       C
ATOM   1855  C5   DG L  16      23.732  53.836  76.266  1.00 65.51           C
ANISOU 1855  C5   DG L  16     8951   7616   8322    704  -1593     34       C
ATOM   1856  N7   DG L  16      24.686  54.781  75.884  1.00 55.17           N
ANISOU 1856  N7   DG L  16     7661   6332   6967    753  -1641     89       N
ATOM   1857  C8   DG L  16      24.110  55.441  74.910  1.00 60.59           C
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ANISOU 1857  C8   DG L  16     8241   7129   7649    850  -1596     44       C
ATOM   1858  N3   DG L  16      21.452  53.239  75.565  1.00 63.09           N
ANISOU 1858  N3   DG L  16     8471   7418   8082    758  -1459   -110       N
ATOM   1859  C2   DG L  16      21.512  52.302  76.506  1.00 62.73           C
ANISOU 1859  C2   DG L  16     8502   7272   8060    660  -1474    -97       C
ATOM   1860  N2   DG L  16      20.467  51.503  76.708  1.00 55.88           N
ANISOU 1860  N2   DG L  16     7595   6399   7238    630  -1419   -157       N
ATOM   1861  N1   DG L  16      22.595  52.095  77.320  1.00 66.67           N
ANISOU 1861  N1   DG L  16     9121   7670   8540    584  -1544    -24       N
ATOM   1862  C6   DG L  16      23.785  52.819  77.264  1.00 65.08           C
ANISOU 1862  C6   DG L  16     8977   7456   8294    599  -1609     47       C
ATOM   1863  O6   DG L  16      24.713  52.536  78.042  1.00 66.50           O
ANISOU 1863  O6   DG L  16     9265   7540   8461    525  -1672    111       O
ATOM   1864  OP2  DG L  16      26.887  58.814  74.311  1.00 60.17           O
ANISOU 1864  OP2  DG L  16     8326   7120   7418    969  -1708    242       O
ATOM   1865  P    DC L  17      21.102  60.101  75.237  1.00 64.35           P
ANISOU 1865  P    DC L  17     8831   7749   7871    986  -1227     49       P
ATOM   1866  OP1  DC L  17      20.550  61.387  74.710  1.00 61.61           O
ANISOU 1866  OP1  DC L  17     8452   7486   7471   1068  -1156     40       O
ATOM   1867  O5'  DC L  17      20.074  59.464  76.293  1.00 71.75           O
ANISOU 1867  O5'  DC L  17     9835   8610   8816    898  -1151     27       O
ATOM   1868  C5'  DC L  17      18.700  59.247  75.925  1.00 70.60           C
ANISOU 1868  C5'  DC L  17     9593   8528   8703    931  -1063    -52       C
ATOM   1869  C4'  DC L  17      18.068  58.206  76.827  1.00 68.81           C
ANISOU 1869  C4'  DC L  17     9413   8221   8512    839  -1031    -73       C
ATOM   1870  C3'  DC L  17      18.156  58.521  78.311  1.00 66.13           C
ANISOU 1870  C3'  DC L  17     9262   7758   8107    738   -997     -4       C
ATOM   1871  O3'  DC L  17      17.043  59.271  78.701  1.00 56.15           O
ANISOU 1871  O3'  DC L  17     8035   6503   6795    743   -882    -16       O
ATOM   1872  C2'  DC L  17      18.120  57.136  78.935  1.00 69.27           C
ANISOU 1872  C2'  DC L  17     9679   8076   8563    652  -1026    -20       C
ATOM   1873  C1'  DC L  17      18.870  56.294  77.921  1.00 70.42           C
ANISOU 1873  C1'  DC L  17     9699   8273   8783    694  -1129    -49       C
ATOM   1874  O4'  DC L  17      18.773  56.945  76.666  1.00 67.24           O
ANISOU 1874  O4'  DC L  17     9171   7993   8384    807  -1126    -83       O
ATOM   1875  N1   DC L  17      20.301  56.098  78.285  1.00 69.50           N
ANISOU 1875  N1   DC L  17     9665   8084   8657    649  -1234     20       N
ATOM   1876  C6   DC L  17      21.245  57.016  77.893  1.00 62.90           C
ANISOU 1876  C6   DC L  17     8847   7274   7776    696  -1283     71       C
ATOM   1877  C5   DC L  17      22.546  56.846  78.222  1.00 62.68           C
ANISOU 1877  C5   DC L  17     8894   7181   7741    655  -1379    137       C
ATOM   1878  C4   DC L  17      22.898  55.673  78.984  1.00 58.98           C
ANISOU 1878  C4   DC L  17     8481   6615   7312    561  -1427    149       C
ATOM   1879  N4   DC L  17      24.160  55.452  79.348  1.00 56.74           N
ANISOU 1879  N4   DC L  17     8272   6263   7024    515  -1521    214       N
ATOM   1880  N3   DC L  17      21.982  54.791  79.378  1.00 63.13           N
ANISOU 1880  N3   DC L  17     8992   7115   7880    514  -1378    100       N
ATOM   1881  C2   DC L  17      20.673  54.961  79.040  1.00 64.56           C
ANISOU 1881  C2   DC L  17     9097   7362   8070    556  -1282     34       C
ATOM   1882  O2   DC L  17      19.799  54.140  79.385  1.00 56.84           O
ANISOU 1882  O2   DC L  17     8102   6363   7134    514  -1236    -13       O
ATOM   1883  OP2  DC L  17      22.461  60.111  75.833  1.00 61.66           O
ANISOU 1883  OP2  DC L  17     8604   7322   7504    929  -1317    132       O
ATOM   1884  P    DA L  18      16.984  60.007  80.138  1.00 66.09           P
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ANISOU 1884  P    DA L  18     9492   7653   7967    660   -824     56       P
ATOM   1885  OP1  DA L  18       15.713  60.772  80.184  1.00 73.98          O
ANISOU 1885  OP1  DA L  18    10484   8696   8930    693   -702     27       O
ATOM   1886  OP2  DA L  18       18.237  60.726  80.424  1.00 70.75          O
ANISOU 1886  OP2  DA L  18    10186   8199   8497    648   -891    139       O
ATOM   1887  O5'  DA L  18       16.897  58.796  81.164  1.00 68.69          O
ANISOU 1887  O5'  DA L  18     9893   7873   8332    550   -835     59       O
ATOM   1888  C5'  DA L  18       15.730  57.991  81.241  1.00 65.90          C
ANISOU 1888  C5'  DA L  18     9478   7528   8031    532   -770     -8       C
ATOM   1889  C4'  DA L  18       15.911  56.878  82.266  1.00 74.17          C
ANISOU 1889  C4'  DA L  18    10611   8462   9108    423   -798      9       C
ATOM   1890  C3'  DA L  18       16.408  57.329  83.626  1.00 73.63          C
ANISOU 1890  C3'  DA L  18    10742   8271   8965    332   -793     93       C
ATOM   1891  O3'  DA L  18       15.346  57.776  84.413  1.00 62.91          O
ANISOU 1891  O3'  DA L  18     9460   6880   7563    301   -680     92       O
ATOM   1892  C2'  DA L  18       17.002  56.038  84.176  1.00 76.65          C
ANISOU 1892  C2'  DA L  18    11159   8567   9399    247   -868    103       C
ATOM   1893  C1'  DA L  18       17.650  55.444  82.921  1.00 70.67          C
ANISOU 1893  C1'  DA L  18    10250   7891   8712    314   -962     66       C
ATOM   1894  O4'  DA L  18       16.930  55.949  81.809  1.00 77.00          O
ANISOU 1894  O4'  DA L  18    10913   8816   9526    418   -915      8       O
ATOM   1895  N9   DA L  18       19.050  55.818  82.764  1.00 74.25          N
ANISOU 1895  N9   DA L  18    10745   8328   9139    322  -1060    129       N
ATOM   1896  C4   DA L  18       20.156  55.207  83.339  1.00 80.68          C
ANISOU 1896  C4   DA L  18    11640   9052   9962    251  -1152    181       C
ATOM   1897  C5   DA L  18       21.248  55.920  82.888  1.00 80.23          C
ANISOU 1897  C5   DA L  18    11593   9018   9873    294  -1222    230       C
ATOM   1898  N7   DA L  18       20.849  56.948  82.054  1.00 75.93          N
ANISOU 1898  N7   DA L  18    10976   8576   9299    389  -1176    209       N
ATOM   1899  C8   DA L  18       19.539  56.845  82.019  1.00 61.16          C
ANISOU 1899  C8   DA L  18     9055   6741   7444    402  -1080    149       C
ATOM   1900  N3   DA L  18       20.176  54.135  84.162  1.00 69.10          N
ANISOU 1900  N3   DA L  18    10232   7494   8530    158  -1171    184       N
ATOM   1901  C2   DA L  18       21.422  53.829  84.507  1.00 73.78          C
ANISOU 1901  C2   DA L  18    10893   8018   9121    111  -1269    243       C
ATOM   1902  N1   DA L  18       22.565  54.429  84.154  1.00 79.22          N
ANISOU 1902  N1   DA L  18    11600   8719   9781    143  -1344    296       N
ATOM   1903  C6   DA L  18       22.512  55.497  83.332  1.00 76.02          C
ANISOU 1903  C6   DA L  18    11137   8406   9342    235  -1323    291       C
ATOM   1904  N6   DA L  18       23.644  56.091  82.977  1.00 67.19          N
ANISOU 1904  N6   DA L  18    10034   7299   8196    267  -1398    344       N
ATOM   1905  P    DC L  19       15.600  58.920  85.505  1.00 74.59          P
ANISOU 1905  P    DC L  19    11127   8277   8936    254   -640    174       P
ATOM   1906  OP1  DC L  19       14.269  59.193  86.093  1.00 71.10          O
ANISOU 1906  OP1  DC L  19    10722   7823   8470    235   -514    151       O
ATOM   1907  O5'  DC L  19       16.514  58.235  86.629  1.00 68.16          O
ANISOU 1907  O5'  DC L  19    10454   7328   8116    141   -710    235       O
ATOM   1908  C5'  DC L  19       15.974  57.226  87.436  1.00 75.84          C
ANISOU 1908  C5'  DC L  19    11466   8227   9125     59   -682    217       C
ATOM   1909  C4'  DC L  19       17.055  56.482  88.189  1.00 75.14          C
ANISOU 1909  C4'  DC L  19    11475   8030   9044    -30   -775    269       C
ATOM   1910  C3'  DC L  19       17.950  57.332  89.049  1.00 74.97          C
ANISOU 1910  C3'  DC L  19    11624   7923   8936    -78   -801    361       C
ATOM   1911  O3'  DC L  19       17.318  57.638  90.257  1.00 82.57          O
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ANISOU 1911  O3'  DC L  19    12729   8802   9843   -148   -717    389       O
ATOM   1912  C2'  DC L  19      19.114  56.377  89.256  1.00 70.84           C
ANISOU 1912  C2'  DC L  19    11126   7336   8454   -135   -919    392       C
ATOM   1913  C1'  DC L  19      19.251  55.763  87.867  1.00 65.60           C
ANISOU 1913  C1'  DC L  19    10272   6781   7874    -54   -976    329       C
ATOM   1914  O4'  DC L  19      17.976  55.871  87.254  1.00 76.32           O
ANISOU 1914  O4'  DC L  19    11516   8227   9255      8   -885    256       O
ATOM   1915  N1   DC L  19      20.191  56.501  87.059  1.00 64.74           N
ANISOU 1915  N1   DC L  19    10124   6731   7743     16  -1043    358       N
ATOM   1916  C6   DC L  19      19.746  57.503  86.264  1.00 59.26           C
ANISOU 1916  C6   DC L  19     9359   6135   7021    108   -993    336       C
ATOM   1917  C5   DC L  19      20.588  58.218  85.524  1.00 57.62           C
ANISOU 1917  C5   DC L  19     9118   5984   6793    174  -1051    363       C
ATOM   1918  C4   DC L  19      21.967  57.909  85.611  1.00 56.05           C
ANISOU 1918  C4   DC L  19     8962   5735   6601    143  -1167    418       C
ATOM   1919  N4   DC L  19      22.843  58.581  84.877  1.00 62.63           N
ANISOU 1919  N4   DC L  19     9759   6621   7416    206  -1228    447       N
ATOM   1920  N3   DC L  19      22.417  56.919  86.396  1.00 68.91           N
ANISOU 1920  N3   DC L  19    10659   7265   8257     51  -1217    440       N
ATOM   1921  C2   DC L  19      21.542  56.201  87.138  1.00 65.85           C
ANISOU 1921  C2   DC L  19    10306   6823   7891    -15  -1156    411       C
ATOM   1922  O2   DC L  19      21.899  55.293  87.875  1.00 72.56           O
ANISOU 1922  O2   DC L  19    11221   7584   8766    -99  -1198    430       O
ATOM   1923  OP2  DC L  19      16.449  59.962  84.873  1.00 66.46           O
ANISOU 1923  OP2  DC L  19    10092   7299   7861    321   -686    212       O
ATOM   1924  P    DC L  20      17.740  58.950  91.080  1.00 72.86           P
ANISOU 1924  P    DC L  20    11671   7508   8502   -173   -693    473       P
ATOM   1925  OP1  DC L  20      16.725  58.942  92.168  1.00 88.53           O
ANISOU 1925  OP1  DC L  20    13759   9423  10457   -238   -589    472       O
ATOM   1926  O5'  DC L  20      19.152  58.570  91.736  1.00 74.08           O
ANISOU 1926  O5'  DC L  20    11939   7562   8647   -250   -806    546       O
ATOM   1927  C5'  DC L  20      19.164  57.499  92.689  1.00 78.40           C
ANISOU 1927  C5'  DC L  20    12561   8006   9223   -351   -821    554       C
ATOM   1928  C4'  DC L  20      20.563  57.100  93.075  1.00 79.53           C
ANISOU 1928  C4'  DC L  20    12781   8071   9367   -409   -939    617       C
ATOM   1929  C3'  DC L  20      21.392  58.219  93.645  1.00 80.35           C
ANISOU 1929  C3'  DC L  20    13032   8120   9379   -429   -962    703       C
ATOM   1930  O3'  DC L  20      21.141  58.335  95.005  1.00 75.76           O
ANISOU 1930  O3'  DC L  20    12620   7425   8741   -521   -912    747       O
ATOM   1931  C2'  DC L  20      22.805  57.722  93.387  1.00 78.99           C
ANISOU 1931  C2'  DC L  20    12849   7925   9237   -444  -1097    742       C
ATOM   1932  C1'  DC L  20      22.649  57.073  92.026  1.00 79.30           C
ANISOU 1932  C1'  DC L  20    12685   8080   9365   -361  -1128    666       C
ATOM   1933  O4'  DC L  20      21.289  56.677  91.903  1.00 81.09           O
ANISOU 1933  O4'  DC L  20    12836   8347   9627   -346  -1032    592       O
ATOM   1934  N1   DC L  20      22.979  57.962  90.894  1.00 80.48           N
ANISOU 1934  N1   DC L  20    12742   8336   9502   -257  -1149    662       N
ATOM   1935  C6   DC L  20      21.976  58.475  90.130  1.00 77.98           C
ANISOU 1935  C6   DC L  20    12320   8123   9188   -173  -1067    603       C
ATOM   1936  C5   DC L  20      22.249  59.260  89.089  1.00 75.75           C
ANISOU 1936  C5   DC L  20    11949   7939   8895    -78  -1085    597       C
ATOM   1937  C4   DC L  20      23.621  59.524  88.801  1.00 79.60           C
ANISOU 1937  C4   DC L  20    12454   8419   9370    -66  -1192    653       C
ATOM   1938  N4   DC L  20      23.955  60.302  87.775  1.00 86.03           N
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ANISOU 1938  N4   DC L  20    13184   9329  10175     28  -1213    651       N
ATOM   1939  N3   DC L  20      24.606  59.022  89.540  1.00 80.80           N
ANISOU 1939  N3   DC L  20    12707   8471   9521   -148  -1272    712       N
ATOM   1940  C2   DC L  20      24.319  58.242  90.601  1.00 74.83           C
ANISOU 1940  C2   DC L  20    12043   7616   8775   -245  -1253    718       C
ATOM   1941  O2   DC L  20      25.204  57.774  91.316  1.00 75.43           O
ANISOU 1941  O2   DC L  20    12215   7597   8849   -322  -1326    772       O
ATOM   1942  OP2  DC L  20      17.921  60.107  90.173  1.00 74.83           O
ANISOU 1942  OP2  DC L  20    11863   7854   8716    -76   -690    477       O
ATOM   1943  P    DT L  21      21.473  59.709  95.747  1.00 91.06           P
ANISOU 1943  P    DT L  21    14724   9309  10567   -539   -885    825       P
ATOM   1944  OP1  DT L  21      20.987  59.548  97.136  1.00 96.80           O
ANISOU 1944  OP1  DT L  21    15606   9919  11253   -637   -823    852       O
ATOM   1945  O5'  DT L  21      23.073  59.769  95.713  1.00 78.48           O
ANISOU 1945  O5'  DT L  21    13179   7676   8963   -559  -1017    895       O
ATOM   1946  C5'  DT L  21      23.842  58.830  96.438  1.00 61.87           C
ANISOU 1946  C5'  DT L  21    11151   5473   6885   -650  -1095    931       C
ATOM   1947  C4'  DT L  21      25.329  59.150  96.319  1.00 71.54           C
ANISOU 1947  C4'  DT L  21    12420   6673   8089   -654  -1212   1001       C
ATOM   1948  C3'  DT L  21      25.738  60.591  96.632  1.00 78.90           C
ANISOU 1948  C3'  DT L  21    13468   7587   8922   -642  -1199   1069       C
ATOM   1949  O3'  DT L  21      25.964  60.736  98.035  1.00 81.00           O
ANISOU 1949  O3'  DT L  21    13929   7721   9124   -744  -1191   1135       O
ATOM   1950  C2'  DT L  21      27.052  60.689  95.872  1.00 85.88           C
ANISOU 1950  C2'  DT L  21    14299   8507   9826   -602  -1319   1103       C
ATOM   1951  C1'  DT L  21      26.778  59.848  94.627  1.00 80.14           C
ANISOU 1951  C1'  DT L  21    13367   7887   9196   -530  -1340   1022       C
ATOM   1952  O4'  DT L  21      25.757  58.935  94.958  1.00 74.95           O
ANISOU 1952  O4'  DT L  21    12681   7213   8583   -566  -1276    964       O
ATOM   1953  N1   DT L  21      26.321  60.664  93.482  1.00 83.28           N
ANISOU 1953  N1   DT L  21    13640   8412   9589   -416  -1298    980       N
ATOM   1954  C6   DT L  21      24.968  60.781  93.227  1.00 84.33           C
ANISOU 1954  C6   DT L  21    13705   8607   9730   -374  -1187    912       C
ATOM   1955  C5   DT L  21      24.466  61.519  92.218  1.00 78.67           C
ANISOU 1955  C5   DT L  21    12877   8006   9008   -272  -1142    872       C
ATOM   1956  C7   DT L  21      22.993  61.619  91.971  1.00 66.74           C
ANISOU 1956  C7   DT L  21    11293   6558   7507   -230  -1023    800       C
ATOM   1957  C4   DT L  21      25.391  62.217  91.356  1.00 83.01           C
ANISOU 1957  C4   DT L  21    13376   8619   9546   -201  -1212    900       C
ATOM   1958  N3   DT L  21      26.730  62.059  91.680  1.00 87.61           N
ANISOU 1958  N3   DT L  21    14032   9134  10121   -248  -1321    969       N
ATOM   1959  C2   DT L  21      27.254  61.313  92.713  1.00 84.84           C
ANISOU 1959  C2   DT L  21    13796   8665   9775   -353  -1369   1011       C
ATOM   1960  O2   DT L  21      28.455  61.232  92.914  1.00 85.02           O
ANISOU 1960  O2   DT L  21    13876   8636   9793   -387  -1466   1073       O
ATOM   1961  O4   DT L  21      25.017  62.904  90.408  1.00 84.99           O
ANISOU 1961  O4   DT L  21    13524   8975   9792   -106  -1178    866       O
ATOM   1962  OP2  DT L  21      20.978  60.825  94.898  1.00 86.35           O
ANISOU 1962  OP2  DT L  21    14052   8819   9939   -438   -827    802       O
ATOM   1963  P    DA L  22      25.708  62.122  98.814  1.00 95.75           P
ANISOU 1963  P    DA L  22    15955   9546  10880   -758  -1117   1189       P
ATOM   1964  OP1  DA L  22      25.939  61.746 100.231  1.00 95.28           O
ANISOU 1964  OP1  DA L  22    16071   9345  10787   -876  -1124   1242       O
ATOM   1965  OP2  DA L  22      24.380  62.678  98.447  1.00 92.67           O
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ANISOU 1965  OP2  DA L  22    15503   9233  10476   -694   -995   1131       O
ATOM   1966  O5'  DA L  22      26.890  63.094  98.300  1.00 84.69           O
ANISOU 1966  O5'  DA L  22    14567   8174   9438   -711  -1199   1249       O
ATOM   1967  C5'  DA L  22      28.265  62.700  98.465  1.00 79.54           C
ANISOU 1967  C5'  DA L  22    13959   7464   8800   -756  -1324   1308       C
ATOM   1968  C4'  DA L  22      29.234  63.702  97.839  1.00 79.87           C
ANISOU 1968  C4'  DA L  22    13992   7551   8805   -697  -1389   1356       C
ATOM   1969  C3'  DA L  22      28.825  65.171  97.906  1.00 94.75           C
ANISOU 1969  C3'  DA L  22    15941   9460  10599   -654  -1313   1378       C
ATOM   1970  O3'  DA L  22      29.216  65.742  99.126  1.00 99.67           O
ANISOU 1970  O3'  DA L  22    16763   9968  11139   -735  -1312   1457       O
ATOM   1971  C2'  DA L  22      29.616  65.764  96.750  1.00 95.74           C
ANISOU 1971  C2'  DA L  22    15964   9678  10733   -564  -1381   1389       C
ATOM   1972  C1'  DA L  22      29.492  64.652  95.706  1.00 88.02           C
ANISOU 1972  C1'  DA L  22    14797   8785   9864   -516  -1416   1315       C
ATOM   1973  O4'  DA L  22      29.383  63.428  96.422  1.00 82.98           O
ANISOU 1973  O4'  DA L  22    14193   8066   9270   -601  -1430   1304       O
ATOM   1974  N9   DA L  22      28.320  64.799  94.851  1.00 81.80           N
ANISOU 1974  N9   DA L  22    13870   8109   9101   -430  -1326   1232       N
ATOM   1975  C4   DA L  22      28.262  65.431  93.636  1.00 82.37           C
ANISOU 1975  C4   DA L  22    13811   8302   9182   -321  -1322   1201       C
ATOM   1976  C5   DA L  22      26.943  65.334  93.225  1.00 78.90           C
ANISOU 1976  C5   DA L  22    13277   7935   8767   -273  -1221   1122       C
ATOM   1977  N7   DA L  22      26.181  64.658  94.163  1.00 73.45           N
ANISOU 1977  N7   DA L  22    12655   7170   8083   -351  -1162   1104       N
ATOM   1978  C8   DA L  22      27.046  64.364  95.109  1.00 83.94           C
ANISOU 1978  C8   DA L  22    14119   8385   9391   -442  -1227   1171       C
ATOM   1979  N3   DA L  22      29.268  66.030  92.980  1.00 85.64           N
ANISOU 1979  N3   DA L  22    14197   8758   9585   -270  -1400   1240       N
ATOM   1980  C2   DA L  22      28.844  66.540  91.823  1.00 83.93           C
ANISOU 1980  C2   DA L  22    13841   8665   9382   -163  -1367   1191       C
ATOM   1981  N1   DA L  22      27.615  66.513  91.290  1.00 86.72           N
ANISOU 1981  N1   DA L  22    14090   9100   9760   -106  -1274   1113       N
ATOM   1982  C6   DA L  22      26.621  65.902  91.977  1.00 85.10           C
ANISOU 1982  C6   DA L  22    13917   8851   9567   -160  -1198   1077       C
ATOM   1983  N6   DA L  22      25.393  65.859  91.449  1.00 83.92           N
ANISOU 1983  N6   DA L  22    13661   8782   9443   -104  -1106   1000       N
ATOM   1984  P    DA L  23      28.373  66.961  99.740  1.00101.20           P
ANISOU 1984  P    DA L  23    17071  10144  11236   -733  -1197   1472       P
ATOM   1985  OP1  DA L  23      28.956  67.158 101.080  1.00101.60           O
ANISOU 1985  OP1  DA L  23    17327  10057  11219   -836  -1222   1553       O
ATOM   1986  OP2  DA L  23      26.912  66.739  99.622  1.00107.57           O
ANISOU 1986  OP2  DA L  23    17809  10999  12063   -705  -1078   1394       O
ATOM   1987  O5'  DA L  23      28.740  68.174  98.782  1.00 82.03           O
ANISOU 1987  O5'  DA L  23    14583   7811   8773   -634  -1210   1485       O
ATOM   1988  C5'  DA L  23      30.006  68.774  98.878  1.00 85.57           C
ANISOU 1988  C5'  DA L  23    15108   8224   9180   -646  -1302   1564       C
ATOM   1989  C4'  DA L  23      30.239  69.725  97.729  1.00 89.89           C
ANISOU 1989  C4'  DA L  23    15553   8883   9716   -538  -1313   1558       C
ATOM   1990  C3'  DA L  23      29.255  70.881  97.610  1.00 94.10           C
ANISOU 1990  C3'  DA L  23    16098   9471  10186   -480  -1198   1538       C
ATOM   1991  O3'  DA L  23      29.637  71.955  98.484  1.00103.14           O
ANISOU 1991  O3'  DA L  23    17421  10538  11231   -522  -1189   1616       O
ATOM   1992  C2'  DA L  23      29.452  71.262  96.149  1.00105.47           C
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ANISOU 1992  C2'  DA L  23    17366  11046  11662   -364  -1225   1503       C
ATOM   1993  C1'  DA L  23      29.621  69.885  95.483  1.00108.98           C
ANISOU 1993  C1'  DA L  23    17664  11529  12215   -355  -1287   1451       C
ATOM   1994  O4'  DA L  23      30.108  69.005  96.482  1.00105.47           O
ANISOU 1994  O4'  DA L  23    17324  10967  11783   -462  -1339   1487       O
ATOM   1995  N9   DA L  23      28.363  69.367  94.956  1.00102.31           N
ANISOU 1995  N9   DA L  23    16689  10760  11422   -310  -1201   1359       N
ATOM   1996  C4   DA L  23      27.842  69.615  93.723  1.00 87.43           C
ANISOU 1996  C4   DA L  23    14640   9007   9572   -203  -1169   1296       C
ATOM   1997  C5   DA L  23      26.625  68.959  93.684  1.00 95.74           C
ANISOU 1997  C5   DA L  23    15622  10087  10667   -200  -1085   1221       C
ATOM   1998  N7   DA L  23      26.376  68.315  94.890  1.00 96.99           N
ANISOU 1998  N7   DA L  23    15901  10132  10817   -303  -1063   1237       N
ATOM   1999  C8   DA L  23      27.436  68.593  95.611  1.00101.77           C
ANISOU 1999  C8   DA L  23    16645  10646  11376   -366  -1134   1319       C
ATOM   2000  N3   DA L  23      28.406  70.321  92.748  1.00 87.12           N
ANISOU 2000  N3   DA L  23    14522   9052   9529   -119  -1212   1305       N
ATOM   2001  C2   DA L  23      27.624  70.338  91.666  1.00 91.58           C
ANISOU 2001  C2   DA L  23    14923   9737  10135    -26  -1161   1229       C
ATOM   2002  N1   DA L  23      26.433  69.762  91.476  1.00 90.66           N
ANISOU 2002  N1   DA L  23    14722   9663  10063    -10  -1080   1152       N
ATOM   2003  C6   DA L  23      25.890  69.053  92.481  1.00 91.03           C
ANISOU 2003  C6   DA L  23    14851   9622  10114    -97  -1039   1145       C
ATOM   2004  N6   DA L  23      24.700  68.478  92.293  1.00 93.55           N
ANISOU 2004  N6   DA L  23    15085   9982  10477    -81   -959   1069       N
ATOM   2005  P    DT L  24      28.538  72.878  99.219  1.00108.38           P
ANISOU 2005  P    DT L  24    17457  13983   9740   -638  -1404   -328       P
ATOM   2006  OP1  DT L  24      27.393  72.073  99.711  1.00 97.14           O
ANISOU 2006  OP1  DT L  24    15996  12531   8384   -587  -1315   -296       O
ATOM   2007  O5'  DT L  24      28.006  73.846  98.054  1.00 96.72           O
ANISOU 2007  O5'  DT L  24    15887  12534   8329   -631  -1408   -279       O
ATOM   2008  C5'  DT L  24      28.917  74.636  97.293  1.00 89.81           C
ANISOU 2008  C5'  DT L  24    15012  11700   7413   -678  -1495   -298       C
ATOM   2009  C4'  DT L  24      28.206  75.314  96.133  1.00 92.85           C
ANISOU 2009  C4'  DT L  24    15283  12119   7878   -666  -1494   -245       C
ATOM   2010  C3'  DT L  24      26.817  75.862  96.436  1.00 94.30           C
ANISOU 2010  C3'  DT L  24    15464  12230   8134   -595  -1370   -181       C
ATOM   2011  O3'  DT L  24      26.908  77.154  97.018  1.00 92.97           O
ANISOU 2011  O3'  DT L  24    15422  11980   7922   -574  -1317   -174       O
ATOM   2012  C2'  DT L  24      26.208  75.929  95.037  1.00102.21           C
ANISOU 2012  C2'  DT L  24    16303  13306   9227   -598  -1402   -138       C
ATOM   2013  C1'  DT L  24      26.783  74.667  94.384  1.00102.12           C
ANISOU 2013  C1'  DT L  24    16189  13396   9218   -648  -1504   -172       C
ATOM   2014  O4'  DT L  24      27.989  74.354  95.069  1.00103.50           O
ANISOU 2014  O4'  DT L  24    16468  13565   9292   -688  -1557   -236       O
ATOM   2015  N1   DT L  24      25.859  73.499  94.460  1.00 98.06           N
ANISOU 2015  N1   DT L  24    15585  12897   8776   -619  -1462   -150       N
ATOM   2016  C6   DT L  24      25.883  72.669  95.564  1.00 99.62           C
ANISOU 2016  C6   DT L  24    15855  13055   8943   -604  -1422   -175       C
ATOM   2017  C5   DT L  24      25.073  71.614  95.714  1.00 91.33           C
ANISOU 2017  C5   DT L  24    14733  12014   7953   -577  -1380   -157       C
ATOM   2018  C7   DT L  24      25.137  70.744  96.929  1.00 86.47           C
ANISOU 2018  C7   DT L  24    14202  11354   7301   -562  -1338   -185       C
ATOM   2019  C4   DT L  24      24.121  71.336  94.658  1.00 97.01           C
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ANISOU 2019  C4   DT L  24    15291  12789   8778   -561  -1378   -108       C
ATOM   2020  N3   DT L  24      24.163  72.210  93.594  1.00102.18           N
ANISOU 2020  N3   DT L  24    15883  13481   9458   -577  -1420    -85       N
ATOM   2021  C2   DT L  24      24.982  73.293  93.441  1.00 91.49           C
ANISOU 2021  C2   DT L  24    14602  12117   8042   -604  -1461   -103       C
ATOM   2022  O2   DT L  24      24.929  74.004  92.469  1.00 90.59           O
ANISOU 2022  O2   DT L  24    14424  12039   7959   -616  -1495    -80       O
ATOM   2023  O4   DT L  24      23.335  70.391  94.699  1.00 90.75           O
ANISOU 2023  O4   DT L  24    14423  12010   8048   -536  -1341    -88       O
ATOM   2024  OP2  DT L  24      29.295  73.693 100.194  1.00114.42           O
ANISOU 2024  OP2  DT L  24    18393  14673  10409   -641  -1386   -361       O
ATOM   2025  P    DT L  25      25.737  77.692  97.975  1.00100.32           P
ANISOU 2025  P    DT L  25    16426  12804   8888   -499  -1173   -129       P
ATOM   2026  OP1  DT L  25      26.274  78.891  98.642  1.00112.85           O
ANISOU 2026  OP1  DT L  25    18162  14317  10400   -496  -1148   -143       O
ATOM   2027  O5'  DT L  25      24.584  78.125  96.972  1.00 89.91           O
ANISOU 2027  O5'  DT L  25    14978  11506   7677   -467  -1139    -62       O
ATOM   2028  C5'  DT L  25      24.650  79.366  96.331  1.00 87.54           C
ANISOU 2028  C5'  DT L  25    14677  11203   7380   -471  -1152    -40       C
ATOM   2029  C4'  DT L  25      23.416  79.577  95.493  1.00 97.00           C
ANISOU 2029  C4'  DT L  25    15749  12419   8688   -434  -1108     24       C
ATOM   2030  C3'  DT L  25      22.104  79.480  96.248  1.00 95.72           C
ANISOU 2030  C3'  DT L  25    15602  12181   8586   -363   -979     69       C
ATOM   2031  O3'  DT L  25      21.819  80.714  96.892  1.00 88.28           O
ANISOU 2031  O3'  DT L  25    14773  11147   7623   -326   -899     91       O
ATOM   2032  C2'  DT L  25      21.136  79.198  95.110  1.00 83.44           C
ANISOU 2032  C2'  DT L  25    13877  10686   7140   -348   -981    119       C
ATOM   2033  C1'  DT L  25      21.972  78.276  94.212  1.00 97.00           C
ANISOU 2033  C1'  DT L  25    15496  12515   8847   -411  -1107     82       C
ATOM   2034  O4'  DT L  25      23.330  78.527  94.506  1.00100.32           O
ANISOU 2034  O4'  DT L  25    16015  12938   9163   -461  -1178     25       O
ATOM   2035  N1   DT L  25      21.700  76.832  94.430  1.00106.32           N
ANISOU 2035  N1   DT L  25    16615  13727  10056   -409  -1107     72       N
ATOM   2036  C6   DT L  25      22.364  76.148  95.438  1.00107.26           C
ANISOU 2036  C6   DT L  25    16829  13821  10102   -423  -1112     23       C
ATOM   2037  C5   DT L  25      22.164  74.846  95.705  1.00103.90           C
ANISOU 2037  C5   DT L  25    16358  13422   9697   -422  -1111     10       C
ATOM   2038  C7   DT L  25      22.904  74.142  96.803  1.00 81.88           C
ANISOU 2038  C7   DT L  25    13678  10606   6828   -437  -1117    -43       C
ATOM   2039  C4   DT L  25      21.210  74.127  94.891  1.00 97.73           C
ANISOU 2039  C4   DT L  25    15419  12696   9018   -405  -1105     50       C
ATOM   2040  N3   DT L  25      20.584  74.875  93.912  1.00110.25           N
ANISOU 2040  N3   DT L  25    16915  14302  10671   -391  -1100     98       N
ATOM   2041  C2   DT L  25      20.778  76.205  93.630  1.00107.64           C
ANISOU 2041  C2   DT L  25    16631  13946  10322   -392  -1100    111       C
ATOM   2042  O2   DT L  25      20.177  76.776  92.734  1.00 98.12           O
ANISOU 2042  O2   DT L  25    15338  12763   9181   -379  -1096    154       O
ATOM   2043  O4   DT L  25      20.966  72.943  95.059  1.00 91.72           O
ANISOU 2043  O4   DT L  25    14607  11962   8282   -403  -1104     42       O
ATOM   2044  OP2  DT L  25      25.176  76.594  98.782  1.00 92.30           O
ANISOU 2044  OP2  DT L  25    15414  11762   7893   -469  -1114   -129       O
ATOM   2045  P    DT L  26      20.870  80.760  98.190  1.00103.00           P
ANISOU 2045  P    DT L  26    16730  12905   9503   -258   -762    115       P
ATOM   2046  OP1  DT L  26      21.158  79.565  99.010  1.00113.01           O
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ANISOU 2046  OP1  DT L  26    18033  14169  10736   -265   -762     78       O
ATOM   2047  O5'  DT L  26      19.393  80.619  97.598  1.00 88.89           O
ANISOU 2047  O5'  DT L  26    14812  11125   7837   -209   -696    182       O
ATOM   2048  C5'  DT L  26      18.943  81.538  96.633  1.00 85.73           C
ANISOU 2048  C5'  DT L  26    14340  10742   7490   -200   -699    224       C
ATOM   2049  C4'  DT L  26      17.721  81.014  95.918  1.00 91.05           C
ANISOU 2049  C4'  DT L  26    14864  11452   8278   -168   -665    276       C
ATOM   2050  C3'  DT L  26      16.600  80.546  96.828  1.00 94.23           C
ANISOU 2050  C3'  DT L  26    15287  11787   8728   -106   -548    305       C
ATOM   2051  O3'  DT L  26      15.764  81.645  97.101  1.00 90.09           O
ANISOU 2051  O3'  DT L  26    14807  11185   8236    -54   -453    351       O
ATOM   2052  C2'  DT L  26      15.881  79.507  95.963  1.00102.73           C
ANISOU 2052  C2'  DT L  26    16194  12940   9898   -103   -568    330       C
ATOM   2053  C1'  DT L  26      17.003  78.951  95.085  1.00103.03           C
ANISOU 2053  C1'  DT L  26    16166  13081   9901   -174   -705    287       C
ATOM   2054  O4'  DT L  26      18.083  79.869  95.126  1.00 99.68           O
ANISOU 2054  O4'  DT L  26    15838  12646   9391   -211   -757    255       O
ATOM   2055  N1   DT L  26      17.499  77.601  95.513  1.00101.54           N
ANISOU 2055  N1   DT L  26    15976  12926   9681   -200   -743    244       N
ATOM   2056  C6   DT L  26      18.455  77.501  96.506  1.00100.33           C
ANISOU 2056  C6   DT L  26    15958  12735   9427   -221   -756    191       C
ATOM   2057  C5   DT L  26      18.952  76.330  96.935  1.00102.58           C
ANISOU 2057  C5   DT L  26    16250  13046   9678   -245   -791    150       C
ATOM   2058  C7   DT L  26      19.992  76.261  98.011  1.00 96.97           C
ANISOU 2058  C7   DT L  26    15689  12294   8860   -268   -806     93       C
ATOM   2059  C4   DT L  26      18.460  75.117  96.322  1.00104.50           C
ANISOU 2059  C4   DT L  26    16351  13361   9993   -249   -817    161       C
ATOM   2060  N3   DT L  26      17.508  75.299  95.336  1.00 98.63           N
ANISOU 2060  N3   DT L  26    15476  12652   9347   -226   -801    214       N
ATOM   2061  C2   DT L  26      16.992  76.492  94.894  1.00 95.70           C
ANISOU 2061  C2   DT L  26    15097  12254   9012   -202   -765    257       C
ATOM   2062  O2   DT L  26      16.147  76.554  94.020  1.00 93.57           O
ANISOU 2062  O2   DT L  26    14706  12017   8829   -183   -754    302       O
ATOM   2063  O4   DT L  26      18.859  74.005  96.654  1.00106.30           O
ANISOU 2063  O4   DT L  26    16575  13618  10196   -270   -849    125       O
ATOM   2064  OP2  DT L  26      21.002  82.118  98.769  1.00 98.38           O
ANISOU 2064  OP2  DT L  26    16274  12236   8869   -238   -711    122       O
ATOM   2065  P    DC L  27      14.751  81.639  98.342  1.00109.54           P
ANISOU 2065  P    DC L  27    17352  13547  10723     14   -315    377       P
ATOM   2066  OP1  DC L  27      15.492  81.191  99.538  1.00117.59           O
ANISOU 2066  OP1  DC L  27    18501  14524  11654      2   -310    327       O
ATOM   2067  O5'  DC L  27      13.661  80.540  97.967  1.00 87.20           O
ANISOU 2067  O5'  DC L  27    14383  10755   7994     42   -284    411       O
ATOM   2068  C5'  DC L  27      12.730  80.787  96.937  1.00 91.60           C
ANISOU 2068  C5'  DC L  27    14808  11347   8648     64   -272    464       C
ATOM   2069  C4'  DC L  27      11.904  79.549  96.696  1.00 95.27           C
ANISOU 2069  C4'  DC L  27    15153  11853   9194     82   -254    483       C
ATOM   2070  C3'  DC L  27      10.959  79.196  97.849  1.00 92.99           C
ANISOU 2070  C3'  DC L  27    14921  11480   8930    142   -132    503       C
ATOM   2071  O3'  DC L  27       9.667  78.950  97.353  1.00 96.27           O
ANISOU 2071  O3'  DC L  27    15219  11906   9455    184    -76    557       O
ATOM   2072  C2'  DC L  27      11.565  77.937  98.459  1.00100.51           C
ANISOU 2072  C2'  DC L  27    15899  12453   9835    115   -165    454       C
ATOM   2073  C1'  DC L  27      12.314  77.329  97.286  1.00105.84           C
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ANISOU 2073  C1'  DC L  27    16460  13244  10511     54   -295    430       C
ATOM   2074  O4'  DC L  27      12.795  78.414  96.530  1.00103.38           O
ANISOU 2074  O4'  DC L  27    16146  12952  10181     29   -347    434       O
ATOM   2075  N1   DC L  27      13.463  76.470  97.727  1.00104.86           N
ANISOU 2075  N1   DC L  27    16388  13150  10304      6   -367    367       N
ATOM   2076  C6   DC L  27      14.598  77.045  98.221  1.00100.67           C
ANISOU 2076  C6   DC L  27    15985  12594   9672    -27   -406    323       C
ATOM   2077  C5   DC L  27      15.623  76.297  98.645  1.00102.26           C
ANISOU 2077  C5   DC L  27    16237  12819   9798    -69   -469    266       C
ATOM   2078  C4   DC L  27      15.477  74.881  98.578  1.00110.64           C
ANISOU 2078  C4   DC L  27    17216  13933  10889    -78   -491    253       C
ATOM   2079  N4   DC L  27      16.467  74.078  98.991  1.00107.63           N
ANISOU 2079  N4   DC L  27    16881  13577  10437   -120   -554    197       N
ATOM   2080  N3   DC L  27      14.366  74.311  98.104  1.00114.66           N
ANISOU 2080  N3   DC L  27    17602  14466  11498    -46   -452    296       N
ATOM   2081  C2   DC L  27      13.335  75.081  97.675  1.00104.24           C
ANISOU 2081  C2   DC L  27    16231  13122  10254     -4   -389    354       C
ATOM   2082  O2   DC L  27      12.284  74.590  97.231  1.00 96.63           O
ANISOU 2082  O2   DC L  27    15153  12179   9383     27   -351    395       O
ATOM   2083  OP2  DC L  27      14.048  82.943  98.323  1.00115.59           O
ANISOU 2083  OP2  DC L  27    18149  14250  11520     57   -242    424       O
ATOM   2084  P    DC L  28       8.442  78.687  98.360  1.00108.61           P
ANISOU 2084  P    DC L  28    16815  13384  11067    254     59    590       P
ATOM   2085  OP1  DC L  28       7.235  79.103  97.606  1.00 94.40           O
ANISOU 2085  OP1  DC L  28    14908  11589   9372    294    108    652       O
ATOM   2086  O5'  DC L  28       8.419  77.087  98.545  1.00109.85           O
ANISOU 2086  O5'  DC L  28    16913  13587  11239    242     39    567       O
ATOM   2087  C5'  DC L  28       7.829  76.260  97.540  1.00106.73           C
ANISOU 2087  C5'  DC L  28    16350  13272  10932    239      7    591       C
ATOM   2088  C4'  DC L  28       7.524  74.879  98.084  1.00108.37           C
ANISOU 2088  C4'  DC L  28    16531  13487  11157    249     31    578       C
ATOM   2089  C3'  DC L  28       6.736  74.859  99.394  1.00112.55           C
ANISOU 2089  C3'  DC L  28    17158  13915  11692    308    158    593       C
ATOM   2090  O3'  DC L  28       5.708  73.857  99.338  1.00114.97           O
ANISOU 2090  O3'  DC L  28    17364  14235  12083    340    206    621       O
ATOM   2091  C2'  DC L  28       7.803  74.523 100.441  1.00108.63           C
ANISOU 2091  C2'  DC L  28    16799  13389  11088    280    136    535       C
ATOM   2092  C1'  DC L  28       8.739  73.626  99.649  1.00102.80           C
ANISOU 2092  C1'  DC L  28    15977  12756  10327    216      9    495       C
ATOM   2093  O4'  DC L  28       8.767  74.175  98.348  1.00106.75           O
ANISOU 2093  O4'  DC L  28    16373  13320  10867    195    -54    516       O
ATOM   2094  N1   DC L  28      10.142  73.607 100.171  1.00102.30           N
ANISOU 2094  N1   DC L  28    16027  12693  10149    166    -59    433       N
ATOM   2095  C6   DC L  28      10.822  74.781 100.291  1.00104.82           C
ANISOU 2095  C6   DC L  28    16445  12978  10403    152    -76    420       C
ATOM   2096  C5   DC L  28      12.082  74.808 100.741  1.00104.11           C
ANISOU 2096  C5   DC L  28    16458  12889  10212    108   -138    364       C
ATOM   2097  C4   DC L  28      12.693  73.568 101.087  1.00100.71           C
ANISOU 2097  C4   DC L  28    16029  12495   9742     76   -187    319       C
ATOM   2098  N4   DC L  28      13.951  73.543 101.542  1.00103.64           N
ANISOU 2098  N4   DC L  28    16500  12867  10012     32   -249    262       N
ATOM   2099  N3   DC L  28      12.041  72.407 100.976  1.00 98.33           N
ANISOU 2099  N3   DC L  28    15631  12227   9503     90   -171    331       N
ATOM   2100  C2   DC L  28      10.760  72.388 100.514  1.00100.22           C
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ANISOU 2100  C2   DC L  28    15766  12466   9846    135   -108    387       C
ATOM   2101  O2   DC L  28      10.127  71.331 100.401  1.00 92.81           O
ANISOU 2101  O2   DC L  28    14738  11558   8968    149    -92    400       O
ATOM   2102  OP2  DC L  28       8.765  79.278  99.681  1.00110.50           O
ANISOU 2102  OP2  DC L  28    17231  13525  11228    272    122    570       O
TER
ATOM   2103  O5'  DT M   5      31.198  25.629  96.094  1.00 77.78           O
ANISOU 2103  O5'  DT M   5     9101  10292  10161  -1014    541    -20       O
ATOM   2104  C5'  DT M   5      30.352  26.651  95.556  1.00 64.57           C
ANISOU 2104  C5'  DT M   5     7380   8702   8452   -959    578   -120       C
ATOM   2105  C4'  DT M   5      29.805  26.228  94.207  1.00 54.26           C
ANISOU 2105  C4'  DT M   5     5998   7412   7206   -827    544   -255       C
ATOM   2106  C3'  DT M   5      29.142  24.848  94.173  1.00 62.27           C
ANISOU 2106  C3'  DT M   5     6988   8347   8325   -869    524   -325       C
ATOM   2107  O3'  DT M   5      27.981  24.925  93.333  1.00 59.63           O
ANISOU 2107  O3'  DT M   5     6582   8049   8028   -805    535   -479       O
ATOM   2108  C2'  DT M   5      30.253  23.940  93.595  1.00 61.93           C
ANISOU 2108  C2'  DT M   5     6954   8257   8320   -786    451   -270       C
ATOM   2109  C1'  DT M   5      30.978  24.894  92.653  1.00 51.07           C
ANISOU 2109  C1'  DT M   5     5562   6962   6879   -637    430   -258       C
ATOM   2110  O4'  DT M   5      30.887  26.178  93.242  1.00 59.67           O
ANISOU 2110  O4'  DT M   5     6676   8114   7882   -684    485   -220       O
ATOM   2111  N1   DT M   5      32.436  24.590  92.397  1.00 54.17           N
ANISOU 2111  N1   DT M   5     5989   7334   7258   -570    372   -148       N
ATOM   2112  C6   DT M   5      33.356  24.695  93.426  1.00 60.68           C
ANISOU 2112  C6   DT M   5     6887   8131   8038   -660    378     -3       C
ATOM   2113  C5   DT M   5      34.679  24.466  93.273  1.00 49.75           C
ANISOU 2113  C5   DT M   5     5537   6729   6638   -607    329    102       C
ATOM   2114  C7   DT M   5      35.640  24.556  94.414  1.00 53.04           C
ANISOU 2114  C7   DT M   5     6032   7112   7007   -708    336    257       C
ATOM   2115  C4   DT M   5      35.149  24.105  91.970  1.00 52.81           C
ANISOU 2115  C4   DT M   5     5883   7127   7055   -449    269     60       C
ATOM   2116  N3   DT M   5      34.177  24.043  90.987  1.00 57.45           N
ANISOU 2116  N3   DT M   5     6398   7745   7685   -365    267    -86       N
ATOM   2117  C2   DT M   5      32.838  24.277  91.126  1.00 55.22           C
ANISOU 2117  C2   DT M   5     6080   7482   7419   -417    316   -194       C
ATOM   2118  O2   DT M   5      32.068  24.166  90.189  1.00 69.86           O
ANISOU 2118  O2   DT M   5     7870   9361   9313   -333    309   -320       O
ATOM   2119  O4   DT M   5      36.328  23.876  91.738  1.00 58.74           O
ANISOU 2119  O4   DT M   5     6661   7864   7794   -391    222    148       O
ATOM   2120  P    DT M   6      26.929  23.719  93.216  1.00 49.35           P
ANISOU 2120  P    DT M   6     5238   6682   6829   -846    529   -588       P
ATOM   2121  OP1  DT M   6      25.643  24.274  92.722  1.00 56.98           O
ANISOU 2121  OP1  DT M   6     6144   7705   7800   -816    567   -728       O
ATOM   2122  O5'  DT M   6      27.476  22.889  91.988  1.00 54.63           O
ANISOU 2122  O5'  DT M   6     5870   7331   7554   -703    455   -622       O
ATOM   2123  C5'  DT M   6      27.572  23.489  90.702  1.00 39.90           C
ANISOU 2123  C5'  DT M   6     3953   5539   5666   -539    433   -690       C
ATOM   2124  C4'  DT M   6      28.071  22.486  89.677  1.00 39.88           C
ANISOU 2124  C4'  DT M   6     3921   5501   5729   -425    361   -717       C
ATOM   2125  C3'  DT M   6      27.573  21.037  89.830  1.00 49.08           C
ANISOU 2125  C3'  DT M   6     5075   6577   6998   -485    340   -762       C
ATOM   2126  O3'  DT M   6      27.373  20.462  88.523  1.00 57.78           O
ANISOU 2126  O3'  DT M   6     6113   7682   8160   -350    292   -866       O
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ATOM   2127  C2'  DT M   6      28.751  20.361  90.510  1.00 52.06           C
ANISOU 2127  C2'  DT M   6     5517   6885   7378   -542    307   -620       C
ATOM   2128  C1'  DT M   6      29.886  21.046  89.750  1.00 55.17           C
ANISOU 2128  C1'  DT M   6     5916   7336   7711   -407    272   -562       C
ATOM   2129  O4'  DT M   6      29.512  22.396  89.754  1.00 54.49           O
ANISOU 2129  O4'  DT M   6     5821   7335   7549   -393    320   -585       O
ATOM   2130  N1   DT M   6      31.255  20.963  90.373  1.00 45.76           N
ANISOU 2130  N1   DT M   6     4793   6112   6480   -440    248   -403       N
ATOM   2131  C6   DT M   6      31.389  21.069  91.738  1.00 45.52           C
ANISOU 2131  C6   DT M   6     4826   6048   6420   -592    286   -306       C
ATOM   2132  C5   DT M   6      32.574  21.026  92.365  1.00 44.02           C
ANISOU 2132  C5   DT M   6     4701   5830   6193   -630    269   -163       C
ATOM   2133  C7   DT M   6      32.684  21.109  93.848  1.00 37.10           C
ANISOU 2133  C7   DT M   6     3892   4917   5288   -796    310    -60       C
ATOM   2134  C4   DT M   6      33.771  20.896  91.564  1.00 55.61           C
ANISOU 2134  C4   DT M   6     6172   7306   7651   -504    208   -108       C
ATOM   2135  N3   DT M   6      33.558  20.813  90.203  1.00 40.09           N
ANISOU 2135  N3   DT M   6     4142   5376   5717   -354    173   -212       N
ATOM   2136  C2   DT M   6      32.357  20.855  89.554  1.00 51.84           C
ANISOU 2136  C2   DT M   6     5564   6892   7241   -314    190   -358       C
ATOM   2137  O2   DT M   6      32.278  20.783  88.344  1.00 67.77           O
ANISOU 2137  O2   DT M   6     7526   8940   9282   -177    156   -440       O
ATOM   2138  O4   DT M   6      34.901  20.864  92.069  1.00 62.17           O
ANISOU 2138  O4   DT M   6     7060   8114   8448   -529    189     23       O
ATOM   2139  OP2  DT M   6      26.989  22.935  94.475  1.00 57.51           O
ANISOU 2139  OP2  DT M   6     6328   7631   7894  -1004    542   -510       O
ATOM   2140  P    DG M   7      26.126  20.865  87.611  1.00 66.23           P
ANISOU 2140  P    DG M   7     7104   8812   9249   -273    313  -1031       P
ATOM   2141  OP1  DG M   7      26.245  22.241  87.194  1.00 61.84           O
ANISOU 2141  OP1  DG M   7     6537   8352   8608   -195    336  -1036       O
ATOM   2142  O5'  DG M   7      26.340  20.044  86.313  1.00 32.51           O
ANISOU 2142  O5'  DG M   7     2783   4527   5043   -132    247  -1099       O
ATOM   2143  C5'  DG M   7      26.463  18.580  86.379  1.00 46.47           C
ANISOU 2143  C5'  DG M   7     4554   6202   6900   -164    205  -1095       C
ATOM   2144  C4'  DG M   7      27.287  18.042  85.203  1.00 55.23           C
ANISOU 2144  C4'  DG M   7     5638   7306   8039    -13    133  -1099       C
ATOM   2145  C3'  DG M   7      27.192  16.553  84.973  1.00 61.56           C
ANISOU 2145  C3'  DG M   7     6423   8024   8941    -18     88  -1133       C
ATOM   2146  O3'  DG M   7      27.652  16.243  83.693  1.00 51.60           O
ANISOU 2146  O3'  DG M   7     5121   6778   7706    139     29  -1175       O
ATOM   2147  C2'  DG M   7      28.151  16.029  86.007  1.00 64.31           C
ANISOU 2147  C2'  DG M   7     6846   8304   9284   -120     77   -987       C
ATOM   2148  C1'  DG M   7      29.282  17.020  85.820  1.00 59.41           C
ANISOU 2148  C1'  DG M   7     6257   7743   8575    -46     66   -891       C
ATOM   2149  O4'  DG M   7      28.682  18.257  85.461  1.00 58.13           O
ANISOU 2149  O4'  DG M   7     6062   7670   8353      2    106   -957       O
ATOM   2150  N9   DG M   7      30.102  17.191  87.022  1.00 45.88           N
ANISOU 2150  N9   DG M   7     4622   6000   6812   -158     82   -741       N
ATOM   2151  C4   DG M   7      31.467  17.243  87.072  1.00 53.42           C
ANISOU 2151  C4   DG M   7     5622   6947   7727   -122     45   -617       C
ATOM   2152  C5   DG M   7      31.782  17.376  88.398  1.00 56.97           C
ANISOU 2152  C5   DG M   7     6139   7365   8142   -264     78   -505       C
ATOM   2153  N7   DG M   7      30.639  17.426  89.181  1.00 37.84           N
ANISOU 2153  N7   DG M   7     3713   4930   5733   -388    135   -557       N
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ATOM   2154  C8   DG M   7      29.673  17.294  88.314  1.00 56.18           C
ANISOU 2154  C8   DG M   7     5969   7276   8103   -318    134   -698       C
ATOM   2155  N3   DG M   7      32.287  17.166  86.010  1.00 63.99           N
ANISOU 2155  N3   DG M   7     6941   8306   9065     24    -11   -610       N
ATOM   2156  C2   DG M   7      33.552  17.235  86.362  1.00 66.79           C
ANISOU 2156  C2   DG M   7     7352   8647   9378     22    -35   -476       C
ATOM   2157  N2   DG M   7      34.500  17.189  85.403  1.00 30.28           N
ANISOU 2157  N2   DG M   7     2718   4041   4747    161    -91   -452       N
ATOM   2158  N1   DG M   7      33.977  17.374  87.672  1.00 62.61           N
ANISOU 2158  N1   DG M   7     6892   8086   8810   -114     -6   -356       N
ATOM   2159  C6   DG M   7      33.124  17.454  88.782  1.00 62.62           C
ANISOU 2159  C6   DG M   7     6914   8066   8812   -267     53   -362       C
ATOM   2160  O6   DG M   7      33.571  17.581  89.940  1.00 39.04           O
ANISOU 2160  O6   DG M   7     3993   5052   5790   -385     77   -249       O
ATOM   2161  OP2  DG M   7      24.927  20.377  88.246  1.00 54.70           O
ANISOU 2161  OP2  DG M   7     5631   7310   7841   -393    352  -1101       O
ATOM   2162  P    DA M   8      27.215  14.841  83.044  1.00 57.75           P
ANISOU 2162  P    DA M   8     5855   7492   8595    174    -15  -1265       P
ATOM   2163  OP1  DA M   8      27.301  14.902  81.571  1.00 56.89           O
ANISOU 2163  OP1  DA M   8     5686   7430   8501    350    -59  -1349       O
ATOM   2164  OP2  DA M   8      25.928  14.482  83.697  1.00 59.09           O
ANISOU 2164  OP2  DA M   8     6010   7629   8811     52     31  -1342       O
ATOM   2165  O5'  DA M   8      28.380  13.869  83.517  1.00 54.76           O
ANISOU 2165  O5'  DA M   8     5533   7033   8242    134    -61  -1139       O
ATOM   2166  C5'  DA M   8      29.641  13.968  82.882  1.00 62.99           C
ANISOU 2166  C5'  DA M   8     6589   8091   9254    248   -113  -1065       C
ATOM   2167  C4'  DA M   8      30.686  13.132  83.588  1.00 54.58           C
ANISOU 2167  C4'  DA M   8     5586   6947   8204    180   -145   -933       C
ATOM   2168  C3'  DA M   8      30.214  11.730  84.063  1.00 62.27           C
ANISOU 2168  C3'  DA M   8     6562   7823   9273     84   -155   -956       C
ATOM   2169  O3'  DA M   8      31.195  10.815  83.729  1.00 60.44           O
ANISOU 2169  O3'  DA M   8     6346   7539   9079    134   -218   -896       O
ATOM   2170  C2'  DA M   8      30.182  11.879  85.578  1.00 61.81           C
ANISOU 2170  C2'  DA M   8     6568   7731   9184    -90   -106   -863       C
ATOM   2171  C1'  DA M   8      31.380  12.791  85.728  1.00 57.44           C
ANISOU 2171  C1'  DA M   8     6062   7222   8540    -54   -112   -740       C
ATOM   2172  O4'  DA M   8      31.146  13.815  84.788  1.00 50.33           O
ANISOU 2172  O4'  DA M   8     5115   6412   7594     68   -105   -812       O
ATOM   2173  N9   DA M   8      31.619  13.322  87.069  1.00 46.83           N
ANISOU 2173  N9   DA M   8     4785   5871   7137   -193    -65   -631       N
ATOM   2174  C4   DA M   8      32.843  13.541  87.644  1.00 52.73           C
ANISOU 2174  C4   DA M   8     5597   6607   7830   -218    -78   -485       C
ATOM   2175  C5   DA M   8      32.578  13.992  88.916  1.00 49.81           C
ANISOU 2175  C5   DA M   8     5275   6230   7421   -365    -21   -426       C
ATOM   2176  N7   DA M   8      31.218  14.066  89.144  1.00 48.13           N
ANISOU 2176  N7   DA M   8     5028   6024   7235   -430     27   -532       N
ATOM   2177  C8   DA M   8      30.695  13.638  88.024  1.00 56.00           C
ANISOU 2177  C8   DA M   8     5958   7029   8289   -325     -2   -652       C
ATOM   2178  N3   DA M   8      34.070  13.363  87.076  1.00 56.82           N
ANISOU 2178  N3   DA M   8     6130   7123   8336   -119   -135   -413       N
ATOM   2179  C2   DA M   8      35.026  13.682  87.939  1.00 42.21           C
ANISOU 2179  C2   DA M   8     4348   5262   6429   -185   -128   -272       C
ATOM   2180  N1   DA M   8      34.913  14.149  89.196  1.00 41.19           N
ANISOU 2180  N1   DA M   8     4270   5126   6255   -324    -76   -201       N
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ATOM   2181  C6   DA M   8      33.689  14.302  89.725  1.00 45.61           C
ANISOU 2181  C6   DA M   8     4814   5688   6829   -419    -22   -275       C
ATOM   2182  N6   DA M   8      33.575  14.738  90.967  1.00 48.64           N
ANISOU 2182  N6   DA M   8     5249   6064   7170   -557     29   -205       N
ATOM   2183  P    DA M   9      30.905   9.620  82.704  1.00 57.75           P
ANISOU 2183  P    DA M   9     5950   7157   8837    221   -271   -995       P
ATOM   2184  OP1  DA M   9      30.388  10.166  81.442  1.00 61.97           O
ANISOU 2184  OP1  DA M   9     6414   7765   9368    363   -279  -1116       O
ATOM   2185  OP2  DA M   9      30.164   8.593  83.449  1.00 77.19           O
ANISOU 2185  OP2  DA M   9     8418   9539  11373     92   -255  -1022       O
ATOM   2186  O5'  DA M   9      32.365   9.091  82.461  1.00 67.18           O
ANISOU 2186  O5'  DA M   9     7180   8316  10030    282   -335   -883       O
ATOM   2187  C5'  DA M   9      33.370   9.998  82.164  1.00 49.68           C
ANISOU 2187  C5'  DA M   9     4985   6157   7733    364   -348   -805       C
ATOM   2188  C4'  DA M   9      34.562   9.818  83.094  1.00 55.13           C
ANISOU 2188  C4'  DA M   9     5754   6802   8391    288   -360   -642       C
ATOM   2189  C3'  DA M   9      34.970   8.387  83.392  1.00 54.54           C
ANISOU 2189  C3'  DA M   9     5702   6628   8391    238   -401   -597       C
ATOM   2190  O3'  DA M   9      36.272   8.161  82.898  1.00 51.96           O
ANISOU 2190  O3'  DA M   9     5396   6293   8053    330   -459   -513       O
ATOM   2191  C2'  DA M   9      34.953   8.294  84.925  1.00 54.99           C
ANISOU 2191  C2'  DA M   9     5825   6636   8433     58   -358   -504       C
ATOM   2192  C1'  DA M   9      35.010   9.761  85.344  1.00 50.00           C
ANISOU 2192  C1'  DA M   9     5216   6082   7701     40   -308   -462       C
ATOM   2193  O4'  DA M   9      34.295  10.429  84.364  1.00 51.97           O
ANISOU 2193  O4'  DA M   9     5401   6405   7941    145   -299   -582       O
ATOM   2194  N9   DA M   9      34.358  10.039  86.619  1.00 60.62           N
ANISOU 2194  N9   DA M   9     6595   7411   9027   -122   -245   -439       N
ATOM   2195  C4   DA M   9      34.944  10.354  87.811  1.00 61.78           C
ANISOU 2195  C4   DA M   9     6813   7540   9121   -236   -219   -310       C
ATOM   2196  C5   DA M   9      33.899  10.526  88.710  1.00 57.50           C
ANISOU 2196  C5   DA M   9     6276   6989   8582   -368   -158   -346       C
ATOM   2197  N7   DA M   9      32.706  10.330  88.102  1.00 46.44           N
ANISOU 2197  N7   DA M   9     4810   5600   7234   -337   -146   -491       N
ATOM   2198  C8   DA M   9      33.012  10.045  86.866  1.00 49.69           C
ANISOU 2198  C8   DA M   9     5179   6029   7674   -190   -199   -543       C
ATOM   2199  N3   DA M   9      36.235  10.479  88.066  1.00 53.42           N
ANISOU 2199  N3   DA M   9     5807   6474   8017   -224   -245   -179       N
ATOM   2200  C2   DA M   9      36.429  10.804  89.354  1.00 56.20           C
ANISOU 2200  C2   DA M   9     6222   6808   8325   -361   -205    -79       C
ATOM   2201  N1   DA M   9      35.529  10.984  90.326  1.00 59.43           N
ANISOU 2201  N1   DA M   9     6644   7206   8732   -496   -146    -97       N
ATOM   2202  C6   DA M   9      34.227  10.863  90.023  1.00 55.62           C
ANISOU 2202  C6   DA M   9     6106   6732   8295   -503   -120   -233       C
ATOM   2203  N6   DA M   9      33.322  11.068  90.963  1.00 60.54           N
ANISOU 2203  N6   DA M   9     6741   7346   8915   -634    -61   -253       N
ATOM   2204  P    DT M  10      36.783   6.650  82.796  1.00 57.54           P
ANISOU 2204  P    DT M  10     6112   6907   8842    328   -517   -484       P
ATOM   2205  OP1  DT M  10      37.726   6.579  81.668  1.00 63.59           O
ANISOU 2205  OP1  DT M  10     6861   7695   9605    485   -579   -471       O
ATOM   2206  O5'  DT M  10      37.518   6.408  84.178  1.00 63.63           O
ANISOU 2206  O5'  DT M  10     6967   7620   9590    185   -504   -334       O
ATOM   2207  C5'  DT M  10      38.577   7.204  84.541  1.00 56.99           C
ANISOU 2207  C5'  DT M  10     6178   6811   8666    190   -503   -212       C
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ATOM   2208  C4'  DT M  10      39.118   6.751  85.868  1.00 61.30           C
ANISOU 2208  C4'  DT M  10    6797   7287   9206     44   -492    -84        C
ATOM   2209  C3'  DT M  10      39.221   5.240  86.056  1.00 63.14           C
ANISOU 2209  C3'  DT M  10    7039   7422   9528     -3   -529    -74        C
ATOM   2210  O3'  DT M  10      40.477   4.965  86.661  1.00 75.23           O
ANISOU 2210  O3'  DT M  10    8637   8911  11034    -40   -555     74        O
ATOM   2211  C2'  DT M  10      38.062   4.926  87.019  1.00 44.14           C
ANISOU 2211  C2'  DT M  10    4637   4976   7159   -155   -475   -119        C
ATOM   2212  C1'  DT M  10      38.094   6.175  87.866  1.00 46.97           C
ANISOU 2212  C1'  DT M  10    5035   5387   7425   -227   -418    -55        C
ATOM   2213  O4'  DT M  10      38.253   7.212  86.934  1.00 52.66           O
ANISOU 2213  O4'  DT M  10    5722   6197   8090    -96   -423    -92        O
ATOM   2214  N1   DT M  10      36.871   6.489  88.676  1.00 62.35           N
ANISOU 2214  N1   DT M  10    6979   7339   9373   -351   -351   -112        N
ATOM   2215  C6   DT M  10      35.603   6.358  88.131  1.00 57.59           C
ANISOU 2215  C6   DT M  10    6312   6751   8821   -329   -333   -259        C
ATOM   2216  C5   DT M  10      34.480   6.679  88.820  1.00 60.58           C
ANISOU 2216  C5   DT M  10    6684   7136   9198   -436   -272   -314        C
ATOM   2217  C7   DT M  10      33.100   6.519  88.230  1.00 55.92           C
ANISOU 2217  C7   DT M  10    6023   6560   8663   -413   -254   -475        C
ATOM   2218  C4   DT M  10      34.638   7.208  90.166  1.00 65.20           C
ANISOU 2218  C4   DT M  10    7334   7714   9726   -576   -223   -212        C
ATOM   2219  N3   DT M  10      35.933   7.324  90.607  1.00 66.18           N
ANISOU 2219  N3   DT M  10    7518   7824   9801   -586   -245    -69        N
ATOM   2220  C2   DT M  10      37.057   7.004  89.936  1.00 63.74           C
ANISOU 2220  C2   DT M  10    7216   7509   9493   -481   -306    -13        C
ATOM   2221  O2   DT M  10      38.142   7.147  90.430  1.00 79.28           O
ANISOU 2221  O2   DT M  10    9241   9466  11416   -502   -319    115        O
ATOM   2222  O4   DT M  10      33.689   7.537  90.872  1.00 53.52           O
ANISOU 2222  O4   DT M  10    5855   6240   8241   -680   -166   -250        O
ATOM   2223  OP2  DT M  10      35.574   5.787  82.844  1.00 70.69           O
ANISOU 2223  OP2  DT M  10    7739   8525  10593    269   -503   -595        O
ATOM   2224  P    DA M  11      41.076   3.481  86.644  1.00 73.10           P
ANISOU 2224  P    DA M  11    8385   8548  10843    -49   -611    116        P
ATOM   2225  OP1  DA M  11      42.142   3.584  85.624  1.00 90.19           O
ANISOU 2225  OP1  DA M  11   10539  10741  12987    103   -670    149        O
ATOM   2226  OP2  DA M  11      39.989   2.466  86.550  1.00 74.49           O
ANISOU 2226  OP2  DA M  11    8519   8670  11112    -90   -609      7        O
ATOM   2227  O5'  DA M  11      41.704   3.336  88.095  1.00 62.15           O
ANISOU 2227  O5'  DA M  11    7081   7108   9427   -199   -591    261        O
ATOM   2228  C5'  DA M  11      42.413   4.443  88.629  1.00 67.48           C
ANISOU 2228  C5'  DA M  11    7803   7832  10005   -218   -567    364        C
ATOM   2229  C4'  DA M  11      42.734   4.227  90.084  1.00 61.21           C
ANISOU 2229  C4'  DA M  11    7082   6982   9194   -379   -539    481        C
ATOM   2230  C3'  DA M  11      43.065   2.797  90.468  1.00 63.10           C
ANISOU 2230  C3'  DA M  11    7347   7121   9508   -440   -575    525        C
ATOM   2231  O3'  DA M  11      44.034   2.827  91.531  1.00 56.53           O
ANISOU 2231  O3'  DA M  11    6591   6255   8631   -531   -571    677        O
ATOM   2232  C2'  DA M  11      41.699   2.233  90.901  1.00 55.72           C
ANISOU 2232  C2'  DA M  11    6386   6147   8638   -541   -536    427        C
ATOM   2233  C1'  DA M  11      41.011   3.459  91.493  1.00 61.45           C
ANISOU 2233  C1'  DA M  11    7116   6934   9296   -607   -467    411        C
ATOM   2234  O4'  DA M  11      41.601   4.601  90.892  1.00 57.84           O
ANISOU 2234  O4'  DA M  11    6654   6562   8761   -498   -473    433        O
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ATOM   2235  N9   DA M  11      39.540   3.523  91.287  1.00 68.38           N
ANISOU 2235  N9   DA M  11    7938   7830  10213   -626   -429    268       N
ATOM   2236  C4   DA M  11      38.582   3.891  92.218  1.00 59.13           C
ANISOU 2236  C4   DA M  11    6777   6661   9030   -755   -364    244       C
ATOM   2237  C5   DA M  11      37.365   3.830  91.564  1.00 68.22           C
ANISOU 2237  C5   DA M  11    7861   7833  10228   -718   -349     94       C
ATOM   2238  N7   DA M  11      37.536   3.443  90.248  1.00 65.45           N
ANISOU 2238  N7   DA M  11    7458   7495   9917   -569   -403     25       N
ATOM   2239  C8   DA M  11      38.846   3.280  90.129  1.00 66.07           C
ANISOU 2239  C8   DA M  11    7572   7559   9971   -519   -449    133       C
ATOM   2240  N3   DA M  11      38.780   4.213  93.500  1.00 63.67           N
ANISOU 2240  N3   DA M  11    7415   7218   9560   -889   -323    343       N
ATOM   2241  C2   DA M  11      37.631   4.489  94.114  1.00 63.70           C
ANISOU 2241  C2   DA M  11    7408   7227   9567   -989   -264    281       C
ATOM   2242  N1   DA M  11      36.392   4.494  93.616  1.00 61.80           N
ANISOU 2242  N1   DA M  11    7107   7008   9368   -969   -243    140       N
ATOM   2243  C6   DA M  11      36.216   4.148  92.326  1.00 62.97           C
ANISOU 2243  C6   DA M  11    7192   7172   9562   -834   -284     42       C
ATOM   2244  N6   DA M  11      34.985   4.128  91.837  1.00 75.82           N
ANISOU 2244  N6   DA M  11    8758   8819  11231   -815   -263    -98       N
ATOM   2245  P    DG M  12      44.666   1.482  92.138  1.00 66.59           P
ANISOU 2245  P    DG M  12    7912   7427   9964   -606   -606    762       P
ATOM   2246  OP1  DG M  12      45.829   1.863  92.975  1.00 69.92           O
ANISOU 2246  OP1  DG M  12    8407   7843  10317   -659   -606    919       O
ATOM   2247  O5'  DG M  12      43.545   0.995  93.154  1.00 71.28           O
ANISOU 2247  O5'  DG M  12    8512   7968  10601   -765   -556    723       O
ATOM   2248  C5'  DG M  12      43.374   1.711  94.327  1.00 65.31           C
ANISOU 2248  C5'  DG M  12    7803   7224   9787   -890   -498    785       C
ATOM   2249  C4'  DG M  12      42.254   1.131  95.134  1.00 65.05           C
ANISOU 2249  C4'  DG M  12    7768   7138   9808  -1027   -455    732       C
ATOM   2250  C3'  DG M  12      42.294  -0.382  95.297  1.00 65.35           C
ANISOU 2250  C3'  DG M  12    7814   7079   9937  -1072   -490    736       C
ATOM   2251  O3'  DG M  12      42.413  -0.683  96.682  1.00 69.01           O
ANISOU 2251  O3'  DG M  12    8342   7484  10394  -1230   -459    831       O
ATOM   2252  C2'  DG M  12      40.943  -0.860  94.718  1.00 62.19           C
ANISOU 2252  C2'  DG M  12    7345   6672   9613  -1056   -479    578       C
ATOM   2253  C1'  DG M  12      40.117   0.413  94.814  1.00 67.44           C
ANISOU 2253  C1'  DG M  12    7988   7417  10219  -1068   -420    519       C
ATOM   2254  O4'  DG M  12      41.005   1.431  94.495  1.00 67.21           O
ANISOU 2254  O4'  DG M  12    7975   7455  10107   -986   -430    584       O
ATOM   2255  N9   DG M  12      38.988   0.497  93.891  1.00 70.28           N
ANISOU 2255  N9   DG M  12    8271   7813  10618   -996   -412    361       N
ATOM   2256  C4   DG M  12      37.699   0.820  94.222  1.00 72.15           C
ANISOU 2256  C4   DG M  12    8482   8068  10865  -1067   -356    270       C
ATOM   2257  C5   DG M  12      36.996   0.782  93.046  1.00 75.95           C
ANISOU 2257  C5   DG M  12    8888   8583  11385   -956   -371    134       C
ATOM   2258  N7   DG M  12      37.835   0.442  91.978  1.00 71.48           N
ANISOU 2258  N7   DG M  12    8302   8022  10834   -815   -436    139       N
ATOM   2259  C8   DG M  12      38.999   0.301  92.528  1.00 66.27           C
ANISOU 2259  C8   DG M  12    7704   7332  10143   -845   -457    276       C
ATOM   2260  N3   DG M  12      37.253   1.096  95.468  1.00 66.87           N
ANISOU 2260  N3   DG M  12    7853   7383  10172  -1217   -298    310       N
ATOM   2261  C2   DG M  12      35.968   1.365  95.482  1.00 73.89           C
ANISOU 2261  C2   DG M  12    8702   8294  11078  -1253   -253    198       C
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ATOM   2262  N2   DG M  12      35.371   1.656  96.647  1.00 75.69           N
ANISOU 2262  N2   DG M  12    8962   8509  11286  -1398   -194    220        N
ATOM   2263  N1   DG M  12      35.169   1.359  94.359  1.00 75.31           N
ANISOU 2263  N1   DG M  12    8807   8510  11298  -1150   -263     57        N
ATOM   2264  C6   DG M  12      35.612   1.081  93.068  1.00 62.43           C
ANISOU 2264  C6   DG M  12    7133   6896   9692   -994   -322     14        C
ATOM   2265  O6   DG M  12      34.817   1.104  92.117  1.00 65.70           O
ANISOU 2265  O6   DG M  12    7480   7343  10141   -910   -326   -116        O
ATOM   2266  OP2  DG M  12      44.824   0.500  91.030  1.00 63.19           O
ANISOU 2266  OP2  DG M  12    7437   6966   9607   -494   -668    701        O
TER
ATOM   2267  N    LYS B   2       0.049  34.827 119.145  1.00160.35           N
ANISOU 2267  N    LYS B   2   20156  17856  22914   2081   5328   2052        N
ATOM   2268  CA   LYS B   2      -0.602  36.114 118.922  1.00156.20           C
ANISOU 2268  CA   LYS B   2   19568  17334  22448   2097   5317   2043        C
ATOM   2269  CB   LYS B   2      -2.128  35.933 118.852  1.00154.06           C
ANISOU 2269  CB   LYS B   2   19098  16921  22517   2058   5445   2102        C
ATOM   2270  CG   LYS B   2      -2.632  35.243 117.572  1.00149.29           C
ANISOU 2270  CG   LYS B   2   18161  16342  22221   1925   5312   2047        C
ATOM   2271  CD   LYS B   2      -2.455  36.130 116.327  1.00144.14           C
ANISOU 2271  CD   LYS B   2   17332  15832  21602   1868   5082   1949        C
ATOM   2272  CE   LYS B   2      -2.490  35.314 115.031  1.00141.21           C
ANISOU 2272  CE   LYS B   2   16690  15520  21444   1741   4901   1877        C
ATOM   2273  NZ   LYS B   2      -3.276  34.048 115.182  1.00144.78           N
ANISOU 2273  NZ   LYS B   2   17032  15836  22142   1691   5013   1927        N
ATOM   2274  C    LYS B   2      -0.220  37.137 120.007  1.00153.19           C
ANISOU 2274  C    LYS B   2   19492  16934  21777   2228   5404   2079        C
ATOM   2275  O    LYS B   2      -1.043  37.515 120.849  1.00155.25           O
ANISOU 2275  O    LYS B   2   19846  17066  22076   2295   5587   2160        O
ATOM   2276  N    ARG B   3       1.038  37.578 119.973  1.00146.23           N
ANISOU 2276  N    ARG B   3   18770  16181  20611   2264   5270   2016        N
ATOM   2277  CA   ARG B   3       1.531  38.620 120.876  1.00131.04           C
ANISOU 2277  CA   ARG B   3   17138  14255  18396   2384   5307   2028        C
ATOM   2278  CB   ARG B   3       2.807  38.180 121.589  1.00122.94           C
ANISOU 2278  CB   ARG B   3   16386  13264  17061   2450   5281   2020        C
ATOM   2279  CG   ARG B   3       2.766  36.877 122.295  1.00119.88           C
ANISOU 2279  CG   ARG B   3   16078  12776  16694   2465   5412   2089        C
ATOM   2280  CD   ARG B   3       4.149  36.595 122.874  1.00116.74           C
ANISOU 2280  CD   ARG B   3   15946  12435  15973   2532   5341   2063        C
ATOM   2281  NE   ARG B   3       4.669  35.285 122.493  1.00111.66           N
ANISOU 2281  NE   ARG B   3   15216  11831  15378   2467   5288   2045        N
ATOM   2282  CZ   ARG B   3       5.674  34.673 123.115  1.00116.44           C
ANISOU 2282  CZ   ARG B   3   16036  12448  15757   2524   5269   2045        C
ATOM   2283  NH1  ARG B   3       6.265  35.247 124.155  1.00116.81           N
ANISOU 2283  NH1  ARG B   3   16402  12466  15515   2647   5290   2061        N
ATOM   2284  NH2  ARG B   3       6.083  33.477 122.708  1.00124.37           N
ANISOU 2284  NH2  ARG B   3   16944  13488  16825   2460   5224   2029        N
ATOM   2285  C    ARG B   3       1.854  39.922 120.151  1.00123.15           C
ANISOU 2285  C    ARG B   3   16094  13376  17323   2380   5145   1947        C
ATOM   2286  O    ARG B   3       1.737  40.032 118.925  1.00118.09           O
ANISOU 2286  O    ARG B   3   15195  12823  16849   2288   4998   1881        O
ATOM   2287  N    ASN B   4       2.301  40.902 120.928  1.00127.56           N
ANISOU 2287  N    ASN B   4   16917  13930  17619   2486   5166   1951        N
ATOM   2288  CA   ASN B   4       2.947  42.078 120.367  1.00126.98           C
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ANISOU 2288  CA  ASN B   4    16868  13975  17402   2499   4998   1865       C
ATOM   2289  CB  ASN B   4       2.806  43.282 121.289  1.00127.30           C
ANISOU 2289  CB  ASN B   4    17157  13954  17258   2614   5080   1895       C
ATOM   2290  CG  ASN B   4       1.379  43.708 121.464  1.00126.00           C
ANISOU 2290  CG  ASN B   4    16884  13675  17314   2620   5235   1965       C
ATOM   2291  OD1 ASN B   4       0.828  44.410 120.618  1.00119.18           O
ANISOU 2291  OD1 ASN B   4    15819  12850  16614   2575   5166   1930       O
ATOM   2292  ND2 ASN B   4       0.764  43.288 122.567  1.00137.99           N
ANISOU 2292  ND2 ASN B   4    18540  15048  18843   2681   5447   2068       N
ATOM   2293  C   ASN B   4       4.407  41.770 120.134  1.00119.60           C
ANISOU 2293  C   ASN B   4    16037  13164  16243   2494   4837   1792       C
ATOM   2294  O   ASN B   4       5.096  41.262 121.023  1.00112.08           O
ANISOU 2294  O   ASN B   4    15319  12183  15082   2556   4880   1816       O
ATOM   2295  N   TYR B   5       4.891  42.068 118.939  1.00119.08           N
ANISOU 2295  N   TYR B   5    15799  13230  16218   2425   4649   1704       N
ATOM   2296  CA  TYR B   5       6.242  41.652 118.616  1.00112.49           C
ANISOU 2296  CA  TYR B   5    15027  12511  15202   2408   4501   1637       C
ATOM   2297  CB  TYR B   5       6.210  40.299 117.887  1.00101.20           C
ANISOU 2297  CB  TYR B   5    13369  11114  13969   2301   4468   1634       C
ATOM   2298  CG  TYR B   5       5.670  40.323 116.472  1.00 95.65           C
ANISOU 2298  CG  TYR B   5    12328  10472  13544   2190   4354   1589       C
ATOM   2299  CD2 TYR B   5       6.537  40.330 115.388  1.00101.39           C
ANISOU 2299  CD2 TYR B   5    12958  11341  14225   2086   4088   1504       C
ATOM   2300  CE2 TYR B   5       6.070  40.336 114.085  1.00 96.31           C
ANISOU 2300  CE2 TYR B   5    12032  10750  13812   1972   3942   1461       C
ATOM   2301  CZ  TYR B   5       4.720  40.335 113.843  1.00101.30           C
ANISOU 2301  CZ  TYR B   5    12451  11292  14748   1980   4084   1500       C
ATOM   2302  OH  TYR B   5       4.302  40.352 112.532  1.00103.48           O
ANISOU 2302  OH  TYR B   5    12458  11619  15240   1870   3913   1451       O
ATOM   2303  CE1 TYR B   5       3.821  40.324 114.900  1.00 94.66           C
ANISOU 2303  CE1 TYR B   5    11699  10312  13955   2048   4305   1583       C
ATOM   2304  CD1 TYR B   5       4.303  40.312 116.212  1.00 92.48           C
ANISOU 2304  CD1 TYR B   5    11724   9984  13429   2147   4433   1630       C
ATOM   2305  C   TYR B   5       7.042  42.665 117.807  1.00109.73           C
ANISOU 2305  C   TYR B   5    14671  12293  14729   2368   4255   1543       C
ATOM   2306  O   TYR B   5       6.505  43.450 117.020  1.00109.00           O
ANISOU 2306  O   TYR B   5    14415  12228  14773   2319   4169   1515       O
ATOM   2307  N   ILE B   6       8.344  42.639 118.059  1.00100.83           N
ANISOU 2307  N   ILE B   6    13740  11242  13330   2360   4090   1498       N
ATOM   2308  CA  ILE B   6       9.342  43.326 117.260  1.00 91.59           C
ANISOU 2308  CA  ILE B   6    12565  10208  12026   2264   3778   1407       C
ATOM   2309  CB  ILE B   6      10.506  43.758 118.139  1.00100.21           C
ANISOU 2309  CB  ILE B   6    13974  11318  12784   2331   3690   1381       C
ATOM   2310  CG1 ILE B   6       9.989  44.587 119.315  1.00 93.06           C
ANISOU 2310  CG1 ILE B   6    13304  10292  11763   2484   3881   1429       C
ATOM   2311  CD1 ILE B   6      11.057  44.934 120.330  1.00 90.70           C
ANISOU 2311  CD1 ILE B   6    13343   9985  11133   2569   3813   1407       C
ATOM   2312  CG2 ILE B   6      11.572  44.473 117.317  1.00109.59           C
ANISOU 2312  CG2 ILE B   6    15150  12640  13848   2227   3373   1290       C
ATOM   2313  C   ILE B   6       9.861  42.397 116.167  1.00 89.62           C
ANISOU 2313  C   ILE B   6    12110  10065  11876   2124   3601   1362       C
ATOM   2314  O   ILE B   6      10.229  41.252 116.461  1.00 88.25           O
ANISOU 2314  O   ILE B   6    11960   9885  11685   2124   3655   1383       O
ATOM   2315  N   LEU B   7       9.887  42.871 114.920  1.00 92.28           N
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ANISOU 2315  N   LEU B   7    12256  10495  12313   2011   3397   1303       N
ATOM   2316  CA  LEU B   7      10.482  42.117 113.793  1.00 84.81           C
ANISOU 2316  CA  LEU B   7    11133   9657  11435   1877   3203   1251       C
ATOM   2317  CB  LEU B   7       9.554  42.137 112.570  1.00 81.66           C
ANISOU 2317  CB  LEU B   7    10439   9272  11317   1790   3154   1236       C
ATOM   2318  CG  LEU B   7      10.141  41.676 111.229  1.00 82.76           C
ANISOU 2318  CG  LEU B   7    10406   9528  11512   1651   2917   1170       C
ATOM   2319  CD1 LEU B   7      10.579  40.220 111.257  1.00 82.75           C
ANISOU 2319  CD1 LEU B   7    10372   9539  11533   1618   2944   1180       C
ATOM   2320  CD2 LEU B   7       9.171  41.908 110.086  1.00 86.52           C
ANISOU 2320  CD2 LEU B   7    10625  10005  12242   1584   2858   1151       C
ATOM   2321  C   LEU B   7      11.860  42.648 113.378  1.00 79.28           C
ANISOU 2321  C   LEU B   7    10531   9078  10513   1813   2935   1175       C
ATOM   2322  O   LEU B   7      12.002  43.800 112.951  1.00 77.01           O
ANISOU 2322  O   LEU B   7    10256   8835  10171   1789   2800   1134       O
ATOM   2323  N   GLY B   8      12.872  41.800 113.499  1.00 84.40           N
ANISOU 2323  N   GLY B   8    11245   9778  11045   1786   2862   1159       N
ATOM   2324  CA  GLY B   8      14.213  42.168 113.068  1.00 92.99           C
ANISOU 2324  CA  GLY B   8    12402  10979  11951   1719   2614   1090       C
ATOM   2325  C   GLY B   8      14.586  41.516 111.749  1.00 86.74           C
ANISOU 2325  C   GLY B   8    11398  10285  11272   1587   2450   1045       C
ATOM   2326  O   GLY B   8      14.431  40.311 111.596  1.00 86.96           O
ANISOU 2326  O   GLY B   8    11326  10304  11411   1563   2515   1066       O
ATOM   2327  N   LEU B   9      15.057  42.302 110.784  1.00 75.27           N
ANISOU 2327  N   LEU B   9     9883   8921   9794   1504   2244    985       N
ATOM   2328  CA  LEU B   9      15.546  41.724 109.534  1.00 72.83           C
ANISOU 2328  CA  LEU B   9     9406   8706   9560   1384   2080    940       C
ATOM   2329  CB  LEU B   9      14.784  42.281 108.351  1.00 71.96           C
ANISOU 2329  CB  LEU B   9     9105   8616   9620   1318   2005    915       C
ATOM   2330  CG  LEU B   9      13.372  41.790 108.131  1.00 63.25           C
ANISOU 2330  CG  LEU B   9     7824   7436   8771   1329   2149    954       C
ATOM   2331  CD1 LEU B   9      12.944  42.244 106.756  1.00 56.51           C
ANISOU 2331  CD1 LEU B   9     6787   6627   8057   1245   2003    911       C
ATOM   2332  CD2 LEU B   9      13.368  40.305 108.226  1.00 65.45           C
ANISOU 2332  CD2 LEU B   9     8035   7697   9136   1315   2232    978       C
ATOM   2333  C   LEU B   9      17.031  41.964 109.295  1.00 68.25           C
ANISOU 2333  C   LEU B   9     8919   8223   8790   1332   1879    885       C
ATOM   2334  O   LEU B   9      17.495  43.101 109.321  1.00 66.76           O
ANISOU 2334  O   LEU B   9     8826   8061   8479   1333   1775    855       O
ATOM   2335  N   ASP B  10      17.760  40.878 109.059  1.00 68.86           N
ANISOU 2335  N   ASP B  10     8961   8348   8854   1288   1830    875       N
ATOM   2336  CA  ASP B  10      19.097  40.927 108.487  1.00 60.10           C
ANISOU 2336  CA  ASP B  10     7869   7339   7627   1214   1631    821       C
ATOM   2337  CB  ASP B  10      19.958  39.832 109.104  1.00 67.07           C
ANISOU 2337  CB  ASP B  10     8836   8232   8417   1236   1648    832       C
ATOM   2338  CG  ASP B  10      21.401  39.917 108.680  1.00 78.50           C
ANISOU 2338  CG  ASP B  10    10315   9773   9740   1174   1454    780       C
ATOM   2339  OD1 ASP B  10      22.110  40.762 109.277  1.00 77.63           O
ANISOU 2339  OD1 ASP B  10    10358   9667   9469   1206   1381    762       O
ATOM   2340  OD2 ASP B  10      21.814  39.132 107.775  1.00 83.92           O
ANISOU 2340  OD2 ASP B  10    10873  10521  10493   1095   1379    759       O
ATOM   2341  C   ASP B  10      18.996  40.752 106.968  1.00 60.68           C
ANISOU 2341  C   ASP B  10     7738   7480   7839   1104   1512    784       C
ATOM   2342  O   ASP B  10      18.611  39.675 106.507  1.00 71.24           O
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ANISOU 2342  O   ASP B  10     8943   8813   9312   1072   1556    795       O
ATOM   2343  N   ILE B  11      19.294  41.787 106.181  1.00 52.76           N
ANISOU 2343  N   ILE B  11     6711   6530   6805   1049   1366    742       N
ATOM   2344  CA  ILE B  11      19.152  41.650 104.717  1.00 61.20           C
ANISOU 2344  CA  ILE B  11     7604   7654   7994    954   1255    708       C
ATOM   2345  CB  ILE B  11      18.361  42.824 104.070  1.00 52.17           C
ANISOU 2345  CB  ILE B  11     6401   6499   6923    940   1213    695       C
ATOM   2346  CG1 ILE B  11      16.971  42.972 104.687  1.00 57.90           C
ANISOU 2346  CG1 ILE B  11     7101   7128   7770   1015   1380    740       C
ATOM   2347  CD1 ILE B  11      16.066  43.986 103.959  1.00 55.27           C
ANISOU 2347  CD1 ILE B  11     6679   6779   7540   1003   1339    728       C
ATOM   2348  CG2 ILE B  11      18.170  42.589 102.590  1.00 53.55           C
ANISOU 2348  CG2 ILE B  11     6409   6721   7218    854   1100    661       C
ATOM   2349  C   ILE B  11      20.517  41.552 104.040  1.00 65.01           C
ANISOU 2349  C   ILE B  11     8096   8231   8375    879   1089    664       C
ATOM   2350  O   ILE B  11      21.269  42.524 103.985  1.00 66.04           O
ANISOU 2350  O   ILE B  11     8309   8398   8387    862    984    636       O
ATOM   2351  N   GLY B  12      20.832  40.372 103.519  1.00 67.79           N
ANISOU 2351  N   GLY B  12     8359   8615   8781    834   1071    657       N
ATOM   2352  CA  GLY B  12      22.162  40.109 102.990  1.00 36.69           C
ANISOU 2352  CA  GLY B  12     4431   4757   4750    773    940    622       C
ATOM   2353  C   GLY B  12      22.171  39.849 101.507  1.00 55.08           C
ANISOU 2353  C   GLY B  12     6621   7137   7171    687    839    589       C
ATOM   2354  O   GLY B  12      21.144  39.896 100.830  1.00 59.65           O
ANISOU 2354  O   GLY B  12     7091   7690   7884    672    851    588       O
ATOM   2355  N   ILE B  13      23.362  39.568 101.008  1.00 60.90           N
ANISOU 2355  N   ILE B  13     7364   7942   7833    635    737    562       N
ATOM   2356  CA  ILE B  13      23.635  39.430  99.588  1.00 45.51           C
ANISOU 2356  CA  ILE B  13     5316   6046   5928    557    629    528       C
ATOM   2357  CB  ILE B  13      25.170  39.478  99.383  1.00 46.76           C
ANISOU 2357  CB  ILE B  13     5528   6273   5965    517    530    504       C
ATOM   2358  CG1 ILE B  13      25.558  40.847  98.875  1.00 55.02           C
ANISOU 2358  CG1 ILE B  13     6610   7347   6949    484    431    480       C
ATOM   2359  CD1 ILE B  13      25.224  41.930  99.854  1.00 67.49           C
ANISOU 2359  CD1 ILE B  13     8289   8884   8471    537    464    494       C
ATOM   2360  CG2 ILE B  13      25.707  38.397  98.506  1.00 57.56           C
ANISOU 2360  CG2 ILE B  13     6818   7684   7369    466    490    488       C
ATOM   2361  C   ILE B  13      23.019  38.143  99.036  1.00 54.83           C
ANISOU 2361  C   ILE B  13     6378   7210   7244    539    671    531       C
ATOM   2362  O   ILE B  13      22.506  38.124  97.906  1.00 55.39           O
ANISOU 2362  O   ILE B  13     6352   7286   7407    495    613    509       O
ATOM   2363  N   THR B  14      23.074  37.087  99.854  1.00 51.60           N
ANISOU 2363  N   THR B  14     5986   6776   6843    575    767    558       N
ATOM   2364  CA  THR B  14      22.534  35.759  99.538  1.00 62.56           C
ANISOU 2364  CA  THR B  14     7274   8138   8359    564    824    566       C
ATOM   2365  CB  THR B  14      23.631  34.681  99.501  1.00 51.91           C
ANISOU 2365  CB  THR B  14     5940   6832   6950    545    802    560       C
ATOM   2366  OG1 THR B  14      24.344  34.706 100.741  1.00 59.67           O
ANISOU 2366  OG1 THR B  14     7048   7813   7809    600    849    584       O
ATOM   2367  CG2 THR B  14      24.575  34.909  98.380  1.00 41.71           C
ANISOU 2367  CG2 THR B  14     4630   5614   5602    479    664    519       C
ATOM   2368  C   THR B  14      21.525  35.267 100.569  1.00 71.09           C
ANISOU 2368  C   THR B  14     8352   9133   9525    630    986    612       C
ATOM   2369  O   THR B  14      21.015  34.154 100.472  1.00 55.45           O
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ANISOU 2369  O   THR B  14     6291   7116   7662    626   1052    625       O
ATOM   2370  N   SER B  15      21.284  36.071 101.591  1.00 62.82           N
ANISOU 2370  N   SER B  15     7402   8049   8416    693   1056    639       N
ATOM   2371  CA  SER B  15      20.515  35.602 102.713  1.00 48.93           C
ANISOU 2371  CA  SER B  15     5674   6208   6709    767   1227    689       C
ATOM   2372  CB  SER B  15      21.463  35.118 103.811  1.00 45.15           C
ANISOU 2372  CB  SER B  15     5338   5733   6083    818   1273    710       C
ATOM   2373  OG  SER B  15      21.643  36.140 104.791  1.00 69.66           O
ANISOU 2373  OG  SER B  15     8592   8819   9058    882   1296    723       O
ATOM   2374  C   SER B  15      19.575  36.682 103.298  1.00 60.61           C
ANISOU 2374  C   SER B  15     7190   7627   8212    823   1305    713       C
ATOM   2375  O   SER B  15      19.917  37.864 103.348  1.00 51.65           O
ANISOU 2375  O   SER B  15     6133   6519   6974    827   1233    696       O
ATOM   2376  N   VAL B  16      18.405  36.263 103.770  1.00 63.25           N
ANISOU 2376  N   VAL B  16     7470   7874   8687    867   1459    754       N
ATOM   2377  CA  VAL B  16      17.574  37.136 104.606  1.00 66.12           C
ANISOU 2377  CA  VAL B  16     7894   8167   9061    942   1574    789       C
ATOM   2378  CB  VAL B  16      16.318  37.618 103.881  1.00 66.50           C
ANISOU 2378  CB  VAL B  16     7793   8177   9297    922   1577    785       C
ATOM   2379  CG1 VAL B  16      15.470  38.414 104.838  1.00 76.80           C
ANISOU 2379  CG1 VAL B  16     9163   9401  10616   1008   1719    828       C
ATOM   2380  CG2 VAL B  16      16.679  38.455 102.669  1.00 67.46           C
ANISOU 2380  CG2 VAL B  16     7868   8375   9390    850   1383    729       C
ATOM   2381  C   VAL B  16      17.148  36.443 105.901  1.00 70.29           C
ANISOU 2381  C   VAL B  16     8499   8607   9600   1029   1780    850       C
ATOM   2382  O   VAL B  16      16.399  35.450 105.894  1.00 66.78           O
ANISOU 2382  O   VAL B  16     7949   8105   9319   1031   1893    879       O
ATOM   2383  N   GLY B  17      17.644  36.974 107.010  1.00 61.64           N
ANISOU 2383  N   GLY B  17     7594   7498   8330   1104   1826    870       N
ATOM   2384  CA  GLY B  17      17.363  36.427 108.318  1.00 68.89           C
ANISOU 2384  CA  GLY B  17     8628   8329   9216   1201   2018    929       C
ATOM   2385  C   GLY B  17      16.246  37.226 108.967  1.00 75.61           C
ANISOU 2385  C   GLY B  17     9512   9090  10125   1278   2167    969       C
ATOM   2386  O   GLY B  17      16.218  38.453 108.891  1.00 76.49           O
ANISOU 2386  O   GLY B  17     9670   9218  10175   1285   2099    949       O
ATOM   2387  N   TYR B  18      15.298  36.537 109.585  1.00 74.51           N
ANISOU 2387  N   TYR B  18     9345   8851  10113   1336   2376   1029       N
ATOM   2388  CA  TYR B  18      14.238  37.238 110.290  1.00 79.24           C
ANISOU 2388  CA  TYR B  18     9983   9354  10770   1419   2544   1075       C
ATOM   2389  CB  TYR B  18      12.846  36.875 109.745  1.00 64.90           C
ANISOU 2389  CB  TYR B  18     7943   7470   9247   1394   2651   1101       C
ATOM   2390  CG  TYR B  18      12.515  35.426 109.905  1.00 68.94           C
ANISOU 2390  CG  TYR B  18     8372   7925   9895   1391   2784   1139       C
ATOM   2391  CD1 TYR B  18      12.018  34.939 111.097  1.00 76.77           C
ANISOU 2391  CD1 TYR B  18     9461   8806  10901   1490   3031   1213       C
ATOM   2392  CE1 TYR B  18      11.731  33.597 111.253  1.00 86.77           C
ANISOU 2392  CE1 TYR B  18    10657  10016  12296   1486   3160   1251       C
ATOM   2393  CZ  TYR B  18      11.947  32.730 110.209  1.00 90.39           C
ANISOU 2393  CZ  TYR B  18    10947  10530  12868   1382   3034   1211       C
ATOM   2394  OH  TYR B  18      11.670  31.399 110.367  1.00107.31           O
ANISOU 2394  OH  TYR B  18    13022  12611  15140   1376   3160   1247       O
ATOM   2395  CE2 TYR B  18      12.441  33.188 109.017  1.00 87.39           C
ANISOU 2395  CE2 TYR B  18    10475  10260  12469   1286   2788   1136       C
ATOM   2396  CD2 TYR B  18      12.725  34.532 108.869  1.00 80.41           C
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ANISOU 2396  CD2 TYR B  18     9663   9431  11458   1291   2668   1102       C
ATOM   2397  C   TYR B  18       14.375  36.897 111.757  1.00 78.23           C
ANISOU 2397  C   TYR B  18    10066   9146  10509   1536   2725   1133       C
ATOM   2398  O   TYR B  18       14.982  35.898 112.121  1.00 86.34           O
ANISOU 2398  O   TYR B  18    11155  10177  11471   1546   2749   1145       O
ATOM   2399  N   GLY B  19       13.848  37.768 112.595  1.00 83.92           N
ANISOU 2399  N   GLY B  19    10913   9795  11178   1630   2846   1167       N
ATOM   2400  CA  GLY B  19       13.836  37.571 114.028  1.00 98.00           C
ANISOU 2400  CA  GLY B  19    12918  11486  12832   1758   3037   1226       C
ATOM   2401  C   GLY B  19       12.513  38.079 114.570  1.00 92.62           C
ANISOU 2401  C   GLY B  19    12230  10686  12274   1841   3258   1285       C
ATOM   2402  O   GLY B  19       12.065  39.175 114.225  1.00 75.83           O
ANISOU 2402  O   GLY B  19    10060   8567  10186   1834   3211   1266       O
ATOM   2403  N   ILE B  20       11.858  37.270 115.389  1.00 97.18           N
ANISOU 2403  N   ILE B  20    12844  11153  12929   1920   3507   1359       N
ATOM   2404  CA  ILE B  20       10.580  37.687 115.942  1.00 92.70           C
ANISOU 2404  CA  ILE B  20    12265  10461  12494   2005   3743   1423       C
ATOM   2405  CB  ILE B  20        9.430  36.857 115.381  1.00 87.39           C
ANISOU 2405  CB  ILE B  20    11322   9728  12152   1956   3877   1459       C
ATOM   2406  CG1 ILE B  20        9.403  36.989 113.857  1.00 72.71           C
ANISOU 2406  CG1 ILE B  20     9206   7972  10450   1814   3645   1388       C
ATOM   2407  CD1 ILE B  20        8.490  36.019 113.171  1.00 79.44           C
ANISOU 2407  CD1 ILE B  20     9788   8779  11616   1747   3716   1407       C
ATOM   2408  CG2 ILE B  20        8.122  37.327 115.989  1.00 95.31           C
ANISOU 2408  CG2 ILE B  20    12311  10599  13305   2049   4131   1529       C
ATOM   2409  C   ILE B  20       10.635  37.588 117.457  1.00 86.84           C
ANISOU 2409  C   ILE B  20    11805   9614  11576   2156   3956   1488       C
ATOM   2410  O   ILE B  20       10.808  36.509 118.039  1.00 86.66           O
ANISOU 2410  O   ILE B  20    11855   9543  11528   2196   4080   1531       O
ATOM   2411  N   ILE B  21       10.514  38.737 118.094  1.00 86.96           N
ANISOU 2411  N   ILE B  21    11994   9592  11457   2244   3993   1494       N
ATOM   2412  CA  ILE B  21       10.689  38.795 119.520  1.00 92.45           C
ANISOU 2412  CA  ILE B  21    12996  10191  11940   2394   4161   1545       C
ATOM   2413  CB  ILE B  21       12.048  39.450 119.875  1.00 93.92           C
ANISOU 2413  CB  ILE B  21    13427  10453  11803   2414   3940   1483       C
ATOM   2414  CG1 ILE B  21       12.643  38.732 121.076  1.00112.70           C
ANISOU 2414  CG1 ILE B  21    16077  12768  13974   2526   4042   1521       C
ATOM   2415  CD1 ILE B  21       14.102  38.879 121.201  1.00114.66           C
ANISOU 2415  CD1 ILE B  21    16494  13108  13965   2511   3793   1454       C
ATOM   2416  CG2 ILE B  21       11.936  40.972 120.096  1.00 90.59           C
ANISOU 2416  CG2 ILE B  21    13126  10022  11270   2462   3889   1458       C
ATOM   2417  C   ILE B  21        9.504  39.524 120.140  1.00105.55           C
ANISOU 2417  C   ILE B  21    14699  11725  13680   2499   4400   1607       C
ATOM   2418  O   ILE B  21        8.917  40.399 119.502  1.00 98.14           O
ANISOU 2418  O   ILE B  21    13616  10806  12868   2458   4349   1585       O
ATOM   2419  N   ASP B  22        9.138  39.118 121.361  1.00117.34           N
ANISOU 2419  N   ASP B  22    16385  13086  15112   2577   4560   1689       N
ATOM   2420  CA  ASP B  22        7.966  39.650 122.058  1.00116.07           C
ANISOU 2420  CA  ASP B  22    16275  12790  15038   2632   4732   1765       C
ATOM   2421  CB  ASP B  22        7.593  38.767 123.257  1.00120.05           C
ANISOU 2421  CB  ASP B  22    16946  13146  15521   2698   4917   1865       C
ATOM   2422  CG  ASP B  22        6.458  39.363 124.084  1.00125.82           C
ANISOU 2422  CG  ASP B  22    17765  13729  16312   2769   5104   1950       C
ATOM   2423  OD1 ASP B  22        5.308  39.391 123.591  1.00126.62           O
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ANISOU 2423  OD1 ASP B  22    17630  13787  16692   2707   5189   1983       O
ATOM   2424  OD2 ASP B  22       6.720  39.830 125.215  1.00124.52           O
ANISOU 2424  OD2 ASP B  22    17908  13490  15915   2889   5160   1983       O
ATOM   2425  C   ASP B  22       8.183  41.083 122.526  1.00112.28           C
ANISOU 2425  C   ASP B  22    16004  12308  14351   2722   4695   1740       C
ATOM   2426  O   ASP B  22       9.169  41.381 123.189  1.00113.64           O
ANISOU 2426  O   ASP B  22    16448  12496  14234   2801   4623   1711       O
ATOM   2427  N   TYR B  23       7.234  41.957 122.198  1.00104.14           N
ANISOU 2427  N   TYR B  23    14849  11248  13472   2710   4741   1751       N
ATOM   2428  CA  TYR B  23       7.370  43.395 122.437  1.00103.72           C
ANISOU 2428  CA  TYR B  23    14953  11201  13255   2781   4693   1718       C
ATOM   2429  CB  TYR B  23       6.146  44.115 121.874  1.00 97.22           C
ANISOU 2429  CB  TYR B  23    13914  10347  12678   2744   4753   1737       C
ATOM   2430  CG  TYR B  23       6.295  45.608 121.653  1.00120.16           C
ANISOU 2430  CG  TYR B  23    16889  13293  15474   2785   4660   1680       C
ATOM   2431  CD1 TYR B  23       7.175  46.115 120.702  1.00119.51           C
ANISOU 2431  CD1 TYR B  23    16743  13343  15321   2748   4456   1577       C
ATOM   2432  CE1 TYR B  23       7.288  47.481 120.485  1.00115.90           C
ANISOU 2432  CE1 TYR B  23    16346  12917  14772   2749   4320   1529       C
ATOM   2433  CZ  TYR B  23       6.499  48.356 121.209  1.00122.51           C
ANISOU 2433  CZ  TYR B  23    17311  13645  15592   2861   4490   1575       C
ATOM   2434  OH  TYR B  23       6.597  49.716 121.016  1.00127.74           O
ANISOU 2434  OH  TYR B  23    18043  14330  16162   2879   4379   1527       O
ATOM   2435  CE2 TYR B  23       5.614  47.877 122.143  1.00125.26           C
ANISOU 2435  CE2 TYR B  23    17717  13867  16010   2897   4696   1680       C
ATOM   2436  CD2 TYR B  23       5.507  46.513 122.354  1.00129.83           C
ANISOU 2436  CD2 TYR B  23    18233  14416  16682   2860   4781   1732       C
ATOM   2437  C   TYR B  23       7.581  43.765 123.916  1.00116.75           C
ANISOU 2437  C   TYR B  23    16973  12743  14642   2915   4781   1766       C
ATOM   2438  O   TYR B  23       8.302  44.717 124.215  1.00115.25           O
ANISOU 2438  O   TYR B  23    16995  12584  14210   2980   4675   1712       O
ATOM   2439  N   GLU B  24       6.983  43.010 124.838  1.00112.24           N
ANISOU 2439  N   GLU B  24    16489  12040  14115   2959   4965   1866       N
ATOM   2440  CA  GLU B  24       7.132  43.314 126.261  1.00116.67           C
ANISOU 2440  CA  GLU B  24    17408  12485  14437   3094   5054   1920       C
ATOM   2441  CB  GLU B  24       5.805  43.107 126.993  1.00120.68           C
ANISOU 2441  CB  GLU B  24    17919  12827  15107   3134   5305   2042       C
ATOM   2442  C   GLU B  24       8.226  42.491 126.947  1.00122.26           C
ANISOU 2442  C   GLU B  24    18343  13190  14920   3148   4995   1911       C
ATOM   2443  O   GLU B  24       9.064  43.034 127.666  1.00122.90           O
ANISOU 2443  O   GLU B  24    18716  13264  14715   3241   4904   1879       O
ATOM   2444  N   THR B  25       8.218  41.181 126.735  1.00125.23           N
ANISOU 2444  N   THR B  25    18589  13568  15426   3092   5037   1938       N
ATOM   2445  CA  THR B  25       9.156  40.312 127.436  1.00134.14           C
ANISOU 2445  CA  THR B  25    19928  14679  16361   3149   5000   1941       C
ATOM   2446  CB  THR B  25       8.539  38.918 127.680  1.00137.88           C
ANISOU 2446  CB  THR B  25    20308  15057  17021   3126   5168   2028       C
ATOM   2447  OG1 THR B  25       8.190  38.316 126.424  1.00140.20           O
ANISOU 2447  OG1 THR B  25    20243  15439  17588   2983   5139   2002       O
ATOM   2448  CG2 THR B  25       7.293  39.037 128.541  1.00131.45           C
ANISOU 2448  CG2 THR B  25    19565  14065  16314   3192   5409   2143       C
ATOM   2449  C   THR B  25      10.490  40.136 126.697  1.00138.36           C
ANISOU 2449  C   THR B  25    20427  15379  16767   3094   4768   1832       C
ATOM   2450  O   THR B  25      11.446  39.617 127.269  1.00138.61           O
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ANISOU 2450  O   THR B  25    20658  15412  16596   3148   4694   1816       O
ATOM   2451  N   ARG B  26      10.547  40.607 125.450  1.00129.37           N
ANISOU 2451  N   ARG B  26    19043  14371  15742   2992   4651   1759       N
ATOM   2452  CA  ARG B  26      11.630  40.311 124.498  1.00123.95           C
ANISOU 2452  CA  ARG B  26    18243  13845  15006   2914   4456   1665       C
ATOM   2453  CB  ARG B  26      12.853  41.243 124.707  1.00104.17           C
ANISOU 2453  CB  ARG B  26    15974  11415  12189   2969   4263   1578       C
ATOM   2454  CG  ARG B  26      13.715  41.085 125.971  1.00113.50           C
ANISOU 2454  CG  ARG B  26    17515  12535  13076   3083   4218   1584       C
ATOM   2455  CD  ARG B  26      15.129  41.633 125.737  1.00117.59           C
ANISOU 2455  CD  ARG B  26    18149  13173  13358   3059   3932   1481       C
ATOM   2456  NE  ARG B  26      15.522  42.626 126.736  1.00123.01           N
ANISOU 2456  NE  ARG B  26    19171  13795  13773   3185   3888   1459       N
ATOM   2457  CZ  ARG B  26      16.651  43.334 126.705  1.00121.72           C
ANISOU 2457  CZ  ARG B  26    19123  13703  13422   3155   3599   1374       C
ATOM   2458  NH1 ARG B  26      17.531  43.174 125.725  1.00111.13           N
ANISOU 2458  NH1 ARG B  26    17588  12503  12131   3004   3336   1304       N
ATOM   2459  NH2 ARG B  26      16.899  44.212 127.666  1.00129.71           N
ANISOU 2459  NH2 ARG B  26    20449  14638  14198   3278   3577   1358       N
ATOM   2460  C   ARG B  26      12.043  38.834 124.528  1.00118.82           C
ANISOU 2460  C   ARG B  26    17554  13202  14388   2882   4469   1687       C
ATOM   2461  O   ARG B  26      13.224  38.498 124.613  1.00113.88           O
ANISOU 2461  O   ARG B  26    17052  12649  13567   2895   4334   1638       O
ATOM   2462  N   ASP B  27      11.055  37.948 124.433  1.00117.50           N
ANISOU 2462  N   ASP B  27    17210  12958  14475   2836   4628   1761       N
ATOM   2463  CA  ASP B  27      11.352  36.525 124.301  1.00114.45           C
ANISOU 2463  CA  ASP B  27    16747  12581  14158   2790   4641   1779       C
ATOM   2464  CB  ASP B  27      10.446  35.655 125.185  1.00110.72           C
ANISOU 2464  CB  ASP B  27    16328  11939  13802   2834   4860   1889       C
ATOM   2465  CG  ASP B  27      10.660  35.902 126.665  1.00118.55           C
ANISOU 2465  CG  ASP B  27    17686  12807  14549   2988   4935   1940       C
ATOM   2466  OD1 ASP B  27      11.133  36.994 127.032  1.00126.45           O
ANISOU 2466  OD1 ASP B  27    18880  13829  15337   3058   4847   1899       O
ATOM   2467  OD2 ASP B  27      10.377  34.992 127.467  1.00121.94           O
ANISOU 2467  OD2 ASP B  27    18221  13113  14998   3041   5076   2017       O
ATOM   2468  C   ASP B  27      11.224  36.106 122.856  1.00106.75           C
ANISOU 2468  C   ASP B  27    15420  11719  13419   2647   4564   1733       C
ATOM   2469  O   ASP B  27      10.395  36.618 122.103  1.00 91.69           O
ANISOU 2469  O   ASP B  27    13292   9825  11722   2582   4578   1726       O
ATOM   2470  N   VAL B  28      12.062  35.164 122.469  1.00110.43           N
ANISOU 2470  N   VAL B  28    15841  12264  13851   2601   4474   1700       N
ATOM   2471  CA  VAL B  28      12.102  34.780 121.087  1.00103.31           C
ANISOU 2471  CA  VAL B  28    14631  11478  13145   2470   4378   1649       C
ATOM   2472  CB  VAL B  28      13.377  34.039 120.778  1.00 91.86           C
ANISOU 2472  CB  VAL B  28    13206  10133  11563   2421   4196   1598       C
ATOM   2473  CG1 VAL B  28      13.341  33.527 119.352  1.00 92.89           C
ANISOU 2473  CG1 VAL B  28    13013  10362  11918   2256   4048   1552       C
ATOM   2474  CG2 VAL B  28      14.505  35.017 120.959  1.00 96.75           C
ANISOU 2474  CG2 VAL B  28    14016  10835  11911   2436   3957   1529       C
ATOM   2475  C   VAL B  28      10.888  33.963 120.737  1.00 94.90           C
ANISOU 2475  C   VAL B  28    13326  10329  12403   2395   4507   1707       C
ATOM   2476  O   VAL B  28      10.766  32.797 121.105  1.00 95.34           O
ANISOU 2476  O   VAL B  28    13391  10316  12518   2391   4595   1756       O
ATOM   2477  N   ILE B  29       9.965  34.619 120.052  1.00 86.53           N
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ANISOU 2477  N   ILE B  29    12059   9268  11550   2339   4516   1700       N
ATOM   2478  CA  ILE B  29       8.845  33.917 119.474  1.00 94.67           C
ANISOU 2478  CA  ILE B  29    12820  10239  12909   2247   4593   1735       C
ATOM   2479  CB  ILE B  29       7.839  34.876 118.848  1.00 93.81           C
ANISOU 2479  CB  ILE B  29    12524  10122  12997   2207   4591   1725       C
ATOM   2480  CG1 ILE B  29       7.122  35.661 119.957  1.00 89.93           C
ANISOU 2480  CG1 ILE B  29    12220   9505  12446   2310   4750   1793       C
ATOM   2481  CD1 ILE B  29       6.515  37.010 119.509  1.00 89.78           C
ANISOU 2481  CD1 ILE B  29    12109   9504  12498   2308   4717   1768       C
ATOM   2482  CG2 ILE B  29       6.869  34.103 117.971  1.00 87.51           C
ANISOU 2482  CG2 ILE B  29    11413   9292  12543   2092   4605   1734       C
ATOM   2483  C   ILE B  29       9.363  32.938 118.436  1.00102.75           C
ANISOU 2483  C   ILE B  29    13644  11360  14034   2140   4472   1685       C
ATOM   2484  O   ILE B  29       9.277  31.742 118.655  1.00 96.62           O
ANISOU 2484  O   ILE B  29    12852  10527  13332   2120   4541   1723       O
ATOM   2485  N   ASP B  30       9.932  33.456 117.341  1.00118.90           N
ANISOU 2485  N   ASP B  30    15554  13548  16074   2080   4295   1603       N
ATOM   2486  CA  ASP B  30      10.418  32.659 116.197  1.00118.52           C
ANISOU 2486  CA  ASP B  30    15307  13601  16124   1949   4112   1546       C
ATOM   2487  CB  ASP B  30       9.285  32.452 115.182  1.00118.81           C
ANISOU 2487  CB  ASP B  30    15024  13613  16506   1858   4132   1543       C
ATOM   2488  CG  ASP B  30       8.600  31.100 115.320  1.00120.46           C
ANISOU 2488  CG  ASP B  30    15133  13718  16918   1816   4252   1595       C
ATOM   2489  OD1 ASP B  30       8.533  30.552 116.435  1.00126.53           O
ANISOU 2489  OD1 ASP B  30    16085  14385  17606   1885   4400   1662       O
ATOM   2490  OD2 ASP B  30       8.123  30.574 114.293  1.00119.23           O
ANISOU 2490  OD2 ASP B  30    14723  13576  17005   1710   4179   1567       O
ATOM   2491  C   ASP B  30      11.632  33.305 115.487  1.00108.51           C
ANISOU 2491  C   ASP B  30    14075  12490  14665   1874   3792   1453       C
ATOM   2492  O   ASP B  30      11.863  34.510 115.621  1.00112.18           O
ANISOU 2492  O   ASP B  30    14645  12987  14990   1902   3704   1426       O
ATOM   2493  N   ALA B  31      12.393  32.518 114.723  1.00101.22           N
ANISOU 2493  N   ALA B  31    13060  11656  13741   1778   3625   1406       N
ATOM   2494  CA  ALA B  31      13.570  33.038 113.999  1.00 89.38           C
ANISOU 2494  CA  ALA B  31    11579  10300  12080   1702   3334   1323       C
ATOM   2495  CB  ALA B  31      14.671  33.408 114.998  1.00 89.54           C
ANISOU 2495  CB  ALA B  31    11890  10340  11791   1788   3290   1318       C
ATOM   2496  C   ALA B  31      14.140  32.080 112.924  1.00 87.50           C
ANISOU 2496  C   ALA B  31    11179  10149  11917   1584   3174   1275       C
ATOM   2497  O   ALA B  31      14.123  30.857 113.086  1.00 88.38           O
ANISOU 2497  O   ALA B  31    11263  10222  12096   1584   3269   1305       O
ATOM   2498  N   GLY B  32      14.665  32.634 111.832  1.00 86.22           N
ANISOU 2498  N   GLY B  32    10921  10101  11739   1488   2936   1201       N
ATOM   2499  CA  GLY B  32      15.216  31.801 110.765  1.00 92.61           C
ANISOU 2499  CA  GLY B  32    11587  10992  12610   1380   2782   1154       C
ATOM   2500  C   GLY B  32      15.745  32.532 109.538  1.00 85.28           C
ANISOU 2500  C   GLY B  32    10564  10180  11658   1281   2531   1077       C
ATOM   2501  O   GLY B  32      15.767  33.757 109.516  1.00 87.20           O
ANISOU 2501  O   GLY B  32    10858  10449  11825   1293   2461   1056       O
ATOM   2502  N   VAL B  33      16.168  31.792 108.510  1.00 80.34           N
ANISOU 2502  N   VAL B  33     9809   9621  11097   1188   2401   1035       N
ATOM   2503  CA  VAL B  33      16.765  32.421 107.326  1.00 65.16           C
ANISOU 2503  CA  VAL B  33     7814   7806   9138   1098   2169    964       C
ATOM   2504  CB  VAL B  33      18.288  32.209 107.276  1.00 71.30           C
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ANISOU 2504  CB  VAL B  33     8700   8679   9714   1076   2025    929       C
ATOM   2505  CG1 VAL B  33      18.929  32.899 108.419  1.00 84.92           C
ANISOU 2505  CG1 VAL B  33    10641  10399  11225   1161   2046    945       C
ATOM   2506  CG2 VAL B  33      18.605  30.748 107.370  1.00 90.84           C
ANISOU 2506  CG2 VAL B  33    11154  11140  12219   1070   2079    945       C
ATOM   2507  C   VAL B  33      16.224  31.952 105.993  1.00 61.76           C
ANISOU 2507  C   VAL B  33     7162   7392   8911   1002   2086    929       C
ATOM   2508  O   VAL B  33      16.019  30.751 105.766  1.00 70.98           O
ANISOU 2508  O   VAL B  33     8239   8530  10199    975   2135    939       O
ATOM   2509  N   ARG B  34      16.008  32.917 105.103  1.00 53.00           N
ANISOU 2509  N   ARG B  34     5976   6326   7835    954   1953    887       N
ATOM   2510  CA  ARG B  34      15.700  32.610 103.713  1.00 65.36           C
ANISOU 2510  CA  ARG B  34     7360   7922   9552    863   1826    840       C
ATOM   2511  CB  ARG B  34      14.621  33.555 103.206  1.00 55.54           C
ANISOU 2511  CB  ARG B  34     6010   6646   8447    855   1804    831       C
ATOM   2512  CG  ARG B  34      14.425  33.558 101.713  1.00 69.08           C
ANISOU 2512  CG  ARG B  34     7574   8402  10272    768   1629    773       C
ATOM   2513  CD  ARG B  34      13.791  32.291 101.191  1.00 73.63           C
ANISOU 2513  CD  ARG B  34     7992   8926  11058    726   1655    770       C
ATOM   2514  NE  ARG B  34      13.247  32.522  99.852  1.00 70.53           N
ANISOU 2514  NE  ARG B  34     7453   8544  10801    662   1499    717       N
ATOM   2515  CZ  ARG B  34      12.826  31.548  99.053  1.00 72.35           C
ANISOU 2515  CZ  ARG B  34     7544   8745  11199    609   1450    692       C
ATOM   2516  NH1 ARG B  34      12.896  30.291  99.471  1.00 63.98           N
ANISOU 2516  NH1 ARG B  34     6468   7646  10195    609   1553    717       N
ATOM   2517  NH2 ARG B  34      12.345  31.824  97.841  1.00 66.69           N
ANISOU 2517  NH2 ARG B  34     6713   8034  10590    559   1294    641       N
ATOM   2518  C   ARG B  34      16.986  32.701 102.853  1.00 75.77           C
ANISOU 2518  C   ARG B  34     8712   9356  10721    796   1623    782       C
ATOM   2519  O   ARG B  34      17.734  33.677 102.934  1.00 59.18           O
ANISOU 2519  O   ARG B  34     6718   7315  8454    803   1535    763       O
ATOM   2520  N   LEU B  35      17.234  31.684 102.031  1.00 65.49           N
ANISOU 2520  N   LEU B  35     7318   8079   9486    735   1556    755       N
ATOM   2521  CA  LEU B  35      18.527  31.548 101.373  1.00 60.21           C
ANISOU 2521  CA  LEU B  35     6692   7508   8675    684   1403    711       C
ATOM   2522  CB  LEU B  35      19.258  30.330 101.918  1.00 53.45           C
ANISOU 2522  CB  LEU B  35     5893   6654   7759    700   1464    731       C
ATOM   2523  CG  LEU B  35      19.471  30.518 103.414  1.00 57.57           C
ANISOU 2523  CG  LEU B  35     6572   7141   8162    790   1596    781       C
ATOM   2524  CD1 LEU B  35      19.588  29.193 104.075  1.00 53.99           C
ANISOU 2524  CD1 LEU B  35     6146   6643   7727    823   1717    818       C
ATOM   2525  CD2 LEU B  35      20.722  31.361 103.660  1.00 49.45           C
ANISOU 2525  CD2 LEU B  35     5683   6191   6913    800   1486    759       C
ATOM   2526  C   LEU B  35      18.392  31.436  99.873  1.00 54.14           C
ANISOU 2526  C   LEU B  35     5795   6776   7999    602   1254    657       C
ATOM   2527  O   LEU B  35      17.513  30.730  99.389  1.00 53.59           O
ANISOU 2527  O   LEU B  35     5596   6652   8114    578   1276    653       O
ATOM   2528  N   PHE B  36      19.287  32.115  99.156  1.00 49.22           N
ANISOU 2528  N   PHE B  36     5216   6238   7247    564   1103    616       N
ATOM   2529  CA  PHE B  36      19.246  32.201  97.702  1.00 59.55           C
ANISOU 2529  CA  PHE B  36     6435   7582   8608    495    953    564       C
ATOM   2530  CB  PHE B  36      18.267  33.292  97.267  1.00 54.95           C
ANISOU 2530  CB  PHE B  36     5796   6973   8110    495    911    552       C
ATOM   2531  CG  PHE B  36      18.388  34.587  98.040  1.00 60.02           C
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ANISOU 2531  CG  PHE B  36     6541   7624   8640    541    941    573       C
ATOM   2532  CD1 PHE B  36      17.838  34.717  99.301  1.00 56.63           C
ANISOU 2532  CD1 PHE B  36     6155   7131   8230    610   1096    623       C
ATOM   2533  CE1 PHE B  36      17.928  35.925 100.013  1.00 62.06           C
ANISOU 2533  CE1 PHE B  36     6949   7820   8809    656   1121    639       C
ATOM   2534  CZ  PHE B  36      18.549  37.007  99.448  1.00 58.83           C
ANISOU 2534  CZ  PHE B  36     6593   7475   8285    628    988    605       C
ATOM   2535  CE2 PHE B  36      19.096  36.901  98.190  1.00 52.82           C
ANISOU 2535  CE2 PHE B  36     5785   6776   7509    558    841    559       C
ATOM   2536  CD2 PHE B  36      19.004  35.697  97.477  1.00 56.00           C
ANISOU 2536  CD2 PHE B  36     6089   7177   8010    517    817    543       C
ATOM   2537  C   PHE B  36      20.611  32.480  97.067  1.00 53.50           C
ANISOU 2537  C   PHE B  36     5741   6912   7676    456    822    529       C
ATOM   2538  O   PHE B  36      21.526  32.933  97.737  1.00 58.44           O
ANISOU 2538  O   PHE B  36     6478   7579   8150    479    828    541       O
ATOM   2539  N   LYS B  37      20.719  32.247  95.763  1.00 53.67           N
ANISOU 2539  N   LYS B  37     5699   6961   7731    399    704    485       N
ATOM   2540  CA  LYS B  37      21.910  32.617  95.020  1.00 46.93           C
ANISOU 2540  CA  LYS B  37     4905   6190   6738    362    586    453       C
ATOM   2541  CB  LYS B  37      21.947  31.952  93.641  1.00 38.40           C
ANISOU 2541  CB  LYS B  37     3759   5122   5711    309    486    411       C
ATOM   2542  CG  LYS B  37      21.742  30.437  93.597  1.00 43.74           C
ANISOU 2542  CG  LYS B  37     4372   5762   6485    301    534    411       C
ATOM   2543  CD  LYS B  37      22.869  29.645  94.231  1.00 59.05           C
ANISOU 2543  CD  LYS B  37     6377   7737   8322    313    589    431       C
ATOM   2544  CE  LYS B  37      22.632  28.101  94.190  1.00 58.26           C
ANISOU 2544  CE  LYS B  37     6217   7595   8324    306    642    433       C
ATOM   2545  NZ  LYS B  37      22.224  27.601  92.837  1.00 75.37           N
ANISOU 2545  NZ  LYS B  37     8307   9745  10584    260    543    386       N
ATOM   2546  C   LYS B  37      21.982  34.136  94.854  1.00 57.62           C
ANISOU 2546  C   LYS B  37     6308   7570   8013    362    521    444       C
ATOM   2547  O   LYS B  37      20.955  34.838  94.774  1.00 66.83           O
ANISOU 2547  O   LYS B  37     7435   8695   9263    376    522    445       O
ATOM   2548  N   GLU B  38      23.208  34.630  94.792  1.00 56.36           N
ANISOU 2548  N   GLU B  38     6234   7477   7705    347    465    435       N
ATOM   2549  CA  GLU B  38      23.494  36.041  94.582  1.00 52.77           C
ANISOU 2549  CA  GLU B  38     5837   7051   7164    340    398    425       C
ATOM   2550  CB  GLU B  38      24.969  36.306  94.844  1.00 48.47           C
ANISOU 2550  CB  GLU B  38     5380   6567   6468    329    365    424       C
ATOM   2551  CG  GLU B  38      25.411  37.756  94.730  1.00 58.06           C
ANISOU 2551  CG  GLU B  38     6661   7808   7590    318    301    415       C
ATOM   2552  CD  GLU B  38      26.924  37.855  94.799  1.00 66.51           C
ANISOU 2552  CD  GLU B  38     7793   8937   8542    295    258    410       C
ATOM   2553  OE1 GLU B  38      27.575  36.796  94.794  1.00 68.10           O
ANISOU 2553  OE1 GLU B  38     7978   9159   8736    287    272    410       O
ATOM   2554  OE2 GLU B  38      27.466  38.967  94.815  1.00 67.73           O
ANISOU 2554  OE2 GLU B  38     8004   9110   8620    284    209    404       O
ATOM   2555  C   GLU B  38      23.129  36.480  93.176  1.00 41.96           C
ANISOU 2555  C   GLU B  38     4421   5687   5833    300    289    389       C
ATOM   2556  O   GLU B  38      23.474  35.835  92.197  1.00 61.17           O
ANISOU 2556  O   GLU B  38     6826   8141  8273    264    229    364       O
ATOM   2557  N   ALA B  39      22.416  37.584  93.073  1.00 51.34           N
ANISOU 2557  N   ALA B  39     5611   6853  7044    313    265    388       N
ATOM   2558  CA  ALA B  39      21.952  37.997  91.773  1.00 50.47           C
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ANISOU 2558  CA  ALA B  39     5463   6738   6975    285    160    355       C
ATOM   2559  CB  ALA B  39      20.598  38.738  91.885  1.00 36.78           C
ANISOU 2559  CB  ALA B  39     3681   4945   5347    316    167    361       C
ATOM   2560  C   ALA B  39      23.019  38.870  91.136  1.00 52.56           C
ANISOU 2560  C   ALA B  39     5810   7059   7101    255     79    339       C
ATOM   2561  O   ALA B  39      22.787  40.049  90.880  1.00 58.10           O
ANISOU 2561  O   ALA B  39     6544   7756   7774    258     34    335       O
ATOM   2562  N   ASN B  40      24.199  38.308  90.869  1.00 48.48           N
ANISOU 2562  N   ASN B  40     5325   6591   6504    226     64    333       N
ATOM   2563  CA  ASN B  40      25.267  39.205  90.454  1.00 48.92           C
ANISOU 2563  CA  ASN B  40     5457   6693   6438    199     10    326       C
ATOM   2564  CB  ASN B  40      26.655  38.734  90.936  1.00 49.11           C
ANISOU 2564  CB  ASN B  40     5519   6764   6376    185     39    337       C
ATOM   2565  CG  ASN B  40      26.982  37.374  90.520  1.00 60.34           C
ANISOU 2565  CG  ASN B  40     6901   8199   7827    172     49    328       C
ATOM   2566  OD1 ASN B  40      26.261  36.439  90.828  1.00 88.08           O
ANISOU 2566  OD1 ASN B  40    10360  11680  11426    190     94    332       O
ATOM   2567  ND2 ASN B  40      28.079  37.229  89.801  1.00 78.52           N
ANISOU 2567  ND2 ASN B  40     9229  10542  10062    139     14    318       N
ATOM   2568  C   ASN B  40      25.247  39.439  88.964  1.00 46.41           C
ANISOU 2568  C   ASN B  40     5142   6379   6111    170    -82    297       C
ATOM   2569  O   ASN B  40      24.870  38.566  88.170  1.00 59.59           O
ANISOU 2569  O   ASN B  40     6768   8035   7841    162   -114    276       O
ATOM   2570  N   VAL B  41      25.641  40.659  88.604  1.00 51.33           N
ANISOU 2570  N   VAL B  41     5828   7017   6657    158   -126    295       N
ATOM   2571  CA  VAL B  41      25.530  41.185  87.245  1.00 50.13           C
ANISOU 2571  CA  VAL B  41     5704   6859   6482    141   -211    272       C
ATOM   2572  CB  VAL B  41      26.118  42.615  87.188  1.00 55.32           C
ANISOU 2572  CB  VAL B  41     6440   7531   7046    129   -233    281       C
ATOM   2573  CG1 VAL B  41      27.668  42.580  87.263  1.00 33.56           C
ANISOU 2573  CG1 VAL B  41     3728   4823   4200     95   -210    291       C
ATOM   2574  CG2 VAL B  41      25.640  43.358  85.943  1.00 49.82           C
ANISOU 2574  CG2 VAL B  41     5780   6812   6338    128   -314    263       C
ATOM   2575  C   VAL B  41      26.214  40.302  86.188  1.00 57.78           C
ANISOU 2575  C   VAL B  41     6682   7849   7421    115   -242    254       C
ATOM   2576  O   VAL B  41      25.900  40.386  85.004  1.00 71.70           O
ANISOU 2576  O   VAL B  41     8467   9594   9182    112   -312    231       O
ATOM   2577  N   GLU B  42      27.136  39.439  86.600  1.00 49.84           N
ANISOU 2577  N   GLU B  42     5669   6878   6392    102   -190    264       N
ATOM   2578  CA  GLU B  42      27.857  38.617  85.618  1.00 57.09           C
ANISOU 2578  CA  GLU B  42     6600   7813   7276     81   -208    249       C
ATOM   2579  CB  GLU B  42      29.060  37.899  86.266  1.00 54.93           C
ANISOU 2579  CB  GLU B  42     6321   7583   6968     69   -144    266       C
ATOM   2580  CG  GLU B  42      30.210  38.846  86.689  1.00 65.66           C
ANISOU 2580  CG  GLU B  42     7726   8976   8245     50   -127    286       C
ATOM   2581  CD  GLU B  42      29.916  39.605  87.993  1.00 86.89           C
ANISOU 2581  CD  GLU B  42    10417  11658  10939     68   -103    304       C
ATOM   2582  OE1 GLU B  42      28.889  39.306  88.647  1.00 94.41           O
ANISOU 2582  OE1 GLU B  42    11333  12582  11956     98    -81    306       O
ATOM   2583  OE2 GLU B  42      30.680  40.532  88.346  1.00 83.16           O
ANISOU 2583  OE2 GLU B  42     9985  11203  10410     53   -106    315       O
ATOM   2584  C   GLU B  42      26.918  37.613  84.966  1.00 54.79           C
ANISOU 2584  C   GLU B  42     6264   7486   7069     92   -245    222       C
ATOM   2585  O   GLU B  42      27.068  37.288  83.791  1.00 55.13           O
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ANISOU 2585  O   GLU B  42     6340   7521   7085     85   -296    199       O
ATOM   2586  N   ASN B  43      25.941  37.122  85.724  1.00 47.93           N
ANISOU 2586  N   ASN B  43     5323   6585   6305    112   -218    225       N
ATOM   2587  CA  ASN B  43      24.932  36.242  85.139  1.00 46.68           C
ANISOU 2587  CA  ASN B  43     5106   6379   6250    120   -261    197       C
ATOM   2588  CB  ASN B  43      23.872  35.936  86.170  1.00 56.22           C
ANISOU 2588  CB  ASN B  43     6228   7548   7584    143   -209    211       C
ATOM   2589  CG  ASN B  43      24.453  35.355  87.438  1.00 45.71           C
ANISOU 2589  CG  ASN B  43     4884   6240   6242    149   -100    244       C
ATOM   2590  OD1 ASN B  43      25.205  34.404  87.393  1.00 43.34           O
ANISOU 2590  OD1 ASN B  43     4590   5964   5914    137    -74    243       O
ATOM   2591  ND2 ASN B  43      24.077  35.902  88.570  1.00 61.20           N
ANISOU 2591  ND2 ASN B  43     6838   8192   8225    173    -36    272       N
ATOM   2592  C   ASN B  43      24.290  36.832  83.874  1.00 51.76           C
ANISOU 2592  C   ASN B  43     5781   6989   6895    124   -372    165       C
ATOM   2593  O   ASN B  43      24.425  36.272  82.785  1.00 57.55           O
ANISOU 2593  O   ASN B  43     6545   7712   7608    118   -434    135       O
ATOM   2594  N   ASN B  44      23.654  37.992  83.985  1.00 55.63           N
ANISOU 2594  N   ASN B  44     6278   7462   7396    139   -401    170       N
ATOM   2595  CA  ASN B  44      23.033  38.565  82.803  1.00 52.95           C
ANISOU 2595  CA  ASN B  44     5976   7088   7056    150   -514    139       C
ATOM   2596  CB  ASN B  44      22.105  39.712  83.159  1.00 45.31           C
ANISOU 2596  CB  ASN B  44     4989   6092   6136    173   -535    148       C
ATOM   2597  CG  ASN B  44      21.509  40.334  81.935  1.00 52.96           C
ANISOU 2597  CG  ASN B  44     6004   7023   7096    190   -659    117       C
ATOM   2598  OD1 ASN B  44      20.998  39.623  81.057  1.00 56.78           O
ANISOU 2598  OD1 ASN B  44     6473   7469   7631    197   -744     80       O
ATOM   2599  ND2 ASN B  44      21.629  41.651  81.818  1.00 51.11           N
ANISOU 2599  ND2 ASN B  44     5838   6796   6787    199   -676    130       N
ATOM   2600  C   ASN B  44      24.063  39.040  81.775  1.00 52.83           C
ANISOU 2600  C   ASN B  44     6076   7100   6895    137   -549    134       C
ATOM   2601  O   ASN B  44      23.861  38.925  80.520  1.00 41.02           O
ANISOU 2601  O   ASN B  44     4636   5577   5374    146   -640    102       O
ATOM   2602  N   GLU B  45      25.173  39.548  82.291  1.00 45.93           N
ANISOU 2602  N   GLU B  45     5246   6276   5930    118   -476    165       N
ATOM   2603  CA  GLU B  45      26.306  39.899  81.417  1.00 47.12           C
ANISOU 2603  CA  GLU B  45     5496   6452   5955    101   -481    168       C
ATOM   2604  CB  GLU B  45      27.524  40.287  82.229  1.00 40.16           C
ANISOU 2604  CB  GLU B  45     4627   5621   5010     76   -394    202       C
ATOM   2605  CG  GLU B  45      27.538  41.744  82.582  1.00 56.59           C
ANISOU 2605  CG  GLU B  45     6746   7703   7054     74   -395    221       C
ATOM   2606  CD  GLU B  45      28.703  42.134  83.456  1.00 71.98           C
ANISOU 2606  CD  GLU B  45     8701   9693   8954     49   -324    250       C
ATOM   2607  OE1 GLU B  45      28.770  43.333  83.800  1.00 77.10           O
ANISOU 2607  OE1 GLU B  45     9384  10339   9573     45   -325    263       O
ATOM   2608  OE2 GLU B  45      29.549  41.258  83.784  1.00 76.60           O
ANISOU 2608  OE2 GLU B  45     9260  10310   9535     34   -274    257       O
ATOM   2609  C   GLU B  45      26.629  38.735  80.517  1.00 45.88           C
ANISOU 2609  C   GLU B  45     5360   6289   5783     99   -501    144       C
ATOM   2610  O   GLU B  45      26.717  38.876  79.295  1.00 60.43           O
ANISOU 2610  O   GLU B  45     7287   8110   7562    109   -560    125       O
ATOM   2611  N   GLY B  46      26.728  37.555  81.111  1.00 46.17           N
ANISOU 2611  N   GLY B  46     5327   6338   5879     93   -453    144       N
ATOM   2612  CA  GLY B  46      27.062  36.388  80.328  1.00 34.00           C
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ANISOU 2612  CA  GLY B  46     3805   4789   4325     92   -466    122       C
ATOM   2613  C   GLY B  46      26.046  36.159  79.253  1.00 46.81           C
ANISOU 2613  C   GLY B  46     5451   6352   5983    114   -579     79       C
ATOM   2614  O   GLY B  46      26.410  35.909  78.085  1.00 48.10           O
ANISOU 2614  O   GLY B  46     5705   6500   6072    123   -623     57       O
ATOM   2615  N   ARG B  47      24.767  36.248  79.629  1.00 38.66           N
ANISOU 2615  N   ARG B  47     4341   5280   5068    127   -628     65       N
ATOM   2616  CA  ARG B  47      23.717  36.088  78.628  1.00 43.58           C
ANISOU 2616  CA  ARG B  47     4975   5839   5744    150   -756     19       C
ATOM   2617  CB  ARG B  47      22.356  36.195  79.268  1.00 45.25           C
ANISOU 2617  CB  ARG B  47     5071   6008   6112    161   -789     12       C
ATOM   2618  CG  ARG B  47      21.243  36.217  78.291  1.00 46.36           C
ANISOU 2618  CG  ARG B  47     5215   6079   6320    186   -935    -35       C
ATOM   2619  CD  ARG B  47      19.954  36.117  79.077  1.00 62.62           C
ANISOU 2619  CD  ARG B  47     7130   8095   8568    193   -942    -37       C
ATOM   2620  NE  ARG B  47      18.814  35.863  78.216  1.00 71.33           N
ANISOU 2620  NE  ARG B  47     8202   9121   9778    214  -1092    -88       N
ATOM   2621  CZ  ARG B  47      17.947  36.788  77.827  1.00 69.67           C
ANISOU 2621  CZ  ARG B  47     7992   8872   9608    242  -1192   -103       C
ATOM   2622  NH1 ARG B  47      16.958  36.415  77.040  1.00 78.54           N
ANISOU 2622  NH1 ARG B  47     9083   9921  10838    261  -1340   -155       N
ATOM   2623  NH2 ARG B  47      18.061  38.070  78.229  1.00 51.15           N
ANISOU 2623  NH2 ARG B  47     5678   6556   7201    253  -1151    -69       N
ATOM   2624  C   ARG B  47      23.838  37.110  77.499  1.00 50.18           C
ANISOU 2624  C   ARG B  47     5938   6661   6468    169   -835      8       C
ATOM   2625  O   ARG B  47      23.869  36.727  76.326  1.00 59.47           O
ANISOU 2625  O   ARG B  47     7200   7804   7591    187   -913    -26       O
ATOM   2626  N   ARG B  48      23.946  38.392  77.847  1.00 34.82           N
ANISOU 2626  N   ARG B  48     4015   4735   4478    170   -811     36       N
ATOM   2627  CA  ARG B  48      24.006  39.455  76.836  1.00 45.73           C
ANISOU 2627  CA  ARG B  48     5520   6098   5757    191   -878     30       C
ATOM   2628  CB  ARG B  48      23.982  40.853  77.489  1.00 49.12           C
ANISOU 2628  CB  ARG B  48     5949   6546   6169    188   -843     64       C
ATOM   2629  CG  ARG B  48      23.896  42.038  76.508  1.00 50.49           C
ANISOU 2629  CG  ARG B  48     6246   6691   6248    214   -914     61       C
ATOM   2630  CD  ARG B  48      24.550  43.342  77.082  1.00 51.10           C
ANISOU 2630  CD  ARG B  48     6356   6801   6257    196   -837    104       C
ATOM   2631  NE  ARG B  48      23.985  43.741  78.368  1.00 52.53           N
ANISOU 2631  NE  ARG B  48     6433   6995   6533    190   -800    121       N
ATOM   2632  CZ  ARG B  48      24.695  44.080  79.445  1.00 46.23           C
ANISOU 2632  CZ  ARG B  48     5604   6241   5721    162   -699    156       C
ATOM   2633  NH1 ARG B  48      26.012  44.053  79.429  1.00 49.12           N
ANISOU 2633  NH1 ARG B  48     6017   6646   6000    131   -627    177       N
ATOM   2634  NH2 ARG B  48      24.072  44.409  80.569  1.00 57.37           N
ANISOU 2634  NH2 ARG B  48     6935   7652   7212    168   -670    168       N
ATOM   2635  C   ARG B  48      25.257  39.307  76.011  1.00 51.40           C
ANISOU 2635  C   ARG B  48     6360   6837   6334    185   -838     38       C
ATOM   2636  O   ARG B  48      25.275  39.583  74.821  1.00 62.64           O
ANISOU 2636  O   ARG B  48     7905   8225   7671    212   -907     20       O
ATOM   2637  N   SER B  49      26.324  38.864  76.648  1.00 57.37           N
ANISOU 2637  N   SER B  49     7088   7645   7067    153   -724     68       N
ATOM   2638  CA  SER B  49      27.570  38.697  75.929  1.00 55.61           C
ANISOU 2638  CA  SER B  49     6964   7440   6725    147   -668     80       C
ATOM   2639  CB  SER B  49      28.706  38.433  76.909  1.00 59.01           C
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ANISOU 2639  CB  SER B  49     7334   7931   7154    110   -542    118       C
ATOM   2640  OG  SER B  49      29.879  38.124  76.203  1.00 77.75           O
ANISOU 2640  OG  SER B  49     9788  10318   9437    106   -483    130       O
ATOM   2641  C   SER B  49      27.428  37.566  74.905  1.00 52.65           C
ANISOU 2641  C   SER B  49     6645   7027   6333    171   -726     41       C
ATOM   2642  O   SER B  49      27.822  37.715  73.746  1.00 56.16           O
ANISOU 2642  O   SER B  49     7224   7445   6670    194   -748     33       O
ATOM   2643  N   LYS B  50      26.838  36.451  75.323  1.00 47.89           N
ANISOU 2643  N   LYS B  50     5946   6413   5836    167   -749     17       N
ATOM   2644  CA  LYS B  50      26.621  35.330  74.408  1.00 54.71           C
ANISOU 2644  CA  LYS B  50     6857   7233   6696    189   -815    -27       C
ATOM   2645  CB  LYS B  50      26.038  34.134  75.142  1.00 58.78           C
ANISOU 2645  CB  LYS B  50     7242   7742   7350    175   -816    -45       C
ATOM   2646  CG  LYS B  50      27.027  33.385  76.003  1.00 59.69           C
ANISOU 2646  CG  LYS B  50     7298   7913   7470    146   -685    -12       C
ATOM   2647  CD  LYS B  50      28.210  32.925  75.188  1.00 53.60           C
ANISOU 2647  CD  LYS B  50     6633   7154   6578    153   -636     -8       C
ATOM   2648  CE  LYS B  50      28.916  31.778  75.920  1.00 58.60           C
ANISOU 2648  CE  LYS B  50     7194   7823   7248    134   -538      8       C
ATOM   2649  NZ  LYS B  50      30.019  31.128  75.129  1.00 56.39           N
ANISOU 2649  NZ  LYS B  50     7008   7549   6870    145   -486     10       N
ATOM   2650  C   LYS B  50      25.691  35.748  73.286  1.00 50.13           C
ANISOU 2650  C   LYS B  50     6368   6585   6093    230   -962    -69       C
ATOM   2651  O   LYS B  50      25.921  35.417  72.126  1.00 63.24           O
ANISOU 2651  O   LYS B  50     8159   8208   7663    260  -1012    -95       O
ATOM   2652  N   ARG B  51      24.649  36.499  73.632  1.00 55.02           N
ANISOU 2652  N   ARG B  51     6927   7185   6794    236  -1033    -76       N
ATOM   2653  CA  ARG B  51      23.729  37.027  72.625  1.00 60.49           C
ANISOU 2653  CA  ARG B  51     7701   7811   7473    280  -1185   -115       C
ATOM   2654  CB  ARG B  51      22.638  37.873  73.278  1.00 63.81           C
ANISOU 2654  CB  ARG B  51     8021   8218   8005    282  -1236   -112       C
ATOM   2655  CG  ARG B  51      21.643  38.475  72.312  1.00 58.49           C
ANISOU 2655  CG  ARG B  51     7418   7474   7329    331  -1401   -152       C
ATOM   2656  CD  ARG B  51      20.405  38.974  73.063  1.00 61.88           C
ANISOU 2656  CD  ARG B  51     7708   7884   7921    333  -1453   -155       C
ATOM   2657  NE  ARG B  51      20.681  40.191  73.826  1.00 64.72           N
ANISOU 2657  NE  ARG B  51     8052   8288   8249    321  -1361   -104       N
ATOM   2658  CZ  ARG B  51      20.512  40.308  75.136  1.00 60.81           C
ANISOU 2658  CZ  ARG B  51     7423   7828   7854    293  -1267    -72       C
ATOM   2659  NH1 ARG B  51      20.049  39.278  75.824  1.00 59.36           N
ANISOU 2659  NH1 ARG B  51     7104   7639   7813    275  -1243    -82       N
ATOM   2660  NH2 ARG B  51      20.789  41.463  75.751  1.00 57.77           N
ANISOU 2660  NH2 ARG B  51     7046   7477   7426    287  -1195    -31       N
ATOM   2661  C   ARG B  51      24.494  37.848  71.590  1.00 61.29           C
ANISOU 2661  C   ARG B  51     7987   7906   7394    307  -1179   -101       C
ATOM   2662  O   ARG B  51      24.321  37.671  70.383  1.00 66.42           O
ANISOU 2662  O   ARG B  51     8772   8500   7967    350  -1276   -138       O
ATOM   2663  N   GLY B  52      25.370  38.725  72.064  1.00 44.56           N
ANISOU 2663  N   GLY B  52     5882   5839   5209    283  -1061    -49       N
ATOM   2664  CA  GLY B  52      26.146  39.545  71.147  1.00 44.00           C
ANISOU 2664  CA  GLY B  52     5979   5758   4980    304  -1032    -27       C
ATOM   2665  C   GLY B  52      27.030  38.746  70.218  1.00 56.99           C
ANISOU 2665  C   GLY B  52     7746   7391   6517    321   -992    -34       C
ATOM   2666  O   GLY B  52      27.144  39.034  69.019  1.00 67.39           O
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ANISOU 2666  O   GLY B  52     9235   8658   7713    367  -1036    -45       O
ATOM   2667  N   ALA B  53      27.657  37.721  70.777  1.00 55.92           N
ANISOU 2667  N   ALA B  53     7529   7295   6423    289   -904    -25       N
ATOM   2668  CA  ALA B  53      28.563  36.900  69.996  1.00 63.98           C
ANISOU 2668  CA  ALA B  53     8653   8306   7350    305   -848    -27       C
ATOM   2669  CB  ALA B  53      29.338  35.972  70.905  1.00 52.51           C
ANISOU 2669  CB  ALA B  53     7081   6911   5959    262   -732     -5       C
ATOM   2670  C   ALA B  53      27.823  36.112  68.907  1.00 62.02           C
ANISOU 2670  C   ALA B  53     8505   7983   7077    356   -986    -89       C
ATOM   2671  O   ALA B  53      28.344  35.929  67.809  1.00 64.36           O
ANISOU 2671  O   ALA B  53     8968   8241   7244    396   -978    -95       O
ATOM   2672  N   ARG B  54      26.605  35.674  69.198  1.00 56.90           N
ANISOU 2672  N   ARG B  54     7759   7306   6553    357  -1111   -134       N
ATOM   2673  CA  ARG B  54      25.818  34.983  68.186  1.00 59.35           C
ANISOU 2673  CA  ARG B  54     8157   7538   6856    404  -1267   -199       C
ATOM   2674  CB  ARG B  54      24.498  34.520  68.772  1.00 59.21           C
ANISOU 2674  CB  ARG B  54     7980   7494   7022    389  -1385   -241       C
ATOM   2675  CG  ARG B  54      24.658  33.460  69.814  1.00 50.94           C
ANISOU 2675  CG  ARG B  54     6770   6488   6097    341  -1300   -232       C
ATOM   2676  CD  ARG B  54      23.375  32.689  70.047  1.00 65.18           C
ANISOU 2676  CD  ARG B  54     8451   8238   8075    336  -1426   -284       C
ATOM   2677  NE  ARG B  54      22.347  33.481  70.719  1.00 60.58           N
ANISOU 2677  NE  ARG B  54     7746   7653   7620    327  -1478   -279       N
ATOM   2678  CZ  ARG B  54      22.233  33.601  72.036  1.00 65.63           C
ANISOU 2678  CZ  ARG B  54     8222   8341   8372    287  -1379   -240       C
ATOM   2679  NH1 ARG B  54      23.113  33.010  72.833  1.00 69.80           N
ANISOU 2679  NH1 ARG B  54     8695   8928   8897    251  -1231   -203       N
ATOM   2680  NH2 ARG B  54      21.239  34.321  72.552  1.00 65.73           N
ANISOU 2680  NH2 ARG B  54     8136   8339   8499    287  -1429   -239       N
ATOM   2681  C   ARG B  54      25.576  35.882  66.973  1.00 73.45           C
ANISOU 2681  C   ARG B  54    10136   9263   8510    464  -1363   -214       C
ATOM   2682  O   ARG B  54      25.850  35.483  65.831  1.00 78.52           O
ANISOU 2682  O   ARG B  54    10954   9851   9028    514  -1402   -240       O
ATOM   2683  N   ARG B  55      25.088  37.100  67.227  1.00 72.32           N
ANISOU 2683  N   ARG B  55     9970   9124   8384    465  -1396   -196       N
ATOM   2684  CA  ARG B  55      24.875  38.060  66.158  1.00 69.69           C
ANISOU 2684  CA  ARG B  55     9820   8734   7923    525  -1480   -204       C
ATOM   2685  CB  ARG B  55      24.304  39.378  66.688  1.00 64.83           C
ANISOU 2685  CB  ARG B  55     9143   8134   7357    516  -1504   -180       C
ATOM   2686  CG  ARG B  55      22.822  39.338  67.109  1.00 48.69           C
ANISOU 2686  CG  ARG B  55     6959   6060   5482    520  -1661   -225       C
ATOM   2687  CD  ARG B  55      22.340  40.688  67.692  1.00 60.94           C
ANISOU 2687  CD  ARG B  55     8449   7628   7077    514  -1663   -195       C
ATOM   2688  NE  ARG B  55      21.077  40.549  68.423  1.00 64.94           N
ANISOU 2688  NE  ARG B  55     8774   8122   7779    503  -1758   -222       N
ATOM   2689  CZ  ARG B  55      20.721  41.276  69.484  1.00 70.47           C
ANISOU 2689  CZ  ARG B  55     9338   8859   8579    475  -1707   -190       C
ATOM   2690  NH1 ARG B  55      21.522  42.230  69.949  1.00 64.15           N
ANISOU 2690  NH1 ARG B  55     8565   8111   7700    452  -1575   -134       N
ATOM   2691  NH2 ARG B  55      19.544  41.052  70.081  1.00 67.86           N
ANISOU 2691  NH2 ARG B  55     8845   8505   8433    471  -1786   -216       N
ATOM   2692  C   ARG B  55      26.178  38.299  65.411  1.00 69.17           C
ANISOU 2692  C   ARG B  55     9937   8672   7674    545  -1350   -164       C
ATOM   2693  O   ARG B  55      26.185  38.315  64.181  1.00 77.14           O
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ANISOU 2693  O   ARG B  55    11149   9612   8548    610  -1416   -187       O
ATOM   2694  N   LEU B  56      27.289  38.442  66.126  1.00 66.22           N
ANISOU 2694  N   LEU B  56     9495   8369   7295    494  -1165   -105       N
ATOM   2695  CA  LEU B  56      28.560  38.686  65.424  1.00 67.30           C
ANISOU 2695  CA  LEU B  56     9790   8503   7277    511  -1027    -62       C
ATOM   2696  CB  LEU B  56      29.711  38.813  66.395  1.00 65.31           C
ANISOU 2696  CB  LEU B  56     9419   8331   7063    445   -839      0       C
ATOM   2697  CG  LEU B  56      29.837  40.174  67.054  1.00 61.18           C
ANISOU 2697  CG  LEU B  56     8839   7843   6562    411   -786     46       C
ATOM   2698  CD1 LEU B  56      30.963  40.113  68.066  1.00 48.98           C
ANISOU 2698  CD1 LEU B  56     7165   6373   5072    345   -621     97       C
ATOM   2699  CD2 LEU B  56      30.101  41.188  66.002  1.00 55.33           C
ANISOU 2699  CD2 LEU B  56     8297   7049   5678    457   -773     68       C
ATOM   2700  C   LEU B  56      28.906  37.601  64.426  1.00 68.63           C
ANISOU 2700  C   LEU B  56    10101   8622   7352    558  -1035    -92       C
ATOM   2701  O   LEU B  56      29.347  37.877  63.312  1.00 66.05           O
ANISOU 2701  O   LEU B  56     9985   8242   6869    614  -1013    -84       O
ATOM   2702  N   LYS B  57      28.711  36.359  64.837  1.00 71.02           N
ANISOU 2702  N   LYS B  57    10295   8939   7749    536  -1061   -125       N
ATOM   2703  CA  LYS B  57      29.038  35.217  63.995  1.00 65.93           C
ANISOU 2703  CA  LYS B  57     9772   8250   7029    577  -1067   -157       C
ATOM   2704  CB  LYS B  57      28.976  33.943  64.820  1.00 68.12           C
ANISOU 2704  CB  LYS B  57     9878   8565   7441    532  -1055   -177       C
ATOM   2705  CG  LYS B  57      29.988  32.887  64.477  1.00 69.58           C
ANISOU 2705  CG  LYS B  57    10126   8751   7562    542   -942   -169       C
ATOM   2706  CD  LYS B  57      29.536  31.582  65.110  1.00 74.45           C
ANISOU 2706  CD  LYS B  57    10596   9377   8314    512   -991   -209       C
ATOM   2707  CE  LYS B  57      28.064  31.384  64.804  1.00 85.79           C
ANISOU 2707  CE  LYS B  57    12027  10746   9821    534  -1209   -281       C
ATOM   2708  NZ  LYS B  57      27.489  30.264  65.548  1.00 92.77           N
ANISOU 2708  NZ  LYS B  57    12744  11637  10868    496  -1256   -315       N
ATOM   2709  C   LYS B  57      28.076  35.139  62.826  1.00 61.75           C
ANISOU 2709  C   LYS B  57     9414   7623   6426    653  -1262   -222       C
ATOM   2710  O   LYS B  57      28.481  34.968  61.683  1.00 71.95           O
ANISOU 2710  O   LYS B  57    10924   8853   7561    717  -1258   -232       O
ATOM   2711  N   ARG B  58      26.796  35.296  63.131  1.00 67.25           N
ANISOU 2711  N   ARG B  58    10013   8300   7240    648  -1431   -267       N
ATOM   2712  CA  ARG B  58      25.727  35.290  62.131  1.00 73.14           C
ANISOU 2712  CA  ARG B  58    10893   8950   7948    717  -1650   -335       C
ATOM   2713  CB  ARG B  58      24.393  35.604  62.808  1.00 67.42           C
ANISOU 2713  CB  ARG B  58     9991   8224   7402    692  -1800   -368       C
ATOM   2714  CG  ARG B  58      23.235  35.669  61.889  1.00 55.20           C
ANISOU 2714  CG  ARG B  58     8549   6578   5845    759  -2040   -439       C
ATOM   2715  CD  ARG B  58      22.171  36.524  62.500  1.00 68.56           C
ANISOU 2715  CD  ARG B  58    10096   8277   7678    743  -2139   -443       C
ATOM   2716  NE  ARG B  58      21.742  36.042  63.807  1.00 70.03           N
ANISOU 2716  NE  ARG B  58    10009   8517   8080    668  -2103   -438       N
ATOM   2717  CZ  ARG B  58      21.146  36.811  64.720  1.00 68.44           C
ANISOU 2717  CZ  ARG B  58     9644   8352   8008    634  -2099   -415       C
ATOM   2718  NH1 ARG B  58      20.922  38.106  64.473  1.00 66.56           N
ANISOU 2718  NH1 ARG B  58     9479   8105   7708    666  -2132   -394       N
ATOM   2719  NH2 ARG B  58      20.777  36.298  65.887  1.00 57.07           N
ANISOU 2719  NH2 ARG B  58     7974   6953   6757    573  -2054   -409       N
ATOM   2720  C   ARG B  58      25.966  36.287  60.996  1.00 78.20           C
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ANISOU 2720  C   ARG B  58    11784   9534   8394    791  -1664   -321       C
ATOM   2721  O   ARG B  58      25.957  35.923  59.814  1.00 88.51           O
ANISOU 2721  O   ARG B  58    13309  10759   9562    866  -1743   -359       O
ATOM   2722  N   ARG B  59      26.186  37.547  61.363  1.00 60.43           N
ANISOU 2722  N   ARG B  59     9511   7322   6128    772  -1585   -265       N
ATOM   2723  CA  ARG B  59      26.389  38.590  60.373  1.00 70.15           C
ANISOU 2723  CA  ARG B  59    10971   8498   7183    839  -1587   -244       C
ATOM   2724  CB  ARG B  59      26.321  39.957  61.059  1.00 50.22           C
ANISOU 2724  CB  ARG B  59     8358   6021   4704    803  -1534   -193       C
ATOM   2725  CG  ARG B  59      25.000  40.085  61.794  1.00 52.84           C
ANISOU 2725  CG  ARG B  59     8502   6361   5213    779  -1696   -233       C
ATOM   2726  CD  ARG B  59      24.914  41.343  62.546  1.00 51.02           C
ANISOU 2726  CD  ARG B  59     8176   6177   5033    743  -1642   -186       C
ATOM   2727  NE  ARG B  59      23.651  41.437  63.263  1.00 58.24           N
ANISOU 2727  NE  ARG B  59     8909   7096   6124    724  -1782   -221       N
ATOM   2728  CZ  ARG B  59      23.461  42.299  64.256  1.00 67.99           C
ANISOU 2728  CZ  ARG B  59     9999   8383   7453    679  -1731   -185       C
ATOM   2729  NH1 ARG B  59      24.463  43.103  64.616  1.00 70.13           N
ANISOU 2729  NH1 ARG B  59    10287   8702   7657    646  -1557   -118       N
ATOM   2730  NH2 ARG B  59      22.288  42.367  64.879  1.00 66.08           N
ANISOU 2730  NH2 ARG B  59     9596   8137   7374    669  -1849   -215       N
ATOM   2731  C   ARG B  59      27.694  38.418  59.599  1.00 78.76           C
ANISOU 2731  C   ARG B  59    12257   9572   8097    873  -1416   -202       C
ATOM   2732  O   ARG B  59      27.759  38.729  58.407  1.00 86.63           O
ANISOU 2732  O   ARG B  59    13508  10487   8920    957  -1453   -210       O
ATOM   2733  N   ARG B  60      28.725  37.911  60.267  1.00 75.60           N
ANISOU 2733  N   ARG B  60    11743   9242   7741    812  -1229   -158       N
ATOM   2734  CA  ARG B  60      29.979  37.620  59.586  1.00 69.03           C
ANISOU 2734  CA  ARG B  60    11070   8393   6766    842  -1055   -118       C
ATOM   2735  CB  ARG B  60      31.023  37.124  60.572  1.00 65.88           C
ANISOU 2735  CB  ARG B  60    10486   8083   6461    763   -863    -70       C
ATOM   2736  CG  ARG B  60      32.304  36.586  59.935  1.00 80.66           C
ANISOU 2736  CG  ARG B  60    12491   9937   8218    791   -683    -33       C
ATOM   2737  CD  ARG B  60      33.339  36.275  61.018  1.00 96.16           C
ANISOU 2737  CD  ARG B  60    14249  11993  10294    709   -500     20       C
ATOM   2738  NE  ARG B  60      33.734  37.495  61.725  1.00103.67           N
ANISOU 2738  NE  ARG B  60    15097  12996  11296    654   -405     80       N
ATOM   2739  CZ  ARG B  60      34.935  38.057  61.634  1.00112.56           C
ANISOU 2739  CZ  ARG B  60    16256  14132  12378    641   -212    150       C
ATOM   2740  NH1 ARG B  60      35.875  37.490  60.885  1.00116.57           N
ANISOU 2740  NH1 ARG B  60    16892  14605  12793    681    -78    173       N
ATOM   2741  NH2 ARG B  60      35.206  39.173  62.301  1.00114.95           N
ANISOU 2741  NH2 ARG B  60    16461  14476  12738    587   -148    197       N
ATOM   2742  C   ARG B  60      29.739  36.583  58.492  1.00 83.58           C
ANISOU 2742  C   ARG B  60    13102  10150   8503    920  -1158   -180       C
ATOM   2743  O   ARG B  60      30.284  36.679  57.396  1.00 95.02           O
ANISOU 2743  O   ARG B  60    14799  11531   9772    995  -1100   -166       O
ATOM   2744  N   ARG B  61      28.902  35.597  58.786  1.00 80.93           N
ANISOU 2744  N   ARG B  61    12657   9810   8281    906  -1310   -247       N
ATOM   2745  CA  ARG B  61      28.627  34.562  57.812  1.00 82.55           C
ANISOU 2745  CA  ARG B  61    13033   9931   8402    976  -1424   -313       C
ATOM   2746  CB  ARG B  61      27.938  33.363  58.456  1.00 75.21           C
ANISOU 2746  CB  ARG B  61    11915   9017   7645    931  -1538   -374       C
ATOM   2747  CG  ARG B  61      27.860  32.146  57.557  1.00 78.27           C
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ANISOU 2747  CG  ARG B  61    12461   9323   7954    992  -1626   -438       C
ATOM   2748  CD  ARG B  61      26.561  31.411  57.776  1.00 81.61           C
ANISOU 2748  CD  ARG B  61    12766   9709   8531    978  -1858   -524       C
ATOM   2749  NE  ARG B  61      26.089  31.570  59.147  1.00 88.03           N
ANISOU 2749  NE  ARG B  61    13277  10607   9565    884  -1848   -506       N
ATOM   2750  CZ  ARG B  61      26.491  30.808  60.164  1.00 95.74           C
ANISOU 2750  CZ  ARG B  61    14051  11656  10671    810  -1730   -484       C
ATOM   2751  NH1 ARG B  61      27.378  29.832  59.967  1.00 91.19           N
ANISOU 2751  NH1 ARG B  61    13532  11082  10033    816  -1614   -477       N
ATOM   2752  NH2 ARG B  61      26.011  31.019  61.382  1.00 91.67           N
ANISOU 2752  NH2 ARG B  61    13282  11206  10341    736  -1723   -467       N
ATOM   2753  C   ARG B  61      27.764  35.142  56.709  1.00 90.88           C
ANISOU 2753  C   ARG B  61    14310  10884   9336   1068  -1619   -360       C
ATOM   2754  O   ARG B  61      27.961  34.837  55.537  1.00 88.63           O
ANISOU 2754  O   ARG B  61    14287  10512   8877   1157  -1649   -384       O
ATOM   2755  N   HIS B  62      26.819  35.996  57.091  1.00 94.23           N
ANISOU 2755  N   HIS B  62    14637  11316   9850   1052  -1749   -372       N
ATOM   2756  CA  HIS B  62      25.897  36.586  56.130  1.00 89.40           C
ANISOU 2756  CA  HIS B  62    14214  10609   9145   1139  -1957   -420       C
ATOM   2757  CB  HIS B  62      24.779  37.333  56.853  1.00 90.77           C
ANISOU 2757  CB  HIS B  62    14199  10807   9481   1102  -2097   -436       C
ATOM   2758  CG  HIS B  62      23.595  37.650  55.994  1.00 97.30           C
ANISOU 2758  CG  HIS B  62    15165  11534  10270   1186  -2364   -506       C
ATOM   2759  ND1 HIS B  62      22.713  36.679  55.555  1.00102.04           N
ANISOU 2759  ND1 HIS B  62    15784  12062  10926   1220  -2587   -598       N
ATOM   2760  CE1 HIS B  62      21.759  37.249  54.848  1.00100.86           C
ANISOU 2760  CE1 HIS B  62    15757  11828  10737   1295  -2808   -647       C
ATOM   2761  NE2 HIS B  62      21.980  38.552  54.807  1.00100.00           N
ANISOU 2761  NE2 HIS B  62    15716  11737  10544   1312  -2731   -588       N
ATOM   2762  CD2 HIS B  62      23.120  38.822  55.532  1.00100.65           C
ANISOU 2762  CD2 HIS B  62    15707  11915  10620   1241  -2453   -500       C
ATOM   2763  C   HIS B  62      26.654  37.514  55.200  1.00 84.04           C
ANISOU 2763  C   HIS B  62    13805   9885   8242   1211  -1843   -367       C
ATOM   2764  O   HIS B  62      26.371  37.577  54.020  1.00 81.90           O
ANISOU 2764  O   HIS B  62    13799   9512   7808   1312  -1960   -403       O
ATOM   2765  N   ARG B  63      27.626  38.237  55.743  1.00 87.12           N
ANISOU 2765  N   ARG B  63    14128  10346   8627   1159  -1613   -279       N
ATOM   2766  CA  ARG B  63      28.424  39.144  54.934  1.00 86.36           C
ANISOU 2766  CA  ARG B  63    14269  10207   8337   1217  -1473   -217       C
ATOM   2767  CB  ARG B  63      29.359  39.987  55.808  1.00 81.66           C
ANISOU 2767  CB  ARG B  63    13525   9701   7802   1135  -1240   -125       C
ATOM   2768  CG  ARG B  63      30.436  40.744  55.045  1.00 73.52           C
ANISOU 2768  CG  ARG B  63    12713   8628   6594   1181  -1040    -50       C
ATOM   2769  CD  ARG B  63      31.186  41.714  55.946  1.00 82.02           C
ANISOU 2769  CD  ARG B  63    13626   9784   7755   1095   -849     33       C
ATOM   2770  NE  ARG B  63      32.133  41.046  56.838  1.00 87.18           N
ANISOU 2770  NE  ARG B  63    14075  10524   8526   1009   -676     67       N
ATOM   2771  CZ  ARG B  63      31.954  40.898  58.148  1.00 85.25           C
ANISOU 2771  CZ  ARG B  63    13544  10375   8473    913   -687     64       C
ATOM   2772  NH1 ARG B  63      30.861  41.382  58.727  1.00 90.14           N
ANISOU 2772  NH1 ARG B  63    14042  11016   9192    889   -850     31       N
ATOM   2773  NH2 ARG B  63      32.869  40.263  58.879  1.00 70.35           N
ANISOU 2773  NH2 ARG B  63    11496   8558   6675    846   -533     96       N
ATOM   2774  C   ARG B  63      29.210  38.325  53.925  1.00 97.21           C
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ANISOU 2774  C   ARG B  63    15879  11516   9541   1289  -1384   -219       C
ATOM   2775  O   ARG B  63      29.436  38.765  52.797  1.00 97.91           O
ANISOU 2775  O   ARG B  63    16259  11516   9428   1385  -1368   -206       O
ATOM   2776  N   ILE B  64      29.613  37.125  54.335  1.00 91.08           N
ANISOU 2776  N   ILE B  64    14984  10779   8842   1246  -1324   -234       N
ATOM   2777  CA  ILE B  64      30.306  36.207  53.442  1.00 94.91           C
ANISOU 2777  CA  ILE B  64    15677  11203   9181   1313  -1246   -242       C
ATOM   2778  CB  ILE B  64      30.905  35.003  54.209  1.00 90.47           C
ANISOU 2778  CB  ILE B  64    14918  10712   8743   1241  -1136   -239       C
ATOM   2779  CG1 ILE B  64      32.045  35.457  55.108  1.00 86.69           C
ANISOU 2779  CG1 ILE B  64    14262  10332   8344   1157   -876   -146       C
ATOM   2780  CD1 ILE B  64      33.189  36.027  54.347  1.00 94.39           C
ANISOU 2780  CD1 ILE B  64    15443  11268   9154   1208   -658    -71       C
ATOM   2781  CG2 ILE B  64      31.402  33.947  53.243  1.00 78.23           C
ANISOU 2781  CG2 ILE B  64    13589   9086   7049   1320  -1098   -265       C
ATOM   2782  C   ILE B  64      29.348  35.705  52.350  1.00 97.12           C
ANISOU 2782  C   ILE B  64    16188  11366   9348   1418  -1497   -334       C
ATOM   2783  O   ILE B  64      29.602  35.903  51.157  1.00103.12           O
ANISOU 2783  O   ILE B  64    17262  12028   9892   1525  -1486   -332       O
ATOM   2784  N   GLN B  65      28.245  35.080  52.770  1.00 88.03           N
ANISOU 2784  N   GLN B  65    14882  10219   8347   1388  -1723   -415       N
ATOM   2785  CA  GLN B  65      27.247  34.520  51.861  1.00 85.03           C
ANISOU 2785  CA  GLN B  65    14677   9729   7903   1474  -1993   -514       C
ATOM   2786  CB  GLN B  65      25.983  34.116  52.629  1.00 74.76           C
ANISOU 2786  CB  GLN B  65    13119   8451   6834   1412  -2221   -586       C
ATOM   2787  CG  GLN B  65      26.208  33.106  53.722  1.00 93.14           C
ANISOU 2787  CG  GLN B  65    15167  10866   9356   1309  -2137   -585       C
ATOM   2788  CD  GLN B  65      27.164  32.020  53.295  1.00116.97           C
ANISOU 2788  CD  GLN B  65    18307  13865  12273   1333  -2002   -581       C
ATOM   2789  OE1 GLN B  65      26.815  31.144  52.495  1.00127.41           O
ANISOU 2789  OE1 GLN B  65    19791  15095  13523   1399  -2146   -655       O
ATOM   2790  NE2 GLN B  65      28.393  32.079  53.811  1.00123.21           N
ANISOU 2790  NE2 GLN B  65    19023  14736  13055   1285  -1727   -497       N
ATOM   2791  C   GLN B  65      26.864  35.499  50.750  1.00 98.83           C
ANISOU 2791  C   GLN B  65    16718  11375   9457   1586  -2103   -522       C
ATOM   2792  O   GLN B  65      26.601  35.106  49.611  1.00 96.45           O
ANISOU 2792  O   GLN B  65    16695  10959   8991   1694  -2238   -579       O
ATOM   2793  N   ARG B  66      26.835  36.780  51.100  1.00105.03           N
ANISOU 2793  N   ARG B  66    17446  12201  10260   1562  -2048   -466       N
ATOM   2794  CA  ARG B  66      26.440  37.829  50.175  1.00 93.90           C
ANISOU 2794  CA  ARG B  66    16290  10704   8684   1661  -2147   -466       C
ATOM   2795  CB  ARG B  66      25.917  39.049  50.939  1.00 84.26           C
ANISOU 2795  CB  ARG B  66    14885   9543   7587   1604  -2176   -433       C
ATOM   2796  CG  ARG B  66      24.519  38.883  51.523  1.00 79.39           C
ANISOU 2796  CG  ARG B  66    14050   8937   7176   1567  -2442   -510       C
ATOM   2797  CD  ARG B  66      24.313  39.833  52.692  1.00 95.69           C
ANISOU 2797  CD  ARG B  66    15845  11101   9413   1474  -2380   -460       C
ATOM   2798  NE  ARG B  66      24.474  41.225  52.293  1.00115.79           N
ANISOU 2798  NE  ARG B  66    18545  13621  11830   1521  -2326   -405       N
ATOM   2799  CZ  ARG B  66      23.467  42.082  52.171  1.00130.34           C
ANISOU 2799  CZ  ARG B  66    20399  15426  13696   1558  -2512   -431       C
ATOM   2800  NH1 ARG B  66      22.231  41.689  52.440  1.00140.13           N
ANISOU 2800  NH1 ARG B  66    21492  16652  15098   1551  -2761   -510       N
ATOM   2801  NH2 ARG B  66      23.691  43.332  51.788  1.00128.47           N
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ANISOU 2801  NH2 ARG B  66    20317  15164  13333   1602  -2446   -376       N
ATOM   2802  C   ARG B  66      27.599  38.222  49.262  1.00 98.29           C
ANISOU 2802  C   ARG B  66    17144  11206   8994   1738  -1924   -395       C
ATOM   2803  O   ARG B  66      27.372  38.548  48.105  1.00111.14           O
ANISOU 2803  O   ARG B  66    19088  12720  10418   1860  -2019   -416       O
ATOM   2804  N   VAL B  67      28.834  38.187  49.765  1.00 93.36           N
ANISOU 2804  N   VAL B  67    16425  10657   8391   1674  -1631   -311       N
ATOM   2805  CA  VAL B  67      29.997  38.440  48.907  1.00 85.79           C
ANISOU 2805  CA  VAL B  67    15734   9642   7220   1745  -1395   -240       C
ATOM   2806  CB  VAL B  67      31.301  38.619  49.708  1.00 87.86           C
ANISOU 2806  CB  VAL B  67    15813  10002   7567   1649  -1075   -140       C
ATOM   2807  CG1 VAL B  67      32.526  38.638  48.801  1.00 79.52           C
ANISOU 2807  CG1 VAL B  67    15021   8879   6314   1723   -822    -71       C
ATOM   2808  CG2 VAL B  67      31.255  39.905  50.462  1.00 83.15           C
ANISOU 2808  CG2 VAL B  67    15051   9472   7072   1577  -1020    -83       C
ATOM   2809  C   VAL B  67      30.171  37.315  47.904  1.00103.27           C
ANISOU 2809  C   VAL B  67    18201  11761   9277   1842  -1431   -290       C
ATOM   2810  O   VAL B  67      30.739  37.508  46.838  1.00113.61           O
ANISOU 2810  O   VAL B  67    19829  12977  10361   1947  -1326   -259       O
ATOM   2811  N   LYS B  68      29.659  36.134  48.194  1.00116.76           N
ANISOU 2811  N   LYS B  68    19787  13483  11094   1814  -1582   -369       N
ATOM   2812  CA  LYS B  68      29.755  35.136  47.150  1.00118.36           C
ANISOU 2812  CA  LYS B  68    20262  13580  11129   1917  -1638   -423       C
ATOM   2813  CB  LYS B  68      30.063  33.757  47.704  1.00119.16           C
ANISOU 2813  CB  LYS B  68    20186  13732  11355   1854  -1596   -451       C
ATOM   2814  CG  LYS B  68      28.935  33.095  48.418  1.00116.68           C
ANISOU 2814  CG  LYS B  68    19625  13453  11254   1785  -1847   -540       C
ATOM   2815  CD  LYS B  68      29.339  31.686  48.747  1.00131.51           C
ANISOU 2815  CD  LYS B  68    21399  15358  13210   1745  -1789   -565       C
ATOM   2816  CE  LYS B  68      28.349  31.013  49.669  1.00138.60           C
ANISOU 2816  CE  LYS B  68    22000  16306  14357   1655  -1987   -636       C
ATOM   2817  NZ  LYS B  68      28.904  30.837  51.044  1.00139.30           N
ANISOU 2817  NZ  LYS B  68    21744  16533  14649   1523  -1800   -576       N
ATOM   2818  C   LYS B  68      28.488  35.075  46.304  1.00112.94           C
ANISOU 2818  C   LYS B  68    19777  12779  10357   2017  -1977   -526       C
ATOM   2819  O   LYS B  68      28.541  34.658  45.153  1.00115.94           O
ANISOU 2819  O   LYS B  68    20445  13036  10569   2128  -2019   -559       O
ATOM   2820  N   LYS B  69      27.356  35.488  46.862  1.00104.00           N
ANISOU 2820  N   LYS B  69    18452  11677   9386   1969  -2203   -573       N
ATOM   2821  CA  LYS B  69      26.137  35.566  46.070  1.00105.55           C
ANISOU 2821  CA  LYS B  69    18802  11760   9542   2057  -2521   -665       C
ATOM   2822  CB  LYS B  69      24.935  35.888  46.948  1.00 94.88           C
ANISOU 2822  CB  LYS B  69    17174  10466   8410   1984  -2753   -714       C
ATOM   2823  C   LYS B  69      26.305  36.618  44.971  1.00107.29           C
ANISOU 2823  C   LYS B  69    19280  11875   9610   2157  -2449   -618       C
ATOM   2824  O   LYS B  69      25.634  36.556  43.948  1.00101.74           O
ANISOU 2824  O   LYS B  69    18750  11039   8868   2249  -2620   -675       O
ATOM   2825  N   LEU B  70      27.213  37.572  45.191  1.00108.38           N
ANISOU 2825  N   LEU B  70    19443  12066   9669   2138  -2194   -514       N
ATOM   2826  CA  LEU B  70      27.565  38.568  44.178  1.00114.77           C
ANISOU 2826  CA  LEU B  70    20501  12776  10331   2228  -2076   -458       C
ATOM   2827  CB  LEU B  70      28.167  39.830  44.818  1.00108.74           C
ANISOU 2827  CB  LEU B  70    19654  12098   9563   2171  -1871   -355       C
ATOM   2828  CG  LEU B  70      28.684  40.890  43.825  1.00113.05           C
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ANISOU 2828  CG  LEU B  70    20450  12544   9962   2256  -1707   -287       C
ATOM   2829  CD1 LEU B  70      27.534  41.528  43.064  1.00119.75           C
ANISOU 2829  CD1 LEU B  70    21418  13281  10800   2339  -1952   -346       C
ATOM   2830  CD2 LEU B  70      29.561  41.970  44.463  1.00101.99           C
ANISOU 2830  CD2 LEU B  70    18970  11226   8556   2190  -1445   -174       C
ATOM   2831  C   LEU B  70      28.545  37.985  43.159  1.00115.95           C
ANISOU 2831  C   LEU B  70    20907  12831  10317   2312  -1883   -429       C
ATOM   2832  O   LEU B  70      28.432  38.239  41.964  1.00119.83           O
ANISOU 2832  O   LEU B  70    21656  13181  10692   2424  -1910   -438       O
ATOM   2833  N   LEU B  71      29.511  37.214  43.636  1.00106.40           N
ANISOU 2833  N   LEU B  71    19631  11695   9103   2262  -1685   -393       N
ATOM   2834  CA  LEU B  71      30.445  36.549  42.744  1.00111.85           C
ANISOU 2834  CA  LEU B  71    20541  12299   9658   2337  -1498   -366       C
ATOM   2835  CB  LEU B  71      31.579  35.880  43.544  1.00101.32           C
ANISOU 2835  CB  LEU B  71    19070  11077   8349   2259  -1247   -311       C
ATOM   2836  CG  LEU B  71      32.576  36.804  44.266  1.00100.12           C
ANISOU 2836  CG  LEU B  71    18804  11026   8213   2186   -959   -194       C
ATOM   2837  CD1 LEU B  71      33.646  36.034  45.054  1.00 99.29           C
ANISOU 2837  CD1 LEU B  71    18552  11024   8150   2113   -727   -146       C
ATOM   2838  CD2 LEU B  71      33.233  37.771  43.294  1.00101.04           C
ANISOU 2838  CD2 LEU B  71    19143  11040   8209   2264   -758   -115       C
ATOM   2839  C   LEU B  71      29.702  35.524  41.868  1.00127.51           C
ANISOU 2839  C   LEU B  71    22675  14161  11614   2422  -1735   -469       C
ATOM   2840  O   LEU B  71      30.071  35.307  40.714  1.00127.70           O
ANISOU 2840  O   LEU B  71    22966  14052  11501   2530  -1667   -462       O
ATOM   2841  N   PHE B  72      28.649  34.909  42.410  1.00136.62           N
ANISOU 2841  N   PHE B  72    23655  15350  12905   2374  -2013   -563       N
ATOM   2842  CA  PHE B  72      27.860  33.932  41.655  1.00138.57           C
ANISOU 2842  CA  PHE B  72    24015  15480  13154   2444  -2259   -665       C
ATOM   2843  CB  PHE B  72      26.914  33.143  42.566  1.00143.32           C
ANISOU 2843  CB  PHE B  72    24352  16154  13948   2356  -2507   -756       C
ATOM   2844  CG  PHE B  72      27.549  31.965  43.245  1.00159.35           C
ANISOU 2844  CG  PHE B  72    26263  18267  16017   2289  -2401   -762       C
ATOM   2845  CD1 PHE B  72      28.884  31.984  43.608  1.00164.29           C
ANISOU 2845  CD1 PHE B  72    26887  18971  16564   2259  -2077   -670       C
ATOM   2846  CE1 PHE B  72      29.459  30.897  44.239  1.00164.52           C
ANISOU 2846  CE1 PHE B  72    26807  19074  16629   2202  -1979   -678       C
ATOM   2847  CZ  PHE B  72      28.704  29.769  44.502  1.00167.63           C
ANISOU 2847  CZ  PHE B  72    27097  19460  17135   2174  -2207   -780       C
ATOM   2848  CE2 PHE B  72      27.376  29.732  44.139  1.00170.35           C
ANISOU 2848  CE2 PHE B  72    27433  19722  17568   2199  -2529   -871       C
ATOM   2849  CD2 PHE B  72      26.803  30.826  43.513  1.00169.65           C
ANISOU 2849  CD2 PHE B  72    27451  19563  17447   2258  -2625   -861       C
ATOM   2850  C   PHE B  72      27.040  34.607  40.566  1.00139.08           C
ANISOU 2850  C   PHE B  72    24286  15399  13159   2553  -2440   -699       C
ATOM   2851  O   PHE B  72      27.027  34.150  39.424  1.00150.48           O
ANISOU 2851  O   PHE B  72    25986  16699  14490   2664  -2486   -727       O
ATOM   2852  N   ASP B  73      26.348  35.686  40.932  1.00134.97           N
ANISOU 2852  N   ASP B  73    23656  14912  12714   2524  -2546   -696       N
ATOM   2853  CA  ASP B  73      25.482  36.407  39.996  1.00133.08           C
ANISOU 2853  CA  ASP B  73    23589  14542  12435   2622  -2733   -732       C
ATOM   2854  CB  ASP B  73      24.540  37.371  40.736  1.00120.63           C
ANISOU 2854  CB  ASP B  73    21797  13033  11004   2560  -2890   -746       C
ATOM   2855  CG  ASP B  73      23.572  36.658  41.656  1.00120.84           C
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ANISOU 2855  CG  ASP B  73    21532  13133  11248   2470  -3129   -828       C
ATOM   2856  OD1 ASP B  73      23.548  35.412  41.640  1.00132.55           O
ANISOU 2856  OD1 ASP B  73    22995  14601  12767   2461  -3196   -882       O
ATOM   2857  OD2 ASP B  73      22.804  37.345  42.361  1.00109.72           O
ANISOU 2857  OD2 ASP B  73    19921  11787   9981   2412  -3252   -839       O
ATOM   2858  C   ASP B  73      26.264  37.178  38.934  1.00137.30           C
ANISOU 2858  C   ASP B  73    24427  14970  12768   2729  -2526   -658       C
ATOM   2859  O   ASP B  73      25.723  37.499  37.871  1.00136.44           O
ANISOU 2859  O   ASP B  73    24544  14715  12580   2843  -2660   -692       O
ATOM   2860  N   TYR B  74      27.529  37.477  39.222  1.00128.28           N
ANISOU 2860  N   TYR B  74    23290  13897  11554   2694  -2200   -557       N
ATOM   2861  CA  TYR B  74      28.395  38.124  38.243  1.00123.05           C
ANISOU 2861  CA  TYR B  74    22905  13133  10716   2789  -1969   -481       C
ATOM   2862  CB  TYR B  74      29.154  39.298  38.867  1.00116.38           C
ANISOU 2862  CB  TYR B  74    21962  12384   9875   2722  -1715   -375       C
ATOM   2863  CG  TYR B  74      28.365  40.592  38.893  1.00127.01           C
ANISOU 2863  CG  TYR B  74    23289  13718  11250   2729  -1842   -377       C
ATOM   2864  CD1 TYR B  74      26.975  40.585  38.973  1.00141.71           C
ANISOU 2864  CD1 TYR B  74    25071  15562  13211   2735  -2179   -472       C
ATOM   2865  CE1 TYR B  74      26.243  41.770  38.994  1.00144.91           C
ANISOU 2865  CE1 TYR B  74    25456  15953  13648   2745  -2293   -474       C
ATOM   2866  CZ  TYR B  74      26.901  42.977  38.928  1.00137.48           C
ANISOU 2866  CZ  TYR B  74    24588  15017  12632   2749  -2073   -382       C
ATOM   2867  OH  TYR B  74      26.177  44.147  38.947  1.00133.58           O
ANISOU 2867  OH  TYR B  74    24080  14507  12167   2762  -2185   -385       O
ATOM   2868  CE2 TYR B  74      28.279  43.010  38.841  1.00133.57           C
ANISOU 2868  CE2 TYR B  74    24171  14536  12043   2741  -1739   -288       C
ATOM   2869  CD2 TYR B  74      29.004  41.820  38.822  1.00127.71           C
ANISOU 2869  CD2 TYR B  74    23439  13807  11277   2732  -1623   -285       C
ATOM   2870  C   TYR B  74      29.365  37.115  37.638  1.00125.06           C
ANISOU 2870  C   TYR B  74    23329  13326  10861   2844  -1788   -459       C
ATOM   2871  O   TYR B  74      30.216  37.463  36.828  1.00128.04           O
ANISOU 2871  O   TYR B  74    23934  13616  11101   2923  -1565   -392       O
ATOM   2872  N   ASN B  75      29.221  35.860  38.040  1.00130.94           N
ANISOU 2872  N   ASN B  75    23960  14115  11676   2801  -1883   -517       N
ATOM   2873  CA  ASN B  75      29.910  34.739  37.405  1.00134.56           C
ANISOU 2873  CA  ASN B  75    24585  14500  12041   2863  -1775   -518       C
ATOM   2874  CB  ASN B  75      29.390  34.560  35.981  1.00136.88           C
ANISOU 2874  CB  ASN B  75    25200  14595  12212   3015  -1936   -570       C
ATOM   2875  CG  ASN B  75      29.472  33.130  35.519  1.00131.77           C
ANISOU 2875  CG  ASN B  75    24657  13878  11529   3063  -1998   -623       C
ATOM   2876  OD1 ASN B  75      28.489  32.392  35.583  1.00127.34           O
ANISOU 2876  OD1 ASN B  75    24033  13298  11054   3056  -2285   -721       O
ATOM   2877  ND2 ASN B  75      30.650  32.720  35.067  1.00134.35           N
ANISOU 2877  ND2 ASN B  75    25138  14166  11742   3109  -1723   -558       N
ATOM   2878  C   ASN B  75      31.440  34.833  37.372  1.00138.02           C
ANISOU 2878  C   ASN B  75    25084  14964  12394   2860  -1384   -407       C
ANISOU 2878  C   ASN B  75    25084  14964  12394   2860  -1384   -407       C
ATOM   2879  O   ASN B  75      32.056  34.717  36.308  1.00141.18           O
ANISOU 2879  O   ASN B  75    25755  15233  12654   2969  -1243   -374       O
ATOM   2880  O   LEU B  76      34.925  33.288  39.766  1.00108.79           O
ANISOU 2880  O   LEU B  76    20894  11613   8828   2609   -554   -210       O
ATOM   2881  N   LEU B  76      32.036  35.034  38.547  1.00134.86           N
ANISOU 2881  N   LEU B  76    24427  14725  12089   2736  -1212   -350       N
ATOM   2882  CA  LEU B  76      33.484  34.940  38.738  1.00126.22           C
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ANISOU 2882  CA  LEU B  76    23320  13676  10961   2710   -848   -250       C
ATOM   2883  C   LEU B  76      33.777  33.717  39.610  1.00120.74           C
ANISOU 2883  C   LEU B  76    22428  13093  10355   2626   -826   -276       C
ATOM   2884  CB  LEU B  76      34.052  36.199  39.399  1.00123.83           C
ANISOU 2884  CB  LEU B  76    22881  13467  10702   2635   -641   -154       C
ATOM   2885  CG  LEU B  76      33.870  37.610  38.838  1.00130.97           C
ANISOU 2885  CG  LEU B  76    23919  14297  11546   2687   -621   -114       C
ATOM   2886  CD1 LEU B  76      32.430  38.080  38.869  1.00132.91           C
ANISOU 2886  CD1 LEU B  76    24138  14530  11833   2694   -961   -196       C
ATOM   2887  CD2 LEU B  76      34.739  38.571  39.633  1.00130.10           C
ANISOU 2887  CD2 LEU B  76    23642  14293  11496   2594   -355     -8       C
ATOM   2888  O   LEU B  77      30.479  31.536  40.753  1.00127.74           O
ANISOU 2888  O   LEU B  77    22954  14044  11539   2526  -1745   -596       O
ATOM   2889  N   LEU B  77      32.715  33.175  40.194  1.00116.28           N
ANISOU 2889  N   LEU B  77    21708  12582   9893   2575  -1115   -371       N
ATOM   2890  CA  LEU B  77      32.812  31.988  41.020  1.00125.56           C
ANISOU 2890  CA  LEU B  77    22699  13852  11157   2499  -1138   -412       C
ATOM   2891  C   LEU B  77      31.628  31.095  40.704  1.00125.65           C
ANISOU 2891  C   LEU B  77    22742  13794  11206   2531  -1480   -536       C
ATOM   2892  CB  LEU B  77      32.829  32.352  42.508  1.00128.75           C
ANISOU 2892  CB  LEU B  77    22781  14436  11701   2359  -1105   -387       C
ATOM   2893  CG  LEU B  77      33.583  31.390  43.430  1.00125.11           C
ANISOU 2893  CG  LEU B  77    22143  14090  11304   2279   -952   -372       C
ATOM   2894  CD1 LEU B  77      33.997  32.086  44.701  1.00115.85           C
ANISOU 2894  CD1 LEU B  77    20694  13072  10251   2157   -807   -301       C
ATOM   2895  CD2 LEU B  77      32.765  30.160  43.740  1.00130.19           C
ANISOU 2895  CD2 LEU B  77    22699  14741  12026   2255  -1206   -485       C
ATOM   2896  O   THR B  78      31.581  27.721  41.944  1.00146.58           O
ANISOU 2896  O   THR B  78    25114  16549  14029   2419  -1629   -687       O
ATOM   2897  N   THR B  78      31.902  29.844  40.364  1.00128.62           N
ANISOU 2897  N   THR B  78    23201  14122  11548   2566  -1473   -572       N
ATOM   2898  CA  THR B  78      30.827  28.926  40.023  1.00142.35           C
ANISOU 2898  CA  THR B  78    24973  15783  13330   2597  -1791   -689       C
ATOM   2899  C   THR B  78      30.696  27.881  41.103  1.00153.29           C
ANISOU 2899  C   THR B  78    26110  17280  14852   2493  -1856   -743       C
ATOM   2900  CB  THR B  78      31.044  28.231  38.658  1.00139.04           C
ANISOU 2900  CB  THR B  78    24875  15191  12764   2734  -1791   -706       C
ATOM   2901  OG1 THR B  78      29.849  27.537  38.290  1.00143.12           O
ANISOU 2901  OG1 THR B  78    25423  15622  13335   2765  -2134   -819       O
ATOM   2902  CG2 THR B  78      32.178  27.231  38.721  1.00133.80           C
ANISOU 2902  CG2 THR B  78    24239  14548  12052   2733  -1548   -668       C
ATOM   2903  O   ASP B  79      30.461  24.282  43.035  1.00178.92           O
ANISOU 2903  O   ASP B  79    28927  20676  18380   2311  -2041   -926       O
ATOM   2904  N   ASP B  79      29.589  27.157  41.068  1.00160.05           N
ANISOU 2904  N   ASP B  79    26919  18090  15802   2489  -2165   -851       N
ATOM   2905  CA  ASP B  79      29.316  26.167  42.085  1.00166.84           C
ANISOU 2905  CA  ASP B  79    27538  19043  16811   2389  -2258   -914       C
ATOM   2906  C   ASP B  79      30.356  25.039  42.076  1.00169.36           C
ANISOU 2906  C   ASP B  79    27916  19370  17064   2398  -2051   -896       C
ATOM   2907  CB  ASP B  79      27.907  25.611  41.898  1.00172.38           C
ANISOU 2907  CB  ASP B  79    28193  19667  17638   2392  -2631  -1034       C
ATOM   2908  CG  ASP B  79      27.503  24.685  43.012  1.00174.88           C
ANISOU 2908  CG  ASP B  79    28235  20074  18139   2280  -2745  -1103       C
ATOM   2909  OD1 ASP B  79      28.000  24.856  44.152  1.00175.77           O
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ANISOU 2909  OD1 ASP B  79    28138  20333  18315   2183  -2594  -1062       O
ATOM   2910  OD2 ASP B  79      26.691  23.781  42.741  1.00176.66           O
ANISOU 2910  OD2 ASP B  79    28456  20217  18450   2290  -2984  -1197       O
ATOM   2911  O   HIS B  80      34.541  23.819  40.482  1.00142.40           O
ANISOU 2911  O   HIS B  80    25014  15852  13241   2589  -1067   -651       O
ATOM   2912  N   HIS B  80      31.133  24.930  41.004  1.00165.62           N
ANISOU 2912  N   HIS B  80    27715  18791  16422   2506  -1881   -846       N
ATOM   2913  CA  HIS B  80      32.191  23.928  40.961  1.00156.83           C
ANISOU 2913  CA  HIS B  80    26660  17681  15246   2521  -1658   -817       C
ATOM   2914  C   HIS B  80      33.601  24.523  40.847  1.00147.81           C
ANISOU 2914  C   HIS B  80    25589  16572  14000   2544  -1273   -688       C
ATOM   2915  CB  HIS B  80      31.948  22.948  39.807  1.00164.00           C
ANISOU 2915  CB  HIS B  80    27820  18426  16068   2631  -1784   -876       C
ATOM   2916  CG  HIS B  80      30.526  22.486  39.689  1.00163.25           C
ANISOU 2916  CG  HIS B  80    27687  18266  16074   2626  -2170   -996       C
ATOM   2917  ND1 HIS B  80      29.854  22.442  38.484  1.00158.17           N
ANISOU 2917  ND1 HIS B  80    27285  17457  15356   2738  -2370  -1040       N
ATOM   2918  CD2 HIS B  80      29.655  22.044  40.624  1.00161.57           C
ANISOU 2918  CD2 HIS B  80    27216  18127  16048   2523  -2388  -1079       C
ATOM   2919  CE1 HIS B  80      28.628  21.992  38.686  1.00158.77           C
ANISOU 2919  CE1 HIS B  80    27242  17509  15575   2702  -2696  -1144       C
ATOM   2920  NE2 HIS B  80      28.480  21.744  39.974  1.00161.18           N
ANISOU 2920  NE2 HIS B  80    27241  17955  16046   2570  -2710  -1170       N
ATOM   2921  O   SER B  81      35.415  25.356  43.323  1.00129.55           O
ANISOU 2921  O   SER B  81    22782  14603  11838   2329   -742   -519       O
ATOM   2922  N   SER B  81      33.756  25.805  41.168  1.00143.06           N
ANISOU 2922  N   SER B  81    24915  16033  13407   2510  -1174   -619       N
ATOM   2923  CA  SER B  81      35.086  26.413  41.205  1.00134.34           C
ANISOU 2923  CA  SER B  81    23828  14969  12244   2511   -806   -494       C
ATOM   2924  C   SER B  81      35.927  25.705  42.262  1.00132.05           C
ANISOU 2924  C   SER B  81    23328  14812  12035   2424   -609   -464       C
ATOM   2925  CB  SER B  81      35.021  27.916  41.518  1.00125.07           C
ANISOU 2925  CB  SER B  81    22578  13851  11092   2473   -755   -431       C
ATOM   2926  OG  SER B  81      33.945  28.564  40.865  1.00120.63           O
ANISOU 2926  OG  SER B  81    22137  13198  10501   2528  -1008   -481       O
ATOM   2927  O   GLU B  82      39.896  26.449  42.860  1.00132.03           O
ANISOU 2927  O   GLU B  82    23175  14946  12045   2378    439   -130       O
ATOM   2928  N   GLU B  82      37.208  25.488  41.974  1.00133.37           N
ANISOU 2928  N   GLU B  82    23567  14964  12145   2458   -292   -378       N
ATOM   2929  CA  GLU B  82      38.115  24.850  42.931  1.00126.11           C
ANISOU 2929  CA  GLU B  82    22449  14163  11306   2384    -75   -338       C
ATOM   2930  C   GLU B  82      39.062  25.878  43.558  1.00130.20           C
ANISOU 2930  C   GLU B  82    22815  14780  11874   2322    211   -218       C
ATOM   2931  CB  GLU B  82      38.918  23.735  42.250  1.00111.64           C
ANISOU 2931  CB  GLU B  82    20768  12246   9405   2461     80   -327       C
ATOM   2932  O   LEU B  83      41.335  27.378  47.286  1.00108.91           O
ANISOU 2932  O   LEU B  83    19005  12522   9856   1913    803     50       O
ATOM   2933  N   LEU B  83      38.934  26.113  44.868  1.00137.58           N
ANISOU 2933  N   LEU B  83    23370  15860  13045   2177    192   -203       N
ATOM   2934  CA  LEU B  83      39.763  27.117  45.545  1.00124.15           C
ANISOU 2934  CA  LEU B  83    21462  14252  11457   2096    432    -90       C
ATOM   2935  C   LEU B  83      40.652  26.594  46.671  1.00110.39           C
ANISOU 2935  C   LEU B  83    19378  12632   9933   1984    622    -37       C
ATOM   2936  CB  LEU B  83      38.903  28.248  46.135  1.00113.42           C
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ANISOU 2936  CB  LEU B  83    19940  12956  10200   2019    263    -98       C
ATOM   2937  CG  LEU B  83      37.607  28.750  45.498  1.00122.27           C
ANISOU 2937  CG  LEU B  83    21256  13998  11204   2082    -35   -177       C
ATOM   2938  CD1 LEU B  83      36.858  29.689  46.429  1.00114.65           C
ANISOU 2938  CD1 LEU B  83    20024  13127  10410   1974   -175   -179       C
ATOM   2939  CD2 LEU B  83      37.892  29.456  44.198  1.00129.10           C
ANISOU 2939  CD2 LEU B  83    22517  14733  11802   2221     57   -140       C
ATOM   2940  O   SER B  84      43.441  25.562  49.210  1.00106.18           O
ANISOU 2940  O   SER B  84    18077  12371   9896   1753   1196    139       O
ATOM   2941  N   SER B  84      40.663  25.299  46.959  1.00104.69           N
ANISOU 2941  N   SER B  84    18572  11927   9278   1969    579    -86       N
ATOM   2942  CA  SER B  84      41.414  24.824  48.132  1.00102.95           C
ANISOU 2942  CA  SER B  84    18009  11829   9278   1859    730    -40       C
ATOM   2943  C   SER B  84      42.893  25.241  48.154  1.00100.63           C
ANISOU 2943  C   SER B  84    17680  11556   8999   1860   1083     80       C
ATOM   2944  CB  SER B  84      41.324  23.301  48.247  1.00113.25           C
ANISOU 2944  CB  SER B  84    19286  13125  10619   1867    661   -106       C
ATOM   2945  OG  SER B  84      40.003  22.852  48.022  1.00124.04           O
ANISOU 2945  OG  SER B  84    20731  14444  11956   1883    344   -219       O
ATOM   2946  O   GLY B  85      46.440  27.230  47.766  1.00112.57           O
ANISOU 2946  O   GLY B  85    19185  13054  10534   1881   1977    408       O
ATOM   2947  N   GLY B  85      43.530  25.261  46.993  1.00104.64           N
ANISOU 2947  N   GLY B  85    18503  11950   9305   1983   1255    118       N
ATOM   2948  CA  GLY B  85      44.950  25.554  46.925  1.00114.28           C
ANISOU 2948  CA  GLY B  85    19702  13173  10545   1994   1603    232       C
ATOM   2949  C   GLY B  85      45.371  26.990  47.198  1.00112.07           C
ANISOU 2949  C   GLY B  85    19324  12930  10326   1941   1741    321       C
ATOM   2950  O   ILE B  86      44.541  29.542  49.214  1.00103.89           O
ANISOU 2950  O   ILE B  86    17750  12102   9620   1688   1563    366       O
ATOM   2951  N   ILE B  86      44.549  27.953  46.797  1.00109.32           N
ANISOU 2951  N   ILE B  86    19117  12542   9876   1964   1592    299       N
ATOM   2952  CA  ILE B  86      44.988  29.340  46.830  1.00109.72           C
ANISOU 2952  CA  ILE B  86    19143  12601   9946   1937   1742    387       C
ATOM   2953  C   ILE B  86      45.248  29.855  48.255  1.00105.46           C
ANISOU 2953  C   ILE B  86    18189  12207   9675   1779   1768    427       C
ATOM   2954  CB  ILE B  86      43.983  30.268  46.100  1.00111.93           C
ANISOU 2954  CB  ILE B  86    19670  12804  10054   1999   1560    352       C
ATOM   2955  CG1 ILE B  86      42.528  29.899  46.406  1.00125.22           C
ANISOU 2955  CG1 ILE B  86    21304  14516  11758   1973   1189    233       C
ATOM   2956  CG2 ILE B  86      44.163  30.142  44.617  1.00104.81           C
ANISOU 2956  CG2 ILE B  86    19157  11740   8927   2152   1631    356       C
ATOM   2957  CD1 ILE B  86      42.067  30.099  47.860  1.00128.46           C
ANISOU 2957  CD1 ILE B  86    21309  15073  12425   1818   1055    214       C
ATOM   2958  N   ASN B  87      46.304  30.636  48.380  1.00 93.93           N
ANISOU 2958  N   ASN B  87    16651  10755   8282   1750   2029    530       N
ATOM   2959  CA  ASN B  87      46.673  31.217  49.648  1.00 87.96           C
ANISOU 2959  CA  ASN B  87    15532  10122   7768   1610   2072    574       C
ATOM   2960  CB  ASN B  87      48.150  30.922  49.920  1.00 74.48           C
ANISOU 2960  CB  ASN B  87    13679   8434   6186   1586   2374    661       C
ATOM   2961  CG  ASN B  87      48.791  31.847  50.935  1.00 89.07           C
ANISOU 2961  CG  ASN B  87    15222  10369   8251   1465   2482    731       C
ATOM   2962  OD1 ASN B  87      48.143  32.669  51.590  1.00 94.90           O
ANISOU 2962  OD1 ASN B  87    15827  11168   9062   1387   2329    713       O
ATOM   2963  ND2 ASN B  87      50.098  31.692  51.086  1.00 90.35           N
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ANISOU 2963  ND2 ASN B  87    15267  10534   8527   1450   2747    811       N
ATOM   2964  C   ASN B  87      46.347  32.703  49.562  1.00101.97           C
ANISOU 2964  C   ASN B  87    17347  11882   9516   1589   2050    608       C
ATOM   2965  O   ASN B  87      46.991  33.423  48.802  1.00111.72           O
ANISOU 2965  O   ASN B  87    18762  13033  10655   1647   2256    683       O
ATOM   2966  N   PRO B  88      45.331  33.159  50.333  1.00101.21           N
ANISOU 2966  N   PRO B  88    17091  11862   9503   1510   1807    554       N
ATOM   2967  CA  PRO B  88      44.776  34.516  50.235  1.00 88.43           C
ANISOU 2967  CA  PRO B  88    15528  10226   7844   1498   1732    568       C
ATOM   2968  CB  PRO B  88      43.866  34.610  51.471  1.00 87.50           C
ANISOU 2968  CB  PRO B  88    15124  10226   7895   1385   1491    508       C
ATOM   2969  CG  PRO B  88      43.435  33.231  51.721  1.00 92.88           C
ANISOU 2969  CG  PRO B  88    15746  10939   8605   1388   1351    431       C
ATOM   2970  CD  PRO B  88      44.638  32.373  51.373  1.00103.07           C
ANISOU 2970  CD  PRO B  88    17078  12200   9883   1429   1592    477       C
ATOM   2971  C   PRO B  88      45.826  35.628  50.254  1.00 87.79           C
ANISOU 2971  C   PRO B  88    15406  10132   7820   1466   1995    678       C
ATOM   2972  O   PRO B  88      45.689  36.580  49.485  1.00 95.87           O
ANISOU 2972  O   PRO B  88    16648  11071   8706   1525   2034    710       O
ATOM   2973  N   TYR B  89      46.857  35.504  51.088  1.00 89.74           N
ANISOU 2973  N   TYR B  89    15383  10451   8264   1380   2169    735       N
ATOM   2974  CA  TYR B  89      47.825  36.594  51.278  1.00104.83           C
ANISOU 2974  CA  TYR B  89    17200  12358  10275   1328   2397    834       C
ATOM   2975  C   TYR B  89      48.694  36.785  50.057  1.00114.46           C
ANISOU 2975  C   TYR B  89    18690  13447  11353   1433   2668    912       C
ATOM   2976  O   TYR B  89      48.987  37.910  49.661  1.00120.73           O
ANISOU 2976  O   TYR B  89    19579  14180  12112   1442   2797    978       O
ATOM   2977  CB  TYR B  89      48.712  36.339  52.500  1.00114.51           C
ANISOU 2977  CB  TYR B  89    18061  13688  11758   1212   2495    868       C
ATOM   2978  CG  TYR B  89      47.917  36.226  53.773  1.00118.49           C
ANISOU 2978  CG  TYR B  89    18298  14317  12406   1108   2250    801       C
ATOM   2979  CD1 TYR B  89      47.651  37.346  54.551  1.00114.95           C
ANISOU 2979  CD1 TYR B  89    17687  13923  12066   1018   2179    814       C
ATOM   2980  CD2 TYR B  89      47.406  35.003  54.186  1.00118.40           C
ANISOU 2980  CD2 TYR B  89    18208  14362  12417   1105   2093    726       C
ATOM   2981  CE1 TYR B  89      46.904  37.247  55.708  1.00106.16           C
ANISOU 2981  CE1 TYR B  89    16345  12917  11075    932   1965    755       C
ATOM   2982  CE2 TYR B  89      46.664  34.897  55.342  1.00110.22           C
ANISOU 2982  CE2 TYR B  89    16938  13431  11509   1017   1883    670       C
ATOM   2983  CZ  TYR B  89      46.418  36.018  56.098  1.00 97.70           C
ANISOU 2983  CZ  TYR B  89    15199  11897  10025    933   1823    685       C
ATOM   2984  OH  TYR B  89      45.674  35.899  57.241  1.00 83.63           O
ANISOU 2984  OH  TYR B  89    13199  10213   8364    853   1627    631       O
ATOM   2985  N   GLU B  90      49.121  35.674  49.472  1.00117.63           N
ANISOU 2985  N   GLU B  90    19217  13801  11675   1514   2766    906       N
ATOM   2986  CA  GLU B  90      49.867  35.717  48.226  1.00117.00           C
ANISOU 2986  CA  GLU B  90    19433  13585  11435   1633   3022    974       C
ATOM   2987  C   GLU B  90      49.074  36.367  47.141  1.00117.95           C
ANISOU 2987  C   GLU B  90    19875  13595  11345   1730   2913    947       C
ATOM   2988  O   GLU B  90      49.528  37.269  46.432  1.00126.80           O
ANISOU 2988  O   GLU B  90    21102  14618  12460   1763   3051   1003       O
ATOM   2989  CB  GLU B  90      50.282  34.311  47.795  1.00120.81           C
ANISOU 2989  CB  GLU B  90    19997  14037  11870   1708   3093       952       C
ATOM   2990  CG  GLU B  90      51.307  33.677  48.708  1.00120.91           C
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ANISOU 2990  CG  GLU B  90    19695  14136  12110   1626   3245    991       C
ATOM   2991  CD  GLU B  90      52.690  34.315  48.605  1.00130.85           C
ANISOU 2991  CD  GLU B  90    20844  15349  13524   1600   3551   1100       C
ATOM   2992  OE1 GLU B  90      52.900  35.232  47.768  1.00140.24           O
ANISOU 2992  OE1 GLU B  90    22185  16431  14669   1643   3640   1141       O
ATOM   2993  OE2 GLU B  90      53.570  33.894  49.388  1.00130.35           O
ANISOU 2993  OE2 GLU B  90    20516  15355  13655   1532   3683   1139       O
ATOM   2994  N   ALA B  91      47.862  35.891  47.017  1.00102.31           N
ANISOU 2994  N   ALA B  91    18030  11625   9217   1773   2641    852       N
ATOM   2995  CA  ALA B  91      47.022  36.393  45.981  1.00101.66           C
ANISOU 2995  CA  ALA B  91    18232  11434   8960   1867   2487    809       C
ATOM   2996  CB  ALA B  91      45.757  35.562  45.950  1.00 81.72           C
ANISOU 2996  CB  ALA B  91    15812   8929   6311   1907   2176    694       C
ATOM   2997  C   ALA B  91      46.743  37.906  46.234  1.00119.62           C
ANISOU 2997  C   ALA B  91    20471  13719  11261   1814   2470    850       C
ATOM   2998  O   ALA B  91      46.575  38.713  45.288  1.00109.87           O
ANISOU 2998  O   ALA B  91    19447  12371   9930   1886   2475    861       O
ATOM   2999  N   ARG B  92      46.708  38.297  47.522  1.00117.82           N
ANISOU 2999  N   ARG B  92    19936  13622  11207   1682   2433    863       N
ATOM   3000  CA  ARG B  92      46.246  39.665  47.889  1.00101.13           C
ANISOU 3000  CA  ARG B  92    17757  11530   9139   1622   2355    881       C
ATOM   3001  CB  ARG B  92      45.956  39.848  49.396  1.00103.89           C
ANISOU 3001  CB  ARG B  92    17708  12028   9735   1467   2210    852       C
ATOM   3002  CG  ARG B  92      44.441  39.792  49.772  1.00101.52           C
ANISOU 3002  CG  ARG B  92    17378  11781   9413   1452   1854    746       C
ATOM   3003  CD  ARG B  92      44.055  39.744  51.264  1.00 92.72           C
ANISOU 3003  CD  ARG B  92    15888  10811   8530   1314   1699    707       C
ATOM   3004  NE  ARG B  92      44.414  40.908  52.079  1.00 93.91           N
ANISOU 3004  NE  ARG B  92    15833  11015   8835   1211   1772    764       N
ATOM   3005  CZ  ARG B  92      44.416  40.823  53.395  1.00 90.34           C
ANISOU 3005  CZ  ARG B  92    15053  10681   8591   1092   1704    748       C
ATOM   3006  NH1 ARG B  92      44.091  39.640  53.907  1.00 93.74           N
ANISOU 3006  NH1 ARG B  92    15357  11178   9082   1074   1582    684       N
ATOM   3007  NH2 ARG B  92      44.738  41.858  54.165  1.00 96.27           N
ANISOU 3007  NH2 ARG B  92    15621  11477   9481   1000   1758    794       N
ATOM   3008  C   ARG B  92      47.213  40.678  47.411  1.00106.05           C
ANISOU 3008  C   ARG B  92    18467  12073   9756   1636   2641    991       C
ATOM   3009  O   ARG B  92      46.855  41.765  46.953  1.00106.94           O
ANISOU 3009  O   ARG B  92    18705  12120   9806   1660   2607   1004       O
ATOM   3010  N   VAL B  93      48.453  40.272  47.489  1.00112.31           N
ANISOU 3010  N   VAL B  93    19134  12861  10678   1612   2892   1052       N
ATOM   3011  CA  VAL B  93      49.539  41.071  47.033  1.00118.98           C
ANISOU 3011  CA  VAL B  93    19973  13620  11614   1611   3155   1141       C
ATOM   3012  CB  VAL B  93      50.804  40.480  47.587  1.00108.85           C
ANISOU 3012  CB  VAL B  93    18447  12381  10529   1548   3380   1197       C
ATOM   3013  CG1 VAL B  93      51.998  41.220  47.086  1.00105.21           C
ANISOU 3013  CG1 VAL B  93    17968  11823  10183   1550   3656   1287       C
ATOM   3014  CG2 VAL B  93      50.701  40.514  49.115  1.00 91.89           C
ANISOU 3014  CG2 VAL B  93    15977  10391   8546   1409   3308   1198       C
ATOM   3015  C   VAL B  93      49.552  41.168  45.501  1.00115.24           C
ANISOU 3015  C   VAL B  93    19827  12978  10980   1752   3202   1135       C
ATOM   3016  O   VAL B  93      49.650  42.264  44.951  1.00120.57           O
ANISOU 3016  O   VAL B  93    20613  13567  11631   1776   3275   1175       O
ATOM   3017  N   LYS B  94      49.412  40.038  44.814  1.00112.45           N
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ANISOU 3017  N   LYS B  94    19638  12575  10514   1848   3153   1084       N
ATOM   3018  CA  LYS B  94      49.569  40.025  43.360  1.00119.94           C
ANISOU 3018  CA  LYS B  94    20896  13354  11322   1988   3226   1085       C
ATOM   3019  CB  LYS B  94      49.856  38.605  42.858  1.00111.01           C
ANISOU 3019  CB  LYS B  94    19858  12184  10139   2066   3253   1052       C
ATOM   3020  C   LYS B  94      48.355  40.598  42.638  1.00121.92           C
ANISOU 3020  C   LYS B  94    21411  13532  11380   2068   2997   1024       C
ATOM   3021  O   LYS B  94      48.415  40.868  41.445  1.00132.19           O
ANISOU 3021  O   LYS B  94    22979  14685  12564   2182   3051   1031       O
ATOM   3022  N   GLY B  95      47.256  40.781  43.355  1.00110.81           N
ANISOU 3022  N   GLY B  95    19931  12225   9947   2014   2739    966       N
ATOM   3023  CA  GLY B  95      46.115  41.491  42.808  1.00123.42           C
ANISOU 3023  CA  GLY B  95    21733  13763  11397   2075   2516    914       C
ATOM   3024  C   GLY B  95      46.320  43.000  42.794  1.00125.67           C
ANISOU 3024  C   GLY B  95    22010  14015  11724   2042   2621    980       C
ATOM   3025  O   GLY B  95      45.708  43.701  41.992  1.00130.94           O
ANISOU 3025  O   GLY B  95    22901  14585  12266   2122   2525    960       O
ATOM   3026  N   LEU B  96      47.180  43.494  43.684  1.00120.60           N
ANISOU 3026  N   LEU B  96    21109  13451  11264   1926   2813   1059       N
ATOM   3027  CA  LEU B  96      47.541  44.909  43.719  1.00121.03           C
ANISOU 3027  CA  LEU B  96    21132  13470  11384   1884   2944   1130       C
ATOM   3028  CB  LEU B  96      48.333  45.229  44.988  1.00109.50           C
ANISOU 3028  CB  LEU B  96    19330  12126  10148   1733   3093   1198       C
ATOM   3029  CG  LEU B  96      47.697  44.888  46.335  1.00110.48           C
ANISOU 3029  CG  LEU B  96    19222  12416  10339   1627   2907   1160       C
ATOM   3030  CD1 LEU B  96      48.551  45.415  47.478  1.00106.37           C
ANISOU 3030  CD1 LEU B  96    18388  11982  10044   1485   3073   1236       C
ATOM   3031  CD2 LEU B  96      46.292  45.442  46.420  1.00105.12           C
ANISOU 3031  CD2 LEU B  96    18645  11759   9536   1642   2619   1096       C
ATOM   3032  C   LEU B  96      48.362  45.301  42.490  1.00128.00           C
ANISOU 3032  C   LEU B  96    22222  14186  12227   1982   3177   1185       C
ATOM   3033  O   LEU B  96      48.445  46.474  42.117  1.00123.31           O
ANISOU 3033  O   LEU B  96    21710  13518  11624   1994   3252   1227       O
ATOM   3034  N   SER B  97      48.967  44.301  41.866  1.00124.94           N
ANISOU 3034  N   SER B  97    21921  13736  11814   2055   3293   1184       N
ATOM   3035  CA  SER B  97      49.931  44.541  40.816  1.00136.71           C
ANISOU 3035  CA  SER B  97    23572  15073  13297   2140   3553   1246       C
ATOM   3036  C   SER B  97      49.551  43.851  39.507  1.00145.30           C
ANISOU 3036  C   SER B  97    25001  16024  14182   2303   3485   1194       C
ATOM   3037  O   SER B  97      49.930  44.316  38.433  1.00149.38           O
ANISOU 3037  O   SER B  97    25746  16386  14626   2404   3629   1228       O
ATOM   3038  CB  SER B  97      51.318  44.080  41.282  1.00134.22           C
ANISOU 3038  CB  SER B  97    23021  14791  13187   2073   3824   1318       C
ATOM   3039  OG  SER B  97      52.302  44.279  40.283  1.00133.19           O
ANISOU 3039  OG  SER B  97    23033  14508  13065   2156   4087   1380       O
ATOM   3040  N   GLN B  98      48.814  42.742  39.592  1.00145.46           N
ANISOU 3040  N   GLN B  98    25061  16094  14114   2331   3269   1111       N
ATOM   3041  CA  GLN B  98      48.590  41.890  38.419  1.00134.70           C
ANISOU 3041  CA  GLN B  98    23997  14603  12582   2479   3217   1063       C
ATOM   3042  C   GLN B  98      47.180  41.303  38.244  1.00140.56           C
ANISOU 3042  C   GLN B  98    24884  15357  13165   2533   2884    949       C
ATOM   3043  O   GLN B  98      46.345  41.323  39.156  1.00132.41           O
ANISOU 3043  O   GLN B  98    23690  14456  12163   2448   2644    899       O
ATOM   3044  CB  GLN B  98      49.590  40.734  38.428  1.00127.60           C
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ANISOU 3044  CB  GLN B  98    23019  13704  11760   2485   3403   1090       C
ATOM   3045  CG  GLN B  98      51.019  41.161  38.692  1.00129.05           C
ANISOU 3045  CG  GLN B  98    23017  13883  12135   2425   3740   1197       C
ATOM   3046  CD  GLN B  98      51.994  40.014  38.638  1.00135.97           C
ANISOU 3046  CD  GLN B  98    23824  14749  13090   2442   3917   1223       C
ATOM   3047  OE1 GLN B  98      51.706  38.957  38.074  1.00127.97           O
ANISOU 3047  OE1 GLN B  98    22981  13687  11955   2532   3830   1170       O
ATOM   3048  NE2 GLN B  98      53.169  40.218  39.217  1.00146.13           N
ANISOU 3048  NE2 GLN B  98    24856  16077  14590   2356   4165   1304       N
ATOM   3049  N   LYS B  99      46.943  40.780  37.042  1.00156.86           N
ANISOU 3049  N   LYS B  99    27257  17276  15066   2678   2814    910       N
ATOM   3050  CA  LYS B  99      45.655  40.215  36.647  1.00153.03           C
ANISOU 3050  CA  LYS B  99    26950  16766  14430   2750   2484    801       C
ATOM   3051  CB  LYS B  99      45.357  40.512  35.169  1.00146.87           C
ANISOU 3051  CB  LYS B  99    26553  15784  13465   2915   2455    785       C
ATOM   3052  C   LYS B  99      45.664  38.717  36.901  1.00145.83           C
ANISOU 3052  C   LYS B  99    25977  15905  13525   2746   2414    751       C
ATOM   3053  O   LYS B  99      46.422  37.988  36.267  1.00154.58           O
ANISOU 3053  O   LYS B  99    27199  16927  14608   2819   2582    777       O
ATOM   3054  N   LEU B 100      44.824  38.267  37.830  1.00126.65           N
ANISOU 3054  N   LEU B 100    23370  13614  11135   2664   2171    681       N
ATOM   3055  CA  LEU B 100      44.875  36.898  38.332  1.00121.92           C
ANISOU 3055  CA  LEU B 100    22653  13095  10577   2632   2117    637       C
ATOM   3056  CB  LEU B 100      45.376  36.895  39.773  1.00129.82           C
ANISOU 3056  CB  LEU B 100    23286  14276  11764   2477   2217    679       C
ATOM   3057  CG  LEU B 100      46.528  37.815  40.177  1.00135.94           C
ANISOU 3057  CG  LEU B 100    23892  15078  12681   2403   2523    793       C
ATOM   3058  CD1 LEU B 100      46.775  37.633  41.648  1.00126.81           C
ANISOU 3058  CD1 LEU B 100    22381  14103  11698   2255   2547    810       C
ATOM   3059  CD2 LEU B 100      47.806  37.521  39.395  1.00140.21           C
ANISOU 3059  CD2 LEU B 100    24529  15505  13238   2473   2830    866       C
ATOM   3060  C   LEU B 100      43.538  36.168  38.254  1.00122.28           C
ANISOU 3060  C   LEU B 100    22786  13147  10528   2667   1757    516       C
ATOM   3061  O   LEU B 100      42.512  36.769  37.939  1.00121.07           O
ANISOU 3061  O   LEU B 100    22750  12954  10297   2702   1530    464       O
ATOM   3062  N   SER B 101      43.565  34.876  38.580  1.00115.30           N
ANISOU 3062  N   SER B 101    21829  12314   9666   2652   1705    472       N
ATOM   3063  CA  SER B 101      42.455  33.957  38.305  1.00114.01           C
ANISOU 3063  CA  SER B 101    21781  12123   9414   2704   1390    356       C
ATOM   3064  CB  SER B 101      42.856  32.551  38.742  1.00105.29           C
ANISOU 3064  CB  SER B 101    20566  11078   8360   2676   1428    333       C
ATOM   3065  OG  SER B 101      41.729  31.705  38.808  1.00116.94           O
ANISOU 3065  OG  SER B 101    22073  12565   9795   2688   1108    218       O
ATOM   3066  C   SER B 101      41.107  34.311  38.948  1.00112.82           C
ANISOU 3066  C   SER B 101    21525  12057   9284   2644   1062    275       C
ATOM   3067  O   SER B 101      41.073  34.872  40.038  1.00125.24           O
ANISOU 3067  O   SER B 101    22848  13768  10971   2528   1072    299       O
ATOM   3068  N   GLU B 102      40.008  33.969  38.267  1.00109.26           N
ANISOU 3068  N   GLU B 102    21263  11518   8733   2725    771    179       N
ATOM   3069  CA  GLU B 102      38.659  34.036  38.847  1.00113.94           C
ANISOU 3069  CA  GLU B 102    21747  12182   9365   2675    430     86       C
ATOM   3070  CB  GLU B 102      37.617  33.394  37.928  1.00120.12           C
ANISOU 3070  CB  GLU B 102    22754  12839  10046   2780    133    -19       C
ATOM   3071  CG  GLU B 102      37.340  34.077  36.616  1.00126.50           C
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ANISOU 3071  CG  GLU B 102    23874  13473  10718   2913     92    -16       C
ATOM   3072  CD  GLU B 102      36.119  33.484  35.929  1.00133.10           C
ANISOU 3072  CD  GLU B 102    24876  14205  11489   2996   -256   -131       C
ATOM   3073  OE1 GLU B 102      36.060  32.242  35.792  1.00138.98           O
ANISOU 3073  OE1 GLU B 102    25655  14928  12223   3019   -333   -183       O
ATOM   3074  OE2 GLU B 102      35.222  34.255  35.522  1.00135.15           O
ANISOU 3074  OE2 GLU B 102    25232  14404  11716   3040   -453   -167       O
ATOM   3075  C   GLU B 102      38.588  33.325  40.195  1.00113.59           C
ANISOU 3075  C   GLU B 102    21399  12308   9453   2549    380     58       C
ATOM   3076  O   GLU B 102      37.845  33.728  41.084  1.00109.37           O
ANISOU 3076  O   GLU B 102    20675  11879   9001   2464    210     26       O
ATOM   3077  N   GLU B 103      39.331  32.230  40.310  1.00116.29           N
ANISOU 3077  N   GLU B 103    21706  12667   9811   2545    521     68       N
ATOM   3078  CA  GLU B 103      39.400  31.479  41.547  1.00122.15           C
ANISOU 3078  CA  GLU B 103    22177  13561  10673   2436    509     47       C
ATOM   3079  CB  GLU B 103      39.731  30.000  41.285  1.00122.96           C
ANISOU 3079  CB  GLU B 103    22340  13630  10751   2477    531      8       C
ATOM   3080  CG  GLU B 103      38.644  29.247  40.546  1.00131.74           C
ANISOU 3080  CG  GLU B 103    23636  14637  11781   2557    221   -106       C
ATOM   3081  CD  GLU B 103      38.768  29.385  39.045  1.00143.11           C
ANISOU 3081  CD  GLU B 103    25413  15890  13072   2701    252    -94       C
ATOM   3082  OE1 GLU B 103      39.675  30.113  38.589  1.00153.66           O
ANISOU 3082  OE1 GLU B 103    26836  17178  14370   2737    516      3       O
ATOM   3083  OE2 GLU B 103      37.966  28.760  38.320  1.00138.48           O
ANISOU 3083  OE2 GLU B 103    25003  15199  12412   2780     14   -180       O
ATOM   3084  C   GLU B 103      40.435  32.102  42.468  1.00127.71           C
ANISOU 3084  C   GLU B 103    22655  14383  11488   2337    794    154       C
ATOM   3085  O   GLU B 103      40.338  31.985  43.681  1.00129.73           O
ANISOU 3085  O   GLU B 103    22656  14783  11855   2229    765    148       O
ATOM   3086  N   GLU B 104      41.423  32.785  41.908  1.00126.09           N
ANISOU 3086  N   GLU B 104    22536  14112  11260   2373   1067    251       N
ATOM   3087  CA  GLU B 104      42.554  33.164  42.740  1.00137.25           C
ANISOU 3087  CA  GLU B 104    23722  15624  12802   2280   1357    352       C
ATOM   3088  CB  GLU B 104      43.836  33.342  41.912  1.00137.28           C
ANISOU 3088  CB  GLU B 104    23846  15523  12790   2344   1681    447       C
ATOM   3089  CG  GLU B 104      45.043  33.659  42.780  1.00130.19           C
ANISOU 3089  CG  GLU B 104    22688  14722  12056   2244   1976    549       C
ATOM   3090  CD  GLU B 104      46.363  33.624  42.023  1.00130.78           C
ANISOU 3090  CD  GLU B 104    22849  14695  12146   2303   2295    636       C
ATOM   3091  OE1 GLU B 104      46.461  34.213  40.916  1.00123.50           O
ANISOU 3091  OE1 GLU B 104    22168  13631  11124   2399   2355    660       O
ATOM   3092  OE2 GLU B 104      47.326  33.046  42.573  1.00126.26           O
ANISOU 3092  OE2 GLU B 104    22091  14184  11698   2253   2492    684       O
ATOM   3093  C   GLU B 104      42.235  34.434  43.540  1.00168.00           C
ANISOU 3093  C   GLU B 104    27453  19610  16771   2189   1324    386       C
ATOM   3094  O   GLU B 104      42.916  34.741  44.526  1.00149.97           O
ANISOU 3094  O   GLU B 104    24928  17436  14617   2087   1494    454       O
ATOM   3095  N   PHE B 105      41.241  35.219  43.128  1.00217.46           N
ANISOU 3095  N   PHE B 105    33841  25822  22961   2225   1113    345       N
ATOM   3096  CA  PHE B 105      40.869  36.324  44.002  1.00211.52           C
ANISOU 3096  CA  PHE B 105    32916  25166  22286   2134   1061    370       C
ATOM   3097  C   PHE B 105      39.369  36.540  44.161  1.00203.64           C
ANISOU 3097  C   PHE B 105    31931  24184  21260   2134    702    274       C
ATOM   3098  O   PHE B 105      38.900  37.556  44.681  1.00201.19           O
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ANISOU 3098  O   PHE B 105    31525  23925  20991   2081    626    288       O
ATOM   3099  CB  PHE B 105      41.544  37.591  43.580  1.00216.97           C
ANISOU 3099  CB  PHE B 105    33668  25795  22974   2145   1277    465       C
ATOM   3100  CG  PHE B 105      42.209  38.200  44.712  1.00222.96           C
ANISOU 3100  CG  PHE B 105    34161  26675  23878   2022   1451    545       C
ATOM   3101  CD1 PHE B 105      43.245  37.542  45.296  1.00220.74           C
ANISOU 3101  CD1 PHE B 105    33706  26461  23703   1964   1667    596       C
ATOM   3102  CD2 PHE B 105      41.835  39.371  45.227  1.00222.68           C
ANISOU 3102  CD2 PHE B 105    34037  26686  23884   1962   1401    571       C
ATOM   3103  CE1 PHE B 105      43.817  38.070  46.332  1.00218.08           C
ANISOU 3103  CE1 PHE B 105    33106  26228  23528   1849   1803    662       C
ATOM   3104  CE2 PHE B 105      42.481  39.837  46.268  1.00219.47           C
ANISOU 3104  CE2 PHE B 105    33372  26382  23633   1846   1556    641       C
ATOM   3105  CZ  PHE B 105      43.463  39.235  46.858  1.00216.97           C
ANISOU 3105  CZ  PHE B 105    32841  26128  23468   1778   1742    681       C
ATOM   3106  N   SER B 106      38.617  35.520  43.795  1.00163.00           N
ANISOU 3106  N   SER B 106    26876  18997  16060   2187    477    175       N
ATOM   3107  CA  SER B 106      37.367  35.274  44.460  1.00131.33           C
ANISOU 3107  CA  SER B 106    22745  15055  12098   2142    158     80       C
ATOM   3108  CB  SER B 106      36.629  34.079  43.905  1.00110.39           C
ANISOU 3108  CB  SER B 106    20212  12335   9398   2208    -75    -29       C
ATOM   3109  OG  SER B 106      35.995  34.338  42.682  1.00113.75           O
ANISOU 3109  OG  SER B 106    20893  12611   9716   2320   -225    -72       O
ATOM   3110  C   SER B 106      37.814  35.005  45.848  1.00137.90           C
ANISOU 3110  C   SER B 106    23194  16041  13161   1996    253    110       C
ATOM   3111  O   SER B 106      37.525  35.765  46.743  1.00114.01           O
ANISOU 3111  O   SER B 106    19921  13103  10293   1896    209    127       O
ATOM   3112  N   ALA B 107      38.566  33.926  45.977  1.00145.51           N
ANISOU 3112  N   ALA B 107    24100  17024  14164   1986    392    118       N
ATOM   3113  CA  ALA B 107      39.187  33.497  47.202  1.00138.65           C
ANISOU 3113  CA  ALA B 107    22864  16285  13531   1855    514    150       C
ATOM   3114  CB  ALA B 107      40.555  32.961  46.849  1.00136.96           C
ANISOU 3114  CB  ALA B 107    22724  16043  13272   1891    821    221       C
ATOM   3115  C   ALA B 107      39.386  34.470  48.384  1.00139.39           C
ANISOU 3115  C   ALA B 107    22634  16497  13831   1721    581    208       C
ATOM   3116  O   ALA B 107      39.743  34.044  49.482  1.00147.96           O
ANISOU 3116  O   ALA B 107    23409  17692  15118   1613    632    219       O
ATOM   3117  N   ALA B 108      39.262  35.760  48.151  1.00136.57           N
ANISOU 3117  N   ALA B 108    22360  16112  13418   1733    601    251       N
ATOM   3118  CA  ALA B 108      40.044  36.755  48.830  1.00141.23           C
ANISOU 3118  CA  ALA B 108    22762  16767  14132   1645    803    344       C
ATOM   3119  CB  ALA B 108      41.469  36.694  48.170  1.00112.81           C
ANISOU 3119  CB  ALA B 108    19311  13104  10449   1699   1139    437       C
ATOM   3120  C   ALA B 108      39.434  38.204  48.801  1.00124.74           C
ANISOU 3120  C   ALA B 108    20715  14663  12016   1639    717    361       C
ATOM   3121  O   ALA B 108      39.624  39.010  49.687  1.00126.12           O
ANISOU 3121  O   ALA B 108    20660  14917  12343   1539    771    404       O
ATOM   3122  N   LEU B 109      38.515  38.462  47.896  1.00 98.52           N
ANISOU 3122  N   LEU B 109    17665  11249   8517   1741    532    309       N
ATOM   3123  CA  LEU B 109      37.435  39.365  48.280  1.00107.13           C
ANISOU 3123  CA  LEU B 109    18680  12367   9658   1708    314    275       C
ATOM   3124  CB  LEU B 109      36.513  39.686  47.090  1.00109.75           C
ANISOU 3124  CB  LEU B 109    19361  12575   9766   1844    120    224       C
ATOM   3125  CG  LEU B 109      37.283  40.359  45.946  1.00 97.43           C
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ANISOU 3125  CG  LEU B 109    18137  10895   7987   1952    338    302       C
ATOM   3126  CD1 LEU B 109      36.347  40.723  44.807  1.00101.90           C
ANISOU 3126  CD1 LEU B 109    18980  11331   8407   2072    132    243       C
ATOM   3127  CD2 LEU B 109      38.111  41.576  46.365  1.00 86.97           C
ANISOU 3127  CD2 LEU B 109    16705   9602   6738   1884    581    411       C
ATOM   3128  C   LEU B 109      36.694  38.630  49.416  1.00 96.55           C
ANISOU 3128  C   LEU B 109    17022  11138   8525   1608    114    200       C
ATOM   3129  O   LEU B 109      36.112  39.261  50.283  1.00 98.00           O
ANISOU 3129  O   LEU B 109    16991  11395   8850   1527      6    192       O
ATOM   3130  N   LEU B 110      36.771  37.293  49.405  1.00100.09           N
ANISOU 3130  N   LEU B 110    17448  11593   8990   1618     84    153       N
ATOM   3131  CA  LEU B 110      36.364  36.420  50.519  1.00 97.30           C
ANISOU 3131  CA  LEU B 110    16784  11342   8842   1519    -35     99       C
ATOM   3132  CB  LEU B 110      36.495  34.947  50.111  1.00 93.45           C
ANISOU 3132  CB  LEU B 110    16380  10821   8307   1567    -56     47       C
ATOM   3133  CG  LEU B 110      35.768  34.496  48.841  1.00 96.66           C
ANISOU 3133  CG  LEU B 110    17121  11097   8507   1700   -239    -28       C
ATOM   3134  CD1 LEU B 110      35.789  32.982  48.657  1.00 97.57           C
ANISOU 3134  CD1 LEU B 110    17264  11191   8616   1727   -288    -90       C
ATOM   3135  CD2 LEU B 110      34.358  35.039  48.751  1.00 96.62           C
ANISOU 3135  CD2 LEU B 110    17143  11065   8501   1717   -539   -100       C
ATOM   3136  C   LEU B 110      37.170  36.669  51.811  1.00 96.47           C
ANISOU 3136  C   LEU B 110    16346  11362   8946   1388    143    166       C
ATOM   3137  O   LEU B 110      36.603  37.047  52.841  1.00103.75           O
ANISOU 3137  O   LEU B 110    17022  12369  10031   1297     35    151       O
ATOM   3138  N   HIS B 111      38.481  36.443  51.755  1.00 82.58           N
ANISOU 3138  N   HIS B 111    14584   9608   7185   1381    410    238       N
ATOM   3139  CA  HIS B 111      39.354  36.649  52.912  1.00 79.24           C
ANISOU 3139  CA  HIS B 111    13861   9292   6956   1265    581    302       C
ATOM   3140  CB  HIS B 111      40.811  36.408  52.514  1.00 71.49           C
ANISOU 3140  CB  HIS B 111    12945   8282   5938   1289    878    381       C
ATOM   3141  CG  HIS B 111      41.720  36.098  53.660  1.00 75.10           C
ANISOU 3141  CG  HIS B 111    13092   8843   6600   1182   1023    424       C
ATOM   3142  ND1 HIS B 111      42.766  36.919  54.026  1.00 72.44           N
ANISOU 3142  ND1 HIS B 111    12644   8529   6348   1127   1241    514       N
ATOM   3143  CE1 HIS B 111      43.410  36.380  55.049  1.00 89.94           C
ANISOU 3143  CE1 HIS B 111    14591  10837   8745   1042   1315    530       C
ATOM   3144  NE2 HIS B 111      42.814  35.239  55.362  1.00 84.95           N
ANISOU 3144  NE2 HIS B 111    13895  10241   8141   1041   1162    457       N
ATOM   3145  CD2 HIS B 111      41.756  35.038  54.509  1.00 72.93           C
ANISOU 3145  CD2 HIS B 111    12601   8648   6462   1125    979    390       C
ATOM   3146  C   HIS B 111      39.192  38.058  53.503  1.00 84.51           C
ANISOU 3146  C   HIS B 111    14410  10000   7700   1199    580    342       C
ATOM   3147  O   HIS B 111      38.945  38.227  54.696  1.00 88.09           O
ANISOU 3147  O   HIS B 111    14587  10552   8332   1098    517    335       O
ATOM   3148  N   LEU B 112      39.330  39.067  52.654  1.00 88.17           N
ANISOU 3148  N   LEU B 112    15096  10381   8022   1262    652    386       N
ATOM   3149  CA  LEU B 112      39.147  40.438  53.078  1.00 89.92           C
ANISOU 3149  CA  LEU B 112    15243  10625   8297   1211    648    424       C
ATOM   3150  CB  LEU B 112      39.275  41.396  51.884  1.00 93.71           C
ANISOU 3150  CB  LEU B 112    16037  10988   8580   1308    729    468       C
ATOM   3151  CG  LEU B 112      40.702  41.717  51.427  1.00 92.01           C
ANISOU 3151  CG  LEU B 112    15909  10725   8327   1322   1050    569       C
ANISOU 3151  CG  LEU B 112    15909  10725   8327   1322   1050    569       C
ATOM   3152  CD1 LEU B 112      40.703  42.448  50.083  1.00 96.29           C
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ANISOU 3152  CD1 LEU B 112    16815  11130   8640   1443   1117    604       C
ATOM   3153  CD2 LEU B 112      41.430  42.533  52.477  1.00 85.12           C
ANISOU 3153  CD2 LEU B 112    14765   9930   7646   1200   1193    637       C
ATOM   3154  C   LEU B 112      37.796  40.615  53.766  1.00 82.56           C
ANISOU 3154  C   LEU B 112    14172   9747   7450   1170    373    351       C
ATOM   3155  O   LEU B 112      37.731  41.149  54.865  1.00 88.31           O
ANISOU 3155  O   LEU B 112    14654  10561   8340   1072    362    365       O
ATOM   3156  N   ALA B 113      36.728  40.144  53.133  1.00 78.29           N
ANISOU 3156  N   ALA B 113    13787   9152   6810   1247    152    271       N
ATOM   3157  CA  ALA B 113      35.384  40.373  53.655  1.00 84.56           C
ANISOU 3157  CA  ALA B 113    14468   9978   7683   1220   -110    203       C
ATOM   3158  CB  ALA B 113      34.333  39.885  52.671  1.00 79.08           C
ANISOU 3158  CB  ALA B 113    14002   9193   6851   1326   -340    119       C
ATOM   3159  C   ALA B 113      35.190  39.698  55.009  1.00 94.02           C
ANISOU 3159  C   ALA B 113    15331  11292   9100   1112   -164    174       C
ATOM   3160  O   ALA B 113      34.407  40.167  55.839  1.00 98.73           O
ANISOU 3160  O   ALA B 113    15750  11944   9820   1053   -295    152       O
ATOM   3161  N   LYS B 114      35.917  38.605  55.225  1.00 87.71           N
ANISOU 3161  N   LYS B 114    14455  10523   8346   1090    -55    178       N
ATOM   3162  CA  LYS B 114      35.797  37.804  56.439  1.00 76.70           C
ANISOU 3162  CA  LYS B 114    12770   9228   7142   1000    -96    152       C
ATOM   3163  CB  LYS B 114      36.520  36.481  56.265  1.00 81.28           C
ANISOU 3163  CB  LYS B 114    13361   9808   7714   1015      3    147       C
ATOM   3164  CG  LYS B 114      36.485  35.582  57.495  1.00 78.54           C
ANISOU 3164  CG  LYS B 114    12729   9559   7556    928    -22    124       C
ATOM   3165  CD  LYS B 114      37.282  34.358  57.178  1.00 75.96           C
ANISOU 3165  CD  LYS B 114    12446   9218   7198    955     93    125       C
ATOM   3166  CE  LYS B 114      36.966  33.209  58.066  1.00 73.23           C
ANISOU 3166  CE  LYS B 114    11894   8935   6996    902     13     80       C
ATOM   3167  NZ  LYS B 114      37.179  31.972  57.251  1.00 79.24           N
ANISOU 3167  NZ  LYS B 114    12813   9634   7661    972     23     45       N
ATOM   3168  C   LYS B 114      36.350  38.472  57.682  1.00 80.88           C
ANISOU 3168  C   LYS B 114    13040   9855   7834    892     19    209       C
ATOM   3169  O   LYS B 114      35.780  38.346  58.760  1.00 75.76           O
ANISOU 3169  O   LYS B 114    12166   9282   7338    821    -82    181       O
ATOM   3170  N   ARG B 115      37.482  39.149  57.525  1.00 80.65           N
ANISOU 3170  N   ARG B 115    13049   9820   7776    882    236    289       N
ATOM   3171  CA  ARG B 115      38.172  39.771  58.647  1.00 83.97           C
ANISOU 3171  CA  ARG B 115    13236  10322   8347    782    357    345       C
ATOM   3172  CB  ARG B 115      39.466  39.005  58.963  1.00 69.37           C
ANISOU 3172  CB  ARG B 115    11282   8509   6565    749    555    388       C
ATOM   3173  CG  ARG B 115      39.903  39.081  60.405  1.00 73.53           C
ANISOU 3173  CG  ARG B 115    11511   9140   7286    641    599    411       C
ATOM   3174  CD  ARG B 115      40.956  38.019  60.771  1.00 75.94           C
ANISOU 3174  CD  ARG B 115    11700   9485   7669    617    739    432       C
ATOM   3175  NE  ARG B 115      40.477  36.660  60.534  1.00 74.63           N
ANISOU 3175  NE  ARG B 115    11571   9313   7473    658    644    371       N
ATOM   3176  CZ  ARG B 115      40.965  35.858  59.591  1.00 80.77           C
ANISOU 3176  CZ  ARG B 115    12513  10032   8146    729    730    372       C
ATOM   3177  NH1 ARG B 115      41.968  36.270  58.811  1.00 73.58           N
ANISOU 3177  NH1 ARG B 115    11739   9063   7155    767    926    436       N
ATOM   3178  NH2 ARG B 115      40.457  34.642  59.425  1.00 83.20           N
ANISOU 3178  NH2 ARG B 115    12849  10331   8432    762    626    311       N
ATOM   3179  C   ARG B 115      38.444  41.251  58.316  1.00 88.81           C
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ANISOU 3179  C   ARG B 115    13945  10895   8903    786    442    404       C
ATOM   3180  O   ARG B 115      39.579  41.637  58.016  1.00 79.31           O
ANISOU 3180  O   ARG B 115    12789   9666   7678    784    653    475       O
ATOM   3181  N   ARG B 116      37.388  42.064  58.404  1.00 86.78           N
ANISOU 3181  N   ARG B 116    13706  10630   8635    790    278    375       N
ATOM   3182  CA  ARG B 116      37.364  43.437  57.885  1.00 71.32           C
ANISOU 3182  CA  ARG B 116    11893   8615   6592    817    314    417       C
ATOM   3183  CB  ARG B 116      35.931  43.817  57.586  1.00 56.00           C
ANISOU 3183  CB  ARG B 116    10045   6641   4593    866     75    356       C
ATOM   3184  CG  ARG B 116      35.193  44.076  58.887  1.00 71.10           C
ANISOU 3184  CG  ARG B 116    11698   8640   6675    783    -52    327       C
ATOM   3185  CD  ARG B 116      33.968  44.841  58.650  1.00 67.77           C
ANISOU 3185  CD  ARG B 116    11353   8183   6214    823   -241    290       C
ATOM   3186  NE  ARG B 116      32.996  44.657  59.707  1.00 62.25           N
ANISOU 3186  NE  ARG B 116    10433   7551   5667    770   -403    241       N
ATOM   3187  CZ  ARG B 116      31.706  44.918  59.533  1.00 80.20           C
ANISOU 3187  CZ  ARG B 116    12742   9795   7934    810   -611    187       C
ATOM   3188  NH1 ARG B 116      30.836  44.735  60.517  1.00 94.72           N
ANISOU 3188  NH1 ARG B 116    14373  11691   9924    762   -739    147       N
ATOM   3189  NH2 ARG B 116      31.288  45.350  58.348  1.00 84.37           N
ANISOU 3189  NH2 ARG B 116    13524  10230   8305    905   -689    175       N
ATOM   3190  C   ARG B 116      37.945  44.561  58.780  1.00 85.47           C
ANISOU 3190  C   ARG B 116    13518  10456   8502    726    425    478       C
ATOM   3191  O   ARG B 116      37.960  45.728  58.369  1.00 86.63           O
ANISOU 3191  O   ARG B 116    13781  10551   8583    744    464    516       O
ATOM   3192  N   GLY B 117      38.383  44.255  59.999  1.00 72.50           N
ANISOU 3192  N   GLY B 117    11611   8905   7029    633    467    485       N
ATOM   3193  CA  GLY B 117      39.039  45.278  60.807  1.00 78.26           C
ANISOU 3193  CA  GLY B 117    12195   9671   7867    551    574    541       C
ATOM   3194  C   GLY B 117      38.141  46.229  61.599  1.00 80.84           C
ANISOU 3194  C   GLY B 117    12421  10033   8261    508    434    521       C
ATOM   3195  O   GLY B 117      36.907  46.126  61.556  1.00 73.62           O
ANISOU 3195  O   GLY B 117    11535   9116   7319    543    243    463       O
ATOM   3196  N   VAL B 118      38.755  47.151  62.344  1.00 77.90           N
ANISOU 3196  N   VAL B 118    11923   9688   7985    434    527    568       N
ATOM   3197  CA  VAL B 118      37.986  48.087  63.175  1.00 69.45           C
ANISOU 3197  CA  VAL B 118    10753   8651   6983    392    410    553       C
ATOM   3198  CB  VAL B 118      38.684  48.392  64.494  1.00 66.80           C
ANISOU 3198  CB  VAL B 118    10184   8387   6811    291    478    579       C
ATOM   3199  CG1 VAL B 118      37.655  48.726  65.542  1.00 88.36           C
ANISOU 3199  CG1 VAL B 118    12780  11171   9620    258    317    538       C
ATOM   3200  CG2 VAL B 118      39.451  47.203  64.952  1.00 79.10           C
ANISOU 3200  CG2 VAL B 118    11608   9998   8450    260    549    578       C
ATOM   3201  C   VAL B 118      37.715  49.415  62.472  1.00 84.33           C
ANISOU 3201  C   VAL B 118    12814  10460   8769    429    413    582       C
ATOM   3202  O   VAL B 118      38.420  49.797  61.530  1.00 84.69           O
ANISOU 3202  O   VAL B 118    13026  10433   8721    465    553    632       O
ATOM   3203  N   HIS B 119      36.674  50.098  62.946  1.00 84.30           N
ANISOU 3203  N   HIS B 119    12771  10470   8788    423    263    552       N
ATOM   3204  CA  HIS B 119      36.225  51.372  62.401  1.00 88.82           C
ANISOU 3204  CA  HIS B 119    13495  10976   9275    460    234    571       C
ATOM   3205  CB  HIS B 119      34.798  51.251  61.884  1.00 89.76           C
ANISOU 3205  CB  HIS B 119    13727  11067   9313    540     25    510       C
ATOM   3206  CG  HIS B 119      33.791  50.960  62.957  1.00111.50           C
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ANISOU 3206  CG  HIS B 119    16285  13891  12187    506   -139    454       C
ATOM   3207  ND1 HIS B 119      33.783  49.781  63.680  1.00117.90           N
ANISOU 3207  ND1 HIS B 119    16925  14773  13099    468   -167    420       N
ATOM   3208  CE1 HIS B 119      32.787  49.802  64.546  1.00112.38           C
ANISOU 3208  CE1 HIS B 119    16085  14119  12497    448   -307    379       C
ATOM   3209  NE2 HIS B 119      32.148  50.953  64.418  1.00109.98           N
ANISOU 3209  NE2 HIS B 119    15849  13777  12161    471   -374    384       N
ATOM   3210  CD2 HIS B 119      32.760  51.695  63.435  1.00112.53           C
ANISOU 3210  CD2 HIS B 119    16368  14030  12359    506   -275    430       C
ATOM   3211  C   HIS B 119      36.266  52.476  63.436  1.00100.77           C
ANISOU 3211  C   HIS B 119    14868  12523  10897    385    241    593       C
ATOM   3212  O   HIS B 119      35.724  53.546  63.213  1.00106.77           O
ANISOU 3212  O   HIS B 119    15719  13239  11608    408    190    600       O
ATOM   3213  N   ASN B 120      36.904  52.221  64.571  1.00121.89           N
ANISOU 3213  N   ASN B 120    17327  15271  13714    298    299    601       N
ATOM   3214  CA  ASN B 120      36.674  53.063  65.734  1.00135.38           C
ANISOU 3214  CA  ASN B 120    18886  17022  15531    233    254    601       C
ATOM   3215  CB  ASN B 120      35.679  52.362  66.646  1.00145.43           C
ANISOU 3215  CB  ASN B 120    20010  18365  16880    225     97    539       C
ATOM   3216  CG  ASN B 120      34.772  53.326  67.353  1.00159.05           C
ANISOU 3216  CG  ASN B 120    21684  20100  18647    213    -12    523       C
ATOM   3217  OD1 ASN B 120      34.866  54.545  67.172  1.00168.12           O
ANISOU 3217  OD1 ASN B 120    22911  21204  19765    209     21    555       O
ATOM   3218  ND2 ASN B 120      33.860  52.789  68.144  1.00160.61           N
ANISOU 3218  ND2 ASN B 120    21757  20351  18917    211   -137    475       N
ATOM   3219  C   ASN B 120      37.902  53.446  66.550  1.00141.28           C
ANISOU 3219  C   ASN B 120    19489  17796  16394    142    394    645       C
ATOM   3220  O   ASN B 120      37.787  53.769  67.729  1.00146.20           O
ANISOU 3220  O   ASN B 120    19954  18471  17124     83    347    634       O
ATOM   3221  N   VAL B 121      39.076  53.408  65.936  1.00135.34           N
ANISOU 3221  N   VAL B 121    18794  17004  15627    134    564    696       N
ATOM   3222  CA  VAL B 121      40.296  53.818  66.623  1.00130.32           C
ANISOU 3222  CA  VAL B 121    18021  16380  15115     48    696    740       C
ATOM   3223  CB  VAL B 121      41.151  52.601  67.051  1.00116.10           C
ANISOU 3223  CB  VAL B 121    16075  14635  13402     15    764    739       C
ATOM   3224  CG1 VAL B 121      42.338  53.054  67.891  1.00121.01           C
ANISOU 3224  CG1 VAL B 121    16535  15272  14173    -76    869    776       C
ATOM   3225  CG2 VAL B 121      40.304  51.589  67.822  1.00104.28           C
ANISOU 3225  CG2 VAL B 121    14466  13219  11937     21    613    675       C
ATOM   3226  C   VAL B 121      41.116  54.737  65.722  1.00136.10           C
ANISOU 3226  C   VAL B 121    18891  17020  15801     52    860    807       C
ATOM   3227  O   VAL B 121      41.885  54.273  64.881  1.00137.38           O
ANISOU 3227  O   VAL B 121    19136  17140  15922     79    998    843       O
ATOM   3228  N   ASN B 122      40.937  56.045  65.889  1.00141.83           N
ANISOU 3228  N   ASN B 122    19648  17707  16533     29    850    827       N
ATOM   3229  CA  ASN B 122      41.616  57.019  65.039  1.00145.11           C
ANISOU 3229  CA  ASN B 122    20205  18025  16904     34   1004    893       C
ATOM   3230  CB  ASN B 122      40.624  58.070  64.530  1.00145.97           C
ANISOU 3230  CB  ASN B 122    20487  18076  16898     87    919    890       C
ATOM   3231  CG  ASN B 122      39.437  57.456  63.810  1.00148.78           C
ANISOU 3231  CG  ASN B 122    20990  18432  17108    188    779    842       C
ATOM   3232  OD1 ASN B 122      39.239  56.242  63.832  1.00153.32           O
ANISOU 3232  OD1 ASN B 122    21518  19057  17678    211    725    803       O
ATOM   3233  ND2 ASN B 122      38.644  58.298  63.157  1.00148.80           N
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ANISOU 3233  ND2 ASN B 122    21171  18372  16996    251    714    843       N
ATOM   3234  C   ASN B 122      42.775  57.704  65.756  1.00144.71           C
ANISOU 3234  C   ASN B 122    20005  17966  17012    -66   1124    936       C
ATOM   3235  O   ASN B 122      43.927  57.589  65.337  1.00148.40           O
ANISOU 3235  O   ASN B 122    20468  18392  17527    -88   1301    988       O
ATOM   3236  O   GLU B 131      53.151  46.694  75.053  1.00135.87           O
ANISOU 3236  O   GLU B 131    16611  17500  17512   -515   1314    856       O
ATOM   3237  N   GLU B 131      52.940  49.927  76.461  1.00115.08           N
ANISOU 3237  N   GLU B 131    13931  14797  14999   -658   1141    842       N
ATOM   3238  CA  GLU B 131      53.720  48.704  76.270  1.00122.33           C
ANISOU 3238  CA  GLU B 131    14764  15736  15978   -634   1221    856       C
ATOM   3239  C   GLU B 131      52.855  47.459  75.977  1.00136.88           C
ANISOU 3239  C   GLU B 131    16694  17641  17674   -558   1192    829       C
ATOM   3240  CB  GLU B 131      54.595  48.451  77.500  1.00115.65           C
ANISOU 3240  CB  GLU B 131    13720  14918  15303   -679   1141    838       C
ATOM   3241  O   LEU B 132      50.287  46.961  74.437  1.00133.17           O
ANISOU 3241  O   LEU B 132    16587  17189  16822   -429   1144    792       O
ATOM   3242  N   LEU B 132      51.792  47.260  76.758  1.00142.58           N
ANISOU 3242  N   LEU B 132    17439  18422  18312   -540   1036    777       N
ATOM   3243  CA  LEU B 132      50.920  46.088  76.606  1.00139.70           C
ANISOU 3243  CA  LEU B 132    17140  18112  17828   -475    994    747       C
ATOM   3244  C   LEU B 132      50.174  46.048  75.266  1.00139.87           C
ANISOU 3244  C   LEU B 132    17345  18102  17698   -421   1061    759       C
ATOM   3245  CB  LEU B 132      49.908  46.023  77.759  1.00136.28           C
ANISOU 3245  CB  LEU B 132    16691  17736  17351   -470    822    694       C
ATOM   3246  CG  LEU B 132      50.457  45.481  79.088  1.00138.87           C
ANISOU 3246  CG  LEU B 132    16866  18112  17787   -490    741    672       C
ATOM   3247  CD1 LEU B 132      49.418  45.537  80.210  1.00126.50           C
ANISOU 3247  CD1 LEU B 132    15307  16590  16168   -480    587    624       C
ATOM   3248  CD2 LEU B 132      51.004  44.059  78.917  1.00131.44           C
ANISOU 3248  CD2 LEU B 132    15867  17201  16873   -456    798    677       C
ATOM   3249  O   SER B 133      46.275  44.576  73.996  1.00124.35           O
ANISOU 3249  O   SER B 133    15750  16188  15309   -247    842    654       O
ATOM   3250  N   SER B 133      49.405  44.978  75.071  1.00137.64           N
ANISOU 3250  N   SER B 133    17121  17860  17317   -364   1019    729       N
ATOM   3251  CA  SER B 133      48.690  44.746  73.813  1.00133.31           C
ANISOU 3251  CA  SER B 133    16748  17280  16622   -304   1062    731       C
ATOM   3252  C   SER B 133      47.261  45.310  73.809  1.00129.62           C
ANISOU 3252  C   SER B 133    16390  16817  16042   -285    939    696       C
ATOM   3253  CB  SER B 133      48.657  43.248  73.497  1.00121.29           C
ANISOU 3253  CB  SER B 133    15235  15788  15061   -252   1083    716       C
ATOM   3254  OG  SER B 133      49.920  42.653  73.747  1.00113.73           O
ANISOU 3254  OG  SER B 133    14150  14839  14224   -269   1173    742       O
ATOM   3255  O   THR B 134      46.501  48.077  71.208  1.00125.17           O
ANISOU 3255  O   THR B 134    16236  16069  15252   -246   1064    763       O
ATOM   3256  N   THR B 134      47.168  46.622  73.599  1.00114.27           N
ANISOU 3256  N   THR B 134    14503  14826  14087   -310    948    715       N
ATOM   3257  CA  THR B 134      45.892  47.291  73.389  1.00 98.30           C
ANISOU 3257  CA  THR B 134    12600  12792  11957   -286    852    691       C
ATOM   3258  C   THR B 134      45.636  47.560  71.918  1.00105.35           C
ANISOU 3258  C   THR B 134    13681  13618  12727   -235    928    714       C
ATOM   3259  CB  THR B 134      45.805  48.632  74.158  1.00100.47           C
ANISOU 3259  CB  THR B 134    12834  13056  12285   -339    795    692       C
ATOM   3260  OG1 THR B 134      44.768  49.453  73.600  1.00 94.87           O
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ANISOU 3260  OG1 THR B 134    12267  12311  11467   -310    746    685       O
ATOM   3261  CG2 THR B 134      47.112  49.374  74.112  1.00102.85           C
ANISOU 3261  CG2 THR B 134    13074  13310  12694   -396    910    740       C
ATOM   3262  N   LYS B 135      44.443  47.179  71.477  1.00 91.30           N
ANISOU 3262  N   LYS B 135    12014  11846  10832   -178    837    678       N
ATOM   3263  CA  LYS B 135      43.884  47.539  70.176  1.00 86.87           C
ANISOU 3263  CA  LYS B 135    11653  11220  10133   -119    857    686       C
ATOM   3264  C   LYS B 135      44.233  48.972  69.754  1.00 91.36           C
ANISOU 3264  C   LYS B 135    12298  11722  10694   -141    931    730       C
ATOM   3265  O   LYS B 135      44.565  49.208  68.600  1.00 87.84           O
ANISOU 3265  O   LYS B 135    11997  11207  10171   -105   1041    767       O
ATOM   3266  CB  LYS B 135      42.385  47.359  70.245  1.00 61.25           C
ANISOU 3266  CB  LYS B 135     8467   7996   6810    -77    694    632       C
ATOM   3267  CG  LYS B 135      42.077  47.320  71.685  1.00106.10           C
ANISOU 3267  CG  LYS B 135    13981  13743  12588   -123    594    602       C
ATOM   3268  CD  LYS B 135      40.919  48.138  72.042  1.00108.85           C
ANISOU 3268  CD  LYS B 135    14359  14091  12908   -118    471    576       C
ATOM   3269  CE  LYS B 135      41.029  48.347  73.522  1.00 85.04           C
ANISOU 3269  CE  LYS B 135    11180  11129  10002   -174    421    565       C
ATOM   3270  NZ  LYS B 135      42.250  48.958  74.004  1.00 69.59           N
ANISOU 3270  NZ  LYS B 135     9139   9165   8136   -236    506    601       N
ATOM   3271  O   GLU B 136      46.393  51.935  68.978  1.00 84.59           O
ANISOU 3271  O   GLU B 136    11498  10690   9953   -243   1250    875       O
ATOM   3272  N   GLU B 136      44.171  49.922  70.688  1.00 88.69           N
ANISOU 3272  N   GLU B 136    11869  11397  10431   -198    875    728       N
ATOM   3273  CA  GLU B 136      44.541  51.303  70.382  1.00 76.17           C
ANISOU 3273  CA  GLU B 136    10342   9745   8852   -228    943    770       C
ATOM   3274  C   GLU B 136      46.029  51.389  70.026  1.00 87.76           C
ANISOU 3274  C   GLU B 136    11768  11170  10408   -264   1126    828       C
ATOM   3275  CB  GLU B 136      44.210  52.237  71.549  1.00 76.25           C
ANISOU 3275  CB  GLU B 136    10257   9779   8935   -283    841    751       C
ATOM   3276  N   GLN B 137      46.893  50.826  70.868  1.00 91.56           N
ANISOU 3276  N   GLN B 137    12068  11696  11026   -313   1147    828       N
ATOM   3277  CA  GLN B 137      48.323  50.897  70.578  1.00 93.61           C
ANISOU 3277  CA  GLN B 137    12263  11911  11395   -349   1318    884       C
ATOM   3278  CB  GLN B 137      49.160  50.410  71.764  1.00 90.45           C
ANISOU 3278  CB  GLN B 137    11640  11566  11163   -409   1294    873       C
ATOM   3279  C   GLN B 137      48.701  50.104  69.329  1.00 91.13           C
ANISOU 3279  C   GLN B 137    12063  11558  11004   -286   1460    915       C
ATOM   3280  O   GLN B 137      49.484  50.596  68.523  1.00 95.67           O
ANISOU 3280  O   GLN B 137    12700  12055  11594   -287   1625    973       O
ATOM   3281  N   ILE B 138      48.165  48.894  69.149  1.00 82.10           N
ANISOU 3281  N   ILE B 138    10955  10460   9780   -229   1405    879       N
ATOM   3282  CA  ILE B 138      48.657  48.080  68.039  1.00 85.01           C
ANISOU 3282  CA  ILE B 138    11425  10790  10086   -170   1545    907       C
ATOM   3283  CB  ILE B 138      48.361  46.556  68.170  1.00 94.75           C
ANISOU 3283  CB  ILE B 138    12628  12086  11287   -127   1485    865       C
ATOM   3284  CG1 ILE B 138      49.391  45.756  67.348  1.00 79.59           C
ANISOU 3284  CG1 ILE B 138    10738  10127   9375    -92   1667    907       C
ATOM   3285  CD1 ILE B 138      49.999  44.567  68.061  1.00 72.62           C
ANISOU 3285  CD1 ILE B 138     9684   9308   8600   -107   1668    892       C
ATOM   3286  CG2 ILE B 138      46.961  46.235  67.668  1.00 90.88           C
ANISOU 3286  CG2 ILE B 138    12299  11601  10630    -59   1354    815       C
ATOM   3287  C   ILE B 138      48.076  48.565  66.737  1.00 87.18           C
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ANISOU 3287  C   ILE B 138    11946  10988  10190   -101   1588    924       C
ATOM   3288  O   ILE B 138      48.653  48.306  65.680  1.00 99.57           O
ANISOU 3288  O   ILE B 138    13633  12494  11705    -54   1745    966       O
ATOM   3289  N   SER B 139      46.951  49.274  66.785  1.00 82.82           N
ANISOU 3289  N   SER B 139    11481  10435   9551    -89   1452    894       N
ATOM   3290  CA  SER B 139      46.476  49.909  65.554  1.00 93.62           C
ANISOU 3290  CA  SER B 139    13089  11720  10763    -24   1493    915       C
ATOM   3291  CB  SER B 139      45.016  50.357  65.659  1.00 87.07           C
ANISOU 3291  CB  SER B 139    12346  10906   9832      5   1301    864       C
ATOM   3292  OG  SER B 139      44.142  49.257  65.476  1.00 79.59           O
ANISOU 3292  OG  SER B 139    11446   9996   8798     64   1182    808       O
ATOM   3293  C   SER B 139      47.389  51.085  65.206  1.00 95.32           C
ANISOU 3293  C   SER B 139    13330  11855  11034    -61   1659    986       C
ATOM   3294  O   SER B 139      47.762  51.249  64.045  1.00100.38           O
ANISOU 3294  O   SER B 139    14141  12410  11587    -10   1807   1033       O
ATOM   3295  N   ARG B 140      47.768  51.879  66.207  1.00 93.48           N
ANISOU 3295  N   ARG B 140    12931  11640  10945   -149   1637    993       N
ATOM   3296  CA  ARG B 140      48.761  52.929  65.999  1.00 92.77           C
ANISOU 3296  CA  ARG B 140    12827  11473  10948   -199   1798   1060       C
ATOM   3297  CB  ARG B 140      49.071  53.665  67.310  1.00 78.77           C
ANISOU 3297  CB  ARG B 140    10849   9734   9345   -299   1725   1049       C
ATOM   3298  C   ARG B 140      50.034  52.313  65.387  1.00100.20           C
ANISOU 3298  C   ARG B 140    13746  12371  11955   -191   2012   1116       C
ATOM   3299  O   ARG B 140      50.525  52.784  64.364  1.00 99.01           O
ANISOU 3299  O   ARG B 140    13735  12124  11761   -162   2187   1177       O
ATOM   3300  N   ASN B 141      50.530  51.231  65.984  1.00101.52           N
ANISOU 3300  N   ASN B 141    13749  12604  12219   -209   2002   1096       N
ATOM   3301  CA  ASN B 141      51.704  50.525  65.464  1.00104.09           C
ANISOU 3301  CA  ASN B 141    14039  12895  12614   -197   2197   1145       C
ATOM   3302  CB  ASN B 141      52.011  49.311  66.340  1.00107.76           C
ANISOU 3302  CB  ASN B 141    14312  13453  13181   -216   2129   1107       C
ATOM   3303  CG  ASN B 141      52.495  49.697  67.720  1.00118.50           C
ANISOU 3303  CG  ASN B 141    15426  14861  14736   -314   2047   1093       C
ATOM   3304  OD1 ASN B 141      52.384  50.857  68.119  1.00136.84           O
ANISOU 3304  OD1 ASN B 141    17726  17161  17105   -368   2004   1097       O
ATOM   3305  ND2 ASN B 141      53.042  48.728  68.458  1.00104.18           N
ANISOU 3305  ND2 ASN B 141    13436  13111  13036   -335   2022   1074       N
ATOM   3306  C   ASN B 141      51.598  50.067  64.001  1.00106.71           C
ANISOU 3306  C   ASN B 141    14614  13159  12772    -94   2327   1174       C
ATOM   3307  O   ASN B 141      52.471  50.367  63.181  1.00114.94           O
ANISOU 3307  O   ASN B 141    15727  14111  13835    -79   2542   1245       O
ATOM   3308  N   SER B 142      50.537  49.340  63.674  1.00101.97           N
ANISOU 3308  N   SER B 142    14146  12594  12004    -21   2198   1120       N
ATOM   3309  CA  SER B 142      50.410  48.765  62.335  1.00104.46           C
ANISOU 3309  CA  SER B 142    14699  12846  12145     84   2297   1137       C
ATOM   3310  CB  SER B 142      49.333  47.652  62.311  1.00 96.89           C
ANISOU 3310  CB  SER B 142    13806  11950  11056    146   2117   1060       C
ATOM   3311  OG  SER B 142      49.683  46.505  63.094  1.00 73.11           O
ANISOU 3311  OG  SER B 142    10605   9021   8153    118   2081   1031       O
ATOM   3312  C   SER B 142      50.109  49.853  61.288  1.00107.37           C
ANISOU 3312  C   SER B 142    15309  13110  12376    132   2371   1177       C
ATOM   3313  O   SER B 142      50.458  49.718  60.105  1.00112.63           O
ANISOU 3313  O   SER B 142    16173  13688  12932    208   2536   1223       O
ATOM   3314  N   LYS B 143      49.487  50.942  61.720  1.00104.18           N
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ANISOU 3314  N   LYS B 143    14899  12710  11974     92   2258   1164       N
ATOM   3315  CA  LYS B 143      49.221  52.027  60.788  1.00116.72           C
ANISOU 3315  CA  LYS B 143    16712  14198  13439    135   2326   1204       C
ATOM   3316  CB  LYS B 143      48.115  52.953  61.319  1.00110.82           C
ANISOU 3316  CB  LYS B 143    15973  13478  12654    112   2126   1161       C
ATOM   3317  CG  LYS B 143      48.112  54.369  60.772  1.00123.18           C
ANISOU 3317  CG  LYS B 143    17683  14947  14173    115   2206   1213       C
ATOM   3318  CD  LYS B 143      47.030  55.235  61.445  1.00127.63           C
ANISOU 3318  CD  LYS B 143    18225  15547  14720     86   1999   1166       C
ATOM   3319  CE  LYS B 143      45.696  54.499  61.579  1.00116.88           C
ANISOU 3319  CE  LYS B 143    16908  14257  13243    143   1768   1083       C
ATOM   3320  NZ  LYS B 143      45.021  54.409  60.245  1.00130.52           N
ANISOU 3320  NZ  LYS B 143    18930  15911  14749    262   1760   1082       N
ATOM   3321  C   LYS B 143      50.551  52.753  60.566  1.00118.71           C
ANISOU 3321  C   LYS B 143    16915  14367  13823     87   2574   1293       C
ATOM   3322  O   LYS B 143      50.880  53.142  59.438  1.00116.36           O
ANISOU 3322  O   LYS B 143    16821  13960  13430    147   2751   1355       O
ATOM   3323  N   ALA B 144      51.338  52.860  61.641  1.00118.51           N
ANISOU 3323  N   ALA B 144    16618  14388  14022    -18   2587   1300       N
ATOM   3324  CA  ALA B 144      52.630  53.552  61.623  1.00111.34           C
ANISOU 3324  CA  ALA B 144    15609  13405  13289    -82   2801   1378       C
ATOM   3325  CB  ALA B 144      53.149  53.745  63.027  1.00103.29           C
ANISOU 3325  CB  ALA B 144    14288  12454  12504   -200   2720   1358       C
ATOM   3326  C   ALA B 144      53.671  52.823  60.804  1.00121.16           C
ANISOU 3326  C   ALA B 144    16889  14589  14557    -38   3041   1438       C
ATOM   3327  O   ALA B 144      54.732  53.376  60.512  1.00130.24           O
ANISOU 3327  O   ALA B 144    17999  15654  15834    -72   3257   1515       O
ATOM   3328  N   LEU B 145      53.392  51.573  60.460  1.00125.65           N
ANISOU 3328  N   LEU B 145    17526  15199  15017     36   3010   1405       N
ATOM   3329  CA  LEU B 145      54.292  50.840  59.587  1.00126.43           C
ANISOU 3329  CA  LEU B 145    17694  15235  15109     95   3241   1461       C
ATOM   3330  CB  LEU B 145      54.991  49.713  60.348  1.00129.88           C
ANISOU 3330  CB  LEU B 145    17887  15751  15708     57   3238   1441       C
ATOM   3331  CG  LEU B 145      55.849  50.230  61.515  1.00136.56           C
ANISOU 3331  CG  LEU B 145    18426  16628  16831    -68   3238   1455       C
ATOM   3332  CD2 LEU B 145      57.359  50.057  61.234  1.00140.95           C
ANISOU 3332  CD2 LEU B 145    18865  17115  17575    -88   3504   1535       C
ATOM   3333  CD1 LEU B 145      55.447  49.635  62.873  1.00133.38           C
ANISOU 3333  CD1 LEU B 145    17807  16360  16512   -125   2997   1375       C
ATOM   3334  C   LEU B 145      53.539  50.325  58.372  1.00119.78           C
ANISOU 3334  C   LEU B 145    17166  14348  13997    227   3244   1448       C
ATOM   3335  O   LEU B 145      53.617  49.153  58.018  1.00122.23           O
ANISOU 3335  O   LEU B 145    17524  14676  14244    290   3268   1431       O
ATOM   3336  O   GLU B 146      51.450  52.967  55.317  1.00109.84           O
ANISOU 3336  O   GLU B 146    16829  12800  12107    464   3279   1510       O
ATOM   3337  N   GLU B 146      52.819  51.240  57.732  1.00114.09           N
ANISOU 3337  N   GLU B 146    16669  13563  13119    271   3215   1456       N
ATOM   3338  CA  GLU B 146      52.159  50.956  56.472  1.00105.89           C
ANISOU 3338  CA  GLU B 146    15960  12457  11818    402   3227   1452       C
ATOM   3339  C   GLU B 146      52.322  52.113  55.455  1.00113.38           C
ANISOU 3339  C   GLU B 146    17146  13266  12665    448   3401   1528       C
ATOM   3340  CB  GLU B 146      50.679  50.645  56.720  1.00 97.12           C
ANISOU 3340  CB  GLU B 146    14917  11423  10560    436   2926   1355       C
ATOM   3341  O   GLU B 147      53.264  52.006  51.224  1.00124.75           O
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ANISOU 3341  O   GLU B 147    19490  14308  13602    810   4021   1699       O
ATOM   3342  N   GLU B 147      53.470  52.148  54.777  1.00120.62           N
ANISOU 3342  N   GLU B 147    18111  14085  13634    469   3695   1617       N
ATOM   3343  CA  GLU B 147      53.599  52.811  53.478  1.00113.71           C
ANISOU 3343  CA  GLU B 147    17546  13062  12597    562   3894   1691       C
ATOM   3344  C   GLU B 147      53.305  51.738  52.423  1.00118.29           C
ANISOU 3344  C   GLU B 147    18392  13605  12947    703   3922   1674       C
ATOM   3345  CB  GLU B 147      54.988  53.412  53.284  1.00112.59           C
ANISOU 3345  CB  GLU B 147    17320  12821  12637    514   4212   1800       C
ATOM   3346  N   LYS B 148      53.110  50.512  52.915  1.00119.07           N
ANISOU 3346  N   LYS B 148    18365  13808  13070    700   3785   1606       N
ATOM   3347  CA  LYS B 148      52.683  49.349  52.136  1.00106.18           C
ANISOU 3347  CA  LYS B 148    16945  12165  11235    821   3745   1565       C
ATOM   3348  C   LYS B 148      51.228  48.985  52.439  1.00 98.80           C
ANISOU 3348  C   LYS B 148    16056  11317  10168    843   3404   1455       C
ATOM   3349  O   LYS B 148      50.693  49.352  53.475  1.00 90.84           O
ANISOU 3349  O   LYS B 148    14845  10404   9268    752   3207   1406       O
ATOM   3350  CB  LYS B 148      53.582  48.144  52.435  1.00 90.68           C
ANISOU 3350  CB  LYS B 148    14803  10246   9404    804   3857   1571       C
ATOM   3351  N   TYR B 149      50.594  48.249  51.536  1.00114.15           N
ANISOU 3351  N   TYR B 149    18266  13222  11883    966   3336   1414       N
ATOM   3352  CA  TYR B 149      49.218  47.799  51.740  1.00119.83           C
ANISOU 3352  CA  TYR B 149    19033  14012  12486    994   3016   1308       C
ATOM   3353  C   TYR B 149      49.124  46.718  52.823  1.00115.09           C
ANISOU 3353  C   TYR B 149    18148  13547  12035    921   2868   1241       C
ATOM   3354  O   TYR B 149      50.121  46.063  53.128  1.00122.97           O
ANISOU 3354  O   TYR B 149    18986  14569  13169    886   3022   1272       O
ATOM   3355  CB  TYR B 149      48.650  47.278  50.427  1.00125.16           C
ANISOU 3355  CB  TYR B 149    20077  14594  12883   1149   2988   1284       C
ATOM   3356  CG  TYR B 149      48.258  48.363  49.459  1.00130.40           C
ANISOU 3356  CG  TYR B 149    21047  15139  13359   1232   3022   1321       C
ATOM   3357  CD2 TYR B 149      46.955  48.470  49.027  1.00135.32           C
ANISOU 3357  CD2 TYR B 149    21876  15747  13792   1309   2771   1249       C
ATOM   3358  CD1 TYR B 149      49.185  49.282  48.978  1.00133.50           C
ANISOU 3358  CD1 TYR B 149    21487  15432  13805   1230   3276   1411       C
ATOM   3359  CE2 TYR B 149      46.574  49.452  48.153  1.00137.78           C
ANISOU 3359  CE2 TYR B 149    22443  15950  13957   1386   2771   1268       C
ATOM   3360  CE1 TYR B 149      48.810  50.278  48.086  1.00132.38           C
ANISOU 3360  CE1 TYR B 149    21574  15181  13545   1302   3263   1417       C
ATOM   3361  CZ  TYR B 149      47.496  50.351  47.674  1.00132.91           C
ANISOU 3361  CZ  TYR B 149    21851  15237  13413   1381   3008   1345       C
ATOM   3362  OH  TYR B 149      47.082  51.325  46.793  1.00130.44           O
ANISOU 3362  OH  TYR B 149    21765  14814  12982   1458   2983   1346       O
ATOM   3363  N   VAL B 150      47.934  46.526  53.396  1.00104.68           N
ANISOU 3363  N   VAL B 150    16769  12311  10694    902   2577   1150       N
ATOM   3364  CA  VAL B 150      47.761  45.582  54.512  1.00100.26           C
ANISOU 3364  CA  VAL B 150    15937  11880  10279    829   2430   1087       C
ATOM   3365  C   VAL B 150      48.213  44.174  54.156  1.00 99.04           C
ANISOU 3365  C   VAL B 150    15812  11724  10094    883   2503   1074       C
ATOM   3366  O   VAL B 150      48.925  43.518  54.927  1.00 92.46           O
ANISOU 3366  O   VAL B 150    14740  10960   9430    818   2563   1080       O
ATOM   3367  CB  VAL B 150      46.285  45.491  54.989  1.00 88.43           C
ANISOU 3367  CB  VAL B 150    14416  10449   8733    824   2111    991       C
ATOM   3368  CG1 VAL B 150      46.106  44.343  56.009  1.00 84.47           C
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ANISOU 3368  CG1 VAL B 150    13671  10065   8360    767   1979    928       C
ATOM   3369  CG2 VAL B 150      45.819  46.814  55.568  1.00 82.23           C
ANISOU 3369  CG2 VAL B 150    13552   9683   8007    759   2023    997       C
ATOM   3370  N   ALA B 151      47.790  43.734  52.974  1.00102.45           N
ANISOU 3370  N   ALA B 151    16552  12072  10304   1008   2494   1056       N
ATOM   3371  CA  ALA B 151      48.032  42.383  52.491  1.00 96.18           C
ANISOU 3371  CA  ALA B 151    15842  11262   9440   1079   2536   1033       C
ATOM   3372  C   ALA B 151      49.489  41.979  52.539  1.00103.89           C
ANISOU 3372  C   ALA B 151    16704  12226  10543   1058   2817   1108       C
ATOM   3373  O   ALA B 151      49.801  40.834  52.861  1.00121.58           O
ANISOU 3373  O   ALA B 151    18830  14516  12847   1052   2821   1083       O
ATOM   3374  CB  ALA B 151      47.526  42.240  51.098  1.00 87.43           C
ANISOU 3374  CB  ALA B 151    15117  10037   8064   1223   2524   1019       C
ATOM   3375  N   GLU B 152      50.399  42.881  52.218  1.00 95.88           N
ANISOU 3375  N   GLU B 152    15715  11141   9574   1048   3058   1202       N
ATOM   3376  CA  GLU B 152      51.764  42.407  52.168  1.00115.27           C
ANISOU 3376  CA  GLU B 152    18073  13574  12151   1040   3329   1272       C
ATOM   3377  C   GLU B 152      52.555  42.834  53.386  1.00111.83           C
ANISOU 3377  C   GLU B 152    17274  13218  12000    900   3386   1307       C
ATOM   3378  O   GLU B 152      53.732  42.503  53.507  1.00122.95           O
ANISOU 3378  O   GLU B 152    18547  14615  13554    877   3599   1366       O
ATOM   3379  CB  GLU B 152      52.461  42.832  50.872  1.00130.58           C
ANISOU 3379  CB  GLU B 152    20290  15362  13961   1139   3611   1361       C
ATOM   3380  CG  GLU B 152      52.535  44.309  50.584  1.00134.27           C
ANISOU 3380  CG  GLU B 152    20843  15757  14418   1123   3705   1424       C
ATOM   3381  CD  GLU B 152      53.189  44.588  49.236  1.00140.03           C
ANISOU 3381  CD  GLU B 152    21789  16330  15086   1223   3898   1466       C
ATOM   3382  OE1 GLU B 152      53.856  43.674  48.681  1.00145.28           O
ANISOU 3382  OE1 GLU B 152    22492  16948  15760   1287   4019   1470       O
ATOM   3383  OE2 GLU B 152      53.039  45.725  48.742  1.00131.33           O
ANISOU 3383  OE2 GLU B 152    20813  15149  13937   1240   3923   1493       O
ATOM   3384  N   LEU B 153      51.918  43.534  54.313  1.00 93.90           N
ANISOU 3384  N   LEU B 153    14840  11024   9814    810   3192   1270       N
ATOM   3385  CA  LEU B 153      52.487  43.544  55.652  1.00 94.82           C
ANISOU 3385  CA  LEU B 153    14597  11240  10190    683   3171   1272       C
ATOM   3386  C   LEU B 153      52.277  42.133  56.203  1.00102.02           C
ANISOU 3386  C   LEU B 153    15387  12244  11133    684   3043   1204       C
ATOM   3387  O   LEU B 153      53.151  41.564  56.857  1.00102.55           O
ANISOU 3387  O   LEU B 153    15229  12359  11377    632   3125   1222       O
ATOM   3388  CB  LEU B 153      51.853  44.596  56.569  1.00 84.06           C
ANISOU 3388  CB  LEU B 153    13094   9938   8908    590   2993   1245       C
ATOM   3389  CG  LEU B 153      52.609  44.792  57.900  1.00 85.83           C
ANISOU 3389  CG  LEU B 153    12966  10243   9403    461   3001   1259       C
ATOM   3390  CD1 LEU B 153      53.921  45.526  57.694  1.00 83.83           C
ANISOU 3390  CD1 LEU B 153    12647   9913   9293    424   3269   1356       C
ATOM   3391  CD2 LEU B 153      51.779  45.515  58.957  1.00 82.41           C
ANISOU 3391  CD2 LEU B 153    12393   9890   9031    378   2771   1208       C
ATOM   3392  N   GLN B 154      51.115  41.562  55.913  1.00 98.08           N
ANISOU 3392  N   GLN B 154    15041  11761  10463    745   2841   1127       N
ATOM   3393  CA  GLN B 154      50.798  40.232  56.395  1.00 94.68           C
ANISOU 3393  CA  GLN B 154    14514  11410  10052    748   2708   1059       C
ATOM   3394  C   GLN B 154      51.675  39.209  55.698  1.00 94.75           C
ANISOU 3394  C   GLN B 154    14605  11366  10029    821   2905   1092       C
ANISOU 3394  C   GLN B 154    14605  11366  10029    821   2905   1092       C
ATOM   3395  O   GLN B 154      52.265  38.330  56.337  1.00 80.20           O
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ANISOU 3395  O   GLN B 154    12566   9584   8322    786   2937   1088       O
ATOM   3396  CB  GLN B 154      49.320  39.928  56.178  1.00 87.47           C
ANISOU 3396  CB  GLN B 154    13750  10510   8973    797   2447    970       C
ATOM   3397  CG  GLN B 154      48.426  40.735  57.089  1.00 84.43           C
ANISOU 3397  CG  GLN B 154    13231  10196   8652    718   2237    929       C
ATOM   3398  CD  GLN B 154      46.968  40.600  56.751  1.00 80.93           C
ANISOU 3398  CD  GLN B 154    12948   9748   8052    772   1994    850       C
ATOM   3399  OE1 GLN B 154      46.606  40.477  55.585  1.00 75.28           O
ANISOU 3399  OE1 GLN B 154    12514   8945   7145    875   1997    841       O
ATOM   3400  NE2 GLN B 154      46.112  40.644  57.773  1.00 84.28           N
ANISOU 3400  NE2 GLN B 154    13199  10262   8562    706   1781    791       N
ATOM   3401  N   LEU B 155      51.785  39.341  54.383  1.00 99.67           N
ANISOU 3401  N   LEU B 155    15527  11871  10471    927   3045   1127       N
ATOM   3402  CA  LEU B 155      52.597  38.401  53.641  1.00 97.63           C
ANISOU 3402  CA  LEU B 155    15378  11552  10166   1008   3245   1161       C
ATOM   3403  C   LEU B 155      54.041  38.507  54.105  1.00 99.09           C
ANISOU 3403  C   LEU B 155    15330  11744  10577    945   3489   1244       C
ATOM   3404  O   LEU B 155      54.675  37.494  54.384  1.00 99.60           O
ANISOU 3404  O   LEU B 155    15270  11841  10735    946   3558   1245       O
ATOM   3405  CB  LEU B 155      52.488  38.636  52.148  1.00 97.34           C
ANISOU 3405  CB  LEU B 155    15721  11376   9887   1139   3366   1191       C
ATOM   3406  CG  LEU B 155      52.748  37.347  51.378  1.00102.77           C
ANISOU 3406  CG  LEU B 155    16580  12013  10454   1246   3452   1178       C
ATOM   3407  CD1 LEU B 155      52.020  37.405  50.095  1.00111.32           C
ANISOU 3407  CD1 LEU B 155    18057  12987  11253   1377   3411   1155       C
ATOM   3408  CD2 LEU B 155      54.212  37.197  51.097  1.00109.44           C
ANISOU 3408  CD2 LEU B 155    17375  12802  11405   1261   3784   1274       C
ATOM   3409  O   GLU B 156      56.942  38.484  56.374  1.00100.99           O
ANISOU 3409  O   GLU B 156    14769  12104  11499    716   3794   1363       O
ATOM   3410  N   GLU B 156      54.552  39.731  54.214  1.00 99.30           N
ANISOU 3410  N   GLU B 156    15290  11737  10704    889   3610   1311       N
ATOM   3411  CA  GLU B 156      55.887  39.933  54.768  1.00 94.86           C
ANISOU 3411  CA  GLU B 156    14470  11181  10391    814   3814   1384       C
ATOM   3412  C   GLU B 156      56.004  39.242  56.134  1.00 96.69           C
ANISOU 3412  C   GLU B 156    14373  11545  10819    721   3667   1336       C
ATOM   3413  CB  GLU B 156      56.215  41.428  54.882  1.00 89.90           C
ANISOU 3413  CB  GLU B 156    13789  10511   9858    747   3902   1447       C
ATOM   3414  N   ARG B 157      55.027  39.471  57.006  1.00 99.30           N
ANISOU 3414  N   ARG B 157    14602  11968  11158    658   3399   1265       N
ATOM   3415  CA  ARG B 157      55.026  38.853  58.331  1.00 99.02           C
ANISOU 3415  CA  ARG B 157    14278  12054  11289    576   3246   1216       C
ATOM   3416  C   ARG B 157      55.031  37.336  58.242  1.00100.38           C
ANISOU 3416  C   ARG B 157    14466  12257  11418    634   3226   1177       C
ATOM   3417  O   ARG B 157      55.810  36.663  58.922  1.00106.55           O
ANISOU 3417  O   ARG B 157    15031  13087  12364    598   3275   1187       O
ATOM   3418  CB  ARG B 157      53.814  39.316  59.139  1.00 88.89           C
ANISOU 3418  CB  ARG B 157    12939  10852   9984    518   2966   1144       C
ATOM   3419  CG  ARG B 157      54.112  40.429  60.116  1.00 89.83           C
ANISOU 3419  CG  ARG B 157    12840  11009  10283    407   2938   1167       C
ATOM   3420  CD  ARG B 157      52.829  41.003  60.658  1.00 90.39           C
ANISOU 3420  CD  ARG B 157    12921  11135  10290    373   2688   1103       C
ATOM   3421  NE  ARG B 157      53.007  42.320  61.259  1.00 93.11           N
ANISOU 3421  NE  ARG B 157    13145  11481  10751    287   2680   1131       N
ATOM   3422  CZ  ARG B 157      52.012  43.046  61.765  1.00 95.58           C
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ANISOU 3422  CZ  ARG B 157    13456  11832  11030    250   2490   1088       C
ATOM   3423  NH1 ARG B 157      50.767  42.581  61.744  1.00 96.58           N
ANISOU 3423  NH1 ARG B 157    13680  11996  11019    291   2294   1017       N
ATOM   3424  NH2 ARG B 157      52.260  44.238  62.295  1.00 95.98           N
ANISOU 3424  NH2 ARG B 157    13401  11877  11189    174   2497   1116       N
ATOM   3425  N   LEU B 158      54.153  36.808  57.398  1.00101.52           N
ANISOU 3425  N   LEU B 158    14870  12364  11339    727   3145   1131       N
ATOM   3426  CA  LEU B 158      54.012  35.373  57.250  1.00100.30           C
ANISOU 3426  CA  LEU B 158    14759  12229  11123    786   3105   1085       C
ATOM   3427  C   LEU B 158      55.357  34.775  56.830  1.00108.92           C
ANISOU 3427  C   LEU B 158    15826  13270  12290    827   3376   1154       C
ATOM   3428  O   LEU B 158      55.821  33.816  57.433  1.00112.86           O
ANISOU 3428  O   LEU B 158    16153  13826  12905    810   3378   1141       O
ATOM   3429  CB  LEU B 158      52.905  35.044  56.243  1.00 93.63           C
ANISOU 3429  CB  LEU B 158    14228  11328  10019    886   2989   1029       C
ATOM   3430  CG  LEU B 158      52.773  33.606  55.747  1.00 90.89           C
ANISOU 3430  CG  LEU B 158    14005  10964   9565    971   2975    986       C
ATOM   3431  CD1 LEU B 158      52.320  32.734  56.903  1.00 83.68           C
ANISOU 3431  CD1 LEU B 158    12867  10166   8763    908   2777    917       C
ATOM   3432  CD2 LEU B 158      51.771  33.532  54.613  1.00 93.63           C
ANISOU 3432  CD2 LEU B 158    14692  11231   9655   1074   2876    939       C
ATOM   3433  N   LYS B 159      56.009  35.363  55.833  1.00102.50           N
ANISOU 3433  N   LYS B 159    15177  12347  11423    882   3611   1230       N
ATOM   3434  CA  LYS B 159      57.339  34.898  55.464  1.00104.61           C
ANISOU 3434  CA  LYS B 159    15402  12559  11787    917   3890   1304       C
ATOM   3435  CB  LYS B 159      57.852  35.652  54.249  1.00104.67           C
ANISOU 3435  CB  LYS B 159    15641  12429  11699    988   4145   1387       C
ATOM   3436  CG  LYS B 159      56.917  35.617  53.073  1.00110.91           C
ANISOU 3436  CG  LYS B 159    16812  13139  12189   1103   4092   1355       C
ATOM   3437  CD  LYS B 159      57.037  34.317  52.322  1.00117.59           C
ANISOU 3437  CD  LYS B 159    17839  13939  12900   1217   4165   1337       C
ATOM   3438  CE  LYS B 159      56.453  34.474  50.938  1.00119.17           C
ANISOU 3438  CE  LYS B 159    18415  14016  12847   1337   4143   1316       C
ATOM   3439  NZ  LYS B 159      56.961  35.716  50.285  1.00117.59           N
ANISOU 3439  NZ  LYS B 159    18284  13712  12682   1341   4285   1380       N
ATOM   3440  C   LYS B 159      58.330  35.046  56.618  1.00103.41           C
ANISOU 3440  C   LYS B 159    14885  12474  11930    809   3945   1340       C
ATOM   3441  O   LYS B 159      58.916  34.065  57.067  1.00105.05           O
ANISOU 3441  O   LYS B 159    14937  12725  12252    807   3977   1337       O
ATOM   3442  O   LYS B 160      60.330  35.345  60.004  1.00115.60           O
ANISOU 3442  O   LYS B 160    15488  14224  14209    524   3877   1374       O
ATOM   3443  N   LYS B 160      58.502  36.270  57.101  1.00 98.90           N
ANISOU 3443  N   LYS B 160    14184  11911  11483    722   3943   1373       N
ATOM   3444  CA  LYS B 160      59.519  36.560  58.109  1.00105.20           C
ANISOU 3444  CA  LYS B 160    14651  12754  12567    621   4004   1412       C
ATOM   3445  C   LYS B 160      59.343  35.767  59.401  1.00114.83           C
ANISOU 3445  C   LYS B 160    15622  14100  13908    559   3797   1347       C
ATOM   3446  CB  LYS B 160      59.535  38.059  58.435  1.00104.19           C
ANISOU 3446  CB  LYS B 160    14447  12610  12530    536   3994   1443       C
ATOM   3447  O   ASP B 161      56.749  33.033  62.117  1.00108.46           O
ANISOU 3447  O   ASP B 161    14561  13618  13032    503   3031   1079       O
ATOM   3448  N   ASP B 161      58.098  35.560  59.831  1.00114.67           N
ANISOU 3448  N   ASP B 161    15648  14153  13769    549   3536   1262       N
ATOM   3449  CA  ASP B 161      57.870  34.910  61.121  1.00110.13           C
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ANISOU 3449  CA  ASP B 161    14843  13694  13306    488   3339   1203       C
ATOM   3450  C   ASP B 161      56.952  33.681  61.090  1.00106.46           C
ANISOU 3450  C   ASP B 161    14481  13274  12694    544   3181   1126       C
ATOM   3451  CB  ASP B 161      57.316  35.927  62.120  1.00109.23           C
ANISOU 3451  CB  ASP B 161    14592  13643  13266    389   3153   1174       C
ATOM   3452  CG  ASP B 161      58.027  37.257  62.051  1.00115.69           C
ANISOU 3452  CG  ASP B 161    15348  14405  14203    334   3287   1243       C
ATOM   3453  OD2 ASP B 161      57.449  38.206  61.482  1.00112.56           O
ANISOU 3453  OD2 ASP B 161    15120  13960  13688    342   3280   1250       O
ATOM   3454  OD1 ASP B 161      59.156  37.358  62.582  1.00126.00           O
ANISOU 3454  OD1 ASP B 161    16433  15713  15728    282   3393   1288       O
ATOM   3455  O   GLY B 162      53.371  31.310  59.946  1.00102.02           O
ANISOU 3455  O   GLY B 162    14469  12729  11566    724   2681    896       O
ATOM   3456  N   GLY B 162      56.389  33.351  59.937  1.00 98.96           N
ANISOU 3456  N   GLY B 162    13815  12258  11529    639   3208   1111       N
ATOM   3457  CA  GLY B 162      55.606  32.131  59.845  1.00103.89           C
ANISOU 3457  CA  GLY B 162    14536  12911  12028    693   3070   1039       C
ATOM   3458  C   GLY B 162      54.133  32.246  60.180  1.00102.70           C
ANISOU 3458  C   GLY B 162    14444  12810  11770    673   2799    957       C
ATOM   3459  N   GLU B 163      53.723  33.388  60.724  1.00104.27           N
ANISOU 3459  N   GLU B 163    14564  13038  12014    601   2700    956       N
ATOM   3460  CA  GLU B 163      52.333  33.571  61.125  1.00 94.40           C
ANISOU 3460  CA  GLU B 163    13346  11836  10686    579   2448    882       C
ATOM   3461  CB  GLU B 163      52.170  33.299  62.625  1.00 95.83           C
ANISOU 3461  CB  GLU B 163    13257  12128  11026    493   2296    846       C
ATOM   3462  CG  GLU B 163      53.405  33.576  63.455  1.00 96.74           C
ANISOU 3462  CG  GLU B 163    13126  12278  11354    425   2410    901       C
ATOM   3463  CD  GLU B 163      53.143  33.457  64.937  1.00106.18           C
ANISOU 3463  CD  GLU B 163    14086  13574  12682    347   2242    863       C
ATOM   3464  OE1 GLU B 163      52.100  33.969  65.401  1.00118.13           O
ANISOU 3464  OE1 GLU B 163    15604  15123  14157    313   2067    819       O
ATOM   3465  OE2 GLU B 163      53.971  32.836  65.636  1.00106.31           O
ANISOU 3465  OE2 GLU B 163    13920  13631  12841    324   2287    877       O
ATOM   3466  C   GLU B 163      51.786  34.956  60.808  1.00 92.41           C
ANISOU 3466  C   GLU B 163    13199  11548  10366    562   2408    893       C
ATOM   3467  O   GLU B 163      52.498  35.966  60.856  1.00 94.16           O
ANISOU 3467  O   GLU B 163    13359  11745  10674    521   2533    955       O
ATOM   3468  N   VAL B 164      50.500  34.991  60.496  1.00 91.27           N
ANISOU 3468  N   VAL B 164    13207  11398  10074    594   2227    832       N
ATOM   3469  CA  VAL B 164      49.789  36.245  60.389  1.00 84.17           C
ANISOU 3469  CA  VAL B 164    12382  10479   9118    573   2141    830       C
ATOM   3470  CB  VAL B 164      48.897  36.275  59.155  1.00 76.63           C
ANISOU 3470  CB  VAL B 164    11734   9443   7938    668   2081    799       C
ATOM   3471  CG1 VAL B 164      48.190  37.606  59.066  1.00 74.62           C
ANISOU 3471  CG1 VAL B 164    11551   9170   7633    650   1993    799       C
ATOM   3472  CG2 VAL B 164      49.710  36.000  57.916  1.00 75.67           C
ANISOU 3472  CG2 VAL B 164    11818   9221   7710    758   2302    851       C
ATOM   3473  C   VAL B 164      48.929  36.477  61.629  1.00 96.54           C
ANISOU 3473  C   VAL B 164    13766  12140  10773    494   1922    776       C
ATOM   3474  O   VAL B 164      48.954  37.557  62.228  1.00102.90           O
ANISOU 3474  O   VAL B 164    14466  12969  11661    427   1900    797       O
ATOM   3475  N   ARG B 165      48.185  35.448  62.026  1.00 94.71           N
ANISOU 3475  N   ARG B 165    13498  11957  10529    503   1767    710       N
ATOM   3476  CA  ARG B 165      47.114  35.606  63.021  1.00 86.27           C
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ANISOU 3476  CA  ARG B 165    12309  10962   9510    449   1549    653       C
ATOM   3477  CB  ARG B 165      46.224  34.370  63.020  1.00 75.15           C
ANISOU 3477  CB  ARG B 165    10936   9570   8047    486   1403    581       C
ATOM   3478  CG  ARG B 165      45.704  34.028  61.638  1.00 77.77           C
ANISOU 3478  CG  ARG B 165    11545   9814   8190    583   1387    555       C
ATOM   3479  CD  ARG B 165      44.395  34.731  61.360  1.00 69.50           C
ANISOU 3479  CD  ARG B 165    10613   8743   7051    597   1206    510       C
ATOM   3480  NE  ARG B 165      43.314  33.758  61.352  1.00 72.59           N
ANISOU 3480  NE  ARG B 165    11036   9139   7404    625   1023    431       N
ATOM   3481  CZ  ARG B 165      42.182  33.888  62.028  1.00 81.16           C
ANISOU 3481  CZ  ARG B 165    12032  10267   8539    588    830    379       C
ATOM   3482  NH1 ARG B 165      41.977  34.970  62.766  1.00 91.45           N
ANISOU 3482  NH1 ARG B 165    13218  11611   9917    527    794    398       N
ATOM   3483  NH2 ARG B 165      41.248  32.943  61.951  1.00 80.94           N
ANISOU 3483  NH2 ARG B 165    12034  10232   8489    615    676    310       N
ATOM   3484  C   ARG B 165      47.602  35.872  64.433  1.00 82.20           C
ANISOU 3484  C   ARG B 165    11521  10529   9181    355   1540    669       C
ATOM   3485  O   ARG B 165      48.743  35.537  64.787  1.00 95.33           O
ANISOU 3485  O   ARG B 165    13055  12210  10956    332   1672    709       O
ATOM   3486  N   GLY B 166      46.725  36.479  65.235  1.00 69.96           N
ANISOU 3486  N   GLY B 166     9890   9026   7666    306   1380    636       N
ATOM   3487  CA  GLY B 166      47.053  36.793  66.618  1.00 73.29           C
ANISOU 3487  CA  GLY B 166    10076   9522   8248    223   1347    644       C
ATOM   3488  C   GLY B 166      46.776  38.232  67.021  1.00 76.92           C
ANISOU 3488  C   GLY B 166    10505   9984   8737    172   1300    658       C
ATOM   3489  O   GLY B 166      45.981  38.920  66.380  1.00 80.44           O
ANISOU 3489  O   GLY B 166    11101  10387   9075    199   1242    646       O
ATOM   3490  N   SER B 167      47.448  38.675  68.085  1.00 76.85           N
ANISOU 3490  N   SER B 167    10305  10021   8874    101   1320    682       N
ATOM   3491  CA  SER B 167      47.294  40.017  68.649  1.00 70.07           C
ANISOU 3491  CA  SER B 167     9392   9168   8064     44   1275    694       C
ATOM   3492  CB  SER B 167      48.141  40.167  69.925  1.00 63.40           C
ANISOU 3492  CB  SER B 167     8322   8377   7392    -29   1285    710       C
ATOM   3493  OG  SER B 167      48.266  38.941  70.626  1.00 93.97           O
ANISOU 3493  OG  SER B 167    12078  12305  11320    -26   1246    684       O
ATOM   3494  C   SER B 167      47.680  41.149  67.683  1.00 76.93           C
ANISOU 3494  C   SER B 167    10392   9957   8880     52   1392    744       C
ATOM   3495  O   SER B 167      47.147  42.247  67.804  1.00 70.46           O
ANISOU 3495  O   SER B 167     9605   9125   8041     29   1329    742       O
ATOM   3496  N   ILE B 168      48.620  40.899  66.764  1.00 76.88           N
ANISOU 3496  N   ILE B 168    10460   9894   8856     87   1571    791       N
ATOM   3497  CA  ILE B 168      49.103  41.939  65.846  1.00 81.52           C
ANISOU 3497  CA  ILE B 168    11174  10397   9403     97   1712    848       C
ATOM   3498  CB  ILE B 168      50.461  41.588  65.249  1.00 92.90           C
ANISOU 3498  CB  ILE B 168    12609  11790  10900    114   1935    909       C
ATOM   3499  CG1 ILE B 168      50.370  40.244  64.538  1.00 94.90           C
ANISOU 3499  CG1 ILE B 168    12972  12033  11052    194   1966    890       C
ATOM   3500  CD1 ILE B 168      51.583  39.909  63.746  1.00101.91           C
ANISOU 3500  CD1 ILE B 168    13900  12857  11963    230   2199    952       C
ATOM   3501  CG2 ILE B 168      51.520  41.559  66.314  1.00101.95           C
ANISOU 3501  CG2 ILE B 168    13501  12981  12255     38   1981    933       C
ATOM   3502  C   ILE B 168      48.172  42.191  64.676  1.00 82.47           C
ANISOU 3502  C   ILE B 168    11552  10454   9328    173   1678    833       C
ATOM   3503  O   ILE B 168      48.176  43.266  64.085  1.00 92.13           O
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ANISOU 3503  O   ILE B 168    12892  11614  10498    179   1736    868       O
ATOM   3504  N   ASN B 169      47.380  41.185  64.335  1.00 74.62           N
ANISOU 3504  N   ASN B 169    10651   9473   8230    233   1579    781       N
ATOM   3505  CA  ASN B 169      46.533  41.238  63.156  1.00 82.40           C
ANISOU 3505  CA  ASN B 169    11892  10391   9026    316   1535    760       C
ATOM   3506  CB  ASN B 169      46.085  39.815  62.806  1.00 77.89           C
ANISOU 3506  CB  ASN B 169    11387   9829   8380    378   1469    709       C
ATOM   3507  CG  ASN B 169      45.859  39.611  61.328  1.00 80.46           C
ANISOU 3507  CG  ASN B 169    11995  10060   8516    480   1515    709       C
ATOM   3508  OD1 ASN B 169      46.601  40.136  60.483  1.00 84.42           O
ANISOU 3508  OD1 ASN B 169    12627  10486   8962    513   1691    769       O
ATOM   3509  ND2 ASN B 169      44.827  38.830  61.000  1.00 75.49           N
ANISOU 3509  ND2 ASN B 169    11468   9427   7787    533   1357    642       N
ATOM   3510  C   ASN B 169      45.308  42.161  63.321  1.00 87.50           C
ANISOU 3510  C   ASN B 169    12590  11040   9617    308   1362    725       C
ATOM   3511  O   ASN B 169      44.253  41.915  62.735  1.00 98.36           O
ANISOU 3511  O   ASN B 169    14118  12391  10865    370   1235    677       O
ATOM   3512  N   ARG B 170      45.446  43.222  64.111  1.00 70.01           N
ANISOU 3512  N   ARG B 170    10249   8849   7501    236   1351    746       N
ATOM   3513  CA  ARG B 170      44.394  44.222  64.187  1.00 73.64           C
ANISOU 3513  CA  ARG B 170    10770   9301   7908    233   1215    723       C
ATOM   3514  CB  ARG B 170      44.227  44.698  65.624  1.00 65.37           C
ANISOU 3514  CB  ARG B 170    9504   8329   7003    147   1121    708       C
ATOM   3515  CG  ARG B 170      43.677  43.582  66.509  1.00 75.93           C
ANISOU 3515  CG  ARG B 170    10705   9748   8398    135    991    650       C
ATOM   3516  CD  ARG B 170      43.597  43.948  67.982  1.00 80.49           C
ANISOU 3516  CD  ARG B 170    11074  10398   9112     58    912    638       C
ATOM   3517  NE  ARG B 170      44.843  43.618  68.655  1.00 75.16           N
ANISOU 3517  NE  ARG B 170    10234   9756   8568      6   1018    669       N
ATOM   3518  CZ  ARG B 170      45.111  43.885  69.924  1.00 84.27           C
ANISOU 3518  CZ  ARG B 170    11206  10963   9848    -60    978    667       C
ATOM   3519  NH1 ARG B 170      44.200  44.479  70.682  1.00 90.80           N
ANISOU 3519  NH1 ARG B 170    11996  11820  10685    -83    843    636       N
ATOM   3520  NH2 ARG B 170      46.293  43.548  70.430  1.00 82.13           N
ANISOU 3520  NH2 ARG B 170    10797  10714   9695    -99   1071    695       N
ATOM   3521  C   ARG B 170      44.670  45.389  63.230  1.00 86.36           C
ANISOU 3521  C   ARG B 170    12559  10821   9434    260   1326    776       C
ATOM   3522  O   ARG B 170      45.768  45.964  63.208  1.00 84.54           O
ANISOU 3522  O   ARG B 170    12285  10560   9278    222   1496    839       O
ATOM   3523  N   PHE B 171      43.667  45.699  62.411  1.00 88.20           N
ANISOU 3523  N   PHE B 171    12996  11004   9514    329   1229    750       N
ATOM   3524  CA  PHE B 171      43.783  46.732  61.389  1.00 80.51           C
ANISOU 3524  CA  PHE B 171    12229   9933   8427    373   1321    796       C
ATOM   3525  CB  PHE B 171      44.094  46.111  60.021  1.00 88.29           C
ANISOU 3525  CB  PHE B 171    13449  10836   9261    471   1433    814       C
ATOM   3526  CG  PHE B 171      45.445  45.451  59.951  1.00 93.01           C
ANISOU 3526  CG  PHE B 171    13976  11430   9935    457   1643    864       C
ATOM   3527  CD1 PHE B 171      46.607  46.199  60.073  1.00 87.06           C
ANISOU 3527  CD1 PHE B 171    13145  10646   9286    404   1839    939       C
ATOM   3528  CE1 PHE B 171      47.846  45.601  60.016  1.00 86.67           C
ANISOU 3528  CE1 PHE B 171    13016  10589   9325    392   2031    986       C
ATOM   3529  CZ  PHE B 171      47.943  44.241  59.850  1.00 93.68           C
ANISOU 3529  CZ  PHE B 171    13906  11501  10186    435   2031    957       C
ATOM   3530  CE2 PHE B 171      46.794  43.479  59.744  1.00 93.63           C
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ANISOU 3530  CE2 PHE B 171    13981  11525  10071    485   1835    880       C
ATOM   3531  CD2 PHE B 171      45.553  44.082  59.797  1.00 93.00           C
ANISOU 3531  CD2 PHE B 171    13972  11451   9915    494   1640    833       C
ATOM   3532  C   PHE B 171      42.508  47.547  61.304  1.00 74.27           C
ANISOU 3532  C   PHE B 171    11535   9128   7555    397   1145    760       C
ATOM   3533  O   PHE B 171      41.469  47.180  61.864  1.00 72.86           O
ANISOU 3533  O   PHE B 171    11285   9006   7392    394    953    695       O
ATOM   3534  N   LYS B 172      42.578  48.666  60.601  1.00 69.05           N
ANISOU 3534  N   LYS B 172    11036   8388   6812    424   1215    803       N
ATOM   3535  CA  LYS B 172      41.401  49.498  60.501  1.00 69.81           C
ANISOU 3535  CA  LYS B 172    11225   8465   6833    451   1051    772       C
ATOM   3536  CB  LYS B 172      41.777  50.990  60.541  1.00 73.97           C
ANISOU 3536  CB  LYS B 172    11775   8947   7385    413   1143    830       C
ATOM   3537  C   LYS B 172      40.691  49.118  59.215  1.00 79.12           C
ANISOU 3537  C   LYS B 172    12676   9571   7815    569    982    744       C
ATOM   3538  O   LYS B 172      41.345  48.842  58.205  1.00 83.61           O
ANISOU 3538  O   LYS B 172    13420  10068   8282    630   1129    781       O
ATOM   3539  N   THR B 173      39.364  49.064  59.255  1.00 76.31           N
ANISOU 3539  N   THR B 173    12355   9228   7410    605    759    678       N
ATOM   3540  CA  THR B 173      38.581  48.904  58.034  1.00 76.78           C
ANISOU 3540  CA  THR B 173    12684   9207   7281    720    661    646       C
ATOM   3541  CB  THR B 173      37.099  49.181  58.288  1.00 76.54           C
ANISOU 3541  CB  THR B 173    12644   9194   7243    740    407    579       C
ATOM   3542  OG1 THR B 173      36.644  48.346  59.354  1.00 82.23           O
ANISOU 3542  OG1 THR B 173    13128  10011   8105    681    288    525       O
ATOM   3543  CG2 THR B 173      36.270  48.899  57.048  1.00 68.54           C
ANISOU 3543  CG2 THR B 173    11900   8096   6046    861    277    537       C
ATOM   3544  C   THR B 173      39.063  49.825  56.909  1.00 84.22           C
ANISOU 3544  C   THR B 173    13883  10038   8080    783    806    711       C
ATOM   3545  O   THR B 173      39.139  49.418  55.746  1.00 88.21           O
ANISOU 3545  O   THR B 173    14630  10462   8423    881    846    714       O
ATOM   3546  N   SER B 174      39.409  51.060  57.253  1.00 97.50           N
ANISOU 3546  N   SER B 174    15519  11709   9816    731    890    763       N
ATOM   3547  CA  SER B 174      39.855  52.004  56.236  1.00 98.64           C
ANISOU 3547  CA  SER B 174    15901  11742   9834    787   1037    830       C
ATOM   3548  CB  SER B 174      40.203  53.356  56.855  1.00 89.76           C
ANISOU 3548  CB  SER B 174    14675  10619   8811    708   1114    882       C
ATOM   3549  OG  SER B 174      41.395  53.269  57.603  1.00 99.51           O
ANISOU 3549  OG  SER B 174    15697  11898  10214    609   1287    927       O
ATOM   3550  C   SER B 174      41.056  51.420  55.491  1.00101.74           C
ANISOU 3550  C   SER B 174    16397  12080  10179    819   1274    885       C
ATOM   3551  O   SER B 174      41.127  51.468  54.262  1.00104.33           O
ANISOU 3551  O   SER B 174    17008  12304  10328    923   1346    910       O
ATOM   3552  N   ASP B 175      41.974  50.823  56.234  1.00 94.18           N
ANISOU 3552  N   ASP B 175    15216  11189   9380    738   1389    904       N
ATOM   3553  CA  ASP B 175      43.142  50.215  55.623  1.00 90.75           C
ANISOU 3553  CA  ASP B 175    14846  10707   8926    763   1619    957       C
ATOM   3554  CB  ASP B 175      44.135  49.825  56.705  1.00 91.55           C
ANISOU 3554  CB  ASP B 175    14644  10892   9247    651   1726    979       C
ATOM   3555  CG  ASP B 175      44.590  51.013  57.518  1.00101.71           C
ANISOU 3555  CG  ASP B 175    15762  12196  10686    550   1788   1024       C
ATOM   3556  OD1 ASP B 175      44.591  52.145  56.974  1.00105.08           O
ANISOU 3556  OD1 ASP B 175    16339  12541  11044    572   1856   1069       O
ATOM   3557  OD2 ASP B 175      44.945  50.812  58.697  1.00101.56           O
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ANISOU 3557  OD2 ASP B 175    15471  12267  10851    452   1766   1012       O
ATOM   3558  C   ASP B 175      42.785  49.004  54.755  1.00 89.63           C
ANISOU 3558  C   ASP B 175    14887  10536   8632    868   1562    912       C
ATOM   3559  O   ASP B 175      43.400  48.777  53.711  1.00 87.10           O
ANISOU 3559  O   ASP B 175    14778  10125   8190    946   1731    956       O
ATOM   3560  N   TYR B 176      41.792  48.230  55.181  1.00 86.23           N
ANISOU 3560  N   TYR B 176    14380  10174   8209    870   1330    825       N
ATOM   3561  CA  TYR B 176      41.340  47.100  54.377  1.00 85.08           C
ANISOU 3561  CA  TYR B 176    14409   9995   7922    968   1244    772       C
ATOM   3562  CB  TYR B 176      40.397  46.192  55.163  1.00 83.86           C
ANISOU 3562  CB  TYR B 176    14081   9934   7849    936   1006    681       C
ATOM   3563  CG  TYR B 176      41.098  45.165  56.027  1.00 88.31           C
ANISOU 3563  CG  TYR B 176    14399  10585   8570    862   1077    678       C
ATOM   3564  CD1 TYR B 176      42.098  44.349  55.513  1.00 89.37           C
ANISOU 3564  CD1 TYR B 176    14595  10689   8674    894   1260    712       C
ATOM   3565  CE1 TYR B 176      42.739  43.411  56.312  1.00 81.48           C
ANISOU 3565  CE1 TYR B 176    13370   9768   7821    830   1319    709       C
ATOM   3566  CZ  TYR B 176      42.381  43.290  57.640  1.00 88.77           C
ANISOU 3566  CZ  TYR B 176    14014  10800   8914    735   1195    674       C
ATOM   3567  OH  TYR B 176      43.000  42.369  58.457  1.00 92.21           O
ANISOU 3567  OH  TYR B 176    14234  11311   9490    676   1246    671       O
ATOM   3568  CE2 TYR B 176      41.397  44.090  58.165  1.00 88.48           C
ANISOU 3568  CE2 TYR B 176    13920  10793   8906    703   1022    642       C
ATOM   3569  CD2 TYR B 176      40.766  45.019  57.363  1.00 89.28           C
ANISOU 3569  CD2 TYR B 176    14235  10817   8868    765    964    644       C
ATOM   3570  C   TYR B 176      40.655  47.618  53.125  1.00 93.46           C
ANISOU 3570  C   TYR B 176    15809  10943   8760   1090   1176    765       C
ATOM   3571  O   TYR B 176      40.960  47.176  52.018  1.00 92.06           O
ANISOU 3571  O   TYR B 176    15883  10676   8420   1190   1267    779       O
ATOM   3572  N   VAL B 177      39.741  48.567  53.305  1.00 94.39           N
ANISOU 3572  N   VAL B 177    15939  11060   8864   1086   1018    744       N
ATOM   3573  CA  VAL B 177      39.096  49.227  52.175  1.00 97.08           C
ANISOU 3573  CA  VAL B 177    16596  11290   8998   1200    949    741       C
ATOM   3574  CB  VAL B 177      38.184  50.380  52.651  1.00 90.43           C
ANISOU 3574  CB  VAL B 177    15698  10467   8195   1170    788    725       C
ATOM   3575  CG1 VAL B 177      37.845  51.304  51.489  1.00 91.13           C
ANISOU 3575  CG1 VAL B 177    16116  10430   8078   1282    785    751       C
ATOM   3576  CG2 VAL B 177      36.913  49.830  53.313  1.00 81.05           C
ANISOU 3576  CG2 VAL B 177    14359   9356   7080   1152    498    627       C
ATOM   3577  C   VAL B 177      40.128  49.768  51.160  1.00100.89           C
ANISOU 3577  C   VAL B 177    17320  11659   9355   1262   1219    834       C
ATOM   3578  O   VAL B 177      39.988  49.566  49.951  1.00 97.70           O
ANISOU 3578  O   VAL B 177    17229  11150   8742   1387   1228    832       O
ATOM   3579  N   LYS B 178      41.173  50.422  51.665  1.00104.98           N
ANISOU 3579  N   LYS B 178    17690  12192  10004   1174   1440    914       N
ATOM   3580  CA  LYS B 178      42.250  50.970  50.829  1.00103.92           C
ANISOU 3580  CA  LYS B 178    17741  11950   9794   1215   1728   1012       C
ATOM   3581  CB  LYS B 178      43.276  51.689  51.714  1.00 95.61           C
ANISOU 3581  CB  LYS B 178    16435  10939   8955   1087   1920   1085       C
ATOM   3582  CG  LYS B 178      44.544  52.127  51.002  1.00 98.13           C
ANISOU 3582  CG  LYS B 178    16880  11153   9251   1108   2247   1192       C
ATOM   3583  CD  LYS B 178      45.238  53.278  51.748  1.00102.81           C
ANISOU 3583  CD  LYS B 178    17275  11757  10031    992   2382   1259       C
ATOM   3584  CE  LYS B 178      45.620  52.897  53.176  1.00105.08           C
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ANISOU 3584  CE  LYS B 178    17173  12177  10574    852   2342   1235       C
ATOM   3585  NZ  LYS B 178      46.375  53.980  53.875  1.00106.16           N
ANISOU 3585  NZ  LYS B 178    17125  12315  10897    740   2474   1297       N
ATOM   3586  C   LYS B 178      42.951  49.906  49.963  1.00109.53           C
ANISOU 3586  C   LYS B 178    18616  12601  10399   1297   1885   1030       C
ATOM   3587  O   LYS B 178      43.238  50.135  48.785  1.00108.10           O
ANISOU 3587  O   LYS B 178    18744  12296  10034   1406   2022   1077       O
ATOM   3588  N   GLU B 179      43.227  48.743  50.539  1.00105.65           N
ANISOU 3588  N   GLU B 179    17929  12194  10018   1251   1869    994       N
ATOM   3589  CA  GLU B 179      43.799  47.657  49.760  1.00102.42           C
ANISOU 3589  CA  GLU B 179    17672  11734   9511   1331   1996   1002       C
ATOM   3590  C   GLU B 179      42.740  47.065  48.843  1.00100.34           C
ANISOU 3590  C   GLU B 179    17689  11411   9023   1461   1787    924       C
ATOM   3591  O   GLU B 179      43.031  46.679  47.723  1.00109.86           O
ANISOU 3591  O   GLU B 179    19184  12513  10046   1577   1894    943       O
ATOM   3592  CB  GLU B 179      44.381  46.590  50.681  1.00102.35           C
ANISOU 3592  CB  GLU B 179    17367  11832   9691   1243   2030    985       C
ATOM   3593  CG  GLU B 179      44.510  45.211  50.063  1.00104.12           C
ANISOU 3593  CG  GLU B 179    17719  12030   9813   1326   2044    951       C
ATOM   3594  CD  GLU B 179      44.869  44.150  51.095  1.00108.74           C
ANISOU 3594  CD  GLU B 179    17995  12733  10590   1236   2025    920       C
ATOM   3595  OE1 GLU B 179      44.508  42.971  50.899  1.00 96.39           O
ANISOU 3595  OE1 GLU B 179    16478  11181   8966   1284   1920    857       O
ATOM   3596  OE2 GLU B 179      45.507  44.497  52.115  1.00114.49           O
ANISOU 3596  OE2 GLU B 179    18437  13537  11528   1119   2110    957       O
ATOM   3597  N   ALA B 180      41.502  47.022  49.321  1.00100.12           N
ANISOU 3597  N   ALA B 180    17581  11445   9014   1443   1488    837       N
ATOM   3598  CA  ALA B 180      40.410  46.442  48.558  1.00 97.63           C
ANISOU 3598  CA  ALA B 180    17496  11080   8519   1555   1252    752       C
ATOM   3599  CB  ALA B 180      39.143  46.390  49.392  1.00100.18           C
ANISOU 3599  CB  ALA B 180    17627  11493   8943   1500    940    662       C
ATOM   3600  C   ALA B 180      40.144  47.195  47.263  1.00102.13           C
ANISOU 3600  C   ALA B 180    18454  11506   8843   1690   1267    777       C
ATOM   3601  O   ALA B 180      39.916  46.575  46.222  1.00108.26           O
ANISOU 3601  O   ALA B 180    19476  12192   9465   1806   1213    736       O
ATOM   3602  N   LYS B 181      40.163  48.522  47.299  1.00 94.45           N
ANISOU 3602  N   LYS B 181    17507  10506   7874   1671   1325    832       N
ATOM   3603  CA  LYS B 181      39.844  49.235  46.071  1.00 99.11           C
ANISOU 3603  CA  LYS B 181    18385  10957   8316   1786   1304    829       C
ATOM   3604  CB  LYS B 181      39.421  50.686  46.337  1.00 99.56           C
ANISOU 3604  CB  LYS B 181    18430  11008   8392   1755   1260    859       C
ATOM   3605  CG  LYS B 181      40.233  51.435  47.360  1.00 88.02           C
ANISOU 3605  CG  LYS B 181    16748   9618   7078   1627   1459    952       C
ATOM   3606  CD  LYS B 181      39.560  52.735  47.763  1.00 83.13           C
ANISOU 3606  CD  LYS B 181    16092   9007   6485   1593   1346    959       C
ATOM   3607  CE  LYS B 181      38.072  52.551  48.034  1.00 98.29           C
ANISOU 3607  CE  LYS B 181    17976  10977   8393   1614    989    852       C
ATOM   3608  NZ  LYS B 181      37.430  53.808  48.566  1.00106.88           N
ANISOU 3608  NZ  LYS B 181    18980  12084   9545   1568    880    856       N
ATOM   3609  C   LYS B 181      41.036  49.208  45.097  1.00104.42           C
ANISOU 3609  C   LYS B 181    19200  11514   8961   1843   1597    892       C
ATOM   3610  O   LYS B 181      40.841  49.078  43.889  1.00105.36           O
ANISOU 3610  O   LYS B 181    19574  11509   8950   1965   1567    859       O
ATOM   3611  N   GLN B 182      42.260  49.334  45.617  1.00104.05           N
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ANISOU 3611  N   GLN B 182    19492  12009   9552   1757   1874    980       N
ATOM   3612  CA  GLN B 182      43.450  49.375  44.762  1.00102.80           C
ANISOU 3612  CA  GLN B 182    18933  11235   8892   1803   2166   1045       C
ATOM   3613  CB  GLN B 182      44.723  49.565  45.570  1.00 88.36           C
ANISOU 3613  CB  GLN B 182    16853   9464   7254   1685   2441   1138       C
ATOM   3614  C   GLN B 182      43.543  48.099  43.997  1.00106.90           C
ANISOU 3614  C   GLN B 182    19592  11703   9322   1896   2154    997       C
ATOM   3615  O   GLN B 182      43.869  48.074  42.810  1.00105.81           O
ANISOU 3615  O   GLN B 182    19688  11429   9088   2006   2255   1004       O
ATOM   3616  N   LEU B 183      43.242  47.032  44.711  1.00109.15           N
ANISOU 3616  N   LEU B 183    19735  12097   9640   1853   2028    948       N
ATOM   3617  CA  LEU B 183      43.200  45.715  44.133  1.00115.45           C
ANISOU 3617  CA  LEU B 183    20645  12863  10360   1932   1978    891       C
ATOM   3618  CB  LEU B 183      43.056  44.690  45.228  1.00107.90           C
ANISOU 3618  CB  LEU B 183    19461  12050   9486   1849   1886    856       C
ATOM   3619  CG  LEU B 183      42.857  43.294  44.710  1.00107.04           C
ANISOU 3619  CG  LEU B 183    19461  11913   9294   1925   1796    785       C
ATOM   3620  CD1 LEU B 183      43.902  42.582  45.522  1.00112.68           C
ANISOU 3620  CD1 LEU B 183    19943  12719  10151   1840   1999    835       C
ATOM   3621  CD2 LEU B 183      41.436  42.834  45.035  1.00102.08           C
ANISOU 3621  CD2 LEU B 183    18835  11343   8609   1933   1440    678       C
ATOM   3622  C   LEU B 183      42.055  45.593  43.148  1.00112.97           C
ANISOU 3622  C   LEU B 183    20599  12453   9871   2056   1723    802       C
ATOM   3623  O   LEU B 183      42.232  45.086  42.042  1.00115.18           O
ANISOU 3623  O   LEU B 183    21105  12614  10045   2168   1762    783       O
ATOM   3624  N   LEU B 184      40.884  46.065  43.562  1.00106.04           N
ANISOU 3624  N   LEU B 184    19691  11624   8973   2036   1458    747       N
ATOM   3625  CA  LEU B 184      39.704  46.051  42.707  1.00109.76           C
ANISOU 3625  CA  LEU B 184    20389  12009   9307   2146   1188    659       C
ATOM   3626  CB  LEU B 184      38.512  46.658  43.440  1.00106.68           C
ANISOU 3626  CB  LEU B 184    19888  11697   8948   2096    919    611       C
ATOM   3627  CG  LEU B 184      37.590  45.629  44.084  1.00105.01           C
ANISOU 3627  CG  LEU B 184    19553  11580   8766   2068    646    517       C
ATOM   3628  CD1 LEU B 184      36.806  46.234  45.236  1.00 89.58           C
ANISOU 3628  CD1 LEU B 184    17387   9744   6906   1974    474    503       C
ATOM   3629  CD2 LEU B 184      36.659  45.036  43.025  1.00110.85           C
ANISOU 3629  CD2 LEU B 184    20520  12211   9386   2191    405    418       C
ATOM   3630  C   LEU B 184      39.929  46.790  41.391  1.00128.17           C
ANISOU 3630  C   LEU B 184    23005  14171  11524   2262   1293    686       C
ATOM   3631  O   LEU B 184      39.429  46.369  40.343  1.00148.49           O
ANISOU 3631  O   LEU B 184    25821  16630  13967   2384   1168    626       O
ATOM   3632  N   LYS B 185      40.689  47.880  41.429  1.00117.51           N
ANISOU 3632  N   LYS B 185    21629  12796  10222   2227   1523    777       N
ATOM   3633  CA  LYS B 185      40.887  48.659  40.217  1.00116.39           C
ANISOU 3633  CA  LYS B 185    21758  12492   9974   2337   1628    805       C
ATOM   3634  CB  LYS B 185      41.295  50.095  40.571  1.00116.31           C
ANISOU 3634  CB  LYS B 185    21669  12486  10037   2272   1784    886       C
ATOM   3635  CG  LYS B 185      42.662  50.585  40.122  1.00115.62           C
ANISOU 3635  CG  LYS B 185    21621  12313   9995   2277   2143    987       C
ATOM   3636  CD  LYS B 185      42.646  52.109  40.096  1.00106.93           C
ANISOU 3636  CD  LYS B 185    20548  11170   8909   2259   2208   1037       C
ATOM   3637  CE  LYS B 185      43.988  52.732  40.401  1.00103.31           C
ANISOU 3637  CE  LYS B 185    19952  10707   8595   2179   2544   1146       C
ATOM   3638  NZ  LYS B 185      43.841  54.216  40.378  1.00107.85           N
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ANISOU 3638  NZ  LYS B 185    20564  11238   9178   2164   2577   1186       N
ATOM   3639  C   LYS B 185      41.901  47.971  39.282  1.00115.46           C
ANISOU 3639  C   LYS B 185    21800  12263   9807   2420   1861    837       C
ATOM   3640  O   LYS B 185      41.683  47.903  38.071  1.00114.42           O
ANISOU 3640  O   LYS B 185    21958  11984   9533   2556   1829    808       O
ATOM   3641  N   VAL B 186      42.975  47.426  39.853  1.00108.33           N
ANISOU 3641  N   VAL B 186    20708  11428   9025   2342   2083    894       N
ATOM   3642  CA  VAL B 186      43.946  46.625  39.112  1.00 94.37           C
ANISOU 3642  CA  VAL B 186    19051   9571   7234   2411   2298    924       C
ATOM   3643  C   VAL B 186      43.257  45.425  38.470  1.00102.82           C
ANISOU 3643  C   VAL B 186    20300  10594   8174   2512   2092    831       C
ATOM   3644  O   VAL B 186      43.646  44.976  37.399  1.00103.32           O
ANISOU 3644  O   VAL B 186    20595  10523   8141   2628   2189    833       O
ATOM   3645  CB  VAL B 186      45.106  46.138  40.043  1.00 98.36           C
ANISOU 3645  CB  VAL B 186    19268  10183   7920   2294   2531    990       C
ATOM   3646  CG1 VAL B 186      46.068  45.179  39.330  1.00 86.59           C
ANISOU 3646  CG1 VAL B 186    17874   8608   6417   2366   2736   1014       C
ATOM   3647  CG2 VAL B 186      45.869  47.319  40.617  1.00100.00           C
ANISOU 3647  CG2 VAL B 186    19302  10421   8274   2196   2744   1084       C
ATOM   3648  N   GLN B 187      42.223  44.907  39.116  1.00115.68           N
ANISOU 3648  N   GLN B 187    21824  12325   9803   2471   1804    749       N
ATOM   3649  CA  GLN B 187      41.596  43.694  38.613  1.00123.07           C
ANISOU 3649  CA  GLN B 187    22896  13224  10642   2552   1604    658       C
ATOM   3650  C   GLN B 187      40.451  44.000  37.649  1.00131.08           C
ANISOU 3650  C   GLN B 187    24180  14118  11505   2672   1348    583       C
ATOM   3651  O   GLN B 187      39.638  43.130  37.362  1.00136.83           O
ANISOU 3651  O   GLN B 187    24995  14827  12168   2726   1106    492       O
ATOM   3652  CB  GLN B 187      41.099  42.817  39.769  1.00114.43           C
ANISOU 3652  CB  GLN B 187    21549  12291   9636   2452   1425    602       C
ATOM   3653  N   LYS B 188      40.385  45.225  37.140  1.00132.32           N
ANISOU 3653  N   LYS B 188    24470  14192  11615   2715   1397    617       N
ATOM   3654  CA  LYS B 188      39.419  45.536  36.083  1.00134.22           C
ANISOU 3654  CA  LYS B 188    24997  14295  11706   2846   1184    552       C
ATOM   3655  C   LYS B 188      39.788  44.859  34.749  1.00133.68           C
ANISOU 3655  C   LYS B 188    25239  14054  11500   2996   1263    543       C
ATOM   3656  O   LYS B 188      38.922  44.660  33.898  1.00123.76           O
ANISOU 3656  O   LYS B 188    24215  12687  10120   3110   1041    468       O
ATOM   3657  CB  LYS B 188      39.295  47.045  35.898  1.00135.22           C
ANISOU 3657  CB  LYS B 188    25188  14374  11817   2855   1231    595       C
ATOM   3658  N   ALA B 189      41.071  44.516  34.586  1.00141.60           N
ANISOU 3658  N   ALA B 189    26239  15029  12533   2996   1576    619       N
ATOM   3659  CA  ALA B 189      41.568  43.690  33.469  1.00142.60           C
ANISOU 3659  CA  ALA B 189    26625  15007  12549   3126   1680    618       C
ATOM   3660  CB  ALA B 189      42.239  44.549  32.410  1.00149.69           C
ANISOU 3660  CB  ALA B 189    27775  15735  13363   3232   1916    688       C
ATOM   3661  C   ALA B 189      42.540  42.610  33.980  1.00130.89           C
ANISOU 3661  C   ALA B 189    24970  13601  11162   3064   1866    653       C
ATOM   3662  O   ALA B 189      43.691  42.918  34.305  1.00130.63           O
ANISOU 3662  O   ALA B 189    24804  13596  11233   3005   2168    746       O
ATOM   3663  N   TYR B 190      42.114  41.343  34.013  1.00124.11           N
ANISOU 3663  N   TYR B 190    24115  12766  10274   3081   1694    580       N
ATOM   3664  CA  TYR B 190      40.907  40.834  33.336  1.00112.31           C
ANISOU 3664  CA  TYR B 190    22833  11190   8651   3181   1366    473       C
ATOM   3665  C   TYR B 190      39.520  41.430  33.707  1.00135.60           C
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ANISOU 3665  C   TYR B 190    25728  14194  11601   3151   1032    397       C
ATOM   3666  O   TYR B 190      39.281  41.893  34.814  1.00122.22           O
ANISOU 3666  O   TYR B 190    23763  12649  10025   3024    982    404       O
ATOM   3667  CB  TYR B 190      40.854  39.313  33.530  1.00 89.62           C
ANISOU 3667  CB  TYR B 190    19907   8357   5787   3175   1273    418       C
ATOM   3668  N   HIS B 191      38.630  41.432  32.724  1.00153.53           N
ANISOU 3668  N   HIS B 191    28268  16327  13739   3277    809    328       N
ATOM   3669  CA  HIS B 191      37.265  41.939  32.846  1.00156.97           C
ANISOU 3669  CA  HIS B 191    28695  16778  14168   3277    477    248       C
ATOM   3670  C   HIS B 191      36.472  41.086  33.867  1.00143.46           C
ANISOU 3670  C   HIS B 191    26726  15217  12566   3175    220    168       C
ATOM   3671  O   HIS B 191      36.992  40.072  34.322  1.00145.20           O
ANISOU 3671  O   HIS B 191    26822  15508  12839   3123    301    172       O
ATOM   3672  CB  HIS B 191      36.633  41.942  31.440  1.00164.85           C
ANISOU 3672  CB  HIS B 191    30063  17572  14999   3451    319    193       C
ATOM   3673  N   GLN B 192      35.241  41.445  34.245  1.00114.80           N
ANISOU 3673  N   GLN B 192    23008  11633   8977   3146    -82     96       N
ATOM   3674  CA  GLN B 192      34.474  42.574  33.726  1.00128.54           C
ANISOU 3674  CA  GLN B 192    24889  13291  10661   3210   -220     77       C
ATOM   3675  C   GLN B 192      33.762  43.275  34.853  1.00143.96           C
ANISOU 3675  C   GLN B 192    26565  15390  12743   3090   -368     62       C
ATOM   3676  O   GLN B 192      32.685  42.851  35.272  1.00148.13           O
ANISOU 3676  O   GLN B 192    26974  15970  13337   3060   -666    -26       O
ATOM   3677  CB  GLN B 192      33.453  42.113  32.679  1.00134.38           C
ANISOU 3677  CB  GLN B 192    25883  13880  11296   3345   -511    -21       C
ATOM   3678  N   LEU B 193      34.356  44.361  35.332  1.00144.57           N
ANISOU 3678  N   LEU B 193    26541  15525  12862   3024   -159    149       N
ATOM   3679  CA  LEU B 193      33.857  45.035  36.520  1.00137.90           C
ANISOU 3679  CA  LEU B 193    25417  14831  12148   2900   -254    151       C
ATOM   3680  CB  LEU B 193      35.021  45.362  37.453  1.00130.63           C
ANISOU 3680  CB  LEU B 193    24281  14032  11321   2778     53    254       C
ATOM   3681  CG  LEU B 193      36.048  44.260  37.683  1.00123.48           C
ANISOU 3681  CG  LEU B 193    23302  13170  10444   2743    255    287       C
ATOM   3682  CD1 LEU B 193      37.138  44.765  38.608  1.00118.76           C
ANISOU 3682  CD1 LEU B 193    22483  12684   9955   2623    546    391       C
ATOM   3683  CD2 LEU B 193      35.369  43.041  38.267  1.00119.30           C
ANISOU 3683  CD2 LEU B 193    22628  12728   9975   2700     21    199       C
ATOM   3684  C   LEU B 193      33.093  46.314  36.207  1.00136.27           C
ANISOU 3684  C   LEU B 193    25300  14566  11910   2943   -379    141       C
ATOM   3685  O   LEU B 193      33.688  47.318  35.822  1.00135.87           O
ANISOU 3685  O   LEU B 193    25363  14455  11808   2971   -175    215       O
ATOM   3686  N   ASP B 194      31.776  46.281  36.373  1.00133.25           N
ANISOU 3686  N   ASP B 194    24863  14198  11568   2948   -713     50       N
ATOM   3687  CA  ASP B 194      31.001  47.516  36.391  1.00137.57           C
ANISOU 3687  CA  ASP B 194    25416  14729  12125   2959   -842     42       C
ATOM   3688  CB  ASP B 194      29.534  47.253  36.059  1.00136.57           C
ANISOU 3688  CB  ASP B 194    25334  14548  12009   3021  -1223    -75       C
ATOM   3689  CG  ASP B 194      28.939  46.160  36.907  1.00139.74           C
ANISOU 3689  CG  ASP B 194    25491  15062  12540   2938  -1426   -145       C
ATOM   3690  OD1 ASP B 194      29.713  45.312  37.405  1.00140.81           O
ANISOU 3690  OD1 ASP B 194    25514  15278  12708   2872  -1276   -117       O
ATOM   3691  OD2 ASP B 194      27.700  46.143  37.066  1.00142.73           O
ANISOU 3691  OD2 ASP B 194    25791  15445  12995   2941  -1730   -229       O
ATOM   3692  C   ASP B 194      31.156  48.126  37.778  1.00138.22           C
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ANISOU 3692  C   ASP B 194    25185  14984  12347   2808   -770     94       C
ATOM   3693  O   ASP B 194      31.534  47.426  38.713  1.00146.22           O
ANISOU 3693  O   ASP B 194    25974  16126  13456   2704   -714    106       O
ATOM   3694  N   GLN B 195      30.880  49.418  37.926  1.00134.71           N
ANISOU 3694  N   GLN B 195    24729  14540  11915   2797   -771    125       N
ATOM   3695  CA  GLN B 195      31.105  50.055  39.216  1.00127.14           C
ANISOU 3695  CA  GLN B 195    23491  13733  11082   2659   -684    183       C
ATOM   3696  CB  GLN B 195      31.307  51.570  39.062  1.00117.31           C
ANISOU 3696  CB  GLN B 195    22320  12447   9806   2668   -556    251       C
ATOM   3697  CG  GLN B 195      31.943  52.175  40.310  1.00120.25           C
ANISOU 3697  CG  GLN B 195    22433  12959  10295   2526   -377    336       C
ATOM   3698  CD  GLN B 195      33.031  53.167  40.020  1.00128.56           C
ANISOU 3698  CD  GLN B 195    23579  13959  11308   2524    -62    441       C
ATOM   3699  OE1 GLN B 195      33.335  53.444  38.865  1.00140.53           O
ANISOU 3699  OE1 GLN B 195    25361  15329  12703   2634     37    454       O
ATOM   3700  NE2 GLN B 195      33.669  53.672  41.074  1.00126.42           N
ANISOU 3700  NE2 GLN B 195    23089  13800  11146   2399    107    519       N
ATOM   3701  C   GLN B 195      29.981  49.748  40.202  1.00132.70           C
ANISOU 3701  C   GLN B 195    23946  14555  11920   2584   -973    110       C
ATOM   3702  O   GLN B 195      30.106  50.016  41.393  1.00136.36           O
ANISOU 3702  O   GLN B 195    24156  15155  12498   2465   -931    146       O
ATOM   3703  N   SER B 196      28.895  49.160  39.717  1.00131.20           N
ANISOU 3703  N   SER B 196    23823  14303  11723   2655  -1266      6       N
ATOM   3704  CA  SER B 196      27.862  48.662  40.616  1.00125.55           C
ANISOU 3704  CA  SER B 196    22860  13690  11154   2586  -1535    -69       C
ATOM   3705  CB  SER B 196      26.618  48.242  39.845  1.00129.54           C
ANISOU 3705  CB  SER B 196    23480  14089  11650   2683  -1856   -182       C
ATOM   3706  OG  SER B 196      25.709  47.592  40.713  1.00131.14           O
ANISOU 3706  OG  SER B 196    23429  14386  12013   2611  -2096   -254       O
ATOM   3707  C   SER B 196      28.401  47.484  41.420  1.00125.45           C
ANISOU 3707  C   SER B 196    22660  13792  11215   2495  -1464    -67       C
ATOM   3708  O   SER B 196      28.052  47.292  42.585  1.00119.51           O
ANISOU 3708  O   SER B 196    21637  13171  10600   2391  -1550    -81       O
ATOM   3709  N   PHE B 197      29.250  46.691  40.778  1.00130.17           N
ANISOU 3709  N   PHE B 197    23408  14331  11717   2540  -1304    -50       N
ATOM   3710  CA  PHE B 197      29.935  45.591  41.441  1.00125.80           C
ANISOU 3710  CA  PHE B 197    22707  13876  11216   2464  -1193    -39       C
ATOM   3711  CB  PHE B 197      30.706  44.735  40.420  1.00122.77           C
ANISOU 3711  CB  PHE B 197    22553  13386  10709   2550  -1052    -33       C
ATOM   3712  CG  PHE B 197      31.591  43.665  41.033  1.00113.55           C
ANISOU 3712  CG  PHE B 197    21251  12311   9583   2478   -888     -8       C
ATOM   3713  CD2 PHE B 197      32.928  43.927  41.315  1.00111.14           C
ANISOU 3713  CD2 PHE B 197    20909  12049   9270   2429   -548     98       C
ATOM   3714  CE2 PHE B 197      33.746  42.958  41.872  1.00104.09           C
ANISOU 3714  CE2 PHE B 197    19890  11236   8422   2366   -395    122       C
ATOM   3715  CZ  PHE B 197      33.240  41.702  42.140  1.00100.34           C
ANISOU 3715  CZ  PHE B 197    19338  10800   7988   2354   -578     39       C
ATOM   3716  CE1 PHE B 197      31.917  41.419  41.860  1.00107.06           C
ANISOU 3716  CE1 PHE B 197    20223  11605   8850   2399   -915    -67       C
ATOM   3717  CD1 PHE B 197      31.097  42.399  41.304  1.00110.23           C
ANISOU 3717  CD1 PHE B 197    20740  11925   9217   2461  -1069    -90       C
ATOM   3718  C   PHE B 197      30.881  46.149  42.494  1.00127.78           C
ANISOU 3718  C   PHE B 197    22765  14253  11531   2347   -937     62       C
ATOM   3719  O   PHE B 197      30.783  45.808  43.677  1.00131.84           O
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ANISOU 3719  O   PHE B 197    23022  14906  12167   2240   -977     58       O
ATOM   3720  N   ILE B 198      31.790  47.019  42.066  1.00120.38           N
ANISOU 3720  N   ILE B 198    21954  13264  10521   2369   -676    153       N
ATOM   3721  CA  ILE B 198      32.894  47.413  42.927  1.00121.02           C
ANISOU 3721  CA  ILE B 198    21874  13445  10664   2264   -395    255       C
ATOM   3722  CB  ILE B 198      33.932  48.252  42.165  1.00117.77           C
ANISOU 3722  CB  ILE B 198    21643  12936  10167   2310   -101    348       C
ATOM   3723  CG1 ILE B 198      35.237  48.292  42.947  1.00122.82           C
ANISOU 3723  CG1 ILE B 198    22115  13665  10886   2205    209    448       C
ATOM   3724  CD1 ILE B 198      36.226  49.304  42.451  1.00127.88           C
ANISOU 3724  CD1 ILE B 198    22867  14229  11493   2222    498    546       C
ATOM   3725  CG2 ILE B 198      33.438  49.643  41.945  1.00114.87           C
ANISOU 3725  CG2 ILE B 198    21348  12518   9777   2336   -152    365       C
ATOM   3726  C   ILE B 198      32.404  48.183  44.157  1.00124.32           C
ANISOU 3726  C   ILE B 198    22046  13987  11204   2158   -481    270       C
ATOM   3727  O   ILE B 198      33.021  48.132  45.227  1.00130.81           O
ANISOU 3727  O   ILE B 198    22658  14928  12118   2049   -342    325       O
ATOM   3728  N   ASP B 199      31.274  48.868  44.014  1.00114.42           N
ANISOU 3728  N   ASP B 199    20820  12700   9956   2195   -715    219       N
ATOM   3729  CA  ASP B 199      30.733  49.653  45.110  1.00105.60           C
ANISOU 3729  CA  ASP B 199    19487  11684   8951   2108   -808    231       C
ATOM   3730  CB  ASP B 199      29.904  50.825  44.582  1.00110.19           C
ANISOU 3730  CB  ASP B 199    20186  12184   9498   2174   -943    215       C
ATOM   3731  CG  ASP B 199      30.764  51.908  43.973  1.00120.00           C
ANISOU 3731  CG  ASP B 199    21599  13345  10650   2206   -688    304       C
ATOM   3732  OD1 ASP B 199      31.993  51.860  44.184  1.00136.05           O
ANISOU 3732  OD1 ASP B 199    23605  15406  12682   2155   -404    387       O
ATOM   3733  OD2 ASP B 199      30.223  52.820  43.319  1.00118.52           O
ANISOU 3733  OD2 ASP B 199    21561  13065  10404   2280   -768    293       O
ATOM   3734  C   ASP B 199      29.897  48.793  46.046  1.00102.50           C
ANISOU 3734  C   ASP B 199    18866  11397   8680   2047  -1044    155       C
ATOM   3735  O   ASP B 199      29.852  49.043  47.251  1.00 96.79           O
ANISOU 3735  O   ASP B 199    17913  10794   8068   1947  -1045    182       O
ATOM   3736  N   THR B 200      29.230  47.783  45.494  1.00107.49           N
ANISOU 3736  N   THR B 200    19563  11979   9298   2108  -1246     62       N
ATOM   3737  CA  THR B 200      28.438  46.884  46.321  1.00112.15           C
ANISOU 3737  CA  THR B 200    19938  12658  10017   2053  -1469    -15       C
ATOM   3738  CB  THR B 200      27.538  45.967  45.469  1.00115.64           C
ANISOU 3738  CB  THR B 200    20490  13005  10443   2139  -1720   -126       C
ATOM   3739  OG1 THR B 200      26.597  46.766  44.742  1.00123.99           O
ANISOU 3739  OG1 THR B 200    21673  13961  11477   2221  -1900   -165       O
ATOM   3740  CG2 THR B 200      26.774  44.981  46.348  1.00110.90           C
ANISOU 3740  CG2 THR B 200    19651  12492   9996   2073  -1935   -204       C
ATOM   3741  C   THR B 200      29.361  46.050  47.215  1.00114.62           C
ANISOU 3741  C   THR B 200    20074  13084  10392   1956  -1291     23       C
ATOM   3742  O   THR B 200      29.011  45.744  48.356  1.00109.55           O
ANISOU 3742  O   THR B 200    19096  12550   9977   1843  -1353     -4       O
ATOM   3743  N   TYR B 201      30.547  45.710  46.715  1.00109.60           N
ANISOU 3743  N   TYR B 201    19583  12415   9644   1980  -1038     81       N
ATOM   3744  CA  TYR B 201      31.508  44.974  47.528  1.00102.75           C
ANISOU 3744  CA  TYR B 201    18480  11646   8915   1872   -831    117       C
ATOM   3745  CB  TYR B 201      32.684  44.467  46.702  1.00 99.97           C
ANISOU 3745  CB  TYR B 201    18356  11228   8401   1936   -587    169       C
ATOM   3746  CG  TYR B 201      33.740  43.762  47.540  1.00 93.28           C
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ANISOU 3746  CG  TYR B 201    17255  10479   7709   1826   -363    211       C
ATOM   3747  CD1 TYR B 201      33.527  42.466  48.020  1.00101.81           C
ANISOU 3747  CD1 TYR B 201    18164  11617   8901   1782   -461    145       C
ATOM   3748  CE1 TYR B 201      34.481  41.810  48.787  1.00 90.46           C
ANISOU 3748  CE1 TYR B 201    16500  10267   7603   1688   -265    183       C
ATOM   3749  CZ  TYR B 201      35.669  42.453  49.078  1.00 95.85           C
ANISOU 3749  CZ  TYR B 201    17117  10978   8323   1635     25    286       C
ATOM   3750  OH  TYR B 201      36.623  41.826  49.846  1.00 99.48           O
ANISOU 3750  OH  TYR B 201    17348  11522   8928   1545    209    323       O
ATOM   3751  CE2 TYR B 201      35.906  43.739  48.613  1.00 97.82           C
ANISOU 3751  CE2 TYR B 201    17525  11168   8474   1671    130    353       C
ATOM   3752  CD2 TYR B 201      34.944  44.385  47.851  1.00 91.67           C
ANISOU 3752  CD2 TYR B 201    16980  10303   7546   1767    -60    317       C
ATOM   3753  C   TYR B 201      32.045  45.825  48.661  1.00101.48           C
ANISOU 3753  C   TYR B 201    18038  11589   8931   1743   -659    192       C
ATOM   3754  O   TYR B 201      32.006  45.418  49.824  1.00101.35           O
ANISOU 3754  O   TYR B 201    17695  11685   9126   1626   -669    177       O
ATOM   3755  N   ILE B 202      32.568  46.994  48.316  1.00 95.04           N
ANISOU 3755  N   ILE B 202    17359  10727   8024   1765   -497    272       N
ATOM   3756  CA  ILE B 202      33.147  47.874  49.315  1.00 93.06           C
ANISOU 3756  CA  ILE B 202    16868  10560   7931   1647   -327    345       C
ATOM   3757  CB  ILE B 202      33.662  49.179  48.676  1.00 87.48           C
ANISOU 3757  CB  ILE B 202    16379   9770   7090   1696   -160    431       C
ATOM   3758  CG1 ILE B 202      34.836  48.869  47.741  1.00 91.64           C
ANISOU 3758  CG1 ILE B 202    17146  10214   7460   1763     99    496       C
ATOM   3759  CD1 ILE B 202      36.051  48.324  48.454  1.00 91.00           C
ANISOU 3759  CD1 ILE B 202    16837  10212   7528   1658    345    548       C
ATOM   3760  CG2 ILE B 202      34.105  50.165  49.725  1.00 84.03           C
ANISOU 3760  CG2 ILE B 202    15693   9411   6822   1574    -27    495       C
ATOM   3761  C   ILE B 202      32.115  48.160  50.410  1.00 94.76           C
ANISOU 3761  C   ILE B 202    16802  10866   8337   1565   -536    295       C
ATOM   3762  O   ILE B 202      32.444  48.187  51.594  1.00 88.71           O
ANISOU 3762  O   ILE B 202    15734  10207   7765   1442   -457    316       O
ATOM   3763  N   ASP B 203      30.858  48.320  50.019  1.00102.54           N
ANISOU 3763  N   ASP B 203    17886  11805   9271   1636   -806    225       N
ATOM   3764  CA  ASP B 203      29.799  48.533  50.993  1.00 99.27           C
ANISOU 3764  CA  ASP B 203    17213  11465   9039   1570  -1008    174       C
ATOM   3765  CB  ASP B 203      28.454  48.712  50.294  1.00107.32           C
ANISOU 3765  CB  ASP B 203    18397  12406   9976   1674  -1305     98       C
ATOM   3766  CG  ASP B 203      27.298  48.738  51.266  1.00118.47           C
ANISOU 3766  CG  ASP B 203    19532  13888  11594   1612  -1521     38       C
ATOM   3767  OD2 ASP B 203      26.894  49.851  51.678  1.00122.43           O
ANISOU 3767  OD2 ASP B 203    19965  14404  12148   1591  -1550     62       O
ATOM   3768  OD1 ASP B 203      26.799  47.643  51.620  1.00119.99           O
ANISOU 3768  OD1 ASP B 203    19576  14117  11898   1585  -1653    -31       O
ATOM   3769  C   ASP B 203      29.737  47.365  51.971  1.00 91.75           C
ANISOU 3769  C   ASP B 203    15968  10615   8278   1476  -1043    129       C
ATOM   3770  O   ASP B 203      29.792  47.547  53.181  1.00 88.16           O
ANISOU 3770  O   ASP B 203    15223  10261   8012   1365   -999    146       O
ATOM   3771  N   LEU B 204      29.631  46.163  51.425  1.00 90.75           N
ANISOU 3771  N   LEU B 204    15932  10454   8094   1527  -1121     73       N
ATOM   3772  CA  LEU B 204      29.578  44.936  52.208  1.00 86.03           C
ANISOU 3772  CA  LEU B 204    15094   9936   7658   1452  -1155     29       C
ATOM   3773  CB  LEU B 204      29.458  43.744  51.259  1.00 88.98           C
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ANISOU 3773  CB  LEU B 204    15664  10235   7910   1540  -1248    -32       C
ATOM   3774  CG  LEU B 204      28.276  42.784  51.383  1.00 85.92           C
ANISOU 3774  CG  LEU B 204    15184   9843   7617   1547  -1526   -138       C
ATOM   3775  CD1 LEU B 204      26.977  43.525  51.659  1.00 85.58           C
ANISOU 3775  CD1 LEU B 204    15057   9796   7662   1551  -1762   -181       C
ATOM   3776  CD2 LEU B 204      28.161  41.989  50.093  1.00 85.18           C
ANISOU 3776  CD2 LEU B 204    15395   9636   7335   1669  -1628   -193       C
ATOM   3777  C   LEU B 204      30.804  44.767  53.113  1.00 89.41           C
ANISOU 3777  C   LEU B 204    15315  10460   8199   1343   -891     99       C
ATOM   3778  O   LEU B 204      30.701  44.330  54.263  1.00 91.07           O
ANISOU 3778  O   LEU B 204    15234  10768   8601   1244   -902     85       O
ATOM   3779  N   LEU B 205      31.961  45.130  52.580  1.00 79.50           N
ANISOU 3779  N   LEU B 205    14214   9167   6825   1365   -654    175       N
ATOM   3780  CA  LEU B 205      33.216  45.017  53.301  1.00 68.87           C
ANISOU 3780  CA  LEU B 205    12696   7896   5578   1273   -398    245       C
ATOM   3781  CB  LEU B 205      34.380  45.347  52.367  1.00 80.23           C
ANISOU 3781  CB  LEU B 205    14372   9256   6855   1330   -154    323       C
ATOM   3782  CG  LEU B 205      35.785  45.336  52.962  1.00 80.55           C
ANISOU 3782  CG  LEU B 205    14257   9354   6995   1244    128    403       C
ATOM   3783  CD1 LEU B 205      36.326  43.923  53.037  1.00 77.71           C
ANISOU 3783  CD1 LEU B 205    13833   9023   6669   1235    190    383       C
ATOM   3784  CD2 LEU B 205      36.712  46.223  52.165  1.00 87.38           C
ANISOU 3784  CD2 LEU B 205    15333  10135   7732   1290    355    492       C
ATOM   3785  C   LEU B 205      33.277  45.918  54.517  1.00 78.88           C
ANISOU 3785  C   LEU B 205    13702   9251   7016   1163   -351    283       C
ATOM   3786  O   LEU B 205      33.861  45.540  55.533  1.00 93.20           O
ANISOU 3786  O   LEU B 205    15270  11157   8985   1065   -248    303       O
ATOM   3787  N   GLU B 206      32.681  47.105  54.427  1.00 83.13           N
ANISOU 3787  N   GLU B 206    14301   9760   7524   1182   -429    293       N
ATOM   3788  CA  GLU B 206      32.813  48.096  55.503  1.00 86.75           C
ANISOU 3788  CA  GLU B 206    14546  10289   8125   1085   -368    335       C
ATOM   3789  CB  GLU B 206      33.320  49.422  54.934  1.00 84.14           C
ANISOU 3789  CB  GLU B 206    14393   9890   7684   1115   -232    408       C
ATOM   3790  CG  GLU B 206      32.280  50.182  54.133  1.00 91.25           C
ANISOU 3790  CG  GLU B 206    15510  10706   8454   1213   -409    380       C
ATOM   3791  CD  GLU B 206      32.840  51.449  53.514  1.00102.62           C
ANISOU 3791  CD  GLU B 206    17146  12070   9775   1248   -257    458       C
ATOM   3792  OE1 GLU B 206      32.108  52.129  52.749  1.00101.46           O
ANISOU 3792  OE1 GLU B 206    17212  11841   9497   1339   -379    444       O
ATOM   3793  OE2 GLU B 206      34.014  51.767  53.804  1.00106.56           O
ANISOU 3793  OE2 GLU B 206    17583  12587  10320   1184    -16    532       O
ATOM   3794  C   GLU B 206      31.538  48.373  56.312  1.00 81.85           C
ANISOU 3794  C   GLU B 206    13751   9718   7631   1053   -589    279       C
ATOM   3795  O   GLU B 206      31.588  49.085  57.298  1.00 78.67           O
ANISOU 3795  O   GLU B 206    13161   9378   7353    973   -550    307       O
ATOM   3796  N   THR B 207      30.401  47.818  55.925  1.00 85.03           N
ANISOU 3796  N   THR B 207    14207  10088   8010   1115   -820    201       N
ATOM   3797  CA  THR B 207      29.173  48.208  56.598  1.00 84.73           C
ANISOU 3797  CA  THR B 207    14018  10082   8094   1094  -1019    155       C
ATOM   3798  CB  THR B 207      27.970  48.092  55.665  1.00 75.73           C
ANISOU 3798  CB  THR B 207    13056   8856   6863   1201  -1269     84       C
ATOM   3799  OG1 THR B 207      28.031  49.158  54.715  1.00 89.07           O
ANISOU 3799  OG1 THR B 207    15006  10456   8378   1283  -1252    118       O
ATOM   3800  CG2 THR B 207      26.663  48.210  56.446  1.00 68.58           C
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ANISOU 3800  CG2 THR B 207    11948   7987   6123   1174  -1479     28       C
ATOM   3801  C   THR B 207      28.892  47.418  57.866  1.00 90.76           C
ANISOU 3801  C   THR B 207    14474  10946   9065   1001  -1059    122       C
ATOM   3802  O   THR B 207      28.948  46.192  57.886  1.00 99.80           O
ANISOU 3802  O   THR B 207    15568  12108  10243    996  -1082     85       O
ATOM   3803  N   ARG B 208      28.587  48.170  58.918  1.00 89.70           N
ANISOU 3803  N   ARG B 208    14146  10872   9064    934  -1063    139       N
ATOM   3804  CA  ARG B 208      28.154  47.662  60.210  1.00 83.32           C
ANISOU 3804  CA  ARG B 208    13052  10152   8454    853  -1110    112       C
ATOM   3805  CB  ARG B 208      29.210  47.942  61.280  1.00 83.29           C
ANISOU 3805  CB  ARG B 208    12875  10230   8539    753   -907    174       C
ATOM   3806  CG  ARG B 208      30.514  48.308  60.651  1.00 83.55           C
ANISOU 3806  CG  ARG B 208    13061  10234   8452    759   -707    239       C
ATOM   3807  CD  ARG B 208      31.630  48.380  61.590  1.00 75.78           C
ANISOU 3807  CD  ARG B 208    11911   9322   7561    666   -519    293       C
ATOM   3808  NE  ARG B 208      32.853  48.186  60.836  1.00 85.38           N
ANISOU 3808  NE  ARG B 208    13265  10502   8675    683   -339    340       N
ATOM   3809  CZ  ARG B 208      33.887  47.501  61.294  1.00101.09           C
ANISOU 3809  CZ  ARG B 208    15141  12541  10729    627   -192    367       C
ATOM   3810  NH1 ARG B 208      34.964  47.355  60.544  1.00119.95           N
ANISOU 3810  NH1 ARG B 208    17660  14888  13028    650    -23    412       N
ATOM   3811  NH2 ARG B 208      33.839  46.967  62.506  1.00 97.29           N
ANISOU 3811  NH2 ARG B 208    14419  12147  10401    554   -211    349       N
ATOM   3812  C   ARG B 208      26.881  48.393  60.563  1.00 73.67           C
ANISOU 3812  C   ARG B 208    11760   8922   7309    866  -1284     81       C
ATOM   3813  O   ARG B 208      26.742  49.571  60.239  1.00 80.46           O
ANISOU 3813  O   ARG B 208    12730   9743   8099    898  -1290    108       O
ATOM   3814  N   ARG B 209      25.954  47.732  61.237  1.00 70.38           N
ANISOU 3814  N   ARG B 209    11160   8539   7042    843  -1419     27       N
ATOM   3815  CA  ARG B 209      24.863  48.473  61.857  1.00 74.68           C
ANISOU 3815  CA  ARG B 209    11585   9091   7698    838  -1542     10       C
ATOM   3816  CB  ARG B 209      23.912  47.520  62.572  1.00 67.27           C
ANISOU 3816  CB  ARG B 209    10439   8184   6939    812  -1669    -48       C
ATOM   3817  CG  ARG B 209      23.464  46.371  61.692  1.00 64.07           C
ANISOU 3817  CG  ARG B 209    10122   7722   6500    868  -1810   -113       C
ATOM   3818  CD  ARG B 209      22.486  45.508  62.430  1.00 68.17           C
ANISOU 3818  CD  ARG B 209    10422   8263   7215    837  -1930   -167       C
ATOM   3819  NE  ARG B 209      21.808  44.571  61.543  1.00 84.81           N
ANISOU 3819  NE  ARG B 209    12616  10299   9310    898  -2112   -240       N
ATOM   3820  CZ  ARG B 209      20.579  44.761  61.080  1.00 76.51           C
ANISOU 3820  CZ  ARG B 209    11589   9179   8303    958  -2333   -295       C
ATOM   3821  NH1 ARG B 209      19.927  45.862  61.409  1.00 72.63           N
ANISOU 3821  NH1 ARG B 209    11046   8685   7865    967  -2384   -281       N
ATOM   3822  NH2 ARG B 209      20.013  43.865  60.289  1.00 74.15           N
ANISOU 3822  NH2 ARG B 209    11366   8810   7998   1010  -2505   -366       N
ATOM   3823  C   ARG B 209      25.449  49.497  62.833  1.00 74.07           C
ANISOU 3823  C   ARG B 209    11400   9073   7671    767  -1389     74       C
ATOM   3824  O   ARG B 209      26.551  49.315  63.336  1.00 59.31           O
ANISOU 3824  O   ARG B 209     9467   7257   5810    703  -1213    117       O
ATOM   3825  N   THR B 210      24.731  50.583  63.082  1.00 81.55           N
ANISOU 3825  N   THR B 210    12330  10006   8649    781  -1460     79       N
ATOM   3826  CA  THR B 210      25.156  51.540  64.102  1.00 83.00           C
ANISOU 3826  CA  THR B 210    12400  10242   8894    714  -1336    131       C
ATOM   3827  CB  THR B 210      24.788  52.994  63.717  1.00 83.62           C
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ANISOU 3827  CB  THR B 210    12604  10267   8901    758  -1373    154       C
ATOM   3828  OG1 THR B 210      23.367  53.170  63.786  1.00 78.75           O
ANISOU 3828  OG1 THR B 210    11935   9624   8364    805  -1567    106       O
ATOM   3829  CG2 THR B 210      25.286  53.322  62.311  1.00 73.22           C
ANISOU 3829  CG2 THR B 210    11564   8870   7387    829  -1349    173       C
ATOM   3830  C   THR B 210      24.515  51.181  65.436  1.00 71.02           C
ANISOU 3830  C   THR B 210    10627   8790   7567    658  -1372    109       C
ATOM   3831  O   THR B 210      23.723  50.253  65.503  1.00 70.35           O
ANISOU 3831  O   THR B 210    10457   8705   7569    672  -1489     58       O
ATOM   3832  N   TYR B 211      24.861  51.899  66.498  1.00 73.91           N
ANISOU 3832  N   TYR B 211    10876   9207   8000    596  -1268    149       N
ATOM   3833  CA  TYR B 211      24.243  51.629  67.793  1.00 63.99           C
ANISOU 3833  CA  TYR B 211     9395   8005   6913    552  -1291    133       C
ATOM   3834  CB  TYR B 211      24.995  52.348  68.928  1.00 57.33           C
ANISOU 3834  CB  TYR B 211     8455   7217   6110    480  -1145    183       C
ATOM   3835  CG  TYR B 211      24.989  53.870  68.833  1.00 66.54           C
ANISOU 3835  CG  TYR B 211     9713   8351   7219    493  -1128    217       C
ATOM   3836  CD1 TYR B 211      23.945  54.621  69.370  1.00 73.92           C
ANISOU 3836  CD1 TYR B 211    10582   9274   8228    513  -1212    206       C
ATOM   3837  CE1 TYR B 211      23.934  56.018  69.290  1.00 72.35           C
ANISOU 3837  CE1 TYR B 211    10471   9041   7976    527  -1197    237       C
ATOM   3838  CZ  TYR B 211      24.971  56.659  68.673  1.00 71.94           C
ANISOU 3838  CZ  TYR B 211    10569   8966   7801    517  -1096    279       C
ATOM   3839  OH  TYR B 211      24.959  58.031  68.595  1.00 77.95           O
ANISOU 3839  OH  TYR B 211    11417   9687   8512    529  -1079    310       O
ATOM   3840  CE2 TYR B 211      26.032  55.933  68.144  1.00 69.90           C
ANISOU 3840  CE2 TYR B 211    10370   8716   7474    496  -1002    293       C
ATOM   3841  CD2 TYR B 211      26.037  54.553  68.230  1.00 63.28           C
ANISOU 3841  CD2 TYR B 211     9447   7914   6684    486  -1020    262       C
ATOM   3842  C   TYR B 211      22.767  52.040  67.776  1.00 79.26           C
ANISOU 3842  C   TYR B 211    11295   9899   8920    605  -1461     96       C
ATOM   3843  O   TYR B 211      21.959  51.444  68.489  1.00 74.26           O
ANISOU 3843  O   TYR B 211    10496   9287   8433    594  -1523     65       O
ATOM   3844  N   TYR B 212      22.421  53.046  66.962  1.00 76.64           N
ANISOU 3844  N   TYR B 212    11120   9505   8495    666  -1530    101       N
ATOM   3845  CA  TYR B 212      21.042  53.541  66.894  1.00 69.65           C
ANISOU 3845  CA  TYR B 212    10209   8575   7680    723  -1696     68       C
ATOM   3846  CB  TYR B 212      21.000  55.048  66.595  1.00 67.69           C
ANISOU 3846  CB  TYR B 212    10088   8286   7345    757  -1693    102       C
ATOM   3847  CG  TYR B 212      21.810  55.497  65.405  1.00 70.77           C
ANISOU 3847  CG  TYR B 212    10724   8626   7541    793  -1648    129       C
ATOM   3848  CD1 TYR B 212      23.143  55.844  65.547  1.00 65.65           C
ANISOU 3848  CD1 TYR B 212    10125   8004   6815    738  -1459    184       C
ATOM   3849  CE1 TYR B 212      23.902  56.255  64.458  1.00 67.48           C
ANISOU 3849  CE1 TYR B 212    10580   8182   6876    773  -1397    216       C
ATOM   3850  CZ  TYR B 212      23.331  56.332  63.210  1.00 72.67           C
ANISOU 3850  CZ  TYR B 212    11432   8757   7420    869  -1528    190       C
ATOM   3851  OH  TYR B 212      24.100  56.755  62.146  1.00 79.03           O
ANISOU 3851  OH  TYR B 212    12475   9504   8050    909  -1450    226       O
ATOM   3852  CE2 TYR B 212      21.998  55.994  63.032  1.00 76.19           C
ANISOU 3852  CE2 TYR B 212    11838   9176   7935    929  -1737    128       C
ATOM   3853  CD2 TYR B 212      21.244  55.575  64.132  1.00 74.56           C
ANISOU 3853  CD2 TYR B 212    11389   9024   7918    887  -1793     99       C
ATOM   3854  C   TYR B 212      20.208  52.767  65.867  1.00 76.21           C
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ANISOU 3854  C   TYR B 212    11110   9344   8503    795  -1881      7       C
ATOM   3855  O   TYR B 212      18.991  52.659  66.004  1.00 84.23           O
ANISOU 3855  O   TYR B 212    12030  10333   9639    828  -2030    -35       O
ATOM   3856  N   GLU B 213      20.846  52.221  64.842  1.00 75.95           N
ANISOU 3856  N   GLU B 213    11243   9282   8333    821  -1874     -0       N
ATOM   3857  CA  GLU B 213      20.189  51.177  64.051  1.00 71.74           C
ANISOU 3857  CA  GLU B 213    10748   8700   7809    873  -2037    -65       C
ATOM   3858  CB  GLU B 213      20.951  50.897  62.746  1.00 63.76           C
ANISOU 3858  CB  GLU B 213     9987   7639   6598    923  -2022    -64       C
ATOM   3859  CG  GLU B 213      21.035  52.116  61.833  1.00 69.40           C
ANISOU 3859  CG  GLU B 213    10933   8287   7148    992  -2040    -37       C
ATOM   3860  CD  GLU B 213      21.988  51.955  60.652  1.00 82.14           C
ANISOU 3860  CD  GLU B 213    12803   9852   8552   1037  -1968    -18       C
ATOM   3861  OE1 GLU B 213      22.139  52.932  59.879  1.00 97.24           O
ANISOU 3861  OE1 GLU B 213    14923  11705  10319   1096  -1962     10       O
ATOM   3862  OE2 GLU B 213      22.584  50.871  60.491  1.00 77.65           O
ANISOU 3862  OE2 GLU B 213    12238   9302   7963   1016  -1910    -29       O
ATOM   3863  C   GLU B 213      20.172  49.968  64.966  1.00 82.77           C
ANISOU 3863  C   GLU B 213    11931  10158   9359    807  -1999    -84       C
ATOM   3864  O   GLU B 213      21.166  49.698  65.639  1.00 90.15           O
ANISOU 3864  O   GLU B 213    12799  11161  10295    738  -1826    -45       O
ATOM   3865  N   GLY B 214      19.075  49.238  65.060  1.00 88.04           N
ANISOU 3865  N   GLY B 214    12481  10803  10168    824  -2153   -141       N
ATOM   3866  CA  GLY B 214      19.146  48.059  65.925  1.00 89.55           C
ANISOU 3866  CA  GLY B 214    12480  11048  10498    760  -2096   -154       C
ATOM   3867  C   GLY B 214      19.599  46.803  65.193  1.00 84.52           C
ANISOU 3867  C   GLY B 214    11924  10393   9797    768  -2115   -187       C
ATOM   3868  O   GLY B 214      20.379  46.863  64.243  1.00 87.53           O
ANISOU 3868  O   GLY B 214    12510  10750   9999    800  -2081   -176       O
ATOM   3869  N   PRO B 215      19.110  45.644  65.636  1.00 68.99           N
ANISOU 3869  N   PRO B 215     9799   8435   7978    741  -2163   -226       N
ATOM   3870  CA  PRO B 215      19.084  44.468  64.762  1.00 67.98           C
ANISOU 3870  CA  PRO B 215     9755   8261   7814    770  -2260   -279       C
ATOM   3871  CB  PRO B 215      18.892  43.314  65.739  1.00 80.64           C
ANISOU 3871  CB  PRO B 215    11136   9906   9598    706  -2219   -294       C
ATOM   3872  CG  PRO B 215      18.104  43.951  66.877  1.00 80.14           C
ANISOU 3872  CG  PRO B 215    10873   9869   9706    678  -2209   -275       C
ATOM   3873  CD  PRO B 215      18.683  45.330  67.011  1.00 71.93           C
ANISOU 3873  CD  PRO B 215     9919   8861   8551    679  -2106   -217       C
ATOM   3874  C   PRO B 215      17.912  44.541  63.782  1.00 71.28           C
ANISOU 3874  C   PRO B 215    10257   8580   8245    852  -2508   -345       C
ATOM   3875  O   PRO B 215      17.026  45.381  63.959  1.00 78.77           O
ANISOU 3875  O   PRO B 215    11151   9505   9272    877  -2601   -350       O
ATOM   3876  N   GLY B 216      17.909  43.647  62.793  1.00 75.44           N
ANISOU 3876  N   GLY B 216    10913   9048   8702    894  -2616   -398       N
ATOM   3877  CA  GLY B 216      16.846  43.511  61.809  1.00 77.31           C
ANISOU 3877  CA  GLY B 216    11241   9184   8951    974  -2873   -471       C
ATOM   3878  C   GLY B 216      15.415  43.313  62.294  1.00 87.68           C
ANISOU 3878  C   GLY B 216    12339  10463  10511    970  -3044   -521       C
ATOM   3879  O   GLY B 216      15.115  43.449  63.484  1.00 89.68           O
ANISOU 3879  O   GLY B 216    12365  10772  10937    909  -2956   -492       O
ATOM   3880  N   GLU B 217      14.533  42.972  61.351  1.00 94.86           N
ANISOU 3880  N   GLU B 217    13327  11274  11440   1039  -3289   -597       N
ATOM   3881  CA  GLU B 217      13.092  43.065  61.553  1.00 84.83           C
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ANISOU 3881  CA  GLU B 217    11891   9949  10392   1058  -3486   -646       C
ATOM   3882  CB  GLU B 217      12.374  42.606  60.284  1.00 97.15           C
ANISOU 3882  CB  GLU B 217    13596  11391  11924   1142  -3765   -735       C
ATOM   3883  C   GLU B 217      12.557  42.299  62.777  1.00 80.11           C
ANISOU 3883  C   GLU B 217    10982   9388  10068    976  -3433   -649       C
ATOM   3884  O   GLU B 217      12.008  42.906  63.685  1.00 92.69           O
ANISOU 3884  O   GLU B 217    12394  11010  11813    950  -3387   -618       O
ATOM   3885  N   GLY B 218      12.708  40.983  62.815  1.00 78.53           N
ANISOU 3885  N   GLY B 218    10727   9183   9930    940  -3431   -682       N
ATOM   3886  CA  GLY B 218      12.139  40.206  63.912  1.00 95.12           C
ANISOU 3886  CA  GLY B 218    12544  11304  12294    869  -3388   -686       C
ATOM   3887  C   GLY B 218      12.345  40.609  65.385  1.00103.80           C
ANISOU 3887  C   GLY B 218    13443  12498  13500    798  -3163   -611       C
ATOM   3888  O   GLY B 218      11.433  40.460  66.201  1.00104.32           O
ANISOU 3888  O   GLY B 218    13279  12552  13805    770  -3178   -615       O
ATOM   3889  N   SER B 219      13.521  41.137  65.724  1.00 94.95           N
ANISOU 3889  N   SER B 219    12410  11462  12206    772  -2957   -543       N
ATOM   3890  CA  SER B 219      14.025  41.133  67.108  1.00 84.13           C
ANISOU 3890  CA  SER B 219    10876  10183  10905    697  -2728   -477       C
ATOM   3891  CB  SER B 219      15.427  41.737  67.146  1.00 84.24           C
ANISOU 3891  CB  SER B 219    11039  10274  10696    682  -2543   -414       C
ATOM   3892  OG  SER B 219      16.059  41.444  68.373  1.00 74.19           O
ANISOU 3892  OG  SER B 219     9630   9084   9474    610  -2338   -362       O
ATOM   3893  C   SER B 219      13.210  41.832  68.191  1.00 81.94           C
ANISOU 3893  C   SER B 219    10401   9922  10811    680  -2688   -447       C
ATOM   3894  O   SER B 219      12.755  42.960  68.019  1.00101.39           O
ANISOU 3894  O   SER B 219    12901  12365  13257    722  -2749   -438       O
ATOM   3895  N   PRO B 220      13.066  41.161  69.339  1.00 73.30           N
ANISOU 3895  N   PRO B 220     9103   8861   9885    622  -2571   -427       N
ATOM   3896  CA  PRO B 220      12.441  41.745  70.518  1.00 65.47           C
ANISOU 3896  CA  PRO B 220     7929   7891   9056    603  -2486   -388       C
ATOM   3897  CB  PRO B 220      12.281  40.555  71.476  1.00 64.98           C
ANISOU 3897  CB  PRO B 220     7676   7841   9172    546  -2390   -385       C
ATOM   3898  CG  PRO B 220      12.577  39.338  70.679  1.00 61.68           C
ANISOU 3898  CG  PRO B 220     7325   7393   8718    540  -2470   -435       C
ATOM   3899  CD  PRO B 220      13.442  39.752  69.555  1.00 74.90           C
ANISOU 3899  CD  PRO B 220     9247   9076  10136    576  -2516   -443       C
ATOM   3900  C   PRO B 220      13.341  42.798  71.126  1.00 79.13           C
ANISOU 3900  C   PRO B 220     9725   9701  10640    587  -2311   -319       C
ATOM   3901  O   PRO B 220      12.874  43.612  71.922  1.00 90.22           O
ANISOU 3901  O   PRO B 220    11034  11117  12128    589  -2256   -285       O
ATOM   3902  N   PHE B 221      14.622  42.775  70.778  1.00 76.46           N
ANISOU 3902  N   PHE B 221     9544   9413  10093    571  -2221   -296       N
ATOM   3903  CA  PHE B 221      15.551  43.768  71.318  1.00 78.16           C
ANISOU 3903  CA  PHE B 221     9823   9699  10175    552  -2060   -232       C
ATOM   3904  CB  PHE B 221      16.967  43.160  71.454  1.00 71.66           C
ANISOU 3904  CB  PHE B 221     9068   8942   9219    505  -1909   -204       C
ATOM   3905  CG  PHE B 221      17.035  41.955  72.382  1.00 65.52           C
ANISOU 3905  CG  PHE B 221     8131   8194   8568    455  -1817   -201       C
ATOM   3906  CD1 PHE B 221      17.247  42.111  73.738  1.00 48.06           C
ANISOU 3906  CD1 PHE B 221     5798   6039   6424    414  -1663   -153       C
ATOM   3907  CE1 PHE B 221      17.292  41.009  74.580  1.00 55.76           C
ANISOU 3907  CE1 PHE B 221     6642   7035   7509    375  -1578   -148       C
ATOM   3908  CZ  PHE B 221      17.120  39.733  74.081  1.00 54.09           C
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ANISOU 3908  CZ  PHE B 221     6410   6790   7353    371  -1644   -191       C
ATOM   3909  CE2 PHE B 221      16.908  39.552  72.743  1.00 58.93           C
ANISOU 3909  CE2 PHE B 221     7139   7347   7906    407  -1803   -243       C
ATOM   3910  CD2 PHE B 221      16.865  40.665  71.890  1.00 74.85           C
ANISOU 3910  CD2 PHE B 221     9297   9341   9802    452  -1890   -247       C
ATOM   3911  C   PHE B 221      15.562  45.039  70.435  1.00 80.23           C
ANISOU 3911  C   PHE B 221    10258   9933  10294    606  -2141   -229       C
ATOM   3912  O   PHE B 221      15.923  46.125  70.882  1.00 79.29           O
ANISOU 3912  O   PHE B 221    10169   9849  10109    601  -2048   -182       O
ATOM   3913  N   GLY B 222      15.124  44.902  69.188  1.00 81.55           N
ANISOU 3913  N   GLY B 222    10542  10030  10414    662  -2321   -281       N
ATOM   3914  CA  GLY B 222      15.189  45.996  68.234  1.00 83.05           C
ANISOU 3914  CA  GLY B 222    10924  10184  10447    721  -2401   -279       C
ATOM   3915  C   GLY B 222      14.019  46.972  68.251  1.00 75.08           C
ANISOU 3915  C   GLY B 222    9864   9125   9536    771  -2523   -290       C
ATOM   3916  O   GLY B 222      13.120  46.893  69.101  1.00 78.02           O
ANISOU 3916  O   GLY B 222    10037   9493  10113    757  -2531   -293       O
ATOM   3917  N   TRP B 223      14.052  47.900  67.299  1.00 61.36           N
ANISOU 3917  N   TRP B 223    8316   7347   7650    832  -2609   -292       N
ATOM   3918  CA  TRP B 223      13.041  48.945  67.139  1.00 64.60           C
ANISOU 3918  CA  TRP B 223    8720   7705   8119    891  -2734   -300       C
ATOM   3919  CB  TRP B 223      13.437  50.197  67.920  1.00 65.40           C
ANISOU 3919  CB  TRP B 223    8818   7857   8173    872  -2581   -234       C
ATOM   3920  CG  TRP B 223      14.881  50.527  67.722  1.00 73.21           C
ANISOU 3920  CG  TRP B 223    9975   8896   8946    842  -2426   -187       C
ATOM   3921  CD1 TRP B 223      15.423  51.302  66.731  1.00 72.63           C
ANISOU 3921  CD1 TRP B 223    10132   8792   8671    887  -2444   -173       C
ATOM   3922  NE1 TRP B 223      16.793  51.352  66.857  1.00 69.04           N
ANISOU 3922  NE1 TRP B 223    9763   8394   8077    837  -2261   -125       N
ATOM   3923  CE2 TRP B 223      17.166  50.595  67.937  1.00 74.65           C
ANISOU 3923  CE2 TRP B 223    10300   9172   8890    762  -2134   -111       C
ATOM   3924  CD2 TRP B 223      15.984  50.054  68.506  1.00 82.35           C
ANISOU 3924  CD2 TRP B 223    11081  10133  10074    764  -2228   -147       C
ATOM   3925  CE3 TRP B 223      16.089  49.234  69.640  1.00 82.38           C
ANISOU 3925  CE3 TRP B 223    10896  10193  10212    699  -2119   -138       C
ATOM   3926  CZ3 TRP B 223      17.352  48.986  70.167  1.00 73.82           C
ANISOU 3926  CZ3 TRP B 223    9823   9180   9046    636  -1939    -96       C
ATOM   3927  CH2 TRP B 223      18.511  49.541  69.576  1.00 71.68           C
ANISOU 3927  CH2 TRP B 223    9734   8922   8578    633  -1858    -63       C
ATOM   3928  CZ2 TRP B 223      18.437  50.350  68.472  1.00 66.48           C
ANISOU 3928  CZ2 TRP B 223    9262   8207   7789    694  -1945    -68       C
ATOM   3929  C   TRP B 223      12.876  49.286  65.657  1.00 73.25           C
ANISOU 3929  C   TRP B 223    10044   8722   9065    977  -2916   -338       C
ATOM   3930  O   TRP B 223      13.688  48.885  64.822  1.00 75.30           O
ANISOU 3930  O   TRP B 223    10485   8976   9151    988  -2907   -345       O
ATOM   3931  N   LYS B 224      11.835  50.051  65.336  1.00 85.46           N
ANISOU 3931  N   LYS B 224    11589  10206  10675   1043  -3075   -360       N
ATOM   3932  CA  LYS B 224      11.464  50.289  63.941  1.00 81.04           C
ANISOU 3932  CA  LYS B 224    11235   9557   9999   1136  -3285   -406       C
ATOM   3933  CB  LYS B 224       9.940  50.294  63.790  1.00 87.41           C
ANISOU 3933  CB  LYS B 224    11916  10286  11012   1191  -3518   -464       C
ATOM   3934  CG  LYS B 224       9.259  51.569  64.245  1.00 97.49           C
ANISOU 3934  CG  LYS B 224    13126  11553  12363   1223  -3527   -435       C
ATOM   3935  CD  LYS B 224       7.745  51.401  64.266  1.00109.14           C
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ANISOU 3935  CD  LYS B 224    14423  12955  14091   1266  -3737   -490       C
ATOM   3936  CE  LYS B 224       7.024  52.746  64.338  1.00119.12           C
ANISOU 3936  CE  LYS B 224    15684  14186  15391   1328  -3797   -471       C
ATOM   3937  NZ  LYS B 224       7.357  53.510  65.581  1.00118.46           N
ANISOU 3937  NZ  LYS B 224    15492  14180  15338   1274  -3565   -396       N
ATOM   3938  C   LYS B 224      12.046  51.582  63.383  1.00 77.69           C
ANISOU 3938  C   LYS B 224    11038   9125   9354   1182  -3240   -362       C
ATOM   3939  O   LYS B 224      12.221  51.715  62.179  1.00 79.23           O
ANISOU 3939  O   LYS B 224    11467   9260   9376   1252  -3347   -384       O
ATOM   3940  N   ASP B 225      12.355  52.529  64.257  1.00 72.60           N
ANISOU 3940  N   ASP B 225    10334   8537   8714   1145  -3077   -300       N
ATOM   3941  CA  ASP B 225      12.947  53.781  63.819  1.00 82.49           C
ANISOU 3941  CA  ASP B 225    11791   9782   9771   1179  -3015   -253       C
ATOM   3942  CB  ASP B 225      11.889  54.692  63.151  1.00 87.59           C
ANISOU 3942  CB  ASP B 225    12515  10342  10423   1279  -3216   -279       C
ATOM   3943  CG  ASP B 225      10.692  55.022  64.069  1.00 95.11           C
ANISOU 3943  CG  ASP B 225    13224  11293  11622   1278  -3273   -287       C
ATOM   3944  OD1 ASP B 225      10.877  55.562  65.184  1.00 87.78           O
ANISOU 3944  OD1 ASP B 225    12169  10424  10759   1224  -3108   -236       O
ATOM   3945  OD2 ASP B 225       9.544  54.751  63.656  1.00112.85           O
ANISOU 3945  OD2 ASP B 225    15408  13470  13999   1337  -3490   -345       O
ATOM   3946  C   ASP B 225      13.614  54.498  64.984  1.00 80.50           C
ANISOU 3946  C   ASP B 225    11450   9610   9528   1106  -2788   -182       C
ATOM   3947  O   ASP B 225      13.277  54.266  66.150  1.00 86.97           O
ANISOU 3947  O   ASP B 225    12045  10476  10523   1052  -2718   -174       O
ATOM   3948  N   ILE B 226      14.557  55.373  64.649  1.00 72.26           N
ANISOU 3948  N   ILE B 226    10591   8574   8293   1109  -2674   -133       N
ATOM   3949  CA  ILE B 226      15.253  56.219  65.614  1.00 77.51           C
ANISOU 3949  CA  ILE B 226    11208   9299   8942   1047  -2476    -67       C
ATOM   3950  CB  ILE B 226      16.091  57.247  64.865  1.00 79.01           C
ANISOU 3950  CB  ILE B 226    11642   9463   8917   1074  -2407    -24       C
ATOM   3951  CG1 ILE B 226      17.154  56.512  64.034  1.00 81.64           C
ANISOU 3951  CG1 ILE B 226    12133   9794   9091   1065  -2346    -21       C
ATOM   3952  CD1 ILE B 226      17.290  57.006  62.602  1.00 88.71           C
ANISOU 3952  CD1 ILE B 226    13312  10606   9787   1154  -2425    -22       C
ATOM   3953  CG2 ILE B 226      16.709  58.229  65.825  1.00 76.75           C
ANISOU 3953  CG2 ILE B 226    11309   9226   8627   1014  -2228     38       C
ATOM   3954  C   ILE B 226      14.337  56.932  66.623  1.00 83.30           C
ANISOU 3954  C   ILE B 226    11767  10041   9842   1046  -2486    -58       C
ATOM   3955  O   ILE B 226      14.659  57.006  67.817  1.00 81.58           O
ANISOU 3955  O   ILE B 226    11407   9888   9703    977  -2336    -25       O
ATOM   3956  N   LYS B 227      13.190  57.426  66.161  1.00 75.59           N
ANISOU 3956  N   LYS B 227    10803   8996   8922   1126  -2665    -89       N
ATOM   3957  CA  LYS B 227      12.229  58.058  67.067  1.00 77.80           C
ANISOU 3957  CA  LYS B 227    10912   9274   9373   1136  -2680    -82       C
ATOM   3958  CB  LYS B 227      11.065  58.700  66.293  1.00 86.79           C
ANISOU 3958  CB  LYS B 227    12109  10324  10542   1239  -2894   -115       C
ATOM   3959  CG  LYS B 227       9.706  58.515  66.962  1.00 92.13           C
ANISOU 3959  CG  LYS B 227    12548  10981  11478   1259  -2991   -145       C
ATOM   3960  CD  LYS B 227       8.757  59.658  66.663  1.00104.41           C
ANISOU 3960  CD  LYS B 227    14139  12468  13065   1347  -3120   -148       C
ATOM   3961  CE  LYS B 227       7.307  59.186  66.720  1.00115.83           C
ANISOU 3961  CE  LYS B 227    15393  13861  14758   1393  -3302   -201       C
ATOM   3962  NZ  LYS B 227       6.353  60.303  66.507  1.00120.30           N
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ANISOU 3962  NZ  LYS B 227    15972  14361  15375   1481  -3425   -202       N
ATOM   3963  C   LYS B 227      11.676  57.077  68.105  1.00 72.94           C
ANISOU 3963  C   LYS B 227    10035   8697   8983   1086  -2655   -101       C
ATOM   3964  O   LYS B 227      11.597  57.416  69.281  1.00 87.63           O
ANISOU 3964  O   LYS B 227    11754  10598  10942   1046  -2532    -69       O
ATOM   3965  N   GLU B 228      11.288  55.873  67.690  1.00 72.29           N
ANISOU 3965  N   GLU B 228     9893   8594   8980   1091  -2768   -154       N
ATOM   3966  CA  GLU B 228      10.839  54.865  68.660  1.00 72.54           C
ANISOU 3966  CA  GLU B 228     9681   8656   9223   1039  -2727   -168       C
ATOM   3967  CB  GLU B 228      10.369  53.594  67.960  1.00 79.04           C
ANISOU 3967  CB  GLU B 228    10471   9439  10123   1054  -2884   -233       C
ATOM   3968  CG  GLU B 228       9.364  52.799  68.783  1.00 97.87           C
ANISOU 3968  CG  GLU B 228    12590  11814  12781   1032  -2911   -258       C
ATOM   3969  CD  GLU B 228       9.211  51.364  68.322  1.00112.11           C
ANISOU 3969  CD  GLU B 228    14345  13594  14656   1018  -3010   -313       C
ATOM   3970  OE1 GLU B 228       9.703  51.024  67.225  1.00106.69           O
ANISOU 3970  OE1 GLU B 228    13842  12884  13810   1042  -3098   -343       O
ATOM   3971  OE2 GLU B 228       8.591  50.574  69.064  1.00125.96           O
ANISOU 3971  OE2 GLU B 228    15884  15348  16629    984  -2994   -327       O
ATOM   3972  C   GLU B 228      11.960  54.525  69.637  1.00 78.34           C
ANISOU 3972  C   GLU B 228    10367   9481   9916    948  -2498   -122       C
ATOM   3973  O   GLU B 228      11.734  54.383  70.845  1.00 73.75           O
ANISOU 3973  O   GLU B 228     9608   8938   9477    906  -2390   -101       O
ATOM   3974  N   TRP B 229      13.168  54.393  69.088  1.00 81.31           N
ANISOU 3974  N   TRP B 229    10911   9885  10098    923  -2426   -106       N
ATOM   3975  CA  TRP B 229      14.373  54.110  69.859  1.00 73.28           C
ANISOU 3975  CA  TRP B 229     9874   8949   9021    840  -2221    -64       C
ATOM   3976  CB  TRP B 229      15.577  54.057  68.929  1.00 77.40           C
ANISOU 3976  CB  TRP B 229    10604   9476   9328    834  -2177    -51       C
ATOM   3977  CG  TRP B 229      16.922  54.123  69.599  1.00 75.54           C
ANISOU 3977  CG  TRP B 229    10378   9313   9009    758  -1970     -0       C
ATOM   3978  CD1 TRP B 229      17.522  53.143  70.342  1.00 73.20           C
ANISOU 3978  CD1 TRP B 229     9969   9079   8765    690  -1858      6       C
ATOM   3979  NE1 TRP B 229      18.759  53.568  70.771  1.00 66.60           N
ANISOU 3979  NE1 TRP B 229     9182   8294   7831    636  -1692     55       N
ATOM   3980  CE2 TRP B 229      18.985  54.826  70.295  1.00 67.70           C
ANISOU 3980  CE2 TRP B 229     9466   8402   7855    664  -1688     82       C
ATOM   3981  CD2 TRP B 229      17.852  55.216  69.545  1.00 69.34           C
ANISOU 3981  CD2 TRP B 229     9726   8540   8080    743  -1858     50       C
ATOM   3982  CE3 TRP B 229      17.828  56.481  68.955  1.00 65.54           C
ANISOU 3982  CE3 TRP B 229     9399   8013   7491    789  -1886     71       C
ATOM   3983  CZ3 TRP B 229      18.925  57.309  69.108  1.00 59.30           C
ANISOU 3983  CZ3 TRP B 229     8702   7243   6584    750  -1741    123       C
ATOM   3984  CH2 TRP B 229      20.043  56.897  69.854  1.00 65.46           C
ANISOU 3984  CH2 TRP B 229     9418   8091   7361    667  -1577    152       C
ATOM   3985  CZ2 TRP B 229      20.090  55.667  70.454  1.00 66.72           C
ANISOU 3985  CZ2 TRP B 229     9432   8301   7620    626  -1552    132       C
ATOM   3986  C   TRP B 229      14.580  55.149  70.947  1.00 73.22           C
ANISOU 3986  C   TRP B 229     9814   8979   9027    812  -2082    -12       C
ATOM   3987  O   TRP B 229      14.599  54.799  72.127  1.00 67.61           O
ANISOU 3987  O   TRP B 229     8947   8316   8428    762  -1973      5       O
ATOM   3988  N   TYR B 230      14.685  56.423  70.565  1.00 75.18           N
ANISOU 3988  N   TYR B 230    10200   9200   9166    847  -2090     12       N
ATOM   3989  CA  TYR B 230      14.948  57.478  71.542  1.00 58.68           C
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ANISOU 3989  CA  TYR B 230     8084   7139   7074    821  -1962     60       C
ATOM   3990  CB  TYR B 230      15.177  58.822  70.859  1.00 69.98           C
ANISOU 3990  CB  TYR B 230     9701   8529   8358    862  -1981     84       C
ATOM   3991  CG  TYR B 230      15.987  59.758  71.722  1.00 68.72           C
ANISOU 3991  CG  TYR B 230     9560   8407   8143    812  -1818    136       C
ATOM   3992  CD1 TYR B 230      15.382  60.621  72.622  1.00 69.64           C
ANISOU 3992  CD1 TYR B 230     9598   8518   8345    824  -1791    154       C
ATOM   3993  CE1 TYR B 230      16.136  61.448  73.431  1.00 64.41           C
ANISOU 3993  CE1 TYR B 230     8958   7885   7631    777  -1650    196       C
ATOM   3994  CZ  TYR B 230      17.509  61.407  73.339  1.00 71.53           C
ANISOU 3994  CZ  TYR B 230     9947   8821   8410    714  -1539    222       C
ATOM   3995  OH  TYR B 230      18.302  62.205  74.119  1.00 78.10           O
ANISOU 3995  OH  TYR B 230    10799   9676   9199    664  -1411    260       O
ATOM   3996  CE2 TYR B 230      18.120  60.551  72.469  1.00 71.96           C
ANISOU 3996  CE2 TYR B 230    10068   8883   8389    702  -1553    210       C
ATOM   3997  CD2 TYR B 230      17.363  59.732  71.672  1.00 67.52           C
ANISOU 3997  CD2 TYR B 230     9498   8293   7865    751  -1690    167       C
ATOM   3998  C   TYR B 230      13.835  57.627  72.559  1.00 67.87           C
ANISOU 3998  C   TYR B 230     9061   8297   8431    835  -1972     57       C
ATOM   3999  O   TYR B 230      14.093  57.898  73.734  1.00 71.42           O
ANISOU 3999  O   TYR B 230     9426   8787   8922    794  -1836     89       O
ATOM   4000  N   GLU B 231      12.596  57.453  72.112  1.00 74.91           N
ANISOU 4000  N   GLU B 231     9891   9130   9442    898  -2133     17       N
ATOM   4001  CA  GLU B 231      11.446  57.741  72.960  1.00 77.38           C
ANISOU 4001  CA  GLU B 231    10034   9421   9946    925  -2147     17       C
ATOM   4002  CB  GLU B 231      10.186  57.925  72.120  1.00 75.77           C
ANISOU 4002  CB  GLU B 231     9820   9137   9834   1010  -2353    -25       C
ATOM   4003  CG  GLU B 231      10.154  59.246  71.430  1.00 83.48           C
ANISOU 4003  CG  GLU B 231    10968  10071  10681   1070  -2418    -11       C
ATOM   4004  CD  GLU B 231       8.806  59.556  70.859  1.00 89.37           C
ANISOU 4004  CD  GLU B 231    11675  10736  11546   1159  -2613    -47       C
ATOM   4005  OE1 GLU B 231       7.964  58.632  70.811  1.00 96.37           O
ANISOU 4005  OE1 GLU B 231    12413  11596  12609   1171  -2718    -90       O
ATOM   4006  OE2 GLU B 231       8.595  60.726  70.462  1.00 83.17           O
ANISOU 4006  OE2 GLU B 231    11005   9911  10685   1216  -2664    -34       O
ATOM   4007  C   GLU B 231      11.224  56.658  73.991  1.00 79.63           C
ANISOU 4007  C   GLU B 231    10118   9741  10396    878  -2064     14       C
ATOM   4008  O   GLU B 231      10.900  56.956  75.153  1.00 78.67           O
ANISOU 4008  O   GLU B 231     9879   9635  10378    868  -1958     41       O
ATOM   4009  N   MET B 232      11.405  55.407  73.565  1.00 77.81           N
ANISOU 4009  N   MET B 232     9860   9519  10185    853  -2107    -19       N
ATOM   4010  CA  MET B 232      11.312  54.270  74.477  1.00 71.02           C
ANISOU 4010  CA  MET B 232     8825   8692   9468    805  -2021    -21       C
ATOM   4011  CB  MET B 232      11.424  52.947  73.702  1.00 67.72           C
ANISOU 4011  CB  MET B 232     8406   8265   9060    790  -2111    -65       C
ATOM   4012  CG  MET B 232      12.846  52.320  73.724  1.00111.35           C
ANISOU 4012  CG  MET B 232    14016  13857  14433    726  -1991    -49       C
ATOM   4013  SD  MET B 232      13.051  50.796  72.770  1.00155.35           S
ANISOU 4013  SD  MET B 232    19612  19417  19996    714  -2088   -101       S
ATOM   4014  CE  MET B 232      11.661  49.834  73.363  1.00 95.98           C
ANISOU 4014  CE  MET B 232    11845  11855  12767    719  -2153   -134       C
ATOM   4015  C   MET B 232      12.400  54.399  75.570  1.00 65.96           C
ANISOU 4015  C   MET B 232     8190   8126   8747    740  -1814     29       C
ATOM   4016  O   MET B 232      12.166  54.064  76.729  1.00 73.15           O
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ANISOU 4016  O   MET B 232     8960   9057   9776    717  -1707     47       O
ATOM   4017  N   LEU B 233      13.558  54.949  75.207  1.00 64.85           N
ANISOU 4017  N   LEU B 233     8214   8017   8408    716  -1760     51       N
ATOM   4018  CA  LEU B 233      14.657  55.164  76.158  1.00 70.42           C
ANISOU 4018  CA  LEU B 233     8935   8787   9033    656  -1585     94       C
ATOM   4019  CB  LEU B 233      15.990  55.313  75.401  1.00 70.98           C
ANISOU 4019  CB  LEU B 233     9178   8886   8906    624  -1554    106       C
ATOM   4020  CG  LEU B 233      16.515  54.078  74.659  1.00 59.44           C
ANISOU 4020  CG  LEU B 233     7744   7438   7404    602  -1584     80       C
ATOM   4021  CD1 LEU B 233      17.846  54.352  74.004  1.00 68.39           C
ANISOU 4021  CD1 LEU B 233     9043   8593   8349    575  -1526    101       C
ATOM   4022  CD2 LEU B 233      16.644  52.943  75.634  1.00 54.02           C
ANISOU 4022  CD2 LEU B 233     6907   6797   6822    555  -1496     80       C
ATOM   4023  C   LEU B 233      14.479  56.370  77.088  1.00 67.16           C
ANISOU 4023  C   LEU B 233     8514   8374   8631    667  -1505    130       C
ATOM   4024  O   LEU B 233      14.644  56.249  78.305  1.00 62.40           O
ANISOU 4024  O   LEU B 233     7826   7805   8081    637  -1382    154       O
ATOM   4025  N   MET B 234      14.173  57.536  76.524  1.00 73.76           N
ANISOU 4025  N   MET B 234     9451   9168   9407    713  -1573    135       N
ATOM   4026  CA  MET B 234      14.100  58.758  77.329  1.00 69.35           C
ANISOU 4026  CA  MET B 234     8908   8604   8838    724  -1498    168       C
ATOM   4027  CB  MET B 234      13.814  59.974  76.447  1.00 67.88           C
ANISOU 4027  CB  MET B 234     8856   8365   8570    778  -1591    170       C
ATOM   4028  CG  MET B 234      12.382  60.020  75.912  1.00 68.38           C
ANISOU 4028  CG  MET B 234     8856   8363   8760    856  -1744    139       C
ATOM   4029  SD  MET B 234      12.193  61.193  74.551  1.00 77.11           S
ANISOU 4029  SD  MET B 234    10155   9405   9738    925  -1883    133       S
ATOM   4030  CE  MET B 234      12.739  62.697  75.360  1.00 70.62           C
ANISOU 4030  CE  MET B 234     9416   8592   8825    911  -1749    185       C
ATOM   4031  C   MET B 234      13.024  58.634  78.405  1.00 65.14           C
ANISOU 4031  C   MET B 234     8206   8055   8489    750  -1463    171       C
ATOM   4032  O   MET B 234      12.029  57.902  78.230  1.00 57.03           O
ANISOU 4032  O   MET B 234     7058   6997   7614    780  -1543    144       O
ATOM   4033  N   GLY B 235      13.243  59.339  79.515  1.00 61.69           N
ANISOU 4033  N   GLY B 235     7765   7633   8041    739  -1342    205       N
ATOM   4034  CA  GLY B 235      12.311  59.351  80.627  1.00 60.61           C
ANISOU 4034  CA  GLY B 235     7492   7478   8061    769  -1280    216       C
ATOM   4035  C   GLY B 235      11.128  60.285  80.428  1.00 79.13           C
ANISOU 4035  C   GLY B 235     9819   9757  10491    846  -1356    215       C
ATOM   4036  O   GLY B 235      10.950  60.902  79.371  1.00 79.37           O
ANISOU 4036  O   GLY B 235     9941   9754  10461    880  -1475    201       O
ATOM   4037  N   HIS B 236      10.306  60.393  81.460  1.00 84.69           N
ANISOU 4037  N   HIS B 236    10406  10437  11334    878  -1281    231       N
ATOM   4038  CA  HIS B 236       9.116  61.222  81.382  1.00 79.56           C
ANISOU 4038  CA  HIS B 236     9715   9722  10791    955  -1340    232       C
ATOM   4039  CB  HIS B 236       7.875  60.380  81.676  1.00 70.52           C
ANISOU 4039  CB  HIS B 236     8370   8538   9886    990  -1357    219       C
ATOM   4040  CG  HIS B 236       7.593  59.332  80.634  1.00 78.16           C
ANISOU 4040  CG  HIS B 236     9278   9496  10923    982  -1500    176       C
ATOM   4041  ND1 HIS B 236       6.707  59.539  79.594  1.00 83.69           N
ANISOU 4041  ND1 HIS B 236     9959  10137  11700   1038  -1678    144       N
ATOM   4042  CE1 HIS B 236       6.657  58.452  78.843  1.00 84.32           C
ANISOU 4042  CE1 HIS B 236     9997  10216  11826   1018  -1783    105       C
ATOM   4043  NE2 HIS B 236       7.470  57.552  79.355  1.00 86.74           N
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ANISOU 4043  NE2 HIS B 236    10289  10579  12090    951  -1672    113       N
ATOM   4044  CD2 HIS B 236       8.072  58.082  80.480  1.00 85.27           C
ANISOU 4044  CD2 HIS B 236    10140  10432  11826    928  -1497    158       C
ATOM   4045  C   HIS B 236       9.197  62.422  82.327  1.00 80.72           C
ANISOU 4045  C   HIS B 236     9924   9860  10888    976  -1230    268       C
ATOM   4046  O   HIS B 236      10.116  62.540  83.147  1.00 75.73           O
ANISOU 4046  O   HIS B 236     9351   9269  10152    931  -1107    290       O
ATOM   4047  N   CYS B 237       8.231  63.319  82.190  1.00 88.68           N
ANISOU 4047  N   CYS B 237    10919  10809  11968   1049  -1282    272       N
ATOM   4048  CA  CYS B 237       8.183  64.537  82.988  1.00 81.18           C
ANISOU 4048  CA  CYS B 237    10034   9837  10973   1080  -1191    303       C
ATOM   4049  CB  CYS B 237       7.191  65.527  82.375  1.00 78.45           C
ANISOU 4049  CB  CYS B 237     9700   9424  10685   1162  -1298    299       C
ATOM   4050  SG  CYS B 237       7.107  67.117  83.217  1.00 76.84           S
ANISOU 4050  SG  CYS B 237     9594   9183  10417   1208  -1201    335       S
ATOM   4051  C   CYS B 237       7.806  64.259  84.436  1.00 77.49           C
ANISOU 4051  C   CYS B 237     9462   9366  10615   1092  -1032    329       C
ATOM   4052  O   CYS B 237       6.920  63.438  84.710  1.00 79.28           O
ANISOU 4052  O   CYS B 237     9525   9570  11029   1116  -1018    325       O
ATOM   4053  N   THR B 238       8.497  64.947  85.346  1.00 74.98           N
ANISOU 4053  N   THR B 238     9245   9063  10179   1076   -913    355       N
ATOM   4054  CA  THR B 238       8.216  64.915  86.777  1.00 60.92           C
ANISOU 4054  CA  THR B 238     7413   7270   8463   1099   -754    383       C
ATOM   4055  CB  THR B 238       9.157  65.859  87.526  1.00 69.69           C
ANISOU 4055  CB  THR B 238     8684   8395   9401   1078   -667    402       C
ATOM   4056  OG1 THR B 238      10.502  65.372  87.426  1.00 76.64           O
ANISOU 4056  OG1 THR B 238     9640   9341  10141    993   -663    393       O
ATOM   4057  CG2 THR B 238       8.754  66.001  88.996  1.00 58.16           C
ANISOU 4057  CG2 THR B 238     7199   6905   7994   1122   -509    431       C
ATOM   4058  C   THR B 238       6.777  65.310  87.099  1.00 79.84           C
ANISOU 4058  C   THR B 238     9702   9594  11041   1190   -735    396       C
ATOM   4059  O   THR B 238       6.146  64.726  87.980  1.00 87.45           O
ANISOU 4059  O   THR B 238    10546  10536  12146   1217   -626    414       O
ATOM   4060  N   TYR B 239       6.253  66.298  86.382  1.00 76.25           N
ANISOU 4060  N   TYR B 239     9288   9095  10588   1240   -835    391       N
ATOM   4061  CA  TYR B 239       4.930  66.822  86.705  1.00 88.57           C
ANISOU 4061  CA  TYR B 239    10753  10582  12316   1332   -815    406       C
ATOM   4062  CB  TYR B 239       4.972  68.354  86.757  1.00 83.34           C
ANISOU 4062  CB  TYR B 239    10234   9885  11545   1376   -815    421       C
ATOM   4063  CG  TYR B 239       5.841  68.843  87.880  1.00 84.67           C
ANISOU 4063  CG  TYR B 239    10530  10075  11566   1350   -669    444       C
ATOM   4064  CD1 TYR B 239       5.364  68.886  89.178  1.00 86.55           C
ANISOU 4064  CD1 TYR B 239    10726  10280  11879   1397   -510    473       C
ATOM   4065  CE1 TYR B 239       6.173  69.318  90.224  1.00 90.89           C
ANISOU 4065  CE1 TYR B 239    11407  10842  12285   1378   -389    490       C
ATOM   4066  CZ  TYR B 239       7.471  69.705  89.971  1.00 85.54           C
ANISOU 4066  CZ  TYR B 239    10886  10211  11405   1306   -431    477       C
ATOM   4067  OH  TYR B 239       8.270  70.129  91.003  1.00 80.39           O
ANISOU 4067  OH  TYR B 239    10360   9564  10621   1287   -328    488       O
ATOM   4068  CE2 TYR B 239       7.968  69.661  88.689  1.00 87.58           C
ANISOU 4068  CE2 TYR B 239    11176  10501  11598   1255   -573    453       C
ATOM   4069  CD2 TYR B 239       7.155  69.228  87.653  1.00 91.78           C
ANISOU 4069  CD2 TYR B 239    11595  11021  12257   1281   -690    437       C
ATOM   4070  C   TYR B 239       3.832  66.341  85.751  1.00 93.72           C
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ANISOU 4070  C   TYR B 239    11254  11195  13159   1372   -957    381       C
ATOM   4071  O   TYR B 239       2.679  66.210  86.154  1.00 92.82           O
ANISOU 4071  O   TYR B 239    10989  11025  13254   1434   -919    393       O
ATOM   4072  N   PHE B 240       4.182  66.073  84.498  1.00 90.02           N
ANISOU 4072  N   PHE B 240    10827  10750  12627   1340  -1120    347       N
ATOM   4073  CA  PHE B 240       3.241  65.421  83.599  1.00 91.41           C
ANISOU 4073  CA  PHE B 240    10863  10890  12980   1369  -1269    316       C
ATOM   4074  CB  PHE B 240       2.958  66.297  82.400  1.00 90.51           C
ANISOU 4074  CB  PHE B 240    10837  10739  12813   1417  -1449    295       C
ATOM   4075  CG  PHE B 240       2.312  67.577  82.770  1.00107.65           C
ANISOU 4075  CG  PHE B 240    13036  12855  15013   1495  -1417    320       C
ATOM   4076  CD1 PHE B 240       1.043  67.582  83.314  1.00114.85           C
ANISOU 4076  CD1 PHE B 240    13774  13703  16159   1566  -1378    333       C
ATOM   4077  CE1 PHE B 240       0.440  68.759  83.672  1.00110.12           C
ANISOU 4077  CE1 PHE B 240    13201  13050  15590   1644  -1341    358       C
ATOM   4078  CZ  PHE B 240       1.110  69.946  83.510  1.00109.39           C
ANISOU 4078  CZ  PHE B 240    13311  12965  15286   1648  -1345    369       C
ATOM   4079  CE2 PHE B 240       2.380  69.954  82.983  1.00111.00           C
ANISOU 4079  CE2 PHE B 240    13684  13229  15261   1572  -1381    357       C
ATOM   4080  CD2 PHE B 240       2.979  68.773  82.621  1.00111.80           C
ANISOU 4080  CD2 PHE B 240    13757  13386  15338   1498  -1413    334       C
ATOM   4081  C   PHE B 240       3.767  64.066  83.168  1.00 94.39           C
ANISOU 4081  C   PHE B 240    11196  11316  13354   1297  -1312    288       C
ATOM   4082  O   PHE B 240       4.358  63.932  82.104  1.00 89.23           O
ANISOU 4082  O   PHE B 240    10638  10687  12577   1266  -1440    260       O
ATOM   4083  N   PRO B 241       3.523  63.053  84.004  1.00 91.19           N
ANISOU 4083  N   PRO B 241    10647  10916  13085   1276  -1199    299       N
ATOM   4084  CA  PRO B 241       3.990  61.668  83.899  1.00 91.99           C
ANISOU 4084  CA  PRO B 241    10687  11061  13203   1208  -1197    280       C
ATOM   4085  CB  PRO B 241       3.103  60.926  84.895  1.00 97.04           C
ANISOU 4085  CB  PRO B 241    11132  11663  14075   1230  -1072    300       C
ATOM   4086  CG  PRO B 241       2.707  61.971  85.883  1.00102.96           C
ANISOU 4086  CG  PRO B 241    11904  12379  14839   1289   -937    342       C
ATOM   4087  CD  PRO B 241       2.555  63.226  85.098  1.00 94.48           C
ANISOU 4087  CD  PRO B 241    10935  11280  13682   1334  -1063    332       C
ATOM   4088  C   PRO B 241       3.828  61.069  82.514  1.00 88.43           C
ANISOU 4088  C   PRO B 241    10215  10602  12781   1198  -1401    231       C
ATOM   4089  O   PRO B 241       4.753  60.409  82.050  1.00 88.81           O
ANISOU 4089  O   PRO B 241    10336  10704  12704   1135  -1432    212       O
ATOM   4090  N   GLU B 242       2.683  61.289  81.873  1.00 87.68           N
ANISOU 4090  N   GLU B 242    10027  10438  12848   1263  -1539    209       N
ATOM   4091  CA  GLU B 242       2.449  60.767  80.526  1.00 95.94           C
ANISOU 4091  CA  GLU B 242    11065  11465  13924   1265  -1755    157       C
ATOM   4092  CB  GLU B 242       0.948  60.796  80.200  1.00108.17           C
ANISOU 4092  CB  GLU B 242    12441  12925  15735   1340  -1878    136       C
ATOM   4093  CG  GLU B 242       0.435  59.552  79.469  1.00123.84           C
ANISOU 4093  CG  GLU B 242    14292  14879  17883   1324  -2028     86       C
ATOM   4094  CD  GLU B 242       0.171  58.378  80.404  1.00125.75           C
ANISOU 4094  CD  GLU B 242    14345  15121  18312   1282  -1887     99       C
ATOM   4095  OE1 GLU B 242       0.385  58.529  81.627  1.00128.91           O
ANISOU 4095  OE1 GLU B 242    14728  15545  18707   1271  -1671    149       O
ATOM   4096  OE2 GLU B 242      -0.234  57.299  79.913  1.00128.34           O
ANISOU 4096  OE2 GLU B 242    14555  15422  18788   1263  -1993     59       O
ATOM   4097  C   GLU B 242       3.240  61.525  79.446  1.00 93.69           C
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ANISOU 4097  C   GLU B 242    11002  11202  13395   1264  -1876    141       C
ATOM   4098  O   GLU B 242       3.356  61.048  78.321  1.00 88.82           O
ANISOU 4098  O   GLU B 242    10431  10580  12737   1258  -2037     99       O
ATOM   4099  N   GLU B 243       3.783  62.695  79.793  1.00 88.52           N
ANISOU 4099  N   GLU B 243    10490  10564  12578   1273  -1793    175       N
ATOM   4100  CA  GLU B 243       4.578  63.508  78.863  1.00 80.56           C
ANISOU 4100  CA  GLU B 243     9700   9571  11338   1272  -1877    169       C
ATOM   4101  CB  GLU B 243       4.474  64.997  79.229  1.00 85.83           C
ANISOU 4101  CB  GLU B 243    10461  10213  11937   1320  -1825    202       C
ATOM   4102  CG  GLU B 243       3.187  65.671  78.791  1.00 93.90           C
ANISOU 4102  CG  GLU B 243    11422  11154  13100   1417  -1953    192       C
ATOM   4103  CD  GLU B 243       3.078  65.768  77.284  1.00104.89           C
ANISOU 4103  CD  GLU B 243    12914  12514  14426   1452  -2173    152       C
ATOM   4104  OE1 GLU B 243       3.939  66.442  76.677  1.00107.47           O
ANISOU 4104  OE1 GLU B 243    13446  12857  14530   1440  -2194    159       O
ATOM   4105  OE2 GLU B 243       2.143  65.166  76.707  1.00106.41           O
ANISOU 4105  OE2 GLU B 243    12984  12659  14787   1492  -2324    115       O
ATOM   4106  C   GLU B 243       6.058  63.108  78.825  1.00 85.01           C
ANISOU 4106  C   GLU B 243    10395  10211  11695   1185  -1801    175       C
ATOM   4107  O   GLU B 243       6.700  62.932  79.865  1.00 84.61           O
ANISOU 4107  O   GLU B 243    10333  10207  11606   1134  -1634    203       O
ATOM   4108  N   LEU B 244       6.613  62.976  77.627  1.00 79.69           N
ANISOU 4108  N   LEU B 244     9851   9544  10884   1173  -1922    149       N
ATOM   4109  CA  LEU B 244       8.051  62.752  77.516  1.00 80.45           C
ANISOU 4109  CA  LEU B 244    10082   9706  10781   1097  -1846    160       C
ATOM   4110  CB  LEU B 244       8.443  62.367  76.092  1.00 74.44           C
ANISOU 4110  CB  LEU B 244     9439   8937   9907   1096  -1991    127       C
ATOM   4111  CG  LEU B 244       7.952  61.005  75.599  1.00 67.96           C
ANISOU 4111  CG  LEU B 244     8504   8107   9211   1093  -2097     82       C
ATOM   4112  CD2 LEU B 244       8.518  59.907  76.448  1.00 62.81           C
ANISOU 4112  CD2 LEU B 244     7752   7516   8598   1018  -1962     90       C
ATOM   4113  CD1 LEU B 244       8.377  60.812  74.170  1.00 67.68           C
ANISOU 4113  CD1 LEU B 244     8626   8056   9033   1105  -2239     51       C
ATOM   4114  C   LEU B 244       8.799  64.008  77.953  1.00 74.65           C
ANISOU 4114  C   LEU B 244     9489   8985   9889   1085  -1740    199       C
ATOM   4115  O   LEU B 244       8.278  65.113  77.863  1.00 73.35           O
ANISOU 4115  O   LEU B 244     9374   8775   9723   1144  -1776    210       O
ATOM   4116  N   ARG B 245      10.010  63.830  78.457  1.00 72.00           N
ANISOU 4116  N   ARG B 245     9214   8709   9432   1010  -1614    219       N
ATOM   4117  CA  ARG B 245      10.825  64.971  78.832  1.00 65.15           C
ANISOU 4117  CA  ARG B 245     8484   7852   8418    989  -1522    252       C
ATOM   4118  CB  ARG B 245      12.127  64.522  79.498  1.00 72.54           C
ANISOU 4118  CB  ARG B 245     9447   8856   9261    901  -1389    269       C
ATOM   4119  CG  ARG B 245      11.935  63.900  80.870  1.00 71.72           C
ANISOU 4119  CG  ARG B 245     9202   8779   9270    882  -1269    279       C
ATOM   4120  CD  ARG B 245      13.188  63.255  81.406  1.00 63.21           C
ANISOU 4120  CD  ARG B 245     8142   7766   8108    800  -1165    288       C
ATOM   4121  NE  ARG B 245      12.944  62.711  82.740  1.00 73.61           N
ANISOU 4121  NE  ARG B 245     9342   9101   9526    794  -1053    299       N
ATOM   4122  CZ  ARG B 245      13.776  61.896  83.380  1.00 70.97           C
ANISOU 4122  CZ  ARG B 245     8983   8820   9164    736   -965    304       C
ATOM   4123  NH1 ARG B 245      14.913  61.524  82.803  1.00 68.94           N
ANISOU 4123  NH1 ARG B 245     8797   8604   8791    675   -976    298       N
ATOM   4124  NH2 ARG B 245      13.470  61.443  84.590  1.00 59.10           N
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ANISOU 4124  NH2 ARG B 245     7386   7322   7747    743   -863    316       N
ATOM   4125  C   ARG B 245      11.135  65.788  77.601  1.00 64.00           C
ANISOU 4125  C   ARG B 245     8514   7675   8129   1013  -1621    250       C
ATOM   4126  O   ARG B 245      11.098  65.291  76.480  1.00 63.22           O
ANISOU 4126  O   ARG B 245     8458   7564   8000   1027  -1737    224       O
ATOM   4127  N   SER B 246      11.431  67.054  77.807  1.00 64.61           N
ANISOU 4127  N   SER B 246     8704   7731   8114   1022  -1574    278       N
ATOM   4128  CA  SER B 246      12.046  67.815  76.756  1.00 60.77           C
ANISOU 4128  CA  SER B 246     8406   7220   7463   1026  -1624    285       C
ATOM   4129  CB  SER B 246      11.993  69.305  77.084  1.00 63.91           C
ANISOU 4129  CB  SER B 246     8900   7577   7807   1055  -1585    314       C
ATOM   4130  OG  SER B 246      12.918  70.027  76.293  1.00 76.39           O
ANISOU 4130  OG  SER B 246    10668   9141   9214   1034  -1583    331       O
ATOM   4131  C   SER B 246      13.496  67.347  76.567  1.00 66.42           C
ANISOU 4131  C   SER B 246     9202   7988   8047    939  -1546    295       C
ATOM   4132  O   SER B 246      14.144  66.881  77.512  1.00 71.68           O
ANISOU 4132  O   SER B 246     9802   8707   8727    874  -1431    304       O
ATOM   4133  N   VAL B 247      13.994  67.457  75.344  1.00 65.82           N
ANISOU 4133  N   VAL B 247     9271   7893   7845    944  -1609    293       N
ATOM   4134  CA  VAL B 247      15.424  67.398  75.093  1.00 77.63           C
ANISOU 4134  CA  VAL B 247    10875   9421   9202    869  -1520    312       C
ATOM   4135  CB  VAL B 247      15.717  67.578  73.594  1.00 84.31           C
ANISOU 4135  CB  VAL B 247    11894  10225   9916    900  -1600    311       C
ATOM   4136  CG1 VAL B 247      17.056  68.225  73.377  1.00107.18           C
ANISOU 4136  CG1 VAL B 247    14936  13121  12666    843  -1491    348       C
ATOM   4137  CG2 VAL B 247      15.683  66.234  72.913  1.00 81.69           C
ANISOU 4137  CG2 VAL B 247    11526   9915   9600    901  -1669    279       C
ATOM   4138  C   VAL B 247      16.135  68.471  75.940  1.00 78.86           C
ANISOU 4138  C   VAL B 247    11082   9578   9304    826  -1397    347       C
ATOM   4139  O   VAL B 247      15.609  69.576  76.137  1.00 81.85           O
ANISOU 4139  O   VAL B 247    11504   9910   9686    870  -1410    360       O
ATOM   4140  N   LYS B 248      17.318  68.134  76.445  1.00 59.41           N
ANISOU 4140  N   LYS B 248     8613   7163   6797    740  -1286    361       N
ATOM   4141  CA  LYS B 248      18.023  68.985  77.396  1.00 72.14           C
ANISOU 4141  CA  LYS B 248    10252   8779   8379    691  -1177    387       C
ATOM   4142  CB  LYS B 248      19.375  68.360  77.754  1.00 67.92           C
ANISOU 4142  CB  LYS B 248     9700   8299   7806    597  -1078    395       C
ATOM   4143  CG  LYS B 248      20.089  69.054  78.907  1.00 66.31           C
ANISOU 4143  CG  LYS B 248     9498   8103   7594    542   -979    413       C
ATOM   4144  CD  LYS B 248      21.294  68.247  79.376  1.00 67.65           C
ANISOU 4144  CD  LYS B 248     9618   8330   7756    457   -899    415       C
ATOM   4145  CE  LYS B 248      21.808  68.726  80.719  1.00 59.31           C
ANISOU 4145  CE  LYS B 248     8536   7283   6717    413   -823    422       C
ATOM   4146  NZ  LYS B 248      20.820  68.573  81.817  1.00 68.68           N
ANISOU 4146  NZ  LYS B 248     9627   8478   7992    458   -825    408       N
ATOM   4147  C   LYS B 248      18.258  70.413  76.929  1.00 79.41           C
ANISOU 4147  C   LYS B 248    11331   9638   9203    706  -1174    412       C
ATOM   4148  O   LYS B 248      18.131  71.352  77.705  1.00 85.36           O
ANISOU 4148  O   LYS B 248    12097  10368   9968    710  -1134    425       O
ATOM   4149  N   TYR B 249      18.616  70.585  75.666  1.00 80.76           N
ANISOU 4149  N   TYR B 249    11635   9777   9274    718  -1211    421       N
ATOM   4150  CA  TYR B 249      19.031  71.898  75.216  1.00 69.13           C
ANISOU 4150  CA  TYR B 249    10323   8242   7700    722  -1187    452       C
ATOM   4151  CB  TYR B 249      20.464  71.817  74.673  1.00 62.45           C
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ANISOU 4151  CB  TYR B 249     9570   7402   6756    648  -1100    476       C
ATOM   4152  CG  TYR B 249       21.517  71.323  75.674  1.00 71.58           C
ANISOU 4152  CG  TYR B 249    10630   8618   7949    550   -991    480       C
ATOM   4153  CD1 TYR B 249       21.964  72.123  76.715  1.00 73.89           C
ANISOU 4153  CD1 TYR B 249    10910   8904   8260    503   -920    492       C
ATOM   4154  CE1 TYR B 249       22.927  71.674  77.606  1.00 80.03           C
ANISOU 4154  CE1 TYR B 249    11607   9730   9070    419   -838    492       C
ATOM   4155  CZ  TYR B 249       23.462  70.413  77.458  1.00 86.14           C
ANISOU 4155  CZ  TYR B 249    12307  10562   9859    381   -818    482       C
ATOM   4156  OH  TYR B 249       24.426  69.933  78.334  1.00 87.40           O
ANISOU 4156  OH  TYR B 249    12385  10770  10054    303   -745    481       O
ATOM   4157  CE2 TYR B 249       23.041  69.615  76.424  1.00 82.70           C
ANISOU 4157  CE2 TYR B 249    11884  10135   9405    425   -878    471       C
ATOM   4158  CD2 TYR B 249       22.088  70.068  75.544  1.00 79.18           C
ANISOU 4158  CD2 TYR B 249    11523   9638   8924    508   -967    469       C
ATOM   4159  C   TYR B 249       18.060  72.530  74.178  1.00 79.62           C
ANISOU 4159  C   TYR B 249    11760   9502   8991    823  -1303    450       C
ATOM   4160  O   TYR B 249       18.468  73.326  73.320  1.00 73.61           O
ANISOU 4160  O   TYR B 249    11165   8685   8118    836  -1299    475       O
ATOM   4161  N   ALA B 250       16.770  72.205  74.275  1.00 77.61           N
ANISOU 4161  N   ALA B 250    11410   9245   8835    895  -1407    422       N
ATOM   4162  CA  ALA B 250       15.758  72.961  73.522  1.00 73.22           C
ANISOU 4162  CA  ALA B 250    10938   8617   8264    996  -1524    418       C
ATOM   4163  CB  ALA B 250       14.351  72.412  73.740  1.00 49.63           C
ANISOU 4163  CB  ALA B 250     7803   5631   5422   1067  -1636    384       C
ATOM   4164  C   ALA B 250       15.820  74.399  73.964  1.00 80.95           C
ANISOU 4164  C   ALA B 250    12001   9549   9207   1003  -1470    448       C
ATOM   4165  O   ALA B 250       16.113  74.670  75.130  1.00 79.80           O
ANISOU 4165  O   ALA B 250    11786   9428   9107    953  -1375    456       O
ATOM   4166  N   TYR B 251       15.533  75.315  73.042  1.00 83.21           N
ANISOU 4166  N   TYR B 251    12444   9762   9409   1069  -1534    462       N
ATOM   4167  CA  TYR B 251       15.624  76.738  73.342  1.00 76.89           C
ANISOU 4167  CA  TYR B 251    11744   8906   8563   1078  -1485    492       C
ATOM   4168  CB  TYR B 251       15.222  77.597  72.141  1.00 69.15           C
ANISOU 4168  CB  TYR B 251    10947   7841   7486   1165  -1573    506       C
ATOM   4169  CG  TYR B 251       15.111  79.047  72.522  1.00 74.70           C
ANISOU 4169  CG  TYR B 251    11736   8483   8162   1185  -1534    533       C
ATOM   4170  CD2 TYR B 251       13.904  79.583  72.988  1.00 76.98           C
ANISOU 4170  CD2 TYR B 251    11964   8744   8542   1266  -1602    522       C
ATOM   4171  CE2 TYR B 251       13.808  80.903  73.365  1.00 75.67           C
ANISOU 4171  CE2 TYR B 251    11881   8520   8351   1287  -1562    546       C
ATOM   4172  CZ  TYR B 251       14.922  81.721  73.282  1.00 81.66           C
ANISOU 4172  CZ  TYR B 251    12784   9246   8999   1222  -1457    581       C
ATOM   4173  OH  TYR B 251       14.834  83.055  73.651  1.00 87.60           O
ANISOU 4173  OH  TYR B 251    13624   9933   9726   1241  -1419    604       O
ATOM   4174  CE1 TYR B 251       16.126  81.214  72.820  1.00 78.68           C
ANISOU 4174  CE1 TYR B 251    12460   8893   8542   1139  -1386    594       C
ATOM   4175  CD1 TYR B 251       16.214  79.881  72.446  1.00 75.99           C
ANISOU 4175  CD1 TYR B 251    12037   8614   8222   1123  -1423    571       C
ATOM   4176  C   TYR B 251       14.762  77.115  74.529  1.00 79.88           C
ANISOU 4176  C   TYR B 251    11998   9288   9063   1105  -1479    483       C
ATOM   4177  O   TYR B 251       15.189  77.896  75.394  1.00 80.07           O
ANISOU 4177  O   TYR B 251    12039   9303   9080   1065  -1384    501       O
ATOM   4178  N   ASN B 252       13.542  76.591  74.575  1.00 74.33           N
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ANISOU 4178  N   ASN B 252    11175   8590   8477   1178  -1580    454       N
ATOM   4179  CA  ASN B 252      12.656  77.012  75.646  1.00 79.55           C
ANISOU 4179  CA  ASN B 252    11727   9243   9257   1217  -1565    451       C
ATOM   4180  CB  ASN B 252      11.214  76.673  75.317  1.00 87.39           C
ANISOU 4180  CB  ASN B 252    12619  10211  10372   1318  -1701    425       C
ATOM   4181  CG  ASN B 252      10.570  77.749  74.476  1.00 93.04           C
ANISOU 4181  CG  ASN B 252    13467  10844  11039   1413  -1803    434       C
ATOM   4182  OD1 ASN B 252      10.174  78.781  74.991  1.00 84.46           O
ANISOU 4182  OD1 ASN B 252    12406   9716   9970   1451  -1773    450       O
ATOM   4183  ND2 ASN B 252      10.493  77.528  73.173  1.00100.45           N
ANISOU 4183  ND2 ASN B 252    14504  11755  11907   1455  -1922    423       N
ATOM   4184  C   ASN B 252      13.052  76.442  76.987  1.00 78.91           C
ANISOU 4184  C   ASN B 252    11510   9225   9248   1144  -1448    447       C
ATOM   4185  O   ASN B 252      12.828  77.072  78.014  1.00 80.35           O
ANISOU 4185  O   ASN B 252    11663   9394   9472   1150  -1382    457       O
ATOM   4186  N   ALA B 253      13.691  75.279  76.978  1.00 77.47           N
ANISOU 4186  N   ALA B 253    11261   9106   9067   1077  -1421    435       N
ATOM   4187  CA  ALA B 253      14.181  74.672  78.214  1.00 71.14           C
ANISOU 4187  CA  ALA B 253    10345   8365   8320   1006  -1312    432       C
ATOM   4188  CB  ALA B 253      14.638  73.248  77.948  1.00 73.58           C
ANISOU 4188  CB  ALA B 253    10573   8739   8646    955  -1316    414       C
ATOM   4189  C   ALA B 253      15.311  75.490  78.863  1.00 67.30           C
ANISOU 4189  C   ALA B 253     9951   7875   7745    934  -1199    456       C
ATOM   4190  O   ALA B 253      15.313  75.704  80.079  1.00 61.15           O
ANISOU 4190  O   ALA B 253     9120   7105   7011    918  -1124    457       O
ATOM   4191  N   ASP B 254      16.270  75.957  78.069  1.00 72.66           N
ANISOU 4191  N   ASP B 254    10772   8533   8304    891  -1186    474       N
ATOM   4192  CA  ASP B 254      17.336  76.779  78.639  1.00 71.76           C
ANISOU 4192  CA  ASP B 254    10740   8404   8123    820  -1088    494       C
ATOM   4193  CB  ASP B 254      18.533  76.884  77.673  1.00 65.95           C
ANISOU 4193  CB  ASP B 254    10125   7658   7277    758  -1059    514       C
ATOM   4194  CG  ASP B 254      19.572  75.773  77.901  1.00 79.96           C
ANISOU 4194  CG  ASP B 254    11822   9503   9057    668   -998    508       C
ATOM   4195  OD1 ASP B 254      19.660  75.285  79.045  1.00 85.37           O
ANISOU 4195  OD1 ASP B 254    12393  10235   9810    635   -956    493       O
ATOM   4196  OD2 ASP B 254      20.300  75.386  76.954  1.00 87.32           O
ANISOU 4196  OD2 ASP B 254    12814  10440   9926    636   -989    518       O
ATOM   4197  C   ASP B 254      16.805  78.170  79.016  1.00 71.27           C
ANISOU 4197  C   ASP B 254    10756   8272   8051    871  -1086    507       C
ATOM   4198  O   ASP B 254      17.351  78.830  79.903  1.00 81.46           O
ANISOU 4198  O   ASP B 254    12076   9548   9326    826  -1011    515       O
ATOM   4199  N   LEU B 255      15.743  78.624  78.355  1.00 69.12           N
ANISOU 4199  N   LEU B 255    10520   7951   7790    966  -1174    508       N
ATOM   4200  CA  LEU B 255      15.173  79.921  78.710  1.00 63.76           C
ANISOU 4200  CA  LEU B 255     9913   7204   7108   1023  -1173    520       C
ATOM   4201  CB  LEU B 255      14.147  80.387  77.697  1.00 65.96           C
ANISOU 4201  CB  LEU B 255    10252   7426   7383   1128  -1285    523       C
ATOM   4202  CG  LEU B 255      13.321  81.613  78.091  1.00 59.67           C
ANISOU 4202  CG  LEU B 255     9503   6560   6608   1206  -1295    533       C
ATOM   4203  CD1 LEU B 255      14.179  82.845  78.342  1.00 50.46           C
ANISOU 4203  CD1 LEU B 255     8487   5342   5343   1159  -1216    559       C
ATOM   4204  CD2 LEU B 255      12.317  81.914  77.002  1.00 59.43           C
ANISOU 4204  CD2 LEU B 255     9522   6478   6580   1313  -1423    533       C
ATOM   4205  C   LEU B 255      14.532  79.804  80.065  1.00 74.24           C
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ANISOU 4205  C   LEU B 255    11117   8549   8541   1045  -1131    508       C
ATOM   4206  O   LEU B 255      14.577  80.723  80.863  1.00 83.62           O
ANISOU 4206  O   LEU B 255    12354   9699   9717   1047  -1075    517       O
ATOM   4207  N   TYR B 256      13.929  78.652  80.315  1.00 74.64           N
ANISOU 4207  N   TYR B 256    11013   8652   8694   1064  -1153    488       N
ATOM   4208  CA  TYR B 256      13.342  78.360  81.611  1.00 77.39           C
ANISOU 4208  CA  TYR B 256    11239   9019   9148   1085  -1096    479       C
ATOM   4209  CB  TYR B 256      12.557  77.047  81.514  1.00 69.13           C
ANISOU 4209  CB  TYR B 256    10024   8017   8224   1115  -1141    459       C
ATOM   4210  CG  TYR B 256      12.508  76.212  82.767  1.00 62.38           C
ANISOU 4210  CG  TYR B 256     9038   7210   7455   1092  -1054    451       C
ATOM   4211  CD2 TYR B 256      13.591  75.418  83.118  1.00 67.26           C
ANISOU 4211  CD2 TYR B 256     9636   7889   8031   1000   -996    446       C
ATOM   4212  CE2 TYR B 256      13.572  74.647  84.262  1.00 72.05           C
ANISOU 4212  CE2 TYR B 256    10136   8535   8705    983   -917    440       C
ATOM   4213  CZ  TYR B 256      12.459  74.668  85.068  1.00 76.16           C
ANISOU 4213  CZ  TYR B 256    10570   9030   9338   1058   -883    443       C
ATOM   4214  OH  TYR B 256      12.475  73.893  86.197  1.00 81.86           O
ANISOU 4214  OH  TYR B 256    11201   9784  10117   1044   -793    441       O
ATOM   4215  CE1 TYR B 256      11.361  75.450  84.743  1.00 76.32           C
ANISOU 4215  CE1 TYR B 256    10597   8989   9414   1148   -932    449       C
ATOM   4216  CD1 TYR B 256      11.396  76.222  83.601  1.00 74.69           C
ANISOU 4216  CD1 TYR B 256    10495   8746   9136   1164  -1023    452       C
ATOM   4217  C   TYR B 256      14.466  78.305  82.665  1.00 74.83           C
ANISOU 4217  C   TYR B 256    10927   8726   8778    994   -988    480       C
ATOM   4218  O   TYR B 256      14.329  78.794  83.788  1.00 76.73           O
ANISOU 4218  O   TYR B 256    11170   8947   9038   1007   -922    482       O
ATOM   4219  N   ASN B 257      15.583  77.705  82.279  1.00 68.90           N
ANISOU 4219  N   ASN B 257    10192   8020   7968    907   -974    478       N
ATOM   4220  CA  ASN B 257      16.759  77.629  83.126  1.00 64.82           C
ANISOU 4220  CA  ASN B 257     9689   7531   7408    817   -891    478       C
ATOM   4221  CB  ASN B 257      17.859  76.804  82.434  1.00 70.04           C
ANISOU 4221  CB  ASN B 257    10347   8243   8024    733   -890    477       C
ATOM   4222  CG  ASN B 257      17.530  75.293  82.364  1.00 75.08           C
ANISOU 4222  CG  ASN B 257    10841   8950   8736    736   -910    459       C
ATOM   4223  OD1 ASN B 257      16.829  74.760  83.217  1.00 70.66           O
ANISOU 4223  OD1 ASN B 257    10173   8412   8264    771   -891    448       O
ATOM   4224  ND2 ASN B 257      18.055  74.615  81.348  1.00 70.13           N
ANISOU 4224  ND2 ASN B 257    10221   8352   8073    701   -940    459       N
ATOM   4225  C   ASN B 257      17.272  79.024  83.480  1.00 74.35           C
ANISOU 4225  C   ASN B 257    11034   8674   8543    798   -855    491       C
ATOM   4226  O   ASN B 257      17.556  79.324  84.643  1.00 69.29           O
ANISOU 4226  O   ASN B 257    10398   8026   7903    777   -796    485       O
ATOM   4227  N   ALA B 258      17.374  79.887  82.476  1.00 78.73           N
ANISOU 4227  N   ALA B 258    11707   9175   9031    809   -892    508       N
ATOM   4228  CA  ALA B 258      17.894  81.227  82.702  1.00 75.44           C
ANISOU 4228  CA  ALA B 258    11426   8690   8548    786   -859    521       C
ATOM   4229  CB  ALA B 258      18.127  81.928  81.389  1.00 66.11           C
ANISOU 4229  CB  ALA B 258    10372   7456   7289    790   -894    544       C
ATOM   4230  C   ALA B 258      16.949  82.034  83.584  1.00 71.85           C
ANISOU 4230  C   ALA B 258    10984   8186   8128    863   -849    519       C
ATOM   4231  O   ALA B 258      17.379  82.715  84.518  1.00 69.77           O
ANISOU 4231  O   ALA B 258    10776   7891   7841    835   -798    515       O
ATOM   4232  N   LEU B 259      15.658  81.939  83.289  1.00 76.70           N
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ANISOU 4232  N   LEU B 259    11547   8791   8803    963   -900    518       N
ATOM   4233  CA  LEU B 259      14.646  82.667  84.035  1.00 70.30           C
ANISOU 4233  CA  LEU B 259    10740   7931   8040   1050   -887    519       C
ATOM   4234  CB  LEU B 259      13.260  82.444  83.422  1.00 66.09           C
ANISOU 4234  CB  LEU B 259    10132   7388   7590   1156   -960    520       C
ATOM   4235  CG  LEU B 259      13.055  83.260  82.142  1.00 67.22           C
ANISOU 4235  CG  LEU B 259    10393   7475   7674   1198  -1041    536       C
ATOM   4236  CD1 LEU B 259      11.637  83.114  81.606  1.00 74.98           C
ANISOU 4236  CD1 LEU B 259    11302   8439   8750   1311  -1130    533       C
ATOM   4237  CD2 LEU B 259      13.384  84.725  82.416  1.00 66.34           C
ANISOU 4237  CD2 LEU B 259    10437   7286   7483   1198  -1003    552       C
ATOM   4238  C   LEU B 259      14.661  82.266  85.502  1.00 75.07           C
ANISOU 4238  C   LEU B 259    11272   8561   8689   1039   -808    506       C
ATOM   4239  O   LEU B 259      14.514  83.114  86.382  1.00 63.08           O
ANISOU 4239  O   LEU B 259     9819   6993   7158   1067   -762    507       O
ATOM   4240  N   ASN B 260      14.868  80.979  85.766  1.00 70.95           N
ANISOU 4240  N   ASN B 260    10629   8114   8214   1002   -792    493       N
ATOM   4241  CA  ASN B 260      15.008  80.515  87.136  1.00 68.30           C
ANISOU 4241  CA  ASN B 260    10239   7803   7908    989   -715    481       C
ATOM   4242  CB  ASN B 260      15.092  78.998  87.169  1.00 60.62           C
ANISOU 4242  CB  ASN B 260     9125   6911   6995    958   -710    471       C
ATOM   4243  CG  ASN B 260      13.743  78.364  87.392  1.00 75.48           C
ANISOU 4243  CG  ASN B 260    10876   8801   9003   1047   -705    472       C
ATOM   4244  OD1 ASN B 260      13.016  78.745  88.310  1.00 88.21           O
ANISOU 4244  OD1 ASN B 260    12481  10374  10658   1115   -649    477       O
ATOM   4245  ND2 ASN B 260      13.371  77.433  86.526  1.00 80.05           N
ANISOU 4245  ND2 ASN B 260    11352   9420   9643   1052   -765    467       N
ATOM   4246  C   ASN B 260      16.219  81.143  87.825  1.00 79.86           C
ANISOU 4246  C   ASN B 260    11814   9246   9282    911   -673    475       C
ATOM   4247  O   ASN B 260      16.088  81.689  88.922  1.00 88.30           O
ANISOU 4247  O   ASN B 260    12932  10276  10340    939   -624    470       O
ATOM   4248  N   ASP B 261      17.383  81.077  87.183  1.00 70.40           N
ANISOU 4248  N   ASP B 261    10658   8068   8024    817   -694    475       N
ATOM   4249  CA  ASP B 261      18.577  81.727  87.707  1.00 76.49           C
ANISOU 4249  CA  ASP B 261    11527   8810   8726    737   -668    469       C
ATOM   4250  CB  ASP B 261      19.704  81.699  86.679  1.00 72.67           C
ANISOU 4250  CB  ASP B 261    11078   8338   8196    644   -690    478       C
ATOM   4251  CG  ASP B 261      20.275  80.332  86.498  1.00 70.32           C
ANISOU 4251  CG  ASP B 261    10670   8124   7925    588   -686    471       C
ATOM   4252  OD1 ASP B 261      20.185  79.570  87.473  1.00 70.52           O
ANISOU 4252  OD1 ASP B 261    10614   8191   7987    592   -659    454       O
ATOM   4253  OD2 ASP B 261      20.798  80.020  85.392  1.00 70.44           O
ANISOU 4253  OD2 ASP B 261    10685   8159   7919    544   -705    483       O
ATOM   4254  C   ASP B 261      18.313  83.173  88.106  1.00 88.73           C
ANISOU 4254  C   ASP B 261    13207  10269  10237    776   -659    473       C
ATOM   4255  O   ASP B 261      18.765  83.627  89.154  1.00 95.40           O
ANISOU 4255  O   ASP B 261    14111  11082  11053    755   -628    458       O
ATOM   4256  N   LEU B 262      17.581  83.888  87.261  1.00 81.41           N
ANISOU 4256  N   LEU B 262    12330   9297   9306    838   -693    491       N
ATOM   4257  CA  LEU B 262      17.377  85.318  87.461  1.00 87.67           C
ANISOU 4257  CA  LEU B 262    13258   9998  10056    873   -688    498       C
ATOM   4258  CB  LEU B 262      16.928  85.997  86.154  1.00 79.42           C
ANISOU 4258  CB  LEU B 262    12278   8910   8989    915   -738    522       C
ATOM   4259  CG  LEU B 262      17.953  85.928  85.024  1.00 74.54           C
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ANISOU 4259  CG  LEU B 262    11704   8300   8319    829   -759    535       C
ATOM   4260  CD1 LEU B 262      17.421  86.584  83.753  1.00 68.99           C
ANISOU 4260  CD1 LEU B 262    11083   7548   7584    887   -808    561       C
ATOM   4261  CD2 LEU B 262      19.269  86.558  85.473  1.00 76.64           C
ANISOU 4261  CD2 LEU B 262    12057   8528   8536    726   -721    531       C
ATOM   4262  C   LEU B 262      16.356  85.557  88.555  1.00 86.65           C
ANISOU 4262  C   LEU B 262    13118   9841   9966    968   -651    491       C
ATOM   4263  O   LEU B 262      16.498  86.474  89.355  1.00 87.71           O
ANISOU 4263  O   LEU B 262    13355   9911  10060    977   -622    483       O
ATOM   4264  N   ASN B 263      15.323  84.727  88.576  1.00 80.53           N
ANISOU 4264  N   ASN B 263    12218   9108   9273   1041   -649    493       N
ATOM   4265  CA  ASN B 263      14.250  84.864  89.543  1.00 73.01           C
ANISOU 4265  CA  ASN B 263    11238   8125   8375   1141   -598    493       C
ATOM   4266  CB  ASN B 263      13.061  84.005  89.134  1.00 75.01           C
ANISOU 4266  CB  ASN B 263    11342   8417   8742   1217   -614    502       C
ATOM   4267  CG  ASN B 263      11.951  84.806  88.528  1.00 82.06           C
ANISOU 4267  CG  ASN B 263    12254   9250   9674   1316   -652    519       C
ATOM   4268  OD1 ASN B 263      11.808  85.985  88.809  1.00102.93           O
ANISOU 4268  OD1 ASN B 263    15015  11820  12274   1355   -636    525       O
ATOM   4269  ND2 ASN B 263      11.141  84.168  87.702  1.00 80.86           N
ANISOU 4269  ND2 ASN B 263    11986   9125   9610   1362   -710    524       N
ATOM   4270  C   ASN B 263      14.709  84.482  90.939  1.00 69.28           C
ANISOU 4270  C   ASN B 263    10768   7667   7887   1117   -529    475       C
ATOM   4271  O   ASN B 263      14.068  84.854  91.917  1.00 87.30           O
ANISOU 4271  O   ASN B 263    13082   9906  10184   1192   -470    475       O
ATOM   4272  N   ASN B 264      15.814  83.739  91.023  1.00 75.37           N
ANISOU 4272  N   ASN B 264    11513   8496   8630   1018   -535    461       N
ATOM   4273  CA  ASN B 264      16.411  83.340  92.305  1.00 90.79           C
ANISOU 4273  CA  ASN B 264    13479  10461  10556    988   -485    440       C
ATOM   4274  CB  ASN B 264      17.192  82.023  92.181  1.00 95.55           C
ANISOU 4274  CB  ASN B 264    13976  11152  11174    907   -495    431       C
ATOM   4275  CG  ASN B 264      16.296  80.788  92.174  1.00 93.08           C
ANISOU 4275  CG  ASN B 264    13510  10899  10955    960   -467    440       C
ATOM   4276  OD1 ASN B 264      16.672  79.760  91.621  1.00 98.37           O
ANISOU 4276  OD1 ASN B 264    14084  11640  11653    908   -491    438       O
ATOM   4277  ND2 ASN B 264      15.116  80.885  92.782  1.00 90.83           N
ANISOU 4277  ND2 ASN B 264    13202  10583  10727   1065   -413    449       N
ATOM   4278  C   ASN B 264      17.351  84.402  92.862  1.00 98.19           C
ANISOU 4278  C   ASN B 264    14572  11334  11404    937   -493    423       C
ATOM   4279  O   ASN B 264      17.681  84.388  94.047  1.00111.90           O
ANISOU 4279  O   ASN B 264    16359  13052  13106    937   -460    404       O
ATOM   4280  N   LEU B 265      17.800  85.309  92.006  1.00 94.40           N
ANISOU 4280  N   LEU B 265    14172  10813  10885    893   -539    430       N
ATOM   4281  CA  LEU B 265      18.678  86.388  92.445  1.00 95.27           C
ANISOU 4281  CA  LEU B 265    14425  10849  10923    840   -552    414       C
ATOM   4282  CB  LEU B 265      19.191  87.185  91.254  1.00 90.37           C
ANISOU 4282  CB  LEU B 265    13867  10193  10278    783   -595    430       C
ATOM   4283  CG  LEU B 265      20.156  86.388  90.397  1.00 93.31           C
ANISOU 4283  CG  LEU B 265    14163  10631  10662    682   -620    435       C
ATOM   4284  CD1 LEU B 265      20.615  87.228  89.233  1.00 98.19           C
ANISOU 4284  CD1 LEU B 265    14858  11200  11250    636   -644    457       C
ATOM   4285  CD2 LEU B 265      21.320  85.944  91.254  1.00 92.89           C
ANISOU 4285  CD2 LEU B 265    14097  10598  10598    594   -619    407       C
ATOM   4286  C   LEU B 265      17.995  87.336  93.406  1.00 96.97           C
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ANISOU 4286  C   LEU B 265    14752  10982  11111    928   -517    407       C
ATOM   4287  O   LEU B 265      16.801  87.594  93.292  1.00 83.59           O
ANISOU 4287  O   LEU B 265    13046   9266   9450   1031   -491    426       O
ATOM   4288  N   VAL B 266      18.774  87.859  94.347  1.00102.57           N
ANISOU 4288  N   VAL B 266    15570  11640  11762    888   -521    379       N
ATOM   4289  CA  VAL B 266      18.314  88.926  95.227  1.00 99.55           C
ANISOU 4289  CA  VAL B 266    15327  11163  11334    962   -495    369       C
ATOM   4290  CB  VAL B 266      18.270  88.468  96.688  1.00 97.03           C
ANISOU 4290  CB  VAL B 266    15037  10841  10989   1005   -452    344       C
ATOM   4291  CG1 VAL B 266      17.581  89.515  97.541  1.00 97.05           C
ANISOU 4291  CG1 VAL B 266    15185  10744  10945   1104   -411    338       C
ATOM   4292  CG2 VAL B 266      17.533  87.138  96.782  1.00100.46           C
ANISOU 4292  CG2 VAL B 266    15320  11361  11490   1058   -399    361       C
ATOM   4293  C   VAL B 266      19.229  90.142  95.079  1.00 88.31           C
ANISOU 4293  C   VAL B 266    14043   9655   9855    888   -544    354       C
ATOM   4294  O   VAL B 266      20.456  90.023  95.200  1.00 89.16           O
ANISOU 4294  O   VAL B 266    14162   9768   9947    780   -587    331       O
ATOM   4295  N   ILE B 267      18.626  91.294  94.780  1.00 75.76           N
ANISOU 4295  N   ILE B 267    12551   7986   8247    945   -539    368       N
ATOM   4296  CA  ILE B 267      19.378  92.524  94.544  1.00 84.43           C
ANISOU 4296  CA  ILE B 267    13783   8995   9301    881   -579    359       C
ATOM   4297  CB  ILE B 267      18.915  93.297  93.266  1.00 82.04           C
ANISOU 4297  CB  ILE B 267    13507   8657   9007    902   -588    396       C
ATOM   4298  CG1 ILE B 267      18.609  92.357  92.094  1.00 81.72           C
ANISOU 4298  CG1 ILE B 267    13322   8709   9018    899   -595    427       C
ATOM   4299  CD1 ILE B 267      19.803  91.661  91.555  1.00 75.61           C
ANISOU 4299  CD1 ILE B 267    12479   7993   8256    774   -622    424       C
ATOM   4300  CG2 ILE B 267      19.987  94.282  92.836  1.00 73.46           C
ANISOU 4300  CG2 ILE B 267    12527   7495   7890    801   -626    392       C
ATOM   4301  C   ILE B 267      19.221  93.468  95.723  1.00 90.94           C
ANISOU 4301  C   ILE B 267    14765   9720  10068    935   -567    332       C
ATOM   4302  O   ILE B 267      18.114  93.657  96.232  1.00 87.13           O
ANISOU 4302  O   ILE B 267    14313   9212   9580   1056   -515    340       O
ATOM   4303  N   THR B 268      20.328  94.066  96.149  1.00100.04           N
ANISOU 4303  N   THR B 268    16019  10810  11184    847   -615    299       N
ATOM   4304  CA  THR B 268      20.281  95.114  97.165  1.00104.79           C
ANISOU 4304  CA  THR B 268    16793  11299  11722    889   -620    268       C
ATOM   4305  CB  THR B 268      21.474  95.058  98.126  1.00101.74           C
ANISOU 4305  CB  THR B 268    16469  10882  11305    805   -679    216       C
ATOM   4306  OG1 THR B 268      22.673  94.886  97.367  1.00111.12           O
ANISOU 4306  OG1 THR B 268    17587  12094  12538    663   -735    215       O
ATOM   4307  CG2 THR B 268      21.336  93.900  99.092  1.00 86.78           C
ANISOU 4307  CG2 THR B 268    14517   9057   9400    847   -657    198       C
ATOM   4308  C   THR B 268      20.279  96.460  96.468  1.00110.10           C
ANISOU 4308  C   THR B 268    17575  11877  12382    877   -636    283       C
ATOM   4309  O   THR B 268      21.307  96.933  95.996  1.00116.90           O
ANISOU 4309  O   THR B 268    18466  12699  13251    765   -684    275       O
ATOM   4310  N   ARG B 269      19.124  97.083  96.391  1.00110.18           N
ANISOU 4310  N   ARG B 269    17641  11844  12378    994   -590    305       N
ATOM   4311  CA  ARG B 269      19.035  98.333  95.687  1.00117.49           C
ANISOU 4311  CA  ARG B 269    18670  12680  13289    994   -602    324       C
ATOM   4312  C   ARG B 269      18.034  99.212  96.428  1.00130.63           C
ANISOU 4312  C   ARG B 269    20467  14257  14910   1125   -560    320       C
ATOM   4313  O   ARG B 269      17.022  98.728  96.935  1.00128.29           O
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ANISOU 4313  O   ARG B 269    20127  13995  14623   1239   -502    329       O
ATOM   4314  CB  ARG B 269      18.649  98.085  94.221  1.00118.97           C
ANISOU 4314  CB  ARG B 269    18756  12925  13523    995   -597    373       C
ATOM   4315  CG  ARG B 269      17.406  97.229  94.038  1.00110.32           C
ANISOU 4315  CG  ARG B 269    17534  11912  12471   1106   -555    400       C
ATOM   4316  CD  ARG B 269      16.870  97.373  92.642  1.00110.33           C
ANISOU 4316  CD  ARG B 269    17489  11929  12501   1132   -566    443       C
ATOM   4317  NE  ARG B 269      17.499  96.651  91.561  1.00 94.20           N
ANISOU 4317  NE  ARG B 269    15346   9961  10486   1043   -597    460       N
ATOM   4318  CZ  ARG B 269      16.978  95.552  91.038  1.00106.32           C
ANISOU 4318  CZ  ARG B 269    16732  11593  12071   1073   -597    477       C
ATOM   4319  NH1 ARG B 269      15.830  95.091  91.512  1.00102.01           N
ANISOU 4319  NH1 ARG B 269    16115  11078  11565   1185   -566    480       N
ATOM   4320  NH2 ARG B 269      17.581  94.935  90.026  1.00121.02           N
ANISOU 4320  NH2 ARG B 269    18520  13515  13948    995   -624    492       N
ATOM   4321  N   ASP B 270      18.318 100.501  96.540  1.00146.48           N
ANISOU 4321  N   ASP B 270    22637  16146  16874   1112   -583    307       N
ATOM   4322  CA  ASP B 270      17.439 101.280  97.386  1.00159.38           C
ANISOU 4322  CA  ASP B 270    24405  17694  18460   1237   -539    298       C
ATOM   4323  CB  ASP B 270      18.146 101.612  98.739  1.00183.23           C
ANISOU 4323  CB  ASP B 270    27568  20638  21414   1211   -569    239       C
ATOM   4324  CG  ASP B 270      19.225 102.712  98.657  1.00185.80           C
ANISOU 4324  CG  ASP B 270    28029  20854  21715   1103   -644    209       C
ATOM   4325  OD1 ASP B 270      19.194 103.618  97.792  1.00186.03           O
ANISOU 4325  OD1 ASP B 270    28106  20823  21753   1085   -649    234       O
ATOM   4326  OD2 ASP B 270      20.130 102.660  99.515  1.00190.53           O
ANISOU 4326  OD2 ASP B 270    28688  21418  22285   1036   -700    157       O
ATOM   4327  C   ASP B 270      16.830 102.484  96.692  1.00167.07           C
ANISOU 4327  C   ASP B 270    25473  18582  19425   1295   -528    328       C
ATOM   4328  O   ASP B 270      17.486 103.324  96.110  1.00166.51           O
ANISOU 4328  O   ASP B 270    25481  18444  19343   1217   -569    329       O
ATOM   4329  N   GLU B 271      15.505 102.441  96.712  1.00164.38           N
ANISOU 4329  N   GLU B 271    25103  18253  19102   1436   -465    356       N
ATOM   4330  CA  GLU B 271      14.844 101.233  97.253  1.00155.57           C
ANISOU 4330  CA  GLU B 271    23855  17231  18023   1506   -412    361       C
ATOM   4331  CB  GLU B 271      14.001 101.582  98.478  1.00162.46           C
ANISOU 4331  CB  GLU B 271    24831  18037  18858   1641   -337    349       C
ATOM   4332  C   GLU B 271      13.949 100.492  96.267  1.00131.74           C
ANISOU 4332  C   GLU B 271    20660  14306  15090   1559   -392    407       C
ATOM   4333  O   GLU B 271      12.748 100.380  96.506  1.00137.15           O
ANISOU 4333  O   GLU B 271    21304  14993  15814   1689   -329    428       O
ATOM   4334  N   ASN B 272      14.513  99.933  95.200  1.00116.90           N
ANISOU 4334  N   ASN B 272    18672  12500  13245   1463   -443    422       N
ATOM   4335  CA  ASN B 272      13.703  99.183  94.233  1.00108.06           C
ANISOU 4335  CA  ASN B 272    17390  11465  12203   1511   -441    460       C
ATOM   4336  CB  ASN B 272      14.290  99.330  92.835  1.00111.05           C
ANISOU 4336  CB  ASN B 272    17751  11859  12583   1424   -504    481       C
ATOM   4337  CG  ASN B 272      14.685 100.767  92.507  1.00118.12           C
ANISOU 4337  CG  ASN B 272    18823  12639  13420   1400   -526    484       C
ATOM   4338  OD1 ASN B 272      15.866 101.032  92.223  1.00111.33           O
ANISOU 4338  OD1 ASN B 272    18016  11756  12530   1276   -560    474       O
ATOM   4339  ND2 ASN B 272      13.713 101.694  92.515  1.00128.68           N
ANISOU 4339  ND2 ASN B 272    20246  13898  14750   1517   -505    501       N
ATOM   4340  C   ASN B 272      13.671  97.709  94.686  1.00 97.48           C
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ANISOU 4340  C   ASN B 272    15891  10235  10911   1500   -416    451       C
ATOM   4341  O   ASN B 272      14.432  97.355  95.575  1.00100.28           O
ANISOU 4341  O   ASN B 272    16274  10600  11230   1442   -411    418       O
ATOM   4342  N   GLU B 273      12.817  96.864  94.096  1.00 90.21           N
ANISOU 4342  N   GLU B 273    14811   9392  10074   1557   -406    478       N
ATOM   4343  CA  GLU B 273      12.594  95.502  94.612  1.00 92.69           C
ANISOU 4343  CA  GLU B 273    14977   9798  10444   1567   -368    473       C
ATOM   4344  CB  GLU B 273      11.546  94.739  93.778  1.00 80.10           C
ANISOU 4344  CB  GLU B 273    13209   8270   8957   1633   -371    505       C
ATOM   4345  C   GLU B 273      13.889  94.699  94.663  1.00102.18           C
ANISOU 4345  C   GLU B 273    16138  11066  11618   1429   -405    449       C
ATOM   4346  O   GLU B 273      14.845  95.013  93.953  1.00106.54           O
ANISOU 4346  O   GLU B 273    16730  11614  12137   1325   -465    446       O
ATOM   4347  N   LYS B 274      13.929  93.685  95.526  1.00 98.37           N
ANISOU 4347  N   LYS B 274    15582  10640  11153   1432   -364    434       N
ATOM   4348  CA  LYS B 274      15.102  92.820  95.630  1.00 94.43           C
ANISOU 4348  CA  LYS B 274    15032  10210  10636   1312   -398    412       C
ATOM   4349  C   LYS B 274      15.100  91.847  94.473  1.00 83.60           C
ANISOU 4349  C   LYS B 274    13496   8936   9332   1267   -432    433       C
ATOM   4350  O   LYS B 274      16.134  91.311  94.089  1.00 78.59           O
ANISOU 4350  O   LYS B 274    12820   8353   8687   1156   -475    423       O
ATOM   4351  CB  LYS B 274      15.130  92.043  96.953  1.00 97.86           C
ANISOU 4351  CB  LYS B 274    15455  10667  11060   1338   -343    390       C
ATOM   4352  CG  LYS B 274      14.315  92.654  98.079  1.00106.43           C
ANISOU 4352  CG  LYS B 274    16653  11671  12115   1461   -266    387       C
ATOM   4353  CD  LYS B 274      14.351  91.792  99.331  1.00101.23           C
ANISOU 4353  CD  LYS B 274    15989  11035  11438   1492   -204    370       C
ATOM   4354  CE  LYS B 274      14.058  90.345  98.992  1.00 98.86           C
ANISOU 4354  CE  LYS B 274    15490  10846  11227   1484   -180    389       C
ATOM   4355  NZ  LYS B 274      12.614  90.172  98.669  1.00104.37           N
ANISOU 4355  NZ  LYS B 274    16082  11550  12026   1599   -111    428       N
ATOM   4356  N   LEU B 275      13.913  91.618  93.933  1.00 89.07           N
ANISOU 4356  N   LEU B 275    14096   9648  10097   1359   -415    461       N
ATOM   4357  CA  LEU B 275      13.731  90.663  92.870  1.00 94.02           C
ANISOU 4357  CA  LEU B 275    14570  10362  10793   1336   -452    479       C
ATOM   4358  CB  LEU B 275      12.657  89.630  93.250  1.00 98.62           C
ANISOU 4358  CB  LEU B 275    15002  10995  11474   1423   -399    489       C
ATOM   4359  CG  LEU B 275      12.908  88.662  94.431  1.00106.17           C
ANISOU 4359  CG  LEU B 275    15910  11994  12434   1411   -335    472       C
ATOM   4360  CD1 LEU B 275      11.639  87.925  94.824  1.00113.65           C
ANISOU 4360  CD1 LEU B 275    16729  12962  13490   1519   -262    490       C
ATOM   4361  CD2 LEU B 275      14.002  87.622  94.166  1.00100.59           C
ANISOU 4361  CD2 LEU B 275    15130  11375  11716   1292   -374    457       C
ATOM   4362  C   LEU B 275      13.376  91.448  91.613  1.00101.05           C
ANISOU 4362  C   LEU B 275    15496  11215  11685   1358   -508    502       C
ATOM   4363  O   LEU B 275      12.598  92.407  91.656  1.00101.94           O
ANISOU 4363  O   LEU B 275    15684  11253  11797   1448   -496    515       O
ATOM   4364  N   GLU B 276      13.966  91.040  90.496  1.00106.08           N
ANISOU 4364  N   GLU B 276    16089  11900  12317   1281   -567    510       N
ATOM   4365  CA  GLU B 276      13.914  91.817  89.268  1.00102.22           C
ANISOU 4365  CA  GLU B 276    15668  11369  11802   1284   -622    531       C
ATOM   4366  CB  GLU B 276      14.954  91.291  88.316  1.00 97.08           C
ANISOU 4366  CB  GLU B 276    14994  10769  11124   1173   -664    534       C
ATOM   4367  CG  GLU B 276      16.158  90.827  89.036  1.00106.03           C
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ANISOU 4367  CG  GLU B 276    16121  11935  12231   1064   -639    510       C
ATOM   4368  CD  GLU B 276      17.310  90.686  88.109  1.00122.73           C
ANISOU 4368  CD  GLU B 276    18250  14069  14312    951   -668    517       C
ATOM   4369  OE1 GLU B 276      17.640  89.530  87.770  1.00121.97           O
ANISOU 4369  OE1 GLU B 276    18040  14057  14244    905   -677    515       O
ATOM   4370  OE2 GLU B 276      17.868  91.734  87.706  1.00136.46           O
ANISOU 4370  OE2 GLU B 276    20116  15733  15999    911   -675    527       O
ATOM   4371  C   GLU B 276      12.570  91.822  88.572  1.00 97.60           C
ANISOU 4371  C   GLU B 276    15019  10779  11284   1401   -652    554       C
ATOM   4372  O   GLU B 276      11.786  90.887  88.699  1.00101.33           O
ANISOU 4372  O   GLU B 276    15349  11307  11846   1455   -645    554       O
ATOM   4373  N   TYR B 277      12.318  92.879  87.812  1.00 98.02           N
ANISOU 4373  N   TYR B 277    15179  10762  11302   1440   -690    572       N
ATOM   4374  CA  TYR B 277      11.068  92.973  87.083  1.00 99.17           C
ANISOU 4374  CA  TYR B 277    15275  10894  11511   1554   -736    592       C
ATOM   4375  CB  TYR B 277      10.634  94.422  86.944  1.00101.67           C
ANISOU 4375  CB  TYR B 277    15738  11104  11787   1626   -741    608       C
ATOM   4376  CG  TYR B 277      10.333  95.047  88.266  1.00104.76           C
ANISOU 4376  CG  TYR B 277    16186  11440  12180   1675   -663    598       C
ATOM   4377  CD2 TYR B 277      11.335  95.668  88.991  1.00113.92           C
ANISOU 4377  CD2 TYR B 277    17475  12555  13253   1598   -622    581       C
ATOM   4378  CE2 TYR B 277      11.076  96.243  90.213  1.00127.12           C
ANISOU 4378  CE2 TYR B 277    19218  14169  14912   1647   -555    569       C
ATOM   4379  CZ  TYR B 277       9.799  96.185  90.733  1.00133.57           C
ANISOU 4379  CZ  TYR B 277    19972  14972  15808   1777   -510    578       C
ATOM   4380  OH  TYR B 277       9.546  96.759  91.959  1.00141.72           O
ANISOU 4380  OH  TYR B 277    21088  15939  16818   1834   -432    567       O
ATOM   4381  CE1 TYR B 277       8.782  95.560  90.032  1.00121.79           C
ANISOU 4381  CE1 TYR B 277    18331  13523  14419   1852   -544    597       C
ATOM   4382  CD1 TYR B 277       9.056  94.991  88.808  1.00110.36           C
ANISOU 4382  CD1 TYR B 277    16818  12133  12980   1800   -628    604       C
ATOM   4383  C   TYR B 277      11.189  92.347  85.719  1.00 94.91           C
ANISOU 4383  C   TYR B 277    14684  10404  10976   1527   -817    602       C
ATOM   4384  O   TYR B 277      12.292  92.066  85.247  1.00 95.71           O
ANISOU 4384  O   TYR B 277    14816  10534  11015   1421   -827    600       O
ATOM   4385  N   TYR B 278      10.033  92.131  85.102  1.00 79.82           N
ANISOU 4385  N   TYR B 278    12692   8495   9142   1629   -876    612       N
ATOM   4386  CA  TYR B 278       9.969  91.602  83.765  1.00 70.36           C
ANISOU 4386  CA  TYR B 278    11460   7329   7944   1628   -969    619       C
ATOM   4387  CB  TYR B 278       8.539  91.578  83.247  1.00 71.86           C
ANISOU 4387  CB  TYR B 278    11571   7500   8232   1760  -1045    626       C
ATOM   4388  CG  TYR B 278       8.513  91.425  81.755  1.00 78.96           C
ANISOU 4388  CG  TYR B 278    12504   8400   9096   1772  -1158    635       C
ATOM   4389  CD1 TYR B 278       8.907  90.236  81.162  1.00 70.85           C
ANISOU 4389  CD1 TYR B 278    11392   7450   8077   1713  -1200    623       C
ATOM   4390  CE1 TYR B 278       8.909  90.094  79.794  1.00 92.17           C
ANISOU 4390  CE1 TYR B 278    14144  10144  10730   1730  -1304    629       C
ATOM   4391  CZ  TYR B 278       8.503  91.146  78.993  1.00 93.17           C
ANISOU 4391  CZ  TYR B 278    14409  10189  10802   1809  -1369    649       C
ATOM   4392  OH  TYR B 278       8.497  91.003  77.622  1.00 98.82           O
ANISOU 4392  OH  TYR B 278    15196  10893  11459   1835  -1474    655       O
ATOM   4393  CE2 TYR B 278       8.110  92.334  79.562  1.00 83.65           C
ANISOU 4393  CE2 TYR B 278    13282   8908   9593   1865  -1328    662       C
ATOM   4394  CD2 TYR B 278       8.121  92.470  80.934  1.00 73.63           C
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ANISOU 4394  CD2 TYR B 278    11960   7645   8371   1846  -1222    654       C
ATOM   4395  C   TYR B 278      10.835  92.444  82.860  1.00 77.80           C
ANISOU 4395  C   TYR B 278    12576   8221   8764   1575   -994    637       C
ATOM   4396  O   TYR B 278      11.770  91.933  82.249  1.00 91.73           O
ANISOU 4396  O   TYR B 278    14354  10026  10475   1484  -1004    637       O
ATOM   4397  N   GLU B 279      10.517  93.732  82.798  1.00 70.34           N
ANISOU 4397  N   GLU B 279    11764   7184   7778   1635   -995    653       N
ATOM   4398  CA  GLU B 279      11.336  94.717  82.100  1.00 81.05           C
ANISOU 4398  CA  GLU B 279    13304   8472   9019   1587   -997    673       C
ATOM   4399  CB  GLU B 279      10.986  96.138  82.592  1.00 75.69           C
ANISOU 4399  CB  GLU B 279    12756   7690   8312   1647   -965    683       C
ATOM   4400  CG  GLU B 279      12.070  97.196  82.356  1.00 86.68           C
ANISOU 4400  CG  GLU B 279    14335   9005   9594   1567   -929    699       C
ATOM   4401  CD  GLU B 279      12.799  97.675  83.613  1.00 90.01           C
ANISOU 4401  CD  GLU B 279    14805   9397   9997   1493   -847    680       C
ATOM   4402  OE1 GLU B 279      12.155  98.047  84.626  1.00 88.57           O
ANISOU 4402  OE1 GLU B 279    14615   9186   9851   1558   -814    666       O
ATOM   4403  OE2 GLU B 279      14.043  97.692  83.573  1.00 95.82           O
ANISOU 4403  OE2 GLU B 279    15592  10132  10685   1371   -815    677       O
ATOM   4404  C   GLU B 279      12.833  94.424  82.268  1.00 87.75           C
ANISOU 4404  C   GLU B 279    14184   9352   9807   1438   -940    667       C
ATOM   4405  O   GLU B 279      13.573  94.362  81.286  1.00 80.45           O
ANISOU 4405  O   GLU B 279    13324   8426   8818   1379   -957    683       O
ATOM   4406  N   LYS B 280      13.265  94.193  83.505  1.00 92.49           N
ANISOU 4406  N   LYS B 280    14735   9977  10430   1381   -873    644       N
ATOM   4407  CA  LYS B 280      14.673  93.927  83.774  1.00 88.96           C
ANISOU 4407  CA  LYS B 280    14305   9555   9941   1242   -828    634       C
ATOM   4408  CB  LYS B 280      14.966  94.064  85.278  1.00 89.06           C
ANISOU 4408  CB  LYS B 280    14310   9560   9968   1210   -766    606       C
ATOM   4409  C   LYS B 280      15.081  92.540  83.241  1.00 96.06           C
ANISOU 4409  C   LYS B 280    15080  10555  10865   1185   -848    629       C
ATOM   4410  O   LYS B 280      16.156  92.398  82.659  1.00 89.25           O
ANISOU 4410  O   LYS B 280    14257   9700   9955   1090   -836    638       O
ATOM   4411  N   PHE B 281      14.218  91.534  83.414  1.00 99.58           N
ANISOU 4411  N   PHE B 281    15376  11069  11389   1245   -874    616       N
ATOM   4412  CA  PHE B 281      14.451  90.184  82.865  1.00 89.84           C
ANISOU 4412  CA  PHE B 281    14022   9928  10184   1204   -902    610       C
ATOM   4413  CB  PHE B 281      13.251  89.283  83.069  1.00 92.52           C
ANISOU 4413  CB  PHE B 281    14205  10321  10628   1291   -937    597       C
ATOM   4414  CG  PHE B 281      13.103  88.776  84.446  1.00 96.71           C
ANISOU 4414  CG  PHE B 281    14634  10888  11222   1286   -872    577       C
ATOM   4415  CD1 PHE B 281      14.185  88.676  85.271  1.00102.14           C
ANISOU 4415  CD1 PHE B 281    15343  11593  11871   1189   -809    563       C
ATOM   4416  CE1 PHE B 281      14.025  88.205  86.539  1.00119.86           C
ANISOU 4416  CE1 PHE B 281    17513  13866  14163   1195   -753    545       C
ATOM   4417  CZ  PHE B 281      12.770  87.831  86.986  1.00113.60           C
ANISOU 4417  CZ  PHE B 281    16617  13082  13463   1297   -742    544       C
ATOM   4418  CE2 PHE B 281      11.692  87.917  86.171  1.00 93.48           C
ANISOU 4418  CE2 PHE B 281    14029  10518  10972   1389   -802    558       C
ATOM   4419  CD2 PHE B 281      11.857  88.389  84.911  1.00101.14           C
ANISOU 4419  CD2 PHE B 281    15080  11461  11888   1385   -874    572       C
ATOM   4420  C   PHE B 281      14.720  90.193  81.384  1.00 91.98           C
ANISOU 4420  C   PHE B 281    14363  10188  10396   1197   -956    631       C
ATOM   4421  O   PHE B 281      15.747  89.693  80.933  1.00 96.33           O
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ANISOU 4421  O   PHE B 281    14921  10773  10909   1104   -938    635       O
ATOM   4422  N   GLN B 282      13.739  90.715  80.641  1.00 86.94           N
ANISOU 4422  N   GLN B 282    13775   9501   9756   1304  -1024    646       N
ATOM   4423  CA  GLN B 282      13.792  90.849  79.185  1.00 86.35           C
ANISOU 4423  CA  GLN B 282    13795   9399   9614   1327  -1087    668       C
ATOM   4424  CB  GLN B 282      12.592  91.669  78.680  1.00 85.21           C
ANISOU 4424  CB  GLN B 282    13717   9184   9475   1461  -1163    680       C
ATOM   4425  CG  GLN B 282      11.946  91.160  77.396  1.00 82.12           C
ANISOU 4425  CG  GLN B 282    13321   8801   9080   1537  -1278    684       C
ATOM   4426  CD  GLN B 282      12.325  91.978  76.182  1.00 93.61           C
ANISOU 4426  CD  GLN B 282    14977  10179  10411   1554  -1304    716       C
ATOM   4427  OE1 GLN B 282      12.940  93.040  76.296  1.00104.97           O
ANISOU 4427  OE1 GLN B 282    16555  11549  11779   1518  -1236    739       O
ATOM   4428  NE2 GLN B 282      11.952  91.491  75.006  1.00 83.88           N
ANISOU 4428  NE2 GLN B 282    13769   8951   9151   1612  -1404    717       N
ATOM   4429  C   GLN B 282      15.094  91.509  78.754  1.00 92.86           C
ANISOU 4429  C   GLN B 282    14771  10176  10337   1232  -1027    692       C
ATOM   4430  O   GLN B 282      15.810  91.012  77.879  1.00 95.80           O
ANISOU 4430  O   GLN B 282    15172  10569  10659   1179  -1027    704       O
ATOM   4431  N   ILE B 283      15.400  92.632  79.391  1.00 87.59           N
ANISOU 4431  N   ILE B 283    14199   9438   9644   1211   -972    699       N
ATOM   4432  CA  ILE B 283      16.590  93.376  79.050  1.00 79.77           C
ANISOU 4432  CA  ILE B 283    13347   8385   8576   1120   -911    722       C
ATOM   4433  CB  ILE B 283      16.620  94.745  79.791  1.00 77.99           C
ANISOU 4433  CB  ILE B 283    13232   8067   8335   1124   -870    726       C
ATOM   4434  CG1 ILE B 283      15.898  95.823  78.967  1.00 74.70           C
ANISOU 4434  CG1 ILE B 283    12963   7557   7864   1226   -910    755       C
ATOM   4435  CD1 ILE B 283      16.679  96.343  77.741  1.00 74.87           C
ANISOU 4435  CD1 ILE B 283    13142   7512   7793   1188   -889    796       C
ATOM   4436  CG2 ILE B 283      18.025  95.193  80.042  1.00 92.44           C
ANISOU 4436  CG2 ILE B 283    15131   9858  10136    992   -792    732       C
ATOM   4437  C   ILE B 283      17.800  92.485  79.358  1.00 74.28           C
ANISOU 4437  C   ILE B 283    12569   7758   7896    990   -855    710       C
ATOM   4438  O   ILE B 283      18.703  92.359  78.517  1.00 73.43           O
ANISOU 4438  O   ILE B 283    12518   7642   7740    924   -825    733       O
ATOM   4439  N   ILE B 284      17.778  91.815  80.518  1.00 73.07           N
ANISOU 4439  N   ILE B 284    12281   7670   7812    962   -839    677       N
ATOM   4440  CA  ILE B 284      18.809  90.819  80.852  1.00 78.56           C
ANISOU 4440  CA  ILE B 284    12877   8440   8531    851   -799    662       C
ATOM   4441  CB  ILE B 284      18.596  90.160  82.231  1.00 83.29           C
ANISOU 4441  CB  ILE B 284    13344   9103   9201    844   -787    625       C
ATOM   4442  CG1 ILE B 284      18.763  91.152  83.370  1.00 76.18           C
ANISOU 4442  CG1 ILE B 284    12510   8136   8297    830   -751    612       C
ATOM   4443  CD1 ILE B 284      20.150  91.672  83.464  1.00 87.91           C
ANISOU 4443  CD1 ILE B 284    14071   9578   9755    710   -707    615       C
ATOM   4444  CG2 ILE B 284      19.664  89.106  82.452  1.00 84.93           C
ANISOU 4444  CG2 ILE B 284    13456   9385   9430    737   -755    612       C
ATOM   4445  C   ILE B 284      18.912  89.677  79.826  1.00 82.14           C
ANISOU 4445  C   ILE B 284    13268   8963   8980    846   -827    669       C
ATOM   4446  O   ILE B 284      20.004  89.384  79.361  1.00 84.92           O
ANISOU 4446  O   ILE B 284    13637   9324   9305    756   -785    682       O
ATOM   4447  N   GLU B 285      17.805  89.024  79.463  1.00 84.23           N
ANISOU 4447  N   GLU B 285    13459   9270   9275    940   -898    661       N
ATOM   4448  CA  GLU B 285      17.887  87.927  78.485  1.00 77.03           C
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ANISOU 4448  CA  GLU B 285    12496   8417   8353    938   -935    663       C
ATOM   4449  CB  GLU B 285      16.508  87.281  78.241  1.00 66.69           C
ANISOU 4449  CB  GLU B 285    11093   7143   7101   1050  -1029    646       C
ATOM   4450  C   GLU B 285      18.532  88.416  77.161  1.00 89.40           C
ANISOU 4450  C   GLU B 285    14221   9925   9823    921   -924    700       C
ATOM   4451  O   GLU B 285      19.102  87.608  76.431  1.00 79.66           O
ANISOU 4451  O   GLU B 285    12974   8729   8563    882   -916    706       O
ATOM   4452  N   ASN B 286      18.495  89.730  76.882  1.00103.82           N
ANISOU 4452  N   ASN B 286    16201  11652  11592    949   -911    726       N
ATOM   4453  CA  ASN B 286      19.409  90.350  75.894  1.00 78.90           C
ANISOU 4453  CA  ASN B 286    13205   8425   8347    904   -858    766       C
ATOM   4454  CB  ASN B 286      18.677  91.441  75.162  1.00 73.75           C
ANISOU 4454  CB  ASN B 286    12712   7679   7629   1006   -902    792       C
ATOM   4455  C   ASN B 286      20.764  90.891  76.504  1.00106.99           C
ANISOU 4455  C   ASN B 286    16791  11949  11914    773   -749    776       C
ATOM   4456  O   ASN B 286      21.295  91.915  76.088  1.00 76.45           O
ANISOU 4456  O   ASN B 286    13065   7987   7994    748   -697    809       O
ATOM   4457  N   VAL B 287      21.282  90.192  77.527  1.00117.24           N
ANISOU 4457  N   VAL B 287    17948  13317  13283    693   -721    746       N
ATOM   4458  CA  VAL B 287      22.728  90.085  77.811  1.00100.93           C
ANISOU 4458  CA  VAL B 287    15861  11251  11238    559   -635    751       C
ATOM   4459  CB  VAL B 287      23.160  90.631  79.213  1.00108.43           C
ANISOU 4459  CB  VAL B 287    16776  12180  12243    493   -609    724       C
ATOM   4460  CG2 VAL B 287      24.665  90.756  79.301  1.00114.05           C
ANISOU 4460  CG2 VAL B 287    17490  12863  12980    358   -532    735       C
ATOM   4461  CG1 VAL B 287      22.699  89.743  80.339  1.00 97.30           C
ANISOU 4461  CG1 VAL B 287    15214  10861  10896    506   -646    680       C
ATOM   4462  C   VAL B 287      23.055  88.584  77.719  1.00 97.06           C
ANISOU 4462  C   VAL B 287    15231  10868  10780    522   -638    735       C
ATOM   4463  O   VAL B 287      24.199  88.177  77.493  1.00 91.91           O
ANISOU 4463  O   VAL B 287    14557  10229  10138    428   -574    747       O
ATOM   4464  N   PHE B 288      22.020  87.764  77.882  1.00 87.82           N
ANISOU 4464  N   PHE B 288    13963   9769   9635    600   -711    709       N
ATOM   4465  CA  PHE B 288      22.139  86.323  77.726  1.00 83.68           C
ANISOU 4465  CA  PHE B 288    13312   9343   9141    582   -725    693       C
ATOM   4466  CB  PHE B 288      20.956  85.616  78.360  1.00 81.23           C
ANISOU 4466  CB  PHE B 288    12876   9099   8890    659   -796    658       C
ATOM   4467  CG  PHE B 288      21.201  85.214  79.761  1.00 85.44           C
ANISOU 4467  CG  PHE B 288    13289   9683   9493    607   -768    628       C
ATOM   4468  CD1 PHE B 288      20.911  86.083  80.804  1.00 91.45           C
ANISOU 4468  CD1 PHE B 288    14073  10400  10273    622   -759    616       C
ATOM   4469  CE1 PHE B 288      21.146  85.709  82.120  1.00 84.63           C
ANISOU 4469  CE1 PHE B 288    13118   9577   9462    583   -735    588       C
ATOM   4470  CZ  PHE B 288      21.695  84.475  82.390  1.00 74.63           C
ANISOU 4470  CZ  PHE B 288    11730   8393   8231    525   -721    572       C
ATOM   4471  CE2 PHE B 288      21.990  83.605  81.350  1.00 80.49           C
ANISOU 4471  CE2 PHE B 288    12439   9181   8961    507   -728    584       C
ATOM   4472  CD2 PHE B 288      21.747  83.979  80.046  1.00 75.57           C
ANISOU 4472  CD2 PHE B 288    11914   8517   8283    548   -751    611       C
ATOM   4473  C   PHE B 288      22.215  85.919  76.276  1.00 98.36           C
ANISOU 4473  C   PHE B 288    15242  11197  10933    611   -736    719       C
ATOM   4474  O   PHE B 288      22.784  84.880  75.937  1.00 99.25           O
ANISOU 4474  O   PHE B 288    15290  11368  11051    566   -715    717       O
ATOM   4475  N   LYS B 289      21.597  86.729  75.424  1.00100.30           N
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ANISOU 4475  N   LYS B 289    15629  11370  11112    694   -773    742       N
ATOM   4476  CA  LYS B 289      21.568  86.450  73.999  1.00 90.26           C
ANISOU 4476  CA  LYS B 289    14459  10078   9758    740   -793    767       C
ATOM   4477  CB  LYS B 289      20.271  86.965  73.374  1.00 75.15           C
ANISOU 4477  CB  LYS B 289    12636   8117   7802    875   -898    769       C
ATOM   4478  CG  LYS B 289      19.079  86.066  73.635  1.00 74.09           C
ANISOU 4478  CG  LYS B 289    12362   8054   7734    952  -1010    728       C
ATOM   4479  CD  LYS B 289      17.782  86.583  73.006  1.00 63.47           C
ANISOU 4479  CD  LYS B 289    11095   6657   6364   1089  -1126    728       C
ATOM   4480  CE  LYS B 289      16.695  85.516  73.090  1.00 66.16           C
ANISOU 4480  CE  LYS B 289    11285   7067   6786   1157  -1238    688       C
ATOM   4481  NZ  LYS B 289      15.365  85.954  72.591  1.00 76.46           N
ANISOU 4481  NZ  LYS B 289    12633   8323   8096   1292  -1365    681       N
ATOM   4482  C   LYS B 289      22.775  87.074  73.321  1.00 89.39           C
ANISOU 4482  C   LYS B 289    14486   9895   9584    670   -686    813       C
ATOM   4483  O   LYS B 289      22.939  86.960  72.107  1.00 82.14           O
ANISOU 4483  O   LYS B 289    13685   8943   8583    703   -676    842       O
ATOM   4484  N   GLN B 290      23.627  87.724  74.106  1.00 90.38           N
ANISOU 4484  N   GLN B 290    14601   9988   9752    576   -603    820       N
ATOM   4485  CA  GLN B 290      24.770  88.419  73.532  1.00 87.67           C
ANISOU 4485  CA  GLN B 290    14378   9562   9372    504   -492    866       C
ATOM   4486  CB  GLN B 290      24.720  89.911  73.876  1.00 80.22           C
ANISOU 4486  CB  GLN B 290    13543   8515   8420    503   -470    882       C
ATOM   4487  CG  GLN B 290      24.964  90.803  72.668  1.00 89.31           C
ANISOU 4487  CG  GLN B 290    14901   9555   9478    532   -413    938       C
ATOM   4488  CD  GLN B 290      24.008  90.489  71.524  1.00100.38           C
ANISOU 4488  CD  GLN B 290    16399  10957  10782    662   -493    948       C
ATOM   4489  OE1 GLN B 290      22.794  90.356  71.729  1.00 98.10           O
ANISOU 4489  OE1 GLN B 290    16075  10704  10496    759   -610    917       O
ATOM   4490  NE2 GLN B 290      24.556  90.348  70.314  1.00102.97           N
ANISOU 4490  NE2 GLN B 290    16852  11243  11028    668   -430    991       N
ATOM   4491  C   GLN B 290      26.093  87.825  73.981  1.00 89.14           C
ANISOU 4491  C   GLN B 290    14456   9787   9627    373   -403    864       C
ATOM   4492  O   GLN B 290      27.124  88.071  73.370  1.00 97.65           O
ANISOU 4492  O   GLN B 290    15603  10808  10689    310   -301    904       O
ATOM   4493  N   LYS B 291      26.067  87.045  75.051  1.00 87.71           N
ANISOU 4493  N   LYS B 291    14105   9695   9526    337   -437    820       N
ATOM   4494  CA  LYS B 291      27.291  86.450  75.566  1.00 94.85           C
ANISOU 4494  CA  LYS B 291    14895  10638  10503    218   -367    814       C
ATOM   4495  CB  LYS B 291      27.749  87.186  76.835  1.00 93.15           C
ANISOU 4495  CB  LYS B 291    14637  10392  10362    144   -354    793       C
ATOM   4496  CG  LYS B 291      28.109  88.658  76.598  1.00 93.25           C
ANISOU 4496  CG  LYS B 291    14797  10279  10356    120   -302    826       C
ATOM   4497  CD  LYS B 291      29.369  88.771  75.712  1.00 97.25           C
ANISOU 4497  CD  LYS B 291    15357  10727  10867     38   -185    875       C
ATOM   4498  CE  LYS B 291      29.965  90.183  75.669  1.00 94.33           C
ANISOU 4498  CE  LYS B 291    15103  10227  10511    -15   -117    906       C
ATOM   4499  NZ  LYS B 291      28.944  91.220  75.946  1.00 99.27           N
ANISOU 4499  NZ  LYS B 291    15831  10799  11089     65   -181    897       N
ATOM   4500  C   LYS B 291      27.102  84.951  75.818  1.00 96.65           C
ANISOU 4500  C   LYS B 291    14971  10987  10766    224   -409    781       C
ATOM   4501  O   LYS B 291      26.161  84.529  76.494  1.00 97.87           O
ANISOU 4501  O   LYS B 291    15041  11200  10944    279   -491    743       O
ATOM   4502  N   LYS B 292      27.992  84.142  75.256  1.00 90.17           N
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ANISOU 4502  N   LYS B 292    14116  10195   9950    169   -346    797       N
ATOM   4503  CA  LYS B 292      27.759  82.706  75.262  1.00 83.61           C
ANISOU 4503  CA  LYS B 292    13164   9468   9135    186   -386    770       C
ATOM   4504  CB  LYS B 292      28.740  81.985  74.341  1.00 75.43           C
ANISOU 4504  CB  LYS B 292    12137   8441   8080    141   -303    800       C
ATOM   4505  CG  LYS B 292      28.675  80.485  74.508  1.00 98.79           C
ANISOU 4505  CG  LYS B 292    14958  11507  11070    141   -335    769       C
ATOM   4506  CD  LYS B 292      27.279  79.928  74.232  1.00 99.39           C
ANISOU 4506  CD  LYS B 292    15030  11627  11107    253   -450    742       C
ATOM   4507  CE  LYS B 292      27.071  78.615  74.957  1.00 86.90           C
ANISOU 4507  CE  LYS B 292    13275  10152   9592    242   -494    701       C
ATOM   4508  NZ  LYS B 292      26.436  77.567  74.074  1.00 81.53           N
ANISOU 4508  NZ  LYS B 292    12595   9513   8870    313   -553    690       N
ATOM   4509  C   LYS B 292      27.830  82.119  76.665  1.00 85.71           C
ANISOU 4509  C   LYS B 292    13262   9811   9492    140   -416    726       C
ATOM   4510  O   LYS B 292      27.084  81.197  76.994  1.00 97.29           O
ANISOU 4510  O   LYS B 292    14633  11356  10976    187   -481    694       O
ATOM   4511  N   LYS B 293      28.716  82.643  77.500  1.00 84.60           N
ANISOU 4511  N   LYS B 293    13090   9642   9412     50   -370    723       N
ATOM   4512  CA  LYS B 293      28.789  82.155  78.871  1.00 86.03           C
ANISOU 4512  CA  LYS B 293    13135   9886   9667     14   -404    679       C
ATOM   4513  CB  LYS B 293      30.056  81.302  79.094  1.00 68.40           C
ANISOU 4513  CB  LYS B 293    10792   7698   7498    -85   -351    677       C
ATOM   4514  C   LYS B 293      28.722  83.353  79.822  1.00101.69           C
ANISOU 4514  C   LYS B 293    15164  11804  11671     -1   -420    666       C
ATOM   4515  O   LYS B 293      29.747  83.868  80.268  1.00114.29           O
ANISOU 4515  O   LYS B 293    16757  13354  13314    -90   -380    668       O
ATOM   4516  N   PRO B 294      27.492  83.797  80.134  1.00 96.45           N
ANISOU 4516  N   PRO B 294    14539  11131  10976     91   -482    652       N
ATOM   4517  CA  PRO B 294      27.178  85.027  80.874  1.00 87.76           C
ANISOU 4517  CA  PRO B 294    13512   9957   9874    104   -500    642       C
ATOM   4518  CB  PRO B 294      25.664  84.932  81.073  1.00 79.81           C
ANISOU 4518  CB  PRO B 294    12501   8978   8845    224   -568    626       C
ATOM   4519  CG  PRO B 294      25.207  84.100  79.954  1.00 82.81           C
ANISOU 4519  CG  PRO B 294    12866   9404   9194    276   -585    641       C
ATOM   4520  CD  PRO B 294      26.269  83.067  79.770  1.00 89.46           C
ANISOU 4520  CD  PRO B 294    13622  10304  10064    192   -542    642       C
ATOM   4521  C   PRO B 294      27.891  85.153  82.221  1.00 87.27           C
ANISOU 4521  C   PRO B 294    13390   9893   9874     29   -500    609       C
ATOM   4522  O   PRO B 294      27.918  84.218  83.008  1.00 92.00           O
ANISOU 4522  O   PRO B 294    13876  10569  10511     20   -522    579       O
ATOM   4523  N   THR B 295      28.457  86.329  82.466  1.00 91.18           N
ANISOU 4523  N   THR B 295    13971  10295  10378    -22   -480    615       N
ATOM   4524  CA  THR B 295      29.226  86.592  83.669  1.00 83.45           C
ANISOU 4524  CA  THR B 295    12956   9295   9457    -97   -492    582       C
ATOM   4525  CB  THR B 295      30.557  87.298  83.358  1.00 85.41           C
ANISOU 4525  CB  THR B 295    13242   9459   9752   -209   -440    602       C
ATOM   4526  OG1 THR B 295      30.309  88.681  83.051  1.00102.64           O
ANISOU 4526  OG1 THR B 295    15566  11532  11900   -192   -427    622       O
ATOM   4527  CG2 THR B 295      31.264  86.632  82.185  1.00 95.32           C
ANISOU 4527  CG2 THR B 295    14459  10739  11020   -253   -371    641       C
ATOM   4528  C   THR B 295      28.426  87.459  84.620  1.00 92.14           C
ANISOU 4528  C   THR B 295    14127  10349  10534    -38   -538    556       C
ATOM   4529  O   THR B 295      27.484  88.145  84.223  1.00 94.93           O
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ANISOU 4529  O   THR B 295    14572  10662  10836     43   -546    572       O
ATOM   4530  N   LEU B 296      28.816  87.430  85.884  1.00 95.35           N
ANISOU 4530  N   LEU B 296    14497  10757  10977    -74   -570    515       N
ATOM   4531  CA  LEU B 296      28.198  88.274  86.885  1.00 95.26           C
ANISOU 4531  CA  LEU B 296    14563  10690  10940    -23   -607    487       C
ATOM   4532  CB  LEU B 296      28.830  87.997  88.235  1.00 96.05           C
ANISOU 4532  CB  LEU B 296    14618  10800  11077    -72   -646    440       C
ATOM   4533  CG  LEU B 296      28.081  88.718  89.328  1.00 92.97           C
ANISOU 4533  CG  LEU B 296    14316  10361  10648     -1   -680    409       C
ATOM   4534  CD1 LEU B 296      26.667  88.232  89.191  1.00 88.29           C
ANISOU 4534  CD1 LEU B 296    13701   9827  10016    121   -670    421       C
ATOM   4535  CD2 LEU B 296      28.677  88.372  90.665  1.00 97.51           C
ANISOU 4535  CD2 LEU B 296    14861  10944  11246    -37   -725    360       C
ATOM   4536  C   LEU B 296      28.330  89.764  86.557  1.00 99.78           C
ANISOU 4536  C   LEU B 296    15276  11140  11494    -39   -594    504       C
ATOM   4537  O   LEU B 296      27.446  90.565  86.861  1.00 92.29           O
ANISOU 4537  O   LEU B 296    14421  10143  10502     39   -611    500       O
ATOM   4538  N   LYS B 297      29.450  90.125  85.940  1.00100.35           N
ANISOU 4538  N   LYS B 297    15362  11159  11606   -138   -557    526       N
ATOM   4539  CA  LYS B 297      29.737  91.511  85.602  1.00 99.83           C
ANISOU 4539  CA  LYS B 297    15424  10969  11536   -169   -535    545       C
ATOM   4540  CB  LYS B 297      31.114  91.611  84.935  1.00 99.73           C
ANISOU 4540  CB  LYS B 297    15386  10911  11594   -292   -480    572       C
ATOM   4541  CG  LYS B 297      31.679  93.009  84.773  1.00 95.23           C
ANISOU 4541  CG  LYS B 297    14930  10202  11051   -351   -453    587       C
ATOM   4542  CD  LYS B 297      32.944  92.972  83.924  1.00100.79           C
ANISOU 4542  CD  LYS B 297    15597  10866  11833   -462   -375    625       C
ATOM   4543  CE  LYS B 297      33.767  94.246  84.058  1.00101.05           C
ANISOU 4543  CE  LYS B 297    15705  10755  11934   -551   -356    629       C
ATOM   4544  NZ  LYS B 297      32.964  95.487  83.813  1.00100.54           N
ANISOU 4544  NZ  LYS B 297    15807  10598  11795   -484   -350    646       N
ATOM   4545  C   LYS B 297      28.662  92.065  84.687  1.00106.01           C
ANISOU 4545  C   LYS B 297    16310  11725  12243    -70   -516    583       C
ATOM   4546  O   LYS B 297      28.139  93.155  84.904  1.00108.79           O
ANISOU 4546  O   LYS B 297    16778  11996  12562    -25   -529    582       O
ATOM   4547  N   GLN B 298      28.327  91.283  83.672  1.00104.76           N
ANISOU 4547  N   GLN B 298    16112  11633  12058    -31   -491    614       N
ATOM   4548  CA  GLN B 298      27.450  91.731  82.600  1.00 99.03           C
ANISOU 4548  CA  GLN B 298    15486  10878  11262     58   -479    653       C
ATOM   4549  CB  GLN B 298      27.519  90.721  81.443  1.00 94.56           C
ANISOU 4549  CB  GLN B 298    14868  10381  10678     67   -451    684       C
ATOM   4550  CG  GLN B 298      28.948  90.571  80.882  1.00 91.56           C
ANISOU 4550  CG  GLN B 298    14468   9977  10344    -51   -376    710       C
ATOM   4551  CD  GLN B 298      29.223  89.232  80.217  1.00 93.71           C
ANISOU 4551  CD  GLN B 298    14643  10343  10621    -61   -352    722       C
ATOM   4552  OE1 GLN B 298      28.354  88.367  80.139  1.00 93.71           O
ANISOU 4552  OE1 GLN B 298    14588  10428  10590     17   -399    709       O
ATOM   4553  NE2 GLN B 298      30.449  89.056  79.735  1.00 94.67           N
ANISOU 4553  NE2 GLN B 298    14740  10443  10788   -157   -277    747       N
ATOM   4554  C   GLN B 298      26.011  91.947  83.081  1.00 94.13           C
ANISOU 4554  C   GLN B 298    14895  10271  10599    184   -535    635       C
ATOM   4555  O   GLN B 298      25.362  92.912  82.699  1.00102.15           O
ANISOU 4555  O   GLN B 298    16030  11215  11569    249   -539    655       O
ATOM   4556  N   ILE B 299      25.523  91.060  83.936  1.00 88.90           N
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ANISOU 4556  N   ILE B 299    14124   9696   9958    219   -572    600       N
ATOM   4557  CA  ILE B 299      24.196  91.221  84.511  1.00 81.18           C
ANISOU 4557  CA  ILE B 299    13158   8726   8959    335   -611    583       C
ATOM   4558  CB  ILE B 299      23.771  89.964  85.317  1.00 84.90           C
ANISOU 4558  CB  ILE B 299    13489   9305   9465    365   -633    551       C
ATOM   4559  CG1 ILE B 299      23.875  88.701  84.460  1.00 82.31           C
ANISOU 4559  CG1 ILE B 299    13055   9069   9151    354   -630    566       C
ATOM   4560  CD1 ILE B 299      23.530  87.420  85.212  1.00 74.00           C
ANISOU 4560  CD1 ILE B 299    11861   8117   8138    375   -646    537       C
ATOM   4561  CG2 ILE B 299      22.365  90.107  85.874  1.00 79.82           C
ANISOU 4561  CG2 ILE B 299    12849   8665   8814    489   -657    540       C
ATOM   4562  C   ILE B 299      24.174  92.456  85.410  1.00 88.07           C
ANISOU 4562  C   ILE B 299    14138   9504   9823    338   -617    565       C
ATOM   4563  O   ILE B 299      23.201  93.208  85.420  1.00 95.23           O
ANISOU 4563  O   ILE B 299    15126  10362  10696    431   -630    571       O
ATOM   4564  N   ALA B 300      25.252  92.664  86.164  1.00 90.26           N
ANISOU 4564  N   ALA B 300    14414   9749  10132    238   -613    540       N
ATOM   4565  CA  ALA B 300      25.375  93.837  87.036  1.00 89.11           C
ANISOU 4565  CA  ALA B 300    14378   9503   9978    229   -626    516       C
ATOM   4566  CB  ALA B 300      26.641  93.757  87.864  1.00 74.92           C
ANISOU 4566  CB  ALA B 300    12548   7688   8232    113   -641    481       C
ATOM   4567  C   ALA B 300      25.366  95.132  86.232  1.00 92.11           C
ANISOU 4567  C   ALA B 300    14899   9771  10327    232   -603    551       C
ATOM   4568  O   ALA B 300      24.590  96.050  86.510  1.00 92.61           O
ANISOU 4568  O   ALA B 300    15066   9768  10353    309   -614    549       O
ATOM   4569  N   LYS B 301      26.255  95.189  85.247  1.00 89.06           N
ANISOU 4569  N   LYS B 301    14520   9361   9959    150   -564    584       N
ATOM   4570  CA  LYS B 301      26.350  96.312  84.338  1.00 91.18           C
ANISOU 4570  CA  LYS B 301    14923   9524  10199    147   -527    625       C
ATOM   4571  CB  LYS B 301      27.350  95.992  83.227  1.00 81.67           C
ANISOU 4571  CB  LYS B 301    13694   8317   9019     59   -467    666       C
ATOM   4572  CG  LYS B 301      27.551  97.103  82.233  1.00104.47           C
ANISOU 4572  CG  LYS B 301    16727  11090  11877     51   -412    715       C
ATOM   4573  CD  LYS B 301      28.910  97.775  82.427  1.00122.66           C
ANISOU 4573  CD  LYS B 301    19052  13296  14256    -86   -369    716       C
ATOM   4574  CE  LYS B 301      28.889  99.243  81.984  1.00117.25           C
ANISOU 4574  CE  LYS B 301    18538  12467  13546    -81   -332    749       C
ATOM   4575  NZ  LYS B 301      30.102  99.969  82.448  1.00116.63           N
ANISOU 4575  NZ  LYS B 301    18472  12284  13559   -213   -307    737       N
ATOM   4576  C   LYS B 301      24.975  96.654  83.760  1.00105.01           C
ANISOU 4576  C   LYS B 301    16749  11270  11880    285   -541    649       C
ATOM   4577  O   LYS B 301      24.537  97.805  83.818  1.00 96.25           O
ANISOU 4577  O   LYS B 301    15767  10067  10738    332   -544    657       O
ATOM   4578  N   GLU B 302      24.286  95.633  83.255  1.00111.19           N
ANISOU 4578  N   GLU B 302    17447  12151  12648    353   -558    658       N
ATOM   4579  CA  GLU B 302      22.985  95.790  82.602  1.00110.53           C
ANISOU 4579  CA  GLU B 302    17412  12072  12514    486   -586    680       C
ATOM   4580  C   GLU B 302      21.894  96.383  83.503  1.00 99.16           C
ANISOU 4580  C   GLU B 302    16008  10604  11066    586   -620    656       C
ATOM   4581  O   GLU B 302      20.985  97.064  83.036  1.00 96.58           O
ANISOU 4581  O   GLU B 302    15768  10228  10700    684   -637    677       O
ATOM   4582  CB  GLU B 302      22.517  94.435  82.063  1.00115.12           C
ANISOU 4582  CB  GLU B 302    17871  12769  13101    529   -610    683       C
ATOM   4583  CG  GLU B 302      21.362  94.519  81.100  1.00 95.51           C
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ANISOU 4583  CG  GLU B 302    15435  10283  10572    652   -649    709       C
ATOM   4584  CD  GLU B 302      21.619  95.542  80.028  1.00103.30           C
ANISOU 4584  CD  GLU B 302    16585  11167  11496    654   -622    753       C
ATOM   4585  OE1 GLU B 302      20.721  96.362  79.757  1.00106.14           O
ANISOU 4585  OE1 GLU B 302    17044  11466  11817    753   -651    767       O
ATOM   4586  OE2 GLU B 302      22.740  95.551  79.470  1.00106.60           O
ANISOU 4586  OE2 GLU B 302    17036  11560  11909    558   -564    777       O
ATOM   4587  N   ILE B 303      21.986  96.116  84.796  1.00 94.05           N
ANISOU 4587  N   ILE B 303    15299   9984  10453    566   -629    614       N
ATOM   4588  CA  ILE B 303      20.927  96.480  85.723  1.00 94.94           C
ANISOU 4588  CA  ILE B 303    15432  10080  10560    668   -649    591       C
ATOM   4589  CB  ILE B 303      20.519  95.252  86.584  1.00 94.37           C
ANISOU 4589  CB  ILE B 303    15213  10116  10529    697   -660    560       C
ATOM   4590  CG1 ILE B 303      19.122  95.428  87.190  1.00107.94           C
ANISOU 4590  CG1 ILE B 303    16931  11829  12251    833   -667    552       C
ATOM   4591  CD1 ILE B 303      18.011  95.545  86.178  1.00110.98           C
ANISOU 4591  CD1 ILE B 303    17320  12215  12633    940   -690    585       C
ATOM   4592  CG2 ILE B 303      21.560  94.964  87.661  1.00 88.00           C
ANISOU 4592  CG2 ILE B 303    14374   9319   9744    597   -653    522       C
ATOM   4593  C   ILE B 303      21.382  97.661  86.597  1.00 99.82           C
ANISOU 4593  C   ILE B 303    16171  10590  11165    632   -640    570       C
ATOM   4594  O   ILE B 303      20.744  98.000  87.597  1.00 97.31           O
ANISOU 4594  O   ILE B 303    15884  10249  10840    699   -647    544       O
ATOM   4595  N   LEU B 304      22.487  98.292  86.190  1.00106.15           N
ANISOU 4595  N   LEU B 304    17045  11321  11966    526   -621    582       N
ATOM   4596  CA  LEU B 304      23.031  99.492  86.854  1.00104.64           C
ANISOU 4596  CA  LEU B 304    16977  11010  11770    477   -619    563       C
ATOM   4597  CB  LEU B 304      22.144 100.713  86.589  1.00 92.50           C
ANISOU 4597  CB  LEU B 304    15586   9377  10184    575   -615    584       C
ATOM   4598  CG  LEU B 304      22.216 101.353  85.203  1.00 83.06           C
ANISOU 4598  CG  LEU B 304    14482   8120   8958    576   -588    638       C
ATOM   4599  CD1 LEU B 304      21.713 102.777  85.295  1.00 88.62           C
ANISOU 4599  CD1 LEU B 304    15352   8699   9621    638   -586    647       C
ATOM   4600  CD2 LEU B 304      23.619 101.305  84.627  1.00 72.13           C
ANISOU 4600  CD2 LEU B 304    13089   6709   7606    433   -552    655       C
ATOM   4601  C   LEU B 304      23.215  99.321  88.361  1.00100.25           C
ANISOU 4601  C   LEU B 304    16398  10462  11231    462   -646    506       C
ATOM   4602  O   LEU B 304      22.646 100.060  89.166  1.00 94.68           O
ANISOU 4602  O   LEU B 304    15784   9693  10496    528   -656    485       O
ATOM   4603  N   VAL B 305      24.055  98.359  88.715  1.00 95.15           N
ANISOU 4603  N   VAL B 305    15637   9886  10628    375   -656    483       N
ATOM   4604  CA  VAL B 305      24.212  97.883  90.074  1.00 81.49           C
ANISOU 4604  CA  VAL B 305    13866   8186   8909    368   -687    432       C
ATOM   4605  CB  VAL B 305      23.040  96.912  90.453  1.00 87.79           C
ANISOU 4605  CB  VAL B 305    14576   9087   9693    485   -681    428       C
ATOM   4606  CG1 VAL B 305      23.472  95.757  91.335  1.00 75.68           C
ANISOU 4606  CG1 VAL B 305    12931   7637   8185    450   -697    393       C
ATOM   4607  CG2 VAL B 305      21.889  97.673  91.086  1.00 80.70           C
ANISOU 4607  CG2 VAL B 305    13778   8131   8753    611   -673    421       C
ATOM   4608  C   VAL B 305      25.587  97.229  90.089  1.00 90.97           C
ANISOU 4608  C   VAL B 305    14976   9421  10169    231   -700    417       C
ATOM   4609  O   VAL B 305      26.089  96.815  89.037  1.00 89.20           O
ANISOU 4609  O   VAL B 305    14686   9231  9973    172   -673    451       O
ATOM   4610  N   ASN B 306      26.227  97.192  91.251  1.00 94.00           N
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ANISOU 4610  N   ASN B 306    15364   9783  10570    181   -744    366       N
ATOM   4611  CA  ASN B 306      27.518  96.526  91.397  1.00 99.42           C
ANISOU 4611  CA  ASN B 306    15952  10501  11323     56   -768    346       C
ATOM   4612  CB  ASN B 306      28.315  97.191  92.499  1.00106.97           C
ANISOU 4612  CB  ASN B 306    16983  11363  12298     -7   -831    292       C
ATOM   4613  CG  ASN B 306      27.422  97.709  93.594  1.00123.90           C
ANISOU 4613  CG  ASN B 306    19245  13463  14368    100   -856    258       C
ATOM   4614  OD1 ASN B 306      26.196  97.641  93.481  1.00124.46           O
ANISOU 4614  OD1 ASN B 306    19336  13569  14386    221   -816    280       O
ATOM   4615  ND2 ASN B 306      28.017  98.198  94.672  1.00133.83           N
ANISOU 4615  ND2 ASN B 306    20581  14642  15627     62   -923    203       N
ATOM   4616  C   ASN B 306      27.351  95.045  91.705  1.00104.94           C
ANISOU 4616  C   ASN B 306    16509  11334  12030     80   -771    336       C
ATOM   4617  O   ASN B 306      26.318  94.627  92.220  1.00 97.94           O
ANISOU 4617  O   ASN B 306    15615  10498  11099    188   -765    329       O
ATOM   4618  N   GLU B 307      28.369  94.250  91.400  1.00 98.95           N
ANISOU 4618  N   GLU B 307    15635  10628  11333    -19   -774    338       N
ATOM   4619  CA  GLU B 307      28.279  92.813  91.625  1.00 87.36           C
ANISOU 4619  CA  GLU B 307    14031   9286   9875     -3   -775    330       C
ATOM   4620  CB  GLU B 307      29.540  92.116  91.127  1.00 84.82           C
ANISOU 4620  CB  GLU B 307    13594   9004   9631   -124   -772    337       C
ATOM   4621  CG  GLU B 307      29.849  92.392  89.680  1.00 92.21           C
ANISOU 4621  CG  GLU B 307    14525   9921  10591   -170   -713    391       C
ATOM   4622  CD  GLU B 307      31.043  91.607  89.202  1.00107.97           C
ANISOU 4622  CD  GLU B 307    16399  11959  12666   -279   -695    401       C
ATOM   4623  OE1 GLU B 307      31.496  90.709  89.946  1.00115.50           O
ANISOU 4623  OE1 GLU B 307    17257  12975  13651   -307   -733    368       O
ATOM   4624  OE2 GLU B 307      31.537  91.893  88.092  1.00107.84           O
ANISOU 4624  OE2 GLU B 307    16388  11909  12679   -333   -639    444       O
ATOM   4625  C   GLU B 307      28.054  92.461  93.091  1.00 86.92           C
ANISOU 4625  C   GLU B 307    13988   9246   9792     44   -821    279       C
ATOM   4626  O   GLU B 307      27.355  91.510  93.400  1.00 93.25           O
ANISOU 4626  O   GLU B 307    14723  10137  10573    117   -805    279       O
ATOM   4627  N   GLU B 308      28.640  93.223  94.001  1.00 85.75           N
ANISOU 4627  N   GLU B 308    13932   9005   9643      6   -877    236       N
ATOM   4628  CA  GLU B 308      28.546  92.878  95.407  1.00 82.84           C
ANISOU 4628  CA  GLU B 308    13594   8643   9238     50   -925    186       C
ATOM   4629  CB  GLU B 308      29.476  93.772  96.232  1.00100.72           C
ANISOU 4629  CB  GLU B 308    15961  10791  11516    -20  -1007    134       C
ATOM   4630  CG  GLU B 308      30.972  93.491  96.031  1.00110.54           C
ANISOU 4630  CG  GLU B 308    17111  12030  12859   -165  -1058    120       C
ATOM   4631  CD  GLU B 308      31.591  94.259  94.864  1.00124.58           C
ANISOU 4631  CD  GLU B 308    18881  13745  14708   -260  -1026    156       C
ATOM   4632  OE1 GLU B 308      30.840  94.901  94.094  1.00121.85           O
ANISOU 4632  OE1 GLU B 308    18598  13372  14325   -211   -963    197       O
ATOM   4633  OE2 GLU B 308      32.838  94.227  94.725  1.00130.13           O
ANISOU 4633  OE2 GLU B 308    19517  14419  15509   -382  -1061    145       O
ATOM   4634  C   GLU B 308      27.088  92.990  95.874  1.00 86.48           C
ANISOU 4634  C   GLU B 308    14127   9112  9621    198   -884    192       C
ATOM   4635  O   GLU B 308      26.690  92.426  96.904  1.00 77.02           O
ANISOU 4635  O   GLU B 308    12937   7945   8383    267   -890    165       O
ATOM   4636  N   ASP B 309      26.287  93.693  95.083  1.00 87.97           N
ANISOU 4636  N   ASP B 309    14364   9270   9791    251   -837    230       N
ATOM   4637  CA  ASP B 309      24.882  93.924  95.406  1.00 99.70           C
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ANISOU 4637  CA  ASP B 309    15912  10751  11221    393   -794    241       C
ATOM   4638  CB  ASP B 309      24.397  95.175  94.697  1.00111.19           C
ANISOU 4638  CB  ASP B 309    17471  12119  12658    423   -774    269       C
ATOM   4639  CG  ASP B 309      24.618  96.408  95.505  1.00123.44           C
ANISOU 4639  CG  ASP B 309    19190  13542  14170    423   -809    233       C
ATOM   4640  OD1 ASP B 309      25.473  96.357  96.418  1.00126.47           O
ANISOU 4640  OD1 ASP B 309    19604  13896  14555    364   -866    186       O
ATOM   4641  OD2 ASP B 309      23.962  97.431  95.200  1.00130.21           O
ANISOU 4641  OD2 ASP B 309    20152  14325  14998    482   -785    252       O
ATOM   4642  C   ASP B 309      23.940  92.781  95.054  1.00 93.87           C
ANISOU 4642  C   ASP B 309    15046  10127  10494    471   -742    271       C
ATOM   4643  O   ASP B 309      22.759  92.807  95.415  1.00 91.08           O
ANISOU 4643  O   ASP B 309    14718   9776  10112    590   -701    280       O
ATOM   4644  N   ILE B 310      24.445  91.799  94.324  1.00 92.20           N
ANISOU 4644  N   ILE B 310    14698  10005  10331    404   -741    288       N
ATOM   4645  CA  ILE B 310      23.612  90.675  93.937  1.00101.04           C
ANISOU 4645  CA  ILE B 310    15691  11229  11469    469   -701    314       C
ATOM   4646  CB  ILE B 310      23.696  90.409  92.395  1.00103.25           C
ANISOU 4646  CB  ILE B 310    15891  11554  11783    429   -689    356       C
ATOM   4647  CG1 ILE B 310      25.129  90.171  91.924  1.00113.22           C
ANISOU 4647  CG1 ILE B 310    17108  12827  13082    292   -711    354       C
ATOM   4648  CD1 ILE B 310      25.682  88.833  92.216  1.00112.11           C
ANISOU 4648  CD1 ILE B 310    16839  12783  12976    247   -718    339       C
ATOM   4649  CG2 ILE B 310      23.204  91.630  91.608  1.00 91.72           C
ANISOU 4649  CG2 ILE B 310    14537  10013  10300    464   -680    384       C
ATOM   4650  C   ILE B 310      23.999  89.436  94.754  1.00101.27           C
ANISOU 4650  C   ILE B 310    15629  11338  11513    451   -708    288       C
ATOM   4651  O   ILE B 310      25.169  89.217  95.089  1.00 97.77           O
ANISOU 4651  O   ILE B 310    15170  10893  11083    356   -751    262       O
ATOM   4652  N   LYS B 311      23.009  88.631  95.097  1.00 97.31           N
ANISOU 4652  N   LYS B 311    15064  10897  11013    545   -666    296       N
ATOM   4653  CA  LYS B 311      23.303  87.391  95.784  1.00 93.96           C
ANISOU 4653  CA  LYS B 311    14551  10549  10602    534   -663    278       C
ATOM   4654  CB  LYS B 311      23.189  87.592  97.309  1.00 74.42           C
ANISOU 4654  CB  LYS B 311    12181   8024   8072    592   -663    242       C
ATOM   4655  C   LYS B 311      22.362  86.294  95.262  1.00 97.60           C
ANISOU 4655  C   LYS B 311    14874  11103  11105    596   -615    309       C
ATOM   4656  O   LYS B 311      21.452  86.561  94.475  1.00 97.64           O
ANISOU 4656  O   LYS B 311    14863  11107  11129    653   -592    339       O
ATOM   4657  N   GLY B 312      22.600  85.057  95.669  1.00 99.35           N
ANISOU 4657  N   GLY B 312    14997  11402  11348    582   -606    300       N
ATOM   4658  CA  GLY B 312      21.689  83.979  95.340  1.00 96.69           C
ANISOU 4658  CA  GLY B 312    14533  11146  11059    642   -560    324       C
ATOM   4659  C   GLY B 312      21.865  83.385  93.956  1.00 92.21           C
ANISOU 4659  C   GLY B 312    13852  10645  10539    589   -576    349       C
ATOM   4660  O   GLY B 312      20.890  82.998  93.321  1.00 96.39           O
ANISOU 4660  O   GLY B 312    14307  11208  11108    649   -555    372       O
ATOM   4661  N   TYR B 313      23.107  83.302  93.492  1.00 79.35           N
ANISOU 4661  N   TYR B 313    12210   9030   8911    478   -614    342       N
ATOM   4662  CA  TYR B 313      23.389  82.716  92.192  1.00 82.74           C
ANISOU 4662  CA  TYR B 313    12546   9516   9373    426   -622    365       C
ATOM   4663  CB  TYR B 313      24.164  83.692  91.310  1.00 88.99           C
ANISOU 4663  CB  TYR B 313    13410  10252  10151    352   -646    377       C
ATOM   4664  CG  TYR B 313      25.369  84.313  91.968  1.00 97.30           C
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ANISOU 4664  CG  TYR B 313    14532  11247  11189    267   -674    351       C
ATOM   4665  CD1 TYR B 313      25.218  85.343  92.889  1.00 96.28           C
ANISOU 4665  CD1 TYR B 313    14525  11033  11023    298   -687    329       C
ATOM   4666  CE1 TYR B 313      26.303  85.916  93.499  1.00100.05           C
ANISOU 4666  CE1 TYR B 313    15067  11451  11496    220   -728    299       C
ATOM   4667  CZ  TYR B 313      27.571  85.498  93.179  1.00 98.49           C
ANISOU 4667  CZ  TYR B 313    14803  11277  11343    109   -751    294       C
ATOM   4668  OH  TYR B 313      28.643  86.105  93.805  1.00 91.47           O
ANISOU 4668  OH  TYR B 313    13970  10318  10465     31   -803    262       O
ATOM   4669  CE2 TYR B 313      27.757  84.473  92.262  1.00100.02           C
ANISOU 4669  CE2 TYR B 313    14874  11557  11574     78   -726    320       C
ATOM   4670  CD2 TYR B 313      26.659  83.890  91.655  1.00 95.01           C
ANISOU 4670  CD2 TYR B 313    14186  10981  10932    157   -689    347       C
ATOM   4671  C   TYR B 313      24.165  81.415  92.305  1.00 86.49           C
ANISOU 4671  C   TYR B 313    12910  10075   9878    364   -625    355       C
ATOM   4672  O   TYR B 313      25.103  81.308  93.089  1.00 82.01           O
ANISOU 4672  O   TYR B 313    12357   9502   9303    308   -645    330       O
ATOM   4673  N   ARG B 314      23.767  80.432  91.502  1.00 98.21           N
ANISOU 4673  N   ARG B 314    14286  11632  11399    377   -612    374       N
ATOM   4674  CA  ARG B 314      24.483  79.164  91.421  1.00 94.32           C
ANISOU 4674  CA  ARG B 314    13684  11219  10936    319   -612    369       C
ATOM   4675  CB  ARG B 314      23.880  78.247  90.363  1.00 84.64           C
ANISOU 4675  CB  ARG B 314    12357  10057   9745    344   -604    390       C
ATOM   4676  CG  ARG B 314      22.396  77.950  90.548  1.00 80.90           C
ANISOU 4676  CG  ARG B 314    11843   9594   9301    453   -585    397       C
ATOM   4677  CD  ARG B 314      21.819  77.551  89.215  1.00 69.05           C
ANISOU 4677  CD  ARG B 314    10284   8123   7828    474   -604    417       C
ATOM   4678  NE  ARG B 314      22.857  76.880  88.441  1.00 78.18           N
ANISOU 4678  NE  ARG B 314    11398   9327   8981    388   -615    420       N
ATOM   4679  CZ  ARG B 314      23.156  77.147  87.176  1.00 72.31           C
ANISOU 4679  CZ  ARG B 314    10686   8572   8216    359   -634    438       C
ATOM   4680  NH1 ARG B 314      22.475  78.057  86.508  1.00 64.08           N
ANISOU 4680  NH1 ARG B 314     9719   7476   7153    409   -655    453       N
ATOM   4681  NH2 ARG B 314      24.125  76.477  86.572  1.00 79.89           N
ANISOU 4681  NH2 ARG B 314    11607   9573   9175    286   -629    443       N
ATOM   4682  C   ARG B 314      25.932  79.464  91.096  1.00 95.09           C
ANISOU 4682  C   ARG B 314    13802  11299  11030    206   -635    364       C
ATOM   4683  O   ARG B 314      26.252  80.475  90.468  1.00 92.09           O
ANISOU 4683  O   ARG B 314    13497  10858  10635    173   -644    376       O
ATOM   4684  N   VAL B 315      26.817  78.585  91.526  1.00 97.00           N
ANISOU 4684  N   VAL B 315    13973  11588  11293    149   -642    349       N
ATOM   4685  CA  VAL B 315      28.208  78.949  91.529  1.00 94.48           C
ANISOU 4685  CA  VAL B 315    13671  11239  10986     46   -667    338       C
ATOM   4686  CB  VAL B 315      28.500  79.747  92.796  1.00 91.21           C
ANISOU 4686  CB  VAL B 315    13351  10756  10548     46   -704    305       C
ATOM   4687  CG1 VAL B 315      28.842  78.820  93.972  1.00 84.76           C
ANISOU 4687  CG1 VAL B 315    12492   9982   9733     51   -723    275       C
ATOM   4688  CG2 VAL B 315      29.548  80.753  92.534  1.00 91.59           C
ANISOU 4688  CG2 VAL B 315    13458  10731  10613    -43   -732    300       C
ATOM   4689  C   VAL B 315      29.085  77.704  91.415  1.00 93.33           C
ANISOU 4689  C   VAL B 315    13410  11169  10882    -15   -666    335       C
ATOM   4690  O   VAL B 315      28.736  76.646  91.943  1.00 92.71           O
ANISOU 4690  O   VAL B 315    13264  11153  10809     24   -658    326       O
ATOM   4691  N   THR B 316      30.198  77.810  90.692  1.00 87.89           N
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ANISOU 4691  N   THR B 316    12697  10470  10226   -108   -665    346       N
ATOM   4692  CA  THR B 316      31.039  76.639  90.443  1.00 89.28           C
ANISOU 4692  CA  THR B 316    12760  10715  10447   -164   -656    348       C
ATOM   4693  CB  THR B 316      31.999  76.857  89.245  1.00 85.13           C
ANISOU 4693  CB  THR B 316    12216  10171   9958   -248   -626    376       C
ATOM   4694  OG1 THR B 316      32.638  75.617  88.929  1.00113.93           O
ANISOU 4694  OG1 THR B 316    15752  13892  13646   -285   -606    381       O
ATOM   4695  CG2 THR B 316      33.075  77.855  89.566  1.00 81.26           C
ANISOU 4695  CG2 THR B 316    11770   9599   9505   -330   -650    364       C
ATOM   4696  C   THR B 316      31.857  76.243  91.681  1.00105.96           C
ANISOU 4696  C   THR B 316    14842  12835  12583   -198   -699    312       C
ATOM   4697  O   THR B 316      31.786  76.898  92.727  1.00111.77           O
ANISOU 4697  O   THR B 316    15656  13518  13294   -178   -740    284       O
ATOM   4698  N   SER B 317      32.628  75.165  91.558  1.00109.63           N
ANISOU 4698  N   SER B 317    15202  13361  13091   -244   -694    312       N
ATOM   4699  CA  SER B 317      33.423  74.653  92.675  1.00112.30           C
ANISOU 4699  CA  SER B 317    15504  13711  13453   -271   -743    278       C
ATOM   4700  CB  SER B 317      33.981  73.268  92.330  1.00101.26           C
ANISOU 4700  CB  SER B 317    13980  12397  12098   -301   -722    286       C
ATOM   4701  OG  SER B 317      34.534  73.240  91.023  1.00 96.50           O
ANISOU 4701  OG  SER B 317    13330  11800  11536   -361   -676    319       O
ATOM   4702  C   SER B 317      34.555  75.619  93.055  1.00115.94           C
ANISOU 4702  C   SER B 317    16005  14091  13955   -352   -799    256       C
ATOM   4703  O   SER B 317      35.085  75.571  94.171  1.00112.35           O
ANISOU 4703  O   SER B 317    15563  13618  13508   -362   -865    219       O
ATOM   4704  N   THR B 318      34.903  76.492  92.112  1.00112.90           N
ANISOU 4704  N   THR B 318    15646  13654  13599   -406   -773    280       N
ATOM   4705  CA  THR B 318      35.864  77.569  92.318  1.00107.97           C
ANISOU 4705  CA  THR B 318    15063  12936  13026   -485   -816    265       C
ATOM   4706  CB  THR B 318      36.393  78.082  90.967  1.00115.99           C
ANISOU 4706  CB  THR B 318    16063  13915  14091   -553   -752    307       C
ATOM   4707  OG1 THR B 318      37.176  77.054  90.355  1.00120.80           O
ANISOU 4707  OG1 THR B 318    16550  14585  14764   -603   -712    326       O
ATOM   4708  CG2 THR B 318      37.239  79.342  91.127  1.00117.72           C
ANISOU 4708  CG2 THR B 318    16334  14024  14372   -632   -786    295       C
ATOM   4709  C   THR B 318      35.240  78.723  93.091  1.00106.42           C
ANISOU 4709  C   THR B 318    15002  12661  12771   -440   -860    240       C
ATOM   4710  O   THR B 318      35.921  79.440  93.825  1.00116.07           O
ANISOU 4710  O   THR B 318    16270  13809  14022   -484   -929    207       O
ATOM   4711  N   GLY B 319      33.932  78.886  92.934  1.00105.32           N
ANISOU 4711  N   GLY B 319    14926  12536  12556   -349   -823    256       N
ATOM   4712  CA  GLY B 319      33.219  79.986  93.555  1.00101.75           C
ANISOU 4712  CA  GLY B 319    14606  12009  12045   -294   -848    239       C
ATOM   4713  C   GLY B 319      32.818  81.003  92.507  1.00 98.32           C
ANISOU 4713  C   GLY B 319    14236  11520  11599   -296   -804    273       C
ATOM   4714  O   GLY B 319      32.163  82.004  92.809  1.00 92.85           O
ANISOU 4714  O   GLY B 319    13657  10763  10860   -249   -814    267       O
ATOM   4715  N   LYS B 320      33.232  80.742  91.268  1.00 96.90           N
ANISOU 4715  N   LYS B 320    13993  11365  11460   -347   -752    311       N
ATOM   4716  CA  LYS B 320      32.845  81.562  90.127  1.00 97.09           C
ANISOU 4716  CA  LYS B 320    14080  11345  11466   -341   -702    350       C
ATOM   4717  CB  LYS B 320      33.736  81.257  88.921  1.00 87.85           C
ANISOU 4717  CB  LYS B 320    12842  10184  10351   -419   -647    386       C
ATOM   4718  CG  LYS B 320      33.340  81.963  87.633  1.00 88.74           C
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ANISOU 4718  CG  LYS B 320    13030  10255  10433   -404   -588    432       C
ATOM   4719  CD  LYS B 320      34.345  81.676  86.502  1.00 94.80           C
ANISOU 4719  CD  LYS B 320    13744  11020  11255   -482   -520    470       C
ATOM   4720  CE  LYS B 320      33.927  82.339  85.184  1.00101.02           C
ANISOU 4720  CE  LYS B 320    14626  11761  11996   -456   -457    518       C
ATOM   4721  NZ  LYS B 320      34.849  82.057  84.036  1.00101.70           N
ANISOU 4721  NZ  LYS B 320    14679  11839  12123   -520   -374    561       N
ATOM   4722  C   LYS B 320      31.373  81.329  89.789  1.00104.91           C
ANISOU 4722  C   LYS B 320    15096  12377  12387   -230   -676    367       C
ATOM   4723  O   LYS B 320      30.896  80.189  89.803  1.00100.28           O
ANISOU 4723  O   LYS B 320    14431  11878  11794   -185   -666    368       O
ATOM   4724  N   PRO B 321      30.638  82.418  89.524  1.00104.80           N
ANISOU 4724  N   PRO B 321    15191  12297  12329   -183   -670    379       N
ATOM   4725  CA  PRO B 321      29.206  82.383  89.210  1.00101.17           C
ANISOU 4725  CA  PRO B 321    14760  11861  11817    -74   -654    395       C
ATOM   4726  CB  PRO B 321      28.868  83.850  88.980  1.00 98.25           C
ANISOU 4726  CB  PRO B 321    14524  11391  11415    -55   -655    406       C
ATOM   4727  CG  PRO B 321      29.874  84.589  89.775  1.00 99.97           C
ANISOU 4727  CG  PRO B 321    14788  11536  11659   -131   -686    378       C
ATOM   4728  CD  PRO B 321      31.128  83.791  89.712  1.00 98.16           C
ANISOU 4728  CD  PRO B 321    14455  11347  11496   -229   -688    373       C
ATOM   4729  C   PRO B 321      28.888  81.555  87.969  1.00102.80           C
ANISOU 4729  C   PRO B 321    14901  12133  12024    -56   -619    428       C
ATOM   4730  O   PRO B 321      29.599  81.621  86.965  1.00 99.92           O
ANISOU 4730  O   PRO B 321    14535  11756  11675   -116   -589    455       O
ATOM   4731  N   GLU B 322      27.828  80.761  88.049  1.00 97.48           N
ANISOU 4731  N   GLU B 322    14176  11524  11337     27   -622    426       N
ATOM   4732  CA  GLU B 322      27.388  79.983  86.904  1.00 96.66           C
ANISOU 4732  CA  GLU B 322    14019  11475  11231     56   -605    451       C
ATOM   4733  CB  GLU B 322      27.372  78.476  87.229  1.00 99.87           C
ANISOU 4733  CB  GLU B 322    14298  11979  11670     60   -604    438       C
ATOM   4734  CG  GLU B 322      27.003  77.558  86.056  1.00 88.86           C
ANISOU 4734  CG  GLU B 322    12845  10641  10276     83   -595    458       C
ATOM   4735  CD  GLU B 322      27.996  77.623  84.907  1.00 98.36           C
ANISOU 4735  CD  GLU B 322    14069  11831  11473     13   -565    484       C
ATOM   4736  OE1 GLU B 322      29.181  77.959  85.137  1.00103.71           O
ANISOU 4736  OE1 GLU B 322    14754  12480  12173    -73   -545    484       O
ATOM   4737  OE2 GLU B 322      27.576  77.381  83.758  1.00 97.79           O
ANISOU 4737  OE2 GLU B 322    14013  11767  11375     47   -562    505       O
ATOM   4738  C   GLU B 322      26.008  80.477  86.480  1.00 87.78           C
ANISOU 4738  C   GLU B 322    12950  10327  10075    158   -617    464       C
ATOM   4739  O   GLU B 322      25.089  80.590  87.305  1.00 87.78           O
ANISOU 4739  O   GLU B 322    12953  10324  10076    230   -629    449       O
ATOM   4740  N   PHE B 323      25.880  80.804  85.198  1.00 66.03           N
ANISOU 4740  N   PHE B 323    10246   7549   7294    167   -612    494       N
ATOM   4741  CA  PHE B 323      24.599  81.215  84.646  1.00 72.70           C
ANISOU 4741  CA  PHE B 323    11139   8370   8113    266   -637    507       C
ATOM   4742  CB  PHE B 323      24.581  82.724  84.348  1.00 89.90           C
ANISOU 4742  CB  PHE B 323    13459  10448  10250    273   -634    524       C
ATOM   4743  CG  PHE B 323      24.561  83.581  85.579  1.00 85.48           C
ANISOU 4743  CG  PHE B 323    12950   9837   9693    275   -636    503       C
ATOM   4744  CD2 PHE B 323      25.733  84.140  86.065  1.00 84.91           C
ANISOU 4744  CD2 PHE B 323    12916   9718   9627    183   -620    494       C
ATOM   4745  CE2 PHE B 323      25.724  84.916  87.208  1.00 84.51           C
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ANISOU 4745  CE2 PHE B 323    12924   9613   9572    187   -633    469       C
ATOM   4746  CZ  PHE B 323      24.530  85.140  87.885  1.00 79.49           C
ANISOU 4746  CZ  PHE B 323    12311   8970   8923    288   -645    457       C
ATOM   4747  CE1 PHE B 323      23.353  84.592  87.410  1.00 77.36           C
ANISOU 4747  CE1 PHE B 323    11990   8746   8659    379   -650    470       C
ATOM   4748  CD1 PHE B 323      23.374  83.811  86.258  1.00 76.27           C
ANISOU 4748  CD1 PHE B 323    11790   8661   8528    371   -653    490       C
ATOM   4749  C   PHE B 323      24.310  80.430  83.385  1.00 68.54           C
ANISOU 4749  C   PHE B 323    10580   7885   7577    291   -648    525       C
ATOM   4750  O   PHE B 323      25.209  80.180  82.569  1.00 56.94           O
ANISOU 4750  O   PHE B 323     9121   6422   6093    229   -622    542       O
ATOM   4751  N   THR B 324      23.047  80.042  83.237  1.00 70.46           N
ANISOU 4751  N   THR B 324    10784   8153   7834    384   -688    519       N
ATOM   4752  CA  THR B 324      22.592  79.237  82.098  1.00 55.85           C
ANISOU 4752  CA  THR B 324     8901   6340   5980    422   -721    528       C
ATOM   4753  CB  THR B 324      21.053  79.247  82.033  1.00 67.80           C
ANISOU 4753  CB  THR B 324    10391   7849   7522    535   -778    521       C
ATOM   4754  OG1 THR B 324      20.519  78.668  83.234  1.00 72.93           O
ANISOU 4754  OG1 THR B 324    10932   8540   8240    559   -768    498       O
ATOM   4755  CG2 THR B 324      20.561  78.483  80.821  1.00 64.56           C
ANISOU 4755  CG2 THR B 324     9958   7465   7108    578   -833    525       C
ATOM   4756  C   THR B 324      23.153  79.701  80.754  1.00 64.17           C
ANISOU 4756  C   THR B 324    10064   7349   6967    400   -713    558       C
ATOM   4757  O   THR B 324      23.086  80.887  80.425  1.00 74.90           O
ANISOU 4757  O   THR B 324    11544   8632   8284    417   -711    577       O
ATOM   4758  N   ASN B 325      23.714  78.772  79.982  1.00 72.78           N
ANISOU 4758  N   ASN B 325    11122   8483   8047    365   -701    565       N
ATOM   4759  CA  ASN B 325      24.146  79.064  78.608  1.00 76.50           C
ANISOU 4759  CA  ASN B 325    11706   8911   8449    360   -687    596       C
ATOM   4760  CB  ASN B 325      25.371  78.225  78.211  1.00 73.16           C
ANISOU 4760  CB  ASN B 325    11245   8526   8025    277   -626    606       C
ATOM   4761  CG  ASN B 325      26.556  78.427  79.135  1.00 82.11           C
ANISOU 4761  CG  ASN B 325    12334   9660   9202    175   -561    604       C
ATOM   4762  OD1 ASN B 325      26.424  78.945  80.248  1.00 79.09           O
ANISOU 4762  OD1 ASN B 325    11930   9266   8853    166   -571    586       O
ATOM   4763  ND2 ASN B 325      27.721  77.982  78.689  1.00 86.88           N
ANISOU 4763  ND2 ASN B 325    12925  10275   9810    100   -498    621       N
ATOM   4764  C   ASN B 325      23.018  78.787  77.621  1.00 83.22           C
ANISOU 4764  C   ASN B 325    12589   9760   9269    461   -765    596       C
ATOM   4765  O   ASN B 325      22.533  77.656  77.535  1.00 90.25           O
ANISOU 4765  O   ASN B 325    13383  10714  10195    490   -808    575       O
ATOM   4766  N   LEU B 326      22.603  79.798  76.866  1.00 77.01           N
ANISOU 4766  N   LEU B 326    11940   8897   8421    517   -790    617       N
ATOM   4767  CA  LEU B 326      21.596  79.571  75.847  1.00 68.31           C
ANISOU 4767  CA  LEU B 326    10884   7784   7286    616   -878    616       C
ATOM   4768  CB  LEU B 326      20.984  80.887  75.387  1.00 69.13           C
ANISOU 4768  CB  LEU B 326    11131   7798   7336    687   -913    635       C
ATOM   4769  CG  LEU B 326      20.408  81.775  76.493  1.00 76.49           C
ANISOU 4769  CG  LEU B 326    12040   8704   8317    708   -916    626       C
ATOM   4770  CD1 LEU B 326      19.601  82.923  75.886  1.00 75.19           C
ANISOU 4770  CD1 LEU B 326    12012   8454   8103    800   -969    644       C
ATOM   4771  CD2 LEU B 326      19.574  80.985  77.496  1.00 69.07           C
ANISOU 4771  CD2 LEU B 326    10932   7832   7480    737   -954    590       C
ATOM   4772  C   LEU B 326      22.201  78.823  74.669  1.00 79.97           C
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ANISOU 4772  C   LEU B 326    12411   9273   8702    601   -866    629       C
ATOM   4773  O   LEU B 326      22.468  79.403  73.621  1.00 94.66           O
ANISOU 4773  O   LEU B 326    14425  11069  10473    621   -852    660       O
ATOM   4774  N   LYS B 327      22.383  77.523  74.841  1.00 75.13           N
ANISOU 4774  N   LYS B 327    11675   8738   8133    572   -868    607       N
ATOM   4775  CA  LYS B 327      23.173  76.728  73.918  1.00 72.14           C
ANISOU 4775  CA  LYS B 327    11330   8377   7704    540   -833    619       C
ATOM   4776  CB  LYS B 327      23.229  75.269  74.397  1.00 70.95           C
ANISOU 4776  CB  LYS B 327    11015   8319   7624    510   -842    588       C
ATOM   4777  CG  LYS B 327      24.223  74.416  73.616  1.00 69.01           C
ANISOU 4777  CG  LYS B 327    10792   8096   7334    465   -785    601       C
ATOM   4778  CD  LYS B 327      24.197  72.969  74.034  1.00 66.82           C
ANISOU 4778  CD  LYS B 327    10361   7906   7124    444   -802    569       C
ATOM   4779  CE  LYS B 327      25.345  72.191  73.410  1.00 74.28           C
ANISOU 4779  CE  LYS B 327    11321   8871   8031    389   -725    585       C
ATOM   4780  NZ  LYS B 327      25.382  72.328  71.930  1.00 77.14           N
ANISOU 4780  NZ  LYS B 327    11852   9175   8282    441   -734    607       N
ATOM   4781  C   LYS B 327      22.686  76.771  72.470  1.00 70.62           C
ANISOU 4781  C   LYS B 327    11280   8135   7417    625   -898    630       C
ATOM   4782  O   LYS B 327      23.438  77.176  71.577  1.00 72.33           O
ANISOU 4782  O   LYS B 327    11641   8298   7544    612   -835    666       O
ATOM   4783  N   VAL B 328      21.452  76.347  72.218  1.00 67.25           N
ANISOU 4783  N   VAL B 328    10821   7720   7012    715  -1023    600       N
ATOM   4784  CA  VAL B 328      21.032  76.177  70.822  1.00 65.36           C
ANISOU 4784  CA  VAL B 328    10715   7438   6682    798  -1103    602       C
ATOM   4785  CB  VAL B 328      19.700  75.397  70.695  1.00 73.70           C
ANISOU 4785  CB  VAL B 328    11682   8520   7799    883  -1255    557       C
ATOM   4786  CG1 VAL B 328      18.570  76.095  71.427  1.00 72.94           C
ANISOU 4786  CG1 VAL B 328    11520   8407   7785    938  -1324    543       C
ATOM   4787  CG2 VAL B 328      19.348  75.151  69.232  1.00 68.54           C
ANISOU 4787  CG2 VAL B 328    11178   7820   7046    968  -1352    553       C
ATOM   4788  C   VAL B 328      20.907  77.533  70.148  1.00 72.97           C
ANISOU 4788  C   VAL B 328    11871   8304   7551    851  -1106    636       C
ATOM   4789  O   VAL B 328      21.181  77.668  68.961  1.00 80.63           O
ANISOU 4789  O   VAL B 328    13008   9219   8408    888  -1104    659       O
ATOM   4790  N   TYR B 329      20.527  78.545  70.919  1.00 65.82           N
ANISOU 4790  N   TYR B 329    10950   7371   6687    855  -1102    641       N
ATOM   4791  CA  TYR B 329      20.482  79.897  70.405  1.00 68.97           C
ANISOU 4791  CA  TYR B 329    11527   7675   7003    896  -1091    676       C
ATOM   4792  CB  TYR B 329      19.979  80.868  71.475  1.00 61.98           C
ANISOU 4792  CB  TYR B 329    10591   6773   6187    899  -1091    672       C
ATOM   4793  CG  TYR B 329      19.944  82.310  71.050  1.00 73.57           C
ANISOU 4793  CG  TYR B 329    12237   8139   7576    937  -1074    708       C
ATOM   4794  CD1 TYR B 329      18.925  82.799  70.231  1.00 81.36           C
ANISOU 4794  CD1 TYR B 329    13338   9066   8509   1058  -1187    709       C
ATOM   4795  CE1 TYR B 329      18.883  84.142  69.852  1.00 79.81           C
ANISOU 4795  CE1 TYR B 329    13314   8773   8238   1097  -1169    744       C
ATOM   4796  CZ  TYR B 329      19.872  85.010  70.305  1.00 86.44           C
ANISOU 4796  CZ  TYR B 329    14205   9574   9065   1009  -1036    777       C
ATOM   4797  OH  TYR B 329      19.860  86.349  69.948  1.00 86.76           O
ANISOU 4797  OH  TYR B 329    14417   9513   9035   1044  -1011    814       O
ATOM   4798  CE2 TYR B 329      20.889  84.539  71.114  1.00 78.13           C
ANISOU 4798  CE2 TYR B 329    13034   8578   8074    887   -931    774       C
ATOM   4799  CD2 TYR B 329      20.914  83.202  71.489  1.00 81.36           C
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ANISOU 4799  CD2 TYR B 329    13277   9086   8550    855   -952    740       C
ATOM   4800  C   TYR B 329      21.855  80.313  69.907  1.00 74.58           C
ANISOU 4800  C   TYR B 329    12364   8342   7631    823   -951    723       C
ATOM   4801  O   TYR B 329      21.996  80.711  68.756  1.00 84.41           O
ANISOU 4801  O   TYR B 329    13792   9515   8763    871   -946    753       O
ATOM   4802  N   HIS B 330      22.871  80.212  70.753  1.00 65.02           N
ANISOU 4802  N   HIS B 330    11058   7168   6480    710   -838    730       N
ATOM   4803  CA  HIS B 330      24.185  80.669  70.341  1.00 74.53           C
ANISOU 4803  CA  HIS B 330    12364   8321   7632    635   -700    776       C
ATOM   4804  CB  HIS B 330      25.134  80.781  71.531  1.00 77.99           C
ANISOU 4804  CB  HIS B 330    12677   8792   8165    515   -603    775       C
ATOM   4805  CG  HIS B 330      24.939  82.032  72.331  1.00 82.59           C
ANISOU 4805  CG  HIS B 330    13278   9323   8778    503   -598    779       C
ATOM   4806  ND1 HIS B 330      25.506  83.233  71.970  1.00 87.18           N
ANISOU 4806  ND1 HIS B 330    14004   9807   9313    480   -520    822       N
ATOM   4807  CE1 HIS B 330      25.155  84.159  72.847  1.00 97.12           C
ANISOU 4807  CE1 HIS B 330    15251  11037  10613    477   -539    812       C
ATOM   4808  NE2 HIS B 330      24.380  83.602  73.756  1.00100.31           N
ANISOU 4808  NE2 HIS B 330    15513  11515  11084    502   -619    767       N
ATOM   4809  CD2 HIS B 330      24.227  82.267  73.453  1.00 90.04           C
ANISOU 4809  CD2 HIS B 330    14124  10294   9792    517   -656    746       C
ATOM   4810  C   HIS B 330      24.770  79.754  69.283  1.00 83.64           C
ANISOU 4810  C   HIS B 330    13576   9485   8718    636   -662    790       C
ATOM   4811  O   HIS B 330      25.542  80.201  68.436  1.00 98.32           O
ANISOU 4811  O   HIS B 330    15586  11275  10497    624   -567    836       O
ATOM   4812  N   ASP B 331      24.396  78.481  69.305  1.00 69.88           N
ANISOU 4812  N   ASP B 331    11722   7822   7008    654   -732    752       N
ATOM   4813  CA  ASP B 331      24.956  77.568  68.318  1.00 84.46           C
ANISOU 4813  CA  ASP B 331    13628   9676   8787    657   -696    763       C
ATOM   4814  CB  ASP B 331      24.562  76.113  68.614  1.00 91.39           C
ANISOU 4814  CB  ASP B 331    14347  10650   9728    660   -773    714       C
ATOM   4815  CG  ASP B 331      25.478  75.448  69.625  1.00 84.91           C
ANISOU 4815  CG  ASP B 331    13349   9906   9007    547   -681    707       C
ATOM   4816  OD1 ASP B 331      26.472  76.081  70.025  1.00 78.88           O
ANISOU 4816  OD1 ASP B 331    12588   9119   8264    465   -564    738       O
ATOM   4817  OD2 ASP B 331      25.222  74.280  69.994  1.00 83.83           O
ANISOU 4817  OD2 ASP B 331    13074   9848   8929    542   -730    669       O
ATOM   4818  C   ASP B 331      24.514  77.947  66.903  1.00 84.98           C
ANISOU 4818  C   ASP B 331    13919   9657   8712    764   -745    784       C
ATOM   4819  O   ASP B 331      25.288  77.839  65.951  1.00 75.72           O
ANISOU 4819  O   ASP B 331    12884   8440   7448    763   -656    820       O
ATOM   4820  N   ILE B 332      23.261  78.382  66.794  1.00 91.44           N
ANISOU 4820  N   ILE B 332    14775  10450   9517    861   -886    761       N
ATOM   4821  CA  ILE B 332      22.606  78.672  65.522  1.00 84.91           C
ANISOU 4821  CA  ILE B 332    14151   9547   8563    982   -978    769       C
ATOM   4822  CB  ILE B 332      21.067  78.523  65.641  1.00 86.94           C
ANISOU 4822  CB  ILE B 332    14346   9819   8866   1081  -1176    718       C
ATOM   4823  CG1 ILE B 332      20.694  77.097  66.040  1.00 84.49           C
ANISOU 4823  CG1 ILE B 332    13845   9605   8650   1067  -1253    665       C
ATOM   4824  CD1 ILE B 332      21.277  76.075  65.154  1.00 74.36           C
ANISOU 4824  CD1 ILE B 332    12629   8332   7291   1066  -1231    664       C
ATOM   4825  CG2 ILE B 332      20.388  78.831  64.343  1.00 80.70           C
ANISOU 4825  CG2 ILE B 332    13769   8946   7948   1210  -1290    722       C
ATOM   4826  C   ILE B 332      22.956  80.081  65.067  1.00 89.02           C
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ANISOU 4826  C   ILE B 332    14867   9961   8995    997   -897    824       C
ATOM   4827  O   ILE B 332      23.181  80.320  63.884  1.00 99.36           O
ANISOU 4827  O   ILE B 332    16390  11193  10170   1056   -872    858       O
ATOM   4828  N   LYS B 333      23.017  81.007  66.016  1.00 85.86           N
ANISOU 4828  N   LYS B 333    14402   9552   8668    945   -852    834       N
ATOM   4829  CA  LYS B 333      23.450  82.379  65.754  1.00 83.63           C
ANISOU 4829  CA  LYS B 333    14284   9169   8324    940   -760    887       C
ATOM   4830  CB  LYS B 333      23.441  83.195  67.042  1.00 78.64           C
ANISOU 4830  CB  LYS B 333    13533   8546   7799    875   -731    881       C
ATOM   4831  CG  LYS B 333      23.902  84.635  66.897  1.00 79.10           C
ANISOU 4831  CG  LYS B 333    13745   8498   7812    858   -636    932       C
ATOM   4832  CD  LYS B 333      23.370  85.479  68.059  1.00 76.95           C
ANISOU 4832  CD  LYS B 333    13385   8227   7627    844   -673    913       C
ATOM   4833  CE  LYS B 333      24.108  86.789  68.190  1.00 77.66           C
ANISOU 4833  CE  LYS B 333    13580   8223   7706    788   -554    959       C
ATOM   4834  NZ  LYS B 333      23.582  87.623  69.308  1.00 89.24           N
ANISOU 4834  NZ  LYS B 333    14978   9683   9247    780   -594    938       N
ATOM   4835  C   LYS B 333      24.835  82.438  65.153  1.00 98.15           C
ANISOU 4835  C   LYS B 333    16228  10961  10104    871   -581    942       C
ATOM   4836  O   LYS B 333      25.135  83.319  64.343  1.00105.59           O
ANISOU 4836  O   LYS B 333    17375  11799  10945    904   -511    993       O
ATOM   4837  N   ASP B 334      25.685  81.500  65.558  1.00103.39           N
ANISOU 4837  N   ASP B 334    16750  11696  10837    778   -502    934       N
ATOM   4838  CA  ASP B 334      27.079  81.531  65.151  1.00105.62           C
ANISOU 4838  CA  ASP B 334    17093  11939  11099    699   -317    986       C
ATOM   4839  CB  ASP B 334      27.915  80.576  65.997  1.00109.72           C
ANISOU 4839  CB  ASP B 334    17397  12552  11738    584   -251    967       C
ATOM   4840  CG  ASP B 334      29.278  81.144  66.327  1.00120.23           C
ANISOU 4840  CG  ASP B 334    18707  13841  13134    466    -72   1013       C
ATOM   4841  OD1 ASP B 334      30.085  81.323  65.389  1.00122.97           O
ANISOU 4841  OD1 ASP B 334    19197  14114  13414    461     60   1068       O
ATOM   4842  OD2 ASP B 334      29.541  81.407  67.524  1.00123.27           O
ANISOU 4842  OD2 ASP B 334    18936  14261  13639    380    -65    994       O
ATOM   4843  C   ASP B 334      27.214  81.192  63.673  1.00105.22           C
ANISOU 4843  C   ASP B 334    17252  11829  10899    780   -289   1017       C
ATOM   4844  O   ASP B 334      28.182  81.586  63.021  1.00116.35           O
ANISOU 4844  O   ASP B 334    18794  13161  12252    753   -130   1077       O
ATOM   4845  N   ILE B 335      26.237  80.476  63.132  1.00106.41           N
ANISOU 4845  N   ILE B 335    17438  12007  10985    884   -443    977       N
ATOM   4846  CA  ILE B 335      26.267  80.183  61.708  1.00111.29           C
ANISOU 4846  CA  ILE B 335    18280  12560  11443    977   -438   1001       C
ATOM   4847  CB  ILE B 335      25.970  78.686  61.418  1.00103.16           C
ANISOU 4847  CB  ILE B 335    17181  11608  10405   1011   -533    952       C
ATOM   4848  CG1 ILE B 335      24.475  78.393  61.448  1.00107.03           C
ANISOU 4848  CG1 ILE B 335    17635  12130  10901   1111   -768    888       C
ATOM   4849  CD1 ILE B 335      24.095  77.288  60.521  1.00113.59           C
ANISOU 4849  CD1 ILE B 335    18544  12969  11647   1194   -872    856       C
ATOM   4850  CG2 ILE B 335      26.703  77.779  62.397  1.00 98.73           C
ANISOU 4850  CG2 ILE B 335    16375  11153   9986    887   -459    932       C
ATOM   4851  C   ILE B 335      25.280  81.073  60.940  1.00119.27           C
ANISOU 4851  C   ILE B 335    19503  13479  12333   1109   -552   1008       C
ATOM   4852  O   ILE B 335      25.521  81.389  59.773  1.00127.08           O
ANISOU 4852  O   ILE B 335    20739  14372  13173   1181   -498   1052       O
ATOM   4853  N   THR B 336      24.195  81.496  61.599  1.00111.69           N
ATOM   4853  N   THR B 336      24.195  81.496  61.599  1.00111.69           N
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ANISOU 4853  N   THR B 336    18455  12545  11439   1145   -702    969       N
ATOM   4854  CA  THR B 336      23.144  82.295  60.955  1.00104.96           C
ANISOU 4854  CA  THR B 336    17778  11612  10490   1277   -835    968       C
ATOM   4855  CB  THR B 336      22.078  81.403  60.347  1.00112.56           C
ANISOU 4855  CB  THR B 336    18760  12600  11407   1391  -1040    912       C
ATOM   4856  OG1 THR B 336      22.614  80.814  59.162  1.00132.21           O
ANISOU 4856  OG1 THR B 336    21434  15046  13755   1435   -992    934       O
ATOM   4857  CG2 THR B 336      20.846  82.216  59.977  1.00108.35           C
ANISOU 4857  CG2 THR B 336    18345  12001  10823   1520  -1209    899       C
ATOM   4858  C   THR B 336      22.442  83.279  61.875  1.00108.14           C
ANISOU 4858  C   THR B 336    18093  12014  10982   1274   -897    956       C
ATOM   4859  O   THR B 336      21.785  82.883  62.834  1.00116.51           O
ANISOU 4859  O   THR B 336    18941  13159  12170   1254   -995    904       O
ATOM   4860  N   ALA B 337      22.559  84.565  61.562  1.00105.32           N
ANISOU 4860  N   ALA B 337    17909  11554  10555   1301   -836   1005       N
ATOM   4861  CA  ALA B 337      22.003  85.591  62.430  1.00 96.46           C
ANISOU 4861  CA  ALA B 337    16720  10419   9511   1295   -874    999       C
ATOM   4862  CB  ALA B 337      22.984  86.746  62.576  1.00 81.87           C
ANISOU 4862  CB  ALA B 337    14964   8490   7652   1218   -690   1062       C
ATOM   4863  C   ALA B 337      20.652  86.079  61.913  1.00 96.30           C
ANISOU 4863  C   ALA B 337    16814  10347   9427   1445  -1059    979       C
ATOM   4864  O   ALA B 337      20.092  87.047  62.426  1.00 87.19           O
ANISOU 4864  O   ALA B 337    15652   9163   8314   1468  -1097    980       O
ATOM   4865  N   ARG B 338      20.129  85.396  60.899  1.00107.62           N
ANISOU 4865  N   ARG B 338    18355  11770  10766   1550  -1181    959       N
ATOM   4866  CA  ARG B 338      18.805  85.709  60.359  1.00111.22           C
ANISOU 4866  CA  ARG B 338    18906  12179  11171   1700  -1385    932       C
ATOM   4867  C   ARG B 338      17.737  85.746  61.458  1.00105.95           C
ANISOU 4867  C   ARG B 338    18009  11578  10667   1706  -1515    880       C
ATOM   4868  O   ARG B 338      17.586  84.792  62.223  1.00105.56           O
ANISOU 4868  O   ARG B 338    17729  11632  10747   1648  -1548    834       O
ATOM   4869  CB  ARG B 338      18.415  84.690  59.283  1.00120.92           C
ANISOU 4869  CB  ARG B 338    20232  13406  12306   1796  -1518    901       C
ATOM   4870  CG  ARG B 338      19.016  84.960  57.909  1.00103.87           C
ANISOU 4870  CG  ARG B 338    18389  11139   9940   1863  -1446    954       C
ATOM   4871  CD  ARG B 338      19.031  83.703  57.047  1.00 91.48           C
ANISOU 4871  CD  ARG B 338    16880   9589   8290   1912  -1520    924       C
ATOM   4872  NE  ARG B 338      17.683  83.290  56.677  1.00 90.19           N
ANISOU 4872  NE  ARG B 338    16713   9427   8130   2039  -1787    859       N
ATOM   4873  CZ  ARG B 338      17.276  82.025  56.633  1.00103.11           C
ANISOU 4873  CZ  ARG B 338    18226  11133   9820   2050  -1916    797       C
ATOM   4874  NH1 ARG B 338      16.024  81.743  56.295  1.00113.28           N
ANISOU 4874  NH1 ARG B 338    19500  12409  11130   2163  -2162    736       N
ATOM   4875  NH2 ARG B 338      18.111  81.041  56.941  1.00102.68           N
ANISOU 4875  NH2 ARG B 338    18048  11155   9811   1945  -1799    793       N
ATOM   4876  N   LYS B 339      17.006  86.854  61.529  1.00102.50           N
ANISOU 4876  N   LYS B 339    17644  11076  10225   1779  -1580    889       N
ATOM   4877  CA  LYS B 339      15.992  87.054  62.561  1.00104.84           C
ANISOU 4877  CA  LYS B 339    17742  11419  10675   1794  -1683    849       C
ATOM   4878  CB  LYS B 339      15.448  88.491  62.533  1.00 91.11           C
ANISOU 4878  CB  LYS B 339    16132   9586   8901   1869  -1709    876       C
ATOM   4879  C   LYS B 339      14.844  86.064  62.412  1.00111.62           C
ANISOU 4879  C   LYS B 339    18478  12328  11604   1877  -1892    784       C
ATOM   4880  O   LYS B 339      14.231  85.674  63.402  1.00114.29           O
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ANISOU 4880  O   LYS B 339    18582  12741  12103   1852  -1944    744       O
ATOM   4881  N   GLU B 340      14.559  85.649  61.181  1.00115.87           N
ANISOU 4881  N   GLU B 340    19179  12821  12026   1977  -2009    775       N
ATOM   4882  CA  GLU B 340      13.464  84.708  60.932  1.00120.04           C
ANISOU 4882  CA  GLU B 340    19603  13383  12623   2060  -2226    710       C
ATOM   4883  CB  GLU B 340      13.143  84.601  59.432  1.00129.79           C
ANISOU 4883  CB  GLU B 340    21091  14532  13692   2194  -2367    706       C
ATOM   4884  CG  GLU B 340      14.328  84.735  58.477  1.00145.44           C
ANISOU 4884  CG  GLU B 340    23334  16453  15472   2179  -2221    761       C
ATOM   4885  CD  GLU B 340      14.855  86.166  58.378  1.00161.62           C
ANISOU 4885  CD  GLU B 340    25570  18413  17424   2177  -2077    832       C
ATOM   4886  OE1 GLU B 340      14.030  87.105  58.318  1.00166.67           O
ANISOU 4886  OE1 GLU B 340    26277  18989  18060   2270  -2177    835       O
ATOM   4887  OE2 GLU B 340      16.089  86.357  58.364  1.00166.15           O
ANISOU 4887  OE2 GLU B 340    26219  18975  17934   2083  -1863    884       O
ATOM   4888  C   GLU B 340      13.763  83.319  61.498  1.00110.98           C
ANISOU 4888  C   GLU B 340    18233  12349  11586   1965  -2201    671       C
ATOM   4889  O   GLU B 340      12.852  82.511  61.687  1.00109.73           O
ANISOU 4889  O   GLU B 340    17911  12237  11545   2002  -2355    614       O
ATOM   4890  N   ILE B 341      15.041  83.050  61.760  1.00101.03           N
ANISOU 4890  N   ILE B 341    16965  11127  10295   1843  -2006    702       N
ATOM   4891  CA  ILE B 341      15.469  81.812  62.409  1.00 96.37           C
ANISOU 4891  CA  ILE B 341    16164  10645   9808   1741  -1955    673       C
ATOM   4892  CB  ILE B 341      16.777  81.281  61.779  1.00 88.48           C
ANISOU 4892  CB  ILE B 341    15283   9647   8690   1677  -1811    704       C
ATOM   4893  CG1 ILE B 341      16.628  81.140  60.260  1.00 92.55           C
ANISOU 4893  CG1 ILE B 341    16056  10079   9030   1794  -1906    708       C
ATOM   4894  CD1 ILE B 341      15.626  80.078  59.813  1.00 89.44           C
ANISOU 4894  CD1 ILE B 341    15604   9708   8671   1879  -2127    640       C
ATOM   4895  CG2 ILE B 341      17.193  79.968  62.412  1.00 73.75           C
ANISOU 4895  CG2 ILE B 341    13204   7890   6929   1580  -1769    672       C
ATOM   4896  C   ILE B 341      15.673  82.038  63.918  1.00 88.50           C
ANISOU 4896  C   ILE B 341    14944   9718   8964   1632  -1844    674       C
ATOM   4897  O   ILE B 341      14.962  81.485  64.750  1.00 79.71           O
ANISOU 4897  O   ILE B 341    13612   8672   8002   1623  -1915    631       O
ATOM   4898  N   ILE B 342      16.643  82.879  64.248  1.00 89.97           N
ANISOU 4898  N   ILE B 342    15199   9879   9108   1554  -1669    724       N
ATOM   4899  CA  ILE B 342      17.016  83.201  65.620  1.00 92.94           C
ANISOU 4899  CA  ILE B 342    15406  10306   9601   1448  -1554    729       C
ATOM   4900  CB  ILE B 342      18.152  84.231  65.576  1.00 94.27           C
ANISOU 4900  CB  ILE B 342    15718  10412   9687   1380  -1379    789       C
ATOM   4901  CG1 ILE B 342      19.494  83.511  65.598  1.00 90.26           C
ANISOU 4901  CG1 ILE B 342    15179   9949   9168   1264  -1230    807       C
ATOM   4902  CD1 ILE B 342      20.623  84.473  65.687  1.00100.60           C
ANISOU 4902  CD1 ILE B 342    16591  11199  10435   1184  -1055    863       C
ATOM   4903  CG2 ILE B 342      18.050  85.272  66.678  1.00 93.49           C
ANISOU 4903  CG2 ILE B 342    15553  10301   9668   1342  -1325    799       C
ATOM   4904  C   ILE B 342      15.893  83.714  66.541  1.00 99.08           C
ANISOU 4904  C   ILE B 342    16051  11093  10503   1492  -1639    704       C
ATOM   4905  O   ILE B 342      15.917  83.483  67.755  1.00 88.38           O
ANISOU 4905  O   ILE B 342    14503   9804   9272   1420  -1588    686       O
ATOM   4906  N   GLU B 343      14.908  84.408  65.983  1.00106.50           N
ANISOU 4906  N   GLU B 343    17096  11960  11408   1614  -1766    702       N
ATOM   4907  CA  GLU B 343      13.806  84.906  66.808  1.00 98.13           C
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ANISOU 4907  CA  GLU B 343    15912  10902  10471   1665  -1843    681       C
ATOM   4908  CB  GLU B 343      13.393  86.302  66.371  1.00104.43           C
ANISOU 4908  CB  GLU B 343    16892  11594  11191   1753  -1875    712       C
ATOM   4909  CG  GLU B 343      14.533  87.294  66.395  1.00114.88           C
ANISOU 4909  CG  GLU B 343    18370  12865  12415   1680  -1702    767       C
ATOM   4910  CD  GLU B 343      14.062  88.730  66.321  1.00111.76           C
ANISOU 4910  CD  GLU B 343    18112  12373  11978   1754  -1718    795       C
ATOM   4911  OE1 GLU B 343      12.839  88.980  66.458  1.00107.69           O
ANISOU 4911  OE1 GLU B 343    17544  11842  11532   1855  -1852    771       O
ATOM   4912  OE2 GLU B 343      14.928  89.599  66.113  1.00106.38           O
ANISOU 4912  OE2 GLU B 343    17590  11626  11203   1710  -1592    843       O
ATOM   4913  C   GLU B 343      12.606  83.985  66.758  1.00 88.31           C
ANISOU 4913  C   GLU B 343    14518   9697   9339   1741  -2019    626       C
ATOM   4914  O   GLU B 343      11.496  84.387  67.103  1.00 94.50           O
ANISOU 4914  O   GLU B 343    15226  10460  10217   1819  -2117    609       O
ATOM   4915  N   ASN B 344      12.828  82.755  66.310  1.00 85.40           N
ANISOU 4915  N   ASN B 344    14104   9378   8965   1720  -2057    601       N
ATOM   4916  CA  ASN B 344      11.760  81.763  66.261  1.00 87.21           C
ANISOU 4916  CA  ASN B 344    14178   9643   9314   1780  -2222    546       C
ATOM   4917  CB  ASN B 344      11.605  81.180  64.859  1.00 73.56           C
ANISOU 4917  CB  ASN B 344    12595   7876   7479   1858  -2360    527       C
ATOM   4918  CG  ASN B 344      10.357  80.333  64.732  1.00 86.70           C
ANISOU 4918  CG  ASN B 344    14111   9555   9278   1934  -2561    468       C
ATOM   4919  OD1 ASN B 344       9.744  79.958  65.740  1.00 92.07           O
ANISOU 4919  OD1 ASN B 344    14554  10289  10139   1910  -2569    442       O
ATOM   4920  ND2 ASN B 344       9.965  80.030  63.497  1.00 89.96           N
ANISOU 4920  ND2 ASN B 344    14664   9912   9604   2030  -2726    445       N
ATOM   4921  C   ASN B 344      11.990  80.629  67.244  1.00 89.00           C
ANISOU 4921  C   ASN B 344    14168   9974   9673   1682  -2157    519       C
ATOM   4922  O   ASN B 344      12.647  79.628  66.910  1.00 90.24           O
ANISOU 4922  O   ASN B 344    14317  10175   9794   1628  -2130    509       O
ATOM   4923  N   ALA B 345      11.412  80.775  68.434  1.00 86.77           N
ANISOU 4923  N   ALA B 345    13701   9726   9544   1668  -2133    508       N
ATOM   4924  CA  ALA B 345      11.640  79.825  69.520  1.00 77.06           C
ANISOU 4924  CA  ALA B 345    12254   8588   8438   1576  -2052    489       C
ATOM   4925  CB  ALA B 345      10.881  80.232  70.760  1.00 63.32           C
ANISOU 4925  CB  ALA B 345    10352   6859   6846   1587  -2026    484       C
ATOM   4926  C   ALA B 345      11.244  78.429  69.091  1.00 83.45           C
ANISOU 4926  C   ALA B 345    12957   9439   9311   1590  -2161    446       C
ATOM   4927  O   ALA B 345      12.004  77.475  69.283  1.00 82.80           O
ANISOU 4927  O   ALA B 345    12811   9422   9228   1505  -2087    439       O
ATOM   4928  N   GLU B 346      10.068  78.322  68.479  1.00 88.02           N
ANISOU 4928  N   GLU B 346    13520   9974   9948   1699  -2344    415       N
ATOM   4929  CA  GLU B 346       9.566  77.033  68.045  1.00 81.03           C
ANISOU 4929  CA  GLU B 346    12531   9116   9140   1720  -2472    367       C
ATOM   4930  CB  GLU B 346       8.206  77.183  67.374  1.00 76.80           C
ANISOU 4930  CB  GLU B 346    11992   8513   8677   1851  -2688    334       C
ATOM   4931  CG  GLU B 346       7.194  76.164  67.869  1.00 94.24           C
ANISOU 4931  CG  GLU B 346    13946  10755  11107   1865  -2784    287       C
ATOM   4932  CD  GLU B 346       6.029  75.939  66.917  1.00114.31           C
ANISOU 4932  CD  GLU B 346    16490  13230  13712   1984  -3030    242       C
ATOM   4933  OE1 GLU B 346       5.629  76.880  66.196  1.00121.65           O
ANISOU 4933  OE1 GLU B 346    17577  14082  14562   2080  -3133    250       O
ATOM   4934  OE2 GLU B 346       5.507  74.805  66.891  1.00124.22           O
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ANISOU 4934  OE2 GLU B 346    17589  14508  15102   1982  -3127    197       O
ATOM   4935  C   GLU B 346      10.552  76.340  67.105  1.00 86.32           C
ANISOU 4935  C   GLU B 346    13341   9797   9659   1682  -2457    367       C
ATOM   4936  O   GLU B 346      10.786  75.143  67.235  1.00 88.62           O
ANISOU 4936  O   GLU B 346    13521  10148  10002   1629  -2449    342       O
ATOM   4937  N   LEU B 347      11.154  77.088  66.181  1.00 87.35           N
ANISOU 4937  N   LEU B 347    13719   9867   9603   1710  -2440    400       N
ATOM   4938  CA  LEU B 347      12.086  76.477  65.235  1.00 88.87           C
ANISOU 4938  CA  LEU B 347    14062  10059   9644   1685  -2413    405       C
ATOM   4939  CB  LEU B 347      12.400  77.426  64.083  1.00 79.31           C
ANISOU 4939  CB  LEU B 347    13141   8755   8237   1755  -2429    439       C
ATOM   4940  CG  LEU B 347      13.532  76.928  63.170  1.00 86.48           C
ANISOU 4940  CG  LEU B 347    14226   9656   8976   1724  -2352    458       C
ATOM   4941  CD1 LEU B 347      13.103  75.734  62.356  1.00 94.45           C
ANISOU 4941  CD1 LEU B 347    15241  10667   9980   1778  -2510    407       C
ATOM   4942  CD2 LEU B 347      14.050  78.017  62.261  1.00 80.44           C
ANISOU 4942  CD2 LEU B 347    13746   8799   8019   1772  -2301    509       C
ATOM   4943  C   LEU B 347      13.381  76.067  65.944  1.00 97.33           C
ANISOU 4943  C   LEU B 347    15073  11206  10703   1548  -2207    431       C
ATOM   4944  O   LEU B 347      13.970  75.022  65.642  1.00 91.70           O
ANISOU 4944  O   LEU B 347    14348  10534   9961   1503  -2182    418       O
ATOM   4945  N   LEU B 348      13.811  76.900  66.889  1.00 91.55           N
ANISOU 4945  N   LEU B 348    14303  10487   9994   1486  -2066    466       N
ATOM   4946  CA  LEU B 348      15.001  76.626  67.679  1.00 82.83           C
ANISOU 4946  CA  LEU B 348    13129   9447   8894   1359  -1882    488       C
ATOM   4947  CB  LEU B 348      15.342  77.847  68.526  1.00 70.12           C
ANISOU 4947  CB  LEU B 348    11533   7820   7289   1317  -1763    525       C
ATOM   4948  CG  LEU B 348      16.034  78.962  67.746  1.00 79.81           C
ANISOU 4948  CG  LEU B 348    13000   8966   8358   1329  -1698    574       C
ATOM   4949  CD1 LEU B 348      16.461  80.100  68.667  1.00 73.87           C
ANISOU 4949  CD1 LEU B 348    12248   8198   7623   1272  -1575    607       C
ATOM   4950  CD2 LEU B 348      17.232  78.383  67.024  1.00 86.95           C
ANISOU 4950  CD2 LEU B 348    14006   9878   9152   1271  -1607    594       C
ATOM   4951  C   LEU B 348      14.814  75.387  68.569  1.00 86.10           C
ANISOU 4951  C   LEU B 348    13304   9953   9459   1303  -1879    451       C
ATOM   4952  O   LEU B 348      15.765  74.644  68.843  1.00 72.63           O
ANISOU 4952  O   LEU B 348    11547   8305   7743   1213  -1774    456       O
ATOM   4953  N   ASP B 349      13.581  75.190  69.026  1.00 80.72           N
ANISOU 4953  N   ASP B 349    12472   9277   8919   1359  -1989    418       N
ATOM   4954  CA  ASP B 349      13.228  74.035  69.825  1.00 67.69           C
ANISOU 4954  CA  ASP B 349    10597   7700   7423   1320  -1995    384       C
ATOM   4955  CB  ASP B 349      11.801  74.143  70.351  1.00 75.68           C
ANISOU 4955  CB  ASP B 349    11458   8696   8600   1392  -2099    358       C
ATOM   4956  CG  ASP B 349      11.705  74.861  71.682  1.00 86.75           C
ANISOU 4956  CG  ASP B 349    12764  10113  10083   1362  -1986    379       C
ATOM   4957  OD1 ASP B 349      12.747  75.169  72.314  1.00 81.83           O
ANISOU 4957  OD1 ASP B 349    12171   9521   9401   1277  -1834    408       O
ATOM   4958  OD2 ASP B 349      10.552  75.095  72.102  1.00 90.99           O
ANISOU 4958  OD2 ASP B 349    13194  10628  10751   1428  -2054    365       O
ATOM   4959  C   ASP B 349      13.343  72.786  68.986  1.00 75.74           C
ANISOU 4959  C   ASP B 349    11621   8739   8418   1324  -2073    352       C
ATOM   4960  O   ASP B 349      13.921  71.768  69.405  1.00 76.79           O
ANISOU 4960  O   ASP B 349    11650   8939   8588   1247  -2001    343       O
ATOM   4961  N   GLN B 350      12.760  72.876  67.795  1.00 75.92           N
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ANISOU 4961  N   GLN B 350    11773   8697   8378   1419  -2228    335       N
ATOM   4962  CA  GLN B 350      12.693  71.749  66.883  1.00 84.53           C
ANISOU 4962  CA  GLN B 350    12890   9788   9442   1443  -2336    297       C
ATOM   4963  CB  GLN B 350      11.821  72.100  65.693  1.00 88.13           C
ANISOU 4963  CB  GLN B 350    13489  10155   9840   1569  -2534    275       C
ATOM   4964  CG  GLN B 350      10.359  72.077  66.008  1.00 98.01           C
ANISOU 4964  CG  GLN B 350    14580  11386  11274   1640  -2692    236       C
ATOM   4965  CD  GLN B 350       9.549  72.691  64.900  1.00100.66           C
ANISOU 4965  CD  GLN B 350    15074  11626  11546   1769  -2885    220       C
ATOM   4966  OE1 GLN B 350      10.103  73.311  63.993  1.00107.90           O
ANISOU 4966  OE1 GLN B 350    16236  12490  12271   1805  -2877    246       O
ATOM   4967  NE2 GLN B 350       8.233  72.514  64.953  1.00 90.16           N
ANISOU 4967  NE2 GLN B 350    13607  10267  10383   1843  -3058    177       N
ATOM   4968  C   GLN B 350      14.066  71.307  66.402  1.00 89.78           C
ANISOU 4968  C   GLN B 350    13678  10476   9959   1376  -2215    320       C
ATOM   4969  O   GLN B 350      14.318  70.109  66.249  1.00 85.67           O
ANISOU 4969  O   GLN B 350    13097   9997   9458   1343  -2225    294       O
ATOM   4970  N   ILE B 351      14.942  72.276  66.150  1.00 85.78           N
ANISOU 4970  N   ILE B 351    13343   9937   9313   1356  -2099    371       N
ATOM   4971  CA  ILE B 351      16.286  71.966  65.703  1.00 78.31           C
ANISOU 4971  CA  ILE B 351    12513   9004   8237   1292  -1965    400       C
ATOM   4972  CB  ILE B 351      17.030  73.227  65.278  1.00 72.88           C
ANISOU 4972  CB  ILE B 351    12032   8254   7405   1293  -1859    457       C
ATOM   4973  CG1 ILE B 351      16.320  73.864  64.074  1.00 90.69           C
ANISOU 4973  CG1 ILE B 351    14497  10411   9549   1421  -2003    455       C
ATOM   4974  CD1 ILE B 351      16.873  75.241  63.619  1.00 84.10           C
ANISOU 4974  CD1 ILE B 351    13881   9499   8575   1438  -1910    513       C
ATOM   4975  CG2 ILE B 351      18.483  72.898  64.949  1.00 76.43           C
ANISOU 4975  CG2 ILE B 351    12570   8717   7751   1216  -1695    493       C
ATOM   4976  C   ILE B 351      17.035  71.232  66.813  1.00 91.70           C
ANISOU 4976  C   ILE B 351    14022  10793  10026   1174  -1825    403       C
ATOM   4977  O   ILE B 351      17.711  70.237  66.549  1.00100.39           O
ANISOU 4977  O   ILE B 351    15115  11931  11099   1131  -1781    396       O
ATOM   4978  N   ALA B 352      16.882  71.701  68.053  1.00 83.91           N
ANISOU 4978  N   ALA B 352    12892   9842   9150   1128  -1761    411       N
ATOM   4979  CA  ALA B 352      17.486  71.046  69.218  1.00 72.35           C
ANISOU 4979  CA  ALA B 352    11249   8462   7780   1025  -1643    411       C
ATOM   4980  CB  ALA B 352      17.163  71.806  70.475  1.00 59.92           C
ANISOU 4980  CB  ALA B 352     9564   6901   6302   1002  -1592    421       C
ATOM   4981  C   ALA B 352      17.025  69.605  69.373  1.00 79.40           C
ANISOU 4981  C   ALA B 352    11985   9409   8775   1022  -1713    366       C
ATOM   4982  O   ALA B 352      17.806  68.722  69.749  1.00 83.38           O
ANISOU 4982  O   ALA B 352    12410   9974   9296    946  -1625    365       O
ATOM   4983  N   LYS B 353      15.744  69.376  69.109  1.00 72.39           N
ANISOU 4983  N   LYS B 353    11044   8495   7967   1104  -1874    328       N
ATOM   4984  CA  LYS B 353      15.177  68.059  69.316  1.00 63.98           C
ANISOU 4984  CA  LYS B 353     9813   7472   7025   1102  -1948    283       C
ATOM   4985  CB  LYS B 353      13.652  68.079  69.205  1.00 60.36           C
ANISOU 4985  CB  LYS B 353     9272   6972   6690   1193  -2121    245       C
ATOM   4986  CG  LYS B 353      13.067  66.675  69.195  1.00 68.33           C
ANISOU 4986  CG  LYS B 353    10130   8008   7825   1195  -2214    196       C
ATOM   4987  CD  LYS B 353      11.587  66.663  68.896  1.00 75.32           C
ANISOU 4987  CD  LYS B 353    10942   8839   8839   1288  -2404    156       C
ATOM   4988  CE  LYS B 353      10.777  66.390  70.137  1.00 74.99           C
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ANISOU 4988  CE  LYS B 353    10654   8827   9011   1272  -2377    147       C
ATOM   4989  NZ  LYS B 353       9.346  66.098  69.837  1.00 78.49           N
ANISOU 4989  NZ  LYS B 353    10987   9218   9616   1353  -2563    103       N
ATOM   4990  C   LYS B 353      15.769  67.120  68.287  1.00 74.42           C
ANISOU 4990  C   LYS B 353    11234   8795   8249   1099  -1974    268       C
ATOM   4991  O   LYS B 353      16.216  66.001  68.617  1.00 76.63           O
ANISOU 4991  O   LYS B 353    11409   9133   8572   1039  -1923    255       O
ATOM   4992  N   ILE B 354      15.787  67.592  67.040  1.00 67.48           N
ANISOU 4992  N   ILE B 354    10566   7846   7227   1168  -2048    273       N
ATOM   4993  CA  ILE B 354      16.294  66.799  65.913  1.00 77.04           C
ANISOU 4993  CA  ILE B 354    11912   9039   8320   1185  -2081    260       C
ATOM   4994  CB  ILE B 354      16.036  67.503  64.565  1.00 77.75           C
ANISOU 4994  CB  ILE B 354    12251   9033   8256   1288  -2189    263       C
ATOM   4995  CG1 ILE B 354      14.641  67.151  64.046  1.00 79.62           C
ANISOU 4995  CG1 ILE B 354    12459   9225   8567   1388  -2426    205       C
ATOM   4996  CD1 ILE B 354      14.196  68.000  62.856  1.00 83.74           C
ANISOU 4996  CD1 ILE B 354    13218   9646   8953   1503  -2556    206       C
ATOM   4997  CG2 ILE B 354      17.074  67.110  63.535  1.00 78.45           C
ANISOU 4997  CG2 ILE B 354    12538   9101   8169   1286  -2124    281       C
ATOM   4998  C   ILE B 354      17.781  66.502  66.076  1.00 79.41           C
ANISOU 4998  C   ILE B 354    12246   9386   8540   1091  -1889    297       C
ATOM   4999  O   ILE B 354      18.219  65.375  65.845  1.00 87.29           O
ANISOU 4999  O   ILE B 354    13218  10417   9530   1062  -1874    279       O
ATOM   5000  N   LEU B 355      18.533  67.509  66.511  1.00 74.27           N
ANISOU 5000  N   LEU B 355    11642   8735   7844   1043  -1747    348       N
ATOM   5001  CA  LEU B 355      19.951  67.381  66.815  1.00 70.26           C
ANISOU 5001  CA  LEU B 355    11141   8267   7288    947  -1560    387       C
ATOM   5002  CB  LEU B 355      20.498  68.742  67.206  1.00 67.01           C
ANISOU 5002  CB  LEU B 355    10793   7828   6838    914  -1445    437       C
ATOM   5003  CG  LEU B 355      20.828  69.662  66.045  1.00 70.06           C
ANISOU 5003  CG  LEU B 355    11431   8126   7063    968  -1429    473       C
ATOM   5004  CD1 LEU B 355      21.152  71.060  66.576  1.00 76.57           C
ANISOU 5004  CD1 LEU B 355    12293   8921   7881    936  -1336    517       C
ATOM   5005  CD2 LEU B 355      22.002  69.090  65.272  1.00 69.26           C
ANISOU 5005  CD2 LEU B 355    11443   8020   6854    937  -1321    498       C
ATOM   5006  C   LEU B 355      20.292  66.380  67.923  1.00 74.06           C
ANISOU 5006  C   LEU B 355    11405   8839   7895    860  -1489    372       C
ATOM   5007  O   LEU B 355      21.402  65.843  67.967  1.00 82.01           O
ANISOU 5007  O   LEU B 355    12409   9883   8869    793  -1369    390       O
ATOM   5008  N   THR B 356      19.346  66.150  68.827  1.00 74.47           N
ANISOU 5008  N   THR B 356    11278   8924   8092    865  -1557    342       N
ATOM   5009  CA  THR B 356      19.582  65.289  69.983  1.00 66.52           C
ANISOU 5009  CA  THR B 356    10072   7999   7206    790  -1487    331       C
ATOM   5010  CB  THR B 356      18.789  65.777  71.215  1.00 71.09           C
ANISOU 5010  CB  THR B 356    10500   8593   7916    788  -1494    326       C
ATOM   5011  OG1 THR B 356      19.305  67.037  71.659  1.00 79.06           O
ANISOU 5011  OG1 THR B 356    11574   9584   8879    761  -1401    366       O
ATOM   5012  CG2 THR B 356      18.887  64.783  72.330  1.00 52.88           C
ANISOU 5012  CG2 THR B 356     8001   6361   5730    728  -1437    312       C
ATOM   5013  C   THR B 356      19.170  63.871  69.671  1.00 63.25           C
ANISOU 5013  C   THR B 356     9577   7609   6846    806  -1572    287       C
ATOM   5014  O   THR B 356      19.933  62.931  69.815  1.00 80.42           O
ANISOU 5014  O   THR B 356    11703   9832   9021    749  -1499    286       O
ATOM   5015  N   ILE B 357      17.934  63.750  69.224  1.00 65.94           N
ATOM   5015  N   ILE B 357      17.934  63.750  69.224  1.00 65.94           N
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ANISOU 5015  N   ILE B 357     9906   7910   7239    885  -1735    249       N
ATOM   5016  CA  ILE B 357      17.324  62.486  68.887  1.00 66.30           C
ANISOU 5016  CA  ILE B 357     9873   7962   7356    910  -1847    200       C
ATOM   5017  CB  ILE B 357      15.870  62.730  68.489  1.00 62.87           C
ANISOU 5017  CB  ILE B 357     9422   7468   6997   1003  -2035    163       C
ATOM   5018  CG1 ILE B 357      15.010  62.841  69.740  1.00 65.87           C
ANISOU 5018  CG1 ILE B 357     9591   7874   7563    992  -2029    158       C
ATOM   5019  CD1 ILE B 357      13.551  63.077  69.424  1.00 72.03           C
ANISOU 5019  CD1 ILE B 357    10327   8594   8448   1081  -2209    123       C
ATOM   5020  CG2 ILE B 357      15.379  61.636  67.596  1.00 64.06           C
ANISOU 5020  CG2 ILE B 357     9586   7593   7160   1047  -2183    112       C
ATOM   5021  C   ILE B 357      18.060  61.725  67.765  1.00 79.96           C
ANISOU 5021  C   ILE B 357    11744   9680   8957    915  -1852    192       C
ATOM   5022  O   ILE B 357      18.385  60.553  67.912  1.00 86.77           O
ANISOU 5022  O   ILE B 357    12524  10586   9858    875  -1826    174       O
ATOM   5023  N   TYR B 358      18.333  62.391  66.650  1.00 85.52           N
ANISOU 5023  N   TYR B 358    12669  10322   9504    968  -1877    209       N
ATOM   5024  CA  TYR B 358      19.070  61.759  65.560  1.00 78.00           C
ANISOU 5024  CA  TYR B 358    11876   9348   8413    981  -1864    207       C
ATOM   5025  CB  TYR B 358      18.661  62.372  64.215  1.00 85.39           C
ANISOU 5025  CB  TYR B 358    13048  10189   9208   1086  -1986    201       C
ATOM   5026  CG  TYR B 358      17.199  62.124  63.950  1.00 82.27           C
ANISOU 5026  CG  TYR B 358    12599   9754   8905   1167  -2211    142       C
ATOM   5027  CD1 TYR B 358      16.241  63.013  64.395  1.00 84.45           C
ANISOU 5027  CD1 TYR B 358    12808  10010   9271   1202  -2289    140       C
ATOM   5028  CE1 TYR B 358      14.896  62.777  64.191  1.00 91.15           C
ANISOU 5028  CE1 TYR B 358    13585  10819  10229   1275  -2494     86       C
ATOM   5029  CZ  TYR B 358      14.487  61.628  63.556  1.00 90.83           C
ANISOU 5029  CZ  TYR B 358    13538  10759  10212   1307  -2633     30       C
ATOM   5030  OH  TYR B 358      13.142  61.403  63.364  1.00 93.57           O
ANISOU 5030  OH  TYR B 358    13803  11061  10690   1376  -2847    -25       O
ATOM   5031  CE2 TYR B 358      15.420  60.709  63.123  1.00 90.25           C
ANISOU 5031  CE2 TYR B 358    13540  10709  10044   1272  -2561     29       C
ATOM   5032  CD2 TYR B 358      16.772  60.960  63.326  1.00 84.74           C
ANISOU 5032  CD2 TYR B 358    12912  10052   9235   1203  -2345     87       C
ATOM   5033  C   TYR B 358      20.566  61.870  65.815  1.00 70.95           C
ANISOU 5033  C   TYR B 358    11020   8493   7444    899  -1654    260       C
ATOM   5034  O   TYR B 358      21.020  62.724  66.572  1.00 89.52           O
ANISOU 5034  O   TYR B 358    13332  10865   9815    847  -1541    299       O
ATOM   5035  N   GLN B 359      21.335  60.987  65.204  1.00 74.01           N
ANISOU 5035  N   GLN B 359    11477   8887   7755    886  -1604    258       N
ATOM   5036  CA  GLN B 359      22.687  60.735  65.697  1.00 88.97           C
ANISOU 5036  CA  GLN B 359    13328  10835   9639    794  -1411    298       C
ATOM   5037  CB  GLN B 359      22.759  59.327  66.288  1.00 87.96           C
ANISOU 5037  CB  GLN B 359    13026  10778   9617    746  -1406    266       C
ATOM   5038  CG  GLN B 359      21.660  58.990  67.275  1.00 80.09           C
ANISOU 5038  CG  GLN B 359    11823   9819   8791    740  -1503    228       C
ATOM   5039  CD  GLN B 359      21.904  59.585  68.641  1.00 78.46           C
ANISOU 5039  CD  GLN B 359    11471   9664   8677    671  -1398    257       C
ATOM   5040  OE1 GLN B 359      23.043  59.695  69.100  1.00 71.86           O
ANISOU 5040  OE1 GLN B 359    10620   8864   7818    601  -1248    294       O
ATOM   5041  NE2 GLN B 359      20.828  59.984  69.297  1.00 77.27           N
ANISOU 5041  NE2 GLN B 359    11214   9510   8633    694  -1478    239       N
ATOM   5042  C   GLN B 359      23.789  60.872  64.656  1.00 95.23           C
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ANISOU 5042  C   GLN B 359    14329  11585  10268    804  -1302    337       C
ATOM   5043  O   GLN B 359      24.935  60.509  64.912  1.00107.05           O
ANISOU 5043  O   GLN B 359    15793  13120  11760    734  -1148    368       O
ATOM   5044  N   SER B 360      23.445  61.371  63.479  1.00 93.72           N
ANISOU 5044  N   SER B 360    14354  11310   9946    894  -1380    338       N
ATOM   5045  CA  SER B 360      24.415  61.481  62.402  1.00 83.94           C
ANISOU 5045  CA  SER B 360    13336  10016   8541    917  -1273    377       C
ATOM   5046  CB  SER B 360      24.331  60.272  61.485  1.00 78.15           C
ANISOU 5046  CB  SER B 360    12692   9262   7738    972  -1347    338       C
ATOM   5047  OG  SER B 360      22.977  59.905  61.290  1.00 82.73           O
ANISOU 5047  OG  SER B 360    13245   9824   8364   1041  -1572    273       O
ATOM   5048  C   SER B 360      24.147  62.735  61.617  1.00 94.29           C
ANISOU 5048  C   SER B 360    14859  11237   9731    992  -1303    405       C
ATOM   5049  O   SER B 360      22.990  63.083  61.415  1.00104.48           O
ANISOU 5049  O   SER B 360    16175  12492  11030   1064  -1476    370       O
ATOM   5050  N   SER B 361      25.208  63.398  61.166  1.00 99.68           N
ANISOU 5050  N   SER B 361    15690  11877  10307    976  -1134    467       N
ATOM   5051  CA  SER B 361      25.088  64.584  60.314  1.00100.27           C
ANISOU 5051  CA  SER B 361    15997  11855  10246   1050  -1137    502       C
ATOM   5052  CB  SER B 361      26.425  64.899  59.635  1.00100.51           C
ANISOU 5052  CB  SER B 361    16200  11834  10153   1034   -925    571       C
ATOM   5053  OG  SER B 361      27.424  65.222  60.585  1.00101.80           O
ANISOU 5053  OG  SER B 361    16213  12049  10419    916   -745    615       O
ATOM   5054  C   SER B 361      24.009  64.401  59.250  1.00 96.33           C
ANISOU 5054  C   SER B 361    15669  11286   9646   1180  -1344    456       C
ATOM   5055  O   SER B 361      23.108  65.218  59.113  1.00 89.27           O
ANISOU 5055  O   SER B 361    14831  10348   8740   1243  -1470    445       O
ATOM   5056  N   GLU B 362      24.081  63.286  58.539  1.00100.69           N
ANISOU 5056  N   GLU B 362    16294  11830  10134   1220  -1389    424       N
ATOM   5057  CA  GLU B 362      23.204  63.053  57.407  1.00105.54           C
ANISOU 5057  CA  GLU B 362    17103  12365  10633   1348  -1584    379       C
ATOM   5058  CB  GLU B 362      23.719  61.859  56.617  1.00108.80           C
ANISOU 5058  CB  GLU B 362    17625  12764  10952   1375  -1562    361       C
ATOM   5059  CG  GLU B 362      25.218  61.963  56.419  1.00125.29           C
ANISOU 5059  CG  GLU B 362    19801  14847  12958   1323  -1294    435       C
ATOM   5060  CD  GLU B 362      25.830  60.734  55.790  1.00143.35           C
ANISOU 5060  CD  GLU B 362    22167  17129  15170   1338  -1242    423       C
ATOM   5061  OE1 GLU B 362      25.082  59.925  55.197  1.00153.92           O
ANISOU 5061  OE1 GLU B 362    23575  18441  16467   1415  -1426    358       O
ATOM   5062  OE2 GLU B 362      27.067  60.576  55.888  1.00144.17           O
ANISOU 5062  OE2 GLU B 362    22262  17252  15263   1274  -1018    476       O
ATOM   5063  C   GLU B 362      21.734  62.875  57.791  1.00104.90           C
ANISOU 5063  C   GLU B 362    16881  12301  10677   1385  -1831    308       C
ATOM   5064  O   GLU B 362      20.861  63.454  57.151  1.00111.17           O
ANISOU 5064  O   GLU B 362    17813  13021  11406   1485  -1992    288       O
ATOM   5065  N   ASP B 363      21.443  62.113  58.837  1.00101.70           N
ANISOU 5065  N   ASP B 363    16202  11986  10455   1310  -1858    272       N
ATOM   5066  CA  ASP B 363      20.055  61.999  59.276  1.00 98.28           C
ANISOU 5066  CA  ASP B 363    15615  11563  10164   1340  -2070    212       C
ATOM   5067  CB  ASP B 363      19.895  60.858  60.278  1.00106.37           C
ANISOU 5067  CB  ASP B 363    16364  12680  11373   1259  -2076    174       C
ATOM   5068  CG  ASP B 363      20.320  59.525  59.712  1.00108.67           C
ANISOU 5068  CG  ASP B 363    16700  12976  11615   1262  -2079    145       C
ATOM   5069  OD1 ASP B 363      21.532  59.228  59.713  1.00111.97           O
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ANISOU 5069  OD1 ASP B 363    17153  13423  11969   1206  -1891    186       O
ATOM   5070  OD2 ASP B 363      19.438  58.776  59.257  1.00112.24           O
ANISOU 5070  OD2 ASP B 363    17151  13398  12097   1321  -2273     79       O
ATOM   5071  C   ASP B 363      19.554  63.312  59.886  1.00 97.98           C
ANISOU 5071  C   ASP B 363    15522  11519  10187   1339  -2077    238       C
ATOM   5072  O   ASP B 363      18.362  63.624  59.810  1.00101.66           O
ANISOU 5072  O   ASP B 363    15966  11951  10710   1408  -2264    200       O
ATOM   5073  N   ILE B 364      20.463  64.069  60.499  1.00 94.50           N
ANISOU 5073  N   ILE B 364    15055  11108   9741   1262  -1877    301       N
ATOM   5074  CA  ILE B 364      20.136  65.401  60.990  1.00 95.03           C
ANISOU 5074  CA  ILE B 364    15109  11159   9840   1263  -1864    331       C
ATOM   5075  CB  ILE B 364      21.334  66.082  61.704  1.00 89.51           C
ANISOU 5075  CB  ILE B 364    14373  10495   9143   1161  -1629    398       C
ATOM   5076  CG1 ILE B 364      21.735  65.339  62.971  1.00 91.21           C
ANISOU 5076  CG1 ILE B 364    14327  10814   9514   1049  -1540    390       C
ATOM   5077  CD1 ILE B 364      20.709  65.360  64.030  1.00 94.90           C
ANISOU 5077  CD1 ILE B 364    14579  11327  10150   1037  -1638    355       C
ATOM   5078  CG2 ILE B 364      20.969  67.484  62.124  1.00 94.91           C
ANISOU 5078  CG2 ILE B 364    15068  11149   9846   1170  -1625    426       C
ATOM   5079  C   ILE B 364      19.689  66.269  59.805  1.00104.62           C
ANISOU 5079  C   ILE B 364    16590  12264  10897   1382  -1965    339       C
ATOM   5080  O   ILE B 364      18.615  66.879  59.841  1.00108.77           O
ANISOU 5080  O   ILE B 364    17103  12755  11467   1446  -2117    317       O
ATOM   5081  N   GLN B 365      20.510  66.307  58.754  1.00 97.78           N
ANISOU 5081  N   GLN B 365    15966  11337   9847   1418  -1879    373       N
ATOM   5082  CA  GLN B 365      20.220  67.133  57.580  1.00 91.69           C
ANISOU 5082  CA  GLN B 365    15482  10454   8901   1536  -1953    388       C
ATOM   5083  CB  GLN B 365      21.289  66.980  56.487  1.00 90.91           C
ANISOU 5083  CB  GLN B 365    15644  10294   8603   1565  -1817    431       C
ATOM   5084  CG  GLN B 365      22.701  67.208  56.969  1.00 94.23           C
ANISOU 5084  CG  GLN B 365    16022  10751   9028   1453  -1539    501       C
ATOM   5085  CD  GLN B 365      23.725  67.233  55.862  1.00108.66           C
ANISOU 5085  CD  GLN B 365    18118  12502  10664   1491  -1386    554       C
ATOM   5086  OE1 GLN B 365      23.390  67.132  54.680  1.00104.03           O
ANISOU 5086  OE1 GLN B 365    17782  11830   9916   1609  -1484    540       O
ATOM   5087  NE2 GLN B 365      24.994  67.364  56.243  1.00117.80           N
ANISOU 5087  NE2 GLN B 365    19228  13687  11843   1392  -1142    614       N
ATOM   5088  C   GLN B 365      18.873  66.792  56.998  1.00 87.59           C
ANISOU 5088  C   GLN B 365    15002   9889   8388   1649  -2230    317       C
ATOM   5089  O   GLN B 365      18.079  67.686  56.711  1.00 99.20           O
ANISOU 5089  O   GLN B 365    16561  11299   9833   1730  -2353    314       O
ATOM   5090  N   GLU B 366      18.615  65.500  56.827  1.00 86.82           N
ANISOU 5090  N   GLU B 366    14836   9818   8332   1654  -2333    259       N
ATOM   5091  CA  GLU B 366      17.368  65.083  56.212  1.00 89.22           C
ANISOU 5091  CA  GLU B 366    15177  10070   8651   1760  -2609    186       C
ATOM   5092  CB  GLU B 366      17.299  63.574  55.967  1.00 91.73           C
ANISOU 5092  CB  GLU B 366    15439  10412   9002   1756  -2694    125       C
ATOM   5093  CG  GLU B 366      15.860  63.064  55.961  1.00109.45           C
ANISOU 5093  CG  GLU B 366    17561  12639  11386   1815  -2977     41       C
ATOM   5094  CD  GLU B 366      15.658  61.775  55.181  1.00120.08           C
ANISOU 5094  CD  GLU B 366    18977  13954  12693   1863  -3123    -25       C
ATOM   5095  OE1 GLU B 366      16.554  60.905  55.188  1.00120.13           O
ANISOU 5095  OE1 GLU B 366    18982  14002  12662   1803  -2988    -16       O
ATOM   5096  OE2 GLU B 366      14.591  61.647  54.539  1.00127.00           O
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ANISOU 5096  OE2 GLU B 366    19917  14759  13580   1963  -3382    -89       O
ATOM   5097  C   GLU B 366      16.222  65.519  57.091  1.00 87.50           C
ANISOU 5097  C   GLU B 366    14737   9881   8628   1756  -2739    157       C
ATOM   5098  O   GLU B 366      15.332  66.230  56.637  1.00 91.87           O
ANISOU 5098  O   GLU B 366    15385  10364   9158   1853  -2903    141       O
ATOM   5099  N   GLU B 367      16.247  65.144  58.361  1.00 91.88           N
ANISOU 5099  N   GLU B 367    15004  10533   9374   1648  -2659    154       N
ATOM   5100  CA  GLU B 367      15.111  65.470  59.202  1.00 90.51           C
ANISOU 5100  CA  GLU B 367    14615  10382   9394   1650  -2775    126       C
ATOM   5101  CB  GLU B 367      15.259  64.842  60.568  1.00 90.70           C
ANISOU 5101  CB  GLU B 367    14339  10511   9610   1531  -2668    124       C
ATOM   5102  CG  GLU B 367      13.935  64.357  61.097  1.00 98.05           C
ANISOU 5102  CG  GLU B 367    15046  11455  10754   1551  -2846     64       C
ATOM   5103  CD  GLU B 367      13.447  63.129  60.366  1.00107.21           C
ANISOU 5103  CD  GLU B 367    16216  12587  11932   1597  -3024     -4       C
ATOM   5104  OE1 GLU B 367      14.293  62.332  59.897  1.00106.10           O
ANISOU 5104  OE1 GLU B 367    16168  12458  11685   1571  -2955     -4       O
ATOM   5105  OE2 GLU B 367      12.215  62.970  60.239  1.00112.90           O
ANISOU 5105  OE2 GLU B 367    16852  13267  12776   1661  -3236    -58       O
ATOM   5106  C   GLU B 367      14.919  66.985  59.320  1.00 94.27           C
ANISOU 5106  C   GLU B 367    15169  10816   9832   1684  -2747    171       C
ATOM   5107  O   GLU B 367      13.778  67.455  59.402  1.00 86.62           O
ANISOU 5107  O   GLU B 367    14146   9814   8954   1749  -2911    143       O
ATOM   5108  N   LEU B 368      16.026  67.734  59.295  1.00 92.11           N
ANISOU 5108  N   LEU B 368    15026  10540   9431   1641  -2542    240       N
ATOM   5109  CA  LEU B 368      15.976  69.201  59.287  1.00 87.96           C
ANISOU 5109  CA  LEU B 368    14613   9963   8845   1674  -2500    288       C
ATOM   5110  CB  LEU B 368      17.381  69.795  59.421  1.00 80.68           C
ANISOU 5110  CB  LEU B 368    13787   9051   7818   1596  -2241    364       C
ATOM   5111  CG  LEU B 368      17.993  69.939  60.816  1.00 87.91           C
ANISOU 5111  CG  LEU B 368    14478  10056   8868   1462  -2062    393       C
ATOM   5112  CD1 LEU B 368      19.337  70.629  60.731  1.00 93.60           C
ANISOU 5112  CD1 LEU B 368    15327  10760   9478   1401  -1834    466       C
ATOM   5113  CD2 LEU B 368      17.071  70.719  61.734  1.00 92.49           C
ANISOU 5113  CD2 LEU B 368    14907  10649   9588   1467  -2126    385       C
ATOM   5114  C   LEU B 368      15.304  69.763  58.027  1.00100.22           C
ANISOU 5114  C   LEU B 368    16422  11402  10254   1820  -2677    275       C
ATOM   5115  O   LEU B 368      14.487  70.681  58.106  1.00100.13           O
ANISOU 5115  O   LEU B 368    16419  11350  10278   1881  -2776    274       O
ATOM   5116  N   THR B 369      15.649  69.224  56.861  1.00108.13           N
ANISOU 5116  N   THR B 369    17645  12349  11091   1882  -2717    265       N
ATOM   5117  CA  THR B 369      15.024  69.691  55.627  1.00105.68           C
ANISOU 5117  CA  THR B 369    17600  11924  10629   2030  -2896    249       C
ATOM   5118  CB  THR B 369      15.667  69.046  54.361  1.00105.38           C
ANISOU 5118  CB  THR B 369    17833  11826  10380   2088  -2889    247       C
ATOM   5119  OG1 THR B 369      15.662  67.623  54.481  1.00117.38           O
ANISOU 5119  OG1 THR B 369    19218  13401  11980   2048  -2942    192       O
ATOM   5120  CG2 THR B 369      17.102  69.499  54.192  1.00103.43           C
ANISOU 5120  CG2 THR B 369    17742  11572   9986   2033  -2607    331       C
ATOM   5121  C   THR B 369      13.511  69.423  55.659  1.00101.47           C
ANISOU 5121  C   THR B 369    16940  11374  10241   2106  -3183    172       C
ATOM   5122  O   THR B 369      12.727  70.262  55.221  1.00111.78           O
ANISOU 5122  O   THR B 369    18331  12606  11533   2195  -3305    158       O
ATOM   5123  N   ASN B 370      13.099  68.285  56.216  1.00100.54           N
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ANISOU 5123  N   ASN B 370    16580  11322  10297   2055  -3258    116       N
ATOM   5124  CA  ASN B 370      11.674  67.959  56.329  1.00103.86           C
ANISOU 5124  CA  ASN B 370    16843  11726  10892   2115  -3518     43       C
ATOM   5125  CB  ASN B 370      11.469  66.573  56.939  1.00102.78           C
ANISOU 5125  CB  ASN B 370    16449  11664  10938   2039  -3552    -10       C
ATOM   5126  CG  ASN B 370      12.112  65.479  56.123  1.00118.54           C
ANISOU 5126  CG  ASN B 370    18586  13649  12805   2043  -3555    -34       C
ATOM   5127  OD1 ASN B 370      11.536  64.997  55.148  1.00124.94           O
ANISOU 5127  OD1 ASN B 370    19503  14387  13581   2125  -3739    -99       O
ATOM   5128  ND2 ASN B 370      13.290  65.046  56.543  1.00128.06           N
ANISOU 5128  ND2 ASN B 370    19758  14926  13972   1938  -3321      7       N
ATOM   5129  C   ASN B 370      10.872  68.962  57.143  1.00110.58           C
ANISOU 5129  C   ASN B 370    17538  12584  11893   2121  -3546     56       C
ATOM   5130  O   ASN B 370       9.644  68.971  57.083  1.00115.49           O
ANISOU 5130  O   ASN B 370    18070  13168  12642   2194  -3768      5       O
ATOM   5131  N   LEU B 371      11.565  69.794  57.912  1.00119.60           N
ANISOU 5131  N   LEU B 371    18646  13770  13027   2043  -3324    124       N
ATOM   5132  CA  LEU B 371      10.908  70.843  58.676  1.00110.99           C
ANISOU 5132  CA  LEU B 371    17439  12680  12054   2051  -3327    143       C
ATOM   5133  CB  LEU B 371      11.916  71.583  59.552  1.00103.27           C
ANISOU 5133  CB  LEU B 371    16429  11756  11053   1945  -3057    215       C
ATOM   5134  CG  LEU B 371      12.337  70.909  60.860  1.00 99.21           C
ANISOU 5134  CG  LEU B 371    15641  11354  10700   1810  -2903    218       C
ATOM   5135  CD1 LEU B 371      13.344  71.784  61.597  1.00100.63           C
ANISOU 5135  CD1 LEU B 371    15831  11568  10837   1720  -2661    287       C
ATOM   5136  CD2 LEU B 371      11.126  70.604  61.736  1.00 95.40           C
ANISOU 5136  CD2 LEU B 371    14883  10903  10461   1814  -3022    173       C
ATOM   5137  C   LEU B 371      10.210  71.817  57.735  1.00111.46           C
ANISOU 5137  C   LEU B 371    17716  12629  12006   2192  -3495    141       C
ATOM   5138  O   LEU B 371       9.163  72.359  58.074  1.00113.14           O
ANISOU 5138  O   LEU B 371    17818  12819  12350   2245  -3621    123       O
ATOM   5139  N   ASN B 372      10.782  72.003  56.546  1.00110.26           N
ANISOU 5139  N   ASN B 372    17868  12405  11621   2255  -3491    158       N
ATOM   5140  CA  ASN B 372      10.330  73.025  55.600  1.00125.02           C
ANISOU 5140  CA  ASN B 372    19933  14173  13397   2348  -3547    145       C
ATOM   5141  CB  ASN B 372       8.917  72.742  55.071  1.00131.02           C
ANISOU 5141  CB  ASN B 372    20617  14879  14285   2431  -3802     49       C
ATOM   5142  CG  ASN B 372       8.846  71.481  54.224  1.00135.27           C
ANISOU 5142  CG  ASN B 372    21194  15397  14806   2445  -3907    -25       C
ATOM   5143  OD1 ASN B 372       7.966  70.637  54.418  1.00136.91           O
ANISOU 5143  OD1 ASN B 372    21207  15620  15193   2446  -4075    -95       O
ATOM   5144  ND2 ASN B 372       9.773  71.348  53.278  1.00134.44           N
ANISOU 5144  ND2 ASN B 372    21340  15250  14490   2455  -3801    -11       N
ATOM   5145  C   ASN B 372      10.380  74.392  56.260  1.00118.58           C
ANISOU 5145  C   ASN B 372    19124  13351  12579   2346  -3451    214       C
ATOM   5146  O   ASN B 372       9.429  75.167  56.199  1.00114.72           O
ANISOU 5146  O   ASN B 372    18616  12814  12157   2414  -3564    192       O
ATOM   5147  N   SER B 373      11.501  74.665  56.909  1.00108.58           N
ANISOU 5147  N   SER B 373    17872  12135  11250   2257  -3230    291       N
ATOM   5148  CA  SER B 373      11.726  75.949  57.533  1.00102.96           C
ANISOU 5148  CA  SER B 373    17161  11418  10542   2226  -3088    350       C
ATOM   5149  CB  SER B 373      12.774  75.830  58.618  1.00107.40           C
ANISOU 5149  CB  SER B 373    17564  12073  11169   2069  -2831    390       C
ATOM   5150  OG  SER B 373      13.898  75.165  58.081  1.00116.12           O
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ANISOU 5150  OG  SER B 373    18790  13189  12143   2022  -2707    409       O
ATOM   5151  C   SER B 373      12.203  76.940  56.505  1.00105.86           C
ANISOU 5151  C   SER B 373    17852  11683  10685   2297  -3031    397       C
ATOM   5152  O   SER B 373      12.341  76.612  55.329  1.00116.91           O
ANISOU 5152  O   SER B 373    19424  13027  11968   2343  -3056    363       O
ATOM   5153  N   GLU B 374      12.497  78.148  56.965  1.00100.07           N
ANISOU 5153  N   GLU B 374    17165  10930   9926   2277  -2906    460       N
ATOM   5154  CA  GLU B 374      13.163  79.125  56.126  1.00115.08           C
ANISOU 5154  CA  GLU B 374    19338  12745  11643   2305  -2775    508       C
ATOM   5155  CB  GLU B 374      12.844  80.552  56.588  1.00127.85           C
ANISOU 5155  CB  GLU B 374    20976  14320  13280   2327  -2744    549       C
ATOM   5156  CG  GLU B 374      12.481  81.484  55.438  1.00140.52           C
ANISOU 5156  CG  GLU B 374    22806  15815  14769   2427  -2783    533       C
ATOM   5157  CD  GLU B 374      11.077  81.221  54.919  1.00145.97           C
ANISOU 5157  CD  GLU B 374    23442  16477  15541   2532  -3042    442       C
ATOM   5158  OE1 GLU B 374      10.181  80.963  55.753  1.00144.98           O
ANISOU 5158  OE1 GLU B 374    23085  16403  15598   2535  -3175    412       O
ATOM   5159  OE2 GLU B 374      10.872  81.249  53.683  1.00148.31           O
ANISOU 5159  OE2 GLU B 374    23925  16696  15729   2612  -3110    400       O
ATOM   5160  C   GLU B 374      14.669  78.871  56.138  1.00118.37           C
ANISOU 5160  C   GLU B 374    19848  13182  11943   2211  -2539    575       C
ATOM   5161  O   GLU B 374      15.444  79.654  55.593  1.00120.80           O
ANISOU 5161  O   GLU B 374    20356  13425  12117   2207  -2377    626       O
ATOM   5162  O   LEU B 375      16.375  76.339  54.620  1.00 96.04           O
ANISOU 5162  O   LEU B 375    17185  10385   8920   2157  -2400    544       O
ATOM   5163  N   LEU B 375      15.081  77.773  56.761  1.00114.20           N
ANISOU 5163  N   LEU B 375    19117  12753  11520   2109  -2480    552       N
ATOM   5164  CA  LEU B 375      16.485  77.389  56.775  1.00108.23           C
ANISOU 5164  CA  LEU B 375    18395  12029  10699   2004  -2247    596       C
ATOM   5165  C   LEU B 375      16.997  77.109  55.365  1.00101.04           C
ANISOU 5165  C   LEU B 375    17789  11035   9567   2084  -2237    614       C
ATOM   5166  CB  LEU B 375      16.686  76.149  57.639  1.00108.84           C
ANISOU 5166  CB  LEU B 375    18194  12226  10934   1896  -2218    556       C
ATOM   5167  CG  LEU B 375      16.870  76.296  59.148  1.00106.12           C
ANISOU 5167  CG  LEU B 375    17568  11975  10777   1768  -2104    563       C
ATOM   5168  CD1 LEU B 375      16.831  74.927  59.795  1.00 98.09           C
ANISOU 5168  CD1 LEU B 375    16308  11062   9900   1696  -2127    513       C
ATOM   5169  CD2 LEU B 375      18.188  76.981  59.451  1.00 98.74           C
ANISOU 5169  CD2 LEU B 375    16690  11036   9791   1669  -1850    634       C
ATOM   5170  O   THR B 376      19.533  75.450  54.976  1.00109.10           O
ANISOU 5170  O   THR B 376    18860  12119  10474   1922  -1854    667       O
ATOM   5171  N   THR B 376      18.121  77.723  54.994  1.00 97.46           N
ANISOU 5171  N   THR B 376    17519  10530   8983   2053  -2018    689       N
ATOM   5172  CA  THR B 376      18.777  77.362  53.739  1.00100.60           C
ANISOU 5172  CA  THR B 376    18126  10864   9232   2088  -1928    687       C
ATOM   5173  C   THR B 376      19.384  75.968  53.868  1.00107.96           C
ANISOU 5173  C   THR B 376    18975  11870  10175   2028  -1887    677       C
ATOM   5174  CB  THR B 376      19.875  78.375  53.313  1.00112.36           C
ANISOU 5174  CB  THR B 376    19813  12275  10605   2061  -1676    770       C
ATOM   5175  OG1 THR B 376      20.240  78.123  51.952  1.00138.12           O
ANISOU 5175  OG1 THR B 376    23297  15456  13726   2129  -1623    755       O
ATOM   5176  CG2 THR B 376      21.107  78.235  54.131  1.00 92.73           C
ANISOU 5176  CG2 THR B 376    17245   9843   8146   1931  -1456    848       C
ATOM   5177  N   GLN B 377      19.707  75.338  52.743  1.00107.21           N
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ANISOU 5177  N   GLN B 377    19037  11726   9970   2076  -1865    650       N
ATOM   5178  CA  GLN B 377      20.312  74.015  52.803  1.00104.31           C
ANISOU 5178  CA  GLN B 377    18605  11422   9605   2025  -1819    641       C
ATOM   5179  C   GLN B 377      21.723  74.165  53.376  1.00111.15           C
ANISOU 5179  C   GLN B 377    19453  12322  10458   1909  -1543    734       C
ATOM   5180  O   GLN B 377      22.173  73.325  54.157  1.00105.23           O
ANISOU 5180  O   GLN B 377    18468  11673   9842   1798  -1472    716       O
ATOM   5181  CB  GLN B 377      20.329  73.335  51.424  1.00 87.99           C
ANISOU 5181  CB  GLN B 377    16727   9284   7421   2111  -1855    590       C
ATOM   5182  N   GLU B 378      22.394  75.262  53.020  1.00116.46           N
ANISOU 5182  N   GLU B 378    20285  12914  11048   1905  -1362    802       N
ATOM   5183  CA  GLU B 378      23.776  75.515  53.445  1.00110.91           C
ANISOU 5183  CA  GLU B 378    19555  12224  10362   1787  -1080    884       C
ATOM   5184  CB  GLU B 378      24.328  76.752  52.723  1.00102.41           C
ANISOU 5184  CB  GLU B 378    18714  11027   9170   1820   -913    953       C
ATOM   5185  C   GLU B 378      23.886  75.691  54.966  1.00109.82           C
ANISOU 5185  C   GLU B 378    19082  12194  10450   1643  -1031    875       C
ATOM   5186  O   GLU B 378      24.943  75.467  55.569  1.00105.83           O
ANISOU 5186  O   GLU B 378    18439  11741  10032   1519   -838    907       O
ATOM   5187  N   GLU B 379      22.779  76.102  55.570  1.00108.55           N
ANISOU 5187  N   GLU B 379    18799  12061  10382   1667  -1209    832       N
ATOM   5188  CA  GLU B 379      22.659  76.244  57.014  1.00104.09           C
ANISOU 5188  CA  GLU B 379    17932  11594  10022   1554  -1198    813       C
ATOM   5189  C   GLU B 379      22.561  74.881  57.647  1.00 99.24           C
ANISOU 5189  C   GLU B 379    17076  11095   9537   1493  -1256    755       C
ATOM   5190  O   GLU B 379      23.328  74.515  58.554  1.00 94.00           O
ANISOU 5190  O   GLU B 379    16214  10509   8991   1368  -1123    764       O
ATOM   5191  CB  GLU B 379      21.407  77.038  57.368  1.00 96.88           C
ANISOU 5191  CB  GLU B 379    16981  10666   9162   1617  -1377    784       C
ATOM   5192  CG  GLU B 379      21.645  78.489  57.614  1.00107.26           C
ANISOU 5192  CG  GLU B 379    18371  11920  10464   1600  -1272    841       C
ATOM   5193  CD  GLU B 379      20.509  79.377  57.115  1.00106.73           C
ANISOU 5193  CD  GLU B 379    18454  11772  10327   1732  -1444    831       C
ATOM   5194  OE1 GLU B 379      19.386  78.858  56.896  1.00103.45           O
ANISOU 5194  OE1 GLU B 379    18007  11369   9930   1821  -1669    768       O
ATOM   5195  OE2 GLU B 379      20.736  80.604  56.964  1.00 98.89           O
ANISOU 5195  OE2 GLU B 379    17605  10698   9271   1746  -1357    885       O
ATOM   5196  N   ILE B 380      21.566  74.159  57.141  1.00 90.76           N
ANISOU 5196  N   ILE B 380    16027  10020   8437   1589  -1469    693       N
ATOM   5197  CA  ILE B 380      21.193  72.838  57.591  1.00 87.08           C
ANISOU 5197  CA  ILE B 380    15354   9647   8087   1558  -1572    627       C
ATOM   5198  CB  ILE B 380      20.108  72.278  56.665  1.00 87.03           C
ANISOU 5198  CB  ILE B 380    15463   9595   8010   1692  -1817    567       C
ATOM   5199  CG1 ILE B 380      18.814  73.076  56.866  1.00 82.56           C
ANISOU 5199  CG1 ILE B 380    14867   9000   7502   1767  -2006    538       C
ATOM   5200  CD1 ILE B 380      17.613  72.549  56.094  1.00 78.71           C
ANISOU 5200  CD1 ILE B 380    14451   8469   6987   1896  -2279    470       C
ATOM   5201  CG2 ILE B 380      19.887  70.801  56.909  1.00 93.19           C
ANISOU 5201  CG2 ILE B 380    16071  10454   8885   1663  -1904    504       C
ATOM   5202  C   ILE B 380      22.404  71.909  57.664  1.00 92.45           C
ANISOU 5202  C   ILE B 380    15981  10377   8768   1467  -1396    646       C
ATOM   5203  O   ILE B 380      22.634  71.277  58.695  1.00 89.86           O
ANISOU 5203  O   ILE B 380    15402  10149   8592   1365  -1353    627       O
ATOM   5204  N   GLU B 381      23.194  71.865  56.593  1.00 96.71           N
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ANISOU 5204  N   GLU B 381    16762  10845   9139   1507  -1285    688       N
ATOM   5205  CA  GLU B 381      24.415  71.062  56.569  1.00 99.56           C
ANISOU 5205  CA  GLU B 381    17093  11240   9494   1429  -1099    715       C
ATOM   5206  CB  GLU B 381      25.115  71.160  55.209  1.00105.28           C
ANISOU 5206  CB  GLU B 381    18133  11858  10009   1505   -988    765       C
ATOM   5207  C   GLU B 381      25.369  71.492  57.675  1.00105.64           C
ANISOU 5207  C   GLU B 381    17675  12068  10397   1285   -901    759       C
ATOM   5208  O   GLU B 381      25.999  70.649  58.315  1.00119.05           O
ANISOU 5208  O   GLU B 381    19189  13849  12197   1191   -818    751       O
ATOM   5209  N   GLN B 382      25.462  72.795  57.921  1.00 95.60           N
ANISOU 5209  N   GLN B 382    16448  10750   9127   1269   -834    804       N
ATOM   5210  CA  GLN B 382      26.405  73.299  58.919  1.00 98.13           C
ANISOU 5210  CA  GLN B 382    16610  11108   9567   1136   -652    846       C
ATOM   5211  CB  GLN B 382      26.697  74.776  58.683  1.00100.26           C
ANISOU 5211  CB  GLN B 382    17036  11281   9776   1144   -550    909       C
ATOM   5212  CG  GLN B 382      28.112  75.182  59.029  1.00 97.30           C
ANISOU 5212  CG  GLN B 382    16621  10894   9454   1027   -303    974       C
ATOM   5213  CD  GLN B 382      28.356  76.639  58.735  1.00109.27           C
ANISOU 5213  CD  GLN B 382    18302  12303  10912   1039   -206   1037       C
ATOM   5214  OE1 GLN B 382      27.575  77.270  58.026  1.00113.09           O
ANISOU 5214  OE1 GLN B 382    18982  12711  11276   1150   -305   1040       O
ATOM   5215  NE2 GLN B 382      29.437  77.189  59.283  1.00109.27           N
ANISOU 5215  NE2 GLN B 382    18224  12292  11000    925    -17   1086       N
ATOM   5216  C   GLN B 382      25.881  73.084  60.330  1.00101.70           C
ANISOU 5216  C   GLN B 382    16769  11666  10206   1061   -738    797       C
ATOM   5217  O   GLN B 382      26.644  72.755  61.253  1.00 92.33           O
ANISOU 5217  O   GLN B 382    15391  10550   9140    946   -628    803       O
ATOM   5218  N   ILE B 383      24.574  73.276  60.488  1.00105.85           N
ANISOU 5218  N   ILE B 383    17265  12197  10757   1132   -936    750       N
ATOM   5219  CA  ILE B 383      23.899  72.971  61.742  1.00101.20           C
ANISOU 5219  CA  ILE B 383    16413  11701  10339   1084  -1031    701       C
ATOM   5220  CB  ILE B 383      22.394  73.285  61.660  1.00 95.63           C
ANISOU 5220  CB  ILE B 383    15715  10974   9646   1186  -1248    656       C
ATOM   5221  CG1 ILE B 383      22.172  74.794  61.708  1.00 91.82           C
ANISOU 5221  CG1 ILE B 383    15336  10420   9130   1213  -1231    693       C
ATOM   5222  CD1 ILE B 383      20.730  75.196  61.684  1.00 88.63           C
ANISOU 5222  CD1 ILE B 383    14931   9992   8752   1313  -1435    654       C
ATOM   5223  CG2 ILE B 383      21.645  72.638  62.798  1.00 92.78           C
ANISOU 5223  CG2 ILE B 383    15084  10707   9460   1149  -1348    600       C
ATOM   5224  C   ILE B 383      24.104  71.505  62.096  1.00101.58           C
ANISOU 5224  C   ILE B 383    16292  11840  10465   1035  -1040    661       C
ATOM   5225  O   ILE B 383      24.385  71.171  63.244  1.00115.40           O
ANISOU 5225  O   ILE B 383    17823  13673  12352    940   -990    650       O
ATOM   5226  N   SER B 384      24.008  70.635  61.096  1.00 88.48           N
ANISOU 5226  N   SER B 384    14749  10160   8710   1102  -1100    641       N
ATOM   5227  CA  SER B 384      24.119  69.190  61.304  1.00 90.98           C
ANISOU 5227  CA  SER B 384    14925  10553   9088   1068  -1125    599       C
ATOM   5228  CB  SER B 384      23.903  68.480  59.974  1.00 98.35           C
ANISOU 5228  CB  SER B 384    16054  11432   9881   1169  -1210    578       C
ATOM   5229  OG  SER B 384      22.569  68.666  59.551  1.00111.04           O
ANISOU 5229  OG  SER B 384    17724  12999  11467   1276  -1430    533       O
ATOM   5230  C   SER B 384      25.430  68.678  61.922  1.00 84.88           C
ANISOU 5230  C   SER B 384    14027   9843   8379    948   -931    628       C
ATOM   5231  O   SER B 384      25.561  67.493  62.192  1.00 80.62           O
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ANISOU 5231  O   SER B 384    13361   9370   7900    916   -943    596       O
ATOM   5232  N   ASN B 385      26.394  69.561  62.141  1.00 83.77           N
ANISOU 5232  N   ASN B 385    13919   9676   8233    884   -759    688       N
ATOM   5233  CA  ASN B 385      27.671  69.150  62.692  1.00 80.14           C
ANISOU 5233  CA  ASN B 385    13342   9265   7842    773   -582    717       C
ATOM   5234  CB  ASN B 385      28.815  69.597  61.778  1.00 85.63           C
ANISOU 5234  CB  ASN B 385    14230   9879   8428    770   -398    786       C
ATOM   5235  CG  ASN B 385      28.713  69.000  60.384  1.00101.35           C
ANISOU 5235  CG  ASN B 385    16440  11811  10257    873   -426    784       C
ATOM   5236  OD1 ASN B 385      28.982  69.674  59.394  1.00112.49           O
ANISOU 5236  OD1 ASN B 385    18086  13123  11533    932   -355    831       O
ATOM   5237  ND2 ASN B 385      28.312  67.732  60.301  1.00105.85           N
ANISOU 5237  ND2 ASN B 385    16943  12435  10840    898   -529    731       N
ATOM   5238  C   ASN B 385      27.877  69.693  64.089  1.00 85.00           C
ANISOU 5238  C   ASN B 385    13758   9934   8604    674   -537    721       C
ATOM   5239  O   ASN B 385      28.986  69.648  64.621  1.00 90.81           O
ANISOU 5239  O   ASN B 385    14403  10697   9405    578   -390    750       O
ATOM   5240  N   LEU B 386      26.808  70.210  64.684  1.00 85.64           N
ANISOU 5240  N   LEU B 386    13773  10026   8739    702   -667    690       N
ATOM   5241  CA  LEU B 386      26.898  70.756  66.032  1.00 83.49           C
ANISOU 5241  CA  LEU B 386    13329   9798   8594    621   -636    689       C
ATOM   5242  CB  LEU B 386      25.640  71.556  66.371  1.00 81.26           C
ANISOU 5242  CB  LEU B 386    13044   9496   8334    681   -773    666       C
ATOM   5243  CG  LEU B 386      25.541  72.862  65.577  1.00 80.44           C
ANISOU 5243  CG  LEU B 386    13156   9288   8120    739   -759    706       C
ATOM   5244  CD1 LEU B 386      24.137  73.434  65.625  1.00 87.18           C
ANISOU 5244  CD1 LEU B 386    14028  10117   8979    828   -924    677       C
ATOM   5245  CD2 LEU B 386      26.539  73.863  66.103  1.00 76.61           C
ANISOU 5245  CD2 LEU B 386    12671   8774   7664    651   -604    755       C
ATOM   5246  C   LEU B 386      27.120  69.640  67.040  1.00 81.24           C
ANISOU 5246  C   LEU B 386    12818   9616   8433    550   -632    656       C
ATOM   5247  O   LEU B 386      26.629  68.533  66.861  1.00 82.22           O
ANISOU 5247  O   LEU B 386    12889   9783   8567    583   -717    616       O
ATOM   5248  N   LYS B 387      27.871  69.933  68.093  1.00 83.44           N
ANISOU 5248  N   LYS B 387    12970   9929   8805    453   -535    671       N
ATOM   5249  CA  LYS B 387      28.143  68.944  69.128  1.00 75.91           C
ANISOU 5249  CA  LYS B 387    11810   9068   7964    385   -525    642       C
ATOM   5250  CB  LYS B 387      29.646  68.855  69.370  1.00 77.54           C
ANISOU 5250  CB  LYS B 387    11974   9284   8204    288   -365    678       C
ATOM   5251  CG  LYS B 387      30.471  69.117  68.117  1.00 96.03           C
ANISOU 5251  CG  LYS B 387    14494  11552  10442    301   -253    728       C
ATOM   5252  CD  LYS B 387      31.316  67.913  67.712  1.00109.72           C
ANISOU 5252  CD  LYS B 387    16196  13319  12172    276   -173    733       C
ATOM   5253  CE  LYS B 387      32.791  68.119  68.059  1.00115.75           C
ANISOU 5253  CE  LYS B 387    16900  14076  13003    175     -5    776       C
ATOM   5254  NZ  LYS B 387      33.628  66.929  67.738  1.00116.67           N
ANISOU 5254  NZ  LYS B 387    16972  14228  13130    152     78    782       N
ATOM   5255  C   LYS B 387      27.389  69.295  70.409  1.00 77.98           C
ANISOU 5255  C   LYS B 387    11932   9370   8328    372   -598    613       C
ATOM   5256  O   LYS B 387      26.898  70.412  70.551  1.00 95.46           O
ANISOU 5256  O   LYS B 387    14204  11536  10530    398   -628    622       O
ATOM   5257  N   GLY B 388      27.313  68.355  71.346  1.00 70.61           N
ANISOU 5257  N   GLY B 388    10822   8516  7490    336   -617    580       N
ATOM   5258  CA  GLY B 388      26.383  68.451  72.464  1.00 60.70           C
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ANISOU 5258  CA  GLY B 388     9441   7297   6324    347   -695    548       C
ATOM   5259  C   GLY B 388      25.105  67.864  71.914  1.00 82.72           C
ANISOU 5259  C   GLY B 388    12236  10088   9107    437   -830    513       C
ATOM   5260  O   GLY B 388      25.162  67.051  70.990  1.00106.69           O
ANISOU 5260  O   GLY B 388    15323  13122  12091    466   -853    505       O
ATOM   5261  N   TYR B 389      23.961  68.300  72.423  1.00 89.96           N
ANISOU 5261  N   TYR B 389    13107  10997  10076    485   -919    492       N
ATOM   5262  CA  TYR B 389      22.657  67.804  71.947  1.00 85.57           C
ANISOU 5262  CA  TYR B 389    12539  10435   9541    572  -1060    456       C
ATOM   5263  CB  TYR B 389      22.405  68.132  70.465  1.00 70.26           C
ANISOU 5263  CB  TYR B 389    10789   8424   7483    648  -1126    463       C
ATOM   5264  CG  TYR B 389      22.457  69.623  70.293  1.00 70.53           C
ANISOU 5264  CG  TYR B 389    10955   8390   7454    666  -1099    498       C
ATOM   5265  CD2 TYR B 389      23.531  70.237  69.660  1.00 68.41           C
ANISOU 5265  CD2 TYR B 389    10835   8076   7082    635   -992    542       C
ATOM   5266  CE2 TYR B 389      23.589  71.608  69.534  1.00 62.66           C
ANISOU 5266  CE2 TYR B 389    10225   7279   6302    648   -962    575       C
ATOM   5267  CZ  TYR B 389      22.579  72.380  70.073  1.00 71.06           C
ANISOU 5267  CZ  TYR B 389    11260   8325   7414    692  -1041    563       C
ATOM   5268  OH  TYR B 389      22.628  73.754  69.976  1.00 69.81           O
ANISOU 5268  OH  TYR B 389    11222   8097   7207    706  -1011    595       O
ATOM   5269  CE1 TYR B 389      21.511  71.788  70.717  1.00 72.67           C
ANISOU 5269  CE1 TYR B 389    11313   8575   7723    725  -1143    519       C
ATOM   5270  CD1 TYR B 389      21.456  70.426  70.826  1.00 65.53           C
ANISOU 5270  CD1 TYR B 389    10289   7734   6874    710  -1169    488       C
ATOM   5271  C   TYR B 389      22.624  66.332  72.247  1.00 79.94           C
ANISOU 5271  C   TYR B 389    11686   9788   8898    551  -1074    425       C
ATOM   5272  O   TYR B 389      22.494  65.462  71.381  1.00 67.57           O
ANISOU 5272  O   TYR B 389    10153   8221   7298    583  -1129    406       O
ATOM   5273  N   THR B 390      22.771  66.102  73.542  1.00 72.97           N
ANISOU 5273  N   THR B 390    10655   8960   8110    497  -1021    420       N
ATOM   5274  CA  THR B 390      22.714  64.799  74.105  1.00 66.14           C
ANISOU 5274  CA  THR B 390    9642   8160   7328    472  -1022    394       C
ATOM   5275  C   THR B 390      22.015  64.945  75.430  1.00 69.79           C
ANISOU 5275  C   THR B 390    9969   8646   7901    471  -1026    382       C
ATOM   5276  O   THR B 390      22.226  65.938  76.144  1.00 64.47           O
ANISOU 5276  O   THR B 390    9310   7958   7226    450   -976    401       O
ATOM   5277  CB  THR B 390      24.120  64.205  74.273  1.00 63.78           C
ANISOU 5277  CB  THR B 390    9323   7904   7006    390   -907    411       C
ATOM   5278  OG1 THR B 390      24.669  63.912  72.975  1.00 75.90           O
ANISOU 5278  OG1 THR B 390    10983   9414   8443    402   -899    422       O
ATOM   5279  CG2 THR B 390      24.044  62.953  75.096  1.00 53.70           C
ANISOU 5279  CG2 THR B 390    7884   6695   5823    363   -901    387       C
ATOM   5280  N   GLY B 391      21.165  63.976  75.753  1.00 68.18           N
ANISOU 5280  N   GLY B 391    9641   8470   7793    498  -1084    351       N
ATOM   5281  CA  GLY B 391      20.533  63.957  77.049  1.00 59.11           C
ANISOU 5281  CA  GLY B 391    8361   7344   6754    500  -1067    344       C
ATOM   5282  C   GLY B 391      19.262  64.768  77.110  1.00 64.34           C
ANISOU 5282  C   GLY B 391    9023   7957   7466    574  -1143    338       C
ATOM   5283  O   GLY B 391      18.991  65.604  76.264  1.00 64.44           O
ANISOU 5283  O   GLY B 391    9153   7917   7416    617  -1201    344       O
ATOM   5284  N   THR B 392      18.475  64.506  78.136  1.00 67.37           N
ANISOU 5284  N   THR B 392    9276   8355   7967    591  -1138    327       N
ATOM   5285  CA  THR B 392      17.185  65.135  78.266  1.00 59.48           C
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ANISOU 5285  CA  THR B 392     8249   7309   7043    665  -1201    321       C
ATOM   5286  CB  THR B 392      16.109  64.063  78.510  1.00 73.12           C
ANISOU 5286  CB  THR B 392     9819   9045   8918    701  -1253    294       C
ATOM   5287  OG1 THR B 392      16.315  63.425  79.781  1.00 61.92           O
ANISOU 5287  OG1 THR B 392     8285   7673   7570    661  -1152    298       O
ATOM   5288  CG2 THR B 392      16.189  63.014  77.422  1.00 77.52           C
ANISOU 5288  CG2 THR B 392    10381   9612   9461    699  -1333    268       C
ATOM   5289  C   THR B 392      17.144  66.181  79.382  1.00 58.58           C
ANISOU 5289  C   THR B 392     8139   7181   6938    665  -1127    342       C
ATOM   5290  O   THR B 392      17.959  66.178  80.302  1.00 59.51           O
ANISOU 5290  O   THR B 392     8244   7332   7036    608  -1029    355       O
ATOM   5291  N   HIS B 393      16.185  67.088  79.278  1.00 66.35           N
ANISOU 5291  N   HIS B 393     9148   8111   7952    733  -1181    344       N
ATOM   5292  CA  HIS B 393      15.806  67.918  80.409  1.00 73.04           C
ANISOU 5292  CA  HIS B 393     9973   8938   8840    753  -1119    358       C
ATOM   5293  CB  HIS B 393      15.063  69.166  79.929  1.00 70.88           C
ANISOU 5293  CB  HIS B 393     9785   8596   8550    823  -1184    366       C
ATOM   5294  CG  HIS B 393      14.967  70.248  80.956  1.00 74.21           C
ANISOU 5294  CG  HIS B 393    10236   8990   8970    835  -1111    385       C
ATOM   5295  ND1 HIS B 393      14.011  70.251  81.949  1.00 69.86           N
ANISOU 5295  ND1 HIS B 393     9581   8427   8536    884  -1079    384       N
ATOM   5296  CE1 HIS B 393      14.170  71.328  82.702  1.00 75.52           C
ANISOU 5296  CE1 HIS B 393    10369   9114   9211    889  -1015    401       C
ATOM   5297  NE2 HIS B 393      15.190  72.024  82.226  1.00 72.88           N
ANISOU 5297  NE2 HIS B 393    10172   8771   8746    841  -1011    412       N
ATOM   5298  CD2 HIS B 393      15.703  71.374  81.132  1.00 72.21           C
ANISOU 5298  CD2 HIS B 393    10109   8712   8614    807  -1064    405       C
ATOM   5299  C   HIS B 393      14.935  67.045  81.315  1.00 71.19           C
ANISOU 5299  C   HIS B 393     9572   8722   8755    778  -1095    347       C
ATOM   5300  O   HIS B 393      14.430  66.018  80.875  1.00 77.16           O
ANISOU 5300  O   HIS B 393    10237   9491   9591    792  -1153    326       O
ATOM   5301  N   ASN B 394      14.759  67.408  82.574  1.00 66.45           N
ANISOU 5301  N   ASN B 394     8934   8117   8194    785  -1007    360       N
ATOM   5302  CA  ASN B 394      13.917  66.568  83.425  1.00 77.48           C
ANISOU 5302  CA  ASN B 394    10179   9524   9736    814   -968    354       C
ATOM   5303  CB  ASN B 394      14.414  66.598  84.876  1.00 76.78           C
ANISOU 5303  CB  ASN B 394    10083   9456   9634    787   -839    370       C
ATOM   5304  CG  ASN B 394      15.582  65.635  85.104  1.00 81.06           C
ANISOU 5304  CG  ASN B 394    10615  10061  10121    707   -792    365       C
ATOM   5305  OD1 ASN B 394      15.717  64.612  84.411  1.00 91.44           O
ANISOU 5305  OD1 ASN B 394    11877  11409  11458    683   -836    351       O
ATOM   5306  ND2 ASN B 394      16.443  65.971  86.047  1.00 79.17           N
ANISOU 5306  ND2 ASN B 394    10433   9837   9811    669   -711    376       N
ATOM   5307  C   ASN B 394      12.439  66.954  83.334  1.00 82.94           C
ANISOU 5307  C   ASN B 394    10802  10157  10553    905  -1021    352       C
ATOM   5308  O   ASN B 394      11.560  66.184  83.726  1.00 79.48           O
ANISOU 5308  O   ASN B 394    10221   9714  10262    936  -1011    346       O
ATOM   5309  N   LEU B 395      12.163  68.125  82.765  1.00 81.26           N
ANISOU 5309  N   LEU B 395    10688   9897  10292    946  -1081    357       N
ATOM   5310  CA  LEU B 395      10.789  68.519  82.513  1.00 64.18           C
ANISOU 5310  CA  LEU B 395     8463   7675   8247   1036  -1152    353       C
ATOM   5311  CB  LEU B 395      10.566  69.967  82.924  1.00 67.85           C
ANISOU 5311  CB  LEU B 395     9021   8091   8670   1080  -1119    375       C
ATOM   5312  CG  LEU B 395      10.684  70.255  84.412  1.00 70.78           C
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ANISOU 5312  CG  LEU B 395     9380   8463   9051   1077   -975    395       C
ATOM   5313  CD1 LEU B 395      10.342  71.705  84.665  1.00 73.71           C
ANISOU 5313  CD1 LEU B 395     9848   8774   9386   1131   -961    412       C
ATOM   5314  CD2 LEU B 395       9.795  69.339  85.194  1.00 62.93           C
ANISOU 5314  CD2 LEU B 395     8216   7470   8227   1110   -918    395       C
ATOM   5315  C   LEU B 395      10.404  68.343  81.050  1.00 71.70           C
ANISOU 5315  C   LEU B 395     9434   8606   9202   1065  -1309    330       C
ATOM   5316  O   LEU B 395      11.248  68.413  80.153  1.00 74.24           O
ANISOU 5316  O   LEU B 395     9875   8943   9390   1027  -1356    326       O
ATOM   5317  N   SER B 396       9.118  68.103  80.827  1.00 67.65           N
ANISOU 5317  N   SER B 396     8803   8053   8848   1135  -1389    316       N
ATOM   5318  CA  SER B 396       8.533  68.125  79.499  1.00 66.59           C
ANISOU 5318  CA  SER B 396     8692   7880   8730   1185  -1560    291       C
ATOM   5319  CB  SER B 396       7.105  67.594  79.551  1.00 70.34           C
ANISOU 5319  CB  SER B 396     8983   8314   9429   1251  -1631    272       C
ATOM   5320  OG  SER B 396       6.364  68.304  80.534  1.00 74.23           O
ANISOU 5320  OG  SER B 396     9411   8771  10022   1302  -1547    297       O
ATOM   5321  C   SER B 396       8.525  69.536  78.950  1.00 69.16           C
ANISOU 5321  C   SER B 396     9174   8156   8947   1231  -1611    305       C
ATOM   5322  O   SER B 396       8.534  70.495  79.715  1.00 70.95           O
ANISOU 5322  O   SER B 396     9441   8365   9150   1245  -1523    330       O
ATOM   5323  N   LEU B 397       8.489  69.672  77.631  1.00 75.07           N
ANISOU 5323  N   LEU B 397    10020   8878   9627   1260  -1752    287       N
ATOM   5324  CA  LEU B 397       8.219  70.976  77.035  1.00 75.97           C
ANISOU 5324  CA  LEU B 397    10271   8931   9664   1324  -1820    298       C
ATOM   5325  CB  LEU B 397       8.237  70.912  75.511  1.00 69.71           C
ANISOU 5325  CB  LEU B 397     9596   8108   8783   1357  -1982    276       C
ATOM   5326  CG  LEU B 397       9.539  71.374  74.877  1.00 72.61           C
ANISOU 5326  CG  LEU B 397    10173   8487   8929   1307  -1942    295       C
ATOM   5327  CD1 LEU B 397       9.320  71.585  73.399  1.00 60.62           C
ANISOU 5327  CD1 LEU B 397     8794   6914   7323   1371  -2103    279       C
ATOM   5328  CD2 LEU B 397      10.100  72.630  75.560  1.00 76.14           C
ANISOU 5328  CD2 LEU B 397    10718   8923   9287   1286  -1818    335       C
ATOM   5329  C   LEU B 397       6.872  71.512  77.491  1.00 80.64           C
ANISOU 5329  C   LEU B 397    10753   9466  10419   1412  -1851    300       C
ATOM   5330  O   LEU B 397       6.691  72.724  77.617  1.00 77.72           O
ANISOU 5330  O   LEU B 397    10471   9054  10005   1456  -1836    322       O
ATOM   5331  N   LYS B 398       5.928  70.604  77.724  1.00 73.49           N
ANISOU 5331  N   LYS B 398     9655   8556   9710   1438  -1892    279       N
ATOM   5332  CA  LYS B 398       4.592  70.989  78.146  1.00 73.14           C
ANISOU 5332  CA  LYS B 398     9481   8456   9854   1524  -1917    281       C
ATOM   5333  CB  LYS B 398       3.676  69.771  78.193  1.00 74.70           C
ANISOU 5333  CB  LYS B 398     9462   8648  10275   1538  -1976    253       C
ATOM   5334  CG  LYS B 398       2.289  70.040  78.711  1.00 79.86           C
ANISOU 5334  CG  LYS B 398     9948   9239  11155   1621  -1983    258       C
ATOM   5335  CD  LYS B 398       1.296  69.025  78.174  1.00 92.05           C
ANISOU 5335  CD  LYS B 398    11311  10751  12912   1652  -2126    219       C
ATOM   5336  CE  LYS B 398       0.006  69.086  78.967  1.00 96.77           C
ANISOU 5336  CE  LYS B 398    11701  11294  13772   1717  -2080    231       C
ATOM   5337  NZ  LYS B 398       0.314  68.880  80.417  1.00 97.64           N
ANISOU 5337  NZ  LYS B 398    11749  11441  13908   1673  -1843    270       N
ATOM   5338  C   LYS B 398       4.650  71.676  79.499  1.00 78.27           C
ANISOU 5338  C   LYS B 398    10117   9108  10515   1521  -1739    318       C
ATOM   5339  O   LYS B 398       4.065  72.740  79.692  1.00 90.19           O
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ANISOU 5339  O   LYS B 398    11656  10564  12048   1589  -1736    335       O
ATOM   5340  N   ALA B 399       5.383  71.083  80.430  1.00 68.91           N
ANISOU 5340  N   ALA B 399     8899   7980   9303   1445  -1592    330       N
ATOM   5341  CA  ALA B 399       5.489  71.667  81.751  1.00 62.23           C
ANISOU 5341  CA  ALA B 399     8056   7134   8455   1444  -1424    363       C
ATOM   5342  CB  ALA B 399       6.153  70.717  82.694  1.00 70.74           C
ANISOU 5342  CB  ALA B 399     9073   8273   9533   1369  -1290    368       C
ATOM   5343  C   ALA B 399       6.259  72.964  81.667  1.00 71.90           C
ANISOU 5343  C   ALA B 399     9483   8346   9489   1435  -1398    382       C
ATOM   5344  O   ALA B 399       5.916  73.948  82.317  1.00 70.85           O
ANISOU 5344  O   ALA B 399     9385   8172   9362   1481  -1333    403       O
ATOM   5345  N   ILE B 400       7.303  72.955  80.849  1.00 77.19           N
ANISOU 5345  N   ILE B 400    10287   9046   9994   1375  -1446    375       N
ATOM   5346  CA  ILE B 400       8.147  74.121  80.688  1.00 66.82           C
ANISOU 5346  CA  ILE B 400     9167   7718   8502   1354  -1418    394       C
ATOM   5347  CB  ILE B 400       9.346  73.835  79.780  1.00 60.27           C
ANISOU 5347  CB  ILE B 400     8459   6925   7514   1279  -1453    387       C
ATOM   5348  CG1 ILE B 400      10.316  72.893  80.466  1.00 71.63           C
ANISOU 5348  CG1 ILE B 400     9850   8436   8928   1184  -1348    386       C
ATOM   5349  CD1 ILE B 400      11.387  72.371  79.528  1.00 76.81           C
ANISOU 5349  CD1 ILE B 400    10592   9130   9462   1117  -1383    378       C
ATOM   5350  CG2 ILE B 400      10.094  75.092  79.468  1.00 60.61           C
ANISOU 5350  CG2 ILE B 400     8697   6938   7395   1266  -1434    409       C
ATOM   5351  C   ILE B 400       7.310  75.260  80.126  1.00 77.49           C
ANISOU 5351  C   ILE B 400    10584   8995   9864   1448  -1507    400       C
ATOM   5352  O   ILE B 400       7.247  76.322  80.726  1.00 77.44           O
ANISOU 5352  O   ILE B 400    10645   8952   9827   1474  -1440    421       O
ATOM   5353  N   ASN B 401       6.647  75.028  78.997  1.00 77.29           N
ANISOU 5353  N   ASN B 401    10541   8940   9884   1502  -1664    379       N
ATOM   5354  CA  ASN B 401       5.865  76.076  78.339  1.00 82.17           C
ANISOU 5354  CA  ASN B 401    11231   9484  10506   1598  -1770    382       C
ATOM   5355  CB  ASN B 401       5.235  75.545  77.050  1.00 81.06           C
ANISOU 5355  CB  ASN B 401    11067   9319  10414   1650  -1961    351       C
ATOM   5356  CG  ASN B 401       6.235  75.416  75.916  1.00 88.09           C
ANISOU 5356  CG  ASN B 401    12129  10225  11115   1605  -2023    344       C
ATOM   5357  OD1 ASN B 401       7.230  76.141  75.857  1.00 88.44           O
ANISOU 5357  OD1 ASN B 401    12340  10273  10990   1561  -1949    369       O
ATOM   5358  ND2 ASN B 401       5.976  74.480  75.009  1.00 94.71           N
ANISOU 5358  ND2 ASN B 401    12930  11068  11989   1618  -2158    310       N
ATOM   5359  C   ASN B 401       4.769  76.649  79.234  1.00 87.77           C
ANISOU 5359  C   ASN B 401    11835  10146  11366   1675  -1722    396       C
ATOM   5360  O   ASN B 401       4.442  77.830  79.158  1.00 91.78           O
ANISOU 5360  O   ASN B 401    12435  10597  11839   1737  -1736    412       O
ATOM   5361  N   LEU B 402       4.209  75.799  80.084  1.00 86.45           N
ANISOU 5361  N   LEU B 402    11479  10001  11369   1674  -1657    391       N
ATOM   5362  CA  LEU B 402       3.146  76.190  81.007  1.00 91.58           C
ANISOU 5362  CA  LEU B 402    12010  10605  12183   1749  -1587    407       C
ATOM   5363  CB  LEU B 402       2.652  74.948  81.742  1.00 88.88           C
ANISOU 5363  CB  LEU B 402    11455  10291  12026   1734  -1521    400       C
ATOM   5364  CG  LEU B 402       1.595  75.155  82.814  1.00 78.94           C
ANISOU 5364  CG  LEU B 402    10056   8985  10952   1805  -1414    422       C
ATOM   5365  CD1 LEU B 402       0.236  75.321  82.159  1.00 75.15           C
ANISOU 5365  CD1 LEU B 402     9457   8436  10660   1907  -1553    410       C
ATOM   5366  CD2 LEU B 402       1.629  73.991  83.793  1.00 72.21           C
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ANISOU 5366  CD2 LEU B 402     9058   8174  10205   1759  -1282    426       C
ATOM   5367  C   LEU B 402       3.587  77.245  82.027  1.00 93.00           C
ANISOU 5367  C   LEU B 402    12300  10771  12265   1745  -1436    439       C
ATOM   5368  O   LEU B 402       2.810  78.102  82.450  1.00 89.07           O
ANISOU 5368  O   LEU B 402    11793  10214  11835   1826  -1406    456       O
ATOM   5369  N   ILE B 403       4.861  77.154  82.386  1.00 92.42           N
ANISOU 5369  N   ILE B 403    12332  10750  12035   1650  -1348    445       N
ATOM   5370  CA  ILE B 403       5.487  77.874  83.480  1.00 79.83           C
ANISOU 5370  CA  ILE B 403    10833   9154  10345   1622  -1200    467       C
ATOM   5371  CB  ILE B 403       6.482  76.898  84.213  1.00 86.15           C
ANISOU 5371  CB  ILE B 403    11605  10028  11099   1521  -1096    463       C
ATOM   5372  CG1 ILE B 403       5.689  75.791  84.886  1.00 94.50           C
ANISOU 5372  CG1 ILE B 403    12463  11102  12341   1544  -1042    460       C
ATOM   5373  CD1 ILE B 403       4.526  76.307  85.690  1.00 97.01           C
ANISOU 5373  CD1 ILE B 403    12704  11357  12799   1642   -971    479       C
ATOM   5374  CG2 ILE B 403       7.345  77.557  85.251  1.00 86.83           C
ANISOU 5374  CG2 ILE B 403    11810  10116  11064   1479   -968    479       C
ATOM   5375  C   ILE B 403       6.193  79.150  82.997  1.00 82.03           C
ANISOU 5375  C   ILE B 403    11323   9401  10444   1611  -1225    478       C
ATOM   5376  O   ILE B 403       6.404  80.076  83.779  1.00 92.18           O
ANISOU 5376  O   ILE B 403    12699  10655  11670   1619  -1134    495       O
ATOM   5377  N   LEU B 404       6.524  79.209  81.706  1.00 73.79           N
ANISOU 5377  N   LEU B 404    10365   8357   9316   1598  -1348    468       N
ATOM   5378  CA  LEU B 404       7.322  80.310  81.157  1.00 85.34           C
ANISOU 5378  CA  LEU B 404    12034   9790  10603   1576  -1363    482       C
ATOM   5379  CB  LEU B 404       7.509  80.121  79.653  1.00 88.29           C
ANISOU 5379  CB  LEU B 404    12480  10161  10905   1577  -1502    471       C
ATOM   5380  CG  LEU B 404       8.906  79.664  79.249  1.00 88.76           C
ANISOU 5380  CG  LEU B 404    12629  10273  10824   1468  -1473    470       C
ATOM   5381  CD1 LEU B 404       9.256  78.462  80.023  1.00 94.50           C
ANISOU 5381  CD1 LEU B 404    13219  11073  11615   1400  -1398    457       C
ATOM   5382  CD2 LEU B 404       8.939  79.336  77.779  1.00 89.83           C
ANISOU 5382  CD2 LEU B 404    12828  10400  10903   1485  -1607    458       C
ATOM   5383  C   LEU B 404       6.776  81.719  81.416  1.00 93.40           C
ANISOU 5383  C   LEU B 404    13144  10733  11612   1654  -1349    501       C
ATOM   5384  O   LEU B 404       7.525  82.597  81.838  1.00 90.32           O
ANISOU 5384  O   LEU B 404    12890  10322  11104   1617  -1272    517       O
ATOM   5385  N   ASP B 405       5.491  81.942  81.153  1.00 99.25           N
ANISOU 5385  N   ASP B 405    13807  11423  12478   1762  -1426    500       N
ATOM   5386  CA  ASP B 405       4.897  83.252  81.413  1.00 97.53           C
ANISOU 5386  CA  ASP B 405    13665  11128  12262   1846  -1411    519       C
ATOM   5387  CB  ASP B 405       3.445  83.297  80.962  1.00105.16           C
ANISOU 5387  CB  ASP B 405    14518  12045  13392   1966  -1520    514       C
ATOM   5388  CG  ASP B 405       3.308  83.651  79.503  1.00118.36           C
ANISOU 5388  CG  ASP B 405    16291  13681  14999   2009  -1690    506       C
ATOM   5389  OD1 ASP B 405       4.272  84.213  78.938  1.00118.43           O
ANISOU 5389  OD1 ASP B 405    16488  13686  14824   1961  -1696    516       O
ATOM   5390  OD2 ASP B 405       2.232  83.380  78.928  1.00127.39           O
ANISOU 5390  OD2 ASP B 405    17329  14796  16278   2094  -1817    492       O
ATOM   5391  C   ASP B 405       4.981  83.616  82.887  1.00101.16           C
ANISOU 5391  C   ASP B 405    14115  11582  12738   1838  -1249    534       C
ATOM   5392  O   ASP B 405       5.383  84.726  83.237  1.00107.28           O
ANISOU 5392  O   ASP B 405    15038  12315  13409   1838  -1192    549       O
ATOM   5393  N   GLU B 406       4.606  82.673  83.745  1.00 91.45           N
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ANISOU 5393  N   GLU B 406    12722  10389  11637   1834  -1174    528       N
ATOM   5394  CA  GLU B 406       4.692  82.869  85.187  1.00 92.64           C
ANISOU 5394  CA  GLU B 406    12868  10533  11797   1831  -1014    541       C
ATOM   5395  CB  GLU B 406       4.172  81.632  85.928  1.00 98.93           C
ANISOU 5395  CB  GLU B 406    13468  11368  12750   1834   -944    537       C
ATOM   5396  CG  GLU B 406       2.688  81.341  85.704  1.00105.64           C
ANISOU 5396  CG  GLU B 406    14142  12180  13815   1938   -994    539       C
ATOM   5397  CD  GLU B 406       1.803  81.966  86.767  1.00110.35           C
ANISOU 5397  CD  GLU B 406    14703  12712  14512   2031   -874    563       C
ATOM   5398  OE1 GLU B 406       2.365  82.530  87.734  1.00110.25           O
ANISOU 5398  OE1 GLU B 406    14808  12689  14393   2014   -750    575       O
ATOM   5399  OE2 GLU B 406       0.555  81.900  86.633  1.00114.66           O
ANISOU 5399  OE2 GLU B 406    15106  13214  15247   2125   -905    569       O
ATOM   5400  C   GLU B 406       6.115  83.193  85.646  1.00 83.43           C
ANISOU 5400  C   GLU B 406    11856   9392  10450   1729   -940    541       C
ATOM   5401  O   GLU B 406       6.301  83.968  86.582  1.00 83.03           O
ANISOU 5401  O   GLU B 406    11894   9305  10347   1739   -843    552       O
ATOM   5402  N   LEU B 407       7.114  82.600  84.994  1.00 74.14           N
ANISOU 5402  N   LEU B 407    10711   8274   9185   1634   -987    529       N
ATOM   5403  CA  LEU B 407       8.510  82.869  85.342  1.00 73.26           C
ANISOU 5403  CA  LEU B 407    10731   8184   8920   1532   -928    528       C
ATOM   5404  CB  LEU B 407       9.451  81.864  84.673  1.00 70.03           C
ANISOU 5404  CB  LEU B 407    10300   7848   8460   1434   -969    515       C
ATOM   5405  CG  LEU B 407       9.583  80.505  85.365  1.00 82.50           C
ANISOU 5405  CG  LEU B 407    11734   9498  10113   1391   -911    502       C
ATOM   5406  CD1 LEU B 407      10.270  79.484  84.447  1.00 70.01           C
ANISOU 5406  CD1 LEU B 407    10118   7981   8500   1316   -976    489       C
ATOM   5407  CD2 LEU B 407      10.321  80.635  86.722  1.00 73.36           C
ANISOU 5407  CD2 LEU B 407    10623   8349   8900   1342   -789    503       C
ATOM   5408  C   LEU B 407       8.888  84.282  84.941  1.00 84.39           C
ANISOU 5408  C   LEU B 407    12326   9528  10209   1537   -950    540       C
ATOM   5409  O   LEU B 407       9.514  85.011  85.709  1.00 91.22           O
ANISOU 5409  O   LEU B 407    13299  10366  10992   1505   -874    544       O
ATOM   5410  N   TRP B 408       8.505  84.651  83.722  1.00 83.91           N
ANISOU 5410  N   TRP B 408    12307   9437  10137   1581  -1060    545       N
ATOM   5411  CA  TRP B 408       8.729  85.992  83.204  1.00 78.76           C
ANISOU 5411  CA  TRP B 408    11832   8715   9379   1600  -1088    561       C
ATOM   5412  CB  TRP B 408       8.060  86.166  81.843  1.00 74.25           C
ANISOU 5412  CB  TRP B 408    11280   8112   8819   1671  -1222    565       C
ATOM   5413  CG  TRP B 408       8.891  85.745  80.681  1.00 74.16           C
ANISOU 5413  CG  TRP B 408    11336   8131   8711   1605  -1288    562       C
ATOM   5414  CD1 TRP B 408       8.620  84.730  79.811  1.00 61.65           C
ANISOU 5414  CD1 TRP B 408    9667   6586   7170   1614  -1384    547       C
ATOM   5415  NE1 TRP B 408       9.608  84.643  78.871  1.00 76.00           N
ANISOU 5415  NE1 TRP B 408    11601   8416   8861   1549  -1410    552       N
ATOM   5416  CE2 TRP B 408      10.555  85.613  79.125  1.00 75.39           C
ANISOU 5416  CE2 TRP B 408    11673   8304   8666   1491  -1329    572       C
ATOM   5417  CD2 TRP B 408      10.129  86.316  80.258  1.00 80.77           C
ANISOU 5417  CD2 TRP B 408    12340   8954   9396   1524  -1259    576       C
ATOM   5418  CE3 TRP B 408      10.930  87.363  80.726  1.00 91.10           C
ANISOU 5418  CE3 TRP B 408    13788  10218  10610   1475  -1179    591       C
ATOM   5419  CZ3 TRP B 408      12.100  87.662  80.049  1.00 86.07           C
ANISOU 5419  CZ3 TRP B 408    13284   9569   9849   1393  -1166    604       C
ATOM   5420  CH2 TRP B 408      12.488  86.938  78.932  1.00 76.32           C
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ANISOU 5420  CH2 TRP B 408    12057   8368   8574   1365  -1222    605       C
ATOM   5421  CZ2 TRP B 408      11.730  85.912  78.449  1.00 71.80           C
ANISOU 5421  CZ2 TRP B 408    11364   7840   8078   1415  -1308    587       C
ATOM   5422  C   TRP B 408       8.200  87.066  84.135  1.00 86.04           C
ANISOU 5422  C   TRP B 408    12808   9568  10316   1667  -1018    572       C
ATOM   5423  O   TRP B 408       8.935  87.946  84.567  1.00 92.47           O
ANISOU 5423  O   TRP B 408    13761  10346  11029   1626   -962    578       O
ATOM   5424  N   HIS B 409       6.915  86.983  84.443  1.00 83.75           N
ANISOU 5424  N   HIS B 409    12404   9255  10163   1772  -1023    574       N
ATOM   5425  CA  HIS B 409       6.231  88.103  85.048  1.00 73.76           C
ANISOU 5425  CA  HIS B 409    11198   7910   8916   1861   -976    589       C
ATOM   5426  CB  HIS B 409       4.900  88.287  84.348  1.00 77.12           C
ANISOU 5426  CB  HIS B 409    11548   8294   9460   1982  -1070    596       C
ATOM   5427  CG  HIS B 409       5.045  88.757  82.936  1.00 88.90           C
ANISOU 5427  CG  HIS B 409    13146   9759  10871   1991  -1201    599       C
ATOM   5428  ND1 HIS B 409       4.686  87.984  81.848  1.00 97.64           N
ANISOU 5428  ND1 HIS B 409    14173  10896  12030   2007  -1328    587       N
ATOM   5429  CE1 HIS B 409       4.934  88.650  80.737  1.00 87.08           C
ANISOU 5429  CE1 HIS B 409    12983   9519  10585   2020  -1422    595       C
ATOM   5430  NE2 HIS B 409       5.462  89.818  81.058  1.00 84.96           N
ANISOU 5430  NE2 HIS B 409    12879   9198  10204   2006  -1355    613       N
ATOM   5431  CD2 HIS B 409       5.541  89.906  82.429  1.00 86.17           C
ANISOU 5431  CD2 HIS B 409    12993   9357  10390   1987  -1223    613       C
ATOM   5432  C   HIS B 409       6.039  88.021  86.555  1.00 83.07           C
ANISOU 5432  C   HIS B 409    12332   9086  10146   1877   -839    589       C
ATOM   5433  O   HIS B 409       5.527  88.959  87.160  1.00 97.02           O
ANISOU 5433  O   HIS B 409    14160  10782  11919   1951   -785    601       O
ATOM   5434  N   THR B 410       6.475  86.929  87.170  1.00 91.53           N
ANISOU 5434  N   THR B 410    13311  10226  11242   1811   -781    577       N
ATOM   5435  CA  THR B 410       6.528  86.871  88.625  1.00 84.66           C
ANISOU 5435  CA  THR B 410    12438   9350  10380   1816   -646    577       C
ATOM   5436  CB  THR B 410       5.723  85.694  89.203  1.00 88.15           C
ANISOU 5436  CB  THR B 410    12685   9828  10979   1857   -589    579       C
ATOM   5437  OG1 THR B 410       6.471  84.483  89.054  1.00 81.54           O
ANISOU 5437  OG1 THR B 410    11774   9077  10130   1760   -603    563       O
ATOM   5438  CG2 THR B 410       4.373  85.550  88.487  1.00 86.38           C
ANISOU 5438  CG2 THR B 410    12321   9580  10918   1956   -660    588       C
ATOM   5439  C   THR B 410       7.981  86.731  89.046  1.00 85.85           C
ANISOU 5439  C   THR B 410    12687   9537  10394   1694   -612    563       C
ATOM   5440  O   THR B 410       8.882  86.684  88.207  1.00 85.62           O
ANISOU 5440  O   THR B 410    12713   9538  10281   1609   -681    556       O
ATOM   5441  N   ASN B 411       8.209  86.656  90.346  1.00 85.33           N
ANISOU 5441  N   ASN B 411    12646   9467  10311   1690   -504    558       N
ATOM   5442  CA  ASN B 411       9.554  86.447  90.848  1.00 92.64           C
ANISOU 5442  CA  ASN B 411    13649  10426  11123   1579   -478    540       C
ATOM   5443  CB  ASN B 411       9.890  87.489  91.898  1.00 91.40           C
ANISOU 5443  CB  ASN B 411    13654  10199  10877   1593   -410    535       C
ATOM   5444  CG  ASN B 411      10.124  88.840  91.291  1.00103.64           C
ANISOU 5444  CG  ASN B 411    15354  11679  12346   1592   -464    540       C
ATOM   5445  OD1 ASN B 411       9.695  89.861  91.827  1.00106.96           O
ANISOU 5445  OD1 ASN B 411    15876  12019  12744   1662   -423    545       O
ATOM   5446  ND2 ASN B 411      10.815  88.857  90.151  1.00104.11           N
ANISOU 5446  ND2 ASN B 411    15435  11764  12359   1514   -549    540       N
ATOM   5447  C   ASN B 411       9.719  85.048  91.403  1.00 97.36           C
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ANISOU 5447  C   ASN B 411    14118  11099  11775   1543   -431    531       C
ATOM   5448  O   ASN B 411      10.736  84.717  92.025  1.00 90.10           O
ANISOU 5448  O   ASN B 411    13243  10209  10780   1464   -400    516       O
ATOM   5449  N   ASP B 412       8.711  84.227  91.131  1.00 97.65           N
ANISOU 5449  N   ASP B 412    13990  11162  11950   1601   -434    541       N
ATOM   5450  CA  ASP B 412       8.624  82.885  91.677  1.00 98.16           C
ANISOU 5450  CA  ASP B 412    13917  11288  12092   1586   -378    537       C
ATOM   5451  C   ASP B 412       9.533  81.859  91.006  1.00 90.72           C
ANISOU 5451  C   ASP B 412    12917  10431  11122   1478   -442    522       C
ATOM   5452  O   ASP B 412       9.743  81.860  89.789  1.00 80.05           O
ANISOU 5452  O   ASP B 412    11561   9100   9755   1443   -544    519       O
ATOM   5453  CB  ASP B 412       7.176  82.415  91.615  1.00 97.80           C
ANISOU 5453  CB  ASP B 412    13707  11227  12224   1687   -356    554       C
ATOM   5454  CG  ASP B 412       6.320  83.083  92.653  1.00103.38           C
ANISOU 5454  CG  ASP B 412    14445  11858  12976   1794   -244    572       C
ATOM   5455  OD1 ASP B 412       6.799  83.237  93.799  1.00 98.21           O
ANISOU 5455  OD1 ASP B 412    13888  11187  12242   1788   -146    570       O
ATOM   5456  OD2 ASP B 412       5.180  83.472  92.322  1.00111.74           O
ANISOU 5456  OD2 ASP B 412    15437  12868  14149   1889   -256    588       O
ATOM   5457  N   ASN B 413      10.073  80.987  91.845  1.00104.90           N
ANISOU 5457  N   ASN B 413    14679  12271  12906   1433   -375    514       N
ATOM   5458  CA  ASN B 413      10.926  79.890  91.428  1.00100.81           C
ANISOU 5458  CA  ASN B 413    14097  11835  12370   1336   -414    500       C
ATOM   5459  C   ASN B 413      10.010  78.843  90.796  1.00 86.95           C
ANISOU 5459  C   ASN B 413    12160  10115  10760   1370   -445    505       C
ATOM   5460  O   ASN B 413       8.800  78.884  91.022  1.00 88.91           O
ANISOU 5460  O   ASN B 413    12328  10325  11129   1464   -411    518       O
ATOM   5461  CB  ASN B 413      11.702  79.383  92.652  1.00100.44           C
ANISOU 5461  CB  ASN B 413    14082  11813  12268   1294   -330    490       C
ATOM   5462  CG  ASN B 413      12.560  78.199  92.365  1.00127.20           C
ANISOU 5462  CG  ASN B 413    17399  15284  15647   1202   -358    478       C
ATOM   5463  OD1 ASN B 413      12.159  77.262  91.680  1.00145.07           O
ANISOU 5463  OD1 ASN B 413    19529  17593  17998   1199   -392    479       O
ATOM   5464  ND2 ASN B 413      13.779  78.234  92.883  1.00134.52           N
ANISOU 5464  ND2 ASN B 413    18414  16228  16469   1125   -349    463       N
ATOM   5465  N   GLN B 414      10.556  77.938  89.983  1.00 76.65           N
ANISOU 5465  N   GLN B 414    10792   8877   9454   1298   -513    493       N
ATOM   5466  CA  GLN B 414       9.733  76.887  89.358  1.00 88.81           C
ANISOU 5466  CA  GLN B 414    12164  10448  11133   1324   -556    491       C
ATOM   5467  CB  GLN B 414      10.571  75.937  88.472  1.00 84.94           C
ANISOU 5467  CB  GLN B 414    11639  10029  10606   1233   -629    475       C
ATOM   5468  CG  GLN B 414      11.858  75.396  89.082  1.00 91.79           C
ANISOU 5468  CG  GLN B 414    12546  10950  11380   1141   -576    466       C
ATOM   5469  CD  GLN B 414      11.664  74.126  89.912  1.00 99.55           C
ANISOU 5469  CD  GLN B 414    13405  11973  12448   1140   -499    466       C
ATOM   5470  OE1 GLN B 414      10.697  73.373  89.724  1.00 95.38           O
ANISOU 5470  OE1 GLN B 414    12736  11448  12057   1185   -504    468       O
ATOM   5471  NE2 GLN B 414      12.591  73.887  90.841  1.00100.99           N
ANISOU 5471  NE2 GLN B 414    13639  12180  12552   1089   -430    462       N
ATOM   5472  C   GLN B 414       8.978  76.061  90.396  1.00 91.59           C
ANISOU 5472  C   GLN B 414    12389  10800  11611   1373   -450    500       C
ATOM   5473  O   GLN B 414       7.782  75.798  90.257  1.00 93.88           O
ANISOU 5473  O   GLN B 414    12554  11064  12053   1447   -452    509       O
ATOM   5474  N   ILE B 415       9.680  75.656  91.441  1.00 84.93           N
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ANISOU 5474  N   ILE B 415    11579   9981  10708   1334   -358    500       N
ATOM   5475  CA  ILE B 415       9.061  74.817  92.425  1.00 84.42           C
ANISOU 5475  CA  ILE B 415    11410   9915  10749   1378   -247    512       C
ATOM   5476  CB  ILE B 415      10.096  74.241  93.398  1.00 75.08           C
ANISOU 5476  CB  ILE B 415    10283   8771   9472   1319   -173    506       C
ATOM   5477  CG1 ILE B 415       9.368  73.450  94.484  1.00 73.99           C
ANISOU 5477  CG1 ILE B 415    10056   8619   9439   1380    -40    525       C
ATOM   5478  CD1 ILE B 415       8.362  72.459  93.890  1.00 55.73           C
ANISOU 5478  CD1 ILE B 415     7543   6319   7314   1406    -55    532       C
ATOM   5479  CG2 ILE B 415      11.002  75.329  93.956  1.00 59.75           C
ANISOU 5479  CG2 ILE B 415     8532   6803   7369   1295   -162    498       C
ATOM   5480  C   ILE B 415       7.979  75.629  93.144  1.00 87.18           C
ANISOU 5480  C   ILE B 415    11773  10184  11167   1489   -161    534       C
ATOM   5481  O   ILE B 415       6.886  75.123  93.416  1.00 89.18           O
ANISOU 5481  O   ILE B 415    11892  10413  11579   1559   -100    551       O
ATOM   5482  N   ALA B 416       8.264  76.898  93.405  1.00 89.48           N
ANISOU 5482  N   ALA B 416    12223  10428  11347   1507   -157    535       N
ATOM   5483  CA  ALA B 416       7.253  77.791  93.956  1.00 90.08           C
ANISOU 5483  CA  ALA B 416    12327  10422  11479   1616    -85    556       C
ATOM   5484  CB  ALA B 416       7.818  79.193  94.106  1.00 84.83           C
ANISOU 5484  CB  ALA B 416    11858   9711  10663   1614   -104    550       C
ATOM   5485  C   ALA B 416       6.001  77.798  93.069  1.00 97.73           C
ANISOU 5485  C   ALA B 416    13153  11365  12614   1684   -146    566       C
ATOM   5486  O   ALA B 416       4.879  77.676  93.566  1.00 96.79           O
ANISOU 5486  O   ALA B 416    12935  11199  12641   1774    -60    588       O
ATOM   5487  N   ILE B 417       6.201  77.907  91.755  1.00 98.36           N
ANISOU 5487  N   ILE B 417    13225  11471  12678   1643   -292    550       N
ATOM   5488  CA  ILE B 417       5.083  77.989  90.815  1.00 96.33           C
ANISOU 5488  CA  ILE B 417    12852  11185  12565   1708   -381    553       C
ATOM   5489  CB  ILE B 417       5.544  78.356  89.369  1.00100.29           C
ANISOU 5489  CB  ILE B 417    13415  11706  12985   1662   -548    535       C
ATOM   5490  CG1 ILE B 417       6.307  79.689  89.363  1.00106.21           C
ANISOU 5490  CG1 ILE B 417    14372  12424  13558   1644   -557    536       C
ATOM   5491  CD1 ILE B 417       6.839  80.128  87.999  1.00 97.26           C
ANISOU 5491  CD1 ILE B 417    13325  11299  12329   1601   -698    525       C
ATOM   5492  CG2 ILE B 417       4.339  78.475  88.440  1.00 86.50           C
ANISOU 5492  CG2 ILE B 417    11561   9920  11386   1742   -653    535       C
ATOM   5493  C   ILE B 417       4.305  76.688  90.766  1.00 91.74           C
ANISOU 5493  C   ILE B 417    12060  10626  12173   1724   -369    555       C
ATOM   5494  O   ILE B 417       3.083  76.692  90.733  1.00 85.45           O
ANISOU 5494  O   ILE B 417    11137   9780  11551   1809   -359    568       O
ATOM   5495  N   PHE B 418       5.021  75.570  90.763  1.00101.77           N
ANISOU 5495  N   PHE B 418    13286  11965  13417   1640   -368    541       N
ATOM   5496  CA  PHE B 418       4.385  74.260  90.695  1.00100.57           C
ANISOU 5496  CA  PHE B 418    12938  11835  13441   1643   -359    540       C
ATOM   5497  CB  PHE B 418       5.442  73.168  90.539  1.00 95.96           C
ANISOU 5497  CB  PHE B 418    12349  11333  12780   1538   -380    522       C
ATOM   5498  CG  PHE B 418       5.975  73.042  89.142  1.00 90.11           C
ANISOU 5498  CG  PHE B 418    11631  10633  11973   1477   -545    495       C
ATOM   5499  CD1 PHE B 418       5.113  73.025  88.062  1.00 83.96           C
ANISOU 5499  CD1 PHE B 418    10763   9829  11308   1520   -674    484       C
ATOM   5500  CE1 PHE B 418       5.596  72.917  86.775  1.00 74.76           C
ANISOU 5500  CE1 PHE B 418     9641   8695  10069   1474   -823    459       C
ATOM   5501  CZ  PHE B 418       6.953  72.838  86.552  1.00 69.62           C
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ANISOU 5501  CZ  PHE B 418     9114   8100   9240   1382   -832    450       C
ATOM   5502  CE2 PHE B 418       7.827  72.865  87.615  1.00 77.99           C
ANISOU 5502  CE2 PHE B 418    10247   9185  10199   1335   -708    461       C
ATOM   5503  CD2 PHE B 418       7.340  72.966  88.907  1.00 88.76           C
ANISOU 5503  CD2 PHE B 418    11579  10519  11628   1383   -572    481       C
ATOM   5504  C   PHE B 418       3.515  73.990  91.921  1.00104.54           C
ANISOU 5504  C   PHE B 418    13349  12290  14081   1718   -192    570       C
ATOM   5505  O   PHE B 418       2.432  73.407  91.800  1.00 98.16           O
ANISOU 5505  O   PHE B 418    12361  11454  13481   1769   -183    579       O
ATOM   5506  N   ASN B 419       3.988  74.418  93.091  1.00102.91           N
ANISOU 5506  N   ASN B 419    13270  12069  13762   1728    -58    585       N
ATOM   5507  CA  ASN B 419       3.220  74.257  94.315  1.00101.26           C
ANISOU 5507  CA  ASN B 419    13011  11806  13659   1808    120    618       C
ATOM   5508  CB  ASN B 419       4.043  74.653  95.545  1.00104.75           C
ANISOU 5508  CB  ASN B 419    13636  12241  13925   1802    242    626       C
ATOM   5509  CG  ASN B 419       3.353  74.287  96.853  1.00111.23           C
ANISOU 5509  CG  ASN B 419    14418  13008  14837   1884    441    661       C
ATOM   5510  OD1 ASN B 419       2.235  74.728  97.124  1.00113.07           O
ANISOU 5510  OD1 ASN B 419    14591  13166  15202   1984    520    688       O
ATOM   5511  ND2 ASN B 419       4.016  73.466  97.666  1.00109.59           N
ANISOU 5511  ND2 ASN B 419    14247  12833  14560   1845    528    663       N
ATOM   5512  C   ASN B 419       1.958  75.089  94.225  1.00103.49           C
ANISOU 5512  C   ASN B 419    13236  12005  14079   1918    135    638       C
ATOM   5513  O   ASN B 419       0.875  74.631  94.582  1.00114.47           O
ANISOU 5513  O   ASN B 419    14471  13351  15671   1987    224    662       O
ATOM   5514  N   ARG B 420       2.101  76.308  93.720  1.00 99.86           N
ANISOU 5514  N   ARG B 420    12900  11521  13520   1934     49    630       N
ATOM   5515  CA  ARG B 420       0.976  77.230  93.650  1.00106.10           C
ANISOU 5515  CA  ARG B 420    13660  12230  14422   2042     60    649       C
ATOM   5516  CB  ARG B 420       1.434  78.628  93.224  1.00 98.89           C
ANISOU 5516  CB  ARG B 420    12934  11296  13345   2046    -24    639       C
ATOM   5517  CG  ARG B 420       0.285  79.581  92.985  1.00 99.69           C
ANISOU 5517  CG  ARG B 420    13001  11314  13560   2158    -37    656       C
ATOM   5518  CD  ARG B 420       0.591  80.525  91.850  1.00101.26           C
ANISOU 5518  CD  ARG B 420    13306  11512  13656   2142   -205    637       C
ATOM   5519  NE  ARG B 420       1.887  81.169  92.015  1.00 99.88           N
ANISOU 5519  NE  ARG B 420    13350  11361  13239   2069   -211    624       N
ATOM   5520  CZ  ARG B 420       2.543  81.747  91.016  1.00102.44           C
ANISOU 5520  CZ  ARG B 420    13783  11703  13437   2018   -349    605       C
ATOM   5521  NH1 ARG B 420       2.016  81.735  89.799  1.00 94.67           N
ANISOU 5521  NH1 ARG B 420    12723  10717  12533   2038   -494    597       N
ATOM   5522  NH2 ARG B 420       3.720  82.322  91.226  1.00 99.92           N
ANISOU 5522  NH2 ARG B 420    13649  11396  12918   1948   -343    595       N
ATOM   5523  C   ARG B 420      -0.072  76.707  92.684  1.00105.44           C
ANISOU 5523  C   ARG B 420    13364  12137  14563   2074    -45    644       C
ATOM   5524  O   ARG B 420      -1.276  76.851  92.907  1.00107.21           O
ANISOU 5524  O   ARG B 420    13464  12293  14979   2170     14    668       O
ATOM   5525  N   LEU B 421       0.396  76.090  91.608  1.00102.52           N
ANISOU 5525  N   LEU B 421    12954  11830  14171   1994   -201    613       N
ATOM   5526  CA  LEU B 421      -0.505  75.561  90.598  1.00106.89           C
ANISOU 5526  CA  LEU B 421    13320  12372  14920   2017   -332    600       C
ATOM   5527  CB  LEU B 421       0.198  75.450  89.248  1.00104.40           C
ANISOU 5527  CB  LEU B 421    13062  12113  14493   1943   -533    562       C
ATOM   5528  CG  LEU B 421       0.736  76.777  88.699  1.00105.97           C
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ANISOU 5528  CG  LEU B 421    13461  12299  14504   1946   -617    557       C
ATOM   5529  CD1 LEU B 421       1.168  76.640  87.239  1.00101.62           C
ANISOU 5529  CD1 LEU B 421    12946  11784  13881   1896   -816    525       C
ATOM   5530  CD2 LEU B 421      -0.288  77.903  88.873  1.00101.76           C
ANISOU 5530  CD2 LEU B 421    12930  11679  14057   2062   -596    578       C
ATOM   5531  C   LEU B 421      -1.028  74.211  91.043  1.00105.73           C
ANISOU 5531  C   LEU B 421    12973  12232  14966   2011   -249    608       C
ATOM   5532  O   LEU B 421      -1.844  73.599  90.357  1.00 94.40           O
ANISOU 5532  O   LEU B 421    11356  10782  13729   2029   -343    597       O
ATOM   5533  N   LYS B 422      -0.546  73.769  92.203  1.00105.32           N
ANISOU 5533  N   LYS B 422    12965  12198  14855   1988    -77    628       N
ATOM   5534  CA  LYS B 422      -0.932  72.496  92.781  1.00103.31           C
ANISOU 5534  CA  LYS B 422    12546  11947  14761   1980     32    642       C
ATOM   5535  CB  LYS B 422      -2.428  72.483  93.105  1.00110.27           C
ANISOU 5535  CB  LYS B 422    13239  12739  15918   2085    118    673       C
ATOM   5536  C   LYS B 422      -0.572  71.343  91.853  1.00104.22           C
ANISOU 5536  C   LYS B 422    12561  12127  14909   1892   -105    607       C
ATOM   5537  O   LYS B 422      -1.365  70.429  91.651  1.00111.34           O
ANISOU 5537  O   LYS B 422    13263  13010  16030   1903   -115    607       O
ATOM   5538  N   LEU B 423       0.628  71.404  91.284  1.00109.18           N
ANISOU 5538  N   LEU B 423    13333  12827  15324   1806   -210    579       N
ATOM   5539  CA  LEU B 423       1.220  70.260  90.583  1.00101.50           C
ANISOU 5539  CA  LEU B 423    12304  11923  14337   1715   -309    549       C
ATOM   5540  CB  LEU B 423       1.917  70.717  89.303  1.00 93.48           C
ANISOU 5540  CB  LEU B 423    11400  10947  13170   1665   -500    514       C
ATOM   5541  CG  LEU B 423       0.964  71.369  88.301  1.00 93.83           C
ANISOU 5541  CG  LEU B 423    11392  10938  13322   1734   -649    503       C
ATOM   5542  CD1 LEU B 423       1.707  72.015  87.142  1.00 95.24           C
ANISOU 5542  CD1 LEU B 423    11726  11144  13316   1697   -813    477       C
ATOM   5543  CD2 LEU B 423      -0.024  70.339  87.792  1.00 85.99           C
ANISOU 5543  CD2 LEU B 423    10174   9923  12574   1752   -724    488       C
ATOM   5544  C   LEU B 423       2.205  69.526  91.501  1.00100.59           C
ANISOU 5544  C   LEU B 423    12251  11862  14105   1649   -181    557       C
ATOM   5545  O   LEU B 423       3.166  70.105  92.013  1.00102.28           O
ANISOU 5545  O   LEU B 423    12643  12100  14117   1621   -132    560       O
ATOM   5546  N   VAL B 424       1.959  68.247  91.724  1.00103.71           N
ANISOU 5546  N   VAL B 424    12500  12271  14634   1626   -131    559       N
ATOM   5547  CA  VAL B 424       2.780  67.488  92.652  1.00101.80           C
ANISOU 5547  CA  VAL B 424    12308  12072  14300   1576     -4    570       C
ATOM   5548  CB  VAL B 424       1.905  66.865  93.754  1.00101.35           C
ANISOU 5548  CB  VAL B 424    12126  11960  14423   1636    185    608       C
ATOM   5549  CG1 VAL B 424       2.654  65.790  94.523  1.00113.27           C
ANISOU 5549  CG1 VAL B 424    13655  13514  15869   1583    293    616       C
ATOM   5550  CG2 VAL B 424       1.416  67.955  94.695  1.00 95.31           C
ANISOU 5550  CG2 VAL B 424    11443  11124  13645   1730    321    643       C
ATOM   5551  C   VAL B 424       3.559  66.421  91.903  1.00102.03           C
ANISOU 5551  C   VAL B 424    12307  12177  14284   1480   -109    538       C
ATOM   5552  O   VAL B 424       3.051  65.849  90.946  1.00114.29           O
ANISOU 5552  O   VAL B 424    13728  13729  15967   1468   -229    515       O
ATOM   5553  N   PRO B 425       4.815  66.182  92.305  1.00101.48           N
ANISOU 5553  N   PRO B 425    12364  12168  14026   1412    -73    533       N
ATOM   5554  CA  PRO B 425       5.571  65.080  91.708  1.00 99.28           C
ANISOU 5554  CA  PRO B 425    12052  11959  13710   1324   -149    507       C
ATOM   5555  CB  PRO B 425       6.793  64.973  92.619  1.00 98.40           C
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ANISOU 5555  CB  PRO B 425    12080  11893  13414   1277    -54    514       C
ATOM   5556  CG  PRO B 425       7.011  66.381  93.089  1.00 97.61           C
ANISOU 5556  CG  PRO B 425    12140  11763  13185   1314    -22    525       C
ATOM   5557  CD  PRO B 425       5.633  66.972  93.246  1.00101.30           C
ANISOU 5557  CD  PRO B 425    12527  12150  13813   1412     20    547       C
ATOM   5558  C   PRO B 425       4.756  63.793  91.712  1.00110.27           C
ANISOU 5558  C   PRO B 425    13243  13335  15318   1330   -119    510       C
ATOM   5559  O   PRO B 425       4.094  63.520  92.710  1.00113.93           O
ANISOU 5559  O   PRO B 425    13635  13752  15901   1382     34    542       O
ATOM   5560  N   LYS B 426       4.779  63.045  90.611  1.00121.46           N
ANISOU 5560  N   LYS B 426    14578  14782  16790   1283   -260    477       N
ATOM   5561  CA  LYS B 426       3.983  61.820  90.478  1.00125.13           C
ANISOU 5561  CA  LYS B 426    14845  15225  17475   1283   -256    473       C
ATOM   5562  C   LYS B 426       4.397  60.741  91.480  1.00127.23           C
ANISOU 5562  C   LYS B 426    15084  15513  17743   1252   -103    493       C
ATOM   5563  O   LYS B 426       5.547  60.297  91.488  1.00137.79           O
ANISOU 5563  O   LYS B 426    16515  16919  18921   1184   -111    482       O
ATOM   5564  CB  LYS B 426       4.091  61.265  89.055  1.00121.18           C
ANISOU 5564  CB  LYS B 426    14296  14753  16993   1235   -454    427       C
ATOM   5565  N   LYS B 427       3.449  60.326  92.317  1.00118.61           N
ANISOU 5565  N   LYS B 427    13866  14360  16840   1306     39    526       N
ATOM   5566  CA  LYS B 427       3.684  59.296  93.325  1.00118.97           C
ANISOU 5566  CA  LYS B 427    13884  14412  16908   1291    201    552       C
ATOM   5567  C   LYS B 427       2.905  58.031  92.992  1.00128.14           C
ANISOU 5567  C   LYS B 427    14834  15544  18309   1277    191    546       C
ATOM   5568  O   LYS B 427       1.892  58.087  92.294  1.00135.60           O
ANISOU 5568  O   LYS B 427    15636  16438  19448   1305    100    533       O
ATOM   5569  CB  LYS B 427       3.290  59.801  94.715  1.00115.90           C
ANISOU 5569  CB  LYS B 427    13543  13967  16529   1368    410    603       C
ATOM   5570  N   VAL B 428       3.373  56.893  93.495  1.00131.76           N
ANISOU 5570  N   VAL B 428    15274  16029  18761   1236    278    555       N
ATOM   5571  CA  VAL B 428       2.699  55.618  93.251  1.00129.04           C
ANISOU 5571  CA  VAL B 428    14734  15651  18642   1217    280    550       C
ATOM   5572  C   VAL B 428       1.564  55.402  94.253  1.00128.58           C
ANISOU 5572  C   VAL B 428    14547  15500  18808   1288    476    601       C
ATOM   5573  O   VAL B 428       1.793  55.344  95.459  1.00122.54           O
ANISOU 5573  O   VAL B 428    13859  14723  17979   1318    669    645       O
ATOM   5574  CB  VAL B 428       3.694  54.419  93.316  1.00121.87           C
ANISOU 5574  CB  VAL B 428    13860  14809  17638   1141    290    538       C
ATOM   5575  CG1 VAL B 428       4.462  54.279  92.009  1.00113.55           C
ANISOU 5575  CG1 VAL B 428    12852  13825  16466   1069     78    483       C
ATOM   5576  CG2 VAL B 428       4.661  54.573  94.480  1.00121.80           C
ANISOU 5576  CG2 VAL B 428    14023  14836  17421   1144    440    570       C
ATOM   5577  N   ASP B 429       0.335  55.303  93.757  1.00135.95           N
ANISOU 5577  N   ASP B 429    15287  16362  20007   1319    426    596       N
ATOM   5578  CA  ASP B 429      -0.803  55.034  94.632  1.00139.51           C
ANISOU 5578  CA  ASP B 429    15588  16713  20705   1385    617    647       C
ATOM   5579  C   ASP B 429      -0.807  53.560  95.019  1.00142.82           C
ANISOU 5579  C   ASP B 429    15903  17120  21242   1344    719    661       C
ATOM   5580  O   ASP B 429      -0.574  52.692  94.178  1.00145.10           O
ANISOU 5580  O   ASP B 429    16120  17441  21569   1275    578    618       O
ATOM   5581  CB  ASP B 429      -2.121  55.419  93.956  1.00136.28           C
ANISOU 5581  CB  ASP B 429    14991  16226  20563   1430    523    636       C
ATOM   5582  N   LEU B 430      -1.056  53.279  96.295  1.00139.82           N
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ANISOU 5582  N   LEU B 430    15525  16688  20911   1392    967    721       N
ATOM   5583  CA  LEU B 430      -1.042  51.906  96.787  1.00130.72           C
ANISOU 5583  CA  LEU B 430    14291  15517  19861   1361   1091    742       C
ATOM   5584  C   LEU B 430      -2.312  51.552  97.560  1.00136.53           C
ANISOU 5584  C   LEU B 430    14851  16129  20894   1427   1302    800       C
ATOM   5585  O   LEU B 430      -2.518  52.017  98.671  1.00138.92           O
ANISOU 5585  O   LEU B 430    15233  16385  21167   1503   1514    857       O
ATOM   5586  CB  LEU B 430       0.181  51.669  97.680  1.00120.70           C
ANISOU 5586  CB  LEU B 430    13233  14310  18317   1346   1206    762       C
ATOM   5587  CG  LEU B 430       1.537  52.273  97.295  1.00112.29           C
ANISOU 5587  CG  LEU B 430    12381  13356  16929   1300   1061    722       C
ATOM   5588  CD1 LEU B 430       2.545  52.079  98.420  1.00100.96           C
ANISOU 5588  CD1 LEU B 430    11135  11957  15268   1306   1207    752       C
ATOM   5589  CD2 LEU B 430       2.070  51.686  95.994  1.00109.88           C
ANISOU 5589  CD2 LEU B 430    12031  13120  16597   1208    833    660       C
ATOM   5590  O   SER B 431      -4.841  48.085  96.616  1.00154.24           O
ANISOU 5590  O   SER B 431    16355  18152  24097   1333   1310    792       O
ATOM   5591  N   SER B 431      -3.164  50.728  96.965  1.00137.23           N
ANISOU 5591  N   SER B 431    14705  16161  21274   1400   1244    785       N
ATOM   5592  CA  SER B 431      -4.305  50.166  97.672  1.00137.02           C
ANISOU 5592  CA  SER B 431    14491  16014  21556   1447   1453    842       C
ATOM   5593  C   SER B 431      -4.247  48.649  97.535  1.00147.97           C
ANISOU 5593  C   SER B 431    15758  17390  23074   1377   1463    833       C
ATOM   5594  CB  SER B 431      -5.616  50.707  97.112  1.00137.81           C
ANISOU 5594  CB  SER B 431    14383  16029  21951   1491   1380    835       C
ATOM   5595  OG  SER B 431      -6.055  49.933  96.010  1.00141.50           O
ANISOU 5595  OG  SER B 431    14650  16479  22633   1427   1181    781       O
ATOM   5596  O   GLN B 432      -3.184  46.299 100.665  1.00130.90           O
ANISOU 5596  O   GLN B 432    13811  15174  20751   1405   2123    987       O
ATOM   5597  N   GLN B 432      -3.516  47.984  98.428  1.00147.88           N
ANISOU 5597  N   GLN B 432    15872  17402  22914   1368   1631    868       N
ATOM   5598  CA  GLN B 432      -3.271  46.548  98.271  1.00137.56           C
ANISOU 5598  CA  GLN B 432    14484  16097  21685   1297   1628    857       C
ATOM   5599  C   GLN B 432      -3.224  45.743  99.564  1.00136.70           C
ANISOU 5599  C   GLN B 432    14412  15935  21592   1327   1916    928       C
ATOM   5600  CB  GLN B 432      -1.966  46.325  97.513  1.00126.61           C
ANISOU 5600  CB  GLN B 432    13243  14839  20024   1215   1419    793       C
ATOM   5601  CG  GLN B 432      -2.123  46.255  96.014  1.00127.91           C
ANISOU 5601  CG  GLN B 432    13295  15031  20273   1153   1129    716       C
ATOM   5602  CD  GLN B 432      -0.934  46.850  95.298  1.00131.91           C
ANISOU 5602  CD  GLN B 432    13996  15661  20462   1113    932    663       C
ATOM   5603  OE1 GLN B 432      -0.408  47.880  95.718  1.00136.20           O
ANISOU 5603  OE1 GLN B 432    14714  16249  20786   1151    968    679       O
ATOM   5604  NE2 GLN B 432      -0.495  46.205  94.218  1.00124.36           N
ANISOU 5604  NE2 GLN B 432    13016  14755  19481   1038    728    602       N
ATOM   5605  N   GLN B 433      -3.216  44.421  99.396  1.00130.15           N
ANISOU 5605  N   GLN B 433    13474  15087  20891   1266   1922    921       N
ATOM   5606  CA  GLN B 433      -3.229  43.472 100.504  1.00120.96           C
ANISOU 5606  CA  GLN B 433    12323  13863  19774   1288   2186    987       C
ATOM   5607  C   GLN B 433      -1.827  43.194 101.053  1.00122.50           C
ANISOU 5607  C   GLN B 433    12772  14154  19620   1272   2220    990       C
ATOM   5608  O   GLN B 433      -1.597  43.293 102.260  1.00123.58           O
ANISOU 5608  O   GLN B 433    13057  14264  19633   1339   2445   1052       O
ATOM   5609  CB  GLN B 433      -3.886  42.157 100.066  1.00109.98           C
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ANISOU 5609  CB  GLN B 433    10750  12406  18633   1202   2146    971       C
ATOM   5610  N   LYS B 434       -0.893  42.851 100.169  1.00117.18           N
ANISOU 5610  N   LYS B 434    12149  13584  18788   1189   1997    924       N
ATOM   5611  CA  LYS B 434        0.444  42.433 100.589  1.00107.97           C
ANISOU 5611  CA  LYS B 434    11192  12506  17325   1165   2012    922       C
ATOM   5612  C   LYS B 434        1.454  43.580 100.448  1.00112.19           C
ANISOU 5612  C   LYS B 434    11942  13149  17538   1170   1885    890       C
ATOM   5613  O   LYS B 434        1.394  44.332  99.466  1.00 97.86           O
ANISOU 5613  O   LYS B 434    10096  11375  15713   1145   1683    839       O
ATOM   5614  CB  LYS B 434        0.890  41.210  99.777  1.00 96.69           C
ANISOU 5614  CB  LYS B 434     9687  11118  15934   1070   1873    874       C
ATOM   5615  N   GLU B 435        2.363  43.708 101.431  1.00114.10           N
ANISOU 5615  N   GLU B 435    12402  13428  17524   1205   2001    920       N
ATOM   5616  CA  GLU B 435        3.374  44.786 101.447  1.00 96.55           C
ANISOU 5616  CA  GLU B 435    10391  11297  14996   1212   1898    895       C
ATOM   5617  C   GLU B 435        4.003  44.866 100.105  1.00100.01           C
ANISOU 5617  C   GLU B 435    10809  11831  15358   1124   1628    820       C
ATOM   5618  O   GLU B 435        4.505  43.868  99.589  1.00100.51           O
ANISOU 5618  O   GLU B 435    10835  11936  15420   1056   1546    791       O
ATOM   5619  CB  GLU B 435        4.497  44.591 102.495  1.00 63.56           C
ANISOU 5619  CB  GLU B 435     6441   7159  10550   1236   2004    920       C
ATOM   5620  O   ILE B 436        3.982  44.439  97.232  1.00111.66           O
ANISOU 5620  O   ILE B 436    12320  13354  16753   1038    923     69       O
ATOM   5621  N   ILE B 436        3.908  46.052  99.530  1.00113.15           N
ANISOU 5621  N   ILE B 436    12601  13500  16890   1141   1215    156       N
ATOM   5622  CA  ILE B 436        4.671  46.406  98.368  1.00127.87           C
ANISOU 5622  CA  ILE B 436    14569  15420  18597   1097   1051    127       C
ATOM   5623  C   ILE B 436        4.256  45.632  97.162  1.00125.44           C
ANISOU 5623  C   ILE B 436    14167  15114  18381   1061    897     86       C
ATOM   5624  CB  ILE B 436        6.173  46.159  98.589  1.00130.69           C
ANISOU 5624  CB  ILE B 436    15070  15856  18729   1046   1093    120       C
ATOM   5625  O   PRO B 437        6.737  45.541  95.370  1.00125.63           O
ANISOU 5625  O   PRO B 437    14447  15322  17964    935    693     18       O
ATOM   5626  N   PRO B 437        4.216  46.302  96.024  1.00154.01           N
ANISOU 5626  N   PRO B 437    17825  18747  21944   1052    727     70       N
ATOM   5627  CA  PRO B 437        4.343  45.294  94.990  1.00158.88           C
ANISOU 5627  CA  PRO B 437    18401  19397  22570    997    605     19       C
ATOM   5628  C   PRO B 437        5.807  44.849  94.941  1.00136.37           C
ANISOU 5628  C   PRO B 437    15675  16636  19502    940    633     -6       C
ATOM   5629  CB  PRO B 437        3.902  46.023  93.719  1.00173.41           C
ANISOU 5629  CB  PRO B 437    20250  21234  24402    996    407      7       C
ATOM   5630  CG  PRO B 437        3.183  47.271  94.194  1.00175.02           C
ANISOU 5630  CG  PRO B 437    20450  21375  24677   1065    431     56       C
ATOM   5631  CD  PRO B 437        3.830  47.622  95.500  1.00167.60           C
ANISOU 5631  CD  PRO B 437    19591  20444  23645   1085    620     89       C
ATOM   5632  O   THR B 438        8.986  44.009  92.599  1.00103.52           O
ANISOU 5632  O   THR B 438    11780  12751  14804    778    423   -138       O
ATOM   5633  N   THR B 438        5.994  43.650  94.434  1.00122.70           N
ANISOU 5633  N   THR B 438    13896  14928  17798    900    586    -57       N
ATOM   5634  CA  THR B 438        7.304  43.159  94.112  1.00107.41           C
ANISOU 5634  CA  THR B 438    12058  13080  15671    850    577    -98       C
ATOM   5635  C   THR B 438        7.796  43.962  92.904  1.00111.81           C
ANISOU 5635  C   THR B 438    12719  13709  16054    819    429   -116       C
ATOM   5636  CB  THR B 438        7.221  41.638  93.868  1.00 89.55           C
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ANISOU 5636  CB  THR B 438     9704  10808  13515    825    557   -154       C
ATOM   5637  OG1 THR B 438       7.134  40.992  95.138  1.00 75.12           O
ANISOU 5637  OG1 THR B 438     7824   8930  11786    841    719   -122       O
ATOM   5638  CG2 THR B 438       8.421  41.085  93.084  1.00109.34           C
ANISOU 5638  CG2 THR B 438    12295  13410  15841    776    492   -223       C
ATOM   5639  O   THR B 439       9.127  46.566  90.447  1.00134.14           O
ANISOU 5639  O   THR B 439    15858  16709  18400    732    127    -93       O
ATOM   5640  N   THR B 439       6.857  44.639  92.253  1.00135.83           N
ANISOU 5640  N   THR B 439    15723  16709  19177    839    312   -102       N
ATOM   5641  CA  THR B 439       7.118  45.385  91.031  1.00137.50           C
ANISOU 5641  CA  THR B 439    16024  16976  19245    808    152   -111       C
ATOM   5642  C   THR B 439       8.133  46.515  91.173  1.00126.09           C
ANISOU 5642  C   THR B 439    14738  15591  17578    788    182    -69       C
ATOM   5643  CB  THR B 439       5.837  46.009  90.504  1.00143.37           C
ANISOU 5643  CB  THR B 439    16696  17643  20136    844     28    -89       C
ATOM   5644  OG1 THR B 439       5.446  47.068  91.382  1.00156.99           O
ANISOU 5644  OG1 THR B 439    18433  19306  21909    898    109    -24       O
ATOM   5645  CG2 THR B 439       4.730  44.974  90.447  1.00139.46           C
ANISOU 5645  CG2 THR B 439    16028  17076  19885    864      1   -123       C
ATOM   5646  N   LEU B 440       7.872  47.432  92.094  1.00112.07           N
ANISOU 5646  N   LEU B 440    12985  13759  15837    832    268     -9       N
ATOM   5647  CA  LEU B 440       8.558  48.718  92.059  1.00120.73           C
ANISOU 5647  CA  LEU B 440    14228  14889  16756    816    252     37       C
ATOM   5648  CB  LEU B 440       7.660  49.791  92.689  1.00126.65           C
ANISOU 5648  CB  LEU B 440    14962  15537  17622    885    274     92       C
ATOM   5649  CG  LEU B 440       6.910  49.445  93.982  1.00125.14           C
ANISOU 5649  CG  LEU B 440    14663  15265  17618    954    429    102       C
ATOM   5650  CD1 LEU B 440       7.858  49.241  95.148  1.00127.75           C
ANISOU 5650  CD1 LEU B 440    15061  15629  17848    947    602    112       C
ATOM   5651  CD2 LEU B 440       5.873  50.512  94.303  1.00121.07           C
ANISOU 5651  CD2 LEU B 440    14116  14653  17232   1028    416    140       C
ATOM   5652  C   LEU B 440       9.948  48.732  92.714  1.00118.04           C
ANISOU 5652  C   LEU B 440    13997  14623  16229    779    370     43       C
ATOM   5653  O   LEU B 440      10.686  49.711  92.602  1.00108.18           O
ANISOU 5653  O   LEU B 440    12876  13414  14814    749    350     78       O
ATOM   5654  N   VAL B 441      10.317  47.656  93.395  1.00116.78           N
ANISOU 5654  N   VAL B 441    13791  14479  16100    779    485     13       N
ATOM   5655  CA  VAL B 441      11.669  47.579  93.916  1.00107.02           C
ANISOU 5655  CA  VAL B 441    12651  13319  14691    743    577     12       C
ATOM   5656  CB  VAL B 441      11.876  46.340  94.808  1.00 91.73           C
ANISOU 5656  CB  VAL B 441    10648  11375  12829    757    705    -14       C
ATOM   5657  CG1 VAL B 441      11.207  45.171  94.208  1.00 81.48           C
ANISOU 5657  CG1 VAL B 441     9228  10057  11674    758    645    -68       C
ATOM   5658  CG2 VAL B 441      13.367  46.059  95.009  1.00 85.36           C
ANISOU 5658  CG2 VAL B 441     9932  10665  11838    711    759    -33       C
ATOM   5659  C   VAL B 441      12.620  47.587  92.725  1.00115.14           C
ANISOU 5659  C   VAL B 441    13757  14461  15530    671    472    -21       C
ATOM   5660  O   VAL B 441      13.698  48.191  92.773  1.00115.73           O
ANISOU 5660  O   VAL B 441    13945  14607  15422    629     -0     -0       O
ATOM   5661  N   ASP B 442      12.186  46.963  91.636  1.00117.84           N
ANISOU 5661  N   ASP B 442    14038  14822  15916    656    356    -71       N
ATOM   5662  CA  ASP B 442      12.984  46.934  90.419  1.00121.46           C
ANISOU 5662  CA  ASP B 442    14563  15392  16193    591    254   -109       C
ATOM   5663  CB  ASP B 442      12.295  46.089  89.344  1.00122.20           C
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ANISOU 5663  CB  ASP B 442    14572  15486  16372    588    131   -174       C
ATOM   5664  C   ASP B 442      13.228  48.357  89.919  1.00124.01           C
ANISOU 5664  C   ASP B 442    15003  15741  16372    557    178    -48       C
ATOM   5665  O   ASP B 442      14.218  48.623  89.239  1.00115.98           O
ANISOU 5665  O   ASP B 442    14078  14832  15158    491    140    -54       O
ATOM   5666  N   ASP B 443      12.327  49.268  90.292  1.00139.98           N
ANISOU 5666  N   ASP B 443    17022  17663  18499    601    160     12       N
ATOM   5667  CA  ASP B 443      12.369  50.661  89.844  1.00137.52           C
ANISOU 5667  CA  ASP B 443    16819  17347  18086    578     71     77       C
ATOM   5668  CB  ASP B 443      11.031  51.359  90.133  1.00137.43           C
ANISOU 5668  CB  ASP B 443    16757  17203  18259    650     28    119       C
ATOM   5669  CG  ASP B 443      10.030  51.215  88.998  1.00133.86           C
ANISOU 5669  CG  ASP B 443    16239  16723  17898    657   -137    102       C
ATOM   5670  OD1 ASP B 443      10.409  51.466  87.837  1.00132.47           O
ANISOU 5670  OD1 ASP B 443    16138  16619  17577    596   -264    102       O
ATOM   5671  OD2 ASP B 443       8.866  50.851  89.266  1.00130.36           O
ANISOU 5671  OD2 ASP B 443    15671  16188  17672    722   -141     89       O
ATOM   5672  C   ASP B 443      13.504  51.464  90.480  1.00127.29           C
ANISOU 5672  C   ASP B 443    15646  16093  16625    542    154    123       C
ATOM   5673  O   ASP B 443      14.404  51.935  89.785  1.00133.65           O
ANISOU 5673  O   ASP B 443    16553  16990  17239    467    101    139       O
ATOM   5674  N   PHE B 444      13.461  51.624  91.797  1.00109.31           N
ANISOU 5674  N   PHE B 444    13363  13751  14421    591    284    145       N
ATOM   5675  CA  PHE B 444      14.395  52.519  92.466  1.00108.52           C
ANISOU 5675  CA  PHE B 444    13381  13668  14183    564    349    192       C
ATOM   5676  CB  PHE B 444      13.762  53.076  93.733  1.00105.78           C
ANISOU 5676  CB  PHE B 444    13027  13205  13960    642    440    226       C
ATOM   5677  CG  PHE B 444      13.496  52.040  94.786  1.00 98.94           C
ANISOU 5677  CG  PHE B 444    12064  12308  13220    696    581    192       C
ATOM   5678  CD2 PHE B 444      12.294  51.354  94.811  1.00108.96           C
ANISOU 5678  CD2 PHE B 444    13199  13511  14692    755    583    168       C
ATOM   5679  CE2 PHE B 444      12.029  50.410  95.792  1.00101.74           C
ANISOU 5679  CE2 PHE B 444    12197  12565  13894    797    715    147       C
ATOM   5680  CZ  PHE B 444      12.974  50.138  96.751  1.00 91.07           C
ANISOU 5680  CZ  PHE B 444    10900  11248  12453    785    840    149       C
ATOM   5681  CE1 PHE B 444      14.176  50.816  96.734  1.00 90.71           C
ANISOU 5681  CE1 PHE B 444    10986  11270  12210    731    833    168       C
ATOM   5682  CD1 PHE B 444      14.429  51.767  95.766  1.00 92.79           C
ANISOU 5682  CD1 PHE B 444    11329  11563  12362    685    708    190       C
ATOM   5683  C   PHE B 444      15.737  51.906  92.849  1.00119.75           C
ANISOU 5683  C   PHE B 444    14838  15193  15470    516    446    164       C
ATOM   5684  O   PHE B 444      16.401  52.410  93.749  1.00129.01           O
ANISOU 5684  O   PHE B 444    16081  16360  16575    511    531    195       O
ATOM   5685  N   ILE B 445      16.158  50.835  92.193  1.00112.31           N
ANISOU 5685  N   ILE B 445    13846  14339  14489    483    432    103       N
ATOM   5686  CA  ILE B 445      17.359  50.164  92.663  1.00104.99           C
ANISOU 5686  CA  ILE B 445    12932  13497  13464    453    530     70       C
ATOM   5687  CB  ILE B 445      17.019  48.699  93.082  1.00 73.78           C
ANISOU 5687  CB  ILE B 445     8859   9522   9652    501    598      6       C
ATOM   5688  CG1 ILE B 445      17.507  48.467  94.495  1.00 78.41           C
ANISOU 5688  CG1 ILE B 445     9455  10082  10256    529    741     21       C
ATOM   5689  CD1 ILE B 445      17.033  49.545  95.440  1.00 82.33           C
ANISOU 5689  CD1 ILE B 445    10003  10484  10794    567    788     89       C
ATOM   5690  CG2 ILE B 445      17.587  47.661  92.139  1.00 68.33           C
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ANISOU 5690  CG2 ILE B 445     8130   8935   8897    462    554    -71       C
ATOM   5691  C   ILE B 445      18.477  50.241  91.622  1.00103.27           C
ANISOU 5691  C   ILE B 445    12777  13420  13043    365    471     52       C
ATOM   5692  O   ILE B 445      18.216  50.464  90.443  1.00107.16           O
ANISOU 5692  O   ILE B 445    13281  13949  13485    330    354     48       O
ATOM   5693  N   LEU B 446      19.723  50.115  92.071  1.00103.06           N
ANISOU 5693  N   LEU B 446    12791  13472  12895    327    550     44       N
ATOM   5694  CA  LEU B 446      20.871  50.152  91.163  1.00 96.53           C
ANISOU 5694  CA  LEU B 446    12012  12791  11875    242    515     24       C
ATOM   5695  CB  LEU B 446      21.983  51.046  91.722  1.00 84.58           C
ANISOU 5695  CB  LEU B 446    10595  11319  10222    187    565     80       C
ATOM   5696  CG  LEU B 446      21.740  52.533  91.996  1.00 86.08           C
ANISOU 5696  CG  LEU B 446    10887  11435  10385    170    528    173       C
ATOM   5697  CD1 LEU B 446      23.101  53.267  92.091  1.00 84.82           C
ANISOU 5697  CD1 LEU B 446    10821  11363  10044     82    549    213       C
ATOM   5698  CD2 LEU B 446      20.834  53.169  90.945  1.00 78.77           C
ANISOU 5698  CD2 LEU B 446     9983  10475   9470    159    396    205       C
ATOM   5699  C   LEU B 446      21.439  48.756  90.885  1.00 85.84           C
ANISOU 5699  C   LEU B 446    10579  11523  10511    244    551    -71       C
ATOM   5700  O   LEU B 446      21.689  48.409  89.743  1.00 92.30           O
ANISOU 5700  O   LEU B 446    11388  12438  11244    205    486   -120       O
ATOM   5701  N   SER B 447      21.639  47.970  91.940  1.00 76.81           N
ANISOU 5701  N   SER B 447     9386  10345   9455    292    653    -98       N
ATOM   5702  CA  SER B 447      22.287  46.667  91.851  1.00 71.91           C
ANISOU 5702  CA  SER B 447     8696   9794   8832    300    693   -185       C
ATOM   5703  CB  SER B 447      23.122  46.414  93.127  1.00 82.11           C
ANISOU 5703  CB  SER B 447     9996  11079  10122    317    807   -175       C
ATOM   5704  OG  SER B 447      23.767  45.139  93.124  1.00 83.11           O
ANISOU 5704  OG  SER B 447    10056  11262  10260    332    843   -258       O
ATOM   5705  C   SER B 447      21.304  45.508  91.649  1.00 65.96           C
ANISOU 5705  C   SER B 447     7838   8974   8248    359    668   -248       C
ATOM   5706  O   SER B 447      20.278  45.409  92.325  1.00 64.11           O
ANISOU 5706  O   SER B 447     7562   8617   8179    415    689   -219       O
ATOM   5707  N   PRO B 448      21.635  44.599  90.732  1.00 58.80           N
ANISOU 5707  N   PRO B 448     6887   8151   7305    347    625   -337       N
ATOM   5708  CA  PRO B 448      20.890  43.338  90.590  1.00 48.03           C
ANISOU 5708  CA  PRO B 448     5422   6727   6101    399    603   -409       C
ATOM   5709  CB  PRO B 448      21.640  42.582  89.500  1.00 46.01           C
ANISOU 5709  CB  PRO B 448     5148   6596   5736    372    558   -513       C
ATOM   5710  CG  PRO B 448      22.578  43.549  88.897  1.00 64.61           C
ANISOU 5710  CG  PRO B 448     7592   9081   7876    300    545   -487       C
ATOM   5711  CD  PRO B 448      22.781  44.693  89.823  1.00 53.67           C
ANISOU 5711  CD  PRO B 448     6277   7657   6459    283    602   -379       C
ATOM   5712  C   PRO B 448      20.927  42.533  91.885  1.00 68.31           C
ANISOU 5712  C   PRO B 448     7939   9215   8799    451    707   -409       C
ATOM   5713  O   PRO B 448      19.968  41.826  92.196  1.00 77.47           O
ANISOU 5713  O   PRO B 448     9024  10273  10139    498    706   -419       O
ATOM   5714  N   VAL B 449      22.045  42.620  92.609  1.00 65.26           N
ANISOU 5714  N   VAL B 449     7593   8878   8323    439    790   -395       N
ATOM   5715  CA  VAL B 449      22.188  41.899  93.863  1.00 56.35           C
ANISOU 5715  CA  VAL B 449     6433   7681   7297    483    884   -387       C
ATOM   5716  CB  VAL B 449      23.615  41.989  94.431  1.00 53.75           C
ANISOU 5716  CB  VAL B 449     6151   7432   6838    461    951   -385       C
ATOM   5717  CG1 VAL B 449      23.633  41.460  95.823  1.00 42.87           C
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ANISOU 5717  CG1 VAL B 449     4760   5967   5561    506   1041   -354       C
ATOM   5718  CG2 VAL B 449      24.594  41.196  93.573  1.00 49.94           C
ANISOU 5718  CG2 VAL B 449     5636   7070   6269    443    921   -486       C
ATOM   5719  C   VAL B 449      21.197  42.419  94.905  1.00 60.78           C
ANISOU 5719  C   VAL B 449     7001   8113   7980    519    935   -300       C
ATOM   5720  O   VAL B 449      20.490  41.616  95.518  1.00 69.80           O
ANISOU 5720  O   VAL B 449     8076   9160   9284    564    972   -301       O
ATOM   5721  N   VAL B 450      21.120  43.740  95.111  1.00 45.96           N
ANISOU 5721  N   VAL B 450     5202   6229   6031    499    939   -226       N
ATOM   5722  CA  VAL B 450      20.182  44.232  96.120  1.00 50.96           C
ANISOU 5722  CA  VAL B 450     5840   6743   6780    541    995   -154       C
ATOM   5723  CB  VAL B 450      20.423  45.712  96.511  1.00 60.19           C
ANISOU 5723  CB  VAL B 450     7115   7911   7843    520   1009    -79       C
ATOM   5724  CG1 VAL B 450      21.820  45.899  97.094  1.00 69.43           C
ANISOU 5724  CG1 VAL B 450     8357   9153   8869    487   1065    -71       C
ATOM   5725  CG2 VAL B 450      20.262  46.577  95.330  1.00 74.46           C
ANISOU 5725  CG2 VAL B 450     8960   9763   9569    478    901    -72       C
ATOM   5726  C   VAL B 450      18.726  44.046  95.647  1.00 63.05           C
ANISOU 5726  C   VAL B 450     7292   8190   8474    574    938   -158       C
ATOM   5727  O   VAL B 450      17.844  43.811  96.481  1.00 57.81           O
ANISOU 5727  O   VAL B 450     6579   7424   7962    622    998   -126       O
ATOM   5728  N   LYS B 451      18.470  44.109  94.332  1.00 51.17           N
ANISOU 5728  N   LYS B 451     5771   6731   6940    548    823   -196       N
ATOM   5729  CA  LYS B 451      17.092  43.968  93.876  1.00 59.09           C
ANISOU 5729  CA  LYS B 451     6697   7653   8102    577    756   -199       C
ATOM   5730  CB  LYS B 451      16.962  44.091  92.359  1.00 54.74           C
ANISOU 5730  CB  LYS B 451     6149   7167   7485    541    617   -243       C
ATOM   5731  CG  LYS B 451      15.592  43.632  91.849  1.00 63.93           C
ANISOU 5731  CG  LYS B 451     7213   8247   8829    572    535   -265       C
ATOM   5732  CD  LYS B 451      15.443  43.804  90.327  1.00 72.44           C
ANISOU 5732  CD  LYS B 451     8307   9389   9829    536    384   -307       C
ATOM   5733  CE  LYS B 451      14.287  42.944  89.754  1.00 94.41           C
ANISOU 5733  CE  LYS B 451    10978  12102  12791    563    296   -357       C
ATOM   5734  NZ  LYS B 451      14.453  41.421  89.857  1.00 82.26           N
ANISOU 5734  NZ  LYS B 451     9358  10557  11340    577    323   -440       N
ATOM   5735  C   LYS B 451      16.528  42.629  94.341  1.00 66.87           C
ANISOU 5735  C   LYS B 451     7574   8567   9268    617    798   -235       C
ATOM   5736  O   LYS B 451      15.407  42.581  94.835  1.00 61.43           O
ANISOU 5736  O   LYS B 451     6820   7775   8747    657    823   -201       O
ATOM   5737  N   ARG B 452      17.321  41.557  94.246  1.00 66.57           N
ANISOU 5737  N   ARG B 452     7514   8579   9199    608    812   -301       N
ATOM   5738  CA  ARG B 452      16.828  40.248  94.650  1.00 61.87           C
ANISOU 5738  CA  ARG B 452     6822   7909   8777    640    841   -333       C
ATOM   5739  CB  ARG B 452      17.741  39.127  94.182  1.00 56.63           C
ANISOU 5739  CB  ARG B 452     6141   7311   8064    628    816   -424       C
ATOM   5740  CG  ARG B 452      17.301  37.797  94.783  1.00 59.51           C
ANISOU 5740  CG  ARG B 452     6418   7583   8612    660    853   -444       C
ATOM   5741  CD  ARG B 452      18.054  36.653  94.231  1.00 54.23           C
ANISOU 5741  CD  ARG B 452     5724   6961   7920    657    810   -545       C
ATOM   5742  NE  ARG B 452      17.650  36.389  92.866  1.00 56.20           N
ANISOU 5742  NE  ARG B 452     5937   7241   8176    645    683   -626       N
ATOM   5743  CZ  ARG B 452      18.395  35.715  92.003  1.00 56.67           C
ANISOU 5743  CZ  ARG B 452     5997   7380   8155    637    623   -731       C
ATOM   5744  NH1 ARG B 452      19.594  35.282  92.375  1.00 56.29           N
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ANISOU 5744  NH1 ARG B 452     5976   7390   8021    643    680   -765       N
ATOM   5745  NH2 ARG B 452      17.945  35.495  90.771  1.00 47.65           N
ANISOU 5745  NH2 ARG B 452     4828   6261   7016    627    504   -805       N
ATOM   5746  C   ARG B 452      16.659  40.142  96.167  1.00 69.23           C
ANISOU 5746  C   ARG B 452     7749   8759   9796    673    973   -265       C
ATOM   5747  O   ARG B 452      15.636  39.654  96.672  1.00 78.41           O
ANISOU 5747  O   ARG B 452     8831   9821  11140    702   1007   -240       O
ATOM   5748  N   SER B 453      17.665  40.596  96.894  1.00 54.73           N
ANISOU 5748  N   SER B 453     5999   6968   7828    664   1049   -233       N
ATOM   5749  CA  SER B 453      17.558  40.600  98.333  1.00 57.29           C
ANISOU 5749  CA  SER B 453     6337   7223   8207    693   1172   -166       C
ATOM   5750  CB  SER B 453      18.838  41.131  98.949  1.00 51.81           C
ANISOU 5750  CB  SER B 453     5749   6596   7341    676   1228   -144       C
ATOM   5751  OG  SER B 453      19.871  40.207  98.705  1.00 60.56           O
ANISOU 5751  OG  SER B 453     6849   7768   8393    661   1211   -207       O
ATOM   5752  C   SER B 453      16.357  41.437  98.781  1.00 67.00           C
ANISOU 5752  C   SER B 453     7554   8370   9533    722   1205    -99       C
ATOM   5753  O   SER B 453      15.705  41.122  99.765  1.00 63.03           O
ANISOU 5753  O   SER B 453     7010   7784   9153    754   1296    -56       O
ATOM   5754  N   PHE B 454      16.050  42.499  98.053  1.00 70.59           N
ANISOU 5754  N   PHE B 454     8039   8845   9935    711   1132    -90       N
ATOM   5755  CA  PHE B 454      14.943  43.331  98.466  1.00 66.67           C
ANISOU 5755  CA  PHE B 454     7528   8269   9534    747   1159    -33       C
ATOM   5756  CB  PHE B 454      14.978  44.685  97.774  1.00 55.16           C
ANISOU 5756  CB  PHE B 454     6145   6844   7969    731   1078    -16       C
ATOM   5757  CG  PHE B 454      15.798  45.703  98.489  1.00 60.84           C
ANISOU 5757  CG  PHE B 454     6987   7589   8539    722   1137     29       C
ATOM   5758  CD1 PHE B 454      16.558  45.350  99.587  1.00 66.73           C
ANISOU 5758  CD1 PHE B 454     7775   8344   9236    726   1246     43       C
ATOM   5759  CE1 PHE B 454      17.322  46.295 100.261  1.00 65.26           C
ANISOU 5759  CE1 PHE B 454     7706   8178   8914    716   1291     81       C
ATOM   5760  CZ  PHE B 454      17.310  47.608  99.843  1.00 63.58           C
ANISOU 5760  CZ  PHE B 454     7567   7971   8619    701   1230    108       C
ATOM   5761  CE2 PHE B 454      16.534  47.976  98.755  1.00 58.68           C
ANISOU 5761  CE2 PHE B 454     6907   7338   8049    699   1122    100       C
ATOM   5762  CD2 PHE B 454      15.788  47.027  98.085  1.00 61.15           C
ANISOU 5762  CD2 PHE B 454     7104   7637   8492    710   1076     60       C
ATOM   5763  C   PHE B 454      13.641  42.609  98.183  1.00 76.07           C
ANISOU 5763  C   PHE B 454     8584   9382  10935    772   1130    -47       C
ATOM   5764  O   PHE B 454      12.748  42.578  99.040  1.00 77.51           O
ANISOU 5764  O   PHE B 454     8712   9482  11258    811   1215     -4       O
ATOM   5765  N   ILE B 455      13.537  42.015  96.993  1.00 64.97           N
ANISOU 5765  N   ILE B 455     7127   8006   9554    748   1012   -110       N
ATOM   5766  CA  ILE B 455      12.310  41.316  96.640  1.00 68.07           C
ANISOU 5766  CA  ILE B 455     7390   8323  10152    766    965   -128       C
ATOM   5767  CB  ILE B 455      12.343  40.749  95.223  1.00 63.57           C
ANISOU 5767  CB  ILE B 455     6785   7797   9572    735    817   -207       C
ATOM   5768  CG1 ILE B 455      12.352  41.884  94.197  1.00 53.65           C
ANISOU 5768  CG1 ILE B 455     5594   6595   8197    717    703   -208       C
ATOM   5769  CD1 ILE B 455      12.525  41.420  92.745  1.00 58.12           C
ANISOU 5769  CD1 ILE B 455     6151   7225   8708    682    556   -288       C
ATOM   5770  CG2 ILE B 455      11.150  39.851  94.999  1.00 50.01           C
ANISOU 5770  CG2 ILE B 455     4929   5993   8079    750    773   -228       C
ATOM   5771  C   ILE B 455      12.084  40.189  97.641  1.00 81.49           C
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ANISOU 5771  C   ILE B 455     9018   9958  11988    781   1072   -114       C
ATOM   5772  O   ILE B 455      10.989  40.073  98.207  1.00 80.93           O
ANISOU 5772  O   ILE B 455     8859   9800  12090    809   1127    -74       O
ATOM   5773  N   GLN B 456      13.122  39.383  97.893  1.00 78.99           N
ANISOU 5773  N   GLN B 456     8738   9681  11595    763   1105   -144       N
ATOM   5774  CA  GLN B 456      12.990  38.327  98.906  1.00 77.07           C
ANISOU 5774  CA  GLN B 456     8442   9371  11470    775   1204   -120       C
ATOM   5775  CB  GLN B 456      14.274  37.503  99.061  1.00 54.14           C
ANISOU 5775  CB  GLN B 456     5590   6517   8464    757   1217   -160       C
ATOM   5776  CG  GLN B 456      14.635  36.706  97.822  1.00 63.60           C
ANISOU 5776  CG  GLN B 456     6754   7759   9652    736   1090   -259       C
ATOM   5777  CD  GLN B 456      13.554  35.707  97.411  1.00 67.10           C
ANISOU 5777  CD  GLN B 456     7072   8115  10306    738   1031   -288       C
ATOM   5778  OE1 GLN B 456      13.031  34.956  98.241  1.00 73.81           O
ANISOU 5778  OE1 GLN B 456     7860   8877  11308    746   1101   -248       O
ATOM   5779  NE2 GLN B 456      13.237  35.677  96.120  1.00 60.26           N
ANISOU 5779  NE2 GLN B 456     6171   7275   9448    725    897   -358       N
ATOM   5780  C   GLN B 456      12.597  38.912 100.258  1.00 81.38           C
ANISOU 5780  C   GLN B 456     9010   9866  12044    804   1348    -32       C
ATOM   5781  O   GLN B 456      11.696  38.395 100.916  1.00 82.76           O
ANISOU 5781  O   GLN B 456     9100   9960  12386    819   1419      7       O
ATOM   5782  N   SER B 457      13.258  39.994 100.657  1.00 75.15           N
ANISOU 5782  N   SER B 457     8334   9125  11093    809   1390     -3       N
ATOM   5783  CA  SER B 457      12.975  40.617 101.938  1.00 63.75           C
ANISOU 5783  CA  SER B 457     6930   7641   9652    841   1524     71       C
ATOM   5784  CB  SER B 457      13.851  41.844 102.158  1.00 57.51           C
ANISOU 5784  CB  SER B 457     6276   6910   8664    840   1535     87       C
ATOM   5785  OG  SER B 457      15.213  41.489 102.167  1.00 81.30           O
ANISOU 5785  OG  SER B 457     9365   9993  11530    809   1524     61       O
ATOM   5786  C   SER B 457      11.516  41.016 102.112  1.00 72.37           C
ANISOU 5786  C   SER B 457     7930   8655  10911    877   1555    106       C
ATOM   5787  O   SER B 457      11.007  40.910 103.231  1.00 66.10           O
ANISOU 5787  O   SER B 457     7113   7808  10193    903   1684    160       O
ATOM   5788  N   ILE B 458      10.841  41.478 101.051  1.00 75.36           N
ANISOU 5788  N   ILE B 458     8257   9032  11346    879   1441     79       N
ATOM   5789  CA  ILE B 458       9.451  41.907 101.245  1.00 86.06           C
ANISOU 5789  CA  ILE B 458     9517  10313  12870    920   1470    111       C
ATOM   5790  CB  ILE B 458       8.873  42.890 100.121  1.00 82.68           C
ANISOU 5790  CB  ILE B 458     9073   9888  12452    931   1332     91       C
ATOM   5791  CG1 ILE B 458       8.347  42.138  98.901  1.00 93.54           C
ANISOU 5791  CG1 ILE B 458    10345  11256  13941    906   1190     39       C
ATOM   5792  CD1 ILE B 458       7.782  43.035  97.813  1.00103.71           C
ANISOU 5792  CD1 ILE B 458    11624  12545  15238    914   1047     23       C
ATOM   5793  CG2 ILE B 458       9.877  44.009  99.702  1.00 48.61           C
ANISOU 5793  CG2 ILE B 458     4909   5645   7916    916   1271     85       C
ATOM   5794  C   ILE B 458       8.622  40.621 101.344  1.00 78.22           C
ANISOU 5794  C   ILE B 458     8379   9257  12084    912   1491    111       C
ATOM   5795  O   ILE B 458       7.735  40.522 102.202  1.00 79.54           O
ANISOU 5795  O   ILE B 458     8470   9362  12389    939   1603    159       O
ATOM   5796  N   LYS B 459       8.954  39.622 100.522  1.00 61.63           N
ANISOU 5796  N   LYS B 459     6244   7173  10001    873   1391     56       N
ATOM   5797  CA  LYS B 459       8.209  38.357 100.503  1.00 65.58           C
ANISOU 5797  CA  LYS B 459     6609   7606  10703    857   1388     50       C
ATOM   5798  CB  LYS B 459       8.741  37.382  99.446  1.00 52.02           C
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ANISOU 5798  CB  LYS B 459     4879   5915   8971    819   1253    -30       C
ATOM   5799  CG  LYS B 459       8.297  37.657  98.003  1.00 54.77           C
ANISOU 5799  CG  LYS B 459     5187   6281   9343    811   1081    -91       C
ATOM   5800  CD  LYS B 459       8.727  36.540  97.034  1.00 58.08           C
ANISOU 5800  CD  LYS B 459     5586   6718   9765    776    959   -177       C
ATOM   5801  CE  LYS B 459       7.770  36.429  95.846  1.00 77.51           C
ANISOU 5801  CE  LYS B 459     7951   9151  12350    769    804   -226       C
ATOM   5802  NZ  LYS B 459       8.362  35.962  94.558  1.00 89.81           N
ANISOU 5802  NZ  LYS B 459     9542  10768  13816    743    652   -325       N
ATOM   5803  C   LYS B 459       8.247  37.690 101.874  1.00 76.25           C
ANISOU 5803  C   LYS B 459     7954   8914  12103    859   1549    111       C
ATOM   5804  O   LYS B 459       7.243  37.120 102.301  1.00 85.89           O
ANISOU 5804  O   LYS B 459     9057  10063  13515    859   1607    147       O
ATOM   5805  N   VAL B 460       9.367  37.769 102.591  1.00 75.76           N
ANISOU 5805  N   VAL B 460     8016   8896  11874    856   1623    128       N
ATOM   5806  CA  VAL B 460       9.349  37.180 103.932  1.00 81.90           C
ANISOU 5806  CA  VAL B 460     8795   9631  12693    858   1775    194       C
ATOM   5807  CB  VAL B 460      10.765  36.948 104.540  1.00 61.02           C
ANISOU 5807  CB  VAL B 460     6285   7034   9867    846   1817    198       C
ATOM   5808  CG1 VAL B 460      11.786  36.688 103.465  1.00 78.15           C
ANISOU 5808  CG1 VAL B 460     8499   9268  11928    823   1679    117       C
ATOM   5809  CG2 VAL B 460      11.178  38.082 105.465  1.00 71.48           C
ANISOU 5809  CG2 VAL B 460     7728   8392  11038    875   1920    244       C
ATOM   5810  C   VAL B 460       8.531  38.041 104.900  1.00 78.38           C
ANISOU 5810  C   VAL B 460     8339   9156  12287    897   1912    262       C
ATOM   5811  O   VAL B 460       7.969  37.513 105.849  1.00 74.90           O
ANISOU 5811  O   VAL B 460     7844   8664  11951    898   2036    321       O
ATOM   5812  N   ILE B 461       8.453  39.354 104.680  1.00 76.52           N
ANISOU 5812  N   ILE B 461     8154   8952  11968    931   1894    254       N
ATOM   5813  CA  ILE B 461       7.667  40.182 105.587  1.00 79.01           C
ANISOU 5813  CA  ILE B 461     8458   9237  12325    979   2022    306       C
ATOM   5814  CB  ILE B 461       7.908  41.653 105.371  1.00 81.52           C
ANISOU 5814  CB  ILE B 461     8872   9591  12512   1015   1988    291       C
ATOM   5815  CG1 ILE B 461       9.342  41.995 105.763  1.00 83.32           C
ANISOU 5815  CG1 ILE B 461     9271   9880  12507   1001   2002    289       C
ATOM   5816  CD1 ILE B 461       9.714  43.452 105.535  1.00 76.09           C
ANISOU 5816  CD1 ILE B 461     8465   8997  11449   1025   1957    277       C
ATOM   5817  CG2 ILE B 461       6.921  42.455 106.202  1.00 62.75           C
ANISOU 5817  CG2 ILE B 461     6459   7172  10211   1074   2111    331       C
ATOM   5818  C   ILE B 461       6.183  39.891 105.406  1.00 81.58           C
ANISOU 5818  C   ILE B 461     8607   9498  12893    991   2033    320       C
ATOM   5819  O   ILE B 461       5.475  39.573 106.356  1.00 71.59           O
ANISOU 5819  O   ILE B 461     7274   8190  11737   1002   2173    374       O
ATOM   5820  N   ASN B 462       5.743  39.984 104.161  1.00 80.45           N
ANISOU 5820  N   ASN B 462     8390   9350  12828    985   1879    270       N
ATOM   5821  CA  ASN B 462       4.415  39.584 103.770  1.00 71.41           C
ANISOU 5821  CA  ASN B 462     7067   8144  11921    987   1849    272       C
ATOM   5822  CB  ASN B 462       4.350  39.458 102.255  1.00 64.46           C
ANISOU 5822  CB  ASN B 462     6147   7273  11073    964   1644    204       C
ATOM   5823  CG  ASN B 462       4.160  40.788 101.601  1.00 72.67           C
ANISOU 5823  CG  ASN B 462     7224   8334  12053   1003   1555    183       C
ATOM   5824  OD1 ASN B 462       3.933  41.765 102.296  1.00 66.18           O
ANISOU 5824  OD1 ASN B 462     6438   7508  11201   1053   1649    217       O
ATOM   5825  ND2 ASN B 462       4.237  40.845 100.273  1.00 86.42           N
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ANISOU 5825  ND2 ASN B 462     8963  10097  13778    983   1373    128       N
ATOM   5826  C   ASN B 462       3.992  38.292 104.415  1.00 90.50           C
ANISOU 5826  C   ASN B 462     9386  10511  14490    952   1940    312       C
ATOM   5827  O   ASN B 462       2.889  38.192 104.963  1.00113.10           O
ANISOU 5827  O   ASN B 462    12124  13324  17526    967   2038    357       O
ATOM   5828  N   ALA B 463       4.882  37.310 104.365  1.00 80.69           N
ANISOU 5828  N   ALA B 463     8198   9279  13182    906   1910    299       N
ATOM   5829  CA  ALA B 463       4.603  35.993 104.917  1.00 81.27           C
ANISOU 5829  CA  ALA B 463     8192   9296  13392    865   1977    339       C
ATOM   5830  CB  ALA B 463       5.665  34.998 104.485  1.00 86.67           C
ANISOU 5830  CB  ALA B 463     8940   9992  14000    822   1884    296       C
ATOM   5831  C   ALA B 463       4.527  36.061 106.427  1.00 79.77           C
ANISOU 5831  C   ALA B 463     8037   9095  13176    878   2182    424       C
ATOM   5832  O   ALA B 463       3.731  35.357 107.051  1.00 83.71           O
ANISOU 5832  O   ALA B 463     8430   9540  13838    856   2281    482       O
ATOM   5833  N   ILE B 464       5.357  36.910 107.016  1.00 77.23           N
ANISOU 5833  N   ILE B 464     7867   8829  12649    910   2247    433       N
ATOM   5834  CA  ILE B 464       5.314  37.094 108.459  1.00 92.16           C
ANISOU 5834  CA  ILE B 464     9810  10716  14489    928   2441    508       C
ATOM   5835  CB  ILE B 464       6.570  37.844 108.969  1.00 81.94           C
ANISOU 5835  CB  ILE B 464     8711   9484  12937    950   2469    503       C
ATOM   5836  CG1 ILE B 464       7.774  36.912 108.914  1.00 78.01           C
ANISOU 5836  CG1 ILE B 464     8298   9003  12341    905   2411    492       C
ATOM   5837  CD1 ILE B 464       9.110  37.551 109.311  1.00 85.32           C
ANISOU 5837  CD1 ILE B 464     9406   9992  13021    919   2416    482       C
ATOM   5838  CG2 ILE B 464       6.398  38.269 110.404  1.00 79.66           C
ANISOU 5838  CG2 ILE B 464     8481   9196  12589    981   2663    570       C
ATOM   5839  C   ILE B 464       4.032  37.817 108.924  1.00110.20           C
ANISOU 5839  C   ILE B 464    11994  12979  16898    974   2554    541       C
ATOM   5840  O   ILE B 464       3.503  37.470 109.980  1.00118.17           O
ANISOU 5840  O   ILE B 464    12961  13964  17973    970   2717    610       O
ATOM   5841  N   ILE B 465       3.499  38.780 108.162  1.00109.96           N
ANISOU 5841  N   ILE B 465    11918  12956  16906   1016   2473    495       N
ATOM   5842  CA  ILE B 465       2.255  39.417 108.624  1.00113.20           C
ANISOU 5842  CA  ILE B 465    12217  13341  17451   1067   2583    521       C
ATOM   5843  CB  ILE B 465       1.872  40.773 107.883  1.00102.65           C
ANISOU 5843  CB  ILE B 465    10877  12015  16111   1131   2489    468       C
ATOM   5844  CG1 ILE B 465       1.587  40.589 106.385  1.00105.53           C
ANISOU 5844  CG1 ILE B 465    11155  12365  16579   1108   2278    413       C
ATOM   5845  CD1 ILE B 465       1.340  41.918 105.640  1.00 87.85           C
ANISOU 5845  CD1 ILE B 465     8934  10134  14311   1166   2169    369       C
ATOM   5846  CG2 ILE B 465       2.920  41.856 108.119  1.00 94.67           C
ANISOU 5846  CG2 ILE B 465    10064  11054  14854   1165   2486    448       C
ATOM   5847  C   ILE B 465       1.101  38.426 108.495  1.00106.04           C
ANISOU 5847  C   ILE B 465    11109  12377  16806   1031   2600    550       C
ATOM   5848  O   ILE B 465       0.216  38.397 109.340  1.00111.66           O
ANISOU 5848  O   ILE B 465    11726  13067  17632   1046   2758    603       O
ATOM   5849  N   LYS B 466       1.124  37.592 107.464  1.00 93.04           N
ANISOU 5849  N   LYS B 466     9395  10705  15252    980   2441    515       N
ATOM   5850  CA  LYS B 466       0.007  36.679 107.236  1.00 94.23           C
ANISOU 5850  CA  LYS B 466     9347  10792  15663    940   2433    537       C
ATOM   5851  CB  LYS B 466       0.032  36.159 105.790  1.00 90.91           C
ANISOU 5851  CB  LYS B 466     8871  10350  15319    904   2207    468       C
ATOM   5852  CG  LYS B 466      -0.650  34.813 105.541  1.00 80.89           C
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ANISOU 5852  CG  LYS B 466     7445   9011  14278    837   2168    485       C
ATOM   5853  CD  LYS B 466       -0.798  34.508 104.037  1.00 91.00           C
ANISOU 5853  CD  LYS B 466     8663  10271  15642    816   1934    403       C
ATOM   5854  CE  LYS B 466       -1.401  33.113 103.798  1.00100.90           C
ANISOU 5854  CE  LYS B 466     9772  11445  17119    744   1883    415       C
ATOM   5855  NZ  LYS B 466       -1.458  32.741 102.353  1.00106.23           N
ANISOU 5855  NZ  LYS B 466    10405  12101  17857    722   1651    326       N
ATOM   5856  C   LYS B 466       -0.009  35.516 108.250  1.00102.16           C
ANISOU 5856  C   LYS B 466    10328  11764  16724    884   2574    617       C
ATOM   5857  O   LYS B 466       -1.076  34.967 108.549  1.00119.34           O
ANISOU 5857  O   LYS B 466    12341  13893  19111    857   2649    665       O
ATOM   5858  N   LYS B 467        1.137  35.158 108.819  1.00 97.27           N
ANISOU 5858  N   LYS B 467     9866  11168  15923    863   2614    637       N
ATOM   5859  CA  LYS B 467        1.139  34.082 109.815  1.00 92.77           C
ANISOU 5859  CA  LYS B 467     9286  10562  15398    809   2743    721       C
ATOM   5860  CB  LYS B 467        2.364  33.161 109.661  1.00 69.17           C
ANISOU 5860  CB  LYS B 467     6416   7568  12299    763   2654    708       C
ATOM   5861  C   LYS B 467        1.095  34.634 111.231  1.00 93.11           C
ANISOU 5861  C   LYS B 467     9401  10637  15338    841   2963    792       C
ATOM   5862  O   LYS B 467        0.729  33.926 112.161  1.00108.40           O
ANISOU 5862  O   LYS B 467    11299  12547  17343    802   3106    877       O
ATOM   5863  N   TYR B 468        1.479  35.889 111.407  1.00 78.89           N
ANISOU 5863  N   TYR B 468     7712   8893  13369    910   2990    759       N
ATOM   5864  CA  TYR B 468        1.725  36.380 112.761  1.00 93.64           C
ANISOU 5864  CA  TYR B 468     9694  10796  15090    941   3182    814       C
ATOM   5865  CB  TYR B 468        3.240  36.585 113.010  1.00 89.15           C
ANISOU 5865  CB  TYR B 468     9345  10271  14259    945   3143    797       C
ATOM   5866  CG  TYR B 468        4.055  35.309 113.230  1.00106.73           C
ANISOU 5866  CG  TYR B 468    11630  12474  16450    876   3113    835       C
ATOM   5867  CD1 TYR B 468        4.021  34.262 112.309  1.00112.45           C
ANISOU 5867  CD1 TYR B 468    12263  13152  17313    822   2971    812       C
ATOM   5868  CE1 TYR B 468        4.752  33.108 112.495  1.00110.00           C
ANISOU 5868  CE1 TYR B 468    12004  12810  16980    767   2937    841       C
ATOM   5869  CZ  TYR B 468        5.550  32.986 113.609  1.00114.11           C
ANISOU 5869  CZ  TYR B 468    12672  13348  17336    764   3039    900       C
ATOM   5870  OH  TYR B 468        6.279  31.833 113.781  1.00123.57           O
ANISOU 5870  OH  TYR B 468    13920  14509  18521    714   2993    929       O
ATOM   5871  CE2 TYR B 468        5.615  34.007 114.546  1.00107.50           C
ANISOU 5871  CE2 TYR B 468    11934  12563  16351    813   3179    926       C
ATOM   5872  CD2 TYR B 468        4.873  35.162 114.349  1.00107.16           C
ANISOU 5872  CD2 TYR B 468    11837  12547  16331    870   3217    890       C
ATOM   5873  C   TYR B 468        0.964  37.676 113.041  1.00 96.85           C
ANISOU 5873  C   TYR B 468    10066  11228  15503   1022   3275    796       C
ATOM   5874  O   TYR B 468        0.823  38.085 114.191  1.00 88.05           O
ANISOU 5874  O   TYR B 468     9004  10137  14312   1054   3457    840       O
ATOM   5875  N   GLY B 469        0.465  38.312 111.990  1.00 98.86           N
ANISOU 5875  N   GLY B 469    10234  11476  15850   1058   3147    730       N
ATOM   5876  CA  GLY B 469       -0.195  39.592 112.137  1.00 98.13           C
ANISOU 5876  CA  GLY B 469    10116  11401  15770   1143   3206    702       C
ATOM   5877  C   GLY B 469        0.793  40.730 111.985  1.00103.49           C
ANISOU 5877  C   GLY B 469    10983  12120  16219   1193   3137    648       C
ATOM   5878  O   GLY B 469        1.951  40.521 111.631  1.00121.19           O
ANISOU 5878  O   GLY B 469    13356  14382  18307   1159   3032    629       O
ATOM   5879  O   LEU B 470        1.710  42.911 114.515  1.00103.06           O
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ANISOU 5879  O   LEU B 470    11281  12143  15735   1331   3457    660       O
ATOM   5880  N   LEU B 470       0.335  41.943 112.249  1.00 94.85           N
ANISOU 5880  N   LEU B 470     9897  11035  15107   1275   3196    623       N
ATOM   5881  CA  LEU B 470       1.198  43.104 112.175  1.00 94.81           C
ANISOU 5881  CA  LEU B 470    10070  11060  14895   1323   3136    577       C
ATOM   5882  C   LEU B 470       2.123  43.199 113.385  1.00102.04           C
ANISOU 5882  C   LEU B 470    11169  12010  15591   1324   3268    609       C
ATOM   5883  CB  LEU B 470       0.370  44.371 112.061  1.00100.63           C
ANISOU 5883  CB  LEU B 470    10756  11782  15698   1415   3146    536       C
ATOM   5884  CG  LEU B 470      -0.034  44.826 110.664  1.00101.91           C
ANISOU 5884  CG  LEU B 470    10833  11918  15970   1430   2944    483       C
ATOM   5885  CD1 LEU B 470      -0.717  43.719 109.886  1.00 92.76           C
ANISOU 5885  CD1 LEU B 470     9489  10730  15025   1371   2864    494       C
ATOM   5886  CD2 LEU B 470      -0.951  46.026 110.801  1.00111.49           C
ANISOU 5886  CD2 LEU B 470    11989  13108  17266   1530   2986    453       C
ATOM   5887  O   PRO B 471       3.888  46.226 113.863  1.00 78.45           O
ANISOU 5887  O   PRO B 471     8603   9072  12132   1447   3208    513       O
ATOM   5888  N   PRO B 471       3.386  43.587 113.142  1.00 97.17           N
ANISOU 5888  N   PRO B 471    10728  11423  14770   1311   3165    580       N
ATOM   5889  CA  PRO B 471       4.362  43.890 114.189  1.00 87.04           C
ANISOU 5889  CA  PRO B 471     9637  10173  13262   1318   3256    599       C
ATOM   5890  C   PRO B 471       4.293  45.345 114.631  1.00 92.70           C
ANISOU 5890  C   PRO B 471    10448  10895  13879   1402   3304    562       C
ATOM   5891  CB  PRO B 471       5.700  43.600 113.510  1.00 94.71           C
ANISOU 5891  CB  PRO B 471    10721  11171  14093   1261   3096    577       C
ATOM   5892  CG  PRO B 471       5.458  43.909 112.078  1.00 91.65           C
ANISOU 5892  CG  PRO B 471    10254  10774  13796   1260   2915    524       C
ATOM   5893  CD  PRO B 471       4.008  43.564 111.804  1.00 96.22           C
ANISOU 5893  CD  PRO B 471    10625  11309  14625   1275   2949    533       C
ATOM   5894  N   ASN B 472       4.680  45.581 115.877  1.00 99.42           N
ANISOU 5894  N   ASN B 472    11428  11766  14581   1424   3449    586       N
ATOM   5895  CA  ASN B 472       4.871  46.928 116.376  1.00 98.36           C
ANISOU 5895  CA  ASN B 472    11424  11636  14313   1498   3485    546       C
ATOM   5896  CB  ASN B 472       5.268  46.906 117.853  1.00110.40           C
ANISOU 5896  CB  ASN B 472    13086  13185  15677   1511   3658    581       C
ATOM   5897  CG  ASN B 472       4.081  46.712 118.785  1.00111.49           C
ANISOU 5897  CG  ASN B 472    13119  13319  15925   1554   3872    612       C
ATOM   5898  OD1 ASN B 472       3.870  45.629 119.334  1.00122.14           O
ANISOU 5898  OD1 ASN B 472    14413  14677  17317   1504   3979    679       O
ATOM   5899  ND2 ASN B 472       3.323  47.772 118.991  1.00102.36           N
ANISOU 5899  ND2 ASN B 472    11935  12147  14809   1646   3936    565       N
ATOM   5900  C   ASN B 472       5.951  47.600 115.563  1.00106.07           C
ANISOU 5900  C   ASN B 472    12527  12622  15153   1481   3298    503       C
ATOM   5901  O   ASN B 472       5.704  48.564 114.844  1.00101.53           O
ANISOU 5901  O   ASN B 472    11942  12026  14609   1522   3197    455       O
ATOM   5902  N   ASP B 473       7.156  47.046 115.668  1.00112.16           N
ANISOU 5902  N   ASP B 473    13414  13426  15776   1416   3250    523       N
ATOM   5903  CA  ASP B 473       8.327  47.601 115.012  1.00112.98           C
ANISOU 5903  CA  ASP B 473    13645  13551  15730   1389   3089    489       C
ATOM   5904  CB  ASP B 473       9.374  47.975 116.060  1.00109.47           C
ANISOU 5904  CB  ASP B 473    13398  13132  15064   1389   3146    498       C
ATOM   5905  CG  ASP B 473       8.854  48.983 117.058  1.00114.35           C
ANISOU 5905  CG  ASP B 473    14082  13729  15636   1472   3277    483       C
ATOM   5906  OD1 ASP B 473       7.790  49.584 116.795  1.00117.49           O
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ANISOU 5906  OD1 ASP B 473    14382  14092  16165   1534   3299    455       O
ATOM   5907  OD2 ASP B 473       9.521  49.194 118.092  1.00115.85           O
ANISOU 5907  OD2 ASP B 473    14425  13935  15657   1478   3352    493       O
ATOM   5908  C   ASP B 473       8.948  46.655 113.984  1.00107.66           C
ANISOU 5908  C   ASP B 473    12926  12901  15081   1309   2946    490       C
ATOM   5909  O   ASP B 473       9.048  45.453 114.215  1.00113.85           O
ANISOU 5909  O   ASP B 473    13662  13690  15905   1263   2986    528       O
ATOM   5910  N   ILE B 474       9.350  47.214 112.844  1.00 95.41           N
ANISOU 5910  N   ILE B 474    11390  11360  13502   1294   2780    448       N
ATOM   5911  CA  ILE B 474      10.206  46.523 111.890  1.00 85.17           C
ANISOU 5911  CA  ILE B 474    10090  10098  12171   1222   2640    436       C
ATOM   5912  CB  ILE B 474       9.640  46.526 110.472  1.00 80.73           C
ANISOU 5912  CB  ILE B 474     9406   9527  11741   1211   2499    403       C
ATOM   5913  CG1 ILE B 474       8.256  45.887 110.411  1.00 77.23           C
ANISOU 5913  CG1 ILE B 474     8781   9039  11526   1232   2557    418       C
ATOM   5914  CD1 ILE B 474       7.712  45.836 108.963  1.00 71.21           C
ANISOU 5914  CD1 ILE B 474     7899   8265  10893   1218   2399    382       C
ATOM   5915  CG2 ILE B 474      10.579  45.779 109.531  1.00 78.07           C
ANISOU 5915  CG2 ILE B 474     9076   9236  11352   1140   2365    383       C
ATOM   5916  C   ILE B 474      11.561  47.211 111.840  1.00 82.85           C
ANISOU 5916  C   ILE B 474     9966   9848  11667   1198   2561    418       C
ATOM   5917  O   ILE B 474      11.654  48.335 111.368  1.00 87.87           O
ANISOU 5917  O   ILE B 474    10656  10480  12250   1216   2482    390       O
ATOM   5918  N   ILE B 475      12.604  46.552 112.329  1.00 76.65           N
ANISOU 5918  N   ILE B 475     9260   9098  10766   1155   2576    436       N
ATOM   5919  CA  ILE B 475      13.945  47.118 112.254  1.00 78.41           C
ANISOU 5919  CA  ILE B 475     9628   9366  10797   1124   2496    419       C
ATOM   5920  CB  ILE B 475      14.613  47.140 113.628  1.00 70.92           C
ANISOU 5920  CB  ILE B 475     8813   8424   9710   1131   2600    449       C
ATOM   5921  CG1 ILE B 475      16.039  47.677 113.492  1.00 72.42           C
ANISOU 5921  CG1 ILE B 475     9139   8661   9715   1091   2504    431       C
ATOM   5922  CD1 ILE B 475      16.696  48.010 114.801  1.00 69.12           C
ANISOU 5922  CD1 ILE B 475     8872   8245   9147   1104   2583    453       C
ATOM   5923  CG2 ILE B 475      14.574  45.765 114.259  1.00 59.72           C
ANISOU 5923  CG2 ILE B 475     7347   7001   8343   1112   2685    490       C
ATOM   5924  C   ILE B 475      14.828  46.351 111.249  1.00 73.87           C
ANISOU 5924  C   ILE B 475     9026   8843  10199   1057   2369    398       C
ATOM   5925  O   ILE B 475      14.892  45.117 111.256  1.00 71.45           O
ANISOU 5925  O   ILE B 475     8651   8540   9956   1031   2383    409       O
ATOM   5926  N   ILE B 476      15.496  47.086 110.371  1.00 67.11           N
ANISOU 5926  N   ILE B 476     8221   8026   9253   1029   2244    366       N
ATOM   5927  CA  ILE B 476      16.211  46.452 109.266  1.00 65.87           C
ANISOU 5927  CA  ILE B 476     8024   7925   9079    971   2124    335       C
ATOM   5928  CB  ILE B 476      15.560  46.834 107.948  1.00 62.60           C
ANISOU 5928  CB  ILE B 476     7529   7509   8748    967   2016    306       C
ATOM   5929  CG1 ILE B 476      14.061  46.567 108.033  1.00 76.59           C
ANISOU 5929  CG1 ILE B 476     9174   9212  10713   1015   2074    317       C
ATOM   5930  CD1 ILE B 476      13.304  47.012 106.815  1.00 80.92           C
ANISOU 5930  CD1 ILE B 476     9643   9748  11354   1020   1964    291       C
ATOM   5931  CG2 ILE B 476      16.124  46.014 106.841  1.00 69.72           C
ANISOU 5931  CG2 ILE B 476     8374   8467   9648    914   1908    269       C
ATOM   5932  C   ILE B 476      17.710  46.793 109.209  1.00 66.61           C
ANISOU 5932  C   ILE B 476     8237   8086   8987    924   2060    323       C
ATOM   5933  O   ILE B 476      18.106  47.934 109.460  1.00 60.10           O
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ANISOU 5933  O   ILE B 476     7521   7265   8049    926   2047    328       O
ATOM   5934  N   GLU B 477      18.534  45.792 108.891  1.00 56.05           N
ANISOU 5934  N   GLU B 477     6874   6798   7625    883   2019    306       N
ATOM   5935  CA  GLU B 477      19.969  46.000 108.653  1.00 61.33           C
ANISOU 5935  CA  GLU B 477     7626   7542   8135    834   1948    287       C
ATOM   5936  CB  GLU B 477      20.850  45.363 109.733  1.00 58.34           C
ANISOU 5936  CB  GLU B 477     7309   7173   7683    830   2007    308       C
ATOM   5937  CG  GLU B 477      22.329  45.716 109.568  1.00 64.93           C
ANISOU 5937  CG  GLU B 477     8227   8086   8359    782   1936    290       C
ATOM   5938  CD  GLU B 477      23.282  44.716 110.229  1.00 86.60           C
ANISOU 5938  CD  GLU B 477    10989  10852  11063    771   1955    294       C
ATOM   5939  OE1 GLU B 477      23.638  44.923 111.391  1.00 82.51           O
ANISOU 5939  OE1 GLU B 477    10566  10313  10472    785   2013    330       O
ATOM   5940  OE2 GLU B 477      23.706  43.728 109.586  1.00116.90           O
ANISOU 5940  OE2 GLU B 477    14749  14728  14939    752   1904    260       O
ATOM   5941  C   GLU B 477      20.329  45.412 107.315  1.00 63.97           C
ANISOU 5941  C   GLU B 477     7881   7938   8488    792   1841    239       C
ATOM   5942  O   GLU B 477      19.936  44.291 106.988  1.00 81.04           O
ANISOU 5942  O   GLU B 477     9941  10087  10763    797   1838    221       O
ATOM   5943  N   LEU B 478      21.087  46.166 106.542  1.00 56.91           N
ANISOU 5943  N   LEU B 478     7036   7109   7479    750   1752    218       N
ATOM   5944  CA  LEU B 478      21.389  45.784 105.178  1.00 52.82           C
ANISOU 5944  CA  LEU B 478     6451   6659   6959    709   1650    169       C
ATOM   5945  CB  LEU B 478      20.725  46.767 104.212  1.00 54.45           C
ANISOU 5945  CB  LEU B 478     6653   6862   7175    701   1576    168       C
ATOM   5946  CG  LEU B 478      20.417  46.359 102.763  1.00 82.78           C
ANISOU 5946  CG  LEU B 478    10152  10489  10811    677   1477    122       C
ATOM   5947  CD1 LEU B 478      19.892  47.598 102.086  1.00 76.92           C
ANISOU 5947  CD1 LEU B 478     9445   9735  10048    669   1408    141       C
ATOM   5948  CD2 LEU B 478      21.593  45.722 101.924  1.00 69.97           C
ANISOU 5948  CD2 LEU B 478     8516   8977   9094    624   1413     69       C
ATOM   5949  C   LEU B 478      22.922  45.723 105.025  1.00 50.04           C
ANISOU 5949  C   LEU B 478     6152   6402   6460    658   1610    147       C
ATOM   5950  O   LEU B 478      23.650  46.466 105.674  1.00 65.77           O
ANISOU 5950  O   LEU B 478     8244   8408   8338    643   1627    174       O
ATOM   5951  N   ALA B 479      23.414  44.795 104.216  1.00 54.93           N
ANISOU 5951  N   ALA B 479     6701   7084   7087    635   1558     94       N
ATOM   5952  CA  ALA B 479      24.858  44.482 104.219  1.00 54.88           C
ANISOU 5952  CA  ALA B 479     6720   7165   6966    599   1537     67       C
ATOM   5953  CB  ALA B 479      25.103  43.327 103.359  1.00 40.81           C
ANISOU 5953  CB  ALA B 479     4842   5432   5231    594   1492      0       C
ATOM   5954  C   ALA B 479      25.752  45.649 103.790  1.00 52.01           C
ANISOU 5954  C   ALA B 479     6435   6881   6446    541   1486     74       C
ATOM   5955  O   ALA B 479      25.321  46.544 103.056  1.00 49.94           O
ANISOU 5955  O   ALA B 479     6190   6625   6159    518   1437     84       O
ATOM   5956  N   ARG B 480      26.994  45.660 104.268  1.00 64.36           N
ANISOU 5956  N   ARG B 480     8046   8500   7907    514   1491     74       N
ATOM   5957  CA  ARG B 480      27.928  46.700 103.846  1.00 66.10           C
ANISOU 5957  CA  ARG B 480     8331   8802   7983    448   1441     82       C
ATOM   5958  CB  ARG B 480      29.161  46.748 104.742  1.00 73.37           C
ANISOU 5958  CB  ARG B 480     9309   9755   8812    428   1461     94       C
ATOM   5959  CG  ARG B 480      28.903  47.275 106.170  1.00105.63           C
ANISOU 5959  CG  ARG B 480    13494  13747  12893    462   1521    152       C
ATOM   5960  CD  ARG B 480      27.714  48.252 106.288  1.00119.74           C
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ANISOU 5960  CD  ARG B 480    15331  15447  14717    486   1537    191       C
ATOM   5961  NE  ARG B 480      28.054  49.613 105.868  1.00127.88           N
ANISOU 5961  NE  ARG B 480    16440  16504  15646    430   1480    214       N
ATOM   5962  CZ  ARG B 480      27.294  50.682 106.092  1.00115.25           C
ANISOU 5962  CZ  ARG B 480    14910  14828  14053    446   1482    249       C
ATOM   5963  NH1 ARG B 480      27.681  51.881 105.662  1.00107.59           N
ANISOU 5963  NH1 ARG B 480    14011  13877  12990    389   1418    272       N
ATOM   5964  NH2 ARG B 480      26.152  50.545 106.756  1.00110.19           N
ANISOU 5964  NH2 ARG B 480    14264  14090  13513    520   1549    263       N
ATOM   5965  C   ARG B 480      28.328  46.446 102.402  1.00 64.89           C
ANISOU 5965  C   ARG B 480     8110   8755   7791    402   1372     27       C
ATOM   5966  O   ARG B 480      28.407  47.369 101.592  1.00 69.81           O
ANISOU 5966  O   ARG B 480     8764   9424   8335    350   1318     39       O
ATOM   5967  N   GLU B 481      28.534  45.179 102.073  1.00 56.43           N
ANISOU 5967  N   GLU B 481     6948   7717   6776    424   1371    -34       N
ATOM   5968  CA  GLU B 481      29.079  44.809 100.774  1.00 67.70           C
ANISOU 5968  CA  GLU B 481     8312   9259   8154    386   1314   -101       C
ATOM   5969  CB  GLU B 481      29.678  43.402 100.856  1.00 86.60           C
ANISOU 5969  CB  GLU B 481    10626  11683  10597    418   1326   -169       C
ATOM   5970  CG  GLU B 481      28.647  42.299 101.207  1.00 90.18           C
ANISOU 5970  CG  GLU B 481    11018  12028  11217    488   1351   -183       C
ATOM   5971  CD  GLU B 481      28.377  42.118 102.715  1.00 85.44           C
ANISOU 5971  CD  GLU B 481    10461  11320  10681    531   1422   -121       C
ATOM   5972  OE1 GLU B 481      28.340  43.124 103.463  1.00 82.50           O
ANISOU 5972  OE1 GLU B 481    10178  10916  10252    520   1453    -55       O
ATOM   5973  OE2 GLU B 481      28.178  40.951 103.142  1.00 74.60           O
ANISOU 5973  OE2 GLU B 481     9037   9892   9414    576   1444   -140       O
ATOM   5974  C   GLU B 481      28.005  44.887  99.689  1.00 61.40           C
ANISOU 5974  C   GLU B 481     7474   8446   7408    387   1265   -118       C
ATOM   5975  O   GLU B 481      26.817  44.674  99.960  1.00 65.36           O
ANISOU 5975  O   GLU B 481     7955   8844   8033    436   1281   -100       O
ATOM   5976  N   LYS B 482      28.398  45.202  98.459  1.00 58.45           N
ANISOU 5976  N   LYS B 482     7090   8178   6940    332   1205   -150       N
ATOM   5977  CA  LYS B 482      27.392  45.346  97.414  1.00 71.55           C
ANISOU 5977  CA  LYS B 482     8724   9825   8638    330   1146   -162       C
ATOM   5978  CB  LYS B 482      27.752  46.469  96.433  1.00 76.15           C
ANISOU 5978  CB  LYS B 482     9363  10496   9077    252   1086   -138       C
ATOM   5979  CG  LYS B 482      26.551  46.912  95.543  1.00104.29           C
ANISOU 5979  CG  LYS B 482    12927  14016  12681    252   1015   -123       C
ATOM   5980  CD  LYS B 482      25.294  47.307  96.361  1.00 99.91           C
ANISOU 5980  CD  LYS B 482    12392  13310  12260    310   1035    -65       C
ATOM   5981  CE  LYS B 482      25.450  48.644  97.114  1.00 98.88           C
ANISOU 5981  CE  LYS B 482    12367  13134  12069    289   1053     18       C
ATOM   5982  NZ  LYS B 482      24.467  48.821  98.249  1.00 85.27           N
ANISOU 5982  NZ  LYS B 482    10655  11270  10472    360   1108     60       N
ATOM   5983  C   LYS B 482      27.235  44.009  96.708  1.00 67.94           C
ANISOU 5983  C   LYS B 482     8167   9395   8253    361   1124   -253       C
ATOM   5984  O   LYS B 482      26.189  43.701  96.130  1.00 67.40           O
ANISOU 5984  O   LYS B 482     8055   9278   8275    386   1083   -273       O
ATOM   5985  N   ASN B 483      28.270  43.191  96.815  1.00 55.66           N
ANISOU 5985  N   ASN B 483     6572   7908   6667    365   1147   -311       N
ATOM   5986  CA  ASN B 483      28.237  41.868  96.230  1.00 62.28           C
ANISOU 5986  CA  ASN B 483     7320   8768   7575    401   1126   -406       C
ATOM   5987  CB  ASN B 483      28.435  41.970  94.731  1.00 60.91           C
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ANISOU 5987  CB  ASN B 483     7127   8713   7304    357   1060   -469       C
ATOM   5988  CG  ASN B 483      29.744  42.633  94.369  1.00 64.03           C
ANISOU 5988  CG  ASN B 483     7557   9251   7520    289   1067   -469       C
ATOM   5989  OD1 ASN B 483      30.775  42.458  95.042  1.00 64.03           O
ANISOU 5989  OD1 ASN B 483     7553   9288   7485    288   1113   -473       O
ATOM   5990  ND2 ASN B 483      29.711  43.419  93.307  1.00 76.32           N
ANISOU 5990  ND2 ASN B 483     9147  10889   8963    227   1018   -460       N
ATOM   5991  C   ASN B 483      29.309  40.991  96.863  1.00 60.48           C
ANISOU 5991  C   ASN B 483     7059   8571   7351    425   1167   -450       C
ATOM   5992  O   ASN B 483      30.054  41.473  97.701  1.00 63.66           O
ANISOU 5992  O   ASN B 483     7510   8984   7693    409   1207   -401       O
ATOM   5993  N   SER B 484      29.442  39.743  96.422  1.00 58.88           N
ANISOU 5993  N   SER B 484     6776   8384   7212    463   1148   -544       N
ATOM   5994  CA  SER B 484      30.232  38.780  97.183  1.00 66.52           C
ANISOU 5994  CA  SER B 484     7707   9340   8226    504   1181   -578       C
ATOM   5995  CB  SER B 484      29.887  37.333  96.787  1.00 49.69           C
ANISOU 5995  CB  SER B 484     5489   7167   6222    561   1150   -672       C
ATOM   5996  OG  SER B 484      30.354  36.998  95.503  1.00 66.57           O
ANISOU 5996  OG  SER B 484     7580   9423   8291    549   1103   -779       O
ATOM   5997  C   SER B 484      31.739  38.985  97.085  1.00 65.87           C
ANISOU 5997  C   SER B 484     7625   9392   8010    472   1193   -610       C
ATOM   5998  O   SER B 484      32.464  38.708  98.036  1.00 86.63           O
ANISOU 5998  O   SER B 484     10259  12005  10650    492   1225   -594       O
ATOM   5999  N   LYS B 485      32.249  39.471  95.974  1.00 70.88           N
ANISOU 5999  N   LYS B 485     8254  10161   8515    419   1167   -651       N
ATOM   6000  CA  LYS B 485      33.688  39.622  95.972  1.00 82.94           C
ANISOU 6000  CA  LYS B 485     9768  11815   9930    388   1187   -678       C
ATOM   6001  CB  LYS B 485      34.269  39.228  94.613  1.00102.45           C
ANISOU 6001  CB  LYS B 485    12174  14434  12318    371   1162   -789       C
ATOM   6002  CG  LYS B 485      33.795  37.814  94.202  1.00115.93           C
ANISOU 6002  CG  LYS B 485    13805  16094  14149    448   1132   -897       C
ATOM   6003  CD  LYS B 485      34.308  36.712  95.163  1.00112.61           C
ANISOU 6003  CD  LYS B 485    13336  15607  13843    520   1151   -932       C
ATOM   6004  CE  LYS B 485      33.291  35.557  95.258  1.00117.22           C
ANISOU 6004  CE  LYS B 485    13883  16054  14601    591   1120   -972       C
ATOM   6005  NZ  LYS B 485      32.436  35.424  94.034  1.00102.77           N
ANISOU 6005  NZ  LYS B 485    12035  14240  12774    584   1070  -1032       N
ATOM   6006  C   LYS B 485      34.109  41.030  96.432  1.00 74.99           C
ANISOU 6006  C   LYS B 485     8846  10838   8810    317   1207   -576       C
ATOM   6007  O   LYS B 485      35.268  41.237  96.796  1.00 71.82           O
ANISOU 6007  O   LYS B 485     8441  10510   8336    290   1228   -573       O
ATOM   6008  N   ASP B 486      33.178  41.978  96.498  1.00 57.24           N
ANISOU 6008  N   ASP B 486     6671   8519   6557    290   1197   -492       N
ATOM   6009  CA  ASP B 486      33.458  43.140  97.324  1.00 71.52           C
ANISOU 6009  CA  ASP B 486     8568  10305   8303    246   1218   -392       C
ATOM   6010  CB  ASP B 486      32.322  44.162  97.272  1.00 86.09           C
ANISOU 6010  CB  ASP B 486    10490  12067  10155    226   1199   -312       C
ATOM   6011  CG  ASP B 486      32.553  45.336  98.216  1.00 96.47           C
ANISOU 6011  CG  ASP B 486    11902  13337  11415    191   1218   -216       C
ATOM   6012  OD1 ASP B 486      33.731  45.721  98.406  1.00106.84           O
ANISOU 6012  OD1 ASP B 486    13231  14733  12629    141   1225   -207       O
ATOM   6013  OD2 ASP B 486      31.563  45.877  98.767  1.00 94.58           O
ANISOU 6013  OD2 ASP B 486    11722  12981  11234    214   1224   -153       O
ATOM   6014  C   ASP B 486      33.682  42.618  98.745  1.00 72.87           C
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ANISOU 6014  C   ASP B 486     8747  10384   8557    301   1258   -369       C
ATOM   6015  O   ASP B 486      34.707  42.876  99.370  1.00 74.58           O
ANISOU 6015  O   ASP B 486     8983  10641   8713    278   1275   -350       O
ATOM   6016  N   ALA B 487      32.720  41.843  99.228  1.00 65.60           N
ANISOU 6016  N   ALA B 487     7808   9342   7775    370   1271   -370       N
ATOM   6017  CA  ALA B 487      32.814  41.186 100.521  1.00 63.15           C
ANISOU 6017  CA  ALA B 487     7504   8939   7550    425   1308   -348       C
ATOM   6018  CB  ALA B 487      31.676  40.189 100.655  1.00 63.50           C
ANISOU 6018  CB  ALA B 487     7506   8870   7751    490   1314   -364       C
ATOM   6019  C   ALA B 487      34.154  40.481 100.767  1.00 65.53           C
ANISOU 6019  C   ALA B 487     7758   9314   7826    436   1308   -402       C
ATOM   6020  O   ALA B 487      34.768  40.651 101.821  1.00 66.41           O
ANISOU 6020  O   ALA B 487     7913   9401   7917    438   1328   -357       O
ATOM   6021  N   GLN B 488      34.596  39.673  99.803  1.00 67.17           N
ANISOU 6021  N   GLN B 488     7877   9608   8038    447   1281   -503       N
ATOM   6022  CA  GLN B 488      35.859  38.938  99.943  1.00 67.37           C
ANISOU 6022  CA  GLN B 488     7840   9705   8052    468   1278   -568       C
ATOM   6023  CB  GLN B 488      36.048  37.970  98.793  1.00 72.34           C
ANISOU 6023  CB  GLN B 488     8369  10410   8705    496   1250   -692       C
ATOM   6024  CG  GLN B 488      37.159  36.992  99.036  1.00 73.20           C
ANISOU 6024  CG  GLN B 488     8404  10561   8847    542   1244   -768       C
ATOM   6025  CD  GLN B 488      36.972  36.276 100.348  1.00 87.70           C
ANISOU 6025  CD  GLN B 488    10262  12255  10804    604   1249   -724       C
ATOM   6026  OE1 GLN B 488      35.904  35.711 100.615  1.00 91.78           O
ANISOU 6026  OE1 GLN B 488    10789  12646  11436    644   1248   -706       O
ATOM   6027  NE2 GLN B 488      38.005  36.297 101.184  1.00 90.60           N
ANISOU 6027  NE2 GLN B 488    10636  12641  11147    607   1252   -703       N
ATOM   6028  C   GLN B 488      37.049  39.886 100.006  1.00 71.50           C
ANISOU 6028  C   GLN B 488     8387  10342   8437    400   1283   -542       C
ATOM   6029  O   GLN B 488      37.987  39.681 100.773  1.00 66.02           O
ANISOU 6029  O   GLN B 488     7686   9661   7739    411   1287   -538       O
ATOM   6030  N   LYS B 489      36.993  40.926  99.186  1.00 64.95           N
ANISOU 6030  N   LYS B 489     7587   9594   7498    326   1276   -521       N
ATOM   6031  CA  LYS B 489      37.919  42.032  99.306  1.00 64.54           C
ANISOU 6031  CA  LYS B 489     7576   9628   7319    246   1280   -470       C
ATOM   6032  CB  LYS B 489      37.597  43.094  98.252  1.00 57.76           C
ANISOU 6032  CB  LYS B 489     6753   8839   6353    166   1265   -443       C
ATOM   6033  CG  LYS B 489      38.357  44.376  98.430  1.00 81.76           C
ANISOU 6033  CG  LYS B 489     9853  11940   9271     73   1263   -370       C
ATOM   6034  CD  LYS B 489      38.024  45.375  97.336  1.00 97.02           C
ANISOU 6034  CD  LYS B 489    11824  13937  11100     -8   1242   -338       C
ATOM   6035  CE  LYS B 489      38.499  46.774  97.717  1.00106.08           C
ANISOU 6035  CE  LYS B 489    13061  15095  12151    -99   1231   -241       C
ATOM   6036  NZ  LYS B 489      38.135  47.794  96.696  1.00111.46           N
ANISOU 6036  NZ  LYS B 489    13792  15822  12735   -182   1202   -196       N
ATOM   6037  C   LYS B 489      37.923  42.627 100.736  1.00 65.41           C
ANISOU 6037  C   LYS B 489     7780   9635   7440    246   1292   -374       C
ATOM   6038  O   LYS B 489      38.999  42.819 101.301  1.00 70.56           O
ANISOU 6038  O   LYS B 489     8433  10332   8045    223   1290   -362       O
ATOM   6039  N   MET B 490      36.752  42.873 101.335  1.00 59.71           N
ANISOU 6039  N   MET B 490     7131   8776   6779    275   1304   -310       N
ATOM   6040  CA  MET B 490      36.677  43.366 102.731  1.00 61.49           C
ANISOU 6040  CA  MET B 490     7451   8899   7012    285   1323   -227       C
ATOM   6041  CB  MET B 490      35.220  43.660 103.146  1.00 69.59           C
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ANISOU 6041  CB  MET B 490     8545   9789   8107    319   1346   -169       C
ATOM   6042  CG  MET B 490      34.661  45.082 102.849  1.00 77.49           C
ANISOU 6042  CG  MET B 490     9628  10776   9037    263   1336   -106       C
ATOM   6043  SD  MET B 490      32.826  45.218 102.665  1.00102.69           S
ANISOU 6043  SD  MET B 490    12840  13846  12331    308   1351    -77       S
ATOM   6044  CE  MET B 490      32.191  44.083 103.911  1.00 72.33           C
ANISOU 6044  CE  MET B 490     8984   9872   8625    400   1407    -69       C
ATOM   6045  C   MET B 490      37.300  42.365 103.723  1.00 66.41           C
ANISOU 6045  C   MET B 490     8049   9487   7699    343   1330   -245       C
ATOM   6046  O   MET B 490      38.059  42.745 104.615  1.00 66.52           O
ANISOU 6046  O   MET B 490     8112   9498   7666    327   1326   -206       O
ATOM   6047  N   ILE B 491      36.966  41.087 103.562  1.00 73.71           N
ANISOU 6047  N   ILE B 491     8899  10376   8730    411   1332   -304       N
ATOM   6048  CA  ILE B 491      37.525  40.011 104.384  1.00 70.82           C
ANISOU 6048  CA  ILE B 491     8501   9971   8436    470   1328   -326       C
ATOM   6049  CB  ILE B 491      36.984  38.616 103.927  1.00 70.53           C
ANISOU 6049  CB  ILE B 491     8378   9892   8528    539   1321   -399       C
ATOM   6050  CG1 ILE B 491      35.498  38.453 104.259  1.00 70.03           C
ANISOU 6050  CG1 ILE B 491     8355   9694   8561    571   1351   -349       C
ATOM   6051  CD1 ILE B 491      35.165  38.749 105.701  1.00 87.92           C
ANISOU 6051  CD1 ILE B 491    10720  11848  10837    585   1387   -250       C
ATOM   6052  CG2 ILE B 491      37.757  37.502 104.543  1.00 60.83           C
ANISOU 6052  CG2 ILE B 491     7105   8643   7367    595   1301   -435       C
ATOM   6053  C   ILE B 491      39.056  40.015 104.312  1.00 76.24           C
ANISOU 6053  C   ILE B 491     9139  10777   9053    444   1300   -367       C
ATOM   6054  O   ILE B 491      39.759  39.956 105.318  1.00 76.39           O
ANISOU 6054  O   ILE B 491     9188  10771   9065    454   1289   -336       O
ATOM   6055  N   ASN B 492      39.568  40.108 103.101  1.00 71.81           N
ANISOU 6055  N   ASN B 492     8500  10348   8436    407   1288   -437       N
ATOM   6056  CA  ASN B 492      40.994  40.083 102.897  1.00 72.30           C
ANISOU 6056  CA  ASN B 492     8494  10538   8439    380   1269   -485       C
ATOM   6057  CB  ASN B 492      41.287  40.029 101.407  1.00 70.83           C
ANISOU 6057  CB  ASN B 492     8217  10497   8200    349   1271   -572       C
ATOM   6058  CG  ASN B 492      40.910  38.693 100.808  1.00 76.08           C
ANISOU 6058  CG  ASN B 492     8795  11145   8965    428   1265   -673       C
ATOM   6059  OD1 ASN B 492      40.435  38.619  99.678  1.00 81.61           O
ANISOU 6059  OD1 ASN B 492     9462  11899   9647    418   1268   -727       O
ATOM   6060  ND2 ASN B 492      41.115  37.622 101.575  1.00 69.73           N
ANISOU 6060  ND2 ASN B 492     7961  10263   8271    507   1249   -699       N
ATOM   6061  C   ASN B 492      41.700  41.263 103.539  1.00 79.02           C
ANISOU 6061  C   ASN B 492     9416  11418   9189    308   1262   -408       C
ATOM   6062  O   ASN B 492      42.782  41.103 104.114  1.00 79.62           O
ANISOU 6062  O   ASN B 492     9465  11530   9257    309   1240   -416       O
ATOM   6063  N   GLU B 493      41.095  42.443 103.459  1.00 70.86           N
ANISOU 6063  N   GLU B 493     8474  10362   8087    247   1272   -336       N
ATOM   6064  CA  GLU B 493      41.732  43.613 104.053  1.00 72.02           C
ANISOU 6064  CA  GLU B 493     8698  10526   8142    174   1258   -264       C
ATOM   6065  CB  GLU B 493      41.050  44.902 103.606  1.00 81.43           C
ANISOU 6065  CB  GLU B 493     9974  11709   9258    103   1262   -201       C
ATOM   6066  CG  GLU B 493      41.054  45.077 102.097  1.00 97.18           C
ANISOU 6066  CG  GLU B 493    11901  13825  11197     52   1264   -246       C
ATOM   6067  CD  GLU B 493      40.684  46.480 101.678  1.00111.84           C
ANISOU 6067  CD  GLU B 493    13846  15688  12963    -36   1252   -173       C
ATOM   6068  OE1 GLU B 493      40.887  47.407 102.495  1.00130.39           O
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ANISOU 6068  OE1 GLU B 493    16288  17985  15271    -75   1237   -100       O
ATOM   6069  OE2 GLU B 493      40.203  46.656 100.535  1.00104.07           O
ANISOU 6069  OE2 GLU B 493    12841  14756  11946    -64   1251   -191       O
ATOM   6070  C   GLU B 493      41.701  43.480 105.563  1.00 63.71           C
ANISOU 6070  C   GLU B 493     7726   9351   7129    220   1252   -208       C
ATOM   6071  O   GLU B 493      42.583  43.949 106.258  1.00 66.81           O
ANISOU 6071  O   GLU B 493     8152   9761   7472    186   1225   -176       O
ATOM   6072  N   MET B 494      40.679  42.820 106.074  1.00 76.59           N
ANISOU 6072  N   MET B 494     9390  10860   8851    294   1275   -195       N
ATOM   6073  CA  MET B 494      40.603  42.629 107.499  1.00 79.17           C
ANISOU 6073  CA  MET B 494     9798  11074   9207    338   1276   -141       C
ATOM   6074  CB  MET B 494      39.255  42.057 107.904  1.00 87.18           C
ANISOU 6074  CB  MET B 494    10851  11958  10315    405   1318   -116       C
ATOM   6075  CG  MET B 494      39.134  41.744 109.377  1.00 91.97           C
ANISOU 6075  CG  MET B 494    11543  12451  10949    452   1328    -58       C
ATOM   6076  SD  MET B 494      37.507  41.061 109.671  1.00139.93           S
ANISOU 6076  SD  MET B 494    17639  18389  17137    519   1389    -29       S
ATOM   6077  CE  MET B 494      36.484  42.399 109.028  1.00101.89           C
ANISOU 6077  CE  MET B 494    12874  13569  12271    472   1421      1       C
ATOM   6078  C   MET B 494      41.721  41.708 107.916  1.00 84.09           C
ANISOU 6078  C   MET B 494    10353  11731   9865    373   1240   -183       C
ATOM   6079  O   MET B 494      42.443  42.001 108.864  1.00 90.81           O
ANISOU 6079  O   MET B 494    11258  12569  10678    361   1211   -144       O
ATOM   6080  N   GLN B 495      41.871  40.610 107.178  1.00 90.28           N
ANISOU 6080  N   GLN B 495    11019  12561  10724    417   1235   -267       N
ATOM   6081  CA  GLN B 495      42.835  39.565 107.523  1.00 88.16           C
ANISOU 6081  CA  GLN B 495    10673  12311  10513    469   1197   -318       C
ATOM   6082  CB  GLN B 495      42.747  38.402 106.554  1.00 88.56           C
ANISOU 6082  CB  GLN B 495    10600  12398  10651    523   1197   -420       C
ATOM   6083  CG  GLN B 495      41.460  37.622 106.613  1.00 97.61           C
ANISOU 6083  CG  GLN B 495    11766  13421  11901    584   1221   -414       C
ATOM   6084  CD  GLN B 495      41.478  36.471 105.631  1.00114.67           C
ANISOU 6084  CD  GLN B 495    13804  15618  14147    636   1208   -525       C
ATOM   6085  OE1 GLN B 495      41.996  35.396 105.934  1.00129.53           O
ANISOU 6085  OE1 GLN B 495    15630  17474  16113    700   1173   -572       O
ATOM   6086  NE2 GLN B 495      40.961  36.707 104.426  1.00109.20           N
ANISOU 6086  NE2 GLN B 495    13073  14989  13430    609   1228   -573       N
ATOM   6087  C   GLN B 495      44.260  40.075 107.536  1.00 79.91           C
ANISOU 6087  C   GLN B 495     9587  11381   9393    416   1158   -332       C
ATOM   6088  O   GLN B 495      45.030  39.723 108.427  1.00 69.39           O
ANISOU 6088  O   GLN B 495     8259  10026   8081    443   1115   -321       O
ATOM   6089  N   LYS B 496      44.589  40.908 106.546  1.00 80.29           N
ANISOU 6089  N   LYS B 496     9597  11552   9356    338   1169   -352       N
ATOM   6090  CA  LYS B 496      45.928  41.470 106.397  1.00 71.50           C
ANISOU 6090  CA  LYS B 496     8430  10566   8172    272   1139   -365       C
ATOM   6091  CB  LYS B 496      46.052  42.259 105.097  1.00 73.35           C
ANISOU 6091  CB  LYS B 496     8617  10934   8318    185   1166   -387       C
ATOM   6092  CG  LYS B 496      47.420  42.863 104.859  1.00 77.98           C
ANISOU 6092  CG  LYS B 496     9137  11662   8831    104   1144   -396       C
ATOM   6093  CD  LYS B 496      47.344  43.984 103.843  1.00 84.33           C
ANISOU 6093  CD  LYS B 496     9952  12563   9526     -4   1170   -372       C
ATOM   6094  CE  LYS B 496      48.448  43.900 102.807  1.00 93.36           C
ANISOU 6094  CE  LYS B 496    10950  13897  10626    -55   1184   -444       C
ATOM   6095  NZ  LYS B 496      48.204  44.880 101.707  1.00 95.75           N
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ANISOU 6095  NZ  LYS B 496    11270  14290  10821   -158   1214   -417       N
ATOM   6096  C   LYS B 496      46.260  42.363 107.562  1.00 74.89           C
ANISOU 6096  C   LYS B 496     8973  10938   8544    229   1107   -275       C
ATOM   6097  O   LYS B 496      47.327  42.233 108.153  1.00 84.68           O
ANISOU 6097  O   LYS B 496    10181  12207   9785    228   1059   -280       O
ATOM   6098  N   ARG B 497      45.335  43.263 107.887  1.00 76.47           N
ANISOU 6098  N   ARG B 497     9304  11054   8696    198   1128   -199       N
ATOM   6099  CA  ARG B 497      45.462  44.112 109.068  1.00 78.46           C
ANISOU 6099  CA  ARG B 497     9687  11230   8894    168   1100   -116       C
ATOM   6100  CB  ARG B 497      44.239  45.018 109.226  1.00 81.35           C
ANISOU 6100  CB  ARG B 497    10185  11502   9222    149   1136    -50       C
ATOM   6101  CG  ARG B 497      44.353  46.325 108.461  1.00 97.96           C
ANISOU 6101  CG  ARG B 497    12311  13677  11233     46   1132    -25       C
ATOM   6102  CD  ARG B 497      43.148  47.225 108.649  1.00110.87           C
ANISOU 6102  CD  ARG B 497    14076  15210  12841     37   1159     37       C
ATOM   6103  NE  ARG B 497      42.217  47.114 107.532  1.00121.96           N
ANISOU 6103  NE  ARG B 497    15437  16631  14272     44   1198     13       N
ATOM   6104  CZ  ARG B 497      41.030  46.519 107.603  1.00120.89           C
ANISOU 6104  CZ  ARG B 497    15315  16406  14213    119   1240      9       C
ATOM   6105  NH1 ARG B 497      40.256  46.462 106.526  1.00123.11           N
ANISOU 6105  NH1 ARG B 497    15552  16710  14516    118   1262    -15       N
ATOM   6106  NH2 ARG B 497      40.616  45.989 108.749  1.00109.43           N
ANISOU 6106  NH2 ARG B 497    13921  14843  12813    191   1257     33       N
ATOM   6107  C   ARG B 497      45.661  43.273 110.321  1.00 85.38           C
ANISOU 6107  C   ARG B 497    10597  12013   9828    245   1070   -102       C
ATOM   6108  O   ARG B 497      46.524  43.583 111.143  1.00 99.73           O
ANISOU 6108  O   ARG B 497    12451  13831  11610    223   1016    -75       O
ATOM   6109  N   ASN B 498      44.873  42.210 110.459  1.00 79.16           N
ANISOU 6109  N   ASN B 498     9800  11146   9132    331   1099   -119       N
ATOM   6110  CA  ASN B 498      45.011  41.307 111.595  1.00 83.05           C
ANISOU 6110  CA  ASN B 498    10325  11545   9683    404   1070   -101       C
ATOM   6111  CB  ASN B 498      44.001  40.162 111.498  1.00 74.76           C
ANISOU 6111  CB  ASN B 498     9254  10411   8741    486   1110   -118       C
ATOM   6112  CG  ASN B 498      42.585  40.612 111.793  1.00 89.00           C
ANISOU 6112  CG  ASN B 498    11168  12112  10536    489   1175    -55       C
ATOM   6113  OD1 ASN B 498      42.343  41.793 112.069  1.00 91.23           O
ANISOU 6113  OD1 ASN B 498    11549  12383  10731    437   1189     -3       O
ATOM   6114  ND2 ASN B 498      41.635  39.678 111.722  1.00 83.60           N
ANISOU 6114  ND2 ASN B 498    10464  11350   9949    550   1212    -62       N
ATOM   6115  C   ASN B 498      46.433  40.752 111.693  1.00 97.34           C
ANISOU 6115  C   ASN B 498    12035  13432  11517    414   1000   -149       C
ATOM   6116  O   ASN B 498      47.044  40.769 112.764  1.00 94.92           O
ANISOU 6116  O   ASN B 498    11787  13085  11193    422    945   -110       O
ATOM   6117  N   ARG B 499      46.957  40.271 110.567  1.00 98.51           N
ANISOU 6117  N   ARG B 499    12032  13694  11703    416   1001   -238       N
ATOM   6118  CA  ARG B 499      48.299  39.720 110.532  1.00 90.12           C
ANISOU 6118  CA  ARG B 499    10852  12717  10675    432    941   -298       C
ATOM   6119  CB  ARG B 499      48.617  39.146 109.158  1.00101.11           C
ANISOU 6119  CB  ARG B 499    12078  14232  12107    432    965   -406       C
ATOM   6120  CG  ARG B 499      47.814  37.914 108.818  1.00114.75           C
ANISOU 6120  CG  ARG B 499    13767  15891  13941    536    989   -459       C
ATOM   6121  CD  ARG B 499      48.172  37.371 107.442  1.00115.41           C
ANISOU 6121  CD  ARG B 499    13694  16103  14055    550   1010   -578       C
ATOM   6122  NE  ARG B 499      46.980  37.190 106.612  1.00116.52           N
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ANISOU 6122  NE  ARG B 499    13844  16216  14211    561   1065   -600       N
ATOM   6123  CZ  ARG B 499      46.744  37.844 105.476  1.00106.54           C
ANISOU 6123  CZ  ARG B 499    12553  15055  12873    498   1109   -627       C
ATOM   6124  NH1 ARG B 499      47.631  38.714 105.008  1.00 86.76           N
ANISOU 6124  NH1 ARG B 499    10005  12690  10272    416   1113   -632       N
ATOM   6125  NH2 ARG B 499      45.628  37.606 104.794  1.00107.90           N
ANISOU 6125  NH2 ARG B 499    12738  15189  13069    516   1146   -646       N
ATOM   6126  C   ARG B 499      49.320  40.779 110.897  1.00 87.40           C
ANISOU 6126  C   ARG B 499    10526  12440  10240    348    895   -262       C
ATOM   6127  O   ARG B 499      50.250  40.514 111.643  1.00 94.40           O
ANISOU 6127  O   ARG B 499    11396  13325  11147    366    825   -259       O
ATOM   6128  N   GLN B 500      49.135  41.988 110.384  1.00 76.41           N
ANISOU 6128  N   GLN B 500     9174  11102   8755    255    926   -231       N
ATOM   6129  CA  GLN B 500      50.080  43.061 110.652  1.00 72.97           C
ANISOU 6129  CA  GLN B 500     8757  10731   8239    163    880   -195       C
ATOM   6130  CB  GLN B 500      49.735  44.298 109.832  1.00 78.60           C
ANISOU 6130  CB  GLN B 500     9503  11502   8860     60    921   -166       C
ATOM   6131  CG  GLN B 500      50.186  44.195 108.380  1.00 91.20           C
ANISOU 6131  CG  GLN B 500    10944  13259  10450     20    958   -239       C
ATOM   6132  CD  GLN B 500      49.655  45.320 107.525  1.00106.28           C
ANISOU 6132  CD  GLN B 500    12899  15210  12270    -74    999   -203       C
ATOM   6133  OE1 GLN B 500      49.875  45.346 106.318  1.00110.76           O
ANISOU 6133  OE1 GLN B 500    13365  15905  12813   -116   1035   -251       O
ATOM   6134  NE2 GLN B 500      48.946  46.257 108.146  1.00112.50           N
ANISOU 6134  NE2 GLN B 500    13846  15891  13009   -106    992   -120       N
ATOM   6135  C   GLN B 500      50.154  43.417 112.130  1.00 86.44           C
ANISOU 6135  C   GLN B 500    10607  12322   9916    168    822   -118       C
ATOM   6136  O   GLN B 500      51.248  43.566 112.667  1.00 99.20           O
ANISOU 6136  O   GLN B 500    12200  13972  11522    143    749   -114       O
ATOM   6137  N   THR B 501      49.012  43.542 112.799  1.00 73.62           N
ANISOU 6137  N   THR B 501     9130  10565   8278    202    854    -60       N
ATOM   6138  CA  THR B 501      49.069  43.897 114.201  1.00 73.15           C
ANISOU 6138  CA  THR B 501     9217  10402   8175    208    805      9       C
ATOM   6139  CB  THR B 501      47.707  44.445 114.744  1.00 82.45           C
ANISOU 6139  CB  THR B 501    10565  11455   9309    220    864     74       C
ATOM   6140  OG1 THR B 501      46.807  43.374 115.031  1.00 82.47           O
ANISOU 6140  OG1 THR B 501    10581  11368   9386    313    910     75       O
ATOM   6141  CG2 THR B 501      47.063  45.408 113.744  1.00 77.96           C
ANISOU 6141  CG2 THR B 501    10000  10926   8695    155    921     76       C
ATOM   6142  C   THR B 501      49.536  42.671 114.999  1.00 76.61           C
ANISOU 6142  C   THR B 501     9627  10791   8688    295    752     -4       C
ATOM   6143  O   THR B 501      50.247  42.813 115.992  1.00 83.65           O
ANISOU 6143  O   THR B 501    10577  11654   9552    290    674     28       O
ATOM   6144  N   ASN B 502      49.169  41.470 114.556  1.00 63.10           N
ANISOU 6144  N   ASN B 502     7829   9071   7076    373    783    -52       N
ATOM   6145  CA  ASN B 502      49.605  40.265 115.254  1.00 78.25           C
ANISOU 6145  CA  ASN B 502     9718  10935   9076    457    725    -64       C
ATOM   6146  CB  ASN B 502      48.966  38.994 114.679  1.00 89.23           C
ANISOU 6146  CB  ASN B 502    11027  12296  10580    539    768   -115       C
ATOM   6147  CG  ASN B 502      47.586  38.704 115.257  1.00 96.77           C
ANISOU 6147  CG  ASN B 502    12108  13111  11548    582    827    -52       C
ATOM   6148  OD1 ASN B 502      47.192  39.256 116.286  1.00101.06           O
ANISOU 6148  OD1 ASN B 502    12805  13572  12022    568    830     29       O
ATOM   6149  ND2 ASN B 502      46.850  37.819 114.598  1.00 96.36           N
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ANISOU 6149  ND2 ASN B 502    11990  13034  11587    633    875    -93       N
ATOM   6150  C   ASN B 502      51.117  40.151 115.174  1.00 87.72           C
ANISOU 6150  C   ASN B 502    10797  12237  10296    440    637   -111       C
ATOM   6151  O   ASN B 502      51.751  39.656 116.100  1.00 89.68           O
ANISOU 6151  O   ASN B 502    11064  12438  10571    481    554    -94       O
ATOM   6152  N   GLU B 503      51.687  40.609 114.062  1.00 83.79           N
ANISOU 6152  N   GLU B 503    10173  11880   9784    380    655   -169       N
ATOM   6153  CA  GLU B 503      53.137  40.672 113.915  1.00 87.54           C
ANISOU 6153  CA  GLU B 503    10520  12470  10272    349    584   -213       C
ATOM   6154  CB  GLU B 503      53.545  40.975 112.471  1.00 92.57           C
ANISOU 6154  CB  GLU B 503    11001  13270  10901    290    636   -286       C
ATOM   6155  CG  GLU B 503      53.321  39.827 111.496  1.00106.27           C
ANISOU 6155  CG  GLU B 503    12601  15050  12728    368    685   -381       C
ATOM   6156  CD  GLU B 503      53.590  40.222 110.057  1.00115.65           C
ANISOU 6156  CD  GLU B 503    13660  16401  13882    305    750   -447       C
ATOM   6157  OE1 GLU B 503      53.822  41.428 109.798  1.00114.38           O
ANISOU 6157  OE1 GLU B 503    13524  16309  13624    194    763   -406       O
ATOM   6158  OE2 GLU B 503      53.542  39.328 109.185  1.00120.76           O
ANISOU 6158  OE2 GLU B 503    14186  17102  14593    364    786   -540       O
ATOM   6159  C   GLU B 503      53.698  41.727 114.846  1.00 86.95           C
ANISOU 6159  C   GLU B 503    10551  12376  10111    275    513   -142       C
ATOM   6160  O   GLU B 503      54.736  41.521 115.474  1.00 78.90           O
ANISOU 6160  O   GLU B 503     9493  11369   9117    284    418   -145       O
ATOM   6161  N   ARG B 504      52.999  42.854 114.941  1.00 89.41           N
ANISOU 6161  N   ARG B 504    10996  12651  10325    206    554    -81       N
ATOM   6162  CA  ARG B 504      53.451  43.952 115.781  1.00 86.07           C
ANISOU 6162  CA  ARG B 504    10687  12202   9814    131    487    -17       C
ATOM   6163  CB  ARG B 504      52.528  45.159 115.611  1.00 83.96           C
ANISOU 6163  CB  ARG B 504    10551  11898   9452     62    548     34       C
ATOM   6164  CG  ARG B 504      52.846  46.324 116.532  1.00 85.41           C
ANISOU 6164  CG  ARG B 504    10878  12033   9542     -9    479     97       C
ATOM   6165  CD  ARG B 504      53.943  47.227 116.007  1.00 96.16           C
ANISOU 6165  CD  ARG B 504    12154  13512  10872   -125    429     89       C
ATOM   6166  NE  ARG B 504      54.371  48.149 117.061  1.00109.23           N
ANISOU 6166  NE  ARG B 504    13945  15105  12454   -181    338    143       N
ATOM   6167  CZ  ARG B 504      55.503  48.033 117.749  1.00104.41           C
ANISOU 6167  CZ  ARG B 504    13303  14511  11857   -193    227    141       C
ATOM   6168  NH1 ARG B 504      55.797  48.912 118.702  1.00 95.09           N
ANISOU 6168  NH1 ARG B 504    12260  13265  10603   -244    141    189       N
ATOM   6169  NH2 ARG B 504      56.349  47.049 117.475  1.00101.08           N
ANISOU 6169  NH2 ARG B 504    12708  14171  11526   -151    196     88       N
ATOM   6170  C   ARG B 504      53.527  43.524 117.250  1.00 88.23           C
ANISOU 6170  C   ARG B 504    11083  12354  10087    193    410     30       C
ATOM   6171  O   ARG B 504      54.518  43.774 117.938  1.00 90.90           O
ANISOU 6171  O   ARG B 504    11429  12702  10409    166    307     45       O
ATOM   6172  N   ILE B 505      52.479  42.865 117.722  1.00 89.86           N
ANISOU 6172  N   ILE B 505    11384  12445  10312    273    457     57       N
ATOM   6173  CA  ILE B 505      52.440  42.365 119.089  1.00 93.75           C
ANISOU 6173  CA  ILE B 505    12002  12821  10799    334    395    108       C
ATOM   6174  CB  ILE B 505      51.090  41.685 119.369  1.00 82.68           C
ANISOU 6174  CB  ILE B 505    10691  11305   9419    410    479    139       C
ATOM   6175  CG1 ILE B 505      49.978  42.720 119.254  1.00 77.18           C
ANISOU 6175  CG1 ILE B 505    10114  10571   8638    365    572    178       C
ATOM   6176  CD1 ILE B 505      50.118  43.853 120.232  1.00 77.83           C
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ANISOU 6176  CD1 ILE B 505    10364  10608   8601    312    527    235       C
ATOM   6177  CG2 ILE B 505      51.062  41.045 120.747  1.00 68.58           C
ANISOU 6177  CG2 ILE B 505     9028   9403   7626    473    421    197       C
ATOM   6178  C   ILE B 505      53.588  41.396 119.369  1.00 94.69           C
ANISOU 6178  C   ILE B 505    12008  12968  11003    385    290     73       C
ATOM   6179  O   ILE B 505      54.276  41.526 120.383  1.00 78.56           O
ANISOU 6179  O   ILE B 505    10035  10888   8927    381    186    109       O
ATOM   6180  N   GLU B 506      53.785  40.444 118.455  1.00105.87           N
ANISOU 6180  N   GLU B 506    13252  14447  12528    434    314     -1       N
ATOM   6181  CA  GLU B 506      54.877  39.475 118.518  1.00101.75           C
ANISOU 6181  CA  GLU B 506    12592  13962  12107    491    221    -53       C
ATOM   6182  CB  GLU B 506      54.974  38.687 117.210  1.00111.71           C
ANISOU 6182  CB  GLU B 506    13656  15316  13472    530    276   -152       C
ATOM   6183  CG  GLU B 506      53.878  37.669 116.980  1.00118.57           C
ANISOU 6183  CG  GLU B 506    14542  16100  14410    615    344   -164       C
ATOM   6184  CD  GLU B 506      53.930  37.100 115.576  1.00128.44           C
ANISOU 6184  CD  GLU B 506    15609  17452  15740    639    404   -270       C
ATOM   6185  OE1 GLU B 506      55.042  37.021 115.013  1.00128.33           O
ANISOU 6185  OE1 GLU B 506    15433  17560  15765    631    366   -344       O
ATOM   6186  OE2 GLU B 506      52.863  36.754 115.025  1.00135.00           O
ANISOU 6186  OE2 GLU B 506    16456  18246  16594    665    489   -283       O
ATOM   6187  C   GLU B 506      56.225  40.112 118.793  1.00 95.17           C
ANISOU 6187  C   GLU B 506    11704  13208  11249    429    115    -58       C
ATOM   6188  O   GLU B 506      56.943  39.684 119.680  1.00 98.77           O
ANISOU 6188  O   GLU B 506    12174  13622  11734    466      1    -41       O
ATOM   6189  N   GLU B 507      56.585  41.130 118.028  1.00 94.70           N
ANISOU 6189  N   GLU B 507    11580  13263  11140    330    146    -79       N
ATOM   6190  CA  GLU B 507      57.906  41.702 118.202  1.00 99.35           C
ANISOU 6190  CA  GLU B 507    12093  13936  11720    263     47    -87       C
ATOM   6191  CB  GLU B 507      58.397  42.350 116.911  1.00 97.50           C
ANISOU 6191  CB  GLU B 507    11699  13865  11480    173    105   -140       C
ATOM   6192  CG  GLU B 507      58.758  41.318 115.811  1.00128.65           C
ANISOU 6192  CG  GLU B 507    15427  17919  15538    235    151   -243       C
ATOM   6193  CD  GLU B 507      59.393  40.006 116.341  1.00153.10           C
ANISOU 6193  CD  GLU B 507    18439  20978  18755    351     61   -286       C
ATOM   6194  OE1 GLU B 507      60.329  40.049 117.180  1.00145.67           O
ANISOU 6194  OE1 GLU B 507    17492  20023  17831    349    -62   -266       O
ATOM   6195  OE2 GLU B 507      58.945  38.918 115.907  1.00150.60           O
ANISOU 6195  OE2 GLU B 507    18063  20639  18520    447    105   -340       O
ATOM   6196  C   GLU B 507      57.947  42.692 119.355  1.00105.70           C
ANISOU 6196  C   GLU B 507    13085  14659  12417    203    -27     -3       C
ATOM   6197  O   GLU B 507      59.016  43.166 119.721  1.00112.53           O
ANISOU 6197  O   GLU B 507    13914  15569  13274    148   -130      2       O
ATOM   6198  N   ILE B 508      56.796  42.987 119.950  1.00100.27           N
ANISOU 6198  N   ILE B 508    12596  13853  11650    215     23     60       N
ATOM   6199  CA  ILE B 508      56.805  43.748 121.188  1.00 93.62           C
ANISOU 6199  CA  ILE B 508    11948  12919  10706    182    -52    132       C
ATOM   6200  CB  ILE B 508      55.488  44.514 121.409  1.00 86.44           C
ANISOU 6200  CB  ILE B 508    11228  11922   9693    161     43    185       C
ATOM   6201  CG1 ILE B 508      55.431  45.726 120.475  1.00 85.44           C
ANISOU 6201  CG1 ILE B 508    11069  11876   9518     54     97    174       C
ATOM   6202  CD1 ILE B 508      54.218  46.620 120.673  1.00 76.82           C
ANISOU 6202  CD1 ILE B 508    10159  10700   8330     31    177    221       C
ATOM   6203  CG2 ILE B 508      55.362  44.983 122.845  1.00 79.41           C
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ANISOU 6203  CG2 ILE B 508    10555  10916   8700    162    -28    252       C
ATOM   6204  C   ILE B 508      57.103  42.813 122.361  1.00 97.66           C
ANISOU 6204  C   ILE B 508    12523  13337  11246    269   -154    159       C
ATOM   6205  O   ILE B 508      57.823  43.194 123.285  1.00 98.04           O
ANISOU 6205  O   ILE B 508    12644  13357  11248    242   -275    191       O
ATOM   6206  N   ILE B 509      56.592  41.582 122.313  1.00 98.58           N
ANISOU 6206  N   ILE B 509    12610  13405  11442    369   -115    147       N
ATOM   6207  CA  ILE B 509      56.898  40.614 123.368  1.00102.31           C
ANISOU 6207  CA  ILE B 509    13136  13788  11951    452   -217    178       C
ATOM   6208  CB  ILE B 509      55.859  39.442 123.447  1.00 86.08           C
ANISOU 6208  CB  ILE B 509    11120  11637   9951    551   -143    194       C
ATOM   6209  CG1 ILE B 509      56.025  38.471 122.283  1.00 93.38           C
ANISOU 6209  CG1 ILE B 509    11830  12631  11018    604   -103    108       C
ATOM   6210  CD1 ILE B 509      55.115  37.272 122.344  1.00101.24           C
ANISOU 6210  CD1 ILE B 509    12851  13529  12086    697    -50    120       C
ATOM   6211  CG2 ILE B 509      54.429  39.960 123.520  1.00 74.48           C
ANISOU 6211  CG2 ILE B 509     9807  10100   8393    534    -10    243       C
ATOM   6212  C   ILE B 509      58.306  40.030 123.188  1.00109.08           C
ANISOU 6212  C   ILE B 509    13806  14724  12917    474   -339    121       C
ATOM   6213  O   ILE B 509      58.913  39.583 124.155  1.00113.77           O
ANISOU 6213  O   ILE B 509    14445  15259  13524    515   -468    150       O
ATOM   6214  N   ARG B 510      58.836  40.032 121.965  1.00112.66           N
ANISOU 6214  N   ARG B 510    14049  15311  13446    449   -300     39       N
ATOM   6215  CA  ARG B 510      60.227  39.621 121.763  1.00107.27           C
ANISOU 6215  CA  ARG B 510    13174  14718  12865    461   -408    -21       C
ATOM   6216  CB  ARG B 510      60.516  39.305 120.293  1.00 92.26           C
ANISOU 6216  CB  ARG B 510    11038  12959  11057    463   -324   -122       C
ATOM   6217  C   ARG B 510      61.161  40.722 122.265  1.00114.54           C
ANISOU 6217  C   ARG B 510    14119  15682  13718    363   -513      6       C
ATOM   6218  O   ARG B 510      62.073  40.459 123.048  1.00121.90           O
ANISOU 6218  O   ARG B 510    15039  16593  14685    385   -659     16       O
ATOM   6219  N   THR B 511      60.909  41.955 121.828  1.00110.95           N
ANISOU 6219  N   THR B 511    13705  15279  13172    254   -445     21       N
ATOM   6220  CA  THR B 511      61.738  43.102 122.195  1.00105.55           C
ANISOU 6220  CA  THR B 511    13044  14636  12425    145   -537     46       C
ATOM   6221  CB  THR B 511      61.249  44.389 121.506  1.00103.48           C
ANISOU 6221  CB  THR B 511    12825  14423  12071     29   -438     61       C
ATOM   6222  OG1 THR B 511      61.389  44.256 120.087  1.00114.24           O
ANISOU 6222  OG1 THR B 511    13985  15924  13498      6   -337     -6       O
ATOM   6223  CG2 THR B 511      62.047  45.599 121.978  1.00 98.35           C
ANISOU 6223  CG2 THR B 511    12221  13792  11355    -88   -543     95       C
ATOM   6224  C   THR B 511      61.783  43.358 123.698  1.00112.96           C
ANISOU 6224  C   THR B 511    14192  15446  13281    151   -662    120       C
ATOM   6225  O   THR B 511      62.848  43.623 124.255  1.00119.14           O
ANISOU 6225  O   THR B 511    14946  16247  14074    116   -805    125       O
ATOM   6226  N   THR B 512      60.635  43.276 124.360  1.00116.97           N
ANISOU 6226  N   THR B 512    14908  15828  13706    196   -608    175       N
ATOM   6227  CA  THR B 512      60.572  43.675 125.759  1.00113.64           C
ANISOU 6227  CA  THR B 512    14711  15291  13176    192   -708    245       C
ATOM   6228  CB  THR B 512      59.484  44.744 125.974  1.00 99.93           C
ANISOU 6228  CB  THR B 512    13178  13491  11298    139   -614    290       C
ATOM   6229  OG1 THR B 512      58.194  44.140 125.851  1.00102.78           O
ANISOU 6229  OG1 THR B 512    13610  13787  11655    213   -478    306       O
ATOM   6230  CG2 THR B 512      59.615  45.870 124.940  1.00 86.15           C
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ANISOU 6230  CG2 THR B 512    11347  11847   9540     27   -554    261       C
ATOM   6231  C   THR B 512      60.324  42.503 126.719  1.00113.99           C
ANISOU 6231  C   THR B 512    14849  15224  13239    307   -762    282       C
ATOM   6232  O   THR B 512      60.386  42.675 127.933  1.00108.12           O
ANISOU 6232  O   THR B 512    14284  14390  12407    313   -859    339       O
ATOM   6233  N   GLY B 513      60.047  41.313 126.189  1.00114.54           N
ANISOU 6233  N   GLY B 513    14803  15296  13419    395   -704    251       N
ATOM   6234  CA  GLY B 513      59.818  40.149 127.039  1.00115.72           C
ANISOU 6234  CA  GLY B 513    15034  15336  13597    499   -758    291       C
ATOM   6235  C   GLY B 513      58.545  40.300 127.854  1.00117.38           C
ANISOU 6235  C   GLY B 513    15493  15423  13682    515   -680    370       C
ATOM   6236  O   GLY B 513      58.243  39.504 128.751  1.00115.06           O
ANISOU 6236  O   GLY B 513    15317  15025  13375    586   -720    426       O
ATOM   6237  N   LYS B 514      57.797  41.348 127.524  1.00114.27           N
ANISOU 6237  N   LYS B 514    15177  15044  13195    448   -566    376       N
ATOM   6238  CA  LYS B 514      56.551  41.670 128.189  1.00104.66           C
ANISOU 6238  CA  LYS B 514    14183  13728  11857    456   -471    439       C
ATOM   6239  C   LYS B 514      55.412  40.943 127.489  1.00120.47           C
ANISOU 6239  C   LYS B 514    16139  15710  13923    511   -315    432       C
ATOM   6240  O   LYS B 514      54.915  41.404 126.459  1.00123.95           O
ANISOU 6240  O   LYS B 514    16502  16212  14383    475   -201    392       O
ATOM   6241  CB  LYS B 514      56.317  43.187 128.189  1.00 90.76           C
ANISOU 6241  CB  LYS B 514    12527  11985   9973    362   -436    444       C
ATOM   6242  N   GLU B 515      55.013  39.798 128.047  1.00116.32           N
ANISOU 6242  N   GLU B 515    15664  15097  13435    595   -319    473       N
ATOM   6243  CA  GLU B 515      53.922  39.008 127.490  1.00 97.19           C
ANISOU 6243  CA  GLU B 515    13205  12641  11083    648   -184    472       C
ATOM   6244  CB  GLU B 515      53.922  37.611 128.105  1.00 84.65           C
ANISOU 6244  CB  GLU B 515    11633  10962   9566    736   -241    513       C
ATOM   6245  C   GLU B 515      52.559  39.692 127.690  1.00101.28           C
ANISOU 6245  C   GLU B 515    13883  13106  11493    626    -38    517       C
ATOM   6246  O   GLU B 515      51.562  39.263 127.114  1.00 97.19           O
ANISOU 6246  O   GLU B 515    13330  12570  11029    654     87    512       O
ATOM   6247  N   ASN B 516      52.532  40.756 128.498  1.00116.77           N
ANISOU 6247  N   ASN B 516    16016  15044  13309    577    -60    554       N
ATOM   6248  CA  ASN B 516      51.354  41.620 128.675  1.00120.39           C
ANISOU 6248  CA  ASN B 516    16621  15463  13659    552     71    582       C
ATOM   6249  CB  ASN B 516      51.728  42.888 129.460  1.00124.30           C
ANISOU 6249  CB  ASN B 516    17275  15950  14005    492      4     598       C
ATOM   6250  CG  ASN B 516      52.816  42.650 130.489  1.00136.98           C
ANISOU 6250  CG  ASN B 516    18946  17530  15569    499   -168    625       C
ATOM   6251  OD1 ASN B 516      54.000  42.666 130.167  1.00148.65           O
ANISOU 6251  OD1 ASN B 516    20297  19075  17109    471   -290    585       O
ATOM   6252  ND2 ASN B 516      52.420  42.468 131.743  1.00145.24           N
ANISOU 6252  ND2 ASN B 516    20196  18485  16506    533   -180    693       N
ATOM   6253  C   ASN B 516      50.702  42.062 127.357  1.00114.26           C
ANISOU 6253  C   ASN B 516    15727  14750  12938    522    197    530       C
ATOM   6254  O   ASN B 516      49.472  42.115 127.247  1.00105.62           O
ANISOU 6254  O   ASN B 516    14692  13612  11828    540    331    550       O
ATOM   6255  N   ALA B 517      51.549  42.386 126.378  1.00101.05           N
ANISOU 6255  N   ALA B 517    13886  13180  11327    475    152    465       N
ATOM   6256  CA  ALA B 517      51.147  43.019 125.119  1.00 91.24           C
ANISOU 6256  CA  ALA B 517    12541  12013  10114    428    247    416       C
ATOM   6257  CB  ALA B 517      52.328  43.015 124.144  1.00 83.16           C
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ANISOU 6257  CB  ALA B 517    11313  11113   9173    386    177    348       C
ATOM   6258  C   ALA B 517      49.913  42.412 124.431  1.00 84.74           C
ANISOU 6258  C   ALA B 517    11671  11166   9359    474    388    410       C
ATOM   6259  O   ALA B 517      49.114  43.143 123.825  1.00 75.53           O
ANISOU 6259  O   ALA B 517    10517  10012   8168    441    486    401       O
ATOM   6260  N   LYS B 518      49.751  41.094 124.527  1.00 84.29           N
ANISOU 6260  N   LYS B 518    11563  11069   9394    548    391    417       N
ATOM   6261  CA  LYS B 518      48.618  40.417 123.904  1.00 81.75           C
ANISOU 6261  CA  LYS B 518    11192  10719   9151    591    511    411       C
ATOM   6262  CB  LYS B 518      48.797  38.898 124.006  1.00 83.58           C
ANISOU 6262  CB  LYS B 518    11348  10910   9500    668    472    411       C
ATOM   6263  CG  LYS B 518      48.509  38.275 125.375  1.00 89.59           C
ANISOU 6263  CG  LYS B 518    12266  11553  10220    715    446    497       C
ATOM   6264  CD  LYS B 518      49.002  36.826 125.404  1.00102.91           C
ANISOU 6264  CD  LYS B 518    13860  13207  12033    783    368    490       C
ATOM   6265  CE  LYS B 518      48.285  35.987 126.450  1.00114.53           C
ANISOU 6265  CE  LYS B 518    15468  14552  13496    832    387    582       C
ATOM   6266  NZ  LYS B 518      47.052  35.344 125.893  1.00120.36           N
ANISOU 6266  NZ  LYS B 518    16164  15245  14321    860    513    586       N
ATOM   6267  C   LYS B 518      47.274  40.846 124.515  1.00 84.48           C
ANISOU 6267  C   LYS B 518    11706  10976   9417    598    623    473       C
ATOM   6268  O   LYS B 518      46.219  40.578 123.948  1.00 87.46           O
ANISOU 6268  O   LYS B 518    12048  11334   9848    618    733    469       O
ATOM   6269  N   TYR B 519      47.323  41.514 125.665  1.00 84.62           N
ANISOU 6269  N   TYR B 519    11901  10943   9306    583    593    525       N
ATOM   6270  CA  TYR B 519      46.125  42.038 126.322  1.00 82.40           C
ANISOU 6270  CA  TYR B 519    11787  10588   8935    590    701    577       C
ATOM   6271  CB  TYR B 519      46.182  41.799 127.828  1.00 83.15           C
ANISOU 6271  CB  TYR B 519    12063  10600   8931    619    660    648       C
ATOM   6272  CG  TYR B 519      46.278  40.354 128.231  1.00 97.39           C
ANISOU 6272  CG  TYR B 519    13840  12352  10811    678    628    687       C
ATOM   6273  CD1 TYR B 519      45.169  39.518 128.167  1.00100.89           C
ANISOU 6273  CD1 TYR B 519    14275  12737  11321    722    739    723       C
ATOM   6274  CE1 TYR B 519      45.257  38.190 128.540  1.00106.63           C
ANISOU 6274  CE1 TYR B 519    14984  13409  12124    771    702    764       C
ATOM   6275  CZ  TYR B 519      46.465  37.691 128.991  1.00109.43           C
ANISOU 6275  CZ  TYR B 519    15328  13764  12486    784    549    769       C
ATOM   6276  OH  TYR B 519      46.573  36.371 129.367  1.00116.80           O
ANISOU 6276  OH  TYR B 519    16248  14632  13499    835    500    813       O
ATOM   6277  CE2 TYR B 519      47.574  38.507 129.068  1.00104.07           C
ANISOU 6277  CE2 TYR B 519    14652  13147  11743    745    438    731       C
ATOM   6278  CD2 TYR B 519      47.477  39.826 128.696  1.00 98.43           C
ANISOU 6278  CD2 TYR B 519    13956  12489  10953    689    478    693       C
ATOM   6279  C   TYR B 519      45.933  43.532 126.084  1.00 79.20           C
ANISOU 6279  C   TYR B 519    11442  10211   8440    530    731    555       C
ATOM   6280  O   TYR B 519      45.048  44.144 126.661  1.00 73.13           O
ANISOU 6280  O   TYR B 519    10816   9385   7586    536    810    587       O
ATOM   6281  N   LEU B 520      46.774  44.118 125.244  1.00 76.88           N
ANISOU 6281  N   LEU B 520    11039  10005   8166    667    472    502       N
ATOM   6282  CA  LEU B 520      46.809  45.563 125.120  1.00 68.91           C
ANISOU 6282  CA  LEU B 520    10098   9016   7068    405    663    489       C
ATOM   6283  CB  LEU B 520      48.074  46.116 125.783  1.00 68.88           C
ANISOU 6283  CB  LEU B 520    10152   9031   6989    358    520    490       C
ATOM   6284  CG  LEU B 520      48.182  45.762 127.266  1.00 70.76           C
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ANISOU 6284  CG  LEU B 520    10556   9187   7143    401    469    542       C
ATOM   6285  CD1 LEU B 520      49.526  46.157 127.907  1.00 59.56           C
ANISOU 6285  CD1 LEU B 520     9178   7788   5665    358    305    541       C
ATOM   6286  CD2 LEU B 520      47.011  46.414 127.988  1.00 68.84           C
ANISOU 6286  CD2 LEU B 520    10502   8861   6793    420    569    576       C
ATOM   6287  C   LEU B 520      46.745  46.023 123.678  1.00 69.51           C
ANISOU 6287  C   LEU B 520    10029   9175   7207    357    701    438       C
ATOM   6288  O   LEU B 520      47.084  47.161 123.393  1.00 76.54           O
ANISOU 6288  O   LEU B 520    10940  10100   8042    287    668    424       O
ATOM   6289  N   ILE B 521      46.286  45.162 122.771  1.00 64.41           N
ANISOU 6289  N   ILE B 521     9245   8557   6671    390    766    413       N
ATOM   6290  CA  ILE B 521      46.442  45.471 121.361  1.00 71.45           C
ANISOU 6290  CA  ILE B 521     9986   9545   7618    342    783    361       C
ATOM   6291  CB  ILE B 521      45.988  44.283 120.423  1.00 79.75           C
ANISOU 6291  CB  ILE B 521    10882  10622   8797    393    844    326       C
ATOM   6292  CG1 ILE B 521      44.474  44.195 120.289  1.00 90.64           C
ANISOU 6292  CG1 ILE B 521    12307  11932  10199    432    964    347       C
ATOM   6293  CD1 ILE B 521      44.031  43.788 118.902  1.00 90.21           C
ANISOU 6293  CD1 ILE B 521    12100  11936  10240    434   1018    296       C
ATOM   6294  CG2 ILE B 521      46.579  42.935 120.860  1.00 70.89           C
ANISOU 6294  CG2 ILE B 521     9702   9486   7747    454    787    322       C
ATOM   6295  C   ILE B 521      45.717  46.770 120.961  1.00 71.36           C
ANISOU 6295  C   ILE B 521    10042   9524   7545    293    841    366       C
ATOM   6296  O   ILE B 521      46.263  47.550 120.202  1.00 79.40           O
ANISOU 6296  O   ILE B 521    11002  10617   8548    219    805    341       O
ATOM   6297  N   GLU B 522      44.527  47.036 121.486  1.00 84.11           N
ANISOU 6297  N   GLU B 522    11782  11049   9125    330    926    400       N
ATOM   6298  CA  GLU B 522      43.815  48.252 121.092  1.00 82.36           C
ANISOU 6298  CA  GLU B 522    11621  10813   8859    293    975    400       C
ATOM   6299  CB  GLU B 522      42.381  48.268 121.641  1.00 76.70           C
ANISOU 6299  CB  GLU B 522    11012   9998   8132    356   1086    431       C
ATOM   6300  CG  GLU B 522      41.598  49.569 121.394  1.00 77.61           C
ANISOU 6300  CG  GLU B 522    11207  10079   8201    331   1131    431       C
ATOM   6301  CD  GLU B 522      40.162  49.533 121.966  1.00 88.59           C
ANISOU 6301  CD  GLU B 522    12690  11378   9593    402   1249    455       C
ATOM   6302  OE1 GLU B 522      39.197  49.328 121.188  1.00 89.92           O
ANISOU 6302  OE1 GLU B 522    12779  11545   9843    425   1329    447       O
ATOM   6303  OE2 GLU B 522      39.993  49.699 123.201  1.00 83.45           O
ANISOU 6303  OE2 GLU B 522    12188  10660   8860    435   1264    482       O
ATOM   6304  C   GLU B 522      44.583  49.486 121.559  1.00 86.48           C
ANISOU 6304  C   GLU B 522    12247  11336   9277    224    887    407       C
ATOM   6305  O   GLU B 522      44.714  50.456 120.817  1.00 95.81           O
ANISOU 6305  O   GLU B 522    13407  12555  10442    155    870    393       O
ATOM   6306  N   LYS B 523      45.109  49.449 122.777  1.00 77.55           N
ANISOU 6306  N   LYS B 523    11230  10159   8076    237    825    430       N
ATOM   6307  CA  LYS B 523      45.869  50.586 123.276  1.00 80.13           C
ANISOU 6307  CA  LYS B 523    11659  10479   8306    171    729    433       C
ATOM   6308  CB  LYS B 523      46.091  50.468 124.781  1.00 77.22           C
ANISOU 6308  CB  LYS B 523    11453  10037   7849    208    682    462       C
ATOM   6309  CG  LYS B 523      44.813  50.429 125.545  1.00 70.25           C
ANISOU 6309  CG  LYS B 523    10710   9059   6920    282    791    488       C
ATOM   6310  CD  LYS B 523      45.042  50.603 127.023  1.00 66.25           C
ANISOU 6310  CD  LYS B 523    10392   8484   6294    305    742    514       C
ATOM   6311  CE  LYS B 523      43.707  50.730 127.752  1.00 64.87           C
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ANISOU 6311  CE  LYS B 523    10362   8224   6062    373    868    535       C
ATOM   6312  NZ  LYS B 523      43.900  51.223 129.139  1.00 75.68           N
ANISOU 6312  NZ  LYS B 523    11940   9529   7287    386    822    550       N
ATOM   6313  C   LYS B 523      47.206  50.714 122.548  1.00 78.12           C
ANISOU 6313  C   LYS B 523    11268  10330   8084     90    626    408       C
ATOM   6314  O   LYS B 523      47.702  51.817 122.345  1.00 84.21           O
ANISOU 6314  O   LYS B 523    12067  11121   8808      8    566    404       O
ATOM   6315  N   ILE B 524      47.780  49.587 122.147  1.00 69.18           N
ANISOU 6315  N   ILE B 524     9984   9264   7035    112    608    389       N
ATOM   6316  CA  ILE B 524      49.061  49.615 121.469  1.00 66.82           C
ANISOU 6316  CA  ILE B 524     9539   9075   6773     43    522    359       C
ATOM   6317  CB  ILE B 524      49.720  48.233 121.407  1.00 59.20           C
ANISOU 6317  CB  ILE B 524     8437   8161   5898     95    490    336       C
ATOM   6318  CG1 ILE B 524      50.255  47.823 122.775  1.00 58.33           C
ANISOU 6318  CG1 ILE B 524     8427   7986   5748    134    402    365       C
ATOM   6319  CD1 ILE B 524      50.802  46.388 122.796  1.00 63.01           C
ANISOU 6319  CD1 ILE B 524     8897   8606   6437    199    366    347       C
ATOM   6320  CG2 ILE B 524      50.880  48.259 120.415  1.00 55.45           C
ANISOU 6320  CG2 ILE B 524     7775   7818   5475     26    434    293       C
ATOM   6321  C   ILE B 524      48.859  50.147 120.062  1.00 70.26           C
ANISOU 6321  C   ILE B 524     9865   9590   7242    -19    572    335       C
ATOM   6322  O   ILE B 524      49.661  50.959 119.552  1.00 66.85           O
ANISOU 6322  O   ILE B 524     9384   9227   6789   -114    512    328       O
ATOM   6323  N   LYS B 525      47.767  49.693 119.452  1.00 56.26           N
ANISOU 6323  N   LYS B 525     8055   7802   5518     32    679    327       N
ATOM   6324  CA  LYS B 525      47.435  50.100 118.108  1.00 58.84           C
ANISOU 6324  CA  LYS B 525     8286   8196   5873    -16    730    307       C
ATOM   6325  CB  LYS B 525      46.258  49.285 117.557  1.00 58.80           C
ANISOU 6325  CB  LYS B 525     8232   8170   5940     60    837    293       C
ATOM   6326  CG  LYS B 525      45.669  49.931 116.329  1.00 88.85           C
ANISOU 6326  CG  LYS B 525    11989  12017   9752     13    888    283       C
ATOM   6327  CD  LYS B 525      45.081  48.970 115.295  1.00101.78           C
ANISOU 6327  CD  LYS B 525    13493  13700  11479     57    958    245       C
ATOM   6328  CE  LYS B 525      44.130  47.950 115.881  1.00101.88           C
ANISOU 6328  CE  LYS B 525    13535  13623  11552    162   1021    252       C
ATOM   6329  NZ  LYS B 525      43.160  47.555 114.811  1.00101.54           N
ANISOU 6329  NZ  LYS B 525    13408  13595  11578    187   1095    226       N
ATOM   6330  C   LYS B 525      47.140  51.615 118.097  1.00 67.70           C
ANISOU 6330  C   LYS B 525     9529   9279   6915    -88    719    335       C
ATOM   6331  O   LYS B 525      47.534  52.320 117.167  1.00 66.15           O
ANISOU 6331  O   LYS B 525     9268   9156   6710   -175    698    330       O
ATOM   6332  N   LEU B 526      46.501  52.118 119.151  1.00 70.24           N
ANISOU 6332  N   LEU B 526    10027   9485   7175    -52    728    364       N
ATOM   6333  CA  LEU B 526      46.242  53.554 119.274  1.00 83.05           C
ANISOU 6333  CA  LEU B 526    11779  11053   8724   -110    706    385       C
ATOM   6334  CB  LEU B 526      45.270  53.838 120.409  1.00 79.58           C
ANISOU 6334  CB  LEU B 526    11524  10484   8230    -38    749    404       C
ATOM   6335  CG  LEU B 526      43.825  53.481 120.096  1.00 75.00           C
ANISOU 6335  CG  LEU B 526    10940   9857   7698     39    874    404       C
ATOM   6336  CD1 LEU B 526      43.049  53.500 121.376  1.00 66.77           C
ANISOU 6336  CD1 LEU B 526    10063   8704   6604    118    922    420       C
ATOM   6337  CD2 LEU B 526      43.234  54.443 119.090  1.00 65.67           C
ANISOU 6337  CD2 LEU B 526     9748   8678   6527     -7    898    403       C
ATOM   6338  C   LEU B 526      47.528  54.325 119.511  1.00 77.95           C
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ANISOU 6338  C   LEU B 526    11151  10442   8025   -207    584    391       C
ATOM   6339  O   LEU B 526      47.744  55.389 118.923  1.00 64.57           O
ANISOU 6339  O   LEU B 526     9463   8767   6305   -298    548    401       O
ATOM   6340  N   HIS B 527      48.360  53.774 120.388  1.00 66.09           N
ANISOU 6340  N   HIS B 527     9658   8943   6512   -189    515    389       N
ATOM   6341  CA  HIS B 527      49.680  54.309 120.682  1.00 77.85           C
ANISOU 6341  CA  HIS B 527    11143  10471   7967   -276    388    392       C
ATOM   6342  CB  HIS B 527      50.428  53.362 121.619  1.00 84.37           C
ANISOU 6342  CB  HIS B 527    11958  11298   8799   -226    324    388       C
ATOM   6343  CG  HIS B 527      51.792  53.829 122.018  1.00 82.39           C
ANISOU 6343  CG  HIS B 527    11700  11083   8523   -307    183    389       C
ATOM   6344  ND1 HIS B 527      52.900  53.665 121.213  1.00 84.62           N
ANISOU 6344  ND1 HIS B 527    11797  11490   8866   -379    132    371       N
ATOM   6345  CE1 HIS B 527      53.965  54.137 121.837  1.00 88.46           C
ANISOU 6345  CE1 HIS B 527    12310  11978   9322   -442      4    379       C
ATOM   6346  NE2 HIS B 527      53.595  54.578 123.025  1.00 86.51           N
ANISOU 6346  NE2 HIS B 527    12268  11611   8989   -411    -36    399       N
ATOM   6347  CD2 HIS B 527      52.240  54.390 123.165  1.00 85.59           C
ANISOU 6347  CD2 HIS B 527    12253  11417   8850   -325     81    405       C
ATOM   6348  C   HIS B 527      50.471  54.525 119.401  1.00 83.83           C
ANISOU 6348  C   HIS B 527    11725  11357   8769   -374    366    380       C
ATOM   6349  O   HIS B 527      50.899  55.643 119.129  1.00 96.94           O
ANISOU 6349  O   HIS B 527    13412  13028  10392   -477    309    396       O
ATOM   6350  N   ASP B 528      50.638  53.469 118.603  1.00 78.08           N
ANISOU 6350  N   ASP B 528    10821  10725   8120   -345    414    351       N
ATOM   6351  CA  ASP B 528      51.442  53.558 117.374  1.00 86.23           C
ANISOU 6351  CA  ASP B 528    11676  11897   9192   -433    404    332       C
ATOM   6352  CB  ASP B 528      51.577  52.185 116.694  1.00 80.09           C
ANISOU 6352  CB  ASP B 528    10717  11212   8502   -369    459    285       C
ATOM   6353  CG  ASP B 528      52.423  51.196 117.506  1.00 95.96           C
ANISOU 6353  CG  ASP B 528    12678  13230  10553   -312    393    265       C
ATOM   6354  OD1 ASP B 528      53.097  51.603 118.484  1.00 91.38           O
ANISOU 6354  OD1 ASP B 528    12180  12609   9932   -339    294    287       O
ATOM   6355  OD2 ASP B 528      52.418  49.996 117.157  1.00106.37           O
ANISOU 6355  OD2 ASP B 528    13876  14593  11948   -239    432    226       O
ATOM   6356  C   ASP B 528      50.851  54.572 116.387  1.00 90.54           C
ANISOU 6356  C   ASP B 528    12239  12454   9709   -507    449    352       C
ATOM   6357  O   ASP B 528      51.564  55.384 115.800  1.00 89.11           O
ANISOU 6357  O   ASP B 528    12010  12341   9507   -623    402    367       O
ATOM   6358  N   MET B 529      49.537  54.515 116.221  1.00 91.90           N
ANISOU 6358  N   MET B 529    12478  12555   9885   -441    537    356       N
ATOM   6359  CA  MET B 529      48.816  55.429 115.354  1.00 84.16           C
ANISOU 6359  CA  MET B 529    11530  11566   8883   -493    576    377       C
ATOM   6360  CB  MET B 529      47.342  55.013 115.302  1.00 83.15           C
ANISOU 6360  CB  MET B 529    11451  11359   8782   -389    676    371       C
ATOM   6361  CG  MET B 529      46.414  55.885 114.494  1.00 86.77           C
ANISOU 6361  CG  MET B 529    11953  11787   9228   -421    714    393       C
ATOM   6362  SD  MET B 529      45.138  54.860 113.731  1.00162.00           S
ANISOU 6362  SD  MET B 529    21399  21321  18832   -321    831    365       S
ATOM   6363  CE  MET B 529      43.754  55.992 113.473  1.00 83.26           C
ANISOU 6363  CE  MET B 529    11554  11239   8842   -316    864    397       C
ATOM   6364  C   MET B 529      48.989  56.862 115.849  1.00 89.14           C
ANISOU 6364  C   MET B 529    12309  12120   9441   -574    499    417       C
ATOM   6365  O   MET B 529      49.070  57.789 115.062  1.00 91.60           O
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ANISOU 6365  O   MET B 529    12615  12459   9731   -671    480    442       O
ATOM   6366  N   GLN B 530      49.086  57.029 117.163  1.00 93.35           N
ANISOU 6366  N   GLN B 530    12978  12557   9935   -537    447    422       N
ATOM   6367  CA  GLN B 530      49.232  58.351 117.758  1.00 87.47           C
ANISOU 6367  CA  GLN B 530    12390  11724   9121   -603    366    450       C
ATOM   6368  CB  GLN B 530      48.533  58.392 119.112  1.00 78.80           C
ANISOU 6368  CB  GLN B 530    11477  10488   7977   -506    372    446       C
ATOM   6369  CG  GLN B 530      47.023  58.307 119.010  1.00 77.54           C
ANISOU 6369  CG  GLN B 530    11380  10253   7830   -412    486    443       C
ATOM   6370  CD  GLN B 530      46.369  58.154 120.362  1.00 78.27           C
ANISOU 6370  CD  GLN B 530    11634  10229   7876   -309    512    436       C
ATOM   6371  OE1 GLN B 530      45.163  57.918 120.466  1.00 73.56           O
ANISOU 6371  OE1 GLN B 530    11082   9573   7295   -221    612    431       O
ATOM   6372  NE2 GLN B 530      47.167  58.287 121.415  1.00 82.36           N
ANISOU 6372  NE2 GLN B 530    12239  10718   8335   -323    422    435       N
ATOM   6373  C   GLN B 530      50.679  58.790 117.930  1.00 86.72           C
ANISOU 6373  C   GLN B 530    12256  11686   9007   -714    245    460       C
ATOM   6374  O   GLN B 530      50.942  59.827 118.529  1.00 86.94           O
ANISOU 6374  O   GLN B 530    12414  11638   8981   -772    159    480       O
ATOM   6375  N   GLU B 531      51.610  58.006 117.402  1.00 93.54           N
ANISOU 6375  N   GLU B 531    12936  12683   9921   -742    237    443       N
ATOM   6376  CA  GLU B 531      53.037  58.296 117.540  1.00 93.36           C
ANISOU 6376  CA  GLU B 531    12846  12730   9898   -845    127    450       C
ATOM   6377  CB  GLU B 531      53.426  59.545 116.731  1.00 87.69           C
ANISOU 6377  CB  GLU B 531    12116  12046   9156   -995     84    489       C
ATOM   6378  CG  GLU B 531      53.218  59.398 115.226  1.00 92.98           C
ANISOU 6378  CG  GLU B 531    12640  12832   9856  -1038    172    492       C
ATOM   6379  CD  GLU B 531      53.806  60.542 114.403  1.00104.78           C
ANISOU 6379  CD  GLU B 531    14104  14381  11327  -1203    124    539       C
ATOM   6380  OE1 GLU B 531      54.100  61.618 114.963  1.00103.79           O
ANISOU 6380  OE1 GLU B 531    14100  14172  11163  -1281     28    574       O
ATOM   6381  OE2 GLU B 531      53.981  60.358 113.178  1.00115.83           O
ANISOU 6381  OE2 GLU B 531    15358  15909  12743  -1258    183    542       O
ATOM   6382  C   GLU B 531      53.437  58.471 119.002  1.00 89.95           C
ANISOU 6382  C   GLU B 531    12553  12201   9422   -820     26    451       C
ATOM   6383  O   GLU B 531      54.200  59.362 119.342  1.00 93.05           O
ANISOU 6383  O   GLU B 531    12996  12576   9783   -917    -83    471       O
ATOM   6384  N   GLY B 532      52.915  57.616 119.869  1.00 86.51           N
ANISOU 6384  N   GLY B 532    12185  11703   8984   -694     59    432       N
ATOM   6385  CA  GLY B 532      53.325  57.610 121.261  1.00 84.24           C
ANISOU 6385  CA  GLY B 532    12025  11336   8648   -662    -35    432       C
ATOM   6386  C   GLY B 532      52.914  58.822 122.080  1.00 79.38           C
ANISOU 6386  C   GLY B 532    11633  10586   7943   -683    -88    448       C
ATOM   6387  O   GLY B 532      53.402  59.016 123.191  1.00 76.59           O
ANISOU 6387  O   GLY B 532    11393  10171   7536   -680   -188    446       O
ATOM   6388  N   LYS B 533      52.001  59.631 121.560  1.00 92.10           N
ANISOU 6388  N   LYS B 533    13313  12144   9535   -698    -27    459       N
ATOM   6389  CA  LYS B 533      51.628  60.859 122.256  1.00 88.80           C
ANISOU 6389  CA  LYS B 533    13104  11597   9040   -719    -82    467       C
ATOM   6390  CB  LYS B 533      51.976  62.076 121.396  1.00 85.31           C
ANISOU 6390  CB  LYS B 533    12642  11167   8603   -858   -138    493       C
ATOM   6391  CG  LYS B 533      53.469  62.350 121.352  1.00 97.51           C
ANISOU 6391  CG  LYS B 533    14098  12787  10163   -984   -268    507       C
ATOM   6392  CD  LYS B 533      53.823  63.678 121.981  1.00112.50           C
ANISOU 6392  CD  LYS B 533    15993  14637  12113  -1064   -358    523       C
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ANISOU 6392  CD  LYS B 533    16160  14581  12004  -1070   -398    519       C
ATOM   6393  CE  LYS B 533      55.089  64.240 121.358  1.00122.28           C
ANISOU 6393  CE  LYS B 533    17276  15906  13279  -1236   -500    550       C
ATOM   6394  NZ  LYS B 533      55.139  63.905 119.906  1.00126.15           N
ANISOU 6394  NZ  LYS B 533    17566  16534  13833  -1288   -410    572       N
ATOM   6395  C   LYS B 533      50.158  60.923 122.651  1.00 85.97           C
ANISOU 6395  C   LYS B 533    12890  11128   8646   -606     23    456       C
ATOM   6396  O   LYS B 533      49.264  60.697 121.838  1.00 94.19           O
ANISOU 6396  O   LYS B 533    13870  12186   9730   -568    133    458       O
ATOM   6397  N   CYS B 534      49.921  61.242 123.914  1.00 76.14           N
ANISOU 6397  N   CYS B 534    11835   9773   7321   -552    -14    442       N
ATOM   6398  CA  CYS B 534      48.576  61.533 124.394  1.00 83.36           C
ANISOU 6398  CA  CYS B 534    12905  10576   8192   -453     78    428       C
ATOM   6399  CB  CYS B 534      48.618  61.805 125.894  1.00 90.28           C
ANISOU 6399  CB  CYS B 534    13986  11351   8964   -404     19    408       C
ATOM   6400  SG  CYS B 534      47.145  62.571 126.541  1.00 93.65           S
ANISOU 6400  SG  CYS B 534    14627  11633   9322   -307    107    381       S
ATOM   6401  C   CYS B 534      47.978  62.733 123.659  1.00 78.80           C
ANISOU 6401  C   CYS B 534    12372   9944   7623   -503     87    435       C
ATOM   6402  O   CYS B 534      48.490  63.830 123.760  1.00 83.97           O
ANISOU 6402  O   CYS B 534    13108  10551   8245   -591    -21    439       O
ATOM   6403  N   LEU B 535      46.886  62.543 122.936  1.00 69.90           N
ANISOU 6403  N   LEU B 535    11197   8817   6544   -448    208    437       N
ATOM   6404  CA  LEU B 535      46.439  63.596 122.036  1.00 75.39           C
ANISOU 6404  CA  LEU B 535    11903   9479   7264   -507    204    451       C
ATOM   6405  CB  LEU B 535      45.495  63.001 120.990  1.00 65.62           C
ANISOU 6405  CB  LEU B 535    10539   8291   6101   -457    331    458       C
ATOM   6406  CG  LEU B 535      46.181  61.955 120.099  1.00 77.36           C
ANISOU 6406  CG  LEU B 535    11812   9930   7650   -497    350    471       C
ATOM   6407  CD1 LEU B 535      45.283  61.553 118.947  1.00 84.21           C
ANISOU 6407  CD1 LEU B 535    12567  10842   8587   -466    455    476       C
ATOM   6408  CD2 LEU B 535      47.536  62.451 119.572  1.00 72.13           C
ANISOU 6408  CD2 LEU B 535    11072   9347   6986   -645    236    495       C
ATOM   6409  C   LEU B 535      45.783  64.814 122.714  1.00 85.31           C
ANISOU 6409  C   LEU B 535    13369  10584   8461   -480    175    432       C
ATOM   6410  O   LEU B 535      45.702  65.892 122.102  1.00 88.24           O
ANISOU 6410  O   LEU B 535    13772  10910   8844   -553    124    448       O
ATOM   6411  N   TYR B 536      45.338  64.666 123.963  1.00 68.68           N
ANISOU 6411  N   TYR B 536    11408   8397   6289   -379    203    398       N
ATOM   6412  CA  TYR B 536      44.701  65.783 124.670  1.00 75.20           C
ANISOU 6412  CA  TYR B 536    12438   9079   7054   -340    182    366       C
ATOM   6413  CB  TYR B 536      43.604  65.287 125.613  1.00 77.39           C
ANISOU 6413  CB  TYR B 536    12817   9297   7290   -188    305    330       C
ATOM   6414  CG  TYR B 536      42.441  64.618 124.918  1.00 77.80           C
ANISOU 6414  CG  TYR B 536    12759   9380   7421   -108    459    338       C
ATOM   6415  CD1 TYR B 536      42.286  64.715 123.540  1.00 78.13           C
ANISOU 6415  CD1 TYR B 536    12657   9474   7554   -164    471    367       C
ATOM   6416  CE1 TYR B 536      41.228  64.101 122.895  1.00 76.35           C
ANISOU 6416  CE1 TYR B 536    12332   9274   7405    -92    599    372       C
ATOM   6417  CZ  TYR B 536      40.303  63.398 123.629  1.00 80.57           C
ANISOU 6417  CZ  TYR B 536    12903   9780   7931     33    721    351       C
ATOM   6418  OH  TYR B 536      39.266  62.808 122.965  1.00 90.15           O
ANISOU 6418  OH  TYR B 536    14009  11015   9229     97    840    357       O
ATOM   6419  CE2 TYR B 536      40.420  63.293 125.007  1.00 70.58           C
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ANISOU 6419  CE2 TYR B 536    11780   8464   6571     89    723    326       C
ATOM   6420  CD2 TYR B 536      41.490  63.898 125.640  1.00 69.24           C
ANISOU 6420  CD2 TYR B 536    11717   8271   6319     21    589    318       C
ATOM   6421  C   TYR B 536      45.731  66.594 125.457  1.00 87.04           C
ANISOU 6421  C   TYR B 536    14067  10525   8478   -417     24    354       C
ATOM   6422  O   TYR B 536      45.599  67.801 125.654  1.00 98.92           O
ANISOU 6422  O   TYR B 536    15712  11922   9952   -445    -48    335       O
ATOM   6423  N   SER B 537      46.767  65.909 125.897  1.00 80.29           N
ANISOU 6423  N   SER B 537    13163   9743   7601   -451    -38    362       N
ATOM   6424  CA  SER B 537      47.808  66.513 126.693  1.00 84.72           C
ANISOU 6424  CA  SER B 537    13832  10263   8094   -523   -194    351       C
ATOM   6425  CB  SER B 537      48.094  65.593 127.875  1.00 87.59           C
ANISOU 6425  CB  SER B 537    14250  10640   8388   -448   -193    333       C
ATOM   6426  OG  SER B 537      49.470  65.401 128.042  1.00 97.36           O
ANISOU 6426  OG  SER B 537    15426  11940   9625   -540   -328    349       O
ATOM   6427  C   SER B 537      49.061  66.782 125.864  1.00 91.21           C
ANISOU 6427  C   SER B 537    14515  11168   8972   -680   -312    391       C
ATOM   6428  O   SER B 537      49.932  67.550 126.261  1.00 89.88           O
ANISOU 6428  O   SER B 537    14421  10960   8771   -771   -458    389       O
ATOM   6429  N   LEU B 538      49.128  66.140 124.701  1.00 91.34           N
ANISOU 6429  N   LEU B 538    14327  11303   9075   -712   -244    426       N
ATOM   6430  CA  LEU B 538      50.268  66.216 123.788  1.00 88.10           C
ANISOU 6430  CA  LEU B 538    13751  11001   8723   -856   -323    465       C
ATOM   6431  CB  LEU B 538      50.412  67.628 123.197  1.00 90.45           C
ANISOU 6431  CB  LEU B 538    14100  11238   9029   -977   -409    491       C
ATOM   6432  CG  LEU B 538      49.297  68.023 122.208  1.00 85.57           C
ANISOU 6432  CG  LEU B 538    13470  10593   8451   -956   -313    508       C
ATOM   6433  CD1 LEU B 538      49.568  69.346 121.503  1.00 78.13           C
ANISOU 6433  CD1 LEU B 538    12559   9603   7525  -1093   -409    548       C
ATOM   6434  CD2 LEU B 538      49.049  66.923 121.186  1.00 82.03           C
ANISOU 6434  CD2 LEU B 538    12819  10282   8068   -929   -189    526       C
ATOM   6435  C   LEU B 538      51.563  65.763 124.456  1.00 86.01           C
ANISOU 6435  C   LEU B 538    13446  10792   8440   -901   -432    462       C
ATOM   6436  O   LEU B 538      52.636  65.858 123.875  1.00 92.62           O
ANISOU 6436  O   LEU B 538    14151  11718   9323  -1023   -511    490       O
ATOM   6437  N   GLU B 539      51.455  65.234 125.667  1.00 88.00           N
ANISOU 6437  N   GLU B 539    13808  10998   8629   -803   -435    431       N
ATOM   6438  CA  GLU B 539      52.616  64.693 126.360  1.00 95.69           C
ANISOU 6438  CA  GLU B 539    14748  12022   9589   -829   -542    429       C
ATOM   6439  CB  GLU B 539      52.445  64.790 127.878  1.00100.92           C
ANISOU 6439  CB  GLU B 539    15631  12574  10142   -749   -594    394       C
ATOM   6440  CG  GLU B 539      52.467  66.230 128.399  1.00107.12           C
ANISOU 6440  CG  GLU B 539    16613  13229  10859   -804   -705    372       C
ATOM   6441  CD  GLU B 539      51.740  66.391 129.726  1.00118.43           C
ANISOU 6441  CD  GLU B 539    18287  14541  12172   -688   -689    326       C
ATOM   6442  OE1 GLU B 539      51.389  67.541 130.089  1.00123.23           O
ANISOU 6442  OE1 GLU B 539    19070  15028  12724   -698   -739    295       O
ATOM   6443  OE2 GLU B 539      51.516  65.363 130.404  1.00113.64           O
ANISOU 6443  OE2 GLU B 539    17695  13958  11525   -587   -627    319       O
ATOM   6444  C   GLU B 539      52.840  63.252 125.920  1.00 93.18           C
ANISOU 6444  C   GLU B 539    14231  11833   9338   -783   -464    439       C
ATOM   6445  O   GLU B 539      51.912  62.574 125.476  1.00 97.87           O
ANISOU 6445  O   GLU B 539    14772  12451   9964   -697   -321    438       O
ATOM   6446  N   ALA B 540      54.078  62.794 126.019  1.00 84.68           N
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ANISOU 6446  N   ALA B 540    13041  10840   8293   -841   -563    446       N
ATOM   6447  CA  ALA B 540      54.440  61.520 125.431  1.00 98.34           C
ANISOU 6447  CA  ALA B 540    14560  12701  10106   -813   -504    451       C
ATOM   6448  CB  ALA B 540      55.945  61.422 125.253  1.00 94.69           C
ANISOU 6448  CB  ALA B 540    13947  12335   9694   -919   -631    460       C
ATOM   6449  C   ALA B 540      53.920  60.376 126.287  1.00101.76           C
ANISOU 6449  C   ALA B 540    15047  13108  10510   -670   -441    437       C
ATOM   6450  O   ALA B 540      53.827  60.502 127.504  1.00 97.29           O
ANISOU 6450  O   ALA B 540    14660  12450   9856   -620   -495    426       O
ATOM   6451  N   ILE B 541      53.547  59.277 125.635  1.00100.60           N
ANISOU 6451  N   ILE B 541    14752  13038  10433   -606   -325    437       N
ATOM   6452  CA  ILE B 541      53.124  58.070 126.331  1.00 97.95           C
ANISOU 6452  CA  ILE B 541    14440  12687  10089   -480   -266    433       C
ATOM   6453  CB  ILE B 541      51.749  57.556 125.847  1.00 98.30           C
ANISOU 6453  CB  ILE B 541    14473  12717  10160   -387    -92    432       C
ATOM   6454  CG1 ILE B 541      50.655  58.600 126.055  1.00 87.37           C
ANISOU 6454  CG1 ILE B 541    13265  11225   8706   -370    -35    429       C
ATOM   6455  CD1 ILE B 541      49.277  58.092 125.665  1.00 79.19           C
ANISOU 6455  CD1 ILE B 541    12217  10170   7701   -276    132    428       C
ATOM   6456  CG2 ILE B 541      51.363  56.291 126.588  1.00106.38           C
ANISOU 6456  CG2 ILE B 541    15519  13722  11179   -268    -37    436       C
ATOM   6457  C   ILE B 541      54.165  56.988 126.105  1.00 96.67           C
ANISOU 6457  C   ILE B 541    14089  12634  10009   -484   -317    431       C
ATOM   6458  O   ILE B 541      54.125  56.280 125.092  1.00101.24           O
ANISOU 6458  O   ILE B 541    14483  13305  10677   -475   -238    425       O
ATOM   6459  N   PRO B 542      55.117  56.868 127.036  1.00 92.56           N
ANISOU 6459  N   PRO B 542    13611  12100   9457   -496   -455    432       N
ATOM   6460  CA  PRO B 542      56.167  55.850 126.944  1.00 93.12           C
ANISOU 6460  CA  PRO B 542    13507  12264   9609   -492   -522    427       C
ATOM   6461  CB  PRO B 542      56.963  56.047 128.240  1.00 96.73           C
ANISOU 6461  CB  PRO B 542    14094  12662   9997   -502   -687    432       C
ATOM   6462  CG  PRO B 542      56.706  57.464 128.633  1.00 90.87           C
ANISOU 6462  CG  PRO B 542    13539  11830   9158   -566   -732    433       C
ATOM   6463  CD  PRO B 542      55.291  57.739 128.210  1.00 89.91           C
ANISOU 6463  CD  PRO B 542    13492  11660   9010   -517   -567    433       C
ATOM   6464  C   PRO B 542      55.582  54.446 126.870  1.00 92.73           C
ANISOU 6464  C   PRO B 542    13390  12231   9610   -372   -416    425       C
ATOM   6465  O   PRO B 542      54.883  54.020 127.793  1.00 96.14           O
ANISOU 6465  O   PRO B 542    13972  12578   9979   -280   -382    439       O
ATOM   6466  N   LEU B 543      55.854  53.743 125.778  1.00 90.68           N
ANISOU 6466  N   LEU B 543    12910  12082   9463   -376   -363    409       N
ATOM   6467  CA  LEU B 543      55.336  52.391 125.600  1.00 93.51           C
ANISOU 6467  CA  LEU B 543    13189  12456   9885   -267   -270    402       C
ATOM   6468  CB  LEU B 543      55.893  51.779 124.320  1.00 83.72           C
ANISOU 6468  CB  LEU B 543    11693  11351   8768   -290   -237    370       C
ATOM   6469  CG  LEU B 543      55.435  50.369 123.956  1.00 83.57           C
ANISOU 6469  CG  LEU B 543    11566  11354   8832   -185   -148    352       C
ATOM   6470  CD1 LEU B 543      53.913  50.267 123.937  1.00 83.55           C
ANISOU 6470  CD1 LEU B 543    11676  11273   8798   -118     -7    368       C
ATOM   6471  CD2 LEU B 543      56.012  50.006 122.601  1.00 72.81           C
ANISOU 6471  CD2 LEU B 543    9958  10131   7574   -221   -116    309       C
ATOM   6472  C   LEU B 543      55.662  51.488 126.788  1.00103.90           C
ANISOU 6472  C   LEU B 543    14575  13719  11183   -187   -348    417       C
ATOM   6473  O   LEU B 543      54.857  50.631 127.164  1.00111.90           O
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ANISOU 6473  O   LEU B 543    15644  14679  12194    -88   -271    431        O
ATOM   6474  N   GLU B 544      56.842  51.696 127.372  1.00 97.25           N
ANISOU 6474  N   GLU B 544    13730  12889  10330   -234   -507    417        N
ATOM   6475  CA  GLU B 544      57.294  50.911 128.511  1.00 92.55           C
ANISOU 6475  CA  GLU B 544    13203  12246   9716   -168   -611    435        C
ATOM   6476  CB  GLU B 544      58.695  51.344 128.958  1.00 92.50           C
ANISOU 6476  CB  GLU B 544    13167  12267   9710   -242   -800    429        C
ATOM   6477  C   GLU B 544      56.315  51.058 129.652  1.00 90.52           C
ANISOU 6477  C   GLU B 544    13203  11862   9327   -105   -574    468        C
ATOM   6478  O   GLU B 544      55.989  50.084 130.329  1.00 89.04           O
ANISOU 6478  O   GLU B 544    13075  11626   9128    -14   -561    493        O
ATOM   6479  N   ASP B 545      55.845  52.286 129.851  1.00 91.69           N
ANISOU 6479  N   ASP B 545    13503  11957   9378   -155   -557    469        N
ATOM   6480  CA  ASP B 545      54.926  52.583 130.936  1.00 89.90           C
ANISOU 6480  CA  ASP B 545    13526  11615   9015   -100   -518    491        C
ATOM   6481  CB  ASP B 545      54.882  54.078 131.229  1.00 96.64           C
ANISOU 6481  CB  ASP B 545    14534  12416   9769   -174   -564    477        C
ATOM   6482  CG  ASP B 545      54.061  54.391 132.463  1.00114.54           C
ANISOU 6482  CG  ASP B 545    17066  14568  11884   -113   -537    489        C
ATOM   6483  OD1 ASP B 545      54.044  53.550 133.388  1.00117.82           O
ANISOU 6483  OD1 ASP B 545    17565  14950  12251    -41   -559    516        O
ATOM   6484  OD2 ASP B 545      53.422  55.463 132.508  1.00124.97           O
ANISOU 6484  OD2 ASP B 545    18515  15833  13134   -135   -492    473        O
ATOM   6485  C   ASP B 545      53.542  52.085 130.588  1.00 90.15           C
ANISOU 6485  C   ASP B 545    13570  11623   9060    -22   -328    500        C
ATOM   6486  O   ASP B 545      52.805  51.604 131.455  1.00 88.30           O
ANISOU 6486  O   ASP B 545    13479  11317   8755     59   -273    528        O
ATOM   6487  N   LEU B 546      53.190  52.207 129.313  1.00 85.62           N
ANISOU 6487  N   LEU B 546    12846  11111   8576    -49   -231    480        N
ATOM   6488  CA  LEU B 546      51.919  51.692 128.822  1.00 89.02           C
ANISOU 6488  CA  LEU B 546    13254  11528   9043     19    -59    486        C
ATOM   6489  CB  LEU B 546      51.730  52.047 127.356  1.00 81.84           C
ANISOU 6489  CB  LEU B 546    12181  10694   8222    -33     15    459        C
ATOM   6490  CG  LEU B 546      50.464  51.510 126.695  1.00 86.38           C
ANISOU 6490  CG  LEU B 546    12707  11263   8850     31    181    460        C
ATOM   6491  CD1 LEU B 546      49.233  52.182 127.302  1.00 87.05           C
ANISOU 6491  CD1 LEU B 546    12987  11246   8841     69    272    474        C
ATOM   6492  CD2 LEU B 546      50.511  51.688 125.166  1.00 73.42           C
ANISOU 6492  CD2 LEU B 546    10878   9716   7303    -25    229    431        C
ATOM   6493  C   LEU B 546      51.852  50.175 129.015  1.00 99.04           C
ANISOU 6493  C   LEU B 546    14450  12802  10376    106    -31    504        C
ATOM   6494  O   LEU B 546      50.810  49.625 129.392  1.00 89.78           O
ANISOU 6494  O   LEU B 546    13358  11572   9184    183     77    529        O
ATOM   6495  N   LEU B 547      52.977  49.506 128.773  1.00104.20           N
ANISOU 6495  N   LEU B 547    14954  13525  11114     93   -134    493        N
ATOM   6496  CA  LEU B 547      53.051  48.057 128.942  1.00 96.24           C
ANISOU 6496  CA  LEU B 547    13870  12517  10180    174   -133    507        C
ATOM   6497  CB  LEU B 547      54.332  47.510 128.305  1.00 86.95           C
ANISOU 6497  CB  LEU B 547    12477  11437   9121    149   -236    474        C
ATOM   6498  CG  LEU B 547      54.281  47.352 126.783  1.00 78.86           C
ANISOU 6498  CG  LEU B 547    11236  10514   8214    126   -150    427        C
ATOM   6499  CD1 LEU B 547      55.595  46.827 126.237  1.00 81.51           C
ANISOU 6499  CD1 LEU B 547    11361  10951   8658    105   -250    387        C
ATOM   6500  CD2 LEU B 547      53.141  46.404 126.393  1.00 79.74           C
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ANISOU 6500  CD2 LEU B 547    11318  10597   8382    209      -9    432       C
ATOM   6501  C   LEU B 547      52.971  47.632 130.403  1.00 89.98           C
ANISOU 6501  C   LEU B 547    13265  11631   9291    232    -188    556       C
ATOM   6502  O   LEU B 547      52.379  46.608 130.706  1.00 99.09           O
ANISOU 6502  O   LEU B 547    14438  12743  10468    310    -126    588       O
ATOM   6503  N   ASN B 548      53.541  48.414 131.310  1.00 91.16           N
ANISOU 6503  N   ASN B 548    13561  11746   9331    192    -306    565       N
ATOM   6504  CA  ASN B 548      53.577  48.000 132.710  1.00 93.56           C
ANISOU 6504  CA  ASN B 548    14047  11969   9532    244    -374    612       C
ATOM   6505  CB  ASN B 548      54.943  48.313 133.309  1.00 96.69           C
ANISOU 6505  CB  ASN B 548    14462  12377   9897    195    -579    606       C
ATOM   6506  CG  ASN B 548      56.037  47.484 132.687  1.00109.94           C
ANISOU 6506  CG  ASN B 548    15909  14135  11727    193    -675    586       C
ATOM   6507  OD1 ASN B 548      56.183  46.296 132.987  1.00113.08           O
ANISOU 6507  OD1 ASN B 548    16269  14516  12179    263    -705    612       O
ATOM   6508  ND2 ASN B 548      56.801  48.096 131.793  1.00114.27           N
ANISOU 6508  ND2 ASN B 548    16297  14770  12349    113    -720    540       N
ATOM   6509  C   ASN B 548      52.487  48.604 133.580  1.00 89.74           C
ANISOU 6509  C   ASN B 548    13805  11397   8894    269    -283    637       C
ATOM   6510  O   ASN B 548      52.193  48.089 134.654  1.00 91.10           O
ANISOU 6510  O   ASN B 548    14131  11504   8978    325    -288    683       O
ATOM   6511  N   ASN B 549      51.892  49.697 133.120  1.00 84.23           N
ANISOU 6511  N   ASN B 549    13142  10698   8163    229    -202    607       N
ATOM   6512  CA  ASN B 549      50.819  50.342 133.862  1.00 81.42           C
ANISOU 6512  CA  ASN B 549    13003  10263   7670    259    -105    618       C
ATOM   6513  CB  ASN B 549      51.367  51.535 134.642  1.00 88.14           C
ANISOU 6513  CB  ASN B 549    14024  11074   8389    206    -227    597       C
ATOM   6514  CG  ASN B 549      52.571  51.179 135.476  1.00104.02           C
ANISOU 6514  CG  ASN B 549    16075  13084  10363    193    -415    615       C
ATOM   6515  OD1 ASN B 549      52.460  50.463 136.468  1.00108.10           O
ANISOU 6515  OD1 ASN B 549    16712  13556  10805    252    -432    658       O
ATOM   6516  ND2 ASN B 549      53.736  51.673 135.075  1.00111.81           N
ANISOU 6516  ND2 ASN B 549    16959  14120  11403    112    -561    586       N
ATOM   6517  C   ASN B 549      49.676  50.826 132.984  1.00 90.77           C
ANISOU 6517  C   ASN B 549    14145  11450   8895    262      63    596       C
ATOM   6518  O   ASN B 549      49.266  51.984 133.111  1.00100.23           O
ANISOU 6518  O   ASN B 549    15459  12611  10013    236      88    571       O
ATOM   6519  N   PRO B 550      49.145  49.951 132.104  1.00 82.07           N
ANISOU 6519  N   PRO B 550    12879  10385   7917    297    172    602       N
ATOM   6520  CA  PRO B 550      48.171  50.398 131.097  1.00 82.74           C
ANISOU 6520  CA  PRO B 550    12894  10484   8061    292    311    578       C
ATOM   6521  CB  PRO B 550      47.827  49.106 130.345  1.00 80.95           C
ANISOU 6521  CB  PRO B 550    12491  10296   7970    337    392    590       C
ATOM   6522  CG  PRO B 550      48.155  48.006 131.298  1.00 72.34           C
ANISOU 6522  CG  PRO B 550    11452   9174   6860    390    340    635       C
ATOM   6523  CD  PRO B 550      49.344  48.490 132.060  1.00 74.67           C
ANISOU 6523  CD  PRO B 550    11833   9468   7071    348    169    632       C
ATOM   6524  C   PRO B 550      46.905  51.033 131.685  1.00 84.88           C
ANISOU 6524  C   PRO B 550    13344  10678   8231    333    436    584       C
ATOM   6525  O   PRO B 550      46.213  51.762 130.979  1.00 92.86           O
ANISOU 6525  O   PRO B 550    14329  11687   9267    319    518    557       O
ATOM   6526  N   PHE B 551      46.615  50.770 132.954  1.00 82.53           N
ANISOU 6526  N   PHE B 551    13223  10317   7818    385    447    617       N
ATOM   6527  CA  PHE B 551      45.464  51.369 133.623  1.00 84.96           C
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ANISOU 6527  CA  PHE B 551    13707  10556   8017    430    568    617       C
ATOM   6528  CB  PHE B 551      45.185  50.645 134.940  1.00 87.27           C
ANISOU 6528  CB  PHE B 551    14158  10800   8201    492    595    669       C
ATOM   6529  CG  PHE B 551      46.428  50.241 135.669  1.00100.38           C
ANISOU 6529  CG  PHE B 551    15866  12466   9809    471    422    691       C
ATOM   6530  CD1 PHE B 551      47.157  51.176 136.395  1.00103.68           C
ANISOU 6530  CD1 PHE B 551    16434  12859  10101    433    290    666       C
ATOM   6531  CE1 PHE B 551      48.319  50.816 137.055  1.00105.39           C
ANISOU 6531  CE1 PHE B 551    16689  13080  10276    413    118    686       C
ATOM   6532  CZ  PHE B 551      48.770  49.506 136.996  1.00107.72           C
ANISOU 6532  CZ  PHE B 551    16871  13401  10657    436     76    733       C
ATOM   6533  CE2 PHE B 551      48.055  48.559 136.269  1.00110.62           C
ANISOU 6533  CE2 PHE B 551    17092  13789  11151    476    208    756       C
ATOM   6534  CD2 PHE B 551      46.888  48.931 135.609  1.00106.49           C
ANISOU 6534  CD2 PHE B 551    16531  13264  10666    491    380    736       C
ATOM   6535  C   PHE B 551      45.666  52.864 133.872  1.00 89.26           C
ANISOU 6535  C   PHE B 551    14384  11069   8463    385    505    571       C
ATOM   6536  O   PHE B 551      44.756  53.542 134.352  1.00100.74           O
ANISOU 6536  O   PHE B 551    15982  12466   9830    422    598    555       O
ATOM   6537  N   ASN B 552      46.855  53.372 133.547  1.00 84.16           N
ANISOU 6537  N   ASN B 552    13685  10457   7835    307    348    547       N
ATOM   6538  CA  ASN B 552      47.153  54.804 133.652  1.00 85.04           C
ANISOU 6538  CA  ASN B 552    13903  10536   7874    249    268    504       C
ATOM   6539  CB  ASN B 552      48.602  55.023 134.063  1.00 92.43           C
ANISOU 6539  CB  ASN B 552    14858  11488   8775    181     66    500       C
ATOM   6540  CG  ASN B 552      48.840  54.770 135.528  1.00100.77           C
ANISOU 6540  CG  ASN B 552    16110  12491   9685    221      0    519       C
ATOM   6541  OD1 ASN B 552      47.998  54.202 136.236  1.00 93.61           O
ANISOU 6541  OD1 ASN B 552    15308  11548   8710    301    110    546       O
ATOM   6542  ND2 ASN B 552      50.000  55.200 136.000  1.00109.17           N
ANISOU 6542  ND2 ASN B 552    17227  13552  10699    162   -184    507       N
ATOM   6543  C   ASN B 552      46.895  55.547 132.343  1.00 93.39           C
ANISOU 6543  C   ASN B 552    14831  11620   9031    197    307    474       C
ATOM   6544  O   ASN B 552      47.205  56.739 132.207  1.00 92.18           O
ANISOU 6544  O   ASN B 552    14735  11443   8845    135    233    442       O
ATOM   6545  N   TYR B 553      46.345  54.827 131.371  1.00 87.12           N
ANISOU 6545  N   TYR B 553    13867  10876   8360    220    416    487       N
ATOM   6546  CA  TYR B 553      46.005  55.415 130.092  1.00 86.62           C
ANISOU 6546  CA  TYR B 553    13681  10842   8388    177    462    465       C
ATOM   6547  CB  TYR B 553      47.070  55.082 129.054  1.00 84.59           C
ANISOU 6547  CB  TYR B 553    13217  10684   8239    101    375    465       C
ATOM   6548  CG  TYR B 553      48.463  55.439 129.521  1.00 90.23           C
ANISOU 6548  CG  TYR B 553    13960  11414   8907     29    199    461       C
ATOM   6549  CD1 TYR B 553      48.961  56.727 129.367  1.00 88.62           C
ANISOU 6549  CD1 TYR B 553    13808  11194   8668    -59    105    440       C
ATOM   6550  CE1 TYR B 553      50.225  57.059 129.804  1.00 89.29           C
ANISOU 6550  CE1 TYR B 553    13914  11293   8720   -129    -61    437       C
ATOM   6551  CZ  TYR B 553      51.000  56.103 130.423  1.00 94.71           C
ANISOU 6551  CZ  TYR B 553    14572  12008   9405   -106   -138    453       C
ATOM   6552  OH  TYR B 553      52.259  56.417 130.862  1.00 94.62           O
ANISOU 6552  OH  TYR B 553    14573  12010   9369   -175   -311    450       O
ATOM   6553  CE2 TYR B 553      50.523  54.824 130.603  1.00101.41           C
ANISOU 6553  CE2 TYR B 553    15378  12868  10284    -16    -50    475       C
ATOM   6554  CD2 TYR B 553      49.262  54.499 130.157  1.00 98.97           C
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ANISOU 6554  CD2 TYR B 553    15048  12545  10010     48    119    480       C
ATOM   6555  C   TYR B 553      44.643  54.904 129.670  1.00 89.04           C
ANISOU 6555  C   TYR B 553    13938  11138   8755    251    638    474       C
ATOM   6556  O   TYR B 553      44.422  53.703 129.596  1.00 97.78           O
ANISOU 6556  O   TYR B 553    14956  12274   9923    298    699    500       O
ATOM   6557  N   GLU B 554      43.718  55.820 129.418  1.00 86.79           N
ANISOU 6557  N   GLU B 554    13713  10805   8460    263    714    452       N
ATOM   6558  CA  GLU B 554      42.365  55.431 129.071  1.00 78.74           C
ANISOU 6558  CA  GLU B 554    12651   9768   7498    335    878    457       C
ATOM   6559  CB  GLU B 554      41.339  56.295 129.825  1.00 83.25           C
ANISOU 6559  CB  GLU B 554    13403  10248   7980    393    960    436       C
ATOM   6560  CG  GLU B 554      40.706  55.594 131.028  1.00103.53           C
ANISOU 6560  CG  GLU B 554    16089  12779  10470    480   1057    458       C
ATOM   6561  CD  GLU B 554      40.656  56.455 132.285  1.00123.99           C
ANISOU 6561  CD  GLU B 554    18914  15296  12899    506   1035    432       C
ATOM   6562  OE1 GLU B 554      40.244  57.636 132.200  1.00134.21           O
ANISOU 6562  OE1 GLU B 554    20289  16538  14166    506   1041    387       O
ATOM   6563  OE2 GLU B 554      41.028  55.942 133.365  1.00124.75           O
ANISOU 6563  OE2 GLU B 554    19120  15383  12895    528   1008    454       O
ATOM   6564  C   GLU B 554      42.126  55.515 127.570  1.00 79.08           C
ANISOU 6564  C   GLU B 554    12513   9863   7668    297    908    449       C
ATOM   6565  O   GLU B 554      42.703  56.342 126.857  1.00 81.42           O
ANISOU 6565  O   GLU B 554    12770  10185   7982    218    823    432       O
ATOM   6566  N   VAL B 555      41.284  54.618 127.091  1.00 72.85           N
ANISOU 6566  N   VAL B 555    11617   9094   6969    350   1024    463       N
ATOM   6567  CA  VAL B 555      40.739  54.751 125.770  1.00 66.89           C
ANISOU 6567  CA  VAL B 555    10722   8371   6321    333   1074    452       C
ATOM   6568  CB  VAL B 555      40.349  53.420 125.174  1.00 63.24           C
ANISOU 6568  CB  VAL B 555    10101   7957   5971    370   1151    468       C
ATOM   6569  CG1 VAL B 555      39.710  53.659 123.815  1.00 70.41           C
ANISOU 6569  CG1 VAL B 555    10881   8895   6978    353   1198    452       C
ATOM   6570  CG2 VAL B 555      41.575  52.523 125.072  1.00 59.89           C
ANISOU 6570  CG2 VAL B 555     9577   7605   5572    335   1059    475       C
ATOM   6571  C   VAL B 555      39.515  55.640 125.879  1.00 75.71           C
ANISOU 6571  C   VAL B 555    11936   9412   7421    378   1164    436       C
ATOM   6572  O   VAL B 555      38.530  55.285 126.519  1.00 76.54           O
ANISOU 6572  O   VAL B 555    12099   9469   7514    459   1278    444       O
ATOM   6573  N   ASP B 556      39.587  56.816 125.281  1.00 75.59           N
ANISOU 6573  N   ASP B 556    11937   9381   7402    325   1110    415       N
ATOM   6574  CA  ASP B 556      38.484  57.739 125.353  1.00 69.67           C
ANISOU 6574  CA  ASP B 556    11277   8551   6643    370   1179    395       C
ATOM   6575  CB  ASP B 556      38.986  59.126 125.733  1.00 81.40           C
ANISOU 6575  CB  ASP B 556    12910   9978   8039    322   1075    370       C
ATOM   6576  CG  ASP B 556      37.878  60.132 125.801  1.00 94.09           C
ANISOU 6576  CG  ASP B 556    14613  11494   9642    374   1135    342       C
ATOM   6577  OD1 ASP B 556      36.937  59.909 126.596  1.00 99.91           O
ANISOU 6577  OD1 ASP B 556    15427  12184  10353    470   1250    330       O
ATOM   6578  OD2 ASP B 556      37.931  61.119 125.034  1.00 88.59           O
ANISOU 6578  OD2 ASP B 556    13909  10777   8974    320   1071    333       O
ATOM   6579  C   ASP B 556      37.761  57.781 124.018  1.00 73.07           C
ANISOU 6579  C   ASP B 556    11566   9006   7190    363   1228    395       C
ATOM   6580  O   ASP B 556      38.367  57.552 122.977  1.00 77.50           O
ANISOU 6580  O   ASP B 556    11993   9644   7811    295   1172    404       O
ATOM   6581  N   HIS B 557      36.465  58.068 124.046  1.00 77.29           N
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ANISOU 6581  N   HIS B 557    12130   9479   7758    436   1333    383       N
ATOM   6582  CA  HIS B 557      35.708  58.288 122.820  1.00 65.01           C
ANISOU 6582  CA  HIS B 557    10461   7931   6308    433   1366    381       C
ATOM   6583  CB  HIS B 557      34.302  57.692 122.946  1.00 70.48           C
ANISOU 6583  CB  HIS B 557    11114   8592   7072    532   1514    381       C
ATOM   6584  CG  HIS B 557      34.303  56.260 123.362  1.00 70.22           C
ANISOU 6584  CG  HIS B 557    11016   8602   7062    567   1582    405       C
ATOM   6585  ND1 HIS B 557      34.609  55.230 122.496  1.00 71.24           N
ANISOU 6585  ND1 HIS B 557    10981   8808   7277    537   1572    421       N
ATOM   6586  CE1 HIS B 557      34.562  54.083 123.143  1.00 72.58           C
ANISOU 6586  CE1 HIS B 557    11136   8989   7454    577   1630    443       C
ATOM   6587  NE2 HIS B 557      34.248  54.332 124.402  1.00 81.09           N
ANISOU 6587  NE2 HIS B 557    12362  10005   8442    629   1682    446       N
ATOM   6588  CD2 HIS B 557      34.086  55.686 124.567  1.00 67.74           C
ANISOU 6588  CD2 HIS B 557    10786   8260   6691    626   1655    417       C
ATOM   6589  C   HIS B 557      35.634  59.783 122.479  1.00 72.89           C
ANISOU 6589  C   HIS B 557    11543   8869   7285    397   1296    362       C
ATOM   6590  O   HIS B 557      35.064  60.583 123.223  1.00 86.38           O
ANISOU 6590  O   HIS B 557    13390  10487   8944    450   1322    337       O
ATOM   6591  N   ILE B 558      36.217  60.131 121.340  1.00 67.12           N
ANISOU 6591  N   ILE B 558    10724   8189   6589    306   1208    375       N
ATOM   6592  CA  ILE B 558      36.368  61.506 120.885  1.00 74.31           C
ANISOU 6592  CA  ILE B 558    11703   9051   7482    246   1118    371       C
ATOM   6593  CB  ILE B 558      36.882  61.533 119.435  1.00 74.73           C
ANISOU 6593  CB  ILE B 558    11616   9187   7590    146   1051    398       C
ATOM   6594  CG1 ILE B 558      38.070  60.583 119.298  1.00 70.35           C
ANISOU 6594  CG1 ILE B 558    10960   8748   7023     85   1014    412       C
ATOM   6595  CD1 ILE B 558      38.508  60.358 117.880  1.00 83.00           C
ANISOU 6595  CD1 ILE B 558    12406  10453   8679      2    979    431       C
ATOM   6596  CG2 ILE B 558      37.247  62.939 119.016  1.00 78.94           C
ANISOU 6596  CG2 ILE B 558    12227   9673   8093     63    941    407       C
ATOM   6597  C   ILE B 558      35.058  62.260 120.984  1.00 78.04           C
ANISOU 6597  C   ILE B 558    12247   9419   7985    327   1180    349       C
ATOM   6598  O   ILE B 558      34.884  63.125 121.846  1.00 74.76           O
ANISOU 6598  O   ILE B 558    11989   8911   7506    362   1166    320       O
ATOM   6599  N   ILE B 559      34.126  61.923 120.107  1.00 75.00           N
ANISOU 6599  N   ILE B 559    11745   9048   7702    362   1246    356       N
ATOM   6600  CA  ILE B 559      32.758  62.364 120.312  1.00 70.11           C
ANISOU 6600  CA  ILE B 559    11170   8339   7131    461   1330    331       C
ATOM   6601  CB  ILE B 559      32.010  62.476 119.008  1.00 61.59           C
ANISOU 6601  CB  ILE B 559     9972   7267   6161    457   1333    345       C
ATOM   6602  CG1 ILE B 559      32.865  63.219 117.992  1.00 66.78           C
ANISOU 6602  CG1 ILE B 559    10615   7954   6803    336   1197    372       C
ATOM   6603  CD1 ILE B 559      33.287  64.598 118.467  1.00 74.42           C
ANISOU 6603  CD1 ILE B 559    11747   8830   7697    301   1099    361       C
ATOM   6604  CG2 ILE B 559      30.668  63.149 119.228  1.00 71.21           C
ANISOU 6604  CG2 ILE B 559    11243   8379   7433    557   1397    316       C
ATOM   6605  C   ILE B 559      32.043  61.378 121.223  1.00 71.97           C
ANISOU 6605  C   ILE B 559    11399   8573   7375    563   1470    320       C
ATOM   6606  O   ILE B 559      31.971  60.191 120.905  1.00 74.70           O
ANISOU 6606  O   ILE B 559    11616   8990   7776    569   1526    340       O
ATOM   6607  N   PRO B 560      31.531  61.862 122.366  1.00 76.87           N
ANISOU 6607  N   PRO B 560    12160   9110   7937    643   1527    287       N
ATOM   6608  CA  PRO B 560      30.751  61.038 123.304  1.00 73.44           C
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ANISOU 6608  CA  PRO B 560    11734   8669   7502    741   1674    279       C
ATOM   6609  CB  PRO B 560      30.058  62.071 124.187  1.00 70.22           C
ANISOU 6609  CB  PRO B 560    11482   8157   7042    821   1716    230       C
ATOM   6610  CG  PRO B 560      30.997  63.223 124.193  1.00 77.80           C
ANISOU 6610  CG  PRO B 560    12563   9076   7923    751   1567    214       C
ATOM   6611  CD  PRO B 560      31.599  63.269 122.798  1.00 72.84           C
ANISOU 6611  CD  PRO B 560    11811   8504   7362    645   1458    252       C
ATOM   6612  C   PRO B 560      29.728  60.168 122.575  1.00 80.60           C
ANISOU 6612  C   PRO B 560    12472   9608   8544    784   1775    297       C
ATOM   6613  O   PRO B 560      29.057  60.617 121.636  1.00 88.50           O
ANISOU 6613  O   PRO B 560    13401  10587   9639    790   1764    292       O
ATOM   6614  N   ARG B 561      29.633  58.914 122.992  1.00 72.29           N
ANISOU 6614  N   ARG B 561    11359   8604   7504    809   1862    320       N
ATOM   6615  CA  ARG B 561      28.808  57.954 122.286  1.00 74.32           C
ANISOU 6615  CA  ARG B 561    11450   8897   7893    835   1943    340       C
ATOM   6616  CB  ARG B 561      29.147  56.528 122.736  1.00 72.37           C
ANISOU 6616  CB  ARG B 561    11149   8708   7641    833   1995    374       C
ATOM   6617  CG  ARG B 561      30.644  56.240 122.681  1.00 74.80           C
ANISOU 6617  CG  ARG B 561    11468   9077   7874    748   1876    389       C
ATOM   6618  CD  ARG B 561      30.927  54.781 122.580  1.00 63.57           C
ANISOU 6618  CD  ARG B 561    9936   7718   6500    738   1902    420       C
ATOM   6619  NE  ARG B 561      31.433  54.263 123.838  1.00 79.89           N
ANISOU 6619  NE  ARG B 561    12104   9781   8469    754   1922    439       N
ATOM   6620  CZ  ARG B 561      31.322  52.999 124.225  1.00 89.06           C
ANISOU 6620  CZ  ARG B 561    13215  10963   9661    777   1985    473       C
ATOM   6621  NH1 ARG B 561      30.714  52.115 123.445  1.00 91.88           N
ANISOU 6621  NH1 ARG B 561    13417  11343  10150    788   2034    485       N
ATOM   6622  NH2 ARG B 561      31.826  52.621 125.392  1.00 95.01           N
ANISOU 6622  NH2 ARG B 561    14079  11709  10313    788   1990    495       N
ATOM   6623  C   ARG B 561      27.344  58.263 122.519  1.00 84.23           C
ANISOU 6623  C   ARG B 561    12701  10086   9217    933   2063    319       C
ATOM   6624  O   ARG B 561      26.476  57.784 121.786  1.00 88.13           O
ANISOU 6624  O   ARG B 561    13056  10590   9840    958   2116    328       O
ATOM   6625  N   SER B 562      27.071  59.075 123.537  1.00 87.99           N
ANISOU 6625  N   SER B 562    13327  10494   9610    990   2103    286       N
ATOM   6626  CA  SER B 562      25.696  59.422 123.859  1.00 90.31           C
ANISOU 6626  CA  SER B 562    13621  10727   9966   1092   2226    257       C
ATOM   6627  CB  SER B 562      25.619  60.261 125.134  1.00 91.44           C
ANISOU 6627  CB  SER B 562    13953  10805   9986   1153   2267    212       C
ATOM   6628  OG  SER B 562      26.154  61.558 124.936  1.00 96.28           O
ANISOU 6628  OG  SER B 562    14674  11362  10545   1123   2138    176       O
ATOM   6629  C   SER B 562      25.082  60.162 122.677  1.00 83.70           C
ANISOU 6629  C   SER B 562    12702   9855   9247   1095   2171    241       C
ATOM   6630  O   SER B 562      23.882  60.070 122.437  1.00 87.30           O
ANISOU 6630  O   SER B 562    13068  10286   9817   1163   2261    231       O
ATOM   6631  N   VAL B 563      25.906  60.876 121.917  1.00 84.46           N
ANISOU 6631  N   VAL B 563    12821   9951   9318   1015   2020    243       N
ATOM   6632  CA  VAL B 563      25.403  61.504 120.703  1.00 90.35           C
ANISOU 6632  CA  VAL B 563    13488  10669  10170   1004   1953    240       C
ATOM   6633  CB  VAL B 563      25.685  63.027 120.703  1.00 90.44           C
ANISOU 6633  CB  VAL B 563    13638  10597  10127    992   1845    210       C
ATOM   6634  CG1 VAL B 563      25.563  63.551 122.116  1.00 90.78           C
ANISOU 6634  CG1 VAL B 563    13846  10575  10072   1066   1908    163       C
ATOM   6635  CG2 VAL B 563      27.037  63.351 120.115  1.00 74.53           C
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ANISOU 6635  CG2 VAL B 563    11654   8622   8042    867   1690    238       C
ATOM   6636  C   VAL B 563      25.963  60.872 119.426  1.00 80.46           C
ANISOU 6636  C   VAL B 563    12100   9501   8972    911   1870    281       C
ATOM   6637  O   VAL B 563      25.277  60.845 118.408  1.00 86.86           O
ANISOU 6637  O   VAL B 563    12796  10312   9895    916   1859    289       O
ATOM   6638  N   SER B 564      27.176  60.332 119.483  1.00 83.50           N
ANISOU 6638  N   SER B 564    12492   9958   9277    831   1814    305       N
ATOM   6639  CA  SER B 564      27.844  59.855 118.268  1.00 83.33           C
ANISOU 6639  CA  SER B 564    12353  10021   9289    739   1728    334       C
ATOM   6640  CB  SER B 564      29.358  59.953 118.418  1.00 75.52           C
ANISOU 6640  CB  SER B 564    11426   9084   8186    644   1628    346       C
ATOM   6641  OG  SER B 564      29.847  58.948 119.278  1.00 79.13           O
ANISOU 6641  OG  SER B 564    11888   9582   8594    654   1681    353       O
ATOM   6642  C   SER B 564      27.487  58.426 117.878  1.00 76.30           C
ANISOU 6642  C   SER B 564    11305   9197   8486    752   1801    351       C
ATOM   6643  O   SER B 564      27.610  58.067 116.714  1.00 78.17           O
ANISOU 6643  O   SER B 564    11426   9491   8783    702   1750    363       O
ATOM   6644  N   PHE B 565      27.072  57.620 118.853  1.00 68.13           N
ANISOU 6644  N   PHE B 565    10275   8156   7456    816   1918    352       N
ATOM   6645  CA  PHE B 565      26.752  56.201 118.648  1.00 80.78           C
ANISOU 6645  CA  PHE B 565    11741   9809   9142    829   1988    371       C
ATOM   6646  CB  PHE B 565      25.419  56.054 117.921  1.00 80.32           C
ANISOU 6646  CB  PHE B 565    11562   9725   9230    879   2044    366       C
ATOM   6647  CG  PHE B 565      24.270  56.518 118.735  1.00 83.24           C
ANISOU 6647  CG  PHE B 565    11982  10016   9629    974   2154    350       C
ATOM   6648  CD1 PHE B 565      23.853  57.840 118.674  1.00 79.67           C
ANISOU 6648  CD1 PHE B 565    11605   9495   9171   1004   2122    323       C
ATOM   6649  CE1 PHE B 565      22.806  58.282 119.451  1.00 75.62           C
ANISOU 6649  CE1 PHE B 565    11135   8911   8685   1101   2229    298       C
ATOM   6650  CZ  PHE B 565      22.191  57.421 120.315  1.00 77.11           C
ANISOU 6650  CZ  PHE B 565    11295   9105   8897   1158   2374    307       C
ATOM   6651  CE2 PHE B 565      22.608  56.098 120.394  1.00 76.24           C
ANISOU 6651  CE2 PHE B 565    11117   9060   8791   1120   2404    345       C
ATOM   6652  CD2 PHE B 565      23.647  55.657 119.616  1.00 69.71           C
ANISOU 6652  CD2 PHE B 565    10247   8296   7943   1032   2290    363       C
ATOM   6653  C   PHE B 565      27.837  55.444 117.901  1.00 80.67           C
ANISOU 6653  C   PHE B 565    11645   9886   9118    746   1905    385       C
ATOM   6654  O   PHE B 565      27.564  54.440 117.250  1.00 84.93           O
ANISOU 6654  O   PHE B 565    12050  10468   9750    744   1926    393       O
ATOM   6655  N   ASP B 566      29.067  55.933 118.023  1.00 74.28           N
ANISOU 6655  N   ASP B 566    10916   9105   8200    679   1809    386       N
ATOM   6656  CA  ASP B 566      30.203  55.361 117.333  1.00 78.84           C
ANISOU 6656  CA  ASP B 566    11420   9775   8761    598   1726    393       C
ATOM   6657  CB  ASP B 566      30.993  56.448 116.613  1.00 77.57           C
ANISOU 6657  CB  ASP B 566    11295   9636   8542    514   1605    391       C
ATOM   6658  CG  ASP B 566      31.944  55.885 115.580  1.00 80.81           C
ANISOU 6658  CG  ASP B 566    11593  10153   8957    432   1533    394       C
ATOM   6659  OD1 ASP B 566      32.331  54.696 115.692  1.00 71.31           O
ANISOU 6659  OD1 ASP B 566    10314   9005   7775    438   1558    392       O
ATOM   6660  OD2 ASP B 566      32.310  56.638 114.657  1.00 88.64           O
ANISOU 6660  OD2 ASP B 566    12574  11174   9931    362   1450    398       O
ATOM   6661  C   ASP B 566      31.118  54.606 118.294  1.00 87.12           C
ANISOU 6661  C   ASP B 566    12510  10853   9737    591   1730    403       C
ATOM   6662  O   ASP B 566      31.793  55.195 119.144  1.00 83.95           O
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ANISOU 6662  O   ASP B 566    12239  10431   9230    576   1693    403       O
ATOM   6663  N   ASN B 567      31.166  53.294 118.120  1.00 79.69           N
ANISOU 6663  N   ASN B 567    11461   9959   8859    600   1763    411       N
ATOM   6664  CA  ASN B 567      31.915  52.448 119.021  1.00 64.79           C
ANISOU 6664  CA  ASN B 567     9606   8092   6921    604   1768    426       C
ATOM   6665  CB  ASN B 567      31.057  51.259 119.403  1.00 57.13           C
ANISOU 6665  CB  ASN B 567     8575   7098   6035    668   1875    444       C
ATOM   6666  CG  ASN B 567      29.673  51.671 119.859  1.00 74.95           C
ANISOU 6666  CG  ASN B 567    10872   9278   8327    738   1986    449       C
ATOM   6667  OD1 ASN B 567      29.474  52.039 121.018  1.00 81.75           O
ANISOU 6667  OD1 ASN B 567    11861  10089   9111    777   2041    458       O
ATOM   6668  ND2 ASN B 567      28.703  51.613 118.948  1.00 76.08           N
ANISOU 6668  ND2 ASN B 567    10906   9414   8587    755   2018    439       N
ATOM   6669  C   ASN B 567      33.225  52.002 118.390  1.00 77.64           C
ANISOU 6669  C   ASN B 567    11159   9809   8533    532   1668    418       C
ATOM   6670  O   ASN B 567      34.008  51.259 118.991  1.00 76.01           O
ANISOU 6670  O   ASN B 567    10960   9627   8293    529   1648    428       O
ATOM   6671  N   SER B 568      33.459  52.484 117.172  1.00 76.76           N
ANISOU 6671  N   SER B 568    10975   9747   8442    475   1604    401       N
ATOM   6672  CA  SER B 568      34.562  52.017 116.348  1.00 65.87           C
ANISOU 6672  CA  SER B 568     9496   8468   7065    409   1526    387       C
ATOM   6673  CB  SER B 568      34.270  52.297 114.880  1.00 60.14           C
ANISOU 6673  CB  SER B 568     8669   7791   6392    370   1499    370       C
ATOM   6674  OG  SER B 568      34.595  53.636 114.559  1.00 76.19           O
ANISOU 6674  OG  SER B 568    10772   9821   8356    308   1433    377       O
ATOM   6675  C   SER B 568      35.898  52.651 116.717  1.00 69.69           C
ANISOU 6675  C   SER B 568    10052   8986   7442    342   1433    389       C
ATOM   6676  O   SER B 568      35.955  53.654 117.429  1.00 65.24           O
ANISOU 6676  O   SER B 568     9622   8365   6800    335   1413    400       O
ATOM   6677  N   PHE B 569      36.966  52.071 116.184  1.00 68.25           N
ANISOU 6677  N   PHE B 569     9773   8897   7262    292   1374    375       N
ATOM   6678  CA  PHE B 569      38.319  52.602 116.322  1.00 62.18           C
ANISOU 6678  CA  PHE B 569     9035   8179   6410    216   1278    375       C
ATOM   6679  CB  PHE B 569      39.286  51.760 115.484  1.00 57.38           C
ANISOU 6679  CB  PHE B 569     8276   7688   5837    176   1236    350       C
ATOM   6680  CG  PHE B 569      40.742  51.991 115.793  1.00 68.76           C
ANISOU 6680  CG  PHE B 569     9725   9188   7212    110   1145    349       C
ATOM   6681  CD1 PHE B 569      41.371  51.296 116.819  1.00 64.30           C
ANISOU 6681  CD1 PHE B 569     9188   8612   6633    143   1123    352       C
ATOM   6682  CE1 PHE B 569      42.711  51.501 117.094  1.00 74.14           C
ANISOU 6682  CE1 PHE B 569    10431   9911   7828     83   1031    350       C
ATOM   6683  CZ  PHE B 569      43.451  52.392 116.318  1.00 82.35           C
ANISOU 6683  CZ  PHE B 569    11434  11023   8833    -17    968    346       C
ATOM   6684  CE2 PHE B 569      42.841  53.075 115.293  1.00 78.84           C
ANISOU 6684  CE2 PHE B 569    10968  10591   8396    -54    994    349       C
ATOM   6685  CD2 PHE B 569      41.495  52.872 115.030  1.00 76.31           C
ANISOU 6685  CD2 PHE B 569    10655  10213   8125     11   1078    349       C
ATOM   6686  C   PHE B 569      38.404  54.072 115.910  1.00 66.71           C
ANISOU 6686  C   PHE B 569     9679   8742   6927    147   1224    386       C
ATOM   6687  O   PHE B 569      39.215  54.822 116.454  1.00 72.76           O
ANISOU 6687  O   PHE B 569    10533   9499   7613     96   1155    396       O
ATOM   6688  N   ASN B 570      37.566  54.481 114.954  1.00 71.07           N
ANISOU 6688  N   ASN B 570    10193   9288   7523    143   1248    385       N
ATOM   6689  CA  ASN B 570      37.596  55.855 114.458  1.00 64.46           C
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ANISOU 6689  CA  ASN B 570     9418   8433   6640     75   1191    401       C
ATOM   6690  CB  ASN B 570       36.658  56.024 113.269  1.00 67.57           C
ANISOU 6690  CB  ASN B 570     9745   8833   7097     77   1215    400       C
ATOM   6691  CG  ASN B 570       37.276  55.565 111.951  1.00 76.83           C
ANISOU 6691  CG  ASN B 570    10774  10131   8285      9   1182    389       C
ATOM   6692  OD1 ASN B 570       38.491  55.356 111.828  1.00 77.85           O
ANISOU 6692  OD1 ASN B 570    10856  10350   8373    -55   1135    383       O
ATOM   6693  ND2 ASN B 570       36.436  55.450 110.944  1.00 84.98           N
ANISOU 6693  ND2 ASN B 570    11738  11174   9375     22   1206    383       N
ATOM   6694  C   ASN B 570       37.241  56.876 115.524  1.00 73.65           C
ANISOU 6694  C   ASN B 570    10753   9482   7747    101   1185    413       C
ATOM   6695  O   ASN B 570       37.685  58.022 115.463  1.00 77.58           O
ANISOU 6695  O   ASN B 570    11330   9960   8187     33   1110    427       O
ATOM   6696  N   ASN B 571       36.439  56.465 116.501  1.00 67.16           N
ANISOU 6696  N   ASN B 571     9990   8585   6941    197   1265    408       N
ATOM   6697  CA  ASN B 571       36.017  57.375 117.560  1.00 71.31           C
ANISOU 6697  CA  ASN B 571    10681   9003   7410    236   1275    409       C
ATOM   6698  CB  ASN B 571       34.500  57.264 117.803  1.00 76.47           C
ANISOU 6698  CB  ASN B 571    11350   9578   8128    338   1385    402       C
ATOM   6699  CG  ASN B 571       33.964  58.374 118.695  1.00 77.15           C
ANISOU 6699  CG  ASN B 571    11600   9554   8160    382   1397    393       C
ATOM   6700  OD1 ASN B 571       34.526  59.464 118.743  1.00 85.11           O
ANISOU 6700  OD1 ASN B 571    12702  10534   9103    325   1308    392       O
ATOM   6701  ND2 ASN B 571       32.895  58.087 119.436  1.00 74.78           N
ANISOU 6701  ND2 ASN B 571    11336   9191   7886    481   1507    384       N
ATOM   6702  C   ASN B 571       36.764  57.096 118.852  1.00 72.42           C
ANISOU 6702  C   ASN B 571    10913   9131   7471    248   1259    409       C
ATOM   6703  O   ASN B 571       36.300  57.464 119.918  1.00 76.44           O
ANISOU 6703  O   ASN B 571    11555   9557   7933    306   1296    404       O
ATOM   6704  N   LYS B 572       37.918  56.439 118.764  1.00 76.85           N
ANISOU 6704  N   LYS B 572    11406   9777   8018    197   1203    412       N
ATOM   6705  CA  LYS B 572       38.688  56.085 119.960  1.00 70.82           C
ANISOU 6705  CA  LYS B 572    10720   9005   7183    208   1174    415       C
ATOM   6706  CB  LYS B 572       38.813  54.569 120.074  1.00 68.41           C
ANISOU 6706  CB  LYS B 572    10311   8750   6932    251   1219    417       C
ATOM   6707  CG  LYS B 572       37.506  53.886 120.401  1.00 78.69           C
ANISOU 6707  CG  LYS B 572    11611   9997   8290    348   1343    423       C
ATOM   6708  CD  LYS B 572       37.675  52.372 120.537  1.00 80.95           C
ANISOU 6708  CD  LYS B 572    11802  10323   8633    384   1376    431       C
ATOM   6709  CE  LYS B 572       36.414  51.736 121.093  1.00 74.51           C
ANISOU 6709  CE  LYS B 572    11007   9442   7862    473   1499    447       C
ATOM   6710  NZ  LYS B 572       36.607  50.283 121.325  1.00 94.06           N
ANISOU 6710  NZ  LYS B 572    13407  11940  10390    505   1521    462       N
ATOM   6711  C   LYS B 572       40.079  56.714 119.988  1.00 71.34           C
ANISOU 6711  C   LYS B 572    10813   9112   7182    110   1046    417       C
ATOM   6712  O   LYS B 572       40.763  56.814 118.970  1.00 74.98           O
ANISOU 6712  O   LYS B 572    11166   9655   7667     29    990    418       O
ATOM   6713  N   VAL B 573       40.493  57.130 121.175  1.00 70.29           N
ANISOU 6713  N   VAL B 573    10824   8922  6960    116   1002    417       N
ATOM   6714  CA  VAL B 573       41.794  57.760 121.367  1.00 76.98           C
ANISOU 6714  CA  VAL B 573    11710   9795  7742     24    873    420       C
ATOM   6715  CB  VAL B 573       41.685  59.301 121.411  1.00 81.00           C
ANISOU 6715  CB  VAL B 573    12349  10228  8198    -23    814    417       C
ATOM   6716  CG1 VAL B 573       42.972  59.905 121.948  1.00 84.05           C
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ANISOU 6716  CG1 VAL B 573    12806  10618   8511   -107    681    419       C
ATOM   6717  CG2 VAL B 573      41.365  59.852 120.041  1.00 80.30           C
ANISOU 6717  CG2 VAL B 573    12173  10169   8170    -79    814    427       C
ATOM   6718  C   VAL B 573      42.426  57.291 122.665  1.00 69.48           C
ANISOU 6718  C   VAL B 573    10847   8827   6725     52    836    420       C
ATOM   6719  O   VAL B 573      41.749  57.228 123.696  1.00 71.25           O
ANISOU 6719  O   VAL B 573    11199   8973   6900    132    893    418       O
ATOM   6720  N   LEU B 574      43.718  56.974 122.615  1.00 60.09           N
ANISOU 6720  N   LEU B 574     9589   7712   5530    -12    739    424       N
ATOM   6721  CA  LEU B 574      44.473  56.640 123.820  1.00 70.31           C
ANISOU 6721  CA  LEU B 574    10970   8989   6757      2    673    427       C
ATOM   6722  CB  LEU B 574      45.655  55.743 123.503  1.00 72.79           C
ANISOU 6722  CB  LEU B 574    11134   9405   7117    -38    605    430       C
ATOM   6723  CG  LEU B 574      46.544  55.392 124.687  1.00 68.94           C
ANISOU 6723  CG  LEU B 574    10724   8904   6568    -29    514    436       C
ATOM   6724  CD1 LEU B 574      45.891  54.301 125.475  1.00 63.99           C
ANISOU 6724  CD1 LEU B 574    10138   8236   5937     77    594    449       C
ATOM   6725  CD2 LEU B 574      47.890  54.935 124.174  1.00 81.78           C
ANISOU 6725  CD2 LEU B 574    12192  10636   8247    -97    417    431       C
ATOM   6726  C   LEU B 574      44.965  57.911 124.464  1.00 80.62           C
ANISOU 6726  C   LEU B 574    12431  10232   7968    -54    570    421       C
ATOM   6727  O   LEU B 574      45.749  58.659 123.883  1.00 89.14           O
ANISOU 6727  O   LEU B 574    13471  11346   9051   -155    477    423       O
ATOM   6728  N   VAL B 575      44.500  58.166 125.671  1.00 80.58           N
ANISOU 6728  N   VAL B 575    12607  10134   7876      9    587    414       N
ATOM   6729  CA  VAL B 575      44.855  59.400 126.332  1.00 83.81           C
ANISOU 6729  CA  VAL B 575    13182  10470   8193    -34    491    399       C
ATOM   6730  CB  VAL B 575      43.651  60.399 126.277  1.00 78.47           C
ANISOU 6730  CB  VAL B 575    12617   9699   7499      7    564    379       C
ATOM   6731  CG1 VAL B 575      42.410  59.836 126.920  1.00 69.81           C
ANISOU 6731  CG1 VAL B 575    11585   8553   6387    131    709    372       C
ATOM   6732  CG2 VAL B 575      43.984  61.677 126.929  1.00100.82           C
ANISOU 6732  CG2 VAL B 575    15623  12444  10240    -33    462    356       C
ATOM   6733  C   VAL B 575      45.320  59.061 127.760  1.00 89.61           C
ANISOU 6733  C   VAL B 575    14053  11167   8826      5    438    397       C
ATOM   6734  O   VAL B 575      45.099  57.939 128.247  1.00 85.12           O
ANISOU 6734  O   VAL B 575    13467  10617   8260     76    501    412       O
ATOM   6735  N   LYS B 576      46.023  59.989 128.404  1.00 89.50           N
ANISOU 6735  N   LYS B 576    14172  11106   8729    -49    313    382       N
ATOM   6736  CA  LYS B 576      46.392  59.810 129.804  1.00 85.47           C
ANISOU 6736  CA  LYS B 576    13818  10549   8105    -12    255    376       C
ATOM   6737  CB  LYS B 576      47.436  60.844 130.232  1.00 85.64           C
ANISOU 6737  CB  LYS B 576    13941  10536   8061   -102     81    358       C
ATOM   6738  CG  LYS B 576      48.735  60.716 129.456  1.00 91.54           C
ANISOU 6738  CG  LYS B 576    14516  11379   8889   -214    -38    378       C
ATOM   6739  CD  LYS B 576      49.922  61.365 130.148  1.00 88.34           C
ANISOU 6739  CD  LYS B 576    14200  10948   8418   -294   -222    369       C
ATOM   6740  CE  LYS B 576      51.223  60.899 129.513  1.00102.13           C
ANISOU 6740  CE  LYS B 576    16174  12572  10060   -289   -262    333       C
ATOM   6741  NZ  LYS B 576      50.735  63.400 131.190  1.00121.27           N
ANISOU 6741  NZ  LYS B 576    18645  14977  12454   -399   -454    326       N
ATOM   6742  C   LYS B 576      45.155  59.893 130.678  1.00 80.54           C
ANISOU 6742  C   LYS B 576    13361   9839   7400     98    376    358       C
ATOM   6743  O   LYS B 576      44.241  60.661 130.397  1.00 82.35           O
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ANISOU 6743  O   LYS B 576    13642  10013   7636    123    448    335       O
ATOM   6744  N   GLN B 577      45.137  59.080 131.726  1.00 86.24           N
ANISOU 6744  N   GLN B 577    14165  10553   8048    163    398    372       N
ATOM   6745  CA  GLN B 577      43.997  58.955 132.630  1.00 92.30           C
ANISOU 6745  CA  GLN B 577    15081  11258   8733    270    530    363       C
ATOM   6746  CB  GLN B 577      44.447  58.187 133.872  1.00 96.14           C
ANISOU 6746  CB  GLN B 577    15675  11741   9112    306    491    386       C
ATOM   6747  CG  GLN B 577      43.491  58.154 135.036  1.00105.35           C
ANISOU 6747  CG  GLN B 577    17032  12844  10152    402    604    378       C
ATOM   6748  CD  GLN B 577      43.864  57.044 136.002  1.00125.24           C
ANISOU 6748  CD  GLN B 577    19606  15383  12598    435    587    424       C
ATOM   6749  OE1 GLN B 577      45.042  56.849 136.321  1.00127.93           O
ANISOU 6749  OE1 GLN B 577    19954  15744  12911    384    430    437       O
ATOM   6750  NE2 GLN B 577      42.866  56.293 136.453  1.00131.58           N
ANISOU 6750  NE2 GLN B 577    20441  16178  13377    518    745    454       N
ATOM   6751  C   GLN B 577      43.378  60.301 133.022  1.00 96.85           C
ANISOU 6751  C   GLN B 577    15833  11739   9228    289    543    311       C
ATOM   6752  O   GLN B 577      42.161  60.500 132.925  1.00 95.23           O
ANISOU 6752  O   GLN B 577    15652  11495   9036    360    684    294       O
ATOM   6753  N   GLU B 578      44.237  61.229 133.428  1.00101.34           N
ANISOU 6753  N   GLU B 578    16514  12266   9723    226    389    283       N
ATOM   6754  CA  GLU B 578      43.817  62.529 133.940  1.00104.59           C
ANISOU 6754  CA  GLU B 578    17115  12576  10047    243    371    225       C
ATOM   6755  CB  GLU B 578      45.036  63.331 134.404  1.00118.60           C
ANISOU 6755  CB  GLU B 578    18996  14318  11751    155    167    202       C
ATOM   6756  CG  GLU B 578      45.815  62.700 135.555  1.00124.63           C
ANISOU 6756  CG  GLU B 578    19857  15095  12403    163     82    215       C
ATOM   6757  CD  GLU B 578      46.760  61.589 135.113  1.00126.15           C
ANISOU 6757  CD  GLU B 578    19862  15391  12679    111     22    273       C
ATOM   6758  OE1 GLU B 578      47.624  61.207 135.924  1.00130.85           O
ANISOU 6758  OE1 GLU B 578    20520  15995  13201     96    -92    285       O
ATOM   6759  OE2 GLU B 578      46.649  61.094 133.968  1.00124.18           O
ANISOU 6759  OE2 GLU B 578    19405  15211  12567     89     83    303       O
ATOM   6760  C   GLU B 578      43.045  63.339 132.916  1.00 94.36           C
ANISOU 6760  C   GLU B 578    15757  11249   8846    237    431    205       C
ATOM   6761  O   GLU B 578      42.105  64.056 133.255  1.00 94.56           O
ANISOU 6761  O   GLU B 578    15907  11193   8829    305    505    159       O
ATOM   6762  N   GLU B 579      43.454  63.229 131.660  1.00 88.62           N
ANISOU 6762  N   GLU B 579    14839  10588   8247    157    396    238       N
ATOM   6763  CA  GLU B 579      42.839  64.005 130.603  1.00 81.50           C
ANISOU 6763  CA  GLU B 579    13872   9659   7434    137    430    228       C
ATOM   6764  CB  GLU B 579      43.764  64.068 129.394  1.00 84.37           C
ANISOU 6764  CB  GLU B 579    14061  10098   7897     13    332    265       C
ATOM   6765  CG  GLU B 579      45.061  64.814 129.664  1.00 84.80           C
ANISOU 6765  CG  GLU B 579    14179  10138   7905    -97    143    260       C
ATOM   6766  CD  GLU B 579      44.843  66.296 129.881  1.00 87.05           C
ANISOU 6766  CD  GLU B 579    14630  10301   8144   -118     73    219       C
ATOM   6767  OE1 GLU B 579      44.178  66.926 129.027  1.00 85.39           O
ANISOU 6767  OE1 GLU B 579    14383  10058   8003   -125    114    219       O
ATOM   6768  OE2 GLU B 579      45.326  66.822 130.914  1.00102.81           O
ANISOU 6768  OE2 GLU B 579    16797  12231  10036   -125    -29    185       O
ATOM   6769  C   GLU B 579      41.493  63.415 130.232  1.00 82.38           C
ANISOU 6769  C   GLU B 579    13908   9780   7611    235    617    234       C
ATOM   6770  O   GLU B 579      40.535  64.138 129.946  1.00 89.37           O
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ANISOU 6770  O   GLU B 579    14830  10601   8523    278    682    206       O
ATOM   6771  N   ASN B 580      41.411  62.094 130.274  1.00 80.97           N
ANISOU 6771  N   ASN B 580    13627   9677   7462    273    698    270       N
ATOM   6772  CA  ASN B 580      40.164  61.420 129.969  1.00 82.84           C
ANISOU 6772  CA  ASN B 580    13784   9925   7766    361    871    281       C
ATOM   6773  C   ASN B 580      39.100  61.698 131.039  1.00 87.77           C
ANISOU 6773  C   ASN B 580    14579  10470   8302    471    985    244       C
ATOM   6774  O   ASN B 580      37.901  61.718 130.757  1.00 88.78           O
ANISOU 6774  O   ASN B 580    14673  10573   8485    542   1119    233       O
ATOM   6775  CB  ASN B 580      40.405  59.919 129.821  1.00 85.69           C
ANISOU 6775  CB  ASN B 580    14003  10377   8179    369    916    328       C
ATOM   6776  N   SER B 581      39.538  61.919 132.269  1.00 80.36           N
ANISOU 6776  N   SER B 581    13820   9492   7222    486    932    223       N
ATOM   6777  CA  SER B 581      38.600  62.218 133.334  1.00 79.41           C
ANISOU 6777  CA  SER B 581    13871   9302   6998    589   1041    182       C
ATOM   6778  CB  SER B 581      39.201  61.837 134.681  1.00 82.86           C
ANISOU 6778  CB  SER B 581    14466   9737   7279    604    997    184       C
ATOM   6779  OG  SER B 581      39.608  60.474 134.657  1.00108.69           O
ANISOU 6779  OG  SER B 581    17624  13090  10583    591   1011    250       O
ATOM   6780  C   SER B 581      38.185  63.684 133.325  1.00 87.72           C
ANISOU 6780  C   SER B 581    15044  10258   8029    604   1012    114       C
ATOM   6781  O   SER B 581      37.020  63.981 133.564  1.00 96.79           O
ANISOU 6781  O   SER B 581    16244  11357   9173    697   1144     77       O
ATOM   6782  N   LYS B 582      39.125  64.590 133.030  1.00 87.23           N
ANISOU 6782  N   LYS B 582    15017  10165   7960    511    841     98       N
ATOM   6783  CA  LYS B 582      38.874  66.042 133.056  1.00 89.89           C
ANISOU 6783  CA  LYS B 582    15484  10395   8275    514    783     34       C
ATOM   6784  CB  LYS B 582      40.179  66.821 132.868  1.00 91.51           C
ANISOU 6784  CB  LYS B 582    15728  10580   8463    389    571     33       C
ATOM   6785  CG  LYS B 582      40.984  67.025 134.143  1.00 92.22           C
ANISOU 6785  CG  LYS B 582    16006  10635   8398    379    463      1       C
ATOM   6786  CD  LYS B 582      42.444  67.324 133.830  1.00 96.28           C
ANISOU 6786  CD  LYS B 582    16486  11172   8926    239    260     28       C
ATOM   6787  CE  LYS B 582      43.267  67.505 135.099  1.00105.46           C
ANISOU 6787  CE  LYS B 582    17833  12298   9938    227    137     -4       C
ATOM   6788  NZ  LYS B 582      44.711  67.165 134.867  1.00110.01           N
ANISOU 6788  NZ  LYS B 582    18316  12943  10540    104    -26     44       N
ATOM   6789  C   LYS B 582      37.869  66.486 131.998  1.00 94.42           C
ANISOU 6789  C   LYS B 582    15954  10942   8980    542    862     28       C
ATOM   6790  O   LYS B 582      36.981  67.297 132.267  1.00 94.69           O
ANISOU 6790  O   LYS B 582    16092  10887   9000    618    918    -31       O
ATOM   6791  N   LYS B 583      38.026  65.967 130.785  1.00 89.65           N
ANISOU 6791  N   LYS B 583    15147  10414   8503    480    860     85       N
ATOM   6792  CA  LYS B 583      36.985  66.103 129.781  1.00 78.28           C
ANISOU 6792  CA  LYS B 583    13589   8965   7190    515    952     90       C
ATOM   6793  CB  LYS B 583      37.544  65.797 128.392  1.00 70.07           C
ANISOU 6793  CB  LYS B 583    12353   8005   6266    411    889    149       C
ATOM   6794  CG  LYS B 583      36.651  64.954 127.535  1.00 70.66           C
ANISOU 6794  CG  LYS B 583    12251   8139   6459    454   1020    180       C
ATOM   6795  CD  LYS B 583      37.278  64.722 126.191  1.00 78.11           C
ANISOU 6795  CD  LYS B 583    13018   9163   7496    348    948    230       C
ATOM   6796  CE  LYS B 583      36.319  63.951 125.330  1.00 77.10           C
ANISOU 6796  CE  LYS B 583    12726   9084   7484    396   1070    252       C
ATOM   6797  NZ  LYS B 583      36.944  63.571 124.080  1.00 62.44           N
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ANISOU 6797  NZ  LYS B 583    10700   7319   5704    300   1013    296       N
ATOM   6798  C   LYS B 583      35.867  65.148 130.177  1.00 92.29           C
ANISOU 6798  C   LYS B 583    15323  10767   8978    631   1145     92       C
ATOM   6799  O   LYS B 583      36.137  64.065 130.699  1.00104.61           O
ANISOU 6799  O   LYS B 583    16858  12393  10496    642   1191    124       O
ATOM   6800  N   GLY B 584      34.615  65.535 129.979  1.00 95.53           N
ANISOU 6800  N   GLY B 584    15726  11123   9446    718   1255     61       N
ATOM   6801  CA  GLY B 584      33.522  64.619 130.291  1.00 84.53           C
ANISOU 6801  CA  GLY B 584    14275   9762   8082    820   1443     68       C
ATOM   6802  C   GLY B 584      32.795  64.282 129.012  1.00 85.35           C
ANISOU 6802  C   GLY B 584    14181   9898   8350    821   1503    100       C
ATOM   6803  O   GLY B 584      33.359  63.653 128.121  1.00 87.68           O
ANISOU 6803  O   GLY B 584    14330  10270   8716    742   1452    152       O
ATOM   6804  N   ASN B 585      31.552  64.732 128.907  1.00 82.01           N
ANISOU 6804  N   ASN B 585    13755   9417   7989    911   1605     63       N
ATOM   6805  CA  ASN B 585      30.831  64.665 127.646  1.00 94.86           C
ANISOU 6805  CA  ASN B 585    15213  11057   9774    911   1635     85       C
ATOM   6806  CB  ASN B 585      29.342  64.547 127.876  1.00109.56           C
ANISOU 6806  CB  ASN B 585    17043  12886  11699   1035   1805     56       C
ATOM   6807  CG  ASN B 585      28.940  63.171 128.263  1.00122.05           C
ANISOU 6807  CG  ASN B 585    18538  14543  13292   1073   1948     95       C
ATOM   6808  OD1 ASN B 585      29.782  62.303 128.493  1.00123.57           O
ANISOU 6808  OD1 ASN B 585    18714  14803  13432   1016   1918    139       O
ATOM   6809  ND2 ASN B 585      27.644  62.942 128.316  1.00133.13           N
ANISOU 6809  ND2 ASN B 585    19878  15932  14774   1167   2100     81       N
ATOM   6810  C   ASN B 585      31.075  65.858 126.761  1.00 97.67           C
ANISOU 6810  C   ASN B 585    15580  11354  10178    853   1499     73       C
ATOM   6811  O   ASN B 585      30.137  66.532 126.337  1.00113.85           O
ANISOU 6811  O   ASN B 585    17616  13336  12307    910   1528     45       O
ATOM   6812  N   ARG B 586      32.337  66.125 126.475  1.00 98.87           N
ANISOU 6812  N   ARG B 586    15753  11528  10285    737   1346     98       N
ATOM   6813  CA  ARG B 586      32.665  67.203 125.568  1.00 88.67           C
ANISOU 6813  CA  ARG B 586    14465  10188   9038    661   1210    102       C
ATOM   6814  CB  ARG B 586      33.491  68.257 126.297  1.00 81.41           C
ANISOU 6814  CB  ARG B 586    13735   9190   8008    619   1081     66       C
ATOM   6815  CG  ARG B 586      32.940  68.535 127.667  1.00 76.30           C
ANISOU 6815  CG  ARG B 586    13257   8469   7266    734   1160     -5       C
ATOM   6816  CD  ARG B 586      33.540  69.749 128.319  1.00 83.87           C
ANISOU 6816  CD  ARG B 586    14413   9325   8128    708   1029     -57       C
ATOM   6817  NE  ARG B 586      34.543  69.357 129.296  1.00 89.48           N
ANISOU 6817  NE  ARG B 586    15219  10073   8707    670    981     -58       N
ATOM   6818  CZ  ARG B 586      35.205  70.205 130.069  1.00 88.57           C
ANISOU 6818  CZ  ARG B 586    15285   9882   8484    645    865    -104       C
ATOM   6819  NH1 ARG B 586      34.951  71.508 129.994  1.00 79.16           N
ANISOU 6819  NH1 ARG B 586    14204   8567   7306    656    788    -156       N
ATOM   6820  NH2 ARG B 586      36.116  69.744 130.922  1.00 84.37           N
ANISOU 6820  NH2 ARG B 586    14826   9392   7837    609    818     -99       N
ATOM   6821  C   ARG B 586      33.404  66.660 124.366  1.00 81.66           C
ANISOU 6821  C   ARG B 586    13413   9399   8214    546   1140    169       C
ATOM   6822  O   ARG B 586      33.987  65.587 124.418  1.00 88.72           O
ANISOU 6822  O   ARG B 586    14226  10392   9093    512   1161    202       O
ATOM   6823  N   THR B 587      34.298  67.391 123.266  1.00 89.98           N
ANISOU 6823  N   THR B 587    14419  10428   9341    489   1060    189       N
ATOM   6824  CA  THR B 587      34.298  67.197 122.202  1.00 81.71           C
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ANISOU 6824  CA  THR B 587    13258   9468   8320    357    962    246       C
ATOM   6825  CB  THR B 587      33.952  68.024 120.994  1.00 82.79           C
ANISOU 6825  CB  THR B 587    13351   9567   8538    312    896    270       C
ATOM   6826  OG1 THR B 587      34.011  69.406 121.360  1.00102.63           O
ANISOU 6826  OG1 THR B 587    16028  11953  11013    304    800    241       O
ATOM   6827  CG2 THR B 587      32.570  67.707 120.530  1.00 82.66           C
ANISOU 6827  CG2 THR B 587    13246   9536   8625    413   1009    261       C
ATOM   6828  C   THR B 587      35.650  67.631 122.737  1.00 81.74           C
ANISOU 6828  C   THR B 587    13364   9472   8223    262    834    249       C
ATOM   6829  O   THR B 587      35.716  68.380 123.724  1.00 85.51           O
ANISOU 6829  O   THR B 587    14012   9856   8623    294    798    204       O
ATOM   6830  N   PRO B 588      36.732  67.151 122.115  1.00 75.79           N
ANISOU 6830  N   PRO B 588    12503   8824   7469    148    766    296       N
ATOM   6831  CA  PRO B 588      38.056  67.748 122.316  1.00 86.00           C
ANISOU 6831  CA  PRO B 588    13865  10118   8693     32    620    309       C
ATOM   6832  CB  PRO B 588      38.873  67.164 121.162  1.00 78.88           C
ANISOU 6832  CB  PRO B 588    12785   9349   7837    -82    582    366       C
ATOM   6833  CG  PRO B 588      38.284  65.788 121.001  1.00 75.29           C
ANISOU 6833  CG  PRO B 588    12196   8978   7433     -2    718    367       C
ATOM   6834  CD  PRO B 588      36.806  65.911 121.325  1.00 74.74           C
ANISOU 6834  CD  PRO B 588    12179   8820   7399    131    829    333       C
ATOM   6835  C   PRO B 588      38.009  69.272 122.237  1.00 95.79           C
ANISOU 6835  C   PRO B 588    15240  11234   9924     -7    512    297       C
ATOM   6836  O   PRO B 588      38.618  69.977 123.055  1.00 99.63           O
ANISOU 6836  O   PRO B 588    15873  11650  10332    -36    419    271       O
ATOM   6837  N   PHE B 589      37.269  69.771 121.256  1.00 90.53           N
ANISOU 6837  N   PHE B 589    14527  10532   9338     -6    517    315       N
ATOM   6838  CA  PHE B 589      37.152  71.202 121.071  1.00 98.39           C
ANISOU 6838  CA  PHE B 589    15643  11401  10340    -40    409    310       C
ATOM   6839  CB  PHE B 589      36.298  71.517 119.849  1.00 94.22           C
ANISOU 6839  CB  PHE B 589    15032  10855   9911    -36    423    342       C
ATOM   6840  CG  PHE B 589      36.097  72.974 119.639  1.00 87.46           C
ANISOU 6840  CG  PHE B 589    14301   9856   9072    -64    309    341       C
ATOM   6841  CD1 PHE B 589      37.182  73.803 119.460  1.00 89.73           C
ANISOU 6841  CD1 PHE B 589    14653  10119   9321   -206    156    377       C
ATOM   6842  CE1 PHE B 589      37.002  75.162 119.273  1.00 90.94           C
ANISOU 6842  CE1 PHE B 589    14929  10128   9495   -235     42    379       C
ATOM   6843  CZ  PHE B 589      35.733  75.697 119.263  1.00 70.34           C
ANISOU 6843  CZ  PHE B 589    12377   7400   6948   -114     78    340       C
ATOM   6844  CE2 PHE B 589      34.646  74.875 119.443  1.00 81.94           C
ANISOU 6844  CE2 PHE B 589    13774   8900   8457     31    235    301       C
ATOM   6845  CD2 PHE B 589      34.832  73.523 119.638  1.00 87.26           C
ANISOU 6845  CD2 PHE B 589    14329   9717   9108     51    350    303       C
ATOM   6846  C   PHE B 589      36.576  71.912 122.300  1.00 99.14           C
ANISOU 6846  C   PHE B 589    15931  11355  10385     69    420    233       C
ATOM   6847  O   PHE B 589      37.097  72.943 122.720  1.00103.19           O
ANISOU 6847  O   PHE B 589    16587  11773  10849     20    299    214       O
ATOM   6848  N   GLN B 590      35.514  71.362 122.879  1.00 87.80           N
ANISOU 6848  N   GLN B 590    14497   9906   8959    215    565    186       N
ATOM   6849  CA  GLN B 590      34.918  71.965 124.064  1.00 86.29           C
ANISOU 6849  CA  GLN B 590    14482   9594   8712    329    597    106       C
ATOM   6850  CB  GLN B 590      33.581  71.303 124.379  1.00 84.77           C
ANISOU 6850  CB  GLN B 590    14242   9405   8560    483    778     70       C
ATOM   6851  CG  GLN B 590      32.495  71.707 123.399  1.00 85.12           C
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ANISOU 6851  CG  GLN B 590    14209   9402   8731    528    806     77       C
ATOM   6852  CD  GLN B 590      31.355  70.712 123.315  1.00 85.51           C
ANISOU 6852  CD  GLN B 590    14131   9506   8852    639    981     73       C
ATOM   6853  OE1 GLN B 590      31.522  69.516 123.581  1.00 85.93           O
ANISOU 6853  OE1 GLN B 590    14102   9665   8883    646   1071     92       O
ATOM   6854  NE2 GLN B 590      30.184  71.202 122.930  1.00 84.82           N
ANISOU 6854  NE2 GLN B 590    14024   9343   8861    726   1024     48       N
ATOM   6855  C   GLN B 590      35.848  71.888 125.267  1.00 87.32           C
ANISOU 6855  C   GLN B 590    14739   9726   8714    308    549     76       C
ATOM   6856  O   GLN B 590      35.903  72.808 126.073  1.00 97.87           O
ANISOU 6856  O   GLN B 590    16253  10949   9984    335    486     18       O
ATOM   6857  N   TYR B 591      36.611  70.809 125.363  1.00 86.36           N
ANISOU 6857  N   TYR B 591    14527   9729   8559    258    568    114       N
ATOM   6858  CA  TYR B 591      37.461  70.583 126.526  1.00 88.89           C
ANISOU 6858  CA  TYR B 591    14955  10060   8758    246    527     90       C
ATOM   6859  CB  TYR B 591      37.784  69.096 126.656  1.00 80.15           C
ANISOU 6859  CB  TYR B 591    13723   9090   7641    250    611    126       C
ATOM   6860  CG  TYR B 591      38.945  68.779 127.565  1.00 74.04           C
ANISOU 6860  CG  TYR B 591    13021   8350   6760    201    530    125       C
ATOM   6861  CD1 TYR B 591      38.872  69.013 128.929  1.00 73.27           C
ANISOU 6861  CD1 TYR B 591    13111   8184   6544    272    536     67       C
ATOM   6862  CE1 TYR B 591      39.929  68.700 129.758  1.00 83.39           C
ANISOU 6862  CE1 TYR B 591    14461   9496   7727    227    451     68       C
ATOM   6863  CZ  TYR B 591      41.073  68.128 129.221  1.00 89.92           C
ANISOU 6863  CZ  TYR B 591    15155  10425   8586    114    365    126       C
ATOM   6864  OH  TYR B 591      42.149  67.809 130.022  1.00102.90           O
ANISOU 6864  OH  TYR B 591    16855  12098  10143     69    270    129       O
ATOM   6865  CE2 TYR B 591      41.155  67.878 127.879  1.00 79.19           C
ANISOU 6865  CE2 TYR B 591    13604   9140   7343     46    371    180       C
ATOM   6866  CD2 TYR B 591      40.098  68.202 127.061  1.00 79.40           C
ANISOU 6866  CD2 TYR B 591    13576   9135   7456     87    451    180       C
ATOM   6867  C   TYR B 591      38.750  71.382 126.473  1.00 96.60           C
ANISOU 6867  C   TYR B 591    15998  11011   9694    107    338    106       C
ATOM   6868  O   TYR B 591      39.265  71.813 127.502  1.00 99.39           O
ANISOU 6868  O   TYR B 591    16510  11305   9948    106    264     63       O
ATOM   6869  N   LEU B 592      39.288  71.567 125.277  1.00 92.06           N
ANISOU 6869  N   LEU B 592    15302  10485   9193    -15    259    170       N
ATOM   6870  CA  LEU B 592      40.545  72.287 125.153  1.00 89.57           C
ANISOU 6870  CA  LEU B 592    15028  10156   8850   -162     84    196       C
ATOM   6871  CB  LEU B 592      41.251  71.859 123.879  1.00 88.04           C
ANISOU 6871  CB  LEU B 592    14638  10088   8725   -291     51    278       C
ATOM   6872  CG  LEU B 592      41.664  70.402 124.022  1.00 76.68           C
ANISOU 6872  CG  LEU B 592    13065   8794   7275   -276    131    295       C
ATOM   6873  CD1 LEU B 592      41.961  69.829 122.686  1.00 70.11           C
ANISOU 6873  CD1 LEU B 592    12027   8090   6523   -358    149    359       C
ATOM   6874  CD2 LEU B 592      42.880  70.318 124.904  1.00 79.58           C
ANISOU 6874  CD2 LEU B 592    13496   9181   7561   -337     27    286       C
ATOM   6875  C   LEU B 592      40.315  73.803 125.203  1.00 90.55           C
ANISOU 6875  C   LEU B 592    15311  10118   8975   -178    -24    165       C
ATOM   6876  O   LEU B 592      41.115  74.551 125.783  1.00 86.52           O
ANISOU 6876  O   LEU B 592    14931   9539   8405   -245   -161    146       O
ATOM   6877  N   SER B 593      39.203  74.238 124.615  1.00 90.30           N
ANISOU 6877  N   SER B 593    15271  10020   9018   -111     33     158       N
ATOM   6878  CA  SER B 593      38.726  75.604 124.771  1.00 93.50           C
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ANISOU 6878  CA  SER B 593    15837  10255   9433    -84    -47    115       C
ATOM   6879  CB  SER B 593      37.464  75.831 123.951  1.00 87.55           C
ANISOU 6879  CB  SER B 593    15025   9457   8782     -6     30    119       C
ATOM   6880  OG  SER B 593      37.718  75.585 122.586  1.00 97.24           O
ANISOU 6880  OG  SER B 593    16086  10775  10087   -113      9    210       O
ATOM   6881  C   SER B 593      38.450  75.904 126.240  1.00104.71           C
ANISOU 6881  C   SER B 593    17453  11577  10756     29    -29     15       C
ATOM   6882  O   SER B 593      38.686  77.014 126.713  1.00102.41           O
ANISOU 6882  O   SER B 593    17330  11153  10429     11   -151    -29       O
ATOM   6883  N   SER B 594      37.943  74.902 126.951  1.00109.33           N
ANISOU 6883  N   SER B 594    18018  12228  11296    146    122    -19       N
ATOM   6884  CA  SER B 594      37.777  74.970 128.401  1.00108.40           C
ANISOU 6884  CA  SER B 594    18076  12049  11061    248    156   -106       C
ATOM   6885  CB  SER B 594      37.254  73.618 128.911  1.00101.70           C
ANISOU 6885  CB  SER B 594    17153  11310  10179    352    340   -109       C
ATOM   6886  OG  SER B 594      37.549  73.388 130.272  1.00107.50           O
ANISOU 6886  OG  SER B 594    18033  12037  10777    402    351   -163       O
ATOM   6887  C   SER B 594      39.086  75.366 129.104  1.00102.35           C
ANISOU 6887  C   SER B 594    17433  11260  10195    147     -7   -116       C
ATOM   6888  O   SER B 594      40.166  75.326 128.503  1.00 99.32           O
ANISOU 6888  O   SER B 594    16964  10936   9836     -1   -122    -48       O
ATOM   6889  N   SER B 595      38.979  75.766 130.368  1.00107.54           N
ANISOU 6889  N   SER B 595    18289  11831  10741    228    -17   -204       N
ATOM   6890  CA  SER B 595      40.143  76.136 131.171  1.00110.94           C
ANISOU 6890  CA  SER B 595    18854  12229  11067    146   -174   -226       C
ATOM   6891  CB  SER B 595      39.743  77.166 132.231  1.00108.87           C
ANISOU 6891  CB  SER B 595    18839  11809  10717    237   -216   -339       C
ATOM   6892  OG  SER B 595      38.727  76.648 133.073  1.00111.37           O
ANISOU 6892  OG  SER B 595    19216  12136  10965    405    -36   -405       O
ATOM   6893  C   SER B 595      40.798  74.923 131.846  1.00109.59           C
ANISOU 6893  C   SER B 595    18643  12187  10809    140   -135   -202       C
ATOM   6894  O   SER B 595      41.894  75.031 132.399  1.00107.95           O
ANISOU 6894  O   SER B 595    18507  11980  10527     57   -272   -203       O
ATOM   6895  N   ASP B 596      40.123  73.776 131.793  1.00103.94           N
ANISOU 6895  N   ASP B 596    17811  11573  10109    226     44   -180       N
ATOM   6896  CA  ASP B 596      40.589  72.549 132.448  1.00 99.98           C
ANISOU 6896  CA  ASP B 596    17273  11185   9531    238     96   -155       C
ATOM   6897  CB  ASP B 596      39.431  71.563 132.616  1.00 95.88           C
ANISOU 6897  CB  ASP B 596    16687  10724   9018    373    316   -157       C
ATOM   6898  CG  ASP B 596      38.159  72.237 133.069  1.00104.76           C
ANISOU 6898  CG  ASP B 596    17937  11742  10123    510    421   -239       C
ATOM   6899  OD1 ASP B 596      38.262  73.258 133.776  1.00126.28           O
ANISOU 6899  OD1 ASP B 596    20858  14354  12769    529    334   -315       O
ATOM   6900  OD2 ASP B 596      37.059  71.754 132.731  1.00 95.74           O
ANISOU 6900  OD2 ASP B 596    16697  10629   9049    601    587   -234       O
ATOM   6901  C   ASP B 596      41.722  71.868 131.691  1.00 95.95           C
ANISOU 6901  C   ASP B 596    16583  10795   9079    101     16    -66       C
ATOM   6902  O   ASP B 596      42.514  71.115 132.272  1.00 90.10           O
ANISOU 6902  O   ASP B 596    15836  10127   8272     74    -18    -48       O
ATOM   6903  N   SER B 597      41.779  72.140 130.390  1.00 92.36           N
ANISOU 6903  N   SER B 597    15983  10363   8748     18    -14    -14       N
ATOM   6904  CA  SER B 597      42.772  71.559 129.496  1.00 89.69           C
ANISOU 6904  CA  SER B 597    15454  10145   8477   -112    -75     67       C
ATOM   6905  CB  SER B 597      42.373  71.827 128.051  1.00 86.43           C
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ANISOU 6905  CB  SER B 597    14894   9751   8192   -161    -51    116       C
ATOM   6906  OG  SER B 597      42.388  73.218 127.758  1.00 98.55           O
ANISOU 6906  OG  SER B 597    16530  11165   9748   -219   -167    102       O
ATOM   6907  C   SER B 597      44.184  72.087 129.737  1.00 96.48           C
ANISOU 6907  C   SER B 597    16364  10995   9297   -248   -272     79       C
ATOM   6908  O   SER B 597      44.364  73.245 130.096  1.00 88.59           O
ANISOU 6908  O   SER B 597    15522   9875   8263   -281   -390     39       O
ATOM   6909  N   LYS B 598      45.185  71.238 129.523  1.00105.15           N
ANISOU 6909  N   LYS B 598    17324  12217  10411   -328   -311    131       N
ATOM   6910  CA  LYS B 598      46.575  71.662 129.672  1.00105.58           C
ANISOU 6910  CA  LYS B 598    17393  12277  10446   -466   -498    148       C
ATOM   6911  CB  LYS B 598      47.501  70.453 129.895  1.00108.87           C
ANISOU 6911  CB  LYS B 598    17687  12828  10852   -495   -510    183       C
ATOM   6912  CG  LYS B 598      47.647  70.024 131.361  1.00112.49           C
ANISOU 6912  CG  LYS B 598    18298  13259  11183   -413   -526    137       C
ATOM   6913  CD  LYS B 598      48.724  68.946 131.566  1.00106.64           C
ANISOU 6913  CD  LYS B 598    17441  12637  10442   -457   -578    175       C
ATOM   6914  CE  LYS B 598      49.132  68.842 133.041  1.00110.32           C
ANISOU 6914  CE  LYS B 598    18090  13056  10772   -413   -659    134       C
ATOM   6915  NZ  LYS B 598      50.503  69.369 133.336  1.00114.78           N
ANISOU 6915  NZ  LYS B 598    18683  13609  11321   -539   -873    137       N
ATOM   6916  C   LYS B 598      47.049  72.464 128.458  1.00 96.78           C
ANISOU 6916  C   LYS B 598    16181  11164   9428   -611   -590    200       C
ATOM   6917  O   LYS B 598      47.963  73.272 128.563  1.00 99.82           O
ANISOU 6917  O   LYS B 598    16622  11503   9803   -728   -754    206       O
ATOM   6918  N   ILE B 599      46.430  72.232 127.307  1.00 89.83           N
ANISOU 6918  N   ILE B 599    15156  10338   8639   -608   -487    242       N
ATOM   6919  CA  ILE B 599      46.874  72.863 126.071  1.00 94.12           C
ANISOU 6919  CA  ILE B 599    15592  10903   9267   -750   -561    303       C
ATOM   6920  CB  ILE B 599      47.426  71.835 125.035  1.00 80.57           C
ANISOU 6920  CB  ILE B 599    13626   9367   7621   -819   -508    370       C
ATOM   6921  CG1 ILE B 599      46.389  70.749 124.765  1.00 86.50           C
ANISOU 6921  CG1 ILE B 599    14282  10183   8401   -687   -323    364       C
ATOM   6922  CD1 ILE B 599      46.600  70.015 123.469  1.00 96.66           C
ANISOU 6922  CD1 ILE B 599    15339  11616   9771   -746   -262    422       C
ATOM   6923  CG2 ILE B 599      48.752  71.237 125.488  1.00 77.85           C
ANISOU 6923  CG2 ILE B 599    13214   9114   7250   -891   -593    382       C
ATOM   6924  C   ILE B 599      45.763  73.637 125.384  1.00 91.00           C
ANISOU 6924  C   ILE B 599    15236  10417   8924   -712   -511    303       C
ATOM   6925  O   ILE B 599      44.597  73.607 125.787  1.00 88.59           O
ANISOU 6925  O   ILE B 599    15014  10043   8603   -569   -405    253       O
ATOM   6926  N   SER B 600      46.157  74.317 124.319  1.00 85.68           N
ANISOU 6926  N   SER B 600    14492   9748   8315   -846   -590    364       N
ATOM   6927  CA  SER B 600      45.249  75.104 123.523  1.00 80.32           C
ANISOU 6927  CA  SER B 600    13839   8986   7695   -835   -571    379       C
ATOM   6928  CB  SER B 600      45.968  76.321 122.983  1.00 66.54           C
ANISOU 6928  CB  SER B 600    12133   7172   5975  -1000   -736    429       C
ATOM   6929  OG  SER B 600      45.015  77.276 122.586  1.00 98.24           O
ANISOU 6929  OG  SER B 600    16242  11053  10030   -963   -745    424       O
ATOM   6930  C   SER B 600      44.673  74.288 122.373  1.00 84.37           C
ANISOU 6930  C   SER B 600    14161   9617   8277   -812   -437    426       C
ATOM   6931  O   SER B 600      45.364  73.450 121.788  1.00 89.38           O
ANISOU 6931  O   SER B 600    14622  10404   8933   -882   -413    473       O
ATOM   6932  N   TYR B 601      43.409  74.536 122.047  1.00 80.01           N
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ANISOU 6932  N   TYR B 601    13640   8993   7765   -712   -356    410       N
ATOM   6933  CA  TYR B 601      42.798  73.889 120.901  1.00 78.24           C
ANISOU 6933  CA  TYR B 601    13249   8865   7612   -695   -247    453       C
ATOM   6934  CB  TYR B 601      41.367  74.384 120.669  1.00 69.67           C
ANISOU 6934  CB  TYR B 601    12228   7668   6575   -581   -184    428       C
ATOM   6935  CG  TYR B 601      40.731  73.717 119.462  1.00 79.23           C
ANISOU 6935  CG  TYR B 601    13267   8976   7860   -566    -83    472       C
ATOM   6936  CD1 TYR B 601      40.438  72.355 119.472  1.00 90.56           C
ANISOU 6936  CD1 TYR B 601    14571  10531   9305   -487     54    460       C
ATOM   6937  CE1 TYR B 601      39.873  71.731 118.378  1.00 87.43           C
ANISOU 6937  CE1 TYR B 601    14022  10221   8977   -474    138    495       C
ATOM   6938  CZ  TYR B 601      39.584  72.469 117.249  1.00 87.54           C
ANISOU 6938  CZ  TYR B 601    14013  10206   9041   -541     84    546       C
ATOM   6939  OH  TYR B 601      39.012  71.855 116.153  1.00 82.32           O
ANISOU 6939  OH  TYR B 601    13206   9630   8440   -528    159    578       O
ATOM   6940  CE2 TYR B 601      39.870  73.822 117.215  1.00 83.86           C
ANISOU 6940  CE2 TYR B 601    13676   9622   8565   -622    -51    566       C
ATOM   6941  CD2 TYR B 601      40.444  74.433 118.315  1.00 73.22           C
ANISOU 6941  CD2 TYR B 601    12478   8184   7157   -634   -134    528       C
ATOM   6942  C   TYR B 601      43.641  74.108 119.641  1.00 86.05           C
ANISOU 6942  C   TYR B 601    14109   9945   8640   -869   -322    541       C
ATOM   6943  O   TYR B 601      43.774  73.205 118.816  1.00 96.78           O
ANISOU 6943  O   TYR B 601    15291  11450  10031   -894   -247    579       O
ATOM   6944  N   GLU B 602      44.232  75.289 119.510  1.00 75.28           N
ANISOU 6944  N   GLU B 602    12835   8496   7272   -992   -469    573       N
ATOM   6945  CA  GLU B 602      45.083  75.578 118.360  1.00 88.02           C
ANISOU 6945  CA  GLU B 602    14335  10195   8914  -1172   -542    663       C
ATOM   6946  CB  GLU B 602      45.495  77.060 118.348  1.00 89.52           C
ANISOU 6946  CB  GLU B 602    14665  10244   9105  -1291   -710    695       C
ATOM   6947  CG  GLU B 602      44.341  78.039 118.144  1.00 77.51           C
ANISOU 6947  CG  GLU B 602    13277   8554   7621  -1224   -730    685       C
ATOM   6948  CD  GLU B 602      43.587  78.347 119.435  1.00 93.48           C
ANISOU 6948  CD  GLU B 602    15482  10423   9615  -1063   -719    582       C
ATOM   6949  OE1 GLU B 602      43.984  77.844 120.509  1.00 98.28           O
ANISOU 6949  OE1 GLU B 602    16128  11052  10163  -1012   -703    523       O
ATOM   6950  OE2 GLU B 602      42.594  79.103 119.384  1.00 95.85           O
ANISOU 6950  OE2 GLU B 602    15890  10579   9949   -984   -728    558       O
ATOM   6951  C   GLU B 602      46.332  74.677 118.326  1.00 85.97           C
ANISOU 6951  C   GLU B 602    13924  10108   8634  -1260   -541    685       C
ATOM   6952  O   GLU B 602      46.641  74.108 117.277  1.00 91.85           O
ANISOU 6952  O   GLU B 602    14494  10997   9407  -1329   -492    739       O
ATOM   6953  N   THR B 603      47.033  74.549 119.461  1.00 74.32           N
ANISOU 6953  N   THR B 603    12515   8615   7109  -1254   -596    642       N
ATOM   6954  CA  THR B 603      48.197  73.667 119.575  1.00 71.21           C
ANISOU 6954  CA  THR B 603    11983   8373   6702  -1318   -602    653       C
ATOM   6955  CB  THR B 603      48.848  73.690 120.996  1.00103.66           C
ANISOU 6955  CB  THR B 603    16209  12425  10751  -1297   -687    598       C
ATOM   6956  OG1 THR B 603      48.825  75.014 121.557  1.00111.79           O
ANISOU 6956  OG1 THR B 603    17438  13281  11755  -1332   -816    581       O
ATOM   6957  CG2 THR B 603      50.282  73.182 120.946  1.00 97.27           C
ANISOU 6957  CG2 THR B 603    15261  11753   9945  -1416   -750    628       C
ATOM   6958  C   THR B 603      47.747  72.246 119.266  1.00 88.89           C
ANISOU 6958  C   THR B 603    14069  10746   8961  -1214   -444    638       C
ATOM   6959  O   THR B 603      48.497  71.428 118.715  1.00 86.56           O
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ANISOU 6959  O   THR B 603    13595  10608   8685  -1274   -415    665       O
ATOM   6960  N   PHE B 604      46.499  71.970 119.625  1.00 98.36           N
ANISOU 6960  N   PHE B 604    15337  11876  10159  -1055   -341    591       N
ATOM   6961  CA  PHE B 604      45.880  70.671 119.389  1.00 97.03           C
ANISOU 6961  CA  PHE B 604    15044  11807  10017   -944   -189    574       C
ATOM   6962  CB  PHE B 604      44.612  70.550 120.239  1.00 90.01           C
ANISOU 6962  CB  PHE B 604    14280  10808   9111   -770   -100    512       C
ATOM   6963  CG  PHE B 604      43.777  69.350 119.931  1.00 78.47           C
ANISOU 6963  CG  PHE B 604    12701   9424   7689   -657     56    500       C
ATOM   6964  CD1 PHE B 604      44.044  68.131 120.521  1.00 83.12           C
ANISOU 6964  CD1 PHE B 604    13225  10095   8261   -595    120    477       C
ATOM   6965  CE1 PHE B 604      43.269  67.028 120.234  1.00 72.52           C
ANISOU 6965  CE1 PHE B 604    11777   8816   6963   -497    257    469       C
ATOM   6966  CZ  PHE B 604      42.215  67.144 119.376  1.00 67.57           C
ANISOU 6966  CZ  PHE B 604    11106   8171   6395   -457    328    479       C
ATOM   6967  CE2 PHE B 604      41.929  68.354 118.800  1.00 73.88           C
ANISOU 6967  CE2 PHE B 604    11970   8890   7209   -512    263    500       C
ATOM   6968  CD2 PHE B 604      42.703  69.448 119.076  1.00 71.41           C
ANISOU 6968  CD2 PHE B 604    11767   8513   6854   -612    129    512       C
ATOM   6969  C   PHE B 604      45.569  70.464 117.906  1.00 94.04           C
ANISOU 6969  C   PHE B 604    14513  11521   9698   -991   -130    625       C
ATOM   6970  O   PHE B 604      45.827  69.396 117.356  1.00 92.75           O
ANISOU 6970  O   PHE B 604    14181  11501   9558   -991    -57    635       O
ATOM   6971  N   LYS B 605      45.021  71.489 117.263  1.00 87.52           N
ANISOU 6971  N   LYS B 605    13751  10609   8894  -1029   -169    657       N
ATOM   6972  CA  LYS B 605      44.658  71.402 115.853  1.00 84.15           C
ANISOU 6972  CA  LYS B 605    13202  10257   8513  -1075   -125    709       C
ATOM   6973  CB  LYS B 605      43.925  72.656 115.405  1.00 87.36           C
ANISOU 6973  CB  LYS B 605    13726  10527   8941  -1095   -185    739       C
ATOM   6974  CG  LYS B 605      42.885  72.409 114.354  1.00 80.72           C
ANISOU 6974  CG  LYS B 605    12809   9710   8149  -1044   -104    760       C
ATOM   6975  CD  LYS B 605      42.193  73.702 114.010  1.00 72.46           C
ANISOU 6975  CD  LYS B 605    11892   8512   7128  -1059   -181    788       C
ATOM   6976  CE  LYS B 605      40.832  73.451 113.382  1.00 79.29           C
ANISOU 6976  CE  LYS B 605    12722   9355   8050   -948    -95    781       C
ATOM   6977  NZ  LYS B 605      40.104  74.712 113.088  1.00 88.63           N
ANISOU 6977  NZ  LYS B 605    14032  10377   9266   -947   -177    805       N
ATOM   6978  C   LYS B 605      45.868  71.210 114.969  1.00 88.82           C
ANISOU 6978  C   LYS B 605    13643  11002   9102  -1235   -165    768       C
ATOM   6979  O   LYS B 605      45.810  70.503 113.967  1.00 87.43           O
ANISOU 6979  O   LYS B 605    13314  10955   8950  -1250    -90    790       O
ATOM   6980  N   LYS B 606      46.962  71.865 115.325  1.00 90.65           N
ANISOU 6980  N   LYS B 606    13918  11220   9306  -1357   -283    791       N
ATOM   6981  CA  LYS B 606      48.151  71.792 114.498  1.00 98.36           C
ANISOU 6981  CA  LYS B 606    14749  12341  10282  -1521   -322    849       C
ATOM   6982  CB  LYS B 606      49.178  72.829 114.942  1.00 96.19           C
ANISOU 6982  CB  LYS B 606    14558  12004   9986  -1661   -474    881       C
ATOM   6983  CG  LYS B 606      50.620  72.402 114.741  1.00 93.87           C
ANISOU 6983  CG  LYS B 606    14109  11867   9690  -1789   -507    907       C
ATOM   6984  CD  LYS B 606      51.542  73.590 114.864  1.00 95.65           C
ANISOU 6984  CD  LYS B 606    14404  12031   9907  -1958   -661    958       C
ATOM   6985  CE  LYS B 606      52.975  73.171 115.048  1.00 96.18           C
ANISOU 6985  CE  LYS B 606    14338  12229   9979  -2062   -708    966       C
ATOM   6986  NZ  LYS B 606      53.760  74.326 115.554  1.00107.75           N
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ANISOU 6986  NZ  LYS B 606    15910  13592  11438  -2196   -872    997       N
ATOM   6987  C   LYS B 606      48.756  70.387 114.539  1.00101.86           C
ANISOU 6987  C   LYS B 606    15019  12952  10730  -1487   -242    818       C
ATOM   6988  O   LYS B 606      49.145  69.842 113.498  1.00 93.01           O
ANISOU 6988  O   LYS B 606    13729  11985   9625  -1550   -191    848       O
ATOM   6989  N   HIS B 607      48.819  69.801 115.734  1.00100.29           N
ANISOU 6989  N   HIS B 607    14867  12722  10517  -1384   -231    756       N
ATOM   6990  CA  HIS B 607      49.382  68.462 115.890  1.00 95.97           C
ANISOU 6990  CA  HIS B 607    14169  12313   9980  -1341   -168    724       C
ATOM   6991  CB  HIS B 607      49.479  68.080 117.381  1.00102.01           C
ANISOU 6991  CB  HIS B 607    15036  13007  10716  -1241   -190    667       C
ATOM   6992  CG  HIS B 607      50.375  66.906 117.658  1.00114.46           C
ANISOU 6992  CG  HIS B 607    16473  14713  12305  -1228   -175    645       C
ATOM   6993  ND1 HIS B 607      50.059  65.615 117.283  1.00119.51           N
ANISOU 6993  ND1 HIS B 607    16976  15454  12979  -1139    -58    622       N
ATOM   6994  CE1 HIS B 607      51.027  64.796 117.656  1.00112.73           C
ANISOU 6994  CE1 HIS B 607    16015  14685  12130  -1144    -81    604       C
ATOM   6995  NE2 HIS B 607      51.962  65.508 118.258  1.00112.83           N
ANISOU 6995  NE2 HIS B 607    16090  14665  12115  -1235   -209    616       N
ATOM   6996  CD2 HIS B 607      51.579  66.829 118.273  1.00115.27           C
ANISOU 6996  CD2 HIS B 607    16550  14852  12395  -1291   -270    641       C
ATOM   6997  C   HIS B 607      48.533  67.453 115.103  1.00 87.89           C
ANISOU 6997  C   HIS B 607    13029  11371   8993  -1246    -28    710       C
ATOM   6998  O   HIS B 607      49.070  66.596 114.404  1.00 85.41           O
ANISOU 6998  O   HIS B 607    12539  11212   8702  -1276     21    713       O
ATOM   6999  N   ILE B 608      47.211  67.587 115.187  1.00 78.07           N
ANISOU 6999  N   ILE B 608    11880  10023   7758  -1135     33    693       N
ATOM   7000  CA  ILE B 608      46.291  66.667 114.510  1.00 76.07           C
ANISOU 7000  CA  ILE B 608    11529   9829   7546  -1040    158    676       C
ATOM   7001  CB  ILE B 608      44.813  66.961 114.856  1.00 79.22           C
ANISOU 7001  CB  ILE B 608    12054  10085   7959   -912    211    653       C
ATOM   7002  CG1 ILE B 608      44.547  66.693 116.337  1.00 79.89           C
ANISOU 7002  CG1 ILE B 608    12257  10078   8020   -795    228    600       C
ATOM   7003  CD1 ILE B 608      45.190  65.437 116.846  1.00 71.98           C
ANISOU 7003  CD1 ILE B 608    11160   9175   7015   -757    265    572       C
ATOM   7004  CG2 ILE B 608      43.865  66.157 113.973  1.00 69.63           C
ANISOU 7004  CG2 ILE B 608    10730   8929   6796   -837    324    647       C
ATOM   7005  C   ILE B 608      46.402  66.691 112.998  1.00 83.49           C
ANISOU 7005  C   ILE B 608    12336  10881   8504  -1134    178    722       C
ATOM   7006  O   ILE B 608      46.486  65.634 112.367  1.00 91.23           O
ANISOU 7006  O   ILE B 608    13162  11991   9509  -1111    256    706       O
ATOM   7007  N   LEU B 609      46.380  67.890 112.417  1.00 83.95           N
ANISOU 7007  N   LEU B 609    12462  10887   8548  -1238    105    778       N
ATOM   7008  CA  LEU B 609      46.436  68.032 110.964  1.00 74.66           C
ANISOU 7008  CA  LEU B 609    11182   9810   7374  -1335    119    831       C
ATOM   7009  CB  LEU B 609      46.344  69.506 110.575  1.00 84.89           C
ANISOU 7009  CB  LEU B 609    12597  11005   8651  -1444     19    899       C
ATOM   7010  CG  LEU B 609      44.979  70.167 110.789  1.00 88.61           C
ANISOU 7010  CG  LEU B 609    13220  11303   9146  -1344     15    892       C
ATOM   7011  CD1 LEU B 609      45.036  71.683 110.507  1.00 87.49           C
ANISOU 7011  CD1 LEU B 609    13206  11045   8990  -1459   -107    960       C
ATOM   7012  CD2 LEU B 609      43.926  69.480 109.932  1.00 74.94           C
ANISOU 7012  CD2 LEU B 609    11407   9618   7450  -1257    115    882       C
ATOM   7013  C   LEU B 609      47.685  67.385 110.337  1.00 84.67           C
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ANISOU 7013  C   LEU B 609    12269  11271   8631  -1439    131    843       C
ATOM   7014  O   LEU B 609      47.590  66.762 109.279  1.00 85.68           O
ANISOU 7014  O   LEU B 609    12265  11524   8765  -1448    201    847       O
ATOM   7015  N   ASN B 610      48.837  67.506 110.995  1.00 94.28           N
ANISOU 7015  N   ASN B 610    13476  12512   9832  -1509     63    842       N
ATOM   7016  CA  ASN B 610      50.063  66.869 110.510  1.00106.87           C
ANISOU 7016  CA  ASN B 610    14890  14290  11427  -1598     75    845       C
ATOM   7017  CB  ASN B 610      51.283  67.523 111.144  1.00103.21           C
ANISOU 7017  CB  ASN B 610    14451  13817  10948  -1716    -38    869       C
ATOM   7018  CG  ASN B 610      51.324  69.013 110.904  1.00106.87           C
ANISOU 7018  CG  ASN B 610    15036  14183  11386  -1847   -139    943       C
ATOM   7019  OD1 ASN B 610      51.782  69.771 111.754  1.00111.52           O
ANISOU 7019  OD1 ASN B 610    15735  14671  11967  -1896   -246    952       O
ATOM   7020  ND2 ASN B 610      50.826  69.446 109.743  1.00106.94           N
ANISOU 7020  ND2 ASN B 610    15034  14215  11384  -1905   -113    997       N
ATOM   7021  C   ASN B 610      50.109  65.360 110.744  1.00105.56           C
ANISOU 7021  C   ASN B 610    14596  14218  11292  -1477    166    773       C
ATOM   7022  O   ASN B 610      50.789  64.614 110.020  1.00109.06           O
ANISOU 7022  O   ASN B 610    14864  14827  11745  -1515    212    762       O
ATOM   7023  N   LEU B 611      49.381  64.923 111.762  1.00 89.84           N
ANISOU 7023  N   LEU B 611    12697  12120   9317  -1331    191    725       N
ATOM   7024  CA  LEU B 611      49.181  63.510 111.997  1.00 86.65           C
ANISOU 7024  CA  LEU B 611    12198  11777   8949  -1205    279    664       C
ATOM   7025  CB  LEU B 611      48.568  63.273 113.378  1.00 81.93           C
ANISOU 7025  CB  LEU B 611    11735  11042   8353  -1072    282    626       C
ATOM   7026  CG  LEU B 611      49.130  62.143 114.245  1.00 87.53           C
ANISOU 7026  CG  LEU B 611    12385  11791   9079   -996    293    579       C
ATOM   7027  CD2 LEU B 611      48.551  62.234 115.628  1.00 88.37           C
ANISOU 7027  CD2 LEU B 611    12663  11751   9162   -893    280    558       C
ATOM   7028  CD1 LEU B 611      50.664  62.174 114.324  1.00 94.06           C
ANISOU 7028  CD1 LEU B 611    13120  12717   9900  -1106    209    587       C
ATOM   7029  C   LEU B 611      48.283  62.947 110.900  1.00 93.42           C
ANISOU 7029  C   LEU B 611    12974  12690   9832  -1154    378    655       C
ATOM   7030  O   LEU B 611      48.421  61.789 110.507  1.00100.39           O
ANISOU 7030  O   LEU B 611    13715  13684  10746  -1104    448    615       O
ATOM   7031  N   ALA B 612      47.373  63.775 110.396  1.00 88.71           N
ANISOU 7031  N   ALA B 612    12468  12013   9224  -1166    376    691       N
ATOM   7032  CA  ALA B 612      46.393  63.320 109.413  1.00 88.45           C
ANISOU 7032  CA  ALA B 612    12378  12014   9216  -1112    458    684       C
ATOM   7033  CB  ALA B 612      45.089  64.094 109.565  1.00 81.56           C
ANISOU 7033  CB  ALA B 612    11655  10981   8352  -1052    453    702       C
ATOM   7034  C   ALA B 612      46.894  63.437 107.980  1.00 91.23           C
ANISOU 7034  C   ALA B 612    12610  12511   9542  -1233    464    720       C
ATOM   7035  O   ALA B 612      46.133  63.201 107.046  1.00 78.16           O
ANISOU 7035  O   ALA B 612    10916  10887   7896  -1207    515    720       O
ATOM   7036  N   LYS B 613      48.168  63.785 107.805  1.00104.88           N
ANISOU 7036  N   LYS B 613    14278  14332  11238  -1366    412    749       N
ATOM   7037  CA  LYS B 613      48.689  64.065 106.469  1.00120.24           C
ANISOU 7037  CA  LYS B 613    16124  16416  13144  -1500    417    793       C
ATOM   7038  CB  LYS B 613      49.524  65.364 106.467  1.00126.89           C
ANISOU 7038  CB  LYS B 613    17028  17239  13944  -1667    316    871       C
ATOM   7039  CG  LYS B 613      48.732  66.643 106.142  1.00128.82           C
ANISOU 7039  CG  LYS B 613    17429  17352  14165  -1718    257    943       C
ATOM   7040  CD  LYS B 613      49.024  67.198 104.738  1.00131.81           C
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ANISOU 7040  CD  LYS B 613    17754  17838  14492  -1870    251   1019       C
ATOM   7041  CE  LYS B 613      50.313  68.019 104.690  1.00133.65           C
ANISOU 7041  CE  LYS B 613    17967  18122  14690  -2054    174   1085       C
ATOM   7042  NZ  LYS B 613      50.459  68.784 103.417  1.00118.59           N
ANISOU 7042  NZ  LYS B 613    16049  16284  12724  -2210    157   1178       N
ATOM   7043  C   LYS B 613      49.522  62.903 105.930  1.00132.15           C
ANISOU 7043  C   LYS B 613    17433  18117  14661  -1503    484    744       C
ATOM   7044  O   LYS B 613      49.197  62.314 104.892  1.00130.94           O
ANISOU 7044  O   LYS B 613    17184  18065  14501  -1487    555    724       O
ATOM   7045  N   GLY B 614      50.600  62.573 106.633  1.00136.28           N
ANISOU 7045  N   GLY B 614    17893  18689  15200  -1521    457    719       N
ATOM   7046  CA  GLY B 614      51.522  61.566 106.139  1.00143.11           C
ANISOU 7046  CA  GLY B 614    18561  19737  16078  -1532    510    670       C
ATOM   7047  C   GLY B 614      51.078  60.151 106.447  1.00143.97           C
ANISOU 7047  C   GLY B 614    18604  19856  16245  -1367    582    584       C
ATOM   7048  O   GLY B 614      50.828  59.818 107.609  1.00154.62           O
ANISOU 7048  O   GLY B 614    20025  21094  17631  -1267    562    556       O
ATOM   7049  N   LYS B 615      50.971  59.321 105.411  1.00134.62           N
ANISOU 7049  N   LYS B 615    17287  18800  15065  -1342    662    542       N
ATOM   7050  CA  LYS B 615      50.684  57.902 105.603  1.00126.79           C
ANISOU 7050  CA  LYS B 615    16210  17829  14134  -1196    725    456       C
ATOM   7051  CB  LYS B 615      50.531  57.183 104.261  1.00118.51           C
ANISOU 7051  CB  LYS B 615    15029  16923  13078  -1188    807    412       C
ATOM   7052  C   LYS B 615      51.799  57.264 106.430  1.00128.62           C
ANISOU 7052  C   LYS B 615    16356  18106  14408  -1175    697    414       C
ATOM   7053  O   LYS B 615      52.974  57.566 106.214  1.00122.67           O
ANISOU 7053  O   LYS B 615    15512  17462  13636  -1283    667    428       O
ATOM   7054  N   GLY B 616      51.446  56.397 107.382  1.00134.49           N
ANISOU 7054  N   GLY B 616    17125  18764  15210  -1039    703    368       N
ATOM   7055  CA  GLY B 616      50.070  56.011 107.658  1.00134.12           C
ANISOU 7055  CA  GLY B 616    17174  18594  15191   -916    745    355       C
ATOM   7056  C   GLY B 616      49.315  57.028 108.493  1.00134.66           C
ANISOU 7056  C   GLY B 616    17441  18491  15234   -913    700    412       C
ATOM   7057  O   GLY B 616      49.517  57.155 109.704  1.00130.51           O
ANISOU 7057  O   GLY B 616    17002  17872  14712   -882    651    419       O
ATOM   7058  N   ARG B 617      48.432  57.756 107.821  1.00137.68           N
ANISOU 7058  N   ARG B 617    17895  18831  15588   -943    716    450       N
ATOM   7059  CA  ARG B 617      47.687  58.848 108.423  1.00129.54           C
ANISOU 7059  CA  ARG B 617    17045  17642  14531   -947    673    502       C
ATOM   7060  C   ARG B 617      46.765  58.346 109.526  1.00122.05           C
ANISOU 7060  C   ARG B 617    16192  16557  13625   -803    701    475       C
ATOM   7061  O   ARG B 617      46.600  57.147 109.709  1.00132.09           O
ANISOU 7061  O   ARG B 617    17390  17853  14948   -706    755    425       O
ATOM   7062  CB  ARG B 617      46.875  59.584 107.345  1.00124.37           C
ANISOU 7062  CB  ARG B 617    16429  16978  13850   -995    686    543       C
ATOM   7063  CG  ARG B 617      47.518  59.589 105.954  1.00126.14           C
ANISOU 7063  CG  ARG B 617    16520  17370  14036  -1105    702    554       C
ATOM   7064  CD  ARG B 617      46.466  59.637 104.848  1.00127.17           C
ANISOU 7064  CD  ARG B 617    16654  17506  14159  -1091    743    563       C
ATOM   7065  NE  ARG B 617      46.096  58.309 104.354  1.00134.94           N
ANISOU 7065  NE  ARG B 617    17520  18565  15188   -994    821    491       N
ATOM   7066  CZ  ARG B 617      44.993  58.046 103.649  1.00136.32           C
ANISOU 7066  CZ  ARG B 617    17697  18718  15380   -937    860    479       C
ATOM   7067  NH1 ARG B 617      44.735  56.806 103.239  1.00135.21           N
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ANISOU 7067  NH1 ARG B 617    17446  18643  15284   -852    923    408       N
ATOM   7068  NH2 ARG B 617      44.136  59.018 103.363  1.00134.02           N
ANISOU 7068  NH2 ARG B 617    17519  18334  15069   -962    828    536       N
ATOM   7069  N   ILE B 618      46.180  59.272 110.272  1.00107.50           N
ANISOU 7069  N   ILE B 618    14515  14569  11761   -792    665    508       N
ATOM   7070  CA  ILE B 618      45.038  58.955 111.118  1.00 85.50           C
ANISOU 7070  CA  ILE B 618    11827  11653   9007   -660    710    490       C
ATOM   7071  CB  ILE B 618      44.802  60.016 112.200  1.00 92.96           C
ANISOU 7071  CB  ILE B 618    12957  12451   9913   -658    655    516       C
ATOM   7072  CG1 ILE B 618      46.093  60.339 112.940  1.00102.12           C
ANISOU 7072  CG1 ILE B 618    14141  13629  11031   -730    568    524       C
ATOM   7073  CD1 ILE B 618      46.628  59.193 113.727  1.00 91.74           C
ANISOU 7073  CD1 ILE B 618    12769  12351   9738   -662    582    485       C
ATOM   7074  CG2 ILE B 618      43.865  59.503 113.226  1.00 97.05           C
ANISOU 7074  CG2 ILE B 618    13557  12861  10456   -521    712    490       C
ATOM   7075  C   ILE B 618      43.823  58.878 110.199  1.00 77.14           C
ANISOU 7075  C   ILE B 618    10749  10579   7980   -618    772    490       C
ATOM   7076  O   ILE B 618      43.847  59.395 109.093  1.00 68.74           O
ANISOU 7076  O   ILE B 618     9648   9573   6896   -700    758    516       O
ATOM   7077  N   SER B 619      42.757  58.233 110.636  1.00 81.10           N
ANISOU 7077  N   SER B 619    11276  11004   8533   -494    839    464       N
ATOM   7078  CA  SER B 619      41.577  58.136 109.795  1.00 76.63           C
ANISOU 7078  CA  SER B 619    10686  10419   8009   -451    890    462       C
ATOM   7079  CB  SER B 619      40.532  57.260 110.478  1.00 81.98           C
ANISOU 7079  CB  SER B 619    11376  11017   8754   -313    967    431       C
ATOM   7080  OG  SER B 619      39.295  57.346 109.805  1.00 90.69           O
ANISOU 7080  OG  SER B 619    12475  12078   9904   -270   1007    434       O
ATOM   7081  C   SER B 619      40.994  59.516 109.483  1.00 77.75           C
ANISOU 7081  C   SER B 619    10940  10477   8123   -499    846    509       C
ATOM   7082  O   SER B 619      41.035  60.424 110.318  1.00 75.56           O
ANISOU 7082  O   SER B 619    10797  10101   7814   -510    800    531       O
ATOM   7083  N   LYS B 620      40.446  59.674 108.285  1.00 79.03           N
ANISOU 7083  N   LYS B 620    11054  10675   8297   -525    853    523       N
ATOM   7084  CA  LYS B 620      39.786  60.922 107.926  1.00 79.46           C
ANISOU 7084  CA  LYS B 620    11213  10641   8338   -560    806    570       C
ATOM   7085  CB  LYS B 620      39.421  60.946 106.446  1.00 81.43           C
ANISOU 7085  CB  LYS B 620    11386  10964   8588   -607    804    587       C
ATOM   7086  CG  LYS B 620      39.983  62.146 105.714  1.00 99.27           C
ANISOU 7086  CG  LYS B 620    13692  13248  10778   -748    720    652       C
ATOM   7087  CD  LYS B 620      39.068  62.551 104.567  1.00111.48           C
ANISOU 7087  CD  LYS B 620    15241  14781  12334   -759    704    683       C
ATOM   7088  CE  LYS B 620      37.645  62.737 105.081  1.00107.74           C
ANISOU 7088  CE  LYS B 620    14848  14151  11936   -635    722    671       C
ATOM   7089  NZ  LYS B 620      36.726  63.339 104.079  1.00103.18           N
ANISOU 7089  NZ  LYS B 620    14295  13534  11375   -646    683    708       N
ATOM   7090  C   LYS B 620      38.544  61.124 108.800  1.00 82.32           C
ANISOU 7090  C   LYS B 620    11680  10847   8750   -441    839    557       C
ATOM   7091  O   LYS B 620      38.193  62.260 109.162  1.00 83.50           O
ANISOU 7091  O   LYS B 620    11959  10883   8884   -449    791    585       O
ATOM   7092  N   THR B 621      37.902  60.021 109.170  1.00 83.32           N
ANISOU 7092  N   THR B 621    11752  10967   8940   -329    922    515       N
ATOM   7093  CA  THR B 621      36.832  60.084 110.153  1.00 80.54           C
ANISOU 7093  CA  THR B 621    11488  10482   8633   -214    971    500       C
ATOM   7094  CB  THR B 621      36.097  58.724 110.286  1.00 79.27           C
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ANISOU 7094  CB  THR B 621    11234  10334   8553   -107   1068    461       C
ATOM   7095  OG1 THR B 621      35.371  58.456 109.075  1.00 81.26           O
ANISOU 7095  OG1 THR B 621    11394  10622   8859   -103   1081    459       O
ATOM   7096  CG2 THR B 621      35.097  58.726 111.471  1.00 49.84           C
ANISOU 7096  CG2 THR B 621     7595   6478   4862      7   1133    448       C
ATOM   7097  C   THR B 621      37.391  60.547 111.513  1.00 85.24           C
ANISOU 7097  C   THR B 621    12207  11008   9174   -209    947    499       C
ATOM   7098  O   THR B 621      36.707  61.262 112.249  1.00 91.45           O
ANISOU 7098  O   THR B 621    13116  11672   9961   -155    951    500       O
ATOM   7099  N   LYS B 622      38.629  60.184 111.845  1.00 76.06           N
ANISOU 7099  N   LYS B 622    11014   9923   7964   -264    918    495       N
ATOM   7100  CA  LYS B 622      39.201  60.655 113.109  1.00 87.70           C
ANISOU 7100  CA  LYS B 622    12610  11331   9380   -266    879    495       C
ATOM   7101  CB  LYS B 622      40.494  59.927 113.461  1.00 79.30           C
ANISOU 7101  CB  LYS B 622    11481  10363   8285   -307    855    484       C
ATOM   7102  CG  LYS B 622      40.296  58.651 114.219  1.00 79.26           C
ANISOU 7102  CG  LYS B 622    11438  10362   8314   -206    928    452       C
ATOM   7103  CD  LYS B 622      41.312  58.461 115.331  1.00 65.96           C
ANISOU 7103  CD  LYS B 622     9805   8681   6578   -215    883    446       C
ATOM   7104  CE  LYS B 622      41.308  56.991 115.802  1.00 67.68           C
ANISOU 7104  CE  LYS B 622     9947   8933   6837   -132    946    421       C
ATOM   7105  NZ  LYS B 622      42.228  56.780 116.966  1.00 83.97           N
ANISOU 7105  NZ  LYS B 622    12070  10986   8848   -131    896    419       N
ATOM   7106  C   LYS B 622      39.472  62.155 113.110  1.00 93.40           C
ANISOU 7106  C   LYS B 622    13453  11984  10049   -348    785    527       C
ATOM   7107  O   LYS B 622      39.185  62.819 114.108  1.00105.21           O
ANISOU 7107  O   LYS B 622    15092  13365  11519   -307    769    520       O
ATOM   7108  N   LYS B 623      40.044  62.675 112.018  1.00 72.90           N
ANISOU 7108  N   LYS B 623    10806   9459   7434   -466    722    563       N
ATOM   7109  CA  LYS B 623      40.213  64.124 111.846  1.00 69.67           C
ANISOU 7109  CA  LYS B 623    10507   8978   6985   -553    627    605       C
ATOM   7110  C   LYS B 623      38.895  64.847 112.093  1.00 76.28           C
ANISOU 7110  C   LYS B 623    11459   9666   7856   -468    640    601       C
ATOM   7111  O   LYS B 623      38.828  65.724 112.950  1.00 80.20           O
ANISOU 7111  O   LYS B 623    12101  10046   8325   -454    595    597       O
ATOM   7112  CB  LYS B 623      40.730  64.469 110.443  1.00 73.24           C
ANISOU 7112  CB  LYS B 623    10875   9532   7422   -683    580    652       C
ATOM   7113  N   GLU B 624      37.846  64.458 111.363  1.00 71.65           N
ANISOU 7113  N   GLU B 624    10807   9084   7333   -406    700    597       N
ATOM   7114  CA  GLU B 624      36.534  65.114 111.466  1.00 71.73           C
ANISOU 7114  CA  GLU B 624    10902   8960   7392   -321    713    592       C
ATOM   7115  CB  GLU B 624      35.559  64.518 110.451  1.00 76.30           C
ANISOU 7115  CB  GLU B 624    11369   9576   8044   -274    768    591       C
ATOM   7116  CG  GLU B 624      35.899  64.878 108.994  1.00 90.72           C
ANISOU 7116  CG  GLU B 624    13133  11482   9854   -390    701    641       C
ATOM   7117  CD  GLU B 624      35.172  63.997 107.989  1.00107.73           C
ANISOU 7117  CD  GLU B 624    15156  13708  12068   -350    757    631       C
ATOM   7118  OE1 GLU B 624      34.213  63.298 108.389  1.00108.89           O
ANISOU 7118  OE1 GLU B 624    15272  13815  12288   -230    838    591       O
ATOM   7119  OE2 GLU B 624      35.553  64.010 106.798  1.00110.77           O
ANISOU 7119  OE2 GLU B 624    15473  14190  12426   -442    718    663       O
ATOM   7120  C   GLU B 624      35.917  65.043 112.859  1.00 88.53           C
ANISOU 7120  C   GLU B 624    13128  10980   9529   -197    773    546       C
ATOM   7121  O   GLU B 624      35.059  65.858 113.218  1.00 91.84           O
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ANISOU 7121  O   GLU B 624    13652  11272   9971   -135    767    536       O
ATOM   7122  N   TYR B 625      36.357  64.065 113.639  1.00 78.60           N
ANISOU 7122  N   TYR B 625    11837   9774   8252   -160    830    518       N
ATOM   7123  CA  TYR B 625      35.838  63.861 114.976  1.00 74.46           C
ANISOU 7123  CA  TYR B 625    11402   9167   7723    -48    897    478       C
ATOM   7124  CB  TYR B 625      35.948  62.392 115.366  1.00 71.75           C
ANISOU 7124  CB  TYR B 625    10961   8904   7396      6    986    458       C
ATOM   7125  CG  TYR B 625      34.814  61.514 114.894  1.00 72.97           C
ANISOU 7125  CG  TYR B 625    11009   9073   7645     92   1087    447       C
ATOM   7126  CD1 TYR B 625      33.645  62.052 114.387  1.00 73.60           C
ANISOU 7126  CD1 TYR B 625    11094   9082   7789    138   1106    448       C
ATOM   7127  CE1 TYR B 625      32.597  61.223 113.974  1.00 71.69           C
ANISOU 7127  CE1 TYR B 625    10747   8852   7641    214   1193    437       C
ATOM   7128  CZ  TYR B 625      32.731  59.850 114.070  1.00 71.01           C
ANISOU 7128  CZ  TYR B 625    10555   8843   7583    241   1262    426       C
ATOM   7129  OH  TYR B 625      31.714  59.007 113.668  1.00 74.29           O
ANISOU 7129  OH  TYR B 625    10864   9265   8098    310   1341    415       O
ATOM   7130  CE2 TYR B 625      33.877  59.310 114.579  1.00 68.76           C
ANISOU 7130  CE2 TYR B 625    10269   8622   7235    200   1243    425       C
ATOM   7131  CD2 TYR B 625      34.902  60.136 114.993  1.00 77.60           C
ANISOU 7131  CD2 TYR B 625    11488   9735   8262    128   1158    435       C
ATOM   7132  C   TYR B 625      36.603  64.717 115.973  1.00 81.66           C
ANISOU 7132  C   TYR B 625    12465  10013   8549    -85    821    473       C
ATOM   7133  O   TYR B 625      36.018  65.396 116.812  1.00 77.88           O
ANISOU 7133  O   TYR B 625    12120   9415   8054    -16    829    446       O
ATOM   7134  N   LEU B 626      37.925  64.659 115.868  1.00 81.19           N
ANISOU 7134  N   LEU B 626    12377  10034   8437   -192    746    493       N
ATOM   7135  CA  LEU B 626      38.819  65.353 116.778  1.00 76.15           C
ANISOU 7135  CA  LEU B 626    11865   9349   7719   -242    660    488       C
ATOM   7136  CB  LEU B 626      40.264  64.957 116.497  1.00 70.43           C
ANISOU 7136  CB  LEU B 626    11052   8747   6961   -358    596    511       C
ATOM   7137  CG  LEU B 626      40.634  63.512 116.837  1.00 64.21           C
ANISOU 7137  CG  LEU B 626    10157   8057   6181   -312    663    492       C
ATOM   7138  CD1 LEU B 626      41.948  63.190 116.193  1.00 70.57           C
ANISOU 7138  CD1 LEU B 626    10841   8995   6977   -429    603    514       C
ATOM   7139  CD2 LEU B 626      40.730  63.299 118.360  1.00 59.10           C
ANISOU 7139  CD2 LEU B 626    9630   7346   5481   -239    675    461       C
ATOM   7140  C   LEU B 626      38.640  66.850 116.638  1.00 80.95           C
ANISOU 7140  C   LEU B 626    12600   9843   8313   -287    569    503       C
ATOM   7141  O   LEU B 626      38.815  67.609 117.602  1.00 78.91           O
ANISOU 7141  O   LEU B 626    12494   9486   8002   -277    516    480       O
ATOM   7142  N   LEU B 627      38.255  67.261 115.434  1.00 79.10           N
ANISOU 7142  N   LEU B 627    12309   9619   8127   -333    548    538       N
ATOM   7143  CA  LEU B 627      38.099  68.670 115.132  1.00 71.14           C
ANISOU 7143  CA  LEU B 627    11411   8503   7115   -386    450    563       C
ATOM   7144  CB  LEU B 627      38.983  69.034 113.945  1.00 61.72           C
ANISOU 7144  CB  LEU B 627    10144   7396   5911   -547    362    629       C
ATOM   7145  CG  LEU B 627      40.450  68.617 114.157  1.00 69.07           C
ANISOU 7145  CG  LEU B 627    11019   8439   6786   -650    321    641       C
ATOM   7146  CD1 LEU B 627      41.336  68.932 112.948  1.00 57.42           C
ANISOU 7146  CD1 LEU B 627    9454   7066   5298   -813    251    707       C
ATOM   7147  CD2 LEU B 627      41.029  69.247 115.420  1.00 80.41           C
ANISOU 7147  CD2 LEU B 627    12603   9782   8165   -658    249    616       C
ATOM   7148  C   LEU B 627      36.640  69.056 114.875  1.00 70.97           C
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ANISOU 7148  C   LEU B 627    11422   8379   7162   -282    495    549       C
ATOM   7149  O   LEU B 627      36.369  70.047 114.197  1.00 77.57           O
ANISOU 7149  O   LEU B 627    12304   9147   8021   -328    418    582       O
ATOM   7150  N   GLU B 628      35.720  68.294 115.464  1.00 61.98           N
ANISOU 7150  N   GLU B 628    10265   7226   6060   -144    615    502       N
ATOM   7151  CA  GLU B 628      34.273  68.487 115.285  1.00 70.39           C
ANISOU 7151  CA  GLU B 628    11335   8206   7205    -30    675    481       C
ATOM   7152  CB  GLU B 628      33.505  67.621 116.279  1.00 73.55           C
ANISOU 7152  CB  GLU B 628    11729   8594   7623    111    812    427       C
ATOM   7153  CG  GLU B 628      32.061  68.039 116.428  1.00 88.15           C
ANISOU 7153  CG  GLU B 628    13616  10332   9546    237    872    394       C
ATOM   7154  CD  GLU B 628      31.307  68.032 115.111  1.00 96.26           C
ANISOU 7154  CD  GLU B 628    14532  11374  10670    233    865    425       C
ATOM   7155  OE1 GLU B 628      30.476  68.939 114.921  1.00 95.60           O
ANISOU 7155  OE1 GLU B 628    14505  11180  10639    281    833    417       O
ATOM   7156  OE2 GLU B 628      31.542  67.130 114.274  1.00100.51           O
ANISOU 7156  OE2 GLU B 628    14928  12032  11231    185    886    455       O
ATOM   7157  C   GLU B 628      33.768  69.930 115.408  1.00 90.99           C
ANISOU 7157  C   GLU B 628    14090  10658   9825    -13    595    474       C
ATOM   7158  O   GLU B 628      33.036  70.406 114.533  1.00113.48           O
ANISOU 7158  O   GLU B 628    16914  13462  12741     -6    568    497       O
ATOM   7159  N   GLU B 629      34.123  70.611 116.492  1.00 89.04           N
ANISOU 7159  N   GLU B 629    13995  10320   9515     -1    553    439       N
ATOM   7160  CA  GLU B 629      33.825  72.052 116.653  1.00 93.06           C
ANISOU 7160  CA  GLU B 629    14658  10671  10030      5    456    428       C
ATOM   7161  CB  GLU B 629      34.500  72.862 115.548  1.00 73.40           C
ANISOU 7161  CB  GLU B 629    12164   8184   7541   -149    315    503       C
ATOM   7162  CG  GLU B 629      35.866  73.337 115.942  1.00 78.42           C
ANISOU 7162  CG  GLU B 629    12878   8827   8092   -275    207    522       C
ATOM   7163  CD  GLU B 629      36.674  73.818 114.767  1.00 81.91           C
ANISOU 7163  CD  GLU B 629    13272   9321   8529   -447     95    609       C
ATOM   7164  OE1 GLU B 629      36.110  74.493 113.878  1.00 87.71           O
ANISOU 7164  OE1 GLU B 629    14013   9996   9315   -466     42    649       O
ATOM   7165  OE2 GLU B 629      37.880  73.496 114.724  1.00 87.15           O
ANISOU 7165  OE2 GLU B 629    13886  10090   9138   -562     60    639       O
ATOM   7166  C   GLU B 629      32.367  72.523 116.716  1.00 90.03           C
ANISOU 7166  C   GLU B 629    14312  10166   9729    143    505    387       C
ATOM   7167  O   GLU B 629      32.132  73.671 117.078  1.00 81.67           O
ANISOU 7167  O   GLU B 629    13395   8966   8670    168    431    360       O
ATOM   7168  N   ARG B 630      31.384  71.690 116.395  1.00 87.27           N
ANISOU 7168  N   ARG B 630    13842   9863   9455    235    622    377       N
ATOM   7169  CA  ARG B 630      30.011  72.152 116.592  1.00 84.06           C
ANISOU 7169  CA  ARG B 630    13470   9339   9131    374    671    330       C
ATOM   7170  CB  ARG B 630      29.056  71.512 115.595  1.00 83.73           C
ANISOU 7170  CB  ARG B 630    13269   9348   9197    417    734    354       C
ATOM   7171  CG  ARG B 630      29.239  71.970 114.171  1.00 75.41           C
ANISOU 7171  CG  ARG B 630    12164   8310   8179    309    616    427       C
ATOM   7172  CD  ARG B 630      28.298  71.201 113.270  1.00 82.56           C
ANISOU 7172  CD  ARG B 630    12911   9275   9185    358    682    442       C
ATOM   7173  NE  ARG B 630      28.657  69.787 113.215  1.00 92.47           N
ANISOU 7173  NE  ARG B 630    14033  10680  10419    340    778    448       N
ATOM   7174  CZ  ARG B 630      27.919  68.846 112.635  1.00103.34           C
ANISOU 7174  CZ  ARG B 630    15265  12124  11876    387    857    449       C
ATOM   7175  NH1 ARG B 630      28.337  67.584 112.626  1.00102.24           N
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ANISOU 7175  NH1 ARG B 630    15017  12112  11717    367    933    451       N
ATOM   7176  NH2 ARG B 630      26.757  69.161 112.075  1.00106.40           N
ANISOU 7176  NH2 ARG B 630    15614  12444  12370    458    852    447       N
ATOM   7177  C   ARG B 630      29.532  71.864 118.001  1.00 82.17           C
ANISOU 7177  C   ARG B 630    13301   9059   8860    507    791    251       C
ATOM   7178  O   ARG B 630      30.171  71.119 118.736  1.00 81.07           O
ANISOU 7178  O   ARG B 630    13164   8995   8642    494    845    240       O
ATOM   7179  N   ASP B 631      28.397  72.451 118.368  1.00 98.02           N
ANISOU 7179  N   ASP B 631    15365  10950  10930    635    832    196       N
ATOM   7180  CA  ASP B 631      27.804  72.206 119.674  1.00109.48           C
ANISOU 7180  CA  ASP B 631    16880  12366  12353    770    963    117       C
ATOM   7181  CB  ASP B 631      26.886  73.357 120.098  1.00105.94           C
ANISOU 7181  CB  ASP B 631    16546  11756  11950    885    951     48       C
ATOM   7182  CG  ASP B 631      26.607  73.355 121.593  1.00110.74           C
ANISOU 7182  CG  ASP B 631    17271  12322  12483   1001   1059    -39       C
ATOM   7183  OD1 ASP B 631      26.780  72.297 122.240  1.00117.70           O
ANISOU 7183  OD1 ASP B 631    18114  13302  13304   1017   1175    -41       O
ATOM   7184  OD2 ASP B 631      26.208  74.409 122.126  1.00118.93           O
ANISOU 7184  OD2 ASP B 631    18443  13225  13518   1078   1027   -107       O
ATOM   7185  C   ASP B 631      27.033  70.894 119.657  1.00112.87           C
ANISOU 7185  C   ASP B 631    17152  12891  12842    845   1127    119       C
ATOM   7186  O   ASP B 631      26.009  70.757 118.980  1.00115.87           O
ANISOU 7186  O   ASP B 631    17424  13262  13341    904   1170    124       O
ATOM   7187  N   ILE B 632      27.554  69.933 120.410  1.00109.61           N
ANISOU 7187  N   ILE B 632    16730  12567  12348    838   1208    116       N
ATOM   7188  CA  ILE B 632      26.948  68.620 120.565  1.00103.30           C
ANISOU 7188  CA  ILE B 632    15800  11858  11593    900   1364    121       C
ATOM   7189  CB  ILE B 632      27.719  67.803 121.595  1.00102.60           C
ANISOU 7189  CB  ILE B 632    15756  11840  11388    884   1421    118       C
ATOM   7190  CG1 ILE B 632      29.109  67.430 121.103  1.00 96.31           C
ANISOU 7190  CG1 ILE B 632    14927  11135  10533    741   1315    173       C
ATOM   7191  CD1 ILE B 632      29.847  66.584 122.150  1.00 94.07           C
ANISOU 7191  CD1 ILE B 632    14684  10916  10142    734   1365    170       C
ATOM   7192  CG2 ILE B 632      26.990  66.556 121.928  1.00111.93           C
ANISOU 7192  CG2 ILE B 632    16828  13088  12612    960   1586    119       C
ATOM   7193  C   ILE B 632      25.486  68.685 121.014  1.00104.93           C
ANISOU 7193  C   ILE B 632    15990  11998  11881   1053   1496     67       C
ATOM   7194  O   ILE B 632      24.656  67.881 120.580  1.00 95.66           O
ANISOU 7194  O   ILE B 632    14667  10872  10808   1099   1591     82       O
ATOM   7195  N   ASN B 633      25.181  69.639 121.892  1.00106.23           N
ANISOU 7195  N   ASN B 633    16305  12053  12003   1133   1501     -1       N
ATOM   7196  CA  ASN B 633      23.849  69.741 122.472  1.00102.67           C
ANISOU 7196  CA  ASN B 633    15848  11544  11618   1285   1639    -63       C
ATOM   7197  CB  ASN B 633      23.859  70.678 123.664  1.00111.73           C
ANISOU 7197  CB  ASN B 633    17192  12591  12669   1359   1644   -146       C
ATOM   7198  CG  ASN B 633      24.782  70.214 124.742  1.00122.87           C
ANISOU 7198  CG  ASN B 633    18710  14055  13918   1324   1672   -152       C
ATOM   7199  OD1 ASN B 633      24.368  69.502 125.659  1.00126.20           O
ANISOU 7199  OD1 ASN B 633    19133  14520  14295   1398   1826   -176       O
ATOM   7200  ND2 ASN B 633      26.051  70.606 124.646  1.00120.77           N
ANISOU 7200  ND2 ASN B 633    18535  13789  13564   1206   1520   -126       N
ATOM   7201  C   ASN B 633      22.792  70.217 121.501  1.00104.50           C
ANISOU 7201  C   ASN B 633    15982  11715  12009   1338   1617    -64       C
ATOM   7202  O   ASN B 633      21.598  70.067 121.775  1.00104.30           O
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ANISOU 7202  O   ASN B 633    15894  11665  12070   1460   1743   -105       O
ATOM   7203  N   ARG B 634      23.217  70.815 120.387  1.00100.30           N
ANISOU 7203  N   ARG B 634    15437  11157  11514   1246   1456    -18       N
ATOM   7204  CA  ARG B 634      22.250  71.312 119.425  1.00 96.31           C
ANISOU 7204  CA  ARG B 634    14849  10588  11157   1290   1414    -13       C
ATOM   7205  CB  ARG B 634      22.844  72.356 118.476  1.00 96.71           C
ANISOU 7205  CB  ARG B 634    14961  10573  11211   1190   1214     29       C
ATOM   7206  CG  ARG B 634      21.863  73.494 118.169  1.00107.11           C
ANISOU 7206  CG  ARG B 634    16312  11744  12640   1282   1154     -8       C
ATOM   7207  CD  ARG B 634      22.257  74.305 116.943  1.00108.42           C
ANISOU 7207  CD  ARG B 634    16495  11861  12840   1176    962     58       C
ATOM   7208  NE  ARG B 634      23.699  74.278 116.708  1.00110.54           N
ANISOU 7208  NE  ARG B 634    16820  12195  12987   1012    861    119       N
ATOM   7209  CZ  ARG B 634      24.266  74.087 115.518  1.00107.98           C
ANISOU 7209  CZ  ARG B 634    16421  11942  12664    880    765    206       C
ATOM   7210  NH1 ARG B 634      25.591  74.083 115.404  1.00 97.31           N
ANISOU 7210  NH1 ARG B 634    15119  10654  11202    735    686    254       N
ATOM   7211  NH2 ARG B 634      23.514  73.902 114.441  1.00107.55           N
ANISOU 7211  NH2 ARG B 634    16243  11901  12720    892    747    243       N
ATOM   7212  C   ARG B 634      21.694  70.126 118.661  1.00102.05           C
ANISOU 7212  C   ARG B 634    15372  11419  11984   1287   1493     33       C
ATOM   7213  O   ARG B 634      22.413  69.364 118.015  1.00108.09           O
ANISOU 7213  O   ARG B 634    16058  12288  12722   1178   1458     96       O
ATOM   7214  N   PHE B 635      20.384  69.992 118.777  1.00 96.71           N
ANISOU 7214  N   PHE B 635    14610  10709  11427   1412   1601     -5       N
ATOM   7215  CA  PHE B 635      19.611  68.886 118.266  1.00 88.59           C
ANISOU 7215  CA  PHE B 635    13390   9760  10511   1438   1698     23       C
ATOM   7216  CB  PHE B 635      18.156  69.220 118.531  1.00 93.72           C
ANISOU 7216  CB  PHE B 635    13987  10330  11292   1589   1792    -36       C
ATOM   7217  CG  PHE B 635      17.188  68.292 117.918  1.00111.14           C
ANISOU 7217  CG  PHE B 635    15991  12592  13644   1623   1872    -12       C
ATOM   7218  CD1 PHE B 635      17.176  66.955 118.256  1.00117.20           C
ANISOU 7218  CD1 PHE B 635    16660  13467  14402   1610   2004     11       C
ATOM   7219  CE1 PHE B 635      16.250  66.119 117.698  1.00113.09           C
ANISOU 7219  CE1 PHE B 635    15954  12988  14027   1640   2072     31       C
ATOM   7220  CZ  PHE B 635      15.316  66.624 116.820  1.00109.73           C
ANISOU 7220  CZ  PHE B 635    15438  12500  13754   1689   2008     25       C
ATOM   7221  CE2 PHE B 635      15.316  67.940 116.485  1.00108.13           C
ANISOU 7221  CE2 PHE B 635    15332  12192  13560   1707   1877      5       C
ATOM   7222  CD2 PHE B 635      16.238  68.773 117.038  1.00110.78           C
ANISOU 7222  CD2 PHE B 635    15855  12482  13754   1674   1811    -14       C
ATOM   7223  C   PHE B 635      19.866  68.606 116.793  1.00 90.55           C
ANISOU 7223  C   PHE B 635    13526  10061  10818   1334   1581     95       C
ATOM   7224  O   PHE B 635      19.818  67.459 116.354  1.00 96.93           O
ANISOU 7224  O   PHE B 635    14197  10971  11662   1299   1634    131       O
ATOM   7225  N   SER B 636      20.148  69.663 116.041  1.00 94.37           N
ANISOU 7225  N   SER B 636    14077  10475  11306   1283   1419    115       N
ATOM   7226  CA  SER B 636      20.469  69.548 114.628  1.00 90.54           C
ANISOU 7226  CA  SER B 636    13510  10038  10854   1176   1295    186       C
ATOM   7227  CB  SER B 636      20.766  70.919 114.021  1.00 95.22           C
ANISOU 7227  CB  SER B 636    14214  10529  11437   1126   1118    207       C
ATOM   7228  OG  SER B 636      20.034  71.948 114.670  1.00118.36           O
ANISOU 7228  OG  SER B 636    17240  13317  14416   1244   1119    143       O
ATOM   7229  C   SER B 636      21.679  68.652 114.464  1.00 91.98           C
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ANISOU 7229  C   SER B 636    13668  10353  10927   1050   1290    232       C
ATOM   7230  O   SER B 636      21.709  67.780 113.599  1.00 96.29           O
ANISOU 7230  O   SER B 636    14082  10994  11510    996   1289    273       O
ATOM   7231  N   VAL B 637      22.680  68.889 115.309  1.00 87.90           N
ANISOU 7231  N   VAL B 637    13281   9839  10278   1006   1281    221       N
ATOM   7232  CA  VAL B 637      23.961  68.206 115.203  1.00 92.58           C
ANISOU 7232  CA  VAL B 637    13866  10547  10764    884   1256    262       C
ATOM   7233  CB  VAL B 637      25.051  68.934 116.001  1.00 87.27           C
ANISOU 7233  CB  VAL B 637    13364   9838   9956    829   1192    250       C
ATOM   7234  CG1 VAL B 637      26.350  68.160 115.925  1.00 79.22           C
ANISOU 7234  CG1 VAL B 637    12318   8943   8838    711   1172    289       C
ATOM   7235  CG2 VAL B 637      25.253  70.352 115.459  1.00 85.73           C
ANISOU 7235  CG2 VAL B 637    13274   9540   9759    780   1033    266       C
ATOM   7236  C   VAL B 637      23.857  66.753 115.679  1.00 97.25           C
ANISOU 7236  C   VAL B 637    14352  11240  11358    915   1401    255       C
ATOM   7237  O   VAL B 637      24.463  65.842 115.093  1.00 91.25           O
ANISOU 7237  O   VAL B 637    13498  10592  10582    834   1393    294       O
ATOM   7238  N   GLN B 638      23.073  66.529 116.725  1.00 85.78           N
ANISOU 7238  N   GLN B 638    12914   9749   9928   1032   1536    207       N
ATOM   7239  CA  GLN B 638      22.864  65.175 117.192  1.00 79.79           C
ANISOU 7239  CA  GLN B 638    12059   9075   9183   1063   1675    208       C
ATOM   7240  CB  GLN B 638      21.986  65.176 118.445  1.00 88.85           C
ANISOU 7240  CB  GLN B 638    13251  10166  10340   1192   1823    154       C
ATOM   7241  CG  GLN B 638      22.739  65.720 119.632  1.00 87.51           C
ANISOU 7241  CG  GLN B 638    13264   9962  10023   1193   1821    122       C
ATOM   7242  CD  GLN B 638      21.874  66.038 120.814  1.00 90.91           C
ANISOU 7242  CD  GLN B 638    13769  10324  10448   1324   1949     59       C
ATOM   7243  OE1 GLN B 638      20.728  65.603 120.900  1.00 96.54           O
ANISOU 7243  OE1 GLN B 638    14380  11035  11266   1413   2073     44       O
ATOM   7244  NE2 GLN B 638      22.421  66.812 121.746  1.00 88.44           N
ANISOU 7244  NE2 GLN B 638    13636   9956  10012   1334   1922     18       N
ATOM   7245  C   GLN B 638      22.267  64.315 116.092  1.00 86.44           C
ANISOU 7245  C   GLN B 638    12717   9979  10149   1052   1688    240       C
ATOM   7246  O   GLN B 638      22.612  63.136 115.949  1.00 89.31           O
ANISOU 7246  O   GLN B 638    12987  10438  10508   1012   1732    264       O
ATOM   7247  N   LYS B 639      21.398  64.936 115.304  1.00 87.11           N
ANISOU 7247  N   LYS B 639    12754  10001  10343   1089   1638    237       N
ATOM   7248  CA  LYS B 639      20.688  64.281 114.218  1.00 84.74           C
ANISOU 7248  CA  LYS B 639    12287   9741  10169   1088   1635    261       C
ATOM   7249  CB  LYS B 639      19.601  65.189 113.682  1.00 95.28           C
ANISOU 7249  CB  LYS B 639    13603  10977  11622   1158   1585    246       C
ATOM   7250  CG  LYS B 639      18.288  64.491 113.372  1.00111.52           C
ANISOU 7250  CG  LYS B 639    15495  13036  13841   1239   1669    237       C
ATOM   7251  CD  LYS B 639      17.451  64.298 114.644  1.00130.96           C
ANISOU 7251  CD  LYS B 639    17956  15459  16344   1362   1839    188       C
ATOM   7252  CE  LYS B 639      16.060  63.891 114.335  1.00143.83           C
ANISOU 7252  CE  LYS B 639    19428  17070  18152   1448   1910    176       C
ATOM   7253  NZ  LYS B 639      15.072  64.162 115.476  1.00152.66           N
ANISOU 7253  NZ  LYS B 639    20556  18123  19324   1582   2058    120       N
ATOM   7254  C   LYS B 639      21.633  63.901 113.114  1.00 85.58           C
ANISOU 7254  C   LYS B 639    12346   9940  10231    960   1527    309       C
ATOM   7255  O   LYS B 639      21.491  62.838 112.508  1.00 87.04           O
ANISOU 7255  O   LYS B 639    12397  10205  10471    938   1555    326       O
ATOM   7256  N   ASP B 640      22.612  64.759 112.860  1.00 81.60           N
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ANISOU 7256  N   ASP B 640    11952   9427   9627    874   1406    330       N
ATOM   7257  CA  ASP B 640      23.653  64.414 111.909  1.00 79.99           C
ANISOU 7257  CA  ASP B 640    11710   9323   9359    745   1316    374       C
ATOM   7258  CB  ASP B 640      24.700  65.510 111.831  1.00 98.10           C
ANISOU 7258  CB  ASP B 640    14139  11592  11542    653   1193    397       C
ATOM   7259  CG  ASP B 640      24.433  66.483 110.715  1.00110.24           C
ANISOU 7259  CG  ASP B 640    15691  13079  13117    612   1063    432       C
ATOM   7260  OD1 ASP B 640      23.249  66.642 110.337  1.00109.63           O
ANISOU 7260  OD1 ASP B 640    15558  12939  13156    692   1070    422       O
ATOM   7261  OD2 ASP B 640      25.411  67.098 110.231  1.00117.96           O
ANISOU 7261  OD2 ASP B 640    16736  14076  14009    498    952    472       O
ATOM   7262  C   ASP B 640      24.283  63.102 112.339  1.00 79.96           C
ANISOU 7262  C   ASP B 640    11644   9426   9311    721   1401    372       C
ATOM   7263  O   ASP B 640      24.365  62.151 111.562  1.00 84.24           O
ANISOU 7263  O   ASP B 640    12062  10057   9887    683   1404    388       O
ATOM   7264  N   PHE B 641      24.679  63.038 113.607  1.00 88.03           N
ANISOU 7264  N   PHE B 641    12756  10432  10260    750   1468    350       N
ATOM   7265  CA  PHE B 641      25.426  61.892 114.108  1.00 77.64           C
ANISOU 7265  CA  PHE B 641    11405   9207   8887    722   1530    353       C
ATOM   7266  CB  PHE B 641      25.904  62.151 115.531  1.00 72.96           C
ANISOU 7266  CB  PHE B 641    10950   8577   8194    749   1574    332       C
ATOM   7267  CG  PHE B 641      27.190  62.918 115.581  1.00 83.01           C
ANISOU 7267  CG  PHE B 641    12335   9857   9346    653   1459    345       C
ATOM   7268  CD1 PHE B 641      28.403  62.263 115.430  1.00 75.10           C
ANISOU 7268  CD1 PHE B 641    11303   8956   8274    562   1421    367       C
ATOM   7269  CE1 PHE B 641      29.587  62.959 115.441  1.00 68.59           C
ANISOU 7269  CE1 PHE B 641    10567   8144   7351    468   1314    381       C
ATOM   7270  CZ  PHE B 641      29.576  64.340 115.591  1.00 73.79           C
ANISOU 7270  CZ  PHE B 641    11355   8704   7976    458   1236    377       C
ATOM   7271  CE2 PHE B 641      28.375  65.009 115.730  1.00 73.51           C
ANISOU 7271  CE2 PHE B 641    11359   8561   8008    552   1267    352       C
ATOM   7272  CD2 PHE B 641      27.187  64.301 115.720  1.00 81.93           C
ANISOU 7272  CD2 PHE B 641    12329   9625   9177    651   1381    335       C
ATOM   7273  C   PHE B 641      24.608  60.617 114.024  1.00 80.82           C
ANISOU 7273  C   PHE B 641    11664   9649   9394    779   1638    349       C
ATOM   7274  O   PHE B 641      25.105  59.595 113.541  1.00 72.68           O
ANISOU 7274  O   PHE B 641    10538   8710   8366    729   1636    363       O
ATOM   7275  N   ILE B 642      23.349  60.696 114.449  1.00 75.88           N
ANISOU 7275  N   ILE B 642    11018   8951   8861    884   1727    327       N
ATOM   7276  CA  ILE B 642      22.433  59.560 114.365  1.00 73.20           C
ANISOU 7276  CA  ILE B 642    10537   8637   8639    939   1830    325       C
ATOM   7277  CB  ILE B 642      21.059  59.905 114.937  1.00 75.13           C
ANISOU 7277  CB  ILE B 642    10772   8793   8979   1055   1928    299       C
ATOM   7278  CG1 ILE B 642      21.170  60.205 116.427  1.00 71.07           C
ANISOU 7278  CG1 ILE B 642    10389   8237   8376   1110   2020    276       C
ATOM   7279  CD1 ILE B 642      19.873  60.392 117.057  1.00 70.63           C
ANISOU 7279  CD1 ILE B 642    10314   8114   8407   1225   2140    246       C
ATOM   7280  CG2 ILE B 642      20.087  58.776 114.692  1.00 70.12           C
ANISOU 7280  CG2 ILE B 642    9976   8184   8484   1098   2020    304       C
ATOM   7281  C   ILE B 642      22.253  59.076 112.931  1.00 82.77           C
ANISOU 7281  C   ILE B 642    11611   9903   9935    891   1760    342       C
ATOM   7282  O   ILE B 642      22.385  57.873 112.656  1.00 88.76           O
ANISOU 7282  O   ILE B 642    12265  10733  10727    869   1793    350       O
ATOM   7283  N   ASN B 643      21.963  60.016 112.029  1.00 82.93           N
ATOM   7283  N   ASN B 643      21.963  60.016 112.029  1.00 82.93           N
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ANISOU 7283  N   ASN B 643    11638   9885   9985    875   1659    348       N
ATOM   7284  CA  ASN B 643      21.881  59.737 110.591  1.00 85.13           C
ANISOU 7284  CA  ASN B 643    11810  10215  10318    820   1572    365       C
ATOM   7285  CB  ASN B 643      21.505  60.999 109.810  1.00 79.11           C
ANISOU 7285  CB  ASN B 643    11093   9388   9578    813   1458    377       C
ATOM   7286  CG  ASN B 643      20.129  61.524 110.166  1.00101.73           C
ANISOU 7286  CG  ASN B 643    13945  12143  12563    927   1505    355       C
ATOM   7287  OD1 ASN B 643      19.191  60.753 110.376  1.00108.70           O
ANISOU 7287  OD1 ASN B 643    14720  13022  13559    999   1602    338       O
ATOM   7288  ND2 ASN B 643      19.999  62.853 110.237  1.00108.09           N
ANISOU 7288  ND2 ASN B 643    14859  12858  13352    946   1436    353       N
ATOM   7289  C   ASN B 643      23.184  59.167 110.009  1.00 89.90           C
ANISOU 7289  C   ASN B 643    12399  10933  10827    711   1511    382       C
ATOM   7290  O   ASN B 643      23.142  58.377 109.062  1.00 94.17           O
ANISOU 7290  O   ASN B 643    12826  11542  11412    678   1487    385       O
ATOM   7291  N   ARG B 644      24.336  59.558 110.554  1.00 75.95           N
ANISOU 7291  N   ARG B 644    10739   9186   8931    655   1484    390       N
ATOM   7292  CA  ARG B 644      25.586  58.998 110.043  1.00 80.86           C
ANISOU 7292  CA  ARG B 644    11333   9921   9469    556   1434    402       C
ATOM   7293  CB  ARG B 644      26.760  59.940 110.286  1.00 88.07           C
ANISOU 7293  CB  ARG B 644    12372  10840  10252    478   1356    419       C
ATOM   7294  CG  ARG B 644      28.085  59.414 109.706  1.00 87.22           C
ANISOU 7294  CG  ARG B 644    12222  10857  10062    372   1305    430       C
ATOM   7295  CD  ARG B 644      29.288  60.214 110.219  1.00 96.76           C
ANISOU 7295  CD  ARG B 644    13548  12068  11147    299   1245    446       C
ATOM   7296  NE  ARG B 644      30.579  59.805 109.646  1.00102.18           N
ANISOU 7296  NE  ARG B 644    14186  12878  11760    195   1195    457       N
ATOM   7297  CZ  ARG B 644      31.135  58.597 109.752  1.00104.35           C
ANISOU 7297  CZ  ARG B 644    14374  13240  12033    193   1240    437       C
ATOM   7298  NH1 ARG B 644      30.546  57.630 110.444  1.00112.42           N
ANISOU 7298  NH1 ARG B 644    15355  14240  13120    281   1334    413       N
ATOM   7299  NH2 ARG B 644      32.311  58.359 109.183  1.00 90.89           N
ANISOU 7299  NH2 ARG B 644    12624  11647  10264    100   1190    442       N
ATOM   7300  C   ARG B 644      25.943  57.628 110.623  1.00 81.36           C
ANISOU 7300  C   ARG B 644    11331  10046   9535    572   1520    387       C
ATOM   7301  O   ARG B 644      26.348  56.748 109.874  1.00 80.05           O
ANISOU 7301  O   ARG B 644    11066   9968   9379    528   1502    384       O
ATOM   7302  N   ASN B 645      25.788  57.441 111.936  1.00 88.44           N
ANISOU 7302  N   ASN B 645    12287  10895  10421    634   1612    378       N
ATOM   7303  CA  ASN B 645      26.324  56.251 112.623  1.00 78.02           C
ANISOU 7303  CA  ASN B 645    10937   9627   9080    638   1678    375       C
ATOM   7304  CB  ASN B 645      27.233  56.685 113.774  1.00 80.49           C
ANISOU 7304  CB  ASN B 645    11387   9926   9270    625   1678    378       C
ATOM   7305  CG  ASN B 645      28.433  57.449 113.300  1.00 75.68           C
ANISOU 7305  CG  ASN B 645    10836   9361   8559    527   1561    388       C
ATOM   7306  OD1 ASN B 645      28.890  57.250 112.183  1.00 73.62           O
ANISOU 7306  OD1 ASN B 645    10495   9176   8303    459   1495    394       O
ATOM   7307  ND2 ASN B 645      28.949  58.340 114.140  1.00 66.58           N
ANISOU 7307  ND2 ASN B 645     9824   8162   7313    516   1534    389       N
ATOM   7308  C   ASN B 645      25.314  55.265 113.193  1.00 69.49           C
ANISOU 7308  C   ASN B 645     9785   8516   8102    722   1799    369       C
ATOM   7309  O   ASN B 645      25.614  54.090 113.378  1.00 77.09           O
ANISOU 7309  O   ASN B 645    10685   9526   9081    719   1838    371       O
ATOM   7310  N   LEU B 646      24.124  55.731 113.514  1.00 77.25           N
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ANISOU 7310  N   LEU B 646    10777   9418   9158    798   1860    364       N
ATOM   7311  CA  LEU B 646      23.180  54.847 114.159  1.00 73.69           C
ANISOU 7311  CA  LEU B 646    10261   8938   8799    872   1985    365       C
ATOM   7312  CB  LEU B 646      22.396  55.611 115.216  1.00 68.18           C
ANISOU 7312  CB  LEU B 646     9653   8154   8099    953   2072    356       C
ATOM   7313  CG  LEU B 646      21.502  54.792 116.131  1.00 75.25           C
ANISOU 7313  CG  LEU B 646    10505   9024   9064   1026   2222    363       C
ATOM   7314  CD1 LEU B 646      22.284  53.645 116.761  1.00 74.31           C
ANISOU 7314  CD1 LEU B 646    10390   8956   8886    996   2260    386       C
ATOM   7315  CD2 LEU B 646      20.965  55.702 117.208  1.00 68.13           C
ANISOU 7315  CD2 LEU B 646     9715   8049   8121   1101   2302    346       C
ATOM   7316  C   LEU B 646      22.257  54.229 113.123  1.00 73.24           C
ANISOU 7316  C   LEU B 646    10048   8889   8889    885   1983    361       C
ATOM   7317  O   LEU B 646      21.942  53.056 113.188  1.00 77.78           O
ANISOU 7317  O   LEU B 646    10528   9485   9541    899   2044    366       O
ATOM   7318  N   VAL B 647      21.855  55.031 112.148  1.00 74.70           N
ANISOU 7318  N   VAL B 647    10213   9057   9114    875   1902    354       N
ATOM   7319  CA  VAL B 647      20.860  54.648 111.149  1.00 66.81           C
ANISOU 7319  CA  VAL B 647     9076   8052   8255    893   1885    349       C
ATOM   7320  CB  VAL B 647      19.760  55.758 111.100  1.00 70.59           C
ANISOU 7320  CB  VAL B 647     9573   8443   8806    958   1882    342       C
ATOM   7321  CG1 VAL B 647      19.633  56.395 109.736  1.00 67.50           C
ANISOU 7321  CG1 VAL B 647     9152   8055   8440    919   1749    344       C
ATOM   7322  CG2 VAL B 647      18.420  55.232 111.603  1.00 87.16           C
ANISOU 7322  CG2 VAL B 647    11577  10489  11050   1046   2002    337       C
ATOM   7323  C   VAL B 647      21.551  54.405 109.781  1.00 82.96           C
ANISOU 7323  C   VAL B 647    11066  10178  10275    809   1764    346       C
ATOM   7324  O   VAL B 647      22.688  54.840 109.580  1.00 92.96           O
ANISOU 7324  O   VAL B 647    12407  11494  11418    740   1693    352       O
ATOM   7325  N   ASP B 648      20.918  53.669 108.867  1.00 65.64           N
ANISOU 7325  N   ASP B 648     8742   8005   8193    811   1744    336       N
ATOM   7326  CA  ASP B 648      21.511  53.448 107.538  1.00 62.64           C
ANISOU 7326  CA  ASP B 648     8314   7706   7782    736   1635    327       C
ATOM   7327  CB  ASP B 648      21.431  51.979 107.109  1.00 57.45           C
ANISOU 7327  CB  ASP B 648     7528   7099   7202    731   1654    306       C
ATOM   7328  CG  ASP B 648      22.026  51.716 105.700  1.00 76.47           C
ANISOU 7328  CG  ASP B 648     9886   9599   9571    659   1545    285       C
ATOM   7329  OD1 ASP B 648      22.823  52.526 105.188  1.00 72.57           O
ANISOU 7329  OD1 ASP B 648     9462   9151   8961    597   1467    294       O
ATOM   7330  OD2 ASP B 648      21.732  50.653 105.115  1.00 75.12           O
ANISOU 7330  OD2 ASP B 648     9606   9456   9482    661   1540    258       O
ATOM   7331  C   ASP B 648      20.806  54.305 106.522  1.00 72.67           C
ANISOU 7331  C   ASP B 648     9568   8945   9097    735   1545    332       C
ATOM   7332  O   ASP B 648      19.638  54.043 106.219  1.00 76.88           O
ANISOU 7332  O   ASP B 648    10010   9433   9767    786   1558    324       O
ATOM   7333  N   THR B 649      21.509  55.312 105.998  1.00 65.96           N
ANISOU 7333  N   THR B 649     8806   8118   8138    673   1450    348       N
ATOM   7334  CA  THR B 649      20.907  56.302 105.080  1.00 77.93           C
ANISOU 7334  CA  THR B 649    10334   9594   9681    667   1351    363       C
ATOM   7335  CB  THR B 649      21.174  57.770 105.510  1.00 58.12           C
ANISOU 7335  CB  THR B 649     7968   7021   7093    660   1311    389       C
ATOM   7336  OG1 THR B 649      22.533  57.903 105.944  1.00 74.95           O
ANISOU 7336  OG1 THR B 649    10187   9210   9081    592   1309    397       O
ATOM   7337  CG2 THR B 649      20.270  58.162 106.617  1.00 61.26           C
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ANISOU 7337  CG2 THR B 649     8396   7313   7570    761   1397    379       C
ATOM   7338  C   THR B 649      21.414  56.180 103.658  1.00 79.67           C
ANISOU 7338  C   THR B 649    10519   9904   9848    582   1240    366       C
ATOM   7339  O   THR B 649      21.411  57.167 102.918  1.00 79.62           O
ANISOU 7339  O   THR B 649    10566   9885   9800    543   1140    392       O
ATOM   7340  N   ARG B 650      21.883  54.989 103.289  1.00 71.23           N
ANISOU 7340  N   ARG B 650     9368   8925   8772    552   1258    339       N
ATOM   7341  CA  ARG B 650      22.282  54.737 101.915  1.00 59.17           C
ANISOU 7341  CA  ARG B 650     7795   7489   7196    481   1165    329       C
ATOM   7342  CB  ARG B 650      23.059  53.437 101.794  1.00 53.03           C
ANISOU 7342  CB  ARG B 650     6946   6812   6392    453   1201    289       C
ATOM   7343  CG  ARG B 650      24.458  53.472 102.379  1.00 56.96           C
ANISOU 7343  CG  ARG B 650     7508   7373   6759    401   1228    293       C
ATOM   7344  CD  ARG B 650      25.068  52.076 102.403  1.00 51.84           C
ANISOU 7344  CD  ARG B 650     6777   6803   6118    399   1271    248       C
ATOM   7345  NE  ARG B 650      24.440  51.201 103.388  1.00 57.45           N
ANISOU 7345  NE  ARG B 650     7441   7445   6942    478   1365    236       N
ATOM   7346  CZ  ARG B 650      24.544  49.875 103.367  1.00 65.15           C
ANISOU 7346  CZ  ARG B 650     8326   8453   7974    495   1398    197       C
ATOM   7347  NH1 ARG B 650      25.245  49.282 102.408  1.00 69.55           N
ANISOU 7347  NH1 ARG B 650     8829   9111   8485    447   1347    156       N
ATOM   7348  NH2 ARG B 650      23.963  49.138 104.300  1.00 58.64           N
ANISOU 7348  NH2 ARG B 650     7469   7561   7251    559   1483    199       N
ATOM   7349  C   ARG B 650      21.034  54.701 101.034  1.00 72.83           C
ANISOU 7349  C   ARG B 650     9449   9178   9046    516   1108    324       C
ATOM   7350  O   ARG B 650      19.920  54.413 101.497  1.00 84.37           O
ANISOU 7350  O   ARG B 650    10849  10557  10649    598   1160    315       O
ATOM   7351  N   TYR B 651      21.234  54.997  99.762  1.00 65.64           N
ANISOU 7351  N   TYR B 651     8540   8326   8074    452   1000    331       N
ATOM   7352  CA  TYR B 651      20.145  55.091  98.823  1.00 64.96           C
ANISOU 7352  CA  TYR B 651     8397   8204   8081    475    919    331       C
ATOM   7353  CB  TYR B 651      20.707  55.293  97.411  1.00 65.22           C
ANISOU 7353  CB  TYR B 651     8448   8334   7998    384    805    339       C
ATOM   7354  CG  TYR B 651      19.632  55.237  96.364  1.00 70.01           C
ANISOU 7354  CG  TYR B 651     8992   8914   8693    404    710    334       C
ATOM   7355  CD1 TYR B 651      18.568  56.130  96.400  1.00 73.47           C
ANISOU 7355  CD1 TYR B 651     9451   9237   9227    456    658    368       C
ATOM   7356  CE1 TYR B 651      17.570  56.088  95.458  1.00 81.05           C
ANISOU 7356  CE1 TYR B 651    10351  10168  10275    477    561    365       C
ATOM   7357  CZ  TYR B 651      17.615  55.136  94.468  1.00 84.25           C
ANISOU 7357  CZ  TYR B 651    10682  10660  10669    444    516    324       C
ATOM   7358  OH  TYR B 651      16.610  55.098  93.536  1.00 95.53           O
ANISOU 7358  OH  TYR B 651    12055  12057  12184    464    409    319       O
ATOM   7359  CE2 TYR B 651      18.662  54.233  94.409  1.00 79.63           C
ANISOU 7359  CE2 TYR B 651     8080  10190   9987    394    572    283       C
ATOM   7360  CD2 TYR B 651      19.660  54.282  95.362  1.00 64.55           C
ANISOU 7360  CD2 TYR B 651     8222   8308   7997    376    669    289       C
ATOM   7361  C   TYR B 651      19.200  53.872  98.861  1.00 74.62           C
ANISOU 7361  C   TYR B 651     9485   9403   9464    542    966    287       C
ATOM   7362  O   TYR B 651      18.017  54.029  99.142  1.00 72.26           O
ANISOU 7362  O   TYR B 651     9142   9008   9307    615    979    292       O
ATOM   7363  N   ALA B 652      19.712  52.671  98.591  1.00 70.02           N
ANISOU 7363  N   ALA B 652     8833   8904   8867    518    991    242       N
ATOM   7364  CA  ALA B 652      18.860  51.490  98.534  1.00 56.72           C
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ANISOU 7364  CA  ALA B 652     7022   7194   7335    570   1021    201       C
ATOM   7365  CB  ALA B 652      19.678  50.266  98.219  1.00 59.82           C
ANISOU 7365  CB  ALA B 652     7363   7683   7683    535   1037    150       C
ATOM   7366  C   ALA B 652      18.090  51.296  99.843  1.00 67.96           C
ANISOU 7366  C   ALA B 652     8415   8517   8890    652   1136    213       C
ATOM   7367  O   ALA B 652      16.888  51.027  99.847  1.00 62.11           O
ANISOU 7367  O   ALA B 652     7587   7704   8307    709   1143    208       O
ATOM   7368  N   THR B 653      18.791  51.446 100.955  1.00 66.76           N
ANISOU 7368  N   THR B 653     8333   8362   8669    656   1225    229       N
ATOM   7369  CA  THR B 653      18.167  51.325 102.257  1.00 63.32           C
ANISOU 7369  CA  THR B 653     7888   7842   8328    728   1343    243       C
ATOM   7370  CB  THR B 653      19.213  51.515 103.375  1.00 60.85           C
ANISOU 7370  CB  THR B 653     7677   7548   7897    716   1420    259       C
ATOM   7371  OG1 THR B 653      20.288  50.586 103.181  1.00 67.70           O
ANISOU 7371  OG1 THR B 653     8528   8506   8689    665   1419    233       O
ATOM   7372  CG2 THR B 653      18.607  51.321 104.759  1.00 50.21           C
ANISOU 7372  CG2 THR B 653     6327   6121   6628    788   1550    273       C
ATOM   7373  C   THR B 653      17.028  52.347 102.398  1.00 70.36           C
ANISOU 7373  C   THR B 653     8789   8636   9309    787   1332    268       C
ATOM   7374  O   THR B 653      15.946  52.016 102.858  1.00 69.28           O
ANISOU 7374  O   THR B 653     8571   8430   9321    854   1396    266       O
ATOM   7375  N   ARG B 654      17.268  53.585 101.984  1.00 73.74           N
ANISOU 7375  N   ARG B 654     9310   9056   9651    761   1249    292       N
ATOM   7376  CA  ARG B 654      16.222  54.609 102.044  1.00 80.68           C
ANISOU 7376  CA  ARG B 654    10201   9836  10616    820   1221    311       C
ATOM   7377  CB  ARG B 654      16.770  55.975 101.595  1.00 72.97           C
ANISOU 7377  CB  ARG B 654     9353   8856   9517    774   1118    343       C
ATOM   7378  CG  ARG B 654      17.466  56.791 102.675  1.00 72.02           C
ANISOU 7378  CG  ARG B 654     9363   8707   9294    776   1175    361       C
ATOM   7379  CD  ARG B 654      18.558  57.725 102.095  1.00 82.17           C
ANISOU 7379  CD  ARG B 654    10770  10036  10413    683   1071    393       C
ATOM   7380  NE  ARG B 654      18.213  58.346 100.816  1.00 84.74           N
ANISOU 7380  NE  ARG B 654    11098  10358  10742    648    930    417       N
ATOM   7381  CZ  ARG B 654      19.091  58.620  99.850  1.00 91.75           C
ANISOU 7381  CZ  ARG B 654    12036  11327  11499    547    834    441       C
ATOM   7382  NH1 ARG B 654      20.379  58.328  99.998  1.00 84.63           N
ANISOU 7382  NH1 ARG B 654    11175  10520  10461    472    863    440       N
ATOM   7383  NH2 ARG B 654      18.679  59.177  98.719  1.00101.08           N
ANISOU 7383  NH2 ARG B 654    13224  12499  12684    519    706    468       N
ATOM   7384  C   ARG B 654      15.020  54.206 101.177  1.00 70.97           C
ANISOU 7384  C   ARG B 654     8843   8577   9546    853   1160    297       C
ATOM   7385  O   ARG B 654      13.873  54.312 101.604  1.00 72.35           O
ANISOU 7385  O   ARG B 654     8952   8668   9870    931   1204    296       O
ATOM   7386  N   GLY B 655      15.299  53.750  99.959  1.00 61.19           N
ANISOU 7386  N   GLY B 655     7568   7409   8271    792   1058    283       N
ATOM   7387  CA  GLY B 655      14.267  53.291  99.054  1.00 64.78           C
ANISOU 7387  CA  GLY B 655     7906   7844   8863    812    983    264       C
ATOM   7388  C   GLY B 655      13.336  52.268  99.680  1.00 74.92           C
ANISOU 7388  C   GLY B 655     9058   9082  10328    876   1082    242       C
ATOM   7389  O   GLY B 655      12.119  52.459  99.685  1.00 67.04           O
ANISOU 7389  O   GLY B 655     7980   8005  9488    938   1074    245       O
ATOM   7390  N   LEU B 656      13.909  51.192 100.219  1.00 82.61           N
ANISOU 7390  N   LEU B 656    10005  10100  11281    859   1174    222       N
ATOM   7391  CA  LEU B 656      13.117  50.093 100.773  1.00 80.78           C
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ANISOU 7391  CA  LEU B 656     9649   9829  11215    904   1265    207       C
ATOM   7392  CB  LEU B 656      14.023  48.955 101.242  1.00 68.61           C
ANISOU 7392  CB  LEU B 656     8107   8345   9616    871   1340    189       C
ATOM   7393  CG  LEU B 656      13.361  47.791 101.975  1.00 64.45           C
ANISOU 7393  CG  LEU B 656     7471   7774   9244    907   1446    186       C
ATOM   7394  CD1 LEU B 656      12.247  47.214 101.145  1.00 65.51           C
ANISOU 7394  CD1 LEU B 656     7465   7874   9552    919   1377    164       C
ATOM   7395  CD2 LEU B 656      14.403  46.726 102.213  1.00 80.30           C
ANISOU 7395  CD2 LEU B 656     9493   9842  11177    866   1482    167       C
ATOM   7396  C   LEU B 656      12.272  50.608 101.916  1.00 82.91           C
ANISOU 7396  C   LEU B 656     9909  10009  11584    982   1376    234       C
ATOM   7397  O   LEU B 656      11.050  50.523 101.893  1.00 83.86           O
ANISOU 7397  O   LEU B 656     9920  10065  11876   1034   1385    233       O
ATOM   7398  N   MET B 657      12.969  51.112 102.923  1.00 78.48           N
ANISOU 7398  N   MET B 657     9459   9450  10909    988   1463    253       N
ATOM   7399  CA  MET B 657      12.433  51.976 103.962  1.00 78.74           C
ANISOU 7399  CA  MET B 657     9535   9410  10974   1057   1553    273       C
ATOM   7400  CB  MET B 657      13.519  52.964 104.336  1.00 80.33           C
ANISOU 7400  CB  MET B 657     9902   9631  10988   1030   1542    288       C
ATOM   7401  CG  MET B 657      13.720  53.141 105.771  1.00 80.56           C
ANISOU 7401  CG  MET B 657    10003   9633  10973   1070   1681    298       C
ATOM   7402  SD  MET B 657      14.068  51.586 106.530  1.00 95.22           S
ANISOU 7402  SD  MET B 657    11803  11531  12843   1055   1803    298       S
ATOM   7403  CE  MET B 657      13.748  52.143 108.167  1.00100.04           C
ANISOU 7403  CE  MET B 657    12488  12081  13441   1129   1961    314       C
ATOM   7404  C   MET B 657      11.180  52.766 103.595  1.00 88.25           C
ANISOU 7404  C   MET B 657    10679  10535  12316   1120   1503    275       C
ATOM   7405  O   MET B 657      10.111  52.590 104.188  1.00101.29           O
ANISOU 7405  O   MET B 657    12237  12128  14122   1189   1592    275       O
ATOM   7406  N   ASN B 658      11.336  53.657 102.620  1.00 83.78           N
ANISOU 7406  N   ASN B 658    10169   9971  11692   1094   1358    280       N
ATOM   7407  CA  ASN B 658      10.256  54.525 102.183  1.00 87.60           C
ANISOU 7407  CA  ASN B 658    10613  10377  12294   1152   1282    284       C
ATOM   7408  CB  ASN B 658      10.765  55.527 101.146  1.00 94.68           C
ANISOU 7408  CB  ASN B 658    11613  11286  13076   1102   1117    301       C
ATOM   7409  CG  ASN B 658       9.655  56.378 100.578  1.00106.28           C
ANISOU 7409  CG  ASN B 658    13040  12671  14672   1160   1014    308       C
ATOM   7410  OD1 ASN B 658       9.437  56.406  99.370  1.00121.31           O
ANISOU 7410  OD1 ASN B 658    14914  14587  16592   1126    867    313       O
ATOM   7411  ND2 ASN B 658       8.918  57.052 101.456  1.00112.82           N
ANISOU 7411  ND2 ASN B 658    13862  13411  15593   1252   1090    306       N
ATOM   7412  C   ASN B 658       9.074  53.752 101.617  1.00 87.40           C
ANISOU 7412  C   ASN B 658    10413  10327  12469   1180   1254    268       C
ATOM   7413  O   ASN B 658       7.922  54.077 101.907  1.00 95.75           O
ANISOU 7413  O   ASN B 658    11386  11308  13687   1259   1284    266       O
ATOM   7414  N   LEU B 659       9.356  52.736 100.809  1.00 81.79           N
ANISOU 7414  N   LEU B 659     9644   9679  11752   1118   1194    252       N
ATOM   7415  CA  LEU B 659       8.300  51.880 100.278  1.00 87.10           C
ANISOU 7415  CA  LEU B 659    10150  10329  12615   1135   1161    233       C
ATOM   7416  CB  LEU B 659       8.882  50.740  99.455  1.00 87.98           C
ANISOU 7416  CB  LEU B 659    10231  10518  12681   1060   1098    207       C
ATOM   7417  CG  LEU B 659       7.916  49.587  99.187  1.00 79.00           C
ANISOU 7417  CG  LEU B 659     8921   9354  11740   1072   1097    184       C
ATOM   7418  CD1 LEU B 659       6.728  50.052  98.342  1.00 80.42           C
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ANISOU 7418  CD1 LEU B 659     9010   9476  12069   1107    970    181       C
ATOM   7419  CD2 LEU B 659       8.668  48.450  98.516  1.00 66.68           C
ANISOU 7419  CD2 LEU B 659     7352   7870  10113   1000   1047    149       C
ATOM   7420  C   LEU B 659       7.436  51.303 101.383  1.00 91.61           C
ANISOU 7420  C   LEU B 659    10610  10849  13350   1198   1321    235       C
ATOM   7421  O   LEU B 659       6.207  51.346 101.301  1.00 99.52           O
ANISOU 7421  O   LEU B 659    11487  11788  14539   1254   1315    233       O
ATOM   7422  N   LEU B 660       8.079  50.771 102.416  1.00 89.80           N
ANISOU 7422  N   LEU B 660    10424  10648  13048   1187   1463    243       N
ATOM   7423  CA  LEU B 660       7.347  50.169 103.526  1.00 95.84           C
ANISOU 7423  CA  LEU B 660    11095  11373  13947   1236   1629    253       C
ATOM   7424  CB  LEU B 660       8.308  49.543 104.543  1.00 84.07           C
ANISOU 7424  CB  LEU B 660     9683   9925  12334   1207   1759    266       C
ATOM   7425  CG  LEU B 660       9.238  48.452 104.014  1.00 79.42           C
ANISOU 7425  CG  LEU B 660     9102   9404  11670   1128   1707    252       C
ATOM   7426  CD1 LEU B 660      10.292  48.156 105.056  1.00 84.85           C
ANISOU 7426  CD1 LEU B 660     9896  10128  12214   1108   1817    268       C
ATOM   7427  CD2 LEU B 660       8.475  47.190 103.643  1.00 72.08           C
ANISOU 7427  CD2 LEU B 660     8011   8458  10920   1116   1701    241       C
ATOM   7428  C   LEU B 660       6.446  51.200 104.215  1.00106.79           C
ANISOU 7428  C   LEU B 660    12471  12688  15418   1327   1699    262       C
ATOM   7429  O   LEU B 660       5.222  51.035 104.255  1.00104.28           O
ANISOU 7429  O   LEU B 660    12006  12319  15296   1378   1729    259       O
ATOM   7430  N   ARG B 661       7.053  52.259 104.746  1.00100.89           N
ANISOU 7430  N   ARG B 661    11871  11935  14526   1347   1723    268       N
ATOM   7431  CA  ARG B 661       6.312  53.313 105.445  1.00 91.74           C
ANISOU 7431  CA  ARG B 661    10724  10707  13428   1440   1789    265       C
ATOM   7432  CB  ARG B 661       7.248  54.463 105.786  1.00 70.39           C
ANISOU 7432  CB  ARG B 661     8211   8001  10533   1439   1769    268       C
ATOM   7433  CG  ARG B 661       8.186  54.167 106.923  1.00 62.11           C
ANISOU 7433  CG  ARG B 661     7271   6992   9335   1418   1903    277       C
ATOM   7434  CD  ARG B 661       9.111  55.319 107.088  1.00 56.56           C
ANISOU 7434  CD  ARG B 661     6751   6285   8454   1407   1852    277       C
ATOM   7435  NE  ARG B 661      10.073  55.082 108.143  1.00 79.99           N
ANISOU 7435  NE  ARG B 661     9831   9290  11270   1384   1961    284       N
ATOM   7436  CZ  ARG B 661      11.325  55.505 108.077  1.00 85.34           C
ANISOU 7436  CZ  ARG B 661    10656  10006  11765   1323   1898    291       C
ATOM   7437  NH1 ARG B 661      11.715  56.167 106.998  1.00 78.05           N
ANISOU 7437  NH1 ARG B 661     9779   9089  10788   1277   1738    296       N
ATOM   7438  NH2 ARG B 661      12.172  55.266 109.073  1.00 84.35           N
ANISOU 7438  NH2 ARG B 661    10627   9913  11511   1304   1992    298       N
ATOM   7439  C   ARG B 661       5.122  53.859 104.657  1.00 92.85           C
ANISOU 7439  C   ARG B 661    10752  10784  13744   1495   1685    254       C
ATOM   7440  O   ARG B 661       4.039  54.060 105.205  1.00100.56           O
ANISOU 7440  O   ARG B 661    11626  11704  14877   1577   1772    246       O
ATOM   7441  N   SER B 662       5.339  54.109 103.373  1.00 89.78           N
ANISOU 7441  N   SER B 662    10381  10406  13324   1449   1497    253       N
ATOM   7442  CA  SER B 662       4.287  54.591 102.500  1.00 85.03           C
ANISOU 7442  CA  SER B 662     9682   9746  12880   1492   1368    246       C
ATOM   7443  CB  SER B 662       4.823  54.809 101.089  1.00 95.28           C
ANISOU 7443  CB  SER B 662    11041  11076  14084   1420   1161    252       C
ATOM   7444  OG  SER B 662       5.794  55.849 101.068  1.00 94.99           O
ANISOU 7444  OG  SER B 662    11189  11047  13855   1395   1108    268       O
ATOM   7445  C   SER B 662       3.134  53.614 102.484  1.00 96.19           C
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ANISOU 7445  C   SER B 662    10888  11140  14519   1518   1416    237       C
ATOM   7446  O   SER B 662       2.005  53.984 102.771  1.00117.82          O
ANISOU 7446  O   SER B 662    13518  13816  17433   1602   1454    229       O
ATOM   7447  N   TYR B 663       3.431  52.359 102.174  1.00100.17          N
ANISOU 7447  N   TYR B 663    11336  11700  15025   1446   1417    236       N
ATOM   7448  CA  TYR B 663       2.440  51.285 102.216  1.00 98.60          C
ANISOU 7448  CA  TYR B 663    10944  11484  15036   1454   1468    231       C
ATOM   7449  CB  TYR B 663       3.116  49.944 101.934  1.00 93.20          C
ANISOU 7449  CB  TYR B 663    10249  10862  14300   1365   1464    228       C
ATOM   7450  CG  TYR B 663       2.189  48.766 102.122  1.00 95.25          C
ANISOU 7450  CG  TYR B 663    10322  11099  14771   1364   1531    229       C
ATOM   7451  CD1 TYR B 663       2.051  48.147 103.368  1.00 80.47          C
ANISOU 7451  CD1 TYR B 663     8409   9224  12942   1376   1730    253       C
ATOM   7452  CE1 TYR B 663       1.214  47.094 103.545  1.00 76.88          C
ANISOU 7452  CE1 TYR B 663     7785   8745  12680   1365   1791    262       C
ATOM   7453  CZ  TYR B 663       0.473  46.620 102.475  1.00 92.42          C
ANISOU 7453  CZ  TYR B 663     9614  10689  14812   1345   1648    242       C
ATOM   7454  OH  TYR B 663      -0.380  45.550 102.651  1.00105.22          O
ANISOU 7454  OH  TYR B 663    11060  12280  16639   1328   1704    254       O
ATOM   7455  CE2 TYR B 663       0.583  47.203 101.227  1.00 88.12          C
ANISOU 7455  CE2 TYR B 663     9109  10148  14226   1338   1445    214       C
ATOM   7456  CD2 TYR B 663       1.439  48.277 101.057  1.00 91.32          C
ANISOU 7456  CD2 TYR B 663     9689  10580  14428   1346   1391    211       C
ATOM   7457  C   TYR B 663       1.669  51.192 103.541  1.00106.52          C
ANISOU 7457  C   TYR B 663    11860  12450  16162   1525   1675    241       C
ATOM   7458  O   TYR B 663       0.484  50.845 103.551  1.00114.64          O
ANISOU 7458  O   TYR B 663    12712  13438  17409   1564   1703    239       O
ATOM   7459  N   PHE B 664       2.340  51.481 104.653  1.00113.60          N
ANISOU 7459  N   PHE B 664    12880  13365  16917   1539   1819    252       N
ATOM   7460  CA  PHE B 664       1.699  51.439 105.973  1.00116.10          C
ANISOU 7460  CA  PHE B 664    13138  13658  17317   1605   2027    261       C
ATOM   7461  C   PHE B 664       0.940  52.715 106.326  1.00112.23          C
ANISOU 7461  C   PHE B 664    12642  13106  16894   1712   2053    242       C
ATOM   7462  O   PHE B 664      -0.068  52.657 107.027  1.00114.62          O
ANISOU 7462  O   PHE B 664    12819  13379  17353   1779   2188    239       O
ATOM   7463  CB  PHE B 664       2.734  51.169 107.061  1.00115.12          C
ANISOU 7463  CB  PHE B 664    13155  13580  17007   1576   2170    278       C
ATOM   7464  CG  PHE B 664       3.320  49.800 107.003  1.00117.69          C
ANISOU 7464  CG  PHE B 664    13461  13955  17299   1488   2187    298       C
ATOM   7465  CD1 PHE B 664       2.543  48.719 106.626  1.00116.24          C
ANISOU 7465  CD1 PHE B 664    13102  13761  17302   1462   2182    306       C
ATOM   7466  CD2 PHE B 664       4.653  49.590 107.315  1.00111.67          C
ANISOU 7466  CD2 PHE B 664    12856  13245  16328   1432   2200    307       C
ATOM   7467  CE1 PHE B 664       3.082  47.452 106.568  1.00104.72          C
ANISOU 7467  CE1 PHE B 664    11631  12337  15821   1384   2189    320       C
ATOM   7468  CE2 PHE B 664       5.195  48.328 107.255  1.00105.10          C
ANISOU 7468  CE2 PHE B 664    12006  12453  15475   1359   2208    321       C
ATOM   7469  CZ  PHE B 664       4.409  47.258 106.887  1.00101.56          C
ANISOU 7469  CZ  PHE B 664    11388  11987  15212   1336   2203    327       C
ATOM   7470  N   ARG B 665       1.455  53.861 105.884  1.00104.16          N
ANISOU 7470  N   ARG B 665    11759  12065  15753   1727   1931    229       N
ATOM   7471  CA  ARG B 665       0.756  55.126 106.053  1.00102.20          C
ANISOU 7471  CA  ARG B 665    11512  11745  15575   1831   1919    205       C
ATOM   7472  CB  ARG B 665       1.519  56.290 105.408  1.00 90.93          C
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ANISOU 7472  CB  ARG B 665    10258  10296  13994   1820   1752    202       C
ATOM   7473  C   ARG B 665      -0.610  54.969 105.421  1.00111.72           C
ANISOU 7473  C   ARG B 665    12507  12904  17038   1878   1856    195       C
ATOM   7474  O   ARG B 665      -1.640  55.139 106.085  1.00109.17           O
ANISOU 7474  O   ARG B 665    12061  12543  16877   1966   1976    180       O
ATOM   7475  N   VAL B 666      -0.598  54.592 104.145  1.00104.87           N
ANISOU 7475  N   VAL B 666    11595  12046  16207   1815   1670    203       N
ATOM   7476  CA  VAL B 666      -1.817  54.409 103.366  1.00108.66           C
ANISOU 7476  CA  VAL B 666    11881  12481  16924   1847   1570    194       C
ATOM   7477  CB  VAL B 666      -1.526  53.734 102.008  1.00113.16           C
ANISOU 7477  CB  VAL B 666    12433  13082  17479   1752   1375    202       C
ATOM   7478  CG1 VAL B 666      -2.816  53.560 101.241  1.00113.00           C
ANISOU 7478  CG1 VAL B 666    12213  13012  17709   1786   1264    191       C
ATOM   7479  CG2 VAL B 666      -0.548  54.559 101.188  1.00115.33           C
ANISOU 7479  CG2 VAL B 666    12898  13369  17552   1711   1205    208       C
ATOM   7480  C   VAL B 666      -2.882  53.576 104.085  1.00111.62           C
ANISOU 7480  C   VAL B 666    12049  12849  17511   1882   1737    194       C
ATOM   7481  O   VAL B 666      -4.060  53.905 104.041  1.00126.42           O
ANISOU 7481  O   VAL B 666    13769  14669  19595   1961   1733    178       O
ATOM   7482  N   ASN B 667      -2.483  52.503 104.754  1.00107.49           N
ANISOU 7482  N   ASN B 667    11520  12381  16943   1822   1883    214       N
ATOM   7483  CA  ASN B 667      -3.482  51.635 105.365  1.00103.05           C
ANISOU 7483  CA  ASN B 667    10758  11814  16583   1838   2034    224       C
ATOM   7484  CB  ASN B 667      -3.562  50.318 104.586  1.00111.30           C
ANISOU 7484  CB  ASN B 667    11693  12879  17716   1743   1948    239       C
ATOM   7485  CG  ASN B 667      -3.552  50.516 103.074  1.00113.77           C
ANISOU 7485  CG  ASN B 667    12005  13176  18047   1713   1687    221       C
ATOM   7486  OD1 ASN B 667      -2.639  50.042 102.386  1.00106.91           O
ANISOU 7486  OD1 ASN B 667    11235  12349  17038   1629   1578    221       O
ATOM   7487  ND2 ASN B 667      -4.575  51.188 102.549  1.00114.67           N
ANISOU 7487  ND2 ASN B 667    12005  13231  18333   1783   1586    203       N
ATOM   7488  C   ASN B 667      -3.222  51.322 106.844  1.00102.40           C
ANISOU 7488  C   ASN B 667    10720  11765  16424   1848   2287    243       C
ATOM   7489  O   ASN B 667      -3.857  51.879 107.742  1.00 92.40           O
ANISOU 7489  O   ASN B 667     9411  10477  15221   1936   2437    232       O
ATOM   7490  N   ASN B 668      -2.243  50.447 107.074  1.00120.40           N
ANISOU 7490  N   ASN B 668    13093  14098  18556   1759   2327    270       N
ATOM   7491  CA  ASN B 668      -2.108  49.685 108.318  1.00116.00           C
ANISOU 7491  CA  ASN B 668    12537  13575  17965   1739   2548    303       C
ATOM   7492  CB  ASN B 668      -1.277  48.436 108.038  1.00 87.61           C
ANISOU 7492  CB  ASN B 668     8976  10019  14290   1627   2510    331       C
ATOM   7493  C   ASN B 668      -1.519  50.426 109.535  1.00132.60           C
ANISOU 7493  C   ASN B 668    14807  15694  19883   1789   2704    301       C
ATOM   7494  O   ASN B 668      -0.356  50.838 109.550  1.00 96.23           O
ANISOU 7494  O   ASN B 668    10395  11110  15057   1763   2652    295       O
ATOM   7495  N   LEU B 669      -2.379  50.538 110.548  1.00169.27           N
ANISOU 7495  N   LEU B 669    19361  20329  24627   1858   2897    304       N
ATOM   7496  CA  LEU B 669      -2.165  51.218 111.830  1.00181.31           C
ANISOU 7496  CA  LEU B 669    21005  21865  26020   1924   3077    294       C
ATOM   7497  C   LEU B 669      -0.722  51.604 112.214  1.00171.32           C
ANISOU 7497  C   LEU B 669    19994  20628  24470   1893   3061    293       C
ATOM   7498  O   LEU B 669      -0.135  52.494 111.586  1.00182.88           O
ANISOU 7498  O   LEU B 669    21579  22073  25833   1903   2906    264       O
ATOM   7499  CB  LEU B 669      -2.859  50.370 112.937  1.00197.15           C
ANISOU 7499  CB  LEU B 669    23010  23859  28039   1903   3301    329       C
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ANISOU 7499  CB  LEU B 669    22891  23897  28120   1924   3318    332       C
ATOM   7500  CG  LEU B 669       -2.638  48.968 113.567  1.00144.07           C
ANISOU 7500  CG  LEU B 669    16141  17217  21383   1833   3448    399       C
ATOM   7501  CD2 LEU B 669       -4.031  48.335 113.872  1.00126.39           C
ANISOU 7501  CD2 LEU B 669    13655  14970  19398   1846   3587    426       C
ATOM   7502  CD1 LEU B 669       -1.696  48.824 114.783  1.00134.06           C
ANISOU 7502  CD1 LEU B 669    15062  15994  19882   1813   3599    428       C
ATOM   7503  N   ASP B 670       -0.142  50.959 113.218  1.00149.82           N
ANISOU 7503  N   ASP B 670    17354  17950  21621   1853   3211    329       N
ATOM   7504  CA  ASP B 670        0.993  51.538 113.932  1.00130.92           C
ANISOU 7504  CA  ASP B 670    15191  15577  18975   1855   3244    320       C
ATOM   7505  CB  ASP B 670        0.704  51.544 115.435  1.00123.50           C
ANISOU 7505  CB  ASP B 670    14281  14657  17986   1906   3488    330       C
ATOM   7506  C   ASP B 670        2.323  50.835 113.672  1.00129.81           C
ANISOU 7506  C   ASP B 670    15177  15479  18667   1750   3158    351       C
ATOM   7507  O   ASP B 670        3.129  50.696 114.589  1.00131.40           O
ANISOU 7507  O   ASP B 670    15520  15712  18694   1730   3251    370       O
ATOM   7508  N   VAL B 671        2.576  50.438 112.425  1.00119.42           N
ANISOU 7508  N   VAL B 671    13813  14164  17396   1687   2975    351       N
ATOM   7509  CA  VAL B 671        3.870  49.847 112.073  1.00104.97           C
ANISOU 7509  CA  VAL B 671    12098  12377  15409   1594   2881    369       C
ATOM   7510  CB  VAL B 671        3.819  49.116 110.717  1.00 98.66           C
ANISOU 7510  CB  VAL B 671    11191  11581  14713   1528   2713    367       C
ATOM   7511  CG2 VAL B 671        2.467  48.459 110.516  1.00102.39           C
ANISOU 7511  CG2 VAL B 671    11443  12023  15440   1543   2754    378       C
ATOM   7512  CG1 VAL B 671        4.910  48.069 110.645  1.00 94.46           C
ANISOU 7512  CG1 VAL B 671    10725  11096  14069   1437   2683    390       C
ATOM   7513  C   VAL B 671        4.983  50.886 112.001  1.00 93.20           C
ANISOU 7513  C   VAL B 671    10809  10896  13706   1595   2791    344       C
ATOM   7514  O   VAL B 671        5.066  51.631 111.031  1.00 99.25           O
ANISOU 7514  O   VAL B 671    11594  11644  14471   1600   2633    316       O
ATOM   7515  N   LYS B 672        5.839  50.945 113.015  1.00 87.39           N
ANISOU 7515  N   LYS B 672    10226  10188  12791   1587   2885    356       N
ATOM   7516  CA  LYS B 672        7.031  51.782 112.917  1.00 95.32           C
ANISOU 7516  CA  LYS B 672    11419  11205  13591   1568   2789    338       C
ATOM   7517  CB  LYS B 672        7.514  52.188 114.318  1.00 86.53           C
ANISOU 7517  CB  LYS B 672    10459  10099  12320   1601   2930    341       C
ATOM   7518  C   LYS B 672        8.138  51.038 112.122  1.00 97.76           C
ANISOU 7518  C   LYS B 672    11765  11565  13813   1467   2659    352       C
ATOM   7519  O   LYS B 672        8.379  49.857 112.342  1.00100.75           O
ANISOU 7519  O   LYS B 672    12103  11974  14202   1417   2708    381       O
ATOM   7520  N   VAL B 673        8.780  51.721 111.178  1.00 92.93           N
ANISOU 7520  N   VAL B 673    11224  10961  13123   1438   2494    331       N
ATOM   7521  CA  VAL B 673        9.874  51.130 110.395  1.00 88.37           C
ANISOU 7521  CA  VAL B 673    10685  10441  12451   1347   2374    336       C
ATOM   7522  CB  VAL B 673        9.575  51.191 108.893  1.00 82.40           C
ANISOU 7522  CB  VAL B 673    9843   9685  11781   1320   2206    318       C
ATOM   7523  CG1 VAL B 673       10.652  50.478 108.113  1.00 86.65           C
ANISOU 7523  CG1 VAL B 673    10408  10290  12225   1231   2101    316       C
ATOM   7524  CG2 VAL B 673        8.205  50.568 108.610  1.00 79.89           C
ANISOU 7524  CG2 VAL B 673    9333   9330  11692   1353   2235    319       C
ATOM   7525  C   VAL B 673       11.207  51.831 110.687  1.00 90.37           C
ANISOU 7525  C   VAL B 673    11127  10725  12485   1315   2333    333       C
ATOM   7526  O   VAL B 673       11.281  53.061 110.727  1.00 96.79           O
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ANISOU 7526  O   VAL B 673    12033  11506  13235   1348   2294    318        O
ATOM   7527  N   LYS B 674      12.255  51.037 110.881  1.00 82.54           N
ANISOU 7527  N   LYS B 674    10187   9788  11385   1252   2336    347        N
ATOM   7528  CA  LYS B 674      13.519  51.498 111.457  1.00 82.26           C
ANISOU 7528  CA  LYS B 674    10320   9784  11150   1223   2330    350        C
ATOM   7529  CB  LYS B 674      13.511  51.206 112.947  1.00 90.00           C
ANISOU 7529  CB  LYS B 674    11357  10752  12085   1258   2494    371        C
ATOM   7530  CG  LYS B 674      14.190  52.205 113.806  1.00 93.68           C
ANISOU 7530  CG  LYS B 674    11997  11210  12388   1276   2518    364        C
ATOM   7531  CD  LYS B 674      13.943  51.842 115.269  1.00102.10           C
ANISOU 7531  CD  LYS B 674    13105  12264  13426   1319   2691    384        C
ATOM   7532  CE  LYS B 674      12.448  51.789 115.584  1.00 92.69           C
ANISOU 7532  CE  LYS B 674    11794  11026  12398   1393   2813    384        C
ATOM   7533  NZ  LYS B 674      12.210  52.188 116.995  1.00103.06           N
ANISOU 7533  NZ  LYS B 674    13200  12318  13639   1455   2968    384        N
ATOM   7534  C   LYS B 674      14.742  50.821 110.788  1.00 89.35           C
ANISOU 7534  C   LYS B 674    11240  10754  11955   1135   2231    350        C
ATOM   7535  O   LYS B 674      14.729  49.617 110.511  1.00 95.05           O
ANISOU 7535  O   LYS B 674    11868  11502  12745   1106   2236    355        O
ATOM   7536  N   SER B 675      15.786  51.590 110.496  1.00 76.13           N
ANISOU 7536  N   SER B 675     9683   9111  10131   1094   2138    342        N
ATOM   7537  CA  SER B 675      16.977  51.011 109.892  1.00 62.45           C
ANISOU 7537  CA  SER B 675     7967   7456   8306   1015   2053    337        C
ATOM   7538  CB  SER B 675      17.317  51.679 108.561  1.00 68.45           C
ANISOU 7538  CB  SER B 675     8733   8247   9027    967   1902    321        C
ATOM   7539  OG  SER B 675      18.293  52.698 108.736  1.00 77.69           O
ANISOU 7539  OG  SER B 675    10044   9433  10040    935   1853    326        O
ATOM   7540  C   SER B 675      18.123  51.163 110.856  1.00 70.90           C
ANISOU 7540  C   SER B 675     9172   8552   9216    994   2089    348        C
ATOM   7541  O   SER B 675      18.161  52.125 111.618  1.00 81.88           O
ANISOU 7541  O   SER B 675    10671   9904  10534   1025   2125    353        O
ATOM   7542  N   ILE B 676      19.064  50.229 110.848  1.00 68.22           N
ANISOU 7542  N   ILE B 676     8828   8272   8821    944   2075    350        N
ATOM   7543  CA  ILE B 676      20.146  50.355 111.807  1.00 77.48           C
ANISOU 7543  CA  ILE B 676    10125   9465   9848    926   2103    362        C
ATOM   7544  CB  ILE B 676      19.910  49.472 113.066  1.00 73.82           C
ANISOU 7544  CB  ILE B 676     9665   8976   9407    962   2234    389        C
ATOM   7545  CG1 ILE B 676      20.901  49.855 114.169  1.00 68.76           C
ANISOU 7545  CG1 ILE B 676     9176   8344   8607    955   2260    402        C
ATOM   7546  CD1 ILE B 676      20.665  49.168 115.473  1.00 67.79           C
ANISOU 7546  CD1 ILE B 676     9082   8192   8482    991   2387    435        C
ATOM   7547  CG2 ILE B 676      20.021  48.001 112.735  1.00 80.63           C
ANISOU 7547  CG2 ILE B 676    10420   9868  10349    938   2233    392        C
ATOM   7548  C   ILE B 676      21.488  50.040 111.185  1.00 68.07           C
ANISOU 7548  C   ILE B 676     8949   8356   8558    851   2005    349        C
ATOM   7549  O   ILE B 676      21.632  49.138 110.384  1.00 75.72           O
ANISOU 7549  O   ILE B 676     9821   9369   9581    823   1962    332        O
ATOM   7550  N   ASN B 677      22.468  50.835 111.559  1.00 69.82           N
ANISOU 7550  N   ASN B 677     9293   8598   8638    821   1969    353        N
ATOM   7551  CA  ASN B 677      23.796  50.702 111.024  1.00 70.13           C
ANISOU 7551  CA  ASN B 677     9349   8720   8577    748   1880    341        C
ATOM   7552  CB  ASN B 677      24.618  51.914 111.417  1.00 72.43           C
ANISOU 7552  CB  ASN B 677     9779   9013   8728    717   1837    350        C
ATOM   7553  CG  ASN B 677      25.846  52.043 110.600  1.00 76.95           C
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ANISOU 7553  CG  ASN B 677    10355   9674   9210    634   1734    339       C
ATOM   7554  OD1 ASN B 677      26.787  51.271 110.755  1.00 83.84           O
ANISOU 7554  OD1 ASN B 677    11210  10606  10040    604   1726    332       O
ATOM   7555  ND2 ASN B 677      25.845  53.008 109.694  1.00 83.48           N
ANISOU 7555  ND2 ASN B 677    11197  10510  10010    594   1652    339       N
ATOM   7556  C   ASN B 677      24.483  49.425 111.508  1.00 67.31           C
ANISOU 7556  C   ASN B 677     8963   8401   8212    739   1912    341       C
ATOM   7557  O   ASN B 677      24.565  49.171 112.707  1.00 71.97           O
ANISOU 7557  O   ASN B 677     9614   8957   8773    769   1988    364       O
ATOM   7558  N   GLY B 678      24.981  48.627 110.579  1.00 61.15           N
ANISOU 7558  N   GLY B 678     8093   7688   7455    701   1852    315       N
ATOM   7559  CA  GLY B 678      25.653  47.385 110.931  1.00 60.61           C
ANISOU 7559  CA  GLY B 678     7988   7651   7392    696   1867    309       C
ATOM   7560  C   GLY B 678      26.804  47.590 111.899  1.00 65.74           C
ANISOU 7560  C   GLY B 678     8746   8319   7914    678   1867    325       C
ATOM   7561  O   GLY B 678      27.136  46.699 112.693  1.00 62.26           O
ANISOU 7561  O   GLY B 678     8310   7868   7477    695   1906    339       O
ATOM   7562  N   GLY B 679      27.397  48.782 111.860  1.00 73.14           N
ANISOU 7562  N   GLY B 679     9773   9278   8741    641   1816    328       N
ATOM   7563  CA  GLY B 679      28.504  49.108 112.742  1.00 69.58           C
ANISOU 7563  CA  GLY B 679     9428   8843   8167    618   1801    341       C
ATOM   7564  C   GLY B 679      28.060  48.998 114.177  1.00 75.04           C
ANISOU 7564  C   GLY B 679    10203   9459   8850    674   1893    374       C
ATOM   7565  O   GLY B 679      28.715  48.357 115.008  1.00 75.50           O
ANISOU 7565  O   GLY B 679    10298   9523   8867    678   1908    388       O
ATOM   7566  N   PHE B 680      26.918  49.614 114.454  1.00 60.75           N
ANISOU 7566  N   PHE B 680     8422   7579   7081    721   1957    386       N
ATOM   7567  CA  PHE B 680      26.333  49.526 115.768  1.00 63.97           C
ANISOU 7567  CA  PHE B 680     8903   7920   7484    779   2063    414       C
ATOM   7568  CB  PHE B 680      25.138  50.442 115.862  1.00 64.64           C
ANISOU 7568  CB  PHE B 680     9011   7938   7611    828   2119    414       C
ATOM   7569  CG  PHE B 680      24.750  50.752 117.258  1.00 62.00           C
ANISOU 7569  CG  PHE B 680     8788   7545   7224    882   2220    433       C
ATOM   7570  CD1 PHE B 680      25.296  51.845 117.906  1.00 64.15           C
ANISOU 7570  CD1 PHE B 680     9208   7799   7366    878   2194    426       C
ATOM   7571  CE1 PHE B 680      24.939  52.146 119.204  1.00 68.57           C
ANISOU 7571  CE1 PHE B 680     9880   8307   7865    931   2288    436       C
ATOM   7572  CZ  PHE B 680      24.039  51.339 119.872  1.00 66.77           C
ANISOU 7572  CZ  PHE B 680     9614   8053   7704    985   2418    461       C
ATOM   7573  CE2 PHE B 680      23.499  50.225 119.238  1.00 64.06           C
ANISOU 7573  CE2 PHE B 680     9117   7726   7498    982   2444    476       C
ATOM   7574  CD2 PHE B 680      23.859  49.937 117.940  1.00 61.24           C
ANISOU 7574  CD2 PHE B 680     8653   7414   7203    933   2341    459       C
ATOM   7575  C   PHE B 680      25.918  48.105 116.177  1.00 76.14           C
ANISOU 7575  C   PHE B 680    10370   9447   9114    809   2138    436       C
ATOM   7576  O   PHE B 680      26.154  47.718 117.319  1.00 86.72           O
ANISOU 7576  O   PHE B 680    11783  10764  10401    828   2193    466       O
ATOM   7577  N   THR B 681      25.306  47.323 115.286  1.00 78.78           N
ANISOU 7577  N   THR B 681    10565   9788   9580    811   2136    424       N
ATOM   7578  CA  THR B 681      24.997  45.925 115.643  1.00 74.02           C
ANISOU 7578  CA  THR B 681     9892   9166   9067    831   2194    447       C
ATOM   7579  CB  THR B 681      24.250  45.168 114.548  1.00 63.64           C
ANISOU 7579  CB  THR B 681     8423   7852   7907    831   2179    425       C
ATOM   7580  OG1 THR B 681      25.119  44.987 113.428  1.00 83.69           O
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ANISOU 7580  OG1 THR B 681    10907  10462  10428    784   2066    380       O
ATOM   7581  CG2 THR B 681      23.000  45.904 114.123  1.00 61.69           C
ANISOU 7581  CG2 THR B 681     8136   7566   7738    859   2213    420       C
ATOM   7582  C   THR B 681      26.257  45.121 115.965  1.00 68.27           C
ANISOU 7582  C   THR B 681     9186   8477   8276    802   2144    450       C
ATOM   7583  O   THR B 681      26.252  44.324 116.891  1.00 78.74           O
ANISOU 7583  O   THR B 681    10538   9770   9608    822   2200    488       O
ATOM   7584  N   SER B 682      27.325  45.326 115.199  1.00 76.42           N
ANISOU 7584  N   SER B 682    10205   9579   9250    756   2038    412       N
ATOM   7585  CA  SER B 682      28.606  44.666 115.470  1.00 77.62           C
ANISOU 7585  CA  SER B 682    10372   9775   9344    732   1980    408       C
ATOM   7586  CB  SER B 682      29.697  45.168 114.525  1.00 78.13           C
ANISOU 7586  CB  SER B 682    10416   9928   9341    677   1873    362       C
ATOM   7587  OG  SER B 682      29.582  44.555 113.258  1.00 92.53           O
ANISOU 7587  OG  SER B 682    12107  11795  11253    664   1831    318       O
ATOM   7588  C   SER B 682      29.040  44.902 116.898  1.00 78.71           C
ANISOU 7588  C   SER B 682    10649   9882   9376    745   2015    451       C
ATOM   7589  O   SER B 682      29.457  43.973 117.592  1.00 76.28           O
ANISOU 7589  O   SER B 682    10354   9561   9067    756   2022    476       O
ATOM   7590  N   PHE B 683      28.927  46.164 117.313  1.00 76.36           N
ANISOU 7590  N   PHE B 683    10458   9568   8988    746   2029    457       N
ATOM   7591  CA  PHE B 683      29.255  46.600 118.652  1.00 68.04           C
ANISOU 7591  CA  PHE B 683     9553   8482   7817    760   2060    489       C
ATOM   7592  CB  PHE B 683      28.994  48.103 118.801  1.00 67.09           C
ANISOU 7592  CB  PHE B 683     9532   8340   7619    761   2065    478       C
ATOM   7593  CG  PHE B 683      28.885  48.561 120.222  1.00 62.56           C
ANISOU 7593  CG  PHE B 683     9112   7714   6943    796   2129    506       C
ATOM   7594  CD1 PHE B 683      29.995  48.553 121.046  1.00 69.02           C
ANISOU 7594  CD1 PHE B 683    10034   8547   7642    775   2077    518       C
ATOM   7595  CE1 PHE B 683      29.910  48.969 122.349  1.00 70.50           C
ANISOU 7595  CE1 PHE B 683    10373   8690   7724    806   2130    539       C
ATOM   7596  CZ  PHE B 683      28.697  49.399 122.860  1.00 76.95           C
ANISOU 7596  CZ  PHE B 683    11234   9450   8552    862   2248    546       C
ATOM   7597  CE2 PHE B 683      27.564  49.415 122.055  1.00 73.17           C
ANISOU 7597  CE2 PHE B 683    10641   8956   8203    886   2306    534       C
ATOM   7598  CD2 PHE B 683      27.665  48.991 120.738  1.00 77.66           C
ANISOU 7598  CD2 PHE B 683    11063   9567   8879    851   2240    516       C
ATOM   7599  C   PHE B 683      28.446  45.824 119.676  1.00 75.59           C
ANISOU 7599  C   PHE B 683    10534   9376   8812    809   2174    538       C
ATOM   7600  O   PHE B 683      28.988  45.330 120.659  1.00 86.04           O
ANISOU 7600  O   PHE B 683    11933  10688  10071    815   2180    571       O
ATOM   7601  N   LEU B 684      27.145  45.727 119.438  1.00 62.59           N
ANISOU 7601  N   LEU B 684     8820   7690   7272    843   2260    544       N
ATOM   7602  CA  LEU B 684      26.275  44.980 120.316  1.00 70.58           C
ANISOU 7602  CA  LEU B 684     9835   8647   8334    882   2379    595       C
ATOM   7603  CB  LEU B 684      24.823  45.046 119.821  1.00 68.01           C
ANISOU 7603  CB  LEU B 684     9410   8287   8143    913   2462    592       C
ATOM   7604  CG  LEU B 684      24.050  46.373 119.932  1.00 72.05           C
ANISOU 7604  CG  LEU B 684     9974   8774   8628    946   2515    573       C
ATOM   7605  CD1 LEU B 684      22.565  46.190 119.566  1.00 68.31           C
ANISOU 7605  CD1 LEU B 684     9384   8262   8309    982   2605    578       C
ATOM   7606  CD2 LEU B 684      24.186  47.018 121.318  1.00 66.71           C
ANISOU 7606  CD2 LEU B 684     9466   8072   7808    974   2583    595       C
ATOM   7607  C   LEU B 684      26.745  43.517 120.448  1.00 85.14           C
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ANISOU 7607  C   LEU B 684    11626  10493  10230    869   2356    624       C
ATOM   7608  O   LEU B 684      26.944  43.020 121.564  1.00 83.34           O
ANISOU 7608  O   LEU B 684    11482  10238   9946    880   2399    675       O
ATOM   7609  N   ARG B 685      26.943  42.846 119.314  1.00 91.62           N
ANISOU 7609  N   ARG B 685    12315  11343  11154    847   2284    589       N
ATOM   7610  CA  ARG B 685      27.301  41.424 119.304  1.00 86.26           C
ANISOU 7610  CA  ARG B 685    11570  10655  10549    842   2256    607       C
ATOM   7611  CB  ARG B 685      27.535  40.927 117.868  1.00 76.86           C
ANISOU 7611  CB  ARG B 685    10236   9507   9460    821   2167    545       C
ATOM   7612  CG  ARG B 685      28.181  39.552 117.780  1.00 87.92           C
ANISOU 7612  CG  ARG B 685    11577  10906  10924    817   2109    543       C
ATOM   7613  CD  ARG B 685      28.202  38.967 116.365  1.00 87.33           C
ANISOU 7613  CD  ARG B 685    11355  10865  10962    806   2038    475       C
ATOM   7614  NE  ARG B 685      27.421  37.728 116.271  1.00 98.80           N
ANISOU 7614  NE  ARG B 685    12718  12252  12568    821   2069    494       N
ATOM   7615  CZ  ARG B 685      27.904  36.513 116.526  1.00101.63           C
ANISOU 7615  CZ  ARG B 685    13053  12580  12980    828   2032    506       C
ATOM   7616  NH1 ARG B 685      29.167  36.363 116.901  1.00 95.84           N
ANISOU 7616  NH1 ARG B 685    12374  11879  12161    826   1963    498       N
ATOM   7617  NH2 ARG B 685      27.123  35.447 116.413  1.00112.64           N
ANISOU 7617  NH2 ARG B 685    14368  13907  14522    837   2058    525       N
ATOM   7618  C   ARG B 685      28.530  41.153 120.165  1.00 77.76           C
ANISOU 7618  C   ARG B 685    10594   9591   9360    832   2201    629       C
ATOM   7619  O   ARG B 685      28.519  40.214 120.957  1.00 71.90           O
ANISOU 7619  O   ARG B 685    9878   8807   8635    844   2232    683       O
ATOM   7620  N   ARG B 686      29.561  41.990 120.020  1.00 70.41           N
ANISOU 7620  N   ARG B 686    9720   8716   8316    808   2118    593       N
ATOM   7621  CA  ARG B 686      30.804  41.870 120.789  1.00 68.74           C
ANISOU 7621  CA  ARG B 686    9602   8522   7995    796   2049    608       C
ATOM   7622  CB  ARG B 686      31.812  42.956 120.375  1.00 65.05           C
ANISOU 7622  CB  ARG B 686    9170   8121   7426    759   1956    560       C
ATOM   7623  CG  ARG B 686      32.366  42.866 118.956  1.00 84.94           C
ANISOU 7623  CG  ARG B 686    11556  10713  10003    726   1870    495       C
ATOM   7624  CD  ARG B 686      32.611  44.262 118.333  1.00101.89           C
ANISOU 7624  CD  ARG B 686    13728  12910  12077    688   1830    459       C
ATOM   7625  NE  ARG B 686      33.300  45.182 119.239  1.00109.09           N
ANISOU 7625  NE  ARG B 686    14783  13820  12848    671   1801    476       N
ATOM   7626  CZ  ARG B 686      33.244  46.509 119.148  1.00110.91           C
ANISOU 7626  CZ  ARG B 686    15084  14054  13004    648   1791    465       C
ATOM   7627  NH1 ARG B 686      33.897  47.263 120.028  1.00114.38           N
ANISOU 7627  NH1 ARG B 686    15657  14483  13319    633   1757    478       N
ATOM   7628  NH2 ARG B 686      32.530  47.086 118.189  1.00107.24           N
ANISOU 7628  NH2 ARG B 686    14562  13596  12590    640   1807    441       N
ATOM   7629  C   ARG B 686      30.542  41.974 122.299  1.00 85.93           C
ANISOU 7629  C   ARG B 686    11928  10643  10077    820   2127    676       C
ATOM   7630  O   ARG B 686      30.991  41.136 123.089  1.00 87.67           O
ANISOU 7630  O   ARG B 686    12195  10839  10277    827   2113    722       O
ATOM   7631  N   LYS B 687      29.821  43.016 122.698  1.00 85.66           N
ANISOU 7631  N   LYS B 687    11975  10590   9983    836   2206    681       N
ATOM   7632  CA  LYS B 687      29.659  43.313 124.111  1.00 89.90           C
ANISOU 7632  CA  LYS B 687    12669  11087  10401    858   2278    732       C
ATOM   7633  CB  LYS B 687      29.175  44.751 124.298  1.00 93.65           C
ANISOU 7633  CB  LYS B 687    13231  11557  10795    873   2326    704       C
ATOM   7634  CG  LYS B 687      30.263  45.771 124.087  1.00 88.17           C
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ANISOU 7634  CG  LYS B 687    12603  10904   9995    839   2210    659       C
ATOM   7635  CD  LYS B 687      31.359  45.580 125.110  1.00 92.86           C
ANISOU 7635  CD  LYS B 687    13321  11501  10462    828   2146    686       C
ATOM   7636  CE  LYS B 687      32.522  46.488 124.803  1.00 88.21           C
ANISOU 7636  CE  LYS B 687    12773  10956   9788    784   2017    641       C
ATOM   7637  NZ  LYS B 687      33.002  46.173 123.453  1.00 82.66           N
ANISOU 7637  NZ  LYS B 687    11912  10310   9185    747   1936    602       N
ATOM   7638  C   LYS B 687      28.707  42.338 124.782  1.00 88.21           C
ANISOU 7638  C   LYS B 687    12446  10819  10251    886   2395    799       C
ATOM   7639  O   LYS B 687      28.753  42.148 125.999  1.00 94.16           O
ANISOU 7639  O   LYS B 687    13324  11543  10910    898   2444    856       O
ATOM   7640  N   TRP B 688      27.852  41.715 123.980  1.00 81.31           N
ANISOU 7640  N   TRP B 688    11427   9931   9537    889   2437    796       N
ATOM   7641  CA  TRP B 688      26.927  40.713 124.488  1.00 84.58           C
ANISOU 7641  CA  TRP B 688    11809  10291  10036    904   2544    864       C
ATOM   7642  CB  TRP B 688      25.638  40.710 123.669  1.00 73.64           C
ANISOU 7642  CB  TRP B 688    10286   8889   8803    915   2620    846       C
ATOM   7643  CG  TRP B 688      24.878  41.969 123.827  1.00 78.56           C
ANISOU 7643  CG  TRP B 688    10956   9515   9379    943   2703    824       C
ATOM   7644  CD1 TRP B 688      25.242  43.042 124.586  1.00 85.08           C
ANISOU 7644  CD1 TRP B 688    11932  10351  10043    957   2714    813       C
ATOM   7645  NE1 TRP B 688      24.288  44.028 124.496  1.00 89.63           N
ANISOU 7645  NE1 TRP B 688    12508  10918  10631    990   2796    786       N
ATOM   7646  CE2 TRP B 688      23.279  43.609 123.675  1.00 86.12           C
ANISOU 7646  CE2 TRP B 688    11905  10458  10358    995   2839    781       C
ATOM   7647  CD2 TRP B 688      23.613  42.310 123.223  1.00 85.85           C
ANISOU 7647  CD2 TRP B 688    11775  10423  10421    964   2781    804       C
ATOM   7648  CE3 TRP B 688      22.741  41.652 122.353  1.00 78.93           C
ANISOU 7648  CE3 TRP B 688    10735   9528   9726    960   2800    800       C
ATOM   7649  CZ3 TRP B 688      21.569  42.300 121.963  1.00 79.96           C
ANISOU 7649  CZ3 TRP B 688    10797   9646   9939    988   2874    779       C
ATOM   7650  CH2 TRP B 688      21.265  43.590 122.427  1.00 82.60           C
ANISOU 7650  CH2 TRP B 688    11224   9982  10178   1023   2931    757       C
ATOM   7651  CZ2 TRP B 688      22.103  44.257 123.282  1.00 73.56           C
ANISOU 7651  CZ2 TRP B 688    10246   8851   8852   1028   2916    756       C
ATOM   7652  C   TRP B 688      27.594  39.337 124.491  1.00 86.79           C
ANISOU 7652  C   TRP B 688    12046  10555  10375    887   2470    896       C
ATOM   7653  O   TRP B 688      26.961  38.325 124.784  1.00 81.13           O
ANISOU 7653  O   TRP B 688    11288   9788   9749    889   2532    955       O
ATOM   7654  N   LYS B 689      28.884  39.329 124.162  1.00 90.02           N
ANISOU 7654  N   LYS B 689    12461  11004  10737    870   2333    856       N
ATOM   7655  CA  LYS B 689      29.733  38.151 124.301  1.00 99.08           C
ANISOU 7655  CA  LYS B 689    13591  12138  11917    862   2245    880       C
ATOM   7656  CB  LYS B 689      29.905  37.806 125.793  1.00107.06           C
ANISOU 7656  CB  LYS B 689    14753  13104  12820    870   2282    968       C
ATOM   7657  CG  LYS B 689      30.698  38.840 126.615  1.00106.09           C
ANISOU 7657  CG  LYS B 689    14793  13012  12504    869   2247    964       C
ATOM   7658  CD  LYS B 689      32.153  38.935 126.127  1.00107.22           C
ANISOU 7658  CD  LYS B 689    14915  13207  12617    852   2083    906       C
ATOM   7659  CE  LYS B 689      33.033  39.812 127.023  1.00106.08           C
ANISOU 7659  CE  LYS B 689    14932  13083  12289    845   2029    909       C
ATOM   7660  NZ  LYS B 689      33.251  39.254 128.389  1.00110.99           N
ANISOU 7660  NZ  LYS B 689    15695  13658  12818    856   2036    993       N
ATOM   7661  C   LYS B 689      29.218  36.927 123.533  1.00 94.31           C
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ANISOU 7661  C   LYS B 689    12835  11499  11499    862   2243    880       C
ATOM   7662  O   LYS B 689      29.153  35.834 124.079  1.00100.36          O
ANISOU 7662  O   LYS B 689    13608  12208  12315    864   2251    943       O
ATOM   7663  N   PHE B 690      28.843  37.111 122.271  1.00 88.69          N
ANISOU 7663  N   PHE B 690    11992  10817  10889    857   2226    811       N
ATOM   7664  CA  PHE B 690      28.600  35.972 121.386  1.00 86.09          C
ANISOU 7664  CA  PHE B 690    11517  10464  10731    855   2188    788       C
ATOM   7665  CB  PHE B 690      27.782  36.373 120.168  1.00 75.11          C
ANISOU 7665  CB  PHE B 690    10005   9097   9438    851   2207    726       C
ATOM   7666  CG  PHE B 690      26.328  36.644 120.447  1.00 73.79          C
ANISOU 7666  CG  PHE B 690     9827   8885   9325    860   2341    771       C
ATOM   7667  CD1 PHE B 690      25.916  37.872 120.938  1.00 76.83          C
ANISOU 7667  CD1 PHE B 690    10299   9287   9608    870   2419    781       C
ATOM   7668  CE1 PHE B 690      24.576  38.136 121.145  1.00 74.35          C
ANISOU 7668  CE1 PHE B 690     9960   8937   9353    884   2544    812       C
ATOM   7669  CZ  PHE B 690      23.630  37.177 120.857  1.00 75.27          C
ANISOU 7669  CZ  PHE B 690     9961   9002   9636    880   2590    840       C
ATOM   7670  CE2 PHE B 690      24.024  35.963 120.348  1.00 77.48          C
ANISOU 7670  CE2 PHE B 690    10159   9260  10019    864   2507    832       C
ATOM   7671  CD2 PHE B 690      25.366  35.703 120.136  1.00 66.58          C
ANISOU 7671  CD2 PHE B 690     8807   7915   8577    858   2383    794       C
ATOM   7672  C   PHE B 690      29.930  35.385 120.912  1.00 94.01          C
ANISOU 7672  C   PHE B 690    12480  11500  11738    853   2047    737       C
ATOM   7673  O   PHE B 690      30.950  36.070 120.939  1.00 93.11          O
ANISOU 7673  O   PHE B 690    12419  11448  11511    845   1979    702       O
ATOM   7674  N   LYS B 691      29.919  34.130 120.466  1.00103.62          N
ANISOU 7674  N   LYS B 691    13600  12677  13093    859   2002    729       N
ATOM   7675  CA  LYS B 691      31.135  33.509 119.937  1.00100.35          C
ANISOU 7675  CA  LYS B 691    13131  12295  12703    866   1871    668       C
ATOM   7676  CB  LYS B 691      30.863  32.076 119.455  1.00 89.75          C
ANISOU 7676  CB  LYS B 691    11680  10887  11534    880   1834    658       C
ATOM   7677  C   LYS B 691      31.702  34.353 118.797  1.00 93.67          C
ANISOU 7677  C   LYS B 691    12220  11552  11818    854   1812    566       C
ATOM   7678  O   LYS B 691      31.008  34.631 117.820  1.00 91.51          O
ANISOU 7678  O   LYS B 691    11860  11301  11608    846   1837    519       O
ATOM   7679  N   LYS B 692      32.956  34.772 118.943  1.00 87.55          N
ANISOU 7679  N   LYS B 692    11488  10839  10937    849   1733    538       N
ATOM   7680  CA  LYS B 692      33.630  35.557 117.917  1.00 87.17          C
ANISOU 7680  CA  LYS B 692    11383  10896  10843    829   1676    450       C
ATOM   7681  C   LYS B 692      33.684  34.800 116.578  1.00 97.57          C
ANISOU 7681  C   LYS B 692    12544  12243  12283    837   1623    362       C
ATOM   7682  O   LYS B 692      33.421  35.381 115.529  1.00107.46          O
ANISOU 7682  O   LYS B 692    13733  13558  13541    818   1627    304       O
ATOM   7683  CB  LYS B 692      35.044  35.938 118.371  1.00 86.57          C
ANISOU 7683  CB  LYS B 692    11367  10876  10651    819   1592    440       C
ATOM   7684  CG  LYS B 692      35.580  37.212 117.711  1.00 96.24          C
ANISOU 7684  CG  LYS B 692    12587  12202  11778    781   1566    386       C
ATOM   7685  CD  LYS B 692      37.091  37.193 117.486  1.00 93.56          C
ANISOU 7685  CD  LYS B 692    12212  11943  11393    769   1458    334       C
ATOM   7686  CE  LYS B 692      37.555  38.534 116.917  1.00105.31          C
ANISOU 7686  CE  LYS B 692    13707  13527  12780    718   1441    297       C
ATOM   7687  NZ  LYS B 692      38.967  38.546 116.401  1.00113.01          N
ANISOU 7687  NZ  LYS B 692    14610  14601  13727    697   1345    234       N
ATOM   7688  N   GLU B 693      34.021  33.511 116.618  1.00 99.06          N
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ANISOU 7688  N   GLU B 693    12681  12387  12571    866   1570    353       N
ATOM   7689  CA  GLU B 693      34.021  32.671 115.423  1.00 93.91           C
ANISOU 7689  CA  GLU B 693    11889  11750  12043    882   1520    265       C
ATOM   7690  CB  GLU B 693      34.883  31.416 115.623  1.00 84.64           C
ANISOU 7690  CB  GLU B 693    10678  10539  10941    920   1433    244       C
ATOM   7691  C   GLU B 693      32.589  32.281 115.074  1.00100.15           C
ANISOU 7691  C   GLU B 693    12632  12469  12952    883   1587    283       C
ATOM   7692  O   GLU B 693      31.877  31.706 115.906  1.00105.76           O
ANISOU 7692  O   GLU B 693    13385  13078  13721    891   1638    365       O
ATOM   7693  N   ARG B 694      32.173  32.593 113.845  1.00 92.84           N
ANISOU 7693  N   ARG B 694    11617  11596  12061    871   1585    209       N
ATOM   7694  CA  ARG B 694      30.795  32.356 113.418  1.00 85.13           C
ANISOU 7694  CA  ARG B 694    10588  10561  11197    867   1640    220       C
ATOM   7695  CB  ARG B 694      30.257  33.589 112.691  1.00 80.86           C
ANISOU 7695  CB  ARG B 694    10039  10088  10598    839   1676    195       C
ATOM   7696  CG  ARG B 694      29.935  34.741 113.632  1.00 85.31           C
ANISOU 7696  CG  ARG B 694    10718  10646  11050    824   1755    275       C
ATOM   7697  CD  ARG B 694      29.920  36.092 112.943  1.00 89.52           C
ANISOU 7697  CD  ARG B 694    11262  11263  11490    796   1756    240       C
ATOM   7698  NE  ARG B 694      28.939  36.164 111.864  1.00 97.94           N
ANISOU 7698  NE  ARG B 694    12239  12330  12643    791   1762    201       N
ATOM   7699  CZ  ARG B 694      27.723  36.685 111.999  1.00 91.33           C
ANISOU 7699  CZ  ARG B 694    11412  11446  11844    791   1834    243       C
ATOM   7700  NH1 ARG B 694      27.337  37.154 113.178  1.00 85.41           N
ANISOU 7700  NH1 ARG B 694    10757  10647  11047    799   1917    323       N
ATOM   7701  NH2 ARG B 694      26.884  36.708 110.965  1.00 77.41           N
ANISOU 7701  NH2 ARG B 694     9562   9686  10167    786   1823    204       N
ATOM   7702  C   ARG B 694      30.653  31.115 112.534  1.00 87.86           C
ANISOU 7702  C   ARG B 694    10815  10873  11694    889   1580    148       C
ATOM   7703  O   ARG B 694      30.334  31.218 111.355  1.00 91.98           O
ANISOU 7703  O   ARG B 694    11252  11440  12254    882   1557     71       O
ATOM   7704  N   ASN B 695      30.861  29.938 113.120  1.00 83.80           N
ANISOU 7704  N   ASN B 695    10302  10274  11266    914   1549    176       N
ATOM   7705  CA  ASN B 695      30.876  28.702 112.344  1.00 77.63           C
ANISOU 7705  CA  ASN B 695     9416   9451  10629    941   1476    101       C
ATOM   7706  CB  ASN B 695      32.114  27.883 112.694  1.00 83.36           C
ANISOU 7706  CB  ASN B 695    10146  10167  11360    978   1390     75       C
ATOM   7707  CG  ASN B 695      32.437  27.932 114.168  1.00 87.34           C
ANISOU 7707  CG  ASN B 695    10769  10618  11797    977   1416    190       C
ATOM   7708  OD1 ASN B 695      31.544  27.977 115.008  1.00 79.97           O
ANISOU 7708  OD1 ASN B 695     9901   9607  10875    957   1495    297       O
ATOM   7709  ND2 ASN B 695      33.723  27.935 114.491  1.00102.11           N
ANISOU 7709  ND2 ASN B 695    12668  12535  13594    997   1349    169       N
ATOM   7710  C   ASN B 695      29.647  27.827 112.517  1.00 69.18           C
ANISOU 7710  C   ASN B 695     8314   8254   9718    938   1509    153       C
ATOM   7711  O   ASN B 695      29.689  26.641 112.201  1.00 71.50           O
ANISOU 7711  O   ASN B 695     8546   8480  10142    961   1444    114       O
ATOM   7712  N   LYS B 696      28.557  28.406 113.001  1.00 57.61           N
ANISOU 7712  N   LYS B 696     6887   6755   8248    909   1609    239       N
ATOM   7713  CA  LYS B 696      27.309  27.667 113.173  1.00 72.11           C
ANISOU 7713  CA  LYS B 696     8684   8477  10238    897   1653    296       C
ATOM   7714  CB  LYS B 696      26.454  28.371 114.230  1.00 89.46           C
ANISOU 7714  CB  LYS B 696    10961  10644  12385    872   1780    417       C
ATOM   7715  CG  LYS B 696      27.060  28.375 115.631  1.00100.70           C
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ANISOU 7715  CG  LYS B 696    12511  12043  13706    875   1812    513       C
ATOM   7716  CD  LYS B 696      26.184  29.152 116.619  1.00 99.45           C
ANISOU 7716  CD  LYS B 696    12434  11868  13483    855   1948    620       C
ATOM   7717  CE  LYS B 696      26.759  29.093 118.024  1.00108.35           C
ANISOU 7717  CE  LYS B 696    13698  12969  14503    857   1977    715       C
ATOM   7718  NZ  LYS B 696      25.913  29.845 118.987  1.00121.97           N
ANISOU 7718  NZ  LYS B 696    15505  14683  16154    841   2116    809       N
ATOM   7719  C   LYS B 696      26.458  27.459 111.898  1.00 71.23           C
ANISOU 7719  C   LYS B 696     8453   8363  10249    889   1626    217       C
ATOM   7720  O   LYS B 696      25.449  26.760 111.945  1.00 79.14           O
ANISOU 7720  O   LYS B 696     9405   9267  11396    876   1648    256       O
ATOM   7721  N   GLY B 697      26.839  28.067 110.775  1.00 69.71           N
ANISOU 7721  N   GLY B 697     8215   8276   9995    893   1578    112       N
ATOM   7722  CA  GLY B 697      26.086  27.921 109.533  1.00 56.52           C
ANISOU 7722  CA  GLY B 697     6442   6611   8422    887   1542     33       C
ATOM   7723  C   GLY B 697      25.050  29.022 109.331  1.00 62.37           C
ANISOU 7723  C   GLY B 697     7181   7380   9136    860   1614     66       C
ATOM   7724  O   GLY B 697      25.177  30.101 109.887  1.00 49.73           O
ANISOU 7724  O   GLY B 697     5658   5829   7409    850   1678    117       O
ATOM   7725  N   TYR B 698      23.988  28.748 108.582  1.00 69.05           N
ANISOU 7725  N   TYR B 698     7939   8185  10110    849   1601     39       N
ATOM   7726  CA  TYR B 698      23.006  29.795 108.297  1.00 68.77           C
ANISOU 7726  CA  TYR B 698     7891   8176  10061    829   1655     62       C
ATOM   7727  CB  TYR B 698      21.930  29.223 107.359  1.00 67.68           C
ANISOU 7727  CB  TYR B 698     7640   7985  10091    820   1610     17       C
ATOM   7728  CG  TYR B 698      22.541  28.600 106.100  1.00 68.61           C
ANISOU 7728  CG  TYR B 698     7698   8146  10226    833   1487   -115       C
ATOM   7729  CD1 TYR B 698      23.456  29.315 105.319  1.00 52.96           C
ANISOU 7729  CD1 TYR B 698     5739   6292   8092    839   1440   -197       C
ATOM   7730  CE1 TYR B 698      24.021  28.765 104.207  1.00 52.33           C
ANISOU 7730  CE1 TYR B 698     5607   6262   8016    853   1341   -320       C
ATOM   7731  CZ  TYR B 698      23.705  27.475 103.829  1.00 63.33           C
ANISOU 7731  CZ  TYR B 698     6928   7569   9567    867   1275   -373       C
ATOM   7732  OH  TYR B 698      24.316  26.961 102.694  1.00 60.89           O
ANISOU 7732  OH  TYR B 698     6573   7316   9248    888   1177   -510       O
ATOM   7733  CE2 TYR B 698      22.798  26.735 104.570  1.00 46.51           C
ANISOU 7733  CE2 TYR B 698     4774   5300   7598    859   1309   -292       C
ATOM   7734  CD2 TYR B 698      22.235  27.293 105.710  1.00 67.98           C
ANISOU 7734  CD2 TYR B 698     7542   7979  10309    840   1419   -160       C
ATOM   7735  C   TYR B 698      22.368  30.472 109.550  1.00 62.73           C
ANISOU 7735  C   TYR B 698     7196   7374   9265    820   1782    187       C
ATOM   7736  O   TYR B 698      21.956  31.643 109.468  1.00 68.37           O
ANISOU 7736  O   TYR B 698     7934   8136   9909    814   1828    201       O
ATOM   7737  N   LYS B 699      22.340  29.814 110.710  1.00 66.31           N
ANISOU 7737  N   LYS B 699     7692   7747   9756    820   1838    274       N
ATOM   7738  CA  LYS B 699      21.593  30.390 111.856  1.00 73.01           C
ANISOU 7738  CA  LYS B 699     8600   8561  10581    811   1969    387       C
ATOM   7739  CB  LYS B 699      21.603  29.457 113.074  1.00 67.60           C
ANISOU 7739  CB  LYS B 699     7960   7785   9941    805   2021    485       C
ATOM   7740  CG  LYS B 699      22.978  29.189 113.669  1.00 73.48           C
ANISOU 7740  CG  LYS B 699     8800   8550  10570    821   1976    489       C
ATOM   7741  CD  LYS B 699      22.884  28.258 114.881  1.00 75.17           C
ANISOU 7741  CD  LYS B 699     9065   8665  10833    812   2023    597       C
ATOM   7742  CE  LYS B 699      22.198  26.938 114.528  1.00 80.08           C
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ANISOU 7742  CE  LYS B 699     9585   9180  11661    796   1986    603       C
ATOM   7743  NZ  LYS B 699      22.958  26.126 113.529  1.00 81.36           N
ANISOU 7743  NZ  LYS B 699     9685   9341  11887    816   1843    492       N
ATOM   7744  C   LYS B 699      22.112  31.766 112.274  1.00 74.52           C
ANISOU 7744  C   LYS B 699     8894   8836  10582    819   2014    400       C
ATOM   7745  O   LYS B 699      21.344  32.614 112.778  1.00 75.75           O
ANISOU 7745  O   LYS B 699     9080   8990  10713    818   2111    456       O
ATOM   7746  N   HIS B 700      23.403  31.983 112.042  1.00 63.22           N
ANISOU 7746  N   HIS B 700     7512   7480   9028    827   1942    345       N
ATOM   7747  CA  HIS B 700      24.039  33.257 112.336  1.00 61.07           C
ANISOU 7747  CA  HIS B 700     7337   7290   8578    827   1963    348       C
ATOM   7748  CB  HIS B 700      25.496  33.277 111.846  1.00 61.64           C
ANISOU 7748  CB  HIS B 700     7428   7446   8547    829   1864    273       C
ATOM   7749  CG  HIS B 700      26.435  32.531 112.741  1.00 83.22           C
ANISOU 7749  CG  HIS B 700    10219  10151  11248    841   1846    306       C
ATOM   7750  ND1 HIS B 700      26.696  32.924 114.035  1.00 98.12           N
ANISOU 7750  ND1 HIS B 700    12224  12022  13036    843   1907    390       N
ATOM   7751  CE1 HIS B 700      27.563  32.087 114.582  1.00 96.84           C
ANISOU 7751  CE1 HIS B 700    12092  11834  12868    855   1861    403       C
ATOM   7752  NE2 HIS B 700      27.875  31.171 113.684  1.00 88.61           N
ANISOU 7752  NE2 HIS B 700    10952  10790  11925    866   1774    327       N
ATOM   7753  CD2 HIS B 700      27.184  31.420 112.524  1.00 82.38           C
ANISOU 7753  CD2 HIS B 700    10073  10030  11199    856   1764    263       C
ATOM   7754  C   HIS B 700      23.283  34.413 111.721  1.00 60.82           C
ANISOU 7754  C   HIS B 700     7285   7297   8528    821   1988    329       C
ATOM   7755  O   HIS B 700      23.254  35.492 112.305  1.00 56.24           O
ANISOU 7755  O   HIS B 700     6789   6740   7839    823   2047    367       O
ATOM   7756  N   HIS B 701      22.657  34.208 110.561  1.00 58.70           N
ANISOU 7756  N   HIS B 701     6910   7030   8364    815   1937    270       N
ATOM   7757  CA  HIS B 701      21.864  35.317 109.993  1.00 70.07           C
ANISOU 7757  CA  HIS B 701     8331   8498   9795    812   1953    259       C
ATOM   7758  CB  HIS B 701      21.437  35.056 108.543  1.00 65.61           C
ANISOU 7758  CB  HIS B 701     7655   7951   9322    803   1864    178       C
ATOM   7759  CG  HIS B 701      22.561  34.757 107.613  1.00 62.02           C
ANISOU 7759  CG  HIS B 701     7188   7575   8802    795   1757     88       C
ATOM   7760  ND1 HIS B 701      23.607  35.632 107.395  1.00 57.14           N
ANISOU 7760  ND1 HIS B 701     6639   7056   8017    784   1727     59       N
ATOM   7761  CE1 HIS B 701      24.429  35.115 106.510  1.00 42.46           C
ANISOU 7761  CE1 HIS B 701     4739   5258   6136    779   1640    -26       C
ATOM   7762  NE2 HIS B 701      23.963  33.930 106.145  1.00 53.09           N
ANISOU 7762  NE2 HIS B 701     6000   6545   7629    791   1607    -59       N
ATOM   7763  CD2 HIS B 701      22.793  33.690 106.812  1.00 57.09           C
ANISOU 7763  CD2 HIS B 701     6485   6948   8257    797   1676     14       C
ATOM   7764  C   HIS B 701      20.609  35.597 110.815  1.00 67.73           C
ANISOU 7764  C   HIS B 701     8034   8130   9572    822   2069    340       C
ATOM   7765  O   HIS B 701      20.203  36.757 110.942  1.00 71.74           O
ANISOU 7765  O   HIS B 701     8580   8657  10019    830   2114    357       O
ATOM   7766  N   ALA B 702      19.982  34.543 111.343  1.00 62.07           N
ANISOU 7766  N   ALA B 702     7268   7329   8988    821   2117    390       N
ATOM   7767  CA  ALA B 702      18.774  34.724 112.152  1.00 75.77           C
ANISOU 7767  CA  ALA B 702     8989   9001  10799    828   2241    470       C
ATOM   7768  CB  ALA B 702      17.960  33.452 112.234  1.00 60.49           C
ANISOU 7768  CB  ALA B 702     6954   6977   9052    813   2260    504       C
ATOM   7769  C   ALA B 702      19.163  35.197 113.538  1.00 72.57           C
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ANISOU 7769  C   ALA B 702     8715   8598  10261    839   2340    543       C
ATOM   7770  O   ALA B 702      18.482  36.032 114.135  1.00 68.68           O
ANISOU 7770  O   ALA B 702     8256   8099   9740    855   2440    584       O
ATOM   7771  N   GLU B 703      20.263  34.650 114.043  1.00 68.52           N
ANISOU 7771  N   GLU B 703     8276   8091   9666    834   2308    553       N
ATOM   7772  CA  GLU B 703      20.886  35.173 115.253  1.00 71.80           C
ANISOU 7772  CA  GLU B 703     8834   8523   9925    843   2372    608       C
ATOM   7773  CB  GLU B 703      22.241  34.492 115.488  1.00 78.46           C
ANISOU 7773  CB  GLU B 703     9735   9381  10695    837   2292    598       C
ATOM   7774  CG  GLU B 703      22.789  34.467 116.917  1.00 78.42           C
ANISOU 7774  CG  GLU B 703     9865   9359  10573    842   2351    677       C
ATOM   7775  CD  GLU B 703      24.220  33.920 116.950  1.00 98.48           C
ANISOU 7775  CD  GLU B 703    12450  11924  13045    841   2245    650       C
ATOM   7776  OE1 GLU B 703      25.042  34.396 116.134  1.00 98.54           O
ANISOU 7776  OE1 GLU B 703    12445  12006  12990    840   2154    569       O
ATOM   7777  OE2 GLU B 703      24.525  33.015 117.765  1.00103.22           O
ANISOU 7777  OE2 GLU B 703    13092  12470  13657    840   2249    710       O
ATOM   7778  C   GLU B 703      21.032  36.692 115.101  1.00 72.55           C
ANISOU 7778  C   GLU B 703     8994   8684   9890    856   2378    577       C
ATOM   7779  O   GLU B 703      20.546  37.456 115.942  1.00 75.07           O
ANISOU 7779  O   GLU B 703     9381   8991  10150    873   2480    624       O
ATOM   7780  N   ASP B 704      21.647  37.127 114.001  1.00 71.54           N
ANISOU 7780  N   ASP B 704     8840   8620   9720    847   2270    497       N
ATOM   7781  CA  ASP B 704      21.841  38.556 113.734  1.00 65.21           C
ANISOU 7781  CA  ASP B 704     8099   7876   8801    850   2257    468       C
ATOM   7782  CB  ASP B 704      22.601  38.767 112.417  1.00 52.00           C
ANISOU 7782  CB  ASP B 704     6385   6278   7093    829   2131    385       C
ATOM   7783  CG  ASP B 704      24.111  38.523 112.547  1.00 73.37           C
ANISOU 7783  CG  ASP B 704     9152   9040   9685    813   2062    361       C
ATOM   7784  OD1 ASP B 704      24.628  38.495 113.685  1.00 80.64           O
ANISOU 7784  OD1 ASP B 704    10169   9945  10525    820   2104    411       O
ATOM   7785  OD2 ASP B 704      24.793  38.373 111.501  1.00 64.51           O
ANISOU 7785  OD2 ASP B 704     7980   7981   8550    795   1966    292       O
ATOM   7786  C   ASP B 704      20.504  39.331 113.704  1.00 71.24           C
ANISOU 7786  C   ASP B 704     8829   8608   9631    871   2334    486       C
ATOM   7787  O   ASP B 704      20.423  40.463 114.198  1.00 61.35           O
ANISOU 7787  O   ASP B 704     7662   7365   8282    888   2381    500       O
ATOM   7788  N   ALA B 705      19.450  38.734 113.147  1.00 64.97           N
ANISOU 7788  N   ALA B 705     7909   7771   9006    873   2342    482       N
ATOM   7789  CA  ALA B 705      18.171  39.451 113.101  1.00 66.55           C
ANISOU 7789  CA  ALA B 705     8062   7941   9282    897   2409    496       C
ATOM   7790  CB  ALA B 705      17.186  38.755 112.202  1.00 51.18           C
ANISOU 7790  CB  ALA B 705     5961   5958   7525    890   2377    475       C
ATOM   7791  C   ALA B 705      17.575  39.624 114.493  1.00 79.42           C
ANISOU 7791  C   ALA B 705     9750   9527  10899    922   2561    570       C
ATOM   7792  O   ALA B 705      16.985  40.653 114.786  1.00 80.31           O
ANISOU 7792  O   ALA B 705     9892   9636  10985    953   2624    576       O
ATOM   7793  N   LEU B 706      17.731  38.624 115.352  1.00 83.80           N
ANISOU 7793  N   LEU B 706    10323  10047  11468    911   2618    626       N
ATOM   7794  CA  LEU B 706      17.221  38.742 116.712  1.00 85.46           C
ANISOU 7794  CA  LEU B 706    10600  10225  11648    931   2768    701       C
ATOM   7795  CB  LEU B 706      17.339  37.413 117.461  1.00 81.60           C
ANISOU 7795  CB  LEU B 706    10112   9691  11202    906   2811    770       C
ATOM   7796  CG  LEU B 706      16.553  36.228 116.903  1.00 79.56           C
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ANISOU 7796  CG  LEU B 706     9700   9377  11151    881   2798    782       C
ATOM   7797  CD1 LEU B 706      16.965  34.998 117.646  1.00 71.62           C
ANISOU 7797  CD1 LEU B 706     8727   8327  10157    854   2814    849       C
ATOM   7798  CD2 LEU B 706      15.040  36.436 117.011  1.00 82.54           C
ANISOU 7798  CD2 LEU B 706     9977   9720  11666    894   2912    813       C
ATOM   7799  C   LEU B 706      17.973  39.848 117.449  1.00 80.19           C
ANISOU 7799  C   LEU B 706    10093   9596  10779    951   2789    699       C
ATOM   7800  O   LEU B 706      17.374  40.635 118.180  1.00 74.77           O
ANISOU 7800  O   LEU B 706     9459   8900  10051    984   2897    722       O
ATOM   7801  N   ILE B 707      19.283  39.918 117.241  1.00 76.54           N
ANISOU 7801  N   ILE B 707     9707   9178  10197    932   2684    668       N
ATOM   7802  CA  ILE B 707      20.071  40.976 117.855  1.00 80.75           C
ANISOU 7802  CA  ILE B 707    10391   9747  10545    944   2683    661       C
ATOM   7803  CB  ILE B 707      21.558  40.819 117.506  1.00 76.76           C
ANISOU 7803  CB  ILE B 707     9936   9292   9938    913   2555    627       C
ATOM   7804  CG1 ILE B 707      22.082  39.493 118.066  1.00 76.76           C
ANISOU 7804  CG1 ILE B 707     9942   9269   9956    898   2550    670       C
ATOM   7805  CD1 ILE B 707      23.542  39.234 117.770  1.00 73.46           C
ANISOU 7805  CD1 ILE B 707     9559   8898   9453    875   2427    634       C
ATOM   7806  CG2 ILE B 707      22.351  41.987 118.037  1.00 61.94           C
ANISOU 7806  CG2 ILE B 707     8205   7449   7881    918   2539    616       C
ATOM   7807  C   ILE B 707      19.564  42.366 117.433  1.00 77.56           C
ANISOU 7807  C   ILE B 707     9994   9355  10118    970   2686    620       C
ATOM   7808  O   ILE B 707      19.364  43.243 118.256  1.00 74.31           O
ANISOU 7808  O   ILE B 707     9681   8935   9619   1001   2763    634       O
ATOM   7809  N   ILE B 708      19.332  42.541 116.143  1.00 73.25           N
ANISOU 7809  N   ILE B 708     9349   8827   9656    959   2598    569       N
ATOM   7810  CA  ILE B 708      18.773  43.770 115.605  1.00 72.47           C
ANISOU 7810  CA  ILE B 708     9244   8730   9561    982   2584    534       C
ATOM   7811  CB  ILE B 708      18.679  43.656 114.057  1.00 79.98           C
ANISOU 7811  CB  ILE B 708    10080   9707  10603    957   2462    481       C
ATOM   7812  CG1 ILE B 708      20.080  43.662 113.461  1.00 84.02           C
ANISOU 7812  CG1 ILE B 708    10638  10284  11000    913   2340    445       C
ATOM   7813  CD1 ILE B 708      20.175  42.971 112.143  1.00 94.46           C
ANISOU 7813  CD1 ILE B 708    11845  11636  12407    883   2237    399       C
ATOM   7814  CG2 ILE B 708      17.922  44.793 113.446  1.00 85.39           C
ANISOU 7814  CG2 ILE B 708    10742  10382  11322    982   2442    455       C
ATOM   7815  C   ILE B 708      17.402  44.055 116.260  1.00 83.31           C
ANISOU 7815  C   ILE B 708    10584  10050  11019   1032   2722    565       C
ATOM   7816  O   ILE B 708      17.068  45.198 116.594  1.00 90.05           O
ANISOU 7816  O   ILE B 708    11502  10894  11820   1070   2762    554       O
ATOM   7817  N   ALA B 709      16.629  42.998 116.477  1.00 80.54           N
ANISOU 7817  N   ALA B 709    10134   9664  10804   1031   2795    603       N
ATOM   7818  CA  ALA B 709      15.331  43.115 117.106  1.00 75.16           C
ANISOU 7818  CA  ALA B 709     9401   8939  10217   1072   2937    637       C
ATOM   7819  CB  ALA B 709      14.584  41.797 116.987  1.00 72.27           C
ANISOU 7819  CB  ALA B 709     8894   8538  10026   1049   2978    675       C
ATOM   7820  C   ALA B 709      15.460  43.555 118.580  1.00 83.33           C
ANISOU 7820  C   ALA B 709    10578   9970  11115   1102   3066    676       C
ATOM   7821  O   ALA B 709      14.687  44.393 119.045  1.00 80.47           O
ANISOU 7821  O   ALA B 709    10231   9592  10752   1152   3162    671       O
ATOM   7822  N   ASN B 710      16.438  43.008 119.307  1.00 85.60           N
ANISOU 7822  N   ASN B 710    10970  10272  11283   1075   3065    710       N
ATOM   7823  CA  ASN B 710      16.723  43.479 120.675  1.00 94.46           C
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ANISOU 7823  CA  ASN B 710    12250  11396  12246   1100   3165    741       C
ATOM   7824  CB  ASN B 710      17.781  42.615 121.361  1.00 87.33           C
ANISOU 7824  CB  ASN B 710    11440  10503  11240   1062   3142    787       C
ATOM   7825  CG  ASN B 710      17.180  41.426 122.081  1.00 93.54           C
ANISOU 7825  CG  ASN B 710    12181  11255  12105   1048   3255    867       C
ATOM   7826  OD1 ASN B 710      17.283  41.295 123.302  1.00 91.25           O
ANISOU 7826  OD1 ASN B 710    12002  10960  11710   1055   3353    923       O
ATOM   7827  ND2 ASN B 710      16.544  40.555 121.326  1.00101.34           N
ANISOU 7827  ND2 ASN B 710    13010  12218  13278   1026   3238    876       N
ATOM   7828  C   ASN B 710      17.193  44.924 120.732  1.00 99.44           C
ANISOU 7828  C   ASN B 710    13001  12045  12736   1129   3123    689       C
ATOM   7829  O   ASN B 710      16.977  45.624 121.724  1.00106.05           O
ANISOU 7829  O   ASN B 710    13945  12874  13477   1171   3223    695       O
ATOM   7830  N   ALA B 711      17.868  45.357 119.677  1.00 88.53           N
ANISOU 7830  N   ALA B 711    11609  10690  11340   1105   2975    637       N
ATOM   7831  CA  ALA B 711      18.313  46.721 119.605  1.00 77.73           C
ANISOU 7831  CA  ALA B 711    10347   9333   9854   1122   2919    592       C
ATOM   7832  CB  ALA B 711      19.212  46.934 118.381  1.00 66.17           C
ANISOU 7832  CB  ALA B 711     8861   7908   8373   1074   2750    549       C
ATOM   7833  C   ALA B 711      17.075  47.620 119.571  1.00 80.70           C
ANISOU 7833  C   ALA B 711    10682   9672  10307   1183   2995    569       C
ATOM   7834  O   ALA B 711      17.018  48.626 120.285  1.00 82.49           O
ANISOU 7834  O   ALA B 711    11022   9883  10436   1227   3046    552       O
ATOM   7835  N   ASP B 712      16.074  47.227 118.780  1.00 76.64           N
ANISOU 7835  N   ASP B 712    10005   9141   9974   1191   3003    566       N
ATOM   7836  CA  ASP B 712      14.851  48.016 118.636  1.00 86.80           C
ANISOU 7836  CA  ASP B 712    11227  10392  11361   1252   3063    542       C
ATOM   7837  CB  ASP B 712      13.934  47.379 117.590  1.00 89.33           C
ANISOU 7837  CB  ASP B 712    11355  10700  11888   1242   3033    540       C
ATOM   7838  CG  ASP B 712      12.562  48.016 117.551  1.00 95.76           C
ANISOU 7838  CG  ASP B 712    12079  11473  12831   1309   3109    523       C
ATOM   7839  OD1 ASP B 712      11.714  47.644 118.394  1.00103.09           O
ANISOU 7839  OD1 ASP B 712    12961  12384  13823   1342   3266    555       O
ATOM   7840  OD2 ASP B 712      12.337  48.891 116.687  1.00 93.01           O
ANISOU 7840  OD2 ASP B 712    11706  11112  12521   1329   3014    479       O
ATOM   7841  C   ASP B 712      14.135  48.131 119.981  1.00 95.00           C
ANISOU 7841  C   ASP B 712    12311  11408  12376   1308   3247    568       C
ATOM   7842  O   ASP B 712      13.547  49.161 120.329  1.00 96.42           O
ANISOU 7842  O   ASP B 712    12527  11564  12544   1372   3307    536       O
ATOM   7843  N   PHE B 713      14.212  47.035 120.718  1.00 99.09           N
ANISOU 7843  N   PHE B 713    12827  11935  12886   1281   3333    626       N
ATOM   7844  CA  PHE B 713      13.656  46.883 122.048  1.00 95.73           C
ANISOU 7844  CA  PHE B 713    12450  11501  12422   1317   3516    667       C
ATOM   7845  CB  PHE B 713      13.912  45.452 122.511  1.00 93.11           C
ANISOU 7845  CB  PHE B 713    12100  11177  12102   1262   3559    742       C
ATOM   7846  CG  PHE B 713      13.212  45.074 123.769  1.00106.42           C
ANISOU 7846  CG  PHE B 713    13806  12857  13772   1284   3753    800       C
ATOM   7847  CD1 PHE B 713      11.845  44.849 123.777  1.00116.97           C
ANISOU 7847  CD1 PHE B 713    14994  14175  15274   1310   3880    819       C
ATOM   7848  CE1 PHE B 713      11.198  44.474 124.943  1.00111.70           C
ANISOU 7848  CE1 PHE B 713    14342  13512  14589   1324   4072    878       C
ATOM   7849  CZ  PHE B 713      11.921  44.307 126.104  1.00106.83           C
ANISOU 7849  CZ  PHE B 713    13899  12912  13779   1312   4130    921       C
ATOM   7850  CE2 PHE B 713      13.286  44.527 126.107  1.00105.04           C
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ANISOU 7850  CE2 PHE B 713    13824  12699  13390   1289   3992    902       C
ATOM   7851  CD2 PHE B 713      13.927  44.895 124.944  1.00109.36           C
ANISOU 7851  CD2 PHE B 713    14343  13244  13964   1274   3808    842       C
ATOM   7852  C   PHE B 713      14.256  47.884 123.024  1.00 95.36           C
ANISOU 7852  C   PHE B 713    12601  11461  12171   1353   3547    643       C
ATOM   7853  O   PHE B 713      13.534  48.625 123.687  1.00 93.12           O
ANISOU 7853  O   PHE B 713    12352  11162  11869   1420   3665    622       O
ATOM   7854  N   ILE B 714      15.582  47.888 123.107  1.00 83.53           N
ANISOU 7854  N   ILE B 714    11228   9984  10524   1310   3439    643       N
ATOM   7855  CA  ILE B 714      16.312  48.829 123.947  1.00 84.62           C
ANISOU 7855  CA  ILE B 714    11561  10126  10465   1333   3435    617       C
ATOM   7856  CB  ILE B 714      17.841  48.645 123.773  1.00 82.03           C
ANISOU 7856  CB  ILE B 714    11330   9827  10012   1269   3284    620       C
ATOM   7857  CG1 ILE B 714      18.241  47.203 124.095  1.00 84.20           C
ANISOU 7857  CG1 ILE B 714    11579  10118  10296   1219   3299    689       C
ATOM   7858  CD1 ILE B 714      19.741  46.973 124.194  1.00 69.90           C
ANISOU 7858  CD1 ILE B 714    9874   8335   8352   1167   3173    695       C
ATOM   7859  CG2 ILE B 714      18.617  49.596 124.651  1.00 73.27           C
ANISOU 7859  CG2 ILE B 714    10420   8716   8702   1287   3269    595       C
ATOM   7860  C   ILE B 714      15.915  50.283 123.639  1.00 96.14           C
ANISOU 7860  C   ILE B 714    13049  11558  11922   1392   3411    545       C
ATOM   7861  O   ILE B 714      15.699  51.082 124.552  1.00104.22           O
ANISOU 7861  O   ILE B 714    14187  12565  12847   1450   3498    520       O
ATOM   7862  N   PHE B 715      15.791  50.615 122.357  1.00103.42           N
ANISOU 7862  N   PHE B 715    13870  12472  12953   1380   3292    512       N
ATOM   7863  CA  PHE B 715      15.480  51.987 121.951  1.00108.30           C
ANISOU 7863  CA  PHE B 715    14516  13056  13577   1429   3243    450       C
ATOM   7864  CB  PHE B 715      15.752  52.174 120.459  1.00 98.54           C
ANISOU 7864  CB  PHE B 715    13195  11824  12422   1384   3072    429       C
ATOM   7865  CG  PHE B 715      17.156  52.572 120.172  1.00 90.62           C
ANISOU 7865  CG  PHE B 715    12309  10846  11276   1324   2926    418       C
ATOM   7866  CD1 PHE B 715      17.572  53.879 120.392  1.00 89.92           C
ANISOU 7866  CD1 PHE B 715    12359  10729  11076   1344   2871    379       C
ATOM   7867  CE1 PHE B 715      18.879  54.253 120.155  1.00 87.64           C
ANISOU 7867  CE1 PHE B 715    12174  10465  10660   1280   2738    373       C
ATOM   7868  CZ  PHE B 715      19.792  53.309 119.696  1.00 86.77           C
ANISOU 7868  CZ  PHE B 715    12024  10414  10532   1202   2664    403       C
ATOM   7869  CE2 PHE B 715      19.391  52.000 119.489  1.00 75.71           C
ANISOU 7869  CE2 PHE B 715    10490   9037   9238   1189   2717    436       C
ATOM   7870  CD2 PHE B 715      18.078  51.637 119.733  1.00 79.59           C
ANISOU 7870  CD2 PHE B 715    10884   9498   9857   1247   2845    447       C
ATOM   7871  C   PHE B 715      14.058  52.412 122.260  1.00117.58           C
ANISOU 7871  C   PHE B 715    15618  14195  14864   1516   3379    428       C
ATOM   7872  O   PHE B 715      13.828  53.536 122.700  1.00115.68           O
ANISOU 7872  O   PHE B 715    15468  13921  14565   1581   3408    379       O
ATOM   7873  N   LYS B 716      13.105  51.521 122.009  1.00122.10           N
ANISOU 7873  N   LYS B 716    16020  14770  15601   1518   3459    461       N
ATOM   7874  CA  LYS B 716      11.709  51.804 122.309  1.00114.05           C
ANISOU 7874  CA  LYS B 716    14904  13723  14706   1598   3600    444       C
ATOM   7875  CB  LYS B 716      10.789  50.704 121.779  1.00101.09           C
ANISOU 7875  CB  LYS B 716    13054  12088  13270   1576   3648    487       C
ATOM   7876  CG  LYS B 716      10.487  49.726 122.883  1.00102.90           C
ANISOU 7876  CG  LYS B 716    13277  12338  13480   1567   3824    549       C
ATOM   7877  CD  LYS B 716       9.292  48.872 122.699  1.00113.54           C
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ANISOU 7877  CD  LYS B 716    14425  13682  15033   1566   3924    588       C
ATOM   7878  CE  LYS B 716       8.994  48.184 124.027  1.00118.57           C
ANISOU 7878  CE  LYS B 716    15097  14341  15615   1565   4124    650       C
ATOM   7879  NZ  LYS B 716       8.477  46.814 123.867  1.00120.72           N
ANISOU 7879  NZ  LYS B 716    15216  14616  16038   1505   4174    724       N
ATOM   7880  C   LYS B 716      11.495  51.929 123.804  1.00122.40           C
ANISOU 7880  C   LYS B 716    16072  14788  15648   1649   3781    451       C
ATOM   7881  O   LYS B 716      10.558  52.592 124.247  1.00135.81           O
ANISOU 7881  O   LYS B 716    17750  16464  17388   1734   3897    413       O
ATOM   7882  N   GLU B 717      12.345  51.278 124.590  1.00116.94           N
ANISOU 7882  N   GLU B 717    15495  14128  14809   1600   3808    497       N
ATOM   7883  CA  GLU B 717      11.956  51.017 125.959  1.00118.99           C
ANISOU 7883  CA  GLU B 717    15821  14404  14987   1635   4001    526       C
ATOM   7884  CB  GLU B 717      12.510  49.695 126.460  1.00110.29           C
ANISOU 7884  CB  GLU B 717    14741  13335  13829   1559   4032    612       C
ATOM   7885  CG  GLU B 717      11.400  48.791 126.915  1.00109.09           C
ANISOU 7885  CG  GLU B 717    14460  13193  13796   1564   4213    673       C
ATOM   7886  CD  GLU B 717      11.833  47.899 128.029  1.00116.87           C
ANISOU 7886  CD  GLU B 717    15547  14205  14651   1522   4307    752       C
ATOM   7887  OE1 GLU B 717      11.927  48.368 129.186  1.00121.63           O
ANISOU 7887  OE1 GLU B 717    16305  14823  15086   1562   4415    745       O
ATOM   7888  OE2 GLU B 717      12.097  46.726 127.744  1.00132.04           O
ANISOU 7888  OE2 GLU B 717    17402  16130  16637   1449   4265    820       O
ATOM   7889  C   GLU B 717      12.366  52.081 126.924  1.00135.14           C
ANISOU 7889  C   GLU B 717    18068  16442  16838   1690   4036    475       C
ATOM   7890  O   GLU B 717      11.859  52.130 128.048  1.00143.87           O
ANISOU 7890  O   GLU B 717    19231  17558  17873   1740   4210    478       O
ATOM   7891  N   TRP B 718      13.282  52.939 126.512  1.00137.67           N
ANISOU 7891  N   TRP B 718    18499  16743  17067   1679   3874    427       N
ATOM   7892  CA  TRP B 718      13.823  53.866 127.477  1.00140.91           C
ANISOU 7892  CA  TRP B 718    19118  17142  17279   1720   3890    381       C
ATOM   7893  CB  TRP B 718      15.319  53.644 127.590  1.00135.89           C
ANISOU 7893  CB  TRP B 718    18623  16527  16484   1641   3753    407       C
ATOM   7894  CG  TRP B 718      15.547  52.413 128.368  1.00137.26           C
ANISOU 7894  CG  TRP B 718    18814  16741  16597   1597   3842    486       C
ATOM   7895  CD1 TRP B 718      14.597  51.671 129.007  1.00143.89           C
ANISOU 7895  CD1 TRP B 718    19582  17598  17492   1620   4029    533       C
ATOM   7896  NE1 TRP B 718      15.170  50.596 129.627  1.00151.65           N
ANISOU 7896  NE1 TRP B 718    20617  18612  18391   1560   4053    612       N
ATOM   7897  CE2 TRP B 718      16.520  50.629 129.399  1.00147.38           C
ANISOU 7897  CE2 TRP B 718    20179  18076  17744   1503   3880    611       C
ATOM   7898  CD2 TRP B 718      16.789  51.761 128.608  1.00136.50           C
ANISOU 7898  CD2 TRP B 718    18812  16671  16380   1521   3749    534       C
ATOM   7899  CE3 TRP B 718      18.101  52.019 128.235  1.00132.02           C
ANISOU 7899  CE3 TRP B 718    18333  16108  15719   1465   3568    521       C
ATOM   7900  CZ3 TRP B 718      19.076  51.161 128.651  1.00133.79           C
ANISOU 7900  CZ3 TRP B 718    18623  16361  15848   1403   3521    577       C
ATOM   7901  CH2 TRP B 718      18.790  50.050 129.431  1.00141.90           C
ANISOU 7901  CH2 TRP B 718    19643  17408  16865   1393   3642    652       C
ATOM   7902  CZ2 TRP B 718      17.518  49.765 129.819  1.00148.81           C
ANISOU 7902  CZ2 TRP B 718    20439  18280  17823   1438   3825    673       C
ATOM   7903  C   TRP B 718      13.492  55.313 127.194  1.00145.07           C
ANISOU 7903  C   TRP B 718    19684  17615  17821   1796   3842    291       C
ATOM   7904  O   TRP B 718      13.582  55.788 126.057  1.00147.98           O
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ANISOU 7904  O   TRP B 718    19987  17955  18283   1781   3696    266       O
ATOM   7905  N   LYS B 719      13.079  55.985 128.269  1.00143.03           N
ANISOU 7905  N   LYS B 719    19535  17343  17466   1880   3973    243       N
ATOM   7906  CA  LYS B 719      12.645  57.371 128.240  1.00134.92           C
ANISOU 7906  CA  LYS B 719    18558  16256  16448   1972   3958    149       C
ATOM   7907  CB  LYS B 719      12.109  57.767 129.618  1.00119.04           C
ANISOU 7907  CB  LYS B 719    16656  14248  14324   2064   4149    104       C
ATOM   7908  C   LYS B 719      13.776  58.311 127.807  1.00144.74           C
ANISOU 7908  C   LYS B 719    19945  17460  17591   1937   3751    110       C
ATOM   7909  O   LYS B 719      13.541  59.313 127.127  1.00145.72           O
ANISOU 7909  O   LYS B 719    20054  17524  17788   1975   3656     54       O
ATOM   7910  N   LYS B 720      15.004  57.952 128.182  1.00146.09           N
ANISOU 7910  N   LYS B 720    20246  17660  17600   1859   3677    146       N
ATOM   7911  CA  LYS B 720      16.187  58.793 127.976  1.00138.92           C
ANISOU 7911  CA  LYS B 720    19490  16722  16571   1816   3493    115       C
ATOM   7912  C   LYS B 720      16.833  58.554 126.586  1.00140.42           C
ANISOU 7912  C   LYS B 720    19582  16922  16849   1722   3308    152       C
ATOM   7913  O   LYS B 720      17.602  59.396 126.085  1.00140.86           O
ANISOU 7913  O   LYS B 720    19717  16945  16857   1686   3147    125       O
ATOM   7914  CB  LYS B 720      17.188  58.566 129.130  1.00129.65           C
ANISOU 7914  CB  LYS B 720    18506  15576  15177   1783   3505    131       C
ATOM   7915  CG  LYS B 720      18.674  58.585 128.786  1.00128.69           C
ANISOU 7915  CG  LYS B 720    18474  15466  14955   1682   3312    154       C
ATOM   7916  CD  LYS B 720      19.597  58.450 130.014  1.00118.51           C
ANISOU 7916  CD  LYS B 720    17381  14198  13451   1661   3320    163       C
ATOM   7917  CE  LYS B 720      19.099  59.256 131.204  1.00115.23           C
ANISOU 7917  CE  LYS B 720    17119  13747  12917   1759   3439     94       C
ATOM   7918  NZ  LYS B 720      20.164  59.378 132.238  1.00101.42           N
ANISOU 7918  NZ  LYS B 720    15582  12005  10947   1731   3391     90       N
ATOM   7919  N   LEU B 721      16.484  57.430 125.951  1.00128.92           N
ANISOU 7919  N   LEU B 721    17951  15510  15524   1681   3335    212       N
ATOM   7920  CA  LEU B 721      16.809  57.191 124.541  1.00115.92           C
ANISOU 7920  CA  LEU B 721    16183  13874  13987   1609   3183    236       C
ATOM   7921  CB  LEU B 721      16.901  55.699 124.239  1.00102.23           C
ANISOU 7921  CB  LEU B 721    14322  12201  12320   1545   3208    307       C
ATOM   7922  CG  LEU B 721      18.153  54.944 124.648  1.00 88.92           C
ANISOU 7922  CG  LEU B 721    12721  10563  10501   1466   3158    352       C
ATOM   7923  CD1 LEU B 721      17.997  53.491 124.259  1.00 95.88           C
ANISOU 7923  CD1 LEU B 721    13454  11488  11487   1419   3189    415       C
ATOM   7924  CD2 LEU B 721      19.338  55.569 123.955  1.00 77.01           C
ANISOU 7924  CD2 LEU B 721    11282   9058   8921   1401   2968    335       C
ATOM   7925  C   LEU B 721      15.804  57.805 123.578  1.00124.03           C
ANISOU 7925  C   LEU B 721    17084  14856  15187   1658   3155    202       C
ATOM   7926  O   LEU B 721      16.177  58.246 122.488  1.00125.39           O
ANISOU 7926  O   LEU B 721    17228  15014  15401   1614   2998    197       O
ATOM   7927  N   ASP B 722      14.538  57.810 123.992  1.00128.70           N
ANISOU 7927  N   ASP B 722    17597  15427  15876   1747   3308    183       N
ATOM   7928  CA  ASP B 722      13.393  58.232 123.178  1.00134.51           C
ANISOU 7928  CA  ASP B 722    18185  16120  16801   1806   3305    154       C
ATOM   7929  CB  ASP B 722      12.281  58.740 124.108  1.00136.85           C
ANISOU 7929  CB  ASP B 722    18487  16384  17127   1927   3479    103       C
ATOM   7930  CG  ASP B 722      10.912  58.829 123.423  1.00135.50           C
ANISOU 7930  CG  ASP B 722    18121  16183  17181   1994   3519     85       C
ATOM   7931  OD1 ASP B 722      10.811  59.204 122.237  1.00142.98           O
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ANISOU 7931  OD1 ASP B 722    18990  17097  18237   1977   3372     80       O
ATOM   7932  OD2 ASP B 722       9.917  58.476 124.078  1.00141.80          O
ANISOU 7932  OD2 ASP B 722    18835  16994  18048   2060   3701     81       O
ATOM   7933  C   ASP B 722      13.686  59.279 122.087  1.00125.35          C
ANISOU 7933  C   ASP B 722    17043  14909  15674   1792   3115    123       C
ATOM   7934  O   ASP B 722      13.208  59.113 120.965  1.00130.09          O
ANISOU 7934  O   ASP B 722    17497  15505  16426   1776   3043    137       O
ATOM   7935  N   LYS B 723      14.456  60.330 122.387  1.00111.93          N
ANISOU 7935  N   LYS B 723    15522  13169  13837   1792   3028     85       N
ATOM   7936  CA  LYS B 723      14.812  61.299 121.341  1.00101.55          C
ANISOU 7936  CA  LYS B 723    14233  11805  12548   1763   2840     68       C
ATOM   7937  CB  LYS B 723      15.814  62.361 121.834  1.00 77.79          C
ANISOU 7937  CB  LYS B 723    11437   8754   9368   1747   2748     34       C
ATOM   7938  C   LYS B 723      15.378  60.540 120.146  1.00108.84          C
ANISOU 7938  C   LYS B 723    15054  12786  13516   1653   2719    127       C
ATOM   7939  O   LYS B 723      14.789  60.576 119.058  1.00111.34          O
ANISOU 7939  O   LYS B 723    15241  13088  13975   1652   2651    135       O
ATOM   7940  N   ALA B 724      16.479  59.817 120.368  1.00104.06          N
ANISOU 7940  N   ALA B 724    14501  12246  12792   1567   2696    166       N
ATOM   7941  CA  ALA B 724      17.098  58.998 119.323  1.00 99.26          C
ANISOU 7941  CA  ALA B 724    13799  11702  12214   1466   2595    215       C
ATOM   7942  CB  ALA B 724      18.326  58.272 119.869  1.00 87.83          C
ANISOU 7942  CB  ALA B 724    12430  10318  10622   1392   2589    246       C
ATOM   7943  C   ALA B 724      16.119  57.985 118.715  1.00 98.06          C
ANISOU 7943  C   ALA B 724    13446  11576  12236   1479   2656    239       C
ATOM   7944  O   ALA B 724      16.124  57.773 117.501  1.00 94.38          O
ANISOU 7944  O   ALA B 724    12878  11128  11853   1430   2550    255       O
ATOM   7945  N   LYS B 725      15.277  57.378 119.554  1.00104.69          N
ANISOU 7945  N   LYS B 725    14231  12417  13129   1541   2825    243       N
ATOM   7946  CA  LYS B 725      14.331  56.356 119.098  1.00101.14          C
ANISOU 7946  CA  LYS B 725    13590  11989  12851   1549   2893    270       C
ATOM   7947  CB  LYS B 725      13.515  55.811 120.280  1.00 88.40          C
ANISOU 7947  CB  LYS B 725    11949  10376  11261   1613   3097    278       C
ATOM   7948  C   LYS B 725      13.388  56.891 118.026  1.00108.57          C
ANISOU 7948  C   LYS B 725    14410  12886  13957   1585   2824    247       C
ATOM   7949  O   LYS B 725      13.122  56.241 117.015  1.00108.37          O
ANISOU 7949  O   LYS B 725    14244  12883  14048   1545   2762    269       O
ATOM   7950  N   LYS B 726      12.887  58.095 118.256  1.00117.05          N
ANISOU 7950  N   LYS B 726    15542  13893  15039   1664   2827    200       N
ATOM   7951  CA  LYS B 726      11.848  58.651 117.407  1.00118.80          C
ANISOU 7951  CA  LYS B 726    15649  14061  15428   1718   2775    177       C
ATOM   7952  CB  LYS B 726      11.067  59.727 118.172  1.00112.70          C
ANISOU 7952  CB  LYS B 726    14930  13214  14675   1837   2858    119       C
ATOM   7953  C   LYS B 726      12.441  59.205 116.112  1.00124.01          C
ANISOU 7953  C   LYS B 726    16328  14711  16080   1652   2567    184       C
ATOM   7954  O   LYS B 726      11.716  59.412 115.136  1.00117.16          O
ANISOU 7954  O   LYS B 726    15349  13814  15353   1669   2490    181       O
ATOM   7955  N   VAL B 727      13.760  59.432 116.121  1.00123.20          N
ANISOU 7955  N   VAL B 727    16365  14636  15810   1574   2478    197       N
ATOM   7956  CA  VAL B 727      14.520  59.893 114.946  1.00118.46          C
ANISOU 7956  CA  VAL B 727    15796  14043  15171   1491   2289    213       C
ATOM   7957  CB  VAL B 727      15.987  60.345 115.281  1.00 95.84          C
ANISOU 7957  CB  VAL B 727    13108  11200  12108   1417   2216    220       C
ATOM   7958  CG1 VAL B 727      16.833  60.640 113.978  1.00 91.32          C
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ANISOU 7958  CG1 VAL B 727    12545  10657  11494   1312   2031    248       C
ATOM   7959  CG2 VAL B 727      16.044  61.421 116.400  1.00 99.22           C
ANISOU 7959  CG2 VAL B 727    13698  11557  12445   1483   2260    178       C
ATOM   7960  C   VAL B 727      14.632  58.745 113.962  1.00114.71           C
ANISOU 7960  C   VAL B 727    15183  13641  14760   1417   2243    250       C
ATOM   7961  O   VAL B 727      14.456  58.916 112.756  1.00114.13           O
ANISOU 7961  O   VAL B 727    15043  13566  14756   1386   2121    258       O
ATOM   7962  N   MET B 728      15.007  57.586 114.496  1.00115.22           N
ANISOU 7962  N   MET B 728    15221  13769  14790   1386   2333    270       N
ATOM   7963  CA  MET B 728      15.139  56.355 113.737  1.00105.67           C
ANISOU 7963  CA  MET B 728    13886  12625  13640   1323   2306    298       C
ATOM   7964  CB  MET B 728      15.548  55.221 114.673  1.00100.49           C
ANISOU 7964  CB  MET B 728    13234  12016  12932   1306   2424    319       C
ATOM   7965  CG  MET B 728      16.880  55.418 115.367  1.00 93.47           C
ANISOU 7965  CG  MET B 728    12505  11157  11853   1260   2406    324       C
ATOM   7966  SD  MET B 728      17.232  54.019 116.439  1.00105.92           S
ANISOU 7966  SD  MET B 728    14079  12780  13387   1247   2536    357       S
ATOM   7967  CE  MET B 728      17.341  52.711 115.229  1.00 69.09           C
ANISOU 7967  CE  MET B 728     9251   8173   8828   1179   2465    376       C
ATOM   7968  C   MET B 728      13.835  56.016 113.027  1.00105.79           C
ANISOU 7968  C   MET B 728    13728  12615  13852   1365   2314    294       C
ATOM   7969  O   MET B 728      13.834  55.491 111.914  1.00110.88           O
ANISOU 7969  O   MET B 728    14276  13293  14561   1314   2221    304       O
ATOM   7970  N   GLU B 729      12.725  56.323 113.687  1.00105.56           N
ANISOU 7970  N   GLU B 729    13659  12529  13920   1459   2426    277       N
ATOM   7971  CA  GLU B 729      11.415  56.104 113.103  1.00109.94           C
ANISOU 7971  CA  GLU B 729    14045  13053  14675   1508   2436    271       C
ATOM   7972  C   GLU B 729      10.922  57.336 112.319  1.00118.09           C
ANISOU 7972  C   GLU B 729    15081  14020  15767   1548   2314    247       C
ATOM   7973  O   GLU B 729       9.794  57.339 111.835  1.00128.69           O
ANISOU 7973  O   GLU B 729    16289  15326  17281   1599   2308    237       O
ATOM   7974  CB  GLU B 729      10.421  55.711 114.201  1.00100.59           C
ANISOU 7974  CB  GLU B 729    12791  11848  13580   1587   2629    267       C
ATOM   7975  O   ASN B 730       9.657  61.030 110.916  1.00122.87           O
ANISOU 7975  O   ASN B 730    15787  14395  16504   1694   2008    185       O
ATOM   7976  N   ASN B 730      11.774  58.362 112.203  1.00121.36           N
ANISOU 7976  N   ASN B 730    15650  14417  16045   1522   2213    240       N
ATOM   7977  CA  ASN B 730      11.539  59.588 111.401  1.00119.51           C
ANISOU 7977  CA  ASN B 730    15451  14117  15840   1541   2069    227       C
ATOM   7978  C   ASN B 730      10.295  60.420 111.777  1.00128.50           C
ANISOU 7978  C   ASN B 730    16553  15162  17110   1666   2119    190       C
ATOM   7979  CB  ASN B 730      11.478  59.226 109.907  1.00114.46           C
ANISOU 7979  CB  ASN B 730    14713  13508  15269   1476   1922    251       C
ATOM   7980  CG  ASN B 730      11.652  60.442 108.989  1.00110.08           C
ANISOU 7980  CG  ASN B 730    14234  12904  14686   1458   1746    257       C
ATOM   7981  OD1 ASN B 730      10.759  60.776 108.207  1.00112.66           O
ANISOU 7981  OD1 ASN B 730    14476  13183  15146   1495   1664    255       O
ATOM   7982  ND2 ASN B 730      12.805  61.101 109.084  1.00102.39           N
ANISOU 7982  ND2 ASN B 730    13421  11940  13543   1397   1681    269       N
ATOM   7983  O   GLN B 731      10.199  62.939 114.288  1.00141.37           O
ANISOU 7983  O   GLN B 731    18502  16626  18588   1864   2270     82       O
ATOM   7984  N   GLN B 731       9.972  60.473 113.066  1.00137.97           N
ANISOU 7984  N   GLN B 731    17784  16342  18296   1741   2283    161       N
ATOM   7985  CA  GLN B 731       8.776  61.183 113.506  1.00139.68           C
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ANISOU 7985  CA  GLN B 731    17953  16478  18640   1868   2354    116       C
ATOM   7986  C   GLN B 731       9.065  62.607 113.953  1.00141.80           C
ANISOU 7986  C   GLN B 731    18392  16668  18820   1921   2309     76       C
ATOM   7987  CB  GLN B 731       8.084  60.404 114.619  1.00139.31           C
ANISOU 7987  CB  GLN B 731    17824  16459  18648   1929   2573    105       C
ATOM   7988  CG  GLN B 731       6.956  59.554 114.086  1.00141.04           C
ANISOU 7988  CG  GLN B 731    17821  16692  19077   1947   2611    119       C
ATOM   7989  CD  GLN B 731       6.716  58.321 114.909  1.00144.35           C
ANISOU 7989  CD  GLN B 731    18158  17172  19515   1937   2796    143       C
ATOM   7990  OE1 GLN B 731       6.941  58.316 116.121  1.00143.58           O
ANISOU 7990  OE1 GLN B 731    18152  17089  19312   1966   2941    133       O
ATOM   7991  NE2 GLN B 731       6.263  57.255 114.256  1.00148.74           N
ANISOU 7991  NE2 GLN B 731    18548  17764  20204   1893   2786    177       N
ATOM   7992  O   MET B 732       7.594  64.617 116.505  1.00158.76           O
ANISOU 7992  O   MET B 732    20679  18647  20996   2230   2580    -88       O
ATOM   7993  N   MET B 732       8.024  63.438 113.958  1.00147.83           N
ANISOU 7993  N   MET B 732    19110  17344  19714   2033   2309     32       N
ATOM   7994  CA  MET B 732       8.171  64.876 114.181  1.00146.82           C
ANISOU 7994  CA  MET B 732    19132  17119  19535   2091   2233    -11       C
ATOM   7995  C   MET B 732       8.218  65.264 115.659  1.00154.38           C
ANISOU 7995  C   MET B 732    20204  18054  20398   2171   2391    -68       C
ATOM   7996  CB  MET B 732       7.037  65.636 113.490  1.00146.93           C
ANISOU 7996  CB  MET B 732    19048  17039  19739   2183   2147    -37       C
ATOM   7997  CG  MET B 732       7.483  66.945 112.855  1.00149.87           C
ANISOU 7997  CG  MET B 732    19558  17319  20066   2170   1947    -37       C
ATOM   7998  SD  MET B 732       6.282  67.677 111.725  1.00214.29           S
ANISOU 7998  SD  MET B 732    27596  25375  28450   2249   1794    -44       S
ATOM   7999  CE  MET B 732       6.998  69.297 111.478  1.00132.38           C
ANISOU 7999  CE  MET B 732    17444  14882  17974   2239   1602    -49       C
ATOM   8000  O   PHE B 733       8.733  68.779 118.638  1.00141.21           O
ANISOU 8000  O   PHE B 733    19080  16134  18440   2427   2472   -294       O
ATOM   8001  N   PHE B 733       8.958  66.332 115.958  1.00154.25           N
ANISOU 8001  N   PHE B 733    20380  17977  20251   2170   2310    -94       N
ATOM   8002  CA  PHE B 733       9.151  66.787 117.334  1.00151.54           C
ANISOU 8002  CA  PHE B 733    20178  17610  19792   2238   2435   -154       C
ATOM   8003  C   PHE B 733       8.592  68.196 117.556  1.00147.36           C
ANISOU 8003  C   PHE B 733    19723  16951  19315   2359   2391   -230       C
ATOM   8004  CB  PHE B 733      10.640  66.748 117.703  1.00151.68           C
ANISOU 8004  CB  PHE B 733    20376  17670  19587   2128   2388   -127       C
ATOM   8005  CG  PHE B 733      11.228  65.356 117.756  1.00154.45           C
ANISOU 8005  CG  PHE B 733    20669  18143  19871   2028   2456    -66       C
ATOM   8006  CD2 PHE B 733      12.597  65.171 117.841  1.00147.94           C
ANISOU 8006  CD2 PHE B 733    19970  17368  18871   1915   2389    -30       C
ATOM   8007  CD1 PHE B 733      10.415  64.234 117.732  1.00160.46           C
ANISOU 8007  CD1 PHE B 733    21248  18966  20753   2047   2581    -45       C
ATOM   8008  CE2 PHE B 733      13.146  63.901 117.893  1.00144.27           C
ANISOU 8008  CE2 PHE B 733    19453  17009  18353   1831   2443     21       C
ATOM   8009  CE1 PHE B 733      10.957  62.962 117.781  1.00157.30           C
ANISOU 8009  CE1 PHE B 733    20801  18666  20298   1957   2634     10       C
ATOM   8010  CZ  PHE B 733      12.328  62.797 117.864  1.00149.54           C
ANISOU 8010  CZ  PHE B 733    19949  17730  19141   1853   2564     41       C
ATOM   8011  N   PRO B 742      15.711  64.900 127.898  1.00121.16           N
ANISOU 8011  N   PRO B 742    17673  14102  14260   2096   3192   -249       N
ATOM   8012  CA  PRO B 742      15.745  63.457 128.190  1.00124.13           C
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ANISOU 8012  CA  PRO B 742    17963  14580  14621   2045   3308   -171       C
ATOM   8013  CB  PRO B 742      14.327  62.991 127.836  1.00121.01           C
ANISOU 8013  CB  PRO B 742    17359  14199  14421   2115   3448   -165       C
ATOM   8014  CG  PRO B 742      13.823  64.013 126.851  1.00119.90           C
ANISOU 8014  CG  PRO B 742    17158  13974  14426   2159   3334   -212       C
ATOM   8015  CD  PRO B 742      14.476  65.314 127.205  1.00117.80           C
ANISOU 8015  CD  PRO B 742    17098  13626  14034   2181   3221   -282       C
ATOM   8016  C   PRO B 742      16.812  62.742 127.351  1.00122.24           C
ANISOU 8016  C   PRO B 742    17679  14392  14376   1906   3160    -88       C
ATOM   8017  O   PRO B 742      16.499  62.120 126.336  1.00116.50           O
ANISOU 8017  O   PRO B 742    16776  13694  13796   1866   3132    -38       O
ATOM   8018  N   GLU B 743      18.058  62.825 127.815  1.00126.26           N
ANISOU 8018  N   GLU B 743    18346  14913  14713   1837   3070    -78       N
ATOM   8019  CA  GLU B 743      19.253  62.514 127.028  1.00129.65           C
ANISOU 8019  CA  GLU B 743    18767  15377  15118   1711   2899    -21       C
ATOM   8020  CB  GLU B 743      20.017  63.814 126.730  1.00131.73           C
ANISOU 8020  CB  GLU B 743    19164  15568  15319   1681   2720    -64       C
ATOM   8021  CG  GLU B 743      20.246  64.646 128.001  1.00140.90           C
ANISOU 8021  CG  GLU B 743    20541  16676  16318   1741   2748   -135       C
ATOM   8022  CD  GLU B 743      21.029  65.929 127.786  1.00139.64           C
ANISOU 8022  CD  GLU B 743    20524  16435  16096   1707   2566   -177       C
ATOM   8023  OE1 GLU B 743      22.144  65.858 127.232  1.00130.24           O
ANISOU 8023  OE1 GLU B 743    19346  15270  14868   1591   2416   -130       O
ATOM   8024  OE2 GLU B 743      20.540  67.004 128.211  1.00139.23           O
ANISOU 8024  OE2 GLU B 743    20574  16293  16032   1796   2577   -259       O
ATOM   8025  C   GLU B 743      20.180  61.533 127.766  1.00123.28           C
ANISOU 8025  C   GLU B 743    18026  14642  14172   1644   2920     31       C
ATOM   8026  O   GLU B 743      20.269  61.580 128.993  1.00135.06           O
ANISOU 8026  O   GLU B 743    19657  16134  15526   1685   3007      8       O
ATOM   8027  N   ILE B 744      20.873  60.654 127.041  1.00102.17           N
ANISOU 8027  N   ILE B 744    15258  12030  11532   1546   2839     99       N
ATOM   8028  CA  ILE B 744      21.948  59.871 127.664  1.00 99.99           C
ANISOU 8028  CA  ILE B 744    15058  11811  11122   1478   2816    144       C
ATOM   8029  CB  ILE B 744      22.589  58.835 126.695  1.00104.54           C
ANISOU 8029  CB  ILE B 744    15494  12454  11770   1379   2731    213       C
ATOM   8030  CG1 ILE B 744      21.572  57.798 126.214  1.00 90.06           C
ANISOU 8030  CG1 ILE B 744    13469  10652  10096   1401   2844    251       C
ATOM   8031  CD1 ILE B 744      22.204  56.689 125.417  1.00 75.98           C
ANISOU 8031  CD1 ILE B 744    11565   8934   8372   1314   2771    310       C
ATOM   8032  CG2 ILE B 744      23.767  58.125 127.367  1.00101.39           C
ANISOU 8032  CG2 ILE B 744    15183  12106  11236   1316   2691    253       C
ATOM   8033  C   ILE B 744      23.033  60.833 128.155  1.00 98.44           C
ANISOU 8033  C   ILE B 744    15057  11578  10766   1447   2690    107       C
ATOM   8034  O   ILE B 744      23.674  61.510 127.360  1.00 97.45           O
ANISOU 8034  O   ILE B 744    14940  11431  10656   1388   2533     98       O
ATOM   8035  N   GLU B 745      23.249  60.908 129.459  1.00110.98           N
ANISOU 8035  N   GLU B 745    16807  13160  12198   1482   2753     85       N
ATOM   8036  CA  GLU B 745      24.046  62.019 129.970  1.00113.19           C
ANISOU 8036  CA  GLU B 745    17281  13386  12339   1472   2640     31       C
ATOM   8037  CB  GLU B 745      23.538  62.442 131.358  1.00107.15           C
ANISOU 8037  CB  GLU B 745    16680  12587  11446   1570   2767    -29       C
ATOM   8038  C   GLU B 745      25.559  61.749 130.022  1.00113.68           C
ANISOU 8038  C   GLU B 745    17412  13486  12295   1364   2488     69       C
ATOM   8039  O   GLU B 745      26.330  62.697 129.959  1.00108.02           O
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ANISOU 8039  O   GLU B 745    16803  12725  11513   1324   2346     36       O
ATOM   8040  N   THR B 746      25.997  60.492 130.132  1.00110.46           N
ANISOU 8040  N   THR B 746    16941  13154  11876   1315   2511    138       N
ATOM   8041  CA  THR B 746      27.444  60.200 130.241  1.00108.38           C
ANISOU 8041  CA  THR B 746    16736  12928  11516   1220   2369    171       C
ATOM   8042  CB  THR B 746      27.941  60.107 131.721  1.00 90.16           C
ANISOU 8042  CB  THR B 746    14622  10619   9017   1239   2392    164       C
ATOM   8043  OG1 THR B 746      27.191  59.111 132.429  1.00 79.62           O
ANISOU 8043  OG1 THR B 746    13263   9317   7671   1294   2566    200       O
ATOM   8044  CG2 THR B 746      27.847  61.458 132.448  1.00 85.48           C
ANISOU 8044  CG2 THR B 746    14220   9946   8312   1292   2373     79       C
ATOM   8045  C   THR B 746      27.883  58.889 129.584  1.00103.29           C
ANISOU 8045  C   THR B 746    15932  12362  10950   1152   2348    246       C
ATOM   8046  O   THR B 746      27.059  58.041 129.229  1.00108.56           O
ANISOU 8046  O   THR B 746    16458  13058  11731   1179   2457    279       O
ATOM   8047  N   GLU B 747      29.197  58.720 129.474  1.00 91.12           N
ANISOU 8047  N   GLU B 747    14417  10856   9351   1066   2205    269       N
ATOM   8048  CA  GLU B 747      29.789  57.495 128.938  1.00 89.79           C
ANISOU 8048  CA  GLU B 747    14113  10761   9242   1004   2169    330       C
ATOM   8049  CB  GLU B 747      31.317  57.611 128.949  1.00 97.59           C
ANISOU 8049  CB  GLU B 747    15156  11777  10147    916   1999    338       C
ATOM   8050  CG  GLU B 747      32.077  56.295 128.826  1.00 92.80           C
ANISOU 8050  CG  GLU B 747    14456  11242   9563    868   1963    394       C
ATOM   8051  CD  GLU B 747      32.076  55.746 127.413  1.00100.49           C
ANISOU 8051  CD  GLU B 747    15224  12267  10690    825   1935    412       C
ATOM   8052  OE1 GLU B 747      32.476  54.572 127.241  1.00103.21           O
ANISOU 8052  OE1 GLU B 747    15473  12665  11078    802   1929    452       O
ATOM   8053  OE2 GLU B 747      31.670  56.481 126.478  1.00105.26           O
ANISOU 8053  OE2 GLU B 747    15767  12856  11369    815   1916    386       O
ATOM   8054  C   GLU B 747      29.366  56.229 129.683  1.00 98.30           C
ANISOU 8054  C   GLU B 747    15171  11868  10311   1043   2298    379       C
ATOM   8055  O   GLU B 747      29.011  55.232 129.060  1.00100.11           O
ANISOU 8055  O   GLU B 747    15243  12135  10661   1035   2345    420       O
ATOM   8056  N   GLN B 748      29.403  56.254 131.011  1.00107.17           N
ANISOU 8056  N   GLN B 748    16458  12971  11289   1081   2351    378       N
ATOM   8057  CA  GLN B 748      29.087  55.042 131.746  1.00111.03           C
ANISOU 8057  CA  GLN B 748    16940  13488  11757   1106   2465    437       C
ATOM   8058  CB  GLN B 748      29.702  55.046 133.155  1.00116.61           C
ANISOU 8058  CB  GLN B 748    17851  14187  12268   1113   2452    444       C
ATOM   8059  CG  GLN B 748      28.737  55.263 134.309  1.00134.94           C
ANISOU 8059  CG  GLN B 748    20301  16481  14488   1197   2619    429       C
ATOM   8060  CD  GLN B 748      29.383  54.997 135.666  1.00145.49           C
ANISOU 8060  CD  GLN B 748    21828  17822  15628   1196   2604    454       C
ATOM   8061  OE1 GLN B 748      30.420  55.574 135.995  1.00153.24           O
ANISOU 8061  OE1 GLN B 748    22936  18790  16497   1161   2459    425       O
ATOM   8062  NE2 GLN B 748      28.764  54.129 136.463  1.00148.51           N
ANISOU 8062  NE2 GLN B 748    22236  18222  15968   1231   2752    509       N
ATOM   8063  C   GLN B 748      27.576  54.857 131.801  1.00107.50           C
ANISOU 8063  C   GLN B 748    16425  13026  11394   1182   2654    438       C
ATOM   8064  O   GLN B 748      27.097  53.748 132.044  1.00124.93           O
ANISOU 8064  O   GLN B 748    18564  13258  13644   1193   2760    496       O
ATOM   8065  N   GLU B 749      26.817  55.920 131.548  1.00 95.31           N
ANISOU 8065  N   GLU B 749    14890  11439   9885   1232   2694    375       N
ATOM   8066  CA  GLU B 749      25.374  55.738 131.394  1.00 94.52           C
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ANISOU 8066  CA  GLU B 749    14684  11328   9899   1301   2863    374       C
ATOM   8067  CB  GLU B 749      24.610  57.061 131.341  1.00 82.71           C
ANISOU 8067  CB  GLU B 749    13235   9775   8417   1370   2899    293       C
ATOM   8068  CG  GLU B 749      24.430  57.769 132.668  1.00 87.42           C
ANISOU 8068  CG  GLU B 749    14034  10338   8846   1438   2976    243       C
ATOM   8069  CD  GLU B 749      23.641  59.056 132.530  1.00102.95           C
ANISOU 8069  CD  GLU B 749    16031  12240  10847   1515   3006    156       C
ATOM   8070  OE1 GLU B 749      23.033  59.275 131.463  1.00107.57           O
ANISOU 8070  OE1 GLU B 749    16466  12808  11597   1523   2996    146       O
ATOM   8071  OE2 GLU B 749      23.633  59.855 133.487  1.00119.05           O
ANISOU 8071  OE2 GLU B 749    18247  14240  12746   1569   3034     95       O
ATOM   8072  C   GLU B 749      25.139  54.965 130.114  1.00 96.61           C
ANISOU 8072  C   GLU B 749    14730  11624  10353   1261   2841    412       C
ATOM   8073  O   GLU B 749      24.346  54.026 130.101  1.00 96.44           O
ANISOU 8073  O   GLU B 749    14598  11620  10423   1281   2961    456       O
ATOM   8074  N   TYR B 750      25.837  55.378 129.049  1.00 90.27           N
ANISOU 8074  N   TYR B 750    13870  10827   9603   1202   2686    394       N
ATOM   8075  CA  TYR B 750      25.772  54.732 127.733  1.00 85.12           C
ANISOU 8075  CA  TYR B 750    13022  10209   9113   1158   2639    420       C
ATOM   8076  CB  TYR B 750      26.766  55.400 126.770  1.00 88.46           C
ANISOU 8076  CB  TYR B 750    13432  10642   9537   1086   2460    395       C
ATOM   8077  CG  TYR B 750      26.822  54.837 125.352  1.00 92.48           C
ANISOU 8077  CG  TYR B 750    13753  11193  10191   1036   2397    413       C
ATOM   8078  CD1 TYR B 750      25.895  55.222 124.383  1.00 83.61           C
ANISOU 8078  CD1 TYR B 750    12519  10051   9199   1058   2416    393       C
ATOM   8079  CE1 TYR B 750      25.962  54.723 123.102  1.00 79.67           C
ANISOU 8079  CE1 TYR B 750    11861   9592   8817   1011   2354    405       C
ATOM   8080  CZ  TYR B 750      26.963  53.832 122.760  1.00 78.33           C
ANISOU 8080  CZ  TYR B 750    11636   9485   8639    945   2279    432       C
ATOM   8081  OH  TYR B 750      27.032  53.323 121.483  1.00 78.45           O
ANISOU 8081  OH  TYR B 750    11499   9546   8764    903   2222    436       O
ATOM   8082  CE2 TYR B 750      27.896  53.442 123.692  1.00 81.28           C
ANISOU 8082  CE2 TYR B 750    12110   9878   8897    925   2258    452       C
ATOM   8083  CD2 TYR B 750      27.831  53.953 124.974  1.00 94.66           C
ANISOU 8083  CD2 TYR B 750    13968  11530  10470    967   2312    445       C
ATOM   8084  C   TYR B 750      26.047  53.228 127.844  1.00 83.79           C
ANISOU 8084  C   TYR B 750    12775  10087   8976   1125   2664    487       C
ATOM   8085  O   TYR B 750      25.306  52.422 127.294  1.00 76.58           O
ANISOU 8085  O   TYR B 750    11710   9186   8200   1133   2733    515       O
ATOM   8086  N   LYS B 751      27.097  52.862 128.577  1.00 84.05           N
ANISOU 8086  N   LYS B 751    12913  10140   8884   1091   2603    513       N
ATOM   8087  CA  LYS B 751      27.418  51.458 128.841  1.00 81.93           C
ANISOU 8087  CA  LYS B 751    12595   9903   8631   1066   2619    578       C
ATOM   8088  CB  LYS B 751      28.694  51.335 129.672  1.00 70.78           C
ANISOU 8088  CB  LYS B 751    11323   8505   7065   1030   2521    596       C
ATOM   8089  CG  LYS B 751      29.965  51.820 128.962  1.00 79.76           C
ANISOU 8089  CG  LYS B 751    12452   9669   8186    963   2337    565       C
ATOM   8090  CD  LYS B 751      31.186  51.403 129.759  1.00 82.59           C
ANISOU 8090  CD  LYS B 751    12913  10044   8422    929   2243    593       C
ATOM   8091  CE  LYS B 751      32.458  52.028 129.241  1.00 92.38           C
ANISOU 8091  CE  LYS B 751    14163  11310   9628    863   2068    560       C
ATOM   8092  NZ  LYS B 751      33.633  51.382 129.902  1.00 99.97           N
ANISOU 8092  NZ  LYS B 751    15185  12294  10506    830   1971    594       N
ATOM   8093  C   LYS B 751      26.274  50.747 129.551  1.00 89.20           C
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ANISOU 8093  C   LYS B 751    13501  10810   9581   1119   2799    622       C
ATOM   8094  O   LYS B 751      25.866  49.657 129.148  1.00 88.17           O
ANISOU 8094  O   LYS B 751    13235  10692   9573   1108   2845    667       O
ATOM   8095  N   GLU B 752      25.751  51.369 130.603  1.00 93.72           N
ANISOU 8095  N   GLU B 752    14213  11355  10043   1175   2904    605       N
ATOM   8096  CA  GLU B 752      24.610  50.815 131.316  1.00 91.63           C
ANISOU 8096  CA  GLU B 752    13936  11082   9796   1225   3093    644       C
ATOM   8097  CB  GLU B 752      24.303  51.641 132.569  1.00 95.32           C
ANISOU 8097  CB  GLU B 752    14593  11529  10097   1285   3189    613       C
ATOM   8098  C   GLU B 752      23.380  50.751 130.414  1.00101.33           C
ANISOU 8098  C   GLU B 752    14982  12302  11217   1254   3180    633       C
ATOM   8099  O   GLU B 752      22.432  50.048 130.719  1.00111.72           O
ANISOU 8099  O   GLU B 752    16229  13618  12600   1279   3326    677       O
ATOM   8100  N   ILE B 753      23.378  51.491 129.310  1.00101.02           N
ANISOU 8100  N   ILE B 753    14863  12254  11266   1248   3090    578       N
ATOM   8101  CA  ILE B 753      22.266  51.395 128.377  1.00104.51           C
ANISOU 8101  CA  ILE B 753    15125  12686  11895   1271   3150    569       C
ATOM   8102  CB  ILE B 753      22.200  52.589 127.405  1.00116.15           C
ANISOU 8102  CB  ILE B 753    16569  14138  13423   1280   3056    499       C
ATOM   8103  CG1 ILE B 753      22.061  53.919 128.149  1.00110.33           C
ANISOU 8103  CG1 ILE B 753    15993  13361  12567   1338   3083    439       C
ATOM   8104  CD1 ILE B 753      20.978  53.945 129.133  1.00 96.46           C
ANISOU 8104  CD1 ILE B 753    14273  11588  10791   1417   3272    436       C
ATOM   8105  CG2 ILE B 753      21.059  52.407 126.416  1.00119.17           C
ANISOU 8105  CG2 ILE B 753    16763  14512  14005   1302   3105    495       C
ATOM   8106  C   ILE B 753      22.354  50.117 127.550  1.00106.37           C
ANISOU 8106  C   ILE B 753    15196  12950  12270   1218   3112    620       C
ATOM   8107  O   ILE B 753      21.436  49.289 127.557  1.00108.68           O
ANISOU 8107  O   ILE B 753    15379  13239  12675   1233   3225    661       O
ATOM   8108  N   PHE B 754      23.479  49.960 126.854  1.00 97.98           N
ANISOU 8108  N   PHE B 754    14116  11913  11198   1156   2952    615       N
ATOM   8109  CA  PHE B 754      23.617  48.953 125.799  1.00 94.72           C
ANISOU 8109  CA  PHE B 754    13537  11526  10926   1110   2889    637       C
ATOM   8110  CB  PHE B 754      24.263  49.593 124.564  1.00 83.02           C
ANISOU 8110  CB  PHE B 754    12004  10065   9474   1070   2736    587       C
ATOM   8111  CG  PHE B 754      23.461  50.707 123.989  1.00 86.46           C
ANISOU 8111  CG  PHE B 754    12413  10474   9966   1105   2748    538       C
ATOM   8112  CD1 PHE B 754      22.244  50.447 123.380  1.00 79.26           C
ANISOU 8112  CD1 PHE B 754    11357   9545   9214   1136   2822    538       C
ATOM   8113  CE1 PHE B 754      21.482  51.478 122.858  1.00 88.47           C
ANISOU 8113  CE1 PHE B 754    12496  10681  10439   1174   2826    494       C
ATOM   8114  CZ  PHE B 754      21.935  52.787 122.954  1.00 95.78           C
ANISOU 8114  CZ  PHE B 754    13545  11586  11261   1181   2757    451       C
ATOM   8115  CE2 PHE B 754      23.150  53.057 123.565  1.00 97.11           C
ANISOU 8115  CE2 PHE B 754    13859  11769  11268   1145   2685    450       C
ATOM   8116  CD2 PHE B 754      23.904  52.020 124.081  1.00 94.85           C
ANISOU 8116  CD2 PHE B 754    13594  11520  10926   1108   2681    493       C
ATOM   8117  C   PHE B 754      24.405  47.686 126.157  1.00103.24           C
ANISOU 8117  C   PHE B 754    14619  12626  11981   1069   2854    694       C
ATOM   8118  O   PHE B 754      24.106  46.624 125.626  1.00103.63           O
ANISOU 8118  O   PHE B 754    14534  12680  12161   1051   2864    725       O
ATOM   8119  N   ILE B 755      25.410  47.784 127.024  1.00106.69           N
ANISOU 8119  N   ILE B 755    15205  13071  12260   1053   2803    707       N
ATOM   8120  CA  ILE B 755      26.238  46.615 127.299  1.00100.88           C
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ANISOU 8120  CA  ILE B 755    14469  12351  11509   1016   2747    758       C
ATOM   8121  CB  ILE B 755      27.710  47.015 127.658  1.00 84.85           C
ANISOU 8121  CB  ILE B 755    12565  10344   9331    982   2607    743       C
ATOM   8122  CG1 ILE B 755      28.351  47.870 126.563  1.00 86.52           C
ANISOU 8122  CG1 ILE B 755    12729  10585   9561    948   2477    677       C
ATOM   8123  CD1 ILE B 755      29.845  48.191 126.810  1.00 84.39           C
ANISOU 8123  CD1 ILE B 755    12554  10343   9167    905   2332    664       C
ATOM   8124  CG2 ILE B 755      28.579  45.785 127.852  1.00 80.81           C
ANISOU 8124  CG2 ILE B 755    12035   9846   8822    950   2536    791       C
ATOM   8125  C   ILE B 755      25.623  45.729 128.414  1.00118.39           C
ANISOU 8125  C   ILE B 755    16733  14544  13707   1039   2882    834       C
ATOM   8126  O   ILE B 755      25.773  44.513 128.396  1.00110.80           O
ANISOU 8126  O   ILE B 755    15709  13580  12811   1015   2873    888       O
ATOM   8127  N   THR B 756      24.900  46.309 129.363  1.00142.80           N
ANISOU 8127  N   THR B 756    19929  17616  16712   1084   3012    840       N
ATOM   8128  CA  THR B 756      24.319  45.498 130.443  1.00165.45           C
ANISOU 8128  CA  THR B 756    22847  20468  19547   1099   3151    918       C
ATOM   8129  C   THR B 756      23.268  44.498 129.930  1.00172.61           C
ANISOU 8129  C   THR B 756    23579  21362  20645   1095   3245    963       C
ATOM   8130  O   THR B 756      22.799  43.621 130.665  1.00186.05           O
ANISOU 8130  O   THR B 756    25292  23050  22351   1091   3351   1041       O
ATOM   8131  CB  THR B 756      23.640  46.340 131.523  1.00167.44           C
ANISOU 8131  CB  THR B 756    23237  20711  19670   1153   3292    907       C
ATOM   8132  OG1 THR B 756      23.047  45.471 132.501  1.00175.59           O
ANISOU 8132  OG1 THR B 756    24304  21736  20675   1158   3435    991       O
ATOM   8133  CG2 THR B 756      22.546  47.186 130.947  1.00163.85           C
ANISOU 8133  CG2 THR B 756    22694  20247  19315   1199   3375    847       C
ATOM   8134  N   PRO B 757      22.851  44.633 128.666  1.00129.47           N
ANISOU 8134  N   PRO B 757    17952  15900  15341   1092   3207    916       N
ATOM   8135  CA  PRO B 757      22.190  43.410 128.236  1.00113.24           C
ANISOU 8135  CA  PRO B 757    15742  13828  13457   1072   3254    969       C
ATOM   8136  C   PRO B 757      23.135  42.243 128.007  1.00101.85           C
ANISOU 8136  C   PRO B 757    14270  12385  12044   1023   3137   1007       C
ATOM   8137  O   PRO B 757      22.647  41.198 127.586  1.00117.86           O
ANISOU 8137  O   PRO B 757    16170  14391  14222   1004   3158   1046       O
ATOM   8138  CB  PRO B 757      21.519  43.831 126.938  1.00117.17           C
ANISOU 8138  CB  PRO B 757    16079  14328  14114   1082   3232    907       C
ATOM   8139  CG  PRO B 757      21.117  45.232 127.212  1.00112.33           C
ANISOU 8139  CG  PRO B 757    15545  13715  13419   1131   3287    852       C
ATOM   8140  CD  PRO B 757      22.284  45.798 127.975  1.00114.80           C
ANISOU 8140  CD  PRO B 757    16047  14043  13529   1125   3214    840       C
ATOM   8141  N   HIS B 758      24.428  42.381 128.304  1.00 85.76           N
ANISOU 8141  N   HIS B 758    12345  10366   9876   1006   3016    998       N
ATOM   8142  CA  HIS B 758      25.337  41.248 128.188  1.00 86.12           C
ANISOU 8142  CA  HIS B 758    12366  10407   9949    969   2907   1034       C
ATOM   8143  C   HIS B 758      24.768  40.051 128.951  1.00104.90           C
ANISOU 8143  C   HIS B 758    14745  12744  12370    961   3005   1134       C
ATOM   8144  O   HIS B 758      24.955  38.923 128.531  1.00105.02           O
ANISOU 8144  O   HIS B 758    14667  12736  12500    936   2949   1164       O
ATOM   8145  CB  HIS B 758      26.729  41.606 128.694  1.00 75.57           C
ANISOU 8145  CB  HIS B 758    11171   9094   8450    957   2784   1021       C
ATOM   8146  N   GLN B 759      24.035  40.286 130.039  1.00137.47           N
ANISOU 8146  N   GLN B 759    18969  16856  16407    982   3156   1184       N
ATOM   8147  CA  GLN B 759      23.436  39.165 130.767  1.00141.17           C
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ANISOU 8147  CA  GLN B 759    19437  17288  16914    966   3261   1290       C
ATOM   8148  C   GLN B 759      21.892  39.075 130.657  1.00141.91           C
ANISOU 8148  C   GLN B 759    19417  17367  17136    978   3435   1313       C
ATOM   8149  O   GLN B 759      21.320  38.043 131.008  1.00139.30           O
ANISOU 8149  O   GLN B 759    19044  17002  16883    952   3515   1401       O
ATOM   8150  CB  GLN B 759      23.851  39.205 132.250  1.00135.47           C
ANISOU 8150  CB  GLN B 759    18924  16565  15984    969   3304   1355       C
ATOM   8151  CG  GLN B 759      25.374  39.104 132.544  1.00128.06           C
ANISOU 8151  CG  GLN B 759    18103  15632  14921    953   3131   1352       C
ATOM   8152  CD  GLN B 759      26.037  37.787 132.109  1.00141.46           C
ANISOU 8152  CD  GLN B 759    19718  17297  16731    919   3006   1394       C
ATOM   8153  OE1 GLN B 759      25.413  36.920 131.491  1.00148.35           O
ANISOU 8153  OE1 GLN B 759    20445  18140  17783    903   3034   1419       O
ATOM   8154  NE2 GLN B 759      27.319  37.642 132.438  1.00143.31           N
ANISOU 8154  NE2 GLN B 759    20049  17535  16866    910   2861   1396       N
ATOM   8155  N   ILE B 760      21.211  40.118 130.171  1.00142.80           N
ANISOU 8155  N   ILE B 760    19476  17501  17281   1014   3491   1239       N
ATOM   8156  CA  ILE B 760      19.756  40.010 129.975  1.00148.38           C
ANISOU 8156  CA  ILE B 760    20050  18194  18133   1027   3644   1256       C
ATOM   8157  C   ILE B 760      19.480  39.361 128.646  1.00147.47           C
ANISOU 8157  C   ILE B 760    19735  18059  18237   1002   3565   1233       C
ATOM   8158  O   ILE B 760      18.445  38.725 128.444  1.00152.47           O
ANISOU 8158  O   ILE B 760    20238  18667  19027    989   3656   1274       O
ATOM   8159  CB  ILE B 760      19.009  41.354 129.983  1.00146.25           C
ANISOU 8159  CB  ILE B 760    19790  17948  17831   1084   3738   1185       C
ATOM   8160  CG1 ILE B 760      17.511  41.106 130.154  1.00139.47           C
ANISOU 8160  CG1 ILE B 760    18816  17077  17098   1098   3925   1224       C
ATOM   8161  CG2 ILE B 760      19.141  42.043 128.643  1.00145.51           C
ANISOU 8161  CG2 ILE B 760    19591  17862  17832   1095   3617   1088       C
ATOM   8162  CD1 ILE B 760      17.142  40.442 131.456  1.00135.88           C
ANISOU 8162  CD1 ILE B 760    18447  16618  16562   1083   4078   1329       C
ATOM   8163  N   LYS B 761      20.424  39.535 127.729  1.00138.75           N
ANISOU 8163  N   LYS B 761    18606  16970  17142    992   3393   1165       N
ATOM   8164  CA  LYS B 761      20.285  38.989 126.397  1.00130.75           C
ANISOU 8164  CA  LYS B 761    17417  15946  16317    971   3302   1129       C
ATOM   8165  C   LYS B 761      20.696  37.549 126.405  1.00134.25           C
ANISOU 8165  C   LYS B 761    17822  16352  16833    929   3243   1190       C
ATOM   8166  O   LYS B 761      21.006  37.010 125.337  1.00127.86           O
ANISOU 8166  O   LYS B 761    16899  15537  16144    911   3126   1150       O
ATOM   8167  CB  LYS B 761      21.134  39.747 125.379  1.00119.18           C
ANISOU 8167  CB  LYS B 761    15939  14520  14826    975   3149   1031       C
ATOM   8168  N   HIS B 762      20.722  36.947 127.601  1.00141.37           N
ANISOU 8168  N   HIS B 762    18828  17229  17658    916   3319   1285       N
ATOM   8169  CA  HIS B 762      20.978  35.517 127.743  1.00138.34           C
ANISOU 8169  CA  HIS B 762    18416  16794  17353    876   3275   1361       C
ATOM   8170  C   HIS B 762      20.278  34.844 126.610  1.00143.39           C
ANISOU 8170  C   HIS B 762    18858  17402  18220    858   3251   1339       C
ATOM   8171  O   HIS B 762      20.903  34.482 125.623  1.00148.66           O
ANISOU 8171  O   HIS B 762    19450  18069  18965    850   3107   1279       O
ATOM   8172  CB  HIS B 762      20.475  34.952 129.075  1.00131.62           C
ANISOU 8172  CB  HIS B 762    17656  15911  16443    858   3416   1483       C
ATOM   8173  N   ILE B 763      18.967  34.756 126.668  1.00141.03           N
ANISOU 8173  N   ILE B 763    21766  15683  16134   -486   2898    548       N
ATOM   8174  CA  ILE B 763      18.346  33.979 125.623  1.00141.42           C
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ANISOU 8174  CA  ILE B 763    21498  15821  16415   -397   2913    610       C
ATOM   8175  C   ILE B 763      17.225  34.666 124.882  1.00142.15           C
ANISOU 8175  C   ILE B 763    21409  15880  16723   -319   3022    621       C
ATOM   8176  O   ILE B 763      16.404  35.353 125.505  1.00140.96           O
ANISOU 8176  O   ILE B 763    21384  15570  16605   -242   3166    604       O
ATOM   8177  CB  ILE B 763      17.896  32.690 126.196  1.00152.05           C
ANISOU 8177  CB  ILE B 763    22854  17089  17829   -269   2976    660       C
ATOM   8178  CG1 ILE B 763      18.891  31.630 125.781  1.00155.12           C
ANISOU 8178  CG1 ILE B 763    23152  17644  18140   -331   2816    688       C
ATOM   8179  CG2 ILE B 763      16.439  32.364 125.766  1.00152.87           C
ANISOU 8179  CG2 ILE B 763    22744  17121  18220   -105   3127    709       C
ATOM   8180  CD1 ILE B 763      20.346  31.760 126.235  1.00151.44           C
ANISOU 8180  CD1 ILE B 763    22884  17275  17381   -484   2650    645       C
ATOM   8181  N   LYS B 764      17.183  34.471 123.554  1.00144.18           N
ANISOU 8181  N   LYS B 764    21375  16286  17121   -333   2952    650       N
ATOM   8182  CA  LYS B 764      17.824  33.331 122.872  1.00138.28           C
ANISOU 8182  CA  LYS B 764    20453  15698  16391   -368   2827    686       C
ATOM   8183  CB  LYS B 764      16.963  32.894 121.711  1.00133.18           C
ANISOU 8183  CB  LYS B 764    19496  15101  16007   -282   2851    739       C
ATOM   8184  C   LYS B 764      19.250  33.452 122.329  1.00128.32           C
ANISOU 8184  C   LYS B 764    19173  14634  14949   -538   2650    647       C
ATOM   8185  O   LYS B 764      19.570  34.249 121.447  1.00110.16           O
ANISOU 8185  O   LYS B 764    16767  12441  12648   -624   2591    611       O
ATOM   8186  N   ASP B 765      20.086  32.609 122.917  1.00132.66           N
ANISOU 8186  N   ASP B 765    19836  15228  15340   -575   2568    652       N
ATOM   8187  CA  ASP B 765      21.120  31.841 122.243  1.00125.34           C
ANISOU 8187  CA  ASP B 765    18782  14509  14332   -657   2415    656       C
ATOM   8188  CB  ASP B 765      22.394  31.806 123.077  1.00114.59           C
ANISOU 8188  CB  ASP B 765    17656  13212  12669   -774   2287    610       C
ATOM   8189  CG  ASP B 765      22.883  33.176 123.392  1.00109.35           C
ANISOU 8189  CG  ASP B 765    17160  12534  11853   -904   2256    531       C
ATOM   8190  OD1 ASP B 765      22.053  34.079 123.241  1.00115.04           O
ANISOU 8190  OD1 ASP B 765    17865  13142  12703   -865   2373    523       O
ATOM   8191  OD2 ASP B 765      24.033  33.348 123.841  1.00104.14           O
ANISOU 8191  OD2 ASP B 765    16654  11965  10950  -1036   2116    478       O
ATOM   8192  C   ASP B 765      20.524  30.453 122.068  1.00130.42           C
ANISOU 8192  C   ASP B 765    19277  15130  15146   -522   2459    734       C
ATOM   8193  O   ASP B 765      20.647  29.851 120.997  1.00135.74           O
ANISOU 8193  O   ASP B 765    19709  15939  15928   -525   2402    761       O
ATOM   8194  N   PHE B 766      19.852  29.962 123.116  1.00118.62           N
ANISOU 8194  N   PHE B 766    17929  13456  13686   -403   2568    765       N
ATOM   8195  CA  PHE B 766      19.125  28.706 122.981  1.00117.37           C
ANISOU 8195  CA  PHE B 766    17626  13249  13720   -263   2633    835       C
ATOM   8196  CB  PHE B 766      18.442  28.250 124.272  1.00124.35           C
ANISOU 8196  CB  PHE B 766    18707  13928  14613   -135   2764    850       C
ATOM   8197  CG  PHE B 766      19.202  28.521 125.558  1.00132.98           C
ANISOU 8197  CG  PHE B 766    20142  14955  15430   -186   2731    807       C
ATOM   8198  CD1 PHE B 766      20.589  28.516 125.626  1.00136.63           C
ANISOU 8198  CD1 PHE B 766    20710  15567  15636   -319   2554    779       C
ATOM   8199  CE1 PHE B 766      21.249  28.764 126.850  1.00143.77           C
ANISOU 8199  CE1 PHE B 766    21937  16402  16286   -366   2507    738       C
ATOM   8200  CZ  PHE B 766      20.505  28.991 128.025  1.00147.24           C
ANISOU 8200  CZ  PHE B 766    22607  16606  16733   -273   2656    726       C
ATOM   8201  CE2 PHE B 766      19.118  28.965 127.969  1.00147.33           C
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ANISOU 8201  CE2 PHE B 766    22510  16473  16995   -133   2850    749       C
ATOM   8202  CD2 PHE B 766      18.479  28.715 126.742  1.00141.42           C
ANISOU 8202  CD2 PHE B 766    21428  15809  16494    -92   2878    791       C
ATOM   8203  C   PHE B 766      18.040  28.897 121.915  1.00113.28           C
ANISOU 8203  C   PHE B 766    16831  12723  13487   -198   2703    862       C
ATOM   8204  O   PHE B 766      17.308  29.866 122.003  1.00112.09           O
ANISOU 8204  O   PHE B 766    16708  12479  13403   -174   2792    840       O
ATOM   8205  N   LYS B 767      17.922  28.003 120.925  1.00113.18           N
ANISOU 8205  N   LYS B 767    16561  12804  13636   -167   2659    908       N
ATOM   8206  CA  LYS B 767      16.783  28.080 119.992  1.00109.76           C
ANISOU 8206  CA  LYS B 767    15877  12344  13483    -91   2718    936       C
ATOM   8207  CB  LYS B 767      16.957  29.307 119.095  1.00101.15           C
ANISOU 8207  CB  LYS B 767    14706  11345  12382   -187   2664    894       C
ATOM   8208  CG  LYS B 767      16.087  30.490 119.492  1.00 90.98           C
ANISOU 8208  CG  LYS B 767    13515   9924  11129   -144   2778    870       C
ATOM   8209  CD  LYS B 767      14.620  30.198 119.357  1.00 80.32           C
ANISOU 8209  CD  LYS B 767    12028   8455  10036      6   2900    916       C
ATOM   8210  CE  LYS B 767      14.238  30.132 117.897  1.00 85.19           C
ANISOU 8210  CE  LYS B 767    12356   9167  10846     10   2836    940       C
ATOM   8211  NZ  LYS B 767      12.807  29.782 117.811  1.00 90.24           N
ANISOU 8211  NZ  LYS B 767    12863   9693  11732    156   2950    987       N
ATOM   8212  C   LYS B 767      16.428  26.878 119.068  1.00 89.08           C
ANISOU 8212  C   LYS B 767    12984   9780  11081    -27   2688    994       C
ATOM   8213  O   LYS B 767      16.874  25.732 119.244  1.00 82.88           O
ANISOU 8213  O   LYS B 767    12192   9027  10270     -3   2653   1026       O
ATOM   8214  N   ASP B 768      15.596  27.221 118.081  1.00 84.19           N
ANISOU 8214  N   ASP B 768    12149   9165  10673      4   2701   1004       N
ATOM   8215  CA  ASP B 768      14.816  26.324 117.223  1.00 87.86           C
ANISOU 8215  CA  ASP B 768    12349   9632  11402     87   2698   1055       C
ATOM   8216  CB  ASP B 768      13.465  26.040 117.895  1.00 95.60           C
ANISOU 8216  CB  ASP B 768    13339  10437  12550    233   2852   1084       C
ATOM   8217  CG  ASP B 768      12.460  25.419 116.960  1.00109.39           C
ANISOU 8217  CG  ASP B 768    14807  12174  14583    315   2856   1128       C
ATOM   8218  OD1 ASP B 768      12.839  24.464 116.250  1.00122.97           O
ANISOU 8218  OD1 ASP B 768    16366  13980  16377    298   2758   1153       O
ATOM   8219  OD2 ASP B 768      11.309  25.915 116.911  1.00105.81           O
ANISOU 8219  OD2 ASP B 768    14294  11631  14276    394   2954   1138       O
ATOM   8220  C   ASP B 768      14.621  26.963 115.814  1.00 95.43           C
ANISOU 8220  C   ASP B 768    13092  10686  12480     42   2623   1044       C
ATOM   8221  O   ASP B 768      13.514  27.350 115.424  1.00 91.52           O
ANISOU 8221  O   ASP B 768    12491  10118  12163    115   2681   1059       O
ATOM   8222  N   TYR B 769      15.710  27.090 115.057  1.00 86.10           N
ANISOU 8222  N   TYR B 769    11852   9671  11192    -74   2498   1015       N
ATOM   8223  CA  TYR B 769      15.719  27.911 113.842  1.00 75.25           C
ANISOU 8223  CA  TYR B 769    10333   8390   9870   -132   2428    986       C
ATOM   8224  CB  TYR B 769      17.141  28.330 113.512  1.00 62.73           C
ANISOU 8224  CB  TYR B 769     8791   6974   8069   -279   2326    928       C
ATOM   8225  CG  TYR B 769      17.827  29.237 114.511  1.00 65.13           C
ANISOU 8225  CG  TYR B 769     9365   7269   8114   -359   2351    877       C
ATOM   8226  CD1 TYR B 769      17.752  30.619 114.394  1.00 62.78           C
ANISOU 8226  CD1 TYR B 769     9143   6960   7750   -408   2365    828       C
ATOM   8227  CE1 TYR B 769      18.419  31.461 115.296  1.00 64.45           C
ANISOU 8227  CE1 TYR B 769     9600   7160   7729   -489   2375    775       C
ATOM   8228  CZ  TYR B 769      19.164  30.916 116.325  1.00 74.05           C
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ANISOU 8228  CZ  TYR B 769    10995   8377   8765   -523   2362    772       C
ATOM   8229  OH  TYR B 769      19.812  31.740 117.219  1.00 82.62           O
ANISOU 8229  OH  TYR B 769    12328   9444   9622   -607   2358    717       O
ATOM   8230  CE2 TYR B 769      19.258  29.544 116.462  1.00 68.14           C
ANISOU 8230  CE2 TYR B 769    10185   7643   8062   -469   2349    824       C
ATOM   8231  CD2 TYR B 769      18.588  28.713 115.553  1.00 67.41           C
ANISOU 8231  CD2 TYR B 769     9838   7560   8216   -386   2349    876       C
ATOM   8232  C   TYR B 769      15.124  27.205 112.632  1.00 74.22           C
ANISOU 8232  C   TYR B 769     9920   8291   9989    -79   2370   1022       C
ATOM   8233  O   TYR B 769      15.245  25.993 112.500  1.00 81.63           O
ANISOU 8233  O   TYR B 769    10749   9254  11012    -47   2333   1058       O
ATOM   8234  N   LYS B 770      14.497  27.960 111.736  1.00 75.15           N
ANISOU 8234  N   LYS B 770     9927   8408  10218    -68   2355   1013       N
ATOM   8235  CA  LYS B 770      13.990  27.385 110.482  1.00 79.35           C
ANISOU 8235  CA  LYS B 770    10200   8978  10974    -28   2274   1041       C
ATOM   8236  CB  LYS B 770      12.500  27.712 110.279  1.00 69.90           C
ANISOU 8236  CB  LYS B 770     8928   7649   9982     85   2349   1081       C
ATOM   8237  C   LYS B 770      14.823  27.895 109.301  1.00 75.58           C
ANISOU 8237  C   LYS B 770     9626   8659  10434   -131   2151    987       C
ATOM   8238  O   LYS B 770      15.462  28.945 109.381  1.00 76.77           O
ANISOU 8238  O   LYS B 770     9901   8864  10403   -216   2153    932       O
ATOM   8239  N   TYR B 771      14.837  27.140 108.210  1.00 65.29           N
ANISOU 8239  N   TYR B 771     8101   7427   9277   -123   2041    998       N
ATOM   8240  CA  TYR B 771      15.637  27.510 107.054  1.00 57.44           C
ANISOU 8240  CA  TYR B 771     7004   6584   8236   -210   1923    940       C
ATOM   8241  CB  TYR B 771      16.939  26.676 106.964  1.00 54.18           C
ANISOU 8241  CB  TYR B 771     6529   6323   7734   -282   1839    912       C
ATOM   8242  CG  TYR B 771      17.744  26.616 108.243  1.00 56.40           C
ANISOU 8242  CG  TYR B 771     7009   6617   7805   -330   1913    907       C
ATOM   8243  CD1 TYR B 771      17.478  25.656 109.209  1.00 54.50           C
ANISOU 8243  CD1 TYR B 771     6827   6290   7590   -260   1975    967       C
ATOM   8244  CE1 TYR B 771      18.215  25.596 110.398  1.00 59.08           C
ANISOU 8244  CE1 TYR B 771     7617   6881   7949   -290   2004    948       C
ATOM   8245  CZ  TYR B 771      19.243  26.478 110.616  1.00 68.04           C
ANISOU 8245  CZ  TYR B 771     8889   8122   8840   -398   1948    862       C
ATOM   8246  OH  TYR B 771      19.957  26.386 111.787  1.00 81.25           O
ANISOU 8246  OH  TYR B 771    10770   9809  10293   -425   1938    835       O
ATOM   8247  CE2 TYR B 771      19.548  27.436 109.665  1.00 66.27           C
ANISOU 8247  CE2 TYR B 771     8599   7985   8594   -478   1899    801       C
ATOM   8248  CD2 TYR B 771      18.792  27.500 108.482  1.00 61.17           C
ANISOU 8248  CD2 TYR B 771     7755   7317   8169   -442   1900    832       C
ATOM   8249  C   TYR B 771      14.796  27.303 105.818  1.00 52.30           C
ANISOU 8249  C   TYR B 771     6151   5915   7806   -149   1843    961       C
ATOM   8250  O   TYR B 771      14.109  26.307 105.703  1.00 72.23           O
ANISOU 8250  O   TYR B 771     8554   8378  10510    -72   1818   1014       O
ATOM   8251  N   SER B 772      14.867  28.250 104.891  1.00 61.47           N
ANISOU 8251  N   SER B 772     7286   7126   8944   -187   1799    918       N
ATOM   8252  CA  SER B 772      14.176  28.155 103.612  1.00 60.86           C
ANISOU 8252  CA  SER B 772     7036   7040   9049   -139   1707    933       C
ATOM   8253  CB  SER B 772      13.071  29.215 103.523  1.00 57.94           C
ANISOU 8253  CB  SER B 772     6719   6553   8742    -77   1797    965       C
ATOM   8254  OG  SER B 772      12.619  29.392 102.184  1.00 57.35           O
ANISOU 8254  OG  SER B 772     6505   6489   8796    -53   1706    969       O
ATOM   8255  C   SER B 772      15.185  28.336 102.478  1.00 67.88           C
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ANISOU 8255  C   SER B 772     7842   8082   9867   -221   1578    857       C
ATOM   8256  O   SER B 772      15.922  29.332 102.456  1.00 71.47           O
ANISOU 8256  O   SER B 772     8402   8605  10149   -301   1606    795       O
ATOM   8257  N   HIS B 773      15.208  27.393 101.536  1.00 64.36           N
ANISOU 8257  N   HIS B 773     7218   7686   9550   -200   1433    855       N
ATOM   8258  CA  HIS B 773      16.119  27.474 100.393  1.00 67.64           C
ANISOU 8258  CA  HIS B 773     7548   8239   9914   -261   1298    777       C
ATOM   8259  CB  HIS B 773      16.972  26.189 100.246  1.00 63.13           C
ANISOU 8259  CB  HIS B 773     6861   7777   9347   -275   1168    751       C
ATOM   8260  CG  HIS B 773      18.035  26.042 101.295  1.00 58.28           C
ANISOU 8260  CG  HIS B 773     6324   7246   8573   -336   1225    730       C
ATOM   8261  ND1 HIS B 773      19.299  26.591 101.154  1.00 72.88           N
ANISOU 8261  ND1 HIS B 773     8241   9237  10213   -418   1153    624       N
ATOM   8262  CE1 HIS B 773      20.011  26.314 102.226  1.00 71.97           C
ANISOU 8262  CE1 HIS B 773     8228   9173   9943   -443   1160    603       C
ATOM   8263  NE2 HIS B 773      19.268  25.608 103.064  1.00 60.11           N
ANISOU 8263  NE2 HIS B 773     6743   7562   8532   -376   1242    688       N
ATOM   8264  CD2 HIS B 773      18.031  25.422 102.488  1.00 63.39           C
ANISOU 8264  CD2 HIS B 773     7045   7856   9182   -312   1288    769       C
ATOM   8265  C   HIS B 773      15.343  27.729  99.112  1.00 68.78           C
ANISOU 8265  C   HIS B 773     7600   8339  10193   -213   1216    785       C
ATOM   8266  O   HIS B 773      14.484  26.943  98.744  1.00 75.46           O
ANISOU 8266  O   HIS B 773     8347   9113  11210   -142   1147    837       O
ATOM   8267  N   ARG B 774      15.644  28.833  98.432  1.00 64.80           N
ANISOU 8267  N   ARG B 774     7140   7874   9608   -256   1225    734       N
ATOM   8268  CA  ARG B 774      14.968  29.152  97.186  1.00 42.83           C
ANISOU 8268  CA  ARG B 774     4281   5050   6942   -212   1154    744       C
ATOM   8269  CB  ARG B 774      15.342  30.552  96.712  1.00 39.32           C
ANISOU 8269  CB  ARG B 774     3928   4636   6375   -261   1218    690       C
ATOM   8270  CG  ARG B 774      14.598  31.082  95.444  1.00 32.88           C
ANISOU 8270  CG  ARG B 774     3053   3764   5676   -211   1173    708       C
ATOM   8271  CD  ARG B 774      14.812  32.611  95.317  1.00 45.07           C
ANISOU 8271  CD  ARG B 774     4732   5309   7084   -248   1294    669       C
ATOM   8272  NE  ARG B 774      14.200  33.213  94.126  1.00 45.21           N
ANISOU 8272  NE  ARG B 774     4704   5276   7197   -202   1271    686       N
ATOM   8273  CZ  ARG B 774      14.804  33.346  92.951  1.00 70.26           C
ANISOU 8273  CZ  ARG B 774     7833   8512  10351   -232   1183    621       C
ATOM   8274  NH1 ARG B 774      14.169  33.911  91.943  1.00 76.38           N
ANISOU 8274  NH1 ARG B 774     8574   9227  11221   -184   1176    648       N
ATOM   8275  NH2 ARG B 774      16.049  32.925  92.786  1.00 84.42           N
ANISOU 8275  NH2 ARG B 774     9617  10425  12035   -307   1107    531       N
ATOM   8276  C   ARG B 774      15.294  28.094  96.136  1.00 60.59           C
ANISOU 8276  C   ARG B 774     6395   7364   9264   -203    958    711       C
ATOM   8277  O   ARG B 774      16.453  27.714  95.980  1.00 79.18           O
ANISOU 8277  O   ARG B 774     8732   9840  11514   -258    881    639       O
ATOM   8278  N   VAL B 775      14.262  27.612  95.436  1.00 64.84           N
ANISOU 8278  N   VAL B 775     6848   7815   9974   -133    873    765       N
ATOM   8279  CA  VAL B 775      14.362  26.488  94.502  1.00 57.11           C
ANISOU 8279  CA  VAL B 775     5778   6864   9057   -115    682    743       C
ATOM   8280  CB  VAL B 775      13.147  25.578  94.626  1.00 61.00           C
ANISOU 8280  CB  VAL B 775     6217   7237   9726    -51    647    829       C
ATOM   8281  CG1 VAL B 775      13.129  24.541  93.505  1.00 71.55           C
ANISOU 8281  CG1 VAL B 775     7497   8582  11105    -42    452    802       C
ATOM   8282  CG2 VAL B 775      13.117  24.918  95.982  1.00 63.54           C
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ANISOU 8282  CG2 VAL B 775     6559   7534  10050    -40    740    868       C
ATOM   8283  C   VAL B 775      14.467  26.966  93.072  1.00 59.44           C
ANISOU 8283  C   VAL B 775     6049   7179   9355   -120    578    698       C
ATOM   8284  O   VAL B 775      13.781  27.908  92.698  1.00 71.05           O
ANISOU 8284  O   VAL B 775     7527   8582  10885    -99    637    732       O
ATOM   8285  N   ASP B 776      15.307  26.330  92.257  1.00 57.09           N
ANISOU 8285  N   ASP B 776     5731   6967   8995   -140    430    626       N
ATOM   8286  CA  ASP B 776      15.446  26.782  90.864  1.00 65.63           C
ANISOU 8286  CA  ASP B 776     6805   8057  10076   -140    335    581       C
ATOM   8287  CB  ASP B 776      16.921  26.967  90.465  1.00 73.25           C
ANISOU 8287  CB  ASP B 776     7796   9151  10884   -197    298    476       C
ATOM   8288  CG  ASP B 776      17.079  27.389  89.003  1.00 82.48           C
ANISOU 8288  CG  ASP B 776     8964  10313  12061   -191    205    430       C
ATOM   8289  OD1 ASP B 776      16.190  28.113  88.517  1.00 84.64           O
ANISOU 8289  OD1 ASP B 776     9228  10500  12433   -160    232    473       O
ATOM   8290  OD2 ASP B 776      18.069  27.007  88.338  1.00 80.07           O
ANISOU 8290  OD2 ASP B 776     8671  10082  11671   -210    110    356       O
ATOM   8291  C   ASP B 776      14.784  25.820  89.906  1.00 62.56           C
ANISOU 8291  C   ASP B 776     6380   7602   9789    -96    174    603       C
ATOM   8292  O   ASP B 776      15.068  24.628  89.948  1.00 72.97           O
ANISOU 8292  O   ASP B 776     7697   8945  11085    -93     87    588       O
ATOM   8293  N   LYS B 777      13.924  26.354  89.034  1.00 63.21           N
ANISOU 8293  N   LYS B 777     6443   7601   9974    -67    139    637       N
ATOM   8294  CA  LYS B 777      13.112  25.562  88.099  1.00 67.34           C
ANISOU 8294  CA  LYS B 777     6943   8043  10600    -38     -8    667       C
ATOM   8295  CB  LYS B 777      11.641  25.517  88.562  1.00 67.16           C
ANISOU 8295  CB  LYS B 777     6873   7898  10746     -7     42    774       C
ATOM   8296  CG  LYS B 777      11.394  24.414  89.573  1.00 85.01           C
ANISOU 8296  CG  LYS B 777     9123  10137  13040     -7     69    812       C
ATOM   8297  CD  LYS B 777      10.025  24.418  90.264  1.00 87.00           C
ANISOU 8297  CD  LYS B 777     9329  10265  13460     22    154    922       C
ATOM   8298  CE  LYS B 777      10.137  23.586  91.539  1.00 84.72           C
ANISOU 8298  CE  LYS B 777     9045   9975  13168     24    231    945       C
ATOM   8299  NZ  LYS B 777       8.958  23.515  92.410  1.00 85.74           N
ANISOU 8299  NZ  LYS B 777     9141   9983  13454     56    339   1050       N
ATOM   8300  C   LYS B 777      13.203  26.112  86.675  1.00 62.86           C
ANISOU 8300  C   LYS B 777     6386   7465  10033    -31   -108    627       C
ATOM   8301  O   LYS B 777      12.484  25.691  85.764  1.00 66.69           O
ANISOU 8301  O   LYS B 777     6863   7876  10600    -14   -230    650       O
ATOM   8302  N   LYS B 778      14.102  27.055  86.470  1.00 61.93           N
ANISOU 8302  N   LYS B 778     6291   7417   9822    -51    -55    566       N
ATOM   8303  CA  LYS B 778      14.142  27.703  85.174  1.00 60.44           C
ANISOU 8303  CA  LYS B 778     6111   7202   9650    -36   -132    533       C
ATOM   8304  CB  LYS B 778      14.965  28.979  85.220  1.00 53.12           C
ANISOU 8304  CB  LYS B 778     5199   6337   8647    -65     -8    478       C
ATOM   8305  CG  LYS B 778      15.126  29.628  83.870  1.00 49.74           C
ANISOU 8305  CG  LYS B 778     4780   5880   8240    -44    -84    434       C
ATOM   8306  CD  LYS B 778      15.310  31.119  84.017  1.00 53.67           C
ANISOU 8306  CD  LYS B 778     5394   6382   8615    -55     92    399       C
ATOM   8307  CE  LYS B 778      16.273  31.613  82.961  1.00 60.31           C
ANISOU 8307  CE  LYS B 778     6374   7248   9292    -65     55    283       C
ATOM   8308  NZ  LYS B 778      16.259  30.772  81.748  1.00 54.25           N
ANISOU 8308  NZ  LYS B 778     5597   6438   8578    -26   -157    266       N
ATOM   8309  C   LYS B 778      14.677  26.793  84.098  1.00 59.65           C
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ANISOU 8309  C   LYS B 778     6053   7113   9499    -35   -306    475       C
ATOM   8310  O   LYS B 778      15.759  26.220  84.217  1.00 78.98           O
ANISOU 8310  O   LYS B 778     8533   9644  11831    -62   -324    413       O
ATOM   8311  N   PRO B 779      13.890  26.646  83.041  1.00 68.19           N
ANISOU 8311  N   PRO B 779     7140   8103  10665     -5   -430    499       N
ATOM   8312  CA  PRO B 779      14.296  25.987  81.810  1.00 68.58           C
ANISOU 8312  CA  PRO B 779     7251   8134  10671     -0   -591    446       C
ATOM   8313  CB  PRO B 779      12.978  25.836  81.033  1.00 79.21           C
ANISOU 8313  CB  PRO B 779     8591   9364  12142     22   -699    504       C
ATOM   8314  CG  PRO B 779      11.906  26.219  81.971  1.00 71.43           C
ANISOU 8314  CG  PRO B 779     7527   8345  11270     27   -592    591       C
ATOM   8315  CD  PRO B 779      12.501  27.127  82.965  1.00 71.20           C
ANISOU 8315  CD  PRO B 779     7474   8387  11192     24   -421    584       C
ATOM   8316  C   PRO B 779      15.247  26.866  81.040  1.00 58.14           C
ANISOU 8316  C   PRO B 779     5965   6845   9281      6   -603    369       C
ATOM   8317  O   PRO B 779      15.312  28.066  81.275  1.00 46.64           O
ANISOU 8317  O   PRO B 779     4474   5403   7843     10   -497    365       O
ATOM   8318  N   ASN B 780      15.957  26.266  80.101  1.00 78.61           N
ANISOU 8318  N   ASN B 780     8629   9435  11805      9   -722    309       N
ATOM   8319  CA  ASN B 780      16.850  27.003  79.231  1.00 66.79           C
ANISOU 8319  CA  ASN B 780     7176   7946  10256     20   -755    229       C
ATOM   8320  CB  ASN B 780      16.061  27.884  78.280  1.00 50.32           C
ANISOU 8320  CB  ASN B 780     5132   5758   8231     75   -814    242       C
ATOM   8321  CG  ASN B 780      16.884  28.298  77.066  1.00 58.19           C
ANISOU 8321  CG  ASN B 780     6314   6722   9073     95   -849    144       C
ATOM   8322  OD1 ASN B 780      17.613  27.492  76.477  1.00 54.72           O
ANISOU 8322  OD1 ASN B 780     5939   6280   8572     91   -941     99       O
ATOM   8323  ND2 ASN B 780      16.799  29.576  76.711  1.00 58.07           N
ANISOU 8323  ND2 ASN B 780     6396   6677   8990    119   -756    112       N
ATOM   8324  C   ASN B 780      17.844  27.861  79.975  1.00 59.75           C
ANISOU 8324  C   ASN B 780     6317   7159   9228    -25   -570    166       C
ATOM   8325  O   ASN B 780      18.039  29.025  79.623  1.00 60.55           O
ANISOU 8325  O   ASN B 780     6521   7249   9237    -21   -479    117       O
ATOM   8326  N   ARG B 781      18.437  27.310  81.028  1.00 69.41           N
ANISOU 8326  N   ARG B 781     7475   8481  10418    -71   -505    167       N
ATOM   8327  CA  ARG B 781      19.706  27.842  81.523  1.00 56.26           C
ANISOU 8327  CA  ARG B 781     5873   6924   8578   -125   -370     85       C
ATOM   8328  CB  ARG B 781      19.956  27.503  82.989  1.00 46.32           C
ANISOU 8328  CB  ARG B 781     4528   5761   7311   -172   -277    114       C
ATOM   8329  CG  ARG B 781      19.148  28.343  83.951  1.00 52.69           C
ANISOU 8329  CG  ARG B 781     5305   6550   8164   -184   -137    170       C
ATOM   8330  CD  ARG B 781      19.625  28.168  85.382  1.00 44.45           C
ANISOU 8330  CD  ARG B 781     4225   5601   7063   -236    -28    178       C
ATOM   8331  NE  ARG B 781      18.722  28.816  86.341  1.00 62.50           N
ANISOU 8331  NE  ARG B 781     6490   7845   9411   -238    107    249       N
ATOM   8332  CZ  ARG B 781      18.604  30.136  86.509  1.00 65.34           C
ANISOU 8332  CZ  ARG B 781     6935   8188   9702   -258    251    234       C
ATOM   8333  NH1 ARG B 781      19.337  30.992  85.792  1.00 53.68           N
ANISOU 8333  NH1 ARG B 781     5570   6736   8091   -282    279    143       N
ATOM   8334  NH2 ARG B 781      17.751  30.606  87.413  1.00 54.91           N
ANISOU 8334  NH2 ARG B 781     5598   6818   8445   -251    380    312       N
ATOM   8335  C   ARG B 781      20.769  27.228  80.640  1.00 52.26           C
ANISOU 8335  C   ARG B 781     5439   6439   7980   -122   -459     14       C
ATOM   8336  O   ARG B 781      20.434  26.556  79.669  1.00 65.55           O
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ANISOU 8336  O   ARG B 781     7145   8038   9723    -76   -607     29       O
ATOM   8337  N   GLU B 782      22.036  27.458  80.947  1.00 62.05           N
ANISOU 8337  N   GLU B 782     6718   7780   9077   -169   -369    -59       N
ATOM   8338  CA  GLU B 782      23.108  26.828  80.180  1.00 60.90           C
ANISOU 8338  CA  GLU B 782     6630   7656   8853   -161   -434   -116       C
ATOM   8339  CB  GLU B 782      24.453  27.072  80.855  1.00 46.82           C
ANISOU 8339  CB  GLU B 782     4842   6009   6939   -224   -321   -179       C
ATOM   8340  CG  GLU B 782      25.620  26.508  80.090  1.00 62.79           C
ANISOU 8340  CG  GLU B 782     6916   8055   8887   -213   -362   -233       C
ATOM   8341  CD  GLU B 782      26.950  26.760  80.793  1.00 73.04           C
ANISOU 8341  CD  GLU B 782     8183   9496  10072   -278   -258   -289       C
ATOM   8342  OE1 GLU B 782      26.997  26.544  82.023  1.00 73.19           O
ANISOU 8342  OE1 GLU B 782     8105   9610  10094   -317   -225   -259       O
ATOM   8343  OE2 GLU B 782      27.934  27.161  80.114  1.00 68.07           O
ANISOU 8343  OE2 GLU B 782     7630   8878   9357   -291   -211   -362       O
ATOM   8344  C   GLU B 782      22.892  25.316  79.983  1.00 59.72           C
ANISOU 8344  C   GLU B 782     6421   7478   8790   -123   -583    -61       C
ATOM   8345  O   GLU B 782      22.776  24.559  80.956  1.00 55.27           O
ANISOU 8345  O   GLU B 782     5759   6974   8267   -136   -581    -10       O
ATOM   8346  N   LEU B 783      22.848  24.903  78.716  1.00 47.85           N
ANISOU 8346  N   LEU B 783     5008   5877   7296    -76   -700    -73       N
ATOM   8347  CA  LEU B 783      22.718  23.496  78.308  1.00 53.72           C
ANISOU 8347  CA  LEU B 783     5737   6574   8100    -42   -845    -30       C
ATOM   8348  CB  LEU B 783      22.366  23.452  76.828  1.00 61.97           C
ANISOU 8348  CB  LEU B 783     6917   7475   9154      7   -968    -44       C
ATOM   8349  CG  LEU B 783      21.128  24.306  76.506  1.00 62.45           C
ANISOU 8349  CG  LEU B 783     6985   7443   9299     25  -1003    -17       C
ATOM   8350  CD1 LEU B 783      20.767  24.185  75.039  1.00 48.26           C
ANISOU 8350  CD1 LEU B 783     5332   5499   7506     77  -1149    -28       C
ATOM   8351  CD2 LEU B 783      20.000  23.836  77.406  1.00 53.57           C
ANISOU 8351  CD2 LEU B 783     5743   6323   8289     13  -1006     73       C
ATOM   8352  C   LEU B 783      23.940  22.594  78.531  1.00 65.49           C
ANISOU 8352  C   LEU B 783     7218   8153   9510    -48   -830    -50       C
ATOM   8353  O   LEU B 783      23.815  21.439  78.917  1.00 74.84           O
ANISOU 8353  O   LEU B 783     8396   9352  10687    -35   -848      2       O
ATOM   8354  N   ILE B 784      25.124  23.133  78.302  1.00 62.74           N
ANISOU 8354  N   ILE B 784     6937   7865   9038    -64   -738   -124       N
ATOM   8355  CA  ILE B 784      26.277  22.298  78.098  1.00 51.80           C
ANISOU 8355  CA  ILE B 784     5570   6528   7582    -49   -741   -141       C
ATOM   8356  CB  ILE B 784      26.070  21.435  76.831  1.00 52.41           C
ANISOU 8356  CB  ILE B 784     5764   6468   7682     12   -872   -124       C
ATOM   8357  CG1 ILE B 784      27.012  20.236  76.837  1.00 66.54           C
ANISOU 8357  CG1 ILE B 784     7550   8304   9431     37   -885   -107       C
ATOM   8358  CD1 ILE B 784      27.028  19.467  75.553  1.00 56.62           C
ANISOU 8358  CD1 ILE B 784     6444   6907   8163     94   -985    -98       C
ATOM   8359  CG2 ILE B 784      26.249  22.278  75.561  1.00 59.64           C
ANISOU 8359  CG2 ILE B 784     6850   7277   8535     35   -862   -187       C
ATOM   8360  C   ILE B 784      27.536  23.179  77.982  1.00 53.76           C
ANISOU 8360  C   ILE B 784     5866   6852   7710    -81   -612   -224       C
ATOM   8361  O   ILE B 784      27.441  24.339  77.558  1.00 70.73           O
ANISOU 8361  O   ILE B 784     8092   9959   9822    -97   -550   -276       O
ATOM   8362  N   ASN B 785      28.707  22.652  78.344  1.00 51.46           N
ANISOU 8362  N   ASN B 785     5526   6666   7359    -89   -569   -235       N
ATOM   8363  CA  ASN B 785      29.931  23.474  78.280  1.00 46.48           C
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ANISOU 8363  CA  ASN B 785     4918   6113   6629   -129   -447   -311       C
ATOM   8364  CB  ASN B 785      31.111  22.832  79.000  1.00 40.82           C
ANISOU 8364  CB  ASN B 785     4097   5542   5872   -144   -411   -305       C
ATOM   8365  CG  ASN B 785      30.943  22.770  80.478  1.00 54.05           C
ANISOU 8365  CG  ASN B 785     5632   7344   7559   -192   -396   -273       C
ATOM   8366  OD1 ASN B 785      30.060  23.407  81.059  1.00 68.72           O
ANISOU 8366  OD1 ASN B 785     7473   9192   9446   -227   -379   -265       O
ATOM   8367  ND2 ASN B 785      31.792  21.984  81.116  1.00 51.66           N
ANISOU 8367  ND2 ASN B 785     5238   7159   7233   -187   -398   -250       N
ATOM   8368  C   ASN B 785      30.345  23.720  76.849  1.00 52.54           C
ANISOU 8368  C   ASN B 785     5847   6763   7354    -87   -438   -360       C
ATOM   8369  O   ASN B 785      30.203  22.856  75.974  1.00 55.63           O
ANISOU 8369  O   ASN B 785     6323   7048   7766    -21   -526   -330       O
ATOM   8370  N   ASP B 786      30.893  24.899  76.640  1.00 42.36           N
ANISOU 8370  N   ASP B 786     4609   5488   5998   -128   -323   -435       N
ATOM   8371  CA  ASP B 786      31.354  25.347  75.333  1.00 44.97           C
ANISOU 8371  CA  ASP B 786     5107   5704   6277    -93   -280   -493       C
ATOM   8372  CB  ASP B 786      31.945  26.746  75.443  1.00 35.71           C
ANISOU 8372  CB  ASP B 786     3959   4578   5033   -160   -129   -578       C
ATOM   8373  CG  ASP B 786      30.918  27.762  75.806  1.00 53.22           C
ANISOU 8373  CG  ASP B 786     6189   6773   7259   -193   -109   -588       C
ATOM   8374  OD1 ASP B 786      29.745  27.355  76.040  1.00 69.00           O
ANISOU 8374  OD1 ASP B 786     8154   8730   9334   -164   -215   -522       O
ATOM   8375  OD2 ASP B 786      31.285  28.955  75.850  1.00 63.40           O
ANISOU 8375  OD2 ASP B 786     7522   8083   8484   -248     18   -658       O
ATOM   8376  C   ASP B 786      32.381  24.493  74.667  1.00 47.61           C
ANISOU 8376  C   ASP B 786     5487   6018   6585    -44   -275   -489       C
ATOM   8377  O   ASP B 786      32.357  24.324  73.446  1.00 65.92           O
ANISOU 8377  O   ASP B 786     7973   8187   8887     19   -301   -500       O
ATOM   8378  N   THR B 787      33.321  23.989  75.447  1.00 45.15           N
ANISOU 8378  N   THR B 787     5039   5852   6266    -70   -236   -474       N
ATOM   8379  CA  THR B 787      34.530  23.465  74.849  1.00 44.45           C
ANISOU 8379  CA  THR B 787     4983   5760   6145    -32   -183   -480       C
ATOM   8380  CB  THR B 787      35.569  23.114  75.924  1.00 48.95           C
ANISOU 8380  CB  THR B 787     5365   6523   6711    -73   -136   -464       C
ATOM   8381  OG1 THR B 787      35.905  24.294  76.663  1.00 53.97           O
ANISOU 8381  OG1 THR B 787     5922   7271   7315   -172    -45   -526       O
ATOM   8382  CG2 THR B 787      36.819  22.566  75.246  1.00 53.46           C
ANISOU 8382  CG2 THR B 787     5964   7084   7264    -22    -71   -459       C
ATOM   8383  C   THR B 787      34.282  22.246  73.981  1.00 57.55           C
ANISOU 8383  C   THR B 787     6752   7289   7826     63   -279   -421       C
ATOM   8384  O   THR B 787      33.598  21.287  74.402  1.00 56.65           O
ANISOU 8384  O   THR B 787     6583   7181   7759     87   -391   -352       O
ATOM   8385  N   LEU B 788      34.844  22.305  72.770  1.00 56.59           N
ANISOU 8385  N   LEU B 788     6797   7040   7664    115   -225   -450       N
ATOM   8386  CA  LEU B 788      34.825  21.197  71.810  1.00 39.55           C
ANISOU 8386  CA  LEU B 788     4784   4740   5504    206   -290   -400       C
ATOM   8387  CB  LEU B 788      34.929  21.731  70.373  1.00 59.24           C
ANISOU 8387  CB  LEU B 788     7523   7040   7946    254   -243   -451       C
ATOM   8388  CG  LEU B 788      33.774  22.534  69.761  1.00 60.36           C
ANISOU 8388  CG  LEU B 788     7808   7045   8080    254   -312   -488       C
ATOM   8389  CD1 LEU B 788      34.044  22.849  68.314  1.00 77.80           C
ANISOU 8389  CD1 LEU B 788    10281   9055  10225    318   -264   -531       C
ATOM   8390  CD2 LEU B 788      32.606  21.679  69.818  1.00 48.63           C
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ANISOU 8390  CD2 LEU B 788     6325   5505   6646    276   -492   -422       C
ATOM   8391  C   LEU B 788      35.956  20.230  72.040  1.00 54.47           C
ANISOU 8391  C   LEU B 788     6595   6711   7390    241   -238   -353       C
ATOM   8392  O   LEU B 788      37.126  20.639  72.045  1.00 60.69           O
ANISOU 8392  O   LEU B 788     7337   7567   8156    227   -104   -386       O
ATOM   8393  N   TYR B 789      35.622  18.947  72.200  1.00 61.91           N
ANISOU 8393  N   TYR B 789     7524   7641   8357    288   -337   -273       N
ATOM   8394  CA  TYR B 789      36.634  17.898  72.333  1.00 59.07           C
ANISOU 8394  CA  TYR B 789     7112   7341   7991    341   -290   -215       C
ATOM   8395  CB  TYR B 789      36.417  17.099  73.609  1.00 52.13           C
ANISOU 8395  CB  TYR B 789     6041   6617   7149    326   -358   -153       C
ATOM   8396  CG  TYR B 789      36.422  17.924  74.856  1.00 52.21           C
ANISOU 8396  CG  TYR B 789     5852   6808   7175    236   -336   -188       C
ATOM   8397  CD1 TYR B 789      37.612  18.196  75.530  1.00 44.59           C
ANISOU 8397  CD1 TYR B 789     4736   6011   6197    205   -239   -202       C
ATOM   8398  CE1 TYR B 789      37.606  18.953  76.680  1.00 42.03           C
ANISOU 8398  CE1 TYR B 789     4251   5842   5875    117   -226   -235       C
ATOM   8399  CZ  TYR B 789      36.406  19.430  77.184  1.00 48.39           C
ANISOU 8399  CZ  TYR B 789     5051   6635   6701     66   -294   -249       C
ATOM   8400  OH  TYR B 789      36.395  20.174  78.332  1.00 56.80           O
ANISOU 8400  OH  TYR B 789     5981   7840   7758    -20   -271   -278       O
ATOM   8401  CE2 TYR B 789      35.216  19.154  76.548  1.00 44.15           C
ANISOU 8401  CE2 TYR B 789     4643   5941   6193    102   -383   -229       C
ATOM   8402  CD2 TYR B 789      35.229  18.415  75.386  1.00 52.66           C
ANISOU 8402  CD2 TYR B 789     5878   6867   7265    182   -413   -202       C
ATOM   8403  C   TYR B 789      36.663  16.916  71.175  1.00 65.14           C
ANISOU 8403  C   TYR B 789     8092   7925   8732    435   -317   -168       C
ATOM   8404  O   TYR B 789      35.617  16.379  70.767  1.00 64.30           O
ANISOU 8404  O   TYR B 789     8104   7692   8633    456   -446   -140       O
ATOM   8405  N   SER B 790      37.869  16.655  70.678  1.00 52.87           N
ANISOU 8405  N   SER B 790     6584   6354   7150    489   -193   -156       N
ATOM   8406  CA  SER B 790      38.097  15.556  69.733  1.00 55.37           C
ANISOU 8406  CA  SER B 790     7093   6512   7434    586   -191    -94       C
ATOM   8407  CB  SER B 790      39.310  15.848  68.853  1.00 56.17           C
ANISOU 8407  CB  SER B 790     7304   6535   7502    638    -20   -111       C
ATOM   8408  OG  SER B 790      39.644  14.697  68.107  1.00 59.69           O
ANISOU 8408  OG  SER B 790     7919   6845   7915    737      1    -37       O
ATOM   8409  C   SER B 790      38.304  14.214  70.447  1.00 55.68           C
ANISOU 8409  C   SER B 790     7021   6646   7489    627   -226     -1       C
ATOM   8410  O   SER B 790      38.525  14.164  71.661  1.00 60.01           O
ANISOU 8410  O   SER B 790     7334   7395   8070    589   -228     14       O
ATOM   8411  N   THR B 791      38.241  13.123  69.693  1.00 62.19           N
ANISOU 8411  N   THR B 791     8030   7319   8279    708   -251     62       N
ATOM   8412  CA  THR B 791      38.393  11.790  70.281  1.00 60.02           C
ANISOU 8412  CA  THR B 791     7684   7113   8009    756   -276    153       C
ATOM   8413  CB  THR B 791      37.037  11.089  70.418  1.00 61.50           C
ANISOU 8413  CB  THR B 791     7929   7229   8209    737   -449    181       C
ATOM   8414  OG1 THR B 791      36.449  10.944  69.122  1.00 75.86           O
ANISOU 8414  OG1 THR B 791    10033   8805   9987    763   -511    173       O
ATOM   8415  CG2 THR B 791      36.102  11.892  71.332  1.00 57.37           C
ANISOU 8415  CG2 THR B 791     7233   6820   7745    640   -542    131       C
ATOM   8416  C   THR B 791      39.316  10.859  69.502  1.00 66.34           C
ANISOU 8416  C   THR B 791     8637   7807   8762    863   -170    222       C
ATOM   8417  O   THR B 791      39.724  11.149  68.383  1.00 72.99           O
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ANISOU 8417  O   THR B 791     9679   8487   9566    905    -87    203       O
ATOM   8418  N   ARG B 792       39.634   9.734  70.124  1.00 60.88           N
ANISOU 8418  N   ARG B 792     7858   7202   8071    913   -164    306       N
ATOM   8419  CA  ARG B 792       40.401   8.669  69.502  1.00 56.44           C
ANISOU 8419  CA  ARG B 792     7440   6542   7464   1023    -67    391       C
ATOM   8420  CB  ARG B 792       41.898   8.777  69.831  1.00 62.35           C
ANISOU 8420  CB  ARG B 792     8023   7432   8233   1073    106    423       C
ATOM   8421  CG  ARG B 792       42.634  10.009  69.380  1.00 51.29           C
ANISOU 8421  CG  ARG B 792     6602   6030   6854   1046    224    353       C
ATOM   8422  CD  ARG B 792       42.664  10.229  67.875  1.00 45.05           C
ANISOU 8422  CD  ARG B 792     6125   4977   6016   1092    294    331       C
ATOM   8423  NE  ARG B 792       42.265  11.622  67.685  1.00 73.82           N
ANISOU 8423  NE  ARG B 792     9767   8607   9673   1003    271    220       N
ATOM   8424  CZ  ARG B 792       43.104  12.617  67.472  1.00 70.89           C
ANISOU 8424  CZ  ARG B 792     9343   8265   9328    985    409    167       C
ATOM   8425  NH1 ARG B 792       44.400  12.375  67.358  1.00 88.54           N
ANISOU 8425  NH1 ARG B 792    11518  10536  11588   1050    580    217       N
ATOM   8426  NH2 ARG B 792       42.640  13.839  67.345  1.00 70.29           N
ANISOU 8426  NH2 ARG B 792     9278   8175   9255    904    384     66       N
ATOM   8427  C   ARG B 792       39.863   7.336  70.029  1.00 67.73           C
ANISOU 8427  C   ARG B 792     8867   7987   8880   1054   -155    470       C
ATOM   8428  O   ARG B 792       39.446   7.266  71.183  1.00 79.57           O
ANISOU 8428  O   ARG B 792    10161   9653  10420   1005   -231    470       O
ATOM   8429  N   LYS B 793       39.863   6.290  69.203  1.00 69.72           N
ANISOU 8429  N   LYS B 793     9361   8059   9071   1132   -138    536       N
ATOM   8430  CA  LYS B 793       39.598   4.931  69.702  1.00 71.31           C
ANISOU 8430  CA  LYS B 793     9565   8279   9251   1175   -180    621       C
ATOM   8431  CB  LYS B 793       38.843   4.083  68.680  1.00 73.37           C
ANISOU 8431  CB  LYS B 793    10145   8286   9446   1198   -255    651       C
ATOM   8432  CG  LYS B 793       37.394   4.496  68.452  1.00 84.17           C
ANISOU 8432  CG  LYS B 793    11587   9556  10838   1098   -446    584       C
ATOM   8433  CD  LYS B 793       36.544   3.287  68.016  1.00 99.07           C
ANISOU 8433  CD  LYS B 793    13667  11294  12683   1083   -543    627       C
ATOM   8434  CE  LYS B 793       35.052   3.653  67.917  1.00106.18           C
ANISOU 8434  CE  LYS B 793    14565  12150  13627    958   -725    559       C
ATOM   8435  NZ  LYS B 793       34.109   2.483  67.912  1.00100.54           N
ANISOU 8435  NZ  LYS B 793    13897  11403  12900    894   -802    581       N
ATOM   8436  C   LYS B 793       40.894   4.227  70.060  1.00 74.60           C
ANISOU 8436  C   LYS B 793     9890   8802   9654   1280    -23    709       C
ATOM   8437  O   LYS B 793       41.881   4.347  69.337  1.00 78.63           O
ANISOU 8437  O   LYS B 793    10488   9245  10144   1349    124    732       O
ATOM   8438  N   ASP B 794       40.897   3.485  71.165  1.00 79.57           N
ANISOU 8438  N   ASP B 794    10346   9590  10295   1297    -46    763       N
ATOM   8439  CA  ASP B 794       42.090   2.733  71.554  1.00 83.25           C
ANISOU 8439  CA  ASP B 794    10719  10164  10746   1407     93    857       C
ATOM   8440  CB  ASP B 794       42.224   2.628  73.086  1.00 88.76           C
ANISOU 8440  CB  ASP B 794    11115  11125  11486   1391     57    872       C
ATOM   8441  CG  ASP B 794       40.998   2.001  73.764  1.00 94.25           C
ANISOU 8441  CG  ASP B 794    11813  11823  12177   1345    -84    872       C
ATOM   8442  OD1 ASP B 794       40.081   1.510  73.072  1.00 97.45           O
ANISOU 8442  OD1 ASP B 794    12441  12035  12550   1329   -157    872       O
ATOM   8443  OD2 ASP B 794       40.965   1.979  75.013  1.00 89.82           O
ANISOU 8443  OD2 ASP B 794    11029  11454  11643   1326   -122    874       O
ATOM   8444  C   ASP B 794       42.049   1.347  70.917  1.00 95.52           C
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ANISOU 8444  C   ASP B 794    12525  11544  12222   1505    135    952       C
ATOM   8445  O   ASP B 794      41.142   1.047  70.141  1.00 90.52           O
ANISOU 8445  O   ASP B 794    12140  10707  11546   1476     51    936       O
ATOM   8446  N   ASP B 795      43.025   0.504  71.242  1.00113.52           N
ANISOU 8446  N   ASP B 795    14748  13903  14480   1619    262   1053       N
ATOM   8447  CA  ASP B 795      43.069  -0.846  70.685  1.00109.36           C
ANISOU 8447  CA  ASP B 795    14461  13224  13869   1701    322   1138       C
ATOM   8448  C   ASP B 795      41.823  -1.628  71.096  1.00110.86           C
ANISOU 8448  C   ASP B 795    14709  13382  14032   1622    172   1117       C
ATOM   8449  O   ASP B 795      41.294  -2.418  70.315  1.00122.25           O
ANISOU 8449  O   ASP B 795    16380  14656  15412   1560    142   1095       O
ATOM   8450  CB  ASP B 795      44.337  -1.578  71.131  1.00100.64           C
ANISOU 8450  CB  ASP B 795    13236  12251  12752   1812    482   1235       C
ATOM   8451  N   LYS B 796      41.333  -1.373  72.307  1.00103.86           N
ANISOU 8451  N   LYS B 796    13594  12667  13201   1602     76   1112       N
ATOM   8452  CA  LYS B 796      40.199  -2.123  72.857  1.00 90.82           C
ANISOU 8452  CA  LYS B 796    11969  10999  11541   1545    -47   1107       C
ATOM   8453  C   LYS B 796      38.800  -1.652  72.411  1.00 84.97           C
ANISOU 8453  C   LYS B 796    11341  10115  10829   1428   -216   1029       C
ATOM   8454  O   LYS B 796      37.797  -2.180  72.881  1.00 87.65           O
ANISOU 8454  O   LYS B 796    11681  10438  11183   1375   -322   1025       O
ATOM   8455  CB  LYS B 796      40.267  -2.097  74.387  1.00 84.53           C
ANISOU 8455  CB  LYS B 796    10875  10452  10789   1548    -71   1117       C
ATOM   8456  CG  LYS B 796      41.450  -2.847  74.973  1.00 82.93           C
ANISOU 8456  CG  LYS B 796    10569  10391  10551   1659     64   1200       C
ATOM   8457  CD  LYS B 796      40.995  -4.139  75.681  1.00 90.64           C
ANISOU 8457  CD  LYS B 796    11575  11381  11481   1657     50   1228       C
ATOM   8458  CE  LYS B 796      42.186  -5.009  76.147  1.00 97.44           C
ANISOU 8458  CE  LYS B 796    12373  12361  12290   1759    193   1302       C
ATOM   8459  NZ  LYS B 796      42.582  -4.832  77.582  1.00 94.59           N
ANISOU 8459  NZ  LYS B 796    11738  12245  11956   1767    181   1303       N
ATOM   8460  N   GLY B 797      38.715  -0.668  71.522  1.00 87.72           N
ANISOU 8460  N   GLY B 797    11776  10360  11192   1378   -241    962       N
ATOM   8461  CA  GLY B 797      37.416  -0.219  71.040  1.00 92.15           C
ANISOU 8461  CA  GLY B 797    12446  10786  11782   1268   -406    888       C
ATOM   8462  C   GLY B 797      36.748   0.871  71.868  1.00 93.56           C
ANISOU 8462  C   GLY B 797    12381  11111  12056   1160   -510    804       C
ATOM   8463  O   GLY B 797      35.638   1.321  71.557  1.00 94.87           O
ANISOU 8463  O   GLY B 797    12602  11182  12262   1070   -649    746       O
ATOM   8464  N   ASN B 798      37.423   1.291  72.934  1.00 82.67           N
ANISOU 8464  N   ASN B 798    10737   9961  10714   1172   -445    802       N
ATOM   8465  CA  ASN B 798      37.001   2.449  73.706  1.00 71.97           C
ANISOU 8465  CA  ASN B 798    9161   8747   9436   1077   -511    724       C
ATOM   8466  CB  ASN B 798      37.788   2.542  75.005  1.00 73.23           C
ANISOU 8466  CB  ASN B 798    9054   9156   9614   1103   -442    743       C
ATOM   8467  CG  ASN B 798      37.636   1.314  75.868  1.00 80.06           C
ANISOU 8467  CG  ASN B 798    9876  10083  10461   1154   -444    817       C
ATOM   8468  OD1 ASN B 798      36.533   0.794  76.054  1.00 78.99           O
ANISOU 8468  OD1 ASN B 798    9796   9872  10345   1113   -538    819       O
ATOM   8469  ND2 ASN B 798      38.758   0.831  76.395  1.00 76.96           N
ANISOU 8469  ND2 ASN B 798    9384   9826  10033   1248   -336    880       N
ATOM   8470  C   ASN B 798      37.209   3.734  72.932  1.00 66.84           C
ANISOU 8470  C   ASN B 798    8549   8048   8800   1035   -498    648       C
ATOM   8471  O   ASN B 798      38.248   3.922  72.292  1.00 70.71           O
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ANISOU 8471  O   ASN B 798     9103   8511   9253   1096   -379    659       O
ATOM   8472  N   THR B 799      36.229   4.621  72.985  1.00 69.10           N
ANISOU 8472  N   THR B 799     8797   8317   9141    937   -609    574       N
ATOM   8473  CA  THR B 799      36.432   5.989  72.525  1.00 65.87           C
ANISOU 8473  CA  THR B 799     8375   7903   8747    891   -587    494       C
ATOM   8474  CB  THR B 799      35.137   6.576  71.970  1.00 60.32           C
ANISOU 8474  CB  THR B 799     7777   7062   8079    812   -727    435       C
ATOM   8475  OG1 THR B 799      34.770   5.867  70.779  1.00 70.62           O
ANISOU 8475  OG1 THR B 799     9363   8137   9333    845   -778    462       O
ATOM   8476  CG2 THR B 799      35.304   8.037  71.648  1.00 52.00           C
ANISOU 8476  CG2 THR B 799     6696   6023   7040    765   -697    351       C
ATOM   8477  C   THR B 799      36.961   6.861  73.671  1.00 66.91           C
ANISOU 8477  C   THR B 799     8231   8271   8922    851   -535    459       C
ATOM   8478  O   THR B 799      36.286   7.035  74.687  1.00 80.60           O
ANISOU 8478  O   THR B 799     9808  10113  10704    791   -606    444       O
ATOM   8479  N   LEU B 800      38.175   7.385  73.516  1.00 57.30           N
ANISOU 8479  N   LEU B 800     6960   7125   7687    882   -409    448       N
ATOM   8480  CA  LEU B 800      38.752   8.305  74.499  1.00 64.60           C
ANISOU 8480  CA  LEU B 800     7639   8262   8645    831   -364    406       C
ATOM   8481  CB  LEU B 800      40.223   7.982  74.767  1.00 59.73           C
ANISOU 8481  CB  LEU B 800     6912   7771   8010    905   -234    457       C
ATOM   8482  CG  LEU B 800      40.745   6.576  75.070  1.00 59.25           C
ANISOU 8482  CG  LEU B 800     6846   7747   7919   1011   -194    563       C
ATOM   8483  CD1 LEU B 800      42.203   6.721  75.442  1.00 67.70           C
ANISOU 8483  CD1 LEU B 800     7747   8978   8997   1058    -74    593       C
ATOM   8484  CD2 LEU B 800      40.018   5.932  76.194  1.00 49.98           C
ANISOU 8484  CD2 LEU B 800     5571   6666   6754    996   -287    592       C
ATOM   8485  C   LEU B 800      38.664   9.771  74.070  1.00 63.81           C
ANISOU 8485  C   LEU B 800     7547   8137   8563    755   -351    310       C
ATOM   8486  O   LEU B 800      38.901  10.115  72.911  1.00 62.45           O
ANISOU 8486  O   LEU B 800     7548   7816   8366    777   -301    285       O
ATOM   8487  N   ILE B 801      38.338  10.623  75.036  1.00 67.05           N
ANISOU 8487  N   ILE B 801     7778   8688   9008    668   -387    259       N
ATOM   8488  CA  ILE B 801      38.406  12.067  74.894  1.00 58.22           C
ANISOU 8488  CA  ILE B 801     6628   7591   7902    591   -354    170       C
ATOM   8489  CB  ILE B 801      37.768  12.768  76.115  1.00 61.01           C
ANISOU 8489  CB  ILE B 801     6805   8085   8289    498   -413    131       C
ATOM   8490  CG1 ILE B 801      36.270  12.496  76.157  1.00 65.02           C
ANISOU 8490  CG1 ILE B 801     7381   8493   8830    474   -539    139       C
ATOM   8491  CD1 ILE B 801      35.686  12.645  77.539  1.00 75.08           C
ANISOU 8491  CD1 ILE B 801     8481  10139    416   -586    142       C
ATOM   8492  CG2 ILE B 801      38.039  14.297  76.109  1.00 47.70           C
ANISOU 8492  CG2 ILE B 801     5071   6449   6605    415   -353     40       C
ATOM   8493  C   ILE B 801      39.844  12.532  74.763  1.00 62.12           C
ANISOU 8493  C   ILE B 801     7048   8169   8384    607   -215    156       C
ATOM   8494  O   ILE B 801      40.700  12.080  75.518  1.00 70.10           O
ANISOU 8494  O   ILE B 801     7901   9336   9398    635   -172    202       O
ATOM   8495  N   VAL B 802      40.113  13.455  73.841  1.00 64.50           N
ANISOU 8495  N   VAL B 802     7457   8372   8676    588   -144     93       N
ATOM   8496  CA  VAL B 802      41.448  14.052  73.730  1.00 54.68           C
ANISOU 8496  CA  VAL B 802     6130   7207   7437    587     -3     69       C
ATOM   8497  CB  VAL B 802      41.860  14.239  72.267  1.00 56.86           C
ANISOU 8497  CB  VAL B 802     6628   7284   7691    642     98     53       C
ATOM   8498  CG1 VAL B 802      43.311  14.723  72.187  1.00 60.77           C
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ANISOU 8498  CG1 VAL B 802     7018   7862   8210    647    260     43       C
ATOM   8499  CG2 VAL B 802      41.691  12.918  71.515  1.00 64.13           C
ANISOU 8499  CG2 VAL B 802     7741   8046   8581    751     79    137       C
ATOM   8500  C   VAL B 802      41.538  15.404  74.424  1.00 53.47           C
ANISOU 8500  C   VAL B 802     5825   7188   7301    472     15    -17       C
ATOM   8501  O   VAL B 802      40.771  16.301  74.127  1.00 61.13           O
ANISOU 8501  O   VAL B 802     6880   8081   8265    413    -13    -86       O
ATOM   8502  N   ASN B 803      42.484  15.552  75.346  1.00 67.68           N
ANISOU 8502  N   ASN B 803     7408   9188   9120    441     60     -9       N
ATOM   8503  CA  ASN B 803      42.687  16.829  76.044  1.00 53.21           C
ANISOU 8503  CA  ASN B 803     5435   7487   7294    322     83    -91       C
ATOM   8504  CB  ASN B 803      42.754  16.598  77.550  1.00 52.87           C
ANISOU 8504  CB  ASN B 803     5175   7656   7255    279     11    -64       C
ATOM   8505  CG  ASN B 803      41.407  16.215  78.146  1.00 64.23           C
ANISOU 8505  CG  ASN B 803     6645   9074   8686    270   -114    -46       C
ATOM   8506  OD1 ASN B 803      40.564  17.069  78.386  1.00 64.31           O
ANISOU 8506  OD1 ASN B 803     6678   9064   8692    191   -149   -104       O
ATOM   8507  ND2 ASN B 803      41.203  14.925  78.380  1.00 74.72           N
ANISOU 8507  ND2 ASN B 803     7975  10402  10015    353   -172     39       N
ATOM   8508  C   ASN B 803      43.932  17.607  75.616  1.00 67.75           C
ANISOU 8508  C   ASN B 803     7230   9359   9154    296    225   -134       C
ATOM   8509  O   ASN B 803      44.880  17.058  75.027  1.00 72.17           O
ANISOU 8509  O   ASN B 803     7802   9887   9734    376    316    -85       O
ATOM   8510  N   ASN B 804      43.922  18.897  75.944  1.00 80.09           N
ANISOU 8510  N   ASN B 804     8738  10981  10713    181    253   -225       N
ATOM   8511  CA  ASN B 804      44.983  19.830  75.573  1.00 73.15           C
ANISOU 8511  CA  ASN B 804     7816  10124   9852    130    390   -285       C
ATOM   8512  C   ASN B 804      45.627  20.498  76.772  1.00 76.11           C
ANISOU 8512  C   ASN B 804     7958  10721  10239     15    388   -319       C
ATOM   8513  O   ASN B 804      44.933  21.006  77.652  1.00 82.35           O
ANISOU 8513  O   ASN B 804     8701  11589  10999    -71    308   -356       O
ATOM   8514  CB  ASN B 804      44.421  20.900  74.642  1.00 65.30           C
ANISOU 8514  CB  ASN B 804     7019   8962   8831     94    448   -374       C
ATOM   8515  CG  ASN B 804      44.388  20.455  73.201  1.00 75.77           C
ANISOU 8515  CG  ASN B 804     8577  10061  10149    204    510   -353       C
ATOM   8516  OD1 ASN B 804      44.831  19.360  72.873  1.00 97.19           O
ANISOU 8516  OD1 ASN B 804    11310  12741  12879    305    522   -269       O
ATOM   8517  ND2 ASN B 804      43.838  21.290  72.332  1.00 76.75           N
ANISOU 8517  ND2 ASN B 804     8898  10021  10241    190    548   -425       N
ATOM   8518  N   LEU B 805      46.958  20.492  76.792  1.00 81.87           N
ANISOU 8518  N   LEU B 805     8546  11545  11015     13    476   -304       N
ATOM   8519  CA  LEU B 805      47.748  21.289  77.739  1.00 75.82           C
ANISOU 8519  CA  LEU B 805     7570  10973  10264   -112    487   -350       C
ATOM   8520  CB  LEU B 805      48.946  20.477  78.227  1.00 78.43           C
ANISOU 8520  CB  LEU B 805     7776  11378  10644    -59    472   -240       C
ATOM   8521  CG  LEU B 805      48.645  19.742  79.547  1.00 98.80           C
ANISOU 8521  CG  LEU B 805    10328  14015  13196    -52    313   -168       C
ATOM   8522  CD1 LEU B 805      47.138  19.488  79.796  1.00104.82           C
ANISOU 8522  CD1 LEU B 805    11193  14738  13898    -41    216   -178       C
ATOM   8523  CD2 LEU B 805      49.422  18.427  79.676  1.00 93.10           C
ANISOU 8523  CD2 LEU B 805     9528  13325  12521     60    302    -69       C
ATOM   8524  C   LEU B 805      48.175  22.606  77.111  1.00 74.67           C
ANISOU 8524  C   LEU B 805     7475  10767  10129   -202    622   -452       C
ATOM   8525  O   LEU B 805      48.795  22.603  76.060  1.00 81.86           O
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ANISOU 8525  O   LEU B 805     8461  11562  11079   -145    750   -450       O
ATOM   8526  N   ASN B 806      47.824  23.727  77.751  1.00 82.89           N
ANISOU 8526  N   ASN B 806     8548  11829  11117   -327    586   -514       N
ATOM   8527  CA  ASN B 806      48.000  25.054  77.152  1.00 81.17           C
ANISOU 8527  CA  ASN B 806     8409  11542  10890   -417    714   -623       C
ATOM   8528  CB  ASN B 806      46.694  25.865  77.178  1.00 85.34           C
ANISOU 8528  CB  ASN B 806     9063  12009  11354   -480    695   -710       C
ATOM   8529  CG  ASN B 806      45.458  25.011  77.068  1.00102.31           C
ANISOU 8529  CG  ASN B 806    11326  14067  13479   -380    581   -652       C
ATOM   8530  OD1 ASN B 806      44.904  24.553  78.076  1.00100.84           O
ANISOU 8530  OD1 ASN B 806    11056  13983  13276   -391    457   -610       O
ATOM   8531  ND2 ASN B 806      45.001  24.799  75.838  1.00116.70           N
ANISOU 8531  ND2 ASN B 806    13355  15687  15299   -283    620   -648       N
ATOM   8532  C   ASN B 806      49.069  25.904  77.831  1.00 96.72           C
ANISOU 8532  C   ASN B 806    10306  13586  12856   -520    721   -624       C
ATOM   8533  O   ASN B 806      49.778  26.669  77.182  1.00109.92           O
ANISOU 8533  O   ASN B 806    12000  15210  14554   -562    851   -680       O
ATOM   8534  N   GLY B 807      49.160  25.821  79.147  1.00 96.89           N
ANISOU 8534  N   GLY B 807    10258  13710  12848   -562    587   -572       N
ATOM   8535  CA  GLY B 807      49.967  26.794  79.856  1.00 97.05           C
ANISOU 8535  CA  GLY B 807    10230  13791  12853   -674    585   -601       C
ATOM   8536  C   GLY B 807      51.366  26.270  80.004  1.00 95.33           C
ANISOU 8536  C   GLY B 807     9856  13642  12723   -647    589   -523       C
ATOM   8537  O   GLY B 807      51.873  26.159  81.112  1.00106.80           O
ANISOU 8537  O   GLY B 807    11217  15185  14178   -682    489   -482       O
ATOM   8538  N   LEU B 808      51.995  25.954  78.880  1.00 86.32           N
ANISOU 8538  N   LEU B 808     8689  12451  11658   -581    714   -507       N
ATOM   8539  CA  LEU B 808      53.139  25.050  78.907  1.00 90.61           C
ANISOU 8539  CA  LEU B 808     9079  13047  12300   -508    720   -400       C
ATOM   8540  CB  LEU B 808      53.420  24.553  77.496  1.00 94.55           C
ANISOU 8540  CB  LEU B 808     9604  13460  12860   -402    879   -383       C
ATOM   8541  CG  LEU B 808      52.938  23.108  77.453  1.00 86.29           C
ANISOU 8541  CG  LEU B 808     8549  12413  11824   -265    823   -300       C
ATOM   8542  CD2 LEU B 808      53.681  22.380  78.545  1.00 98.80           C
ANISOU 8542  CD2 LEU B 808     9981  14097  13463   -249    708   -202       C
ATOM   8543  CD1 LEU B 808      53.152  22.452  76.105  1.00 82.21           C
ANISOU 8543  CD1 LEU B 808     8075  11803  11356   -136    982   -280       C
ATOM   8544  C   LEU B 808      54.400  25.646  79.535  1.00 90.36           C
ANISOU 8544  C   LEU B 808     8913  13097  12325   -596    710   -388       C
ATOM   8545  O   LEU B 808      55.209  24.932  80.138  1.00 83.20           O
ANISOU 8545  O   LEU B 808     7862  12260  11491   -560    646   -302       O
ATOM   8546  N   TYR B 809      54.531  26.960  79.434  1.00 96.69           N
ANISOU 8546  N   TYR B 809     9765  13881  13091   -713    769   -483       N
ATOM   8547  CA  TYR B 809      55.619  27.665  80.081  1.00103.98           C
ANISOU 8547  CA  TYR B 809    10571  14883  14056   -815    750   -488       C
ATOM   8548  CB  TYR B 809      56.532  28.303  79.029  1.00 97.19           C
ANISOU 8548  CB  TYR B 809     9691  13970  13267   -838    921   -516       C
ATOM   8549  CG  TYR B 809      56.853  27.385  77.864  1.00 93.36           C
ANISOU 8549  CG  TYR B 809     9191  13421  12861   -699   1044   -444       C
ATOM   8550  CD2 TYR B 809      58.035  26.649  77.836  1.00 89.01           C
ANISOU 8550  CD2 TYR B 809     8461  12927  12431   -634   1067   -324       C
ATOM   8551  CE2 TYR B 809      58.331  25.807  76.772  1.00 91.63           C
ANISOU 8551  CE2 TYR B 809     8794  13208  12815   -497   1195   -254       C
ATOM   8552  CZ  TYR B 809      57.435  25.687  75.718  1.00 92.93           C
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ANISOU 8552  CZ  TYR B 809     9150  13243  12915   -428   1295   -321       C
ATOM   8553  OH  TYR B 809       57.736  24.853  74.660  1.00 95.12           O
ANISOU 8553  OH  TYR B 809     9458  13452  13229   -288   1427   -272       O
ATOM   8554  CE1 TYR B 809       56.251  26.409  75.722  1.00 84.07           C
ANISOU 8554  CE1 TYR B 809     8200  12049  11694   -495   1267   -442       C
ATOM   8555  CD1 TYR B 809       55.971  27.253  76.788  1.00 86.81           C
ANISOU 8555  CD1 TYR B 809     8534  12466  11984   -628   1145   -497       C
ATOM   8556  C   TYR B 809       55.077  28.719  81.047  1.00112.06           C
ANISOU 8556  C   TYR B 809    11668  15941  14968   -945    669   -578       C
ATOM   8557  O   TYR B 809       55.404  29.898  80.928  1.00126.19           O
ANISOU 8557  O   TYR B 809    13489  17719  16737  -1053    737   -662       O
ATOM   8558  N   ASP B 810       54.228  28.295  81.984  1.00106.64           N
ANISOU 8558  N   ASP B 810    11021  15291  14207   -931    536   -562       N
ATOM   8559  CA  ASP B 810       53.782  29.157  83.080  1.00 97.63           C
ANISOU 8559  CA  ASP B 810     9938  14198  12960  -1043    456   -626       C
ATOM   8560  CB  ASP B 810       52.260  29.156  83.225  1.00 92.11           C
ANISOU 8560  CB  ASP B 810     9397  13447  12155  -1021    424   -658       C
ATOM   8561  CG  ASP B 810       51.564  29.695  82.000  1.00 95.15           C
ANISOU 8561  CG  ASP B 810     9918  13717  12520  -1013    551   -731       C
ATOM   8562  OD1 ASP B 810       52.294  30.192  81.107  1.00 93.22           O
ANISOU 8562  OD1 ASP B 810     9662  13431  12328  -1036    672   -769       O
ATOM   8563  OD2 ASP B 810       50.306  29.624  81.928  1.00 89.64           O
ANISOU 8563  OD2 ASP B 810     9338  12963  11759   -984    534   -751       O
ATOM   8564  C   ASP B 810       54.432  28.664  84.350  1.00106.95           C
ANISOU 8564  C   ASP B 810    10986  15489  14159  -1056    320   -565       C
ATOM   8565  O   ASP B 810       54.546  27.458  84.556  1.00108.48           O
ANISOU 8565  O   ASP B 810    11108  15705  14404   -954    254   -477       O
ATOM   8566  N   LYS B 811       54.871  29.590  85.194  1.00116.43           N
ANISOU 8566  N   LYS B 811    12162  16758  15318  -1182    281   -617       N
ATOM   8567  CA  LYS B 811       55.644  29.228  86.378  1.00124.34           C
ANISOU 8567  CA  LYS B 811    13030  17870  16344  -1208    153   -571       C
ATOM   8568  CB  LYS B 811       56.000  30.479  87.189  1.00123.45           C
ANISOU 8568  CB  LYS B 811    12922  17821  16163  -1368    128   -650       C
ATOM   8569  C   LYS B 811       54.894  28.235  87.257  1.00126.03           C
ANISOU 8569  C   LYS B 811    13274  18109  16501  -1129     33   -517       C
ATOM   8570  O   LYS B 811       55.463  27.247  87.732  1.00116.62           O
ANISOU 8570  O   LYS B 811    11969  16973  15371  -1062    -49   -442       O
ATOM   8571  N   ASP B 812       53.606  28.491  87.440  1.00127.85           N
ANISOU 8571  N   ASP B 812    13663  18295  16620  -1133     33   -555       N
ATOM   8572  CA  ASP B 812       52.816  27.740  88.401  1.00129.35           C
ANISOU 8572  CA  ASP B 812    13895  18508  16744  -1080    -71   -515       C
ATOM   8573  CB  ASP B 812       51.478  28.448  88.648  1.00126.18           C
ANISOU 8573  CB  ASP B 812    13661  18059  16222  -1126    -48   -575       C
ATOM   8574  C   ASP B 812       52.564  26.291  87.985  1.00128.06           C
ANISOU 8574  C   ASP B 812    13709  18306  16643   -928    -91   -428       C
ATOM   8575  O   ASP B 812       52.834  25.371  88.762  1.00132.29           O
ANISOU 8575  O   ASP B 812    14176  18897  17189   -872   -186   -368       O
ATOM   8576  N   ASN B 813       52.071  26.072  86.766  1.00121.00           N
ANISOU 8576  N   ASN B 813    12872  17317  15783   -861     -2   -425       N
ATOM   8577  CA  ASN B 813       51.373  24.816  86.521  1.00115.87           C
ANISOU 8577  CA  ASN B 813    12256  16620  15149   -732    -29   -359       C
ATOM   8578  CB  ASN B 813       50.342  24.981  85.384  1.00122.82           C
ANISOU 8578  CB  ASN B 813    13257  17393  16017   -699     56   -388       C
ATOM   8579  CG  ASN B 813       50.870  24.601  84.028  1.00112.19           C
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ANISOU 8579  CG  ASN B 813    11868  15998  14761   -632    154   -367       C
ATOM   8580  OD1 ASN B 813      50.976  23.420  83.696  1.00110.50           O
ANISOU 8580  OD1 ASN B 813    11613  15770  14601   -521    144   -295       O
ATOM   8581  ND2 ASN B 813      51.155  25.603  83.213  1.00103.77           N
ANISOU 8581  ND2 ASN B 813    10825  14898  13705   -696    262   -433       N
ATOM   8582  C   ASN B 813      52.255  23.585  86.289  1.00101.10           C
ANISOU 8582  C   ASN B 813    10262  14773  13377   -627    -45   -275       C
ATOM   8583  O   ASN B 813      53.198  23.547  85.501  1.00 93.60           O
ANISOU 8583  O   ASN B 813     9222  13820  12522   -610     28   -258       O
ATOM   8584  N   ASP B 814      51.843  22.574  87.035  1.00104.53           N
ANISOU 8584  N   ASP B 814    10708  15227  13783   -555   -133   -224       N
ATOM   8585  CA  ASP B 814      52.503  21.314  87.275  1.00111.85           C
ANISOU 8585  CA  ASP B 814    11539  16193  14765   -456   -179   -148       C
ATOM   8586  CB  ASP B 814      52.113  20.851  88.681  1.00117.88           C
ANISOU 8586  CB  ASP B 814    12324  17016  15448   -450   -296   -130       C
ATOM   8587  CG  ASP B 814      50.634  21.145  88.995  1.00121.05           C
ANISOU 8587  CG  ASP B 814    12877  17361  15756   -471   -309   -161       C
ATOM   8588  OD1 ASP B 814      49.785  21.022  88.082  1.00129.68           O
ANISOU 8588  OD1 ASP B 814    14054  18360  16857   -430   -251   -164       O
ATOM   8589  OD2 ASP B 814      50.299  21.508  90.144  1.00125.87           O
ANISOU 8589  OD2 ASP B 814    13517  18020  16287   -530   -374   -181       O
ATOM   8590  C   ASP B 814      52.084  20.270  86.251  1.00110.11           C
ANISOU 8590  C   ASP B 814    11356  15894  14585   -332   -125   -101       C
ATOM   8591  O   ASP B 814      52.687  19.200  86.158  1.00110.29           O
ANISOU 8591  O   ASP B 814    11307  15939  14660   -237   -131    -40       O
ATOM   8592  N   LYS B 815      51.029  20.601  85.503  1.00105.34           N
ANISOU 8592  N   LYS B 815    10871  15204  13950   -333    -73   -133       N
ATOM   8593  CA  LYS B 815      50.154  19.616  84.866  1.00 86.63           C
ANISOU 8593  CA  LYS B 815     8577  12761  11577   -227    -61    -95       C
ATOM   8594  CB  LYS B 815      49.066  20.330  84.073  1.00 70.16           C
ANISOU 8594  CB  LYS B 815     6607  10592   9459   -260     -9   -149       C
ATOM   8595  CG  LYS B 815      47.657  19.802  84.305  1.00 93.75           C
ANISOU 8595  CG  LYS B 815     9702  13522  12395   -218    -67   -136       C
ATOM   8596  CD  LYS B 815      47.511  18.328  83.891  1.00 97.75           C
ANISOU 8596  CD  LYS B 815    10209  14001  12931    -87    -80    -64       C
ATOM   8597  CE  LYS B 815      46.243  17.679  84.466  1.00 73.28           C
ANISOU 8597  CE  LYS B 815     7199  10858   9787    -52   -157    -41       C
ATOM   8598  NZ  LYS B 815      46.081  16.245  84.057  1.00 50.29           N
ANISOU 8598  NZ  LYS B 815     4300   7917   6891     71   -168     26       N
ATOM   8599  C   LYS B 815      50.900  18.620  83.972  1.00 96.29           C
ANISOU 8599  C   LYS B 815     9732  13973  12880   -117      0    -37       C
ATOM   8600  O   LYS B 815      50.548  17.451  83.946  1.00104.98           O
ANISOU 8600  O   LYS B 815    10861  15057  13970    -16    -27     16       O
ATOM   8601  N   LEU B 816      51.947  19.060  83.278  1.00 91.65           N
ANISOU 8601  N   LEU B 816     9058  13395  12371   -134     91    -45       N
ATOM   8602  CA  LEU B 816      52.712  18.140  82.437  1.00 87.36           C
ANISOU 8602  CA  LEU B 816     8448  12839  11907    -24    170     11       C
ATOM   8603  CB  LEU B 816      53.379  18.886  81.277  1.00 84.17           C
ANISOU 8603  CB  LEU B 816     8006  12394  11582    -47    319    -16       C
ATOM   8604  CG  LEU B 816      53.801  18.104  80.022  1.00 84.67           C
ANISOU 8604  CG  LEU B 816     8060  12402  11710     77    452     25       C
ATOM   8605  CD1 LEU B 816      54.159  19.058  78.925  1.00 75.67           C
ANISOU 8605  CD1 LEU B 816     6926  11200  10626     39    612    -16       C
ATOM   8606  CD2 LEU B 816      54.979  17.237  80.250  1.00 98.76           C
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ANISOU 8606  CD2 LEU B 816     9720  14242  13564    148    458     82       C
ATOM   8607  C   LEU B 816      53.757  17.371  83.263  1.00 88.97           C
ANISOU 8607  C   LEU B 816     8529  13130  12147     17    111     64       C
ATOM   8608  O   LEU B 816      54.008  16.192  82.986  1.00 91.19           O
ANISOU 8608  O   LEU B 816     8794  13411  12441    135    128    126       O
ATOM   8609  N   LYS B 817      54.356  18.014  84.270  1.00 82.08           N
ANISOU 8609  N   LYS B 817     7574  12334  11277    -76     41     42       N
ATOM   8610  CA  LYS B 817      55.244  17.293  85.191  1.00 92.42           C
ANISOU 8610  CA  LYS B 817     8771  13739  12607    -39    -37     89       C
ATOM   8611  CB  LYS B 817      55.793  18.219  86.288  1.00 94.23           C
ANISOU 8611  CB  LYS B 817     8920  14054  12829   -160   -120     52       C
ATOM   8612  C   LYS B 817      54.501  16.112  85.823  1.00 96.29           C
ANISOU 8612  C   LYS B 817     9338  14236  13010     51   -119    137       C
ATOM   8613  O   LYS B 817      54.901  14.949  85.665  1.00 82.04           O
ANISOU 8613  O   LYS B 817     7500  12448  11221    164   -107    203       O
ATOM   8614  N   LYS B 818      53.410  16.416  86.522  1.00 97.44           N
ANISOU 8614  N   LYS B 818     9592  14368  13064      1   -190    106       N
ATOM   8615  CA  LYS B 818      52.570  15.377  87.095  1.00 90.43           C
ANISOU 8615  CA  LYS B 818     8789  13470  12099     76   -253    146       C
ATOM   8616  CB  LYS B 818      51.327  15.994  87.748  1.00 84.83           C
ANISOU 8616  CB  LYS B 818     8196  12730  11307      3   -306     99       C
ATOM   8617  C   LYS B 818      52.179  14.356  86.015  1.00 84.67           C
ANISOU 8617  C   LYS B 818     8121  12667  11382    195   -185    194       C
ATOM   8618  O   LYS B 818      52.284  13.133  86.233  1.00 76.18           O
ANISOU 8618  O   LYS B 818     7048  11613  10286    298   -205    261       O
ATOM   8619  N   LEU B 819      51.775  14.854  84.842  1.00 63.89           N
ANISOU 8619  N   LEU B 819     5539   9956   8779    185   -101    164       N
ATOM   8620  CA  LEU B 819      51.327  13.958  83.772  1.00 65.63           C
ANISOU 8620  CA  LEU B 819     5830  10106   9000    297    -38    209       C
ATOM   8621  CB  LEU B 819      50.911  14.746  82.530  1.00 61.84           C
ANISOU 8621  CB  LEU B 819     5400   9548   8549    270     53    163       C
ATOM   8622  CG  LEU B 819      50.159  13.964  81.449  1.00 62.55           C
ANISOU 8622  CG  LEU B 819     5589   9558   8621    380    102    205       C
ATOM   8623  CD1 LEU B 819      49.160  13.055  82.097  1.00 65.08           C
ANISOU 8623  CD1 LEU B 819     5993   9861   8873    424      6    242       C
ATOM   8624  CD2 LEU B 819      49.442  14.897  80.490  1.00 69.71           C
ANISOU 8624  CD2 LEU B 819     6561  10396   9531    338    161    145       C
ATOM   8625  C   LEU B 819      52.399  12.933  83.408  1.00 71.86           C
ANISOU 8625  C   LEU B 819     6543  10930   9830    409     15    286       C
ATOM   8626  O   LEU B 819      52.177  11.740  83.546  1.00 79.93           O
ANISOU 8626  O   LEU B 819     7609  11950  10809    510     -6    356       O
ATOM   8627  N   ILE B 820      53.570  13.393  82.981  1.00 84.39           N
ANISOU 8627  N   ILE B 820     8017  12548  11500    393     89    278       N
ATOM   8628  CA  ILE B 820      54.625  12.468  82.557  1.00 96.46           C
ANISOU 8628  CA  ILE B 820     9473  14105  13075    504    157    357       C
ATOM   8629  CB  ILE B 820      55.871  13.213  82.102  1.00 85.86           C
ANISOU 8629  CB  ILE B 820     7996  12786  11841    461    245    330       C
ATOM   8630  CG1 ILE B 820      55.578  13.933  80.794  1.00 86.69           C
ANISOU 8630  CG1 ILE B 820     8162  12797  11979    445    375    286       C
ATOM   8631  CD1 ILE B 820      56.790  14.343  80.029  1.00 95.05           C
ANISOU 8631  CD1 ILE B 820     9117  13854  13145    445    511    277       C
ATOM   8632  CG2 ILE B 820      56.979  12.241  81.871  1.00100.47           C
ANISOU 8632  CG2 ILE B 820     9762  14677  13736    575    303    417       C
ATOM   8633  C   ILE B 820      55.042  11.459  83.627  1.00106.54           C
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ANISOU 8633  C   ILE B 820    10702  15465  14315    563     70    423       C
ATOM   8634  O   ILE B 820      55.212  10.275  83.333  1.00109.27           O
ANISOU 8634  O   ILE B 820    11074  15803  14639    689    106    512       O
ATOM   8635  N   ASN B 821      55.188  11.915  84.866  1.00104.87           N
ANISOU 8635  N   ASN B 821    10430  15328  14089    477    -38    386       N
ATOM   8636  CA  ASN B 821      55.562  11.009  85.947  1.00106.53           C
ANISOU 8636  CA  ASN B 821    10597  15623  14258    532   -123    444       C
ATOM   8637  CB  ASN B 821      55.749  11.782  87.250  1.00105.50           C
ANISOU 8637  CB  ASN B 821    10401  15572  14112    421   -236    394       C
ATOM   8638  CG  ASN B 821      56.922  12.742  87.191  1.00107.88           C
ANISOU 8638  CG  ASN B 821    10548  15927  14515    341   -221    357       C
ATOM   8639  OD1 ASN B 821      57.903  12.510  86.470  1.00 98.79           O
ANISOU 8639  OD1 ASN B 821     9297  14786  13452    393   -139    389       O
ATOM   8640  ND2 ASN B 821      56.839  13.817  87.970  1.00109.17           N
ANISOU 8640  ND2 ASN B 821    10691  16125  14664    214   -294    293       N
ATOM   8641  C   ASN B 821      54.556   9.886  86.166  1.00108.32           C
ANISOU 8641  C   ASN B 821    10958  15811  14388    618   -151    496       C
ATOM   8642  O   ASN B 821      54.941   8.737  86.389  1.00115.08           O
ANISOU 8642  O   ASN B 821    11802  16703  15219    725   -150    578       O
ATOM   8643  N   LYS B 822      53.271  10.222  86.097  1.00104.31           N
ANISOU 8643  N   LYS B 822    10574  15228  13830    573   -172    450       N
ATOM   8644  CA  LYS B 822      52.212   9.257  86.378  1.00 97.09           C
ANISOU 8644  CA  LYS B 822     9784  14271  12835    637   -204    487       C
ATOM   8645  CB  LYS B 822      50.948   9.965  86.892  1.00 90.36           C
ANISOU 8645  CB  LYS B 822     9023  13372  11940    543   -265    416       C
ATOM   8646  C   LYS B 822      51.882   8.436  85.145  1.00 95.87           C
ANISOU 8646  C   LYS B 822     9713  14033  12679    745   -116    547       C
ATOM   8647  O   LYS B 822      51.723   7.222  85.230  1.00 96.23           O
ANISOU 8647  O   LYS B 822     9814  14072  12678    848   -110    624       O
ATOM   8648  N   SER B 823      51.796   9.095  83.992  1.00 96.12           N
ANISOU 8648  N   SER B 823     9761  14002  12759    727    -42    517       N
ATOM   8649  CA  SER B 823      51.227   8.457  82.808  1.00 87.26           C
ANISOU 8649  CA  SER B 823     8747  12783  11624    824     34    570       C
ATOM   8650  CB  SER B 823      49.707   8.534  82.874  1.00 89.06           C
ANISOU 8650  CB  SER B 823     9097  12937  11804    790    -27    533       C
ATOM   8651  OG  SER B 823      49.220   7.920  84.047  1.00100.90           O
ANISOU 8651  OG  SER B 823    10625  14466  13247    786   -113    542       O
ATOM   8652  C   SER B 823      51.686   9.047  81.478  1.00 85.44           C
ANISOU 8652  C   SER B 823     8501  12502  11459    840    151    565       C
ATOM   8653  O   SER B 823      50.869   9.592  80.719  1.00 76.01           O
ANISOU 8653  O   SER B 823     7385  11229  10266    819    176    528       O
ATOM   8654  N   PRO B 824      52.981   8.893  81.164  1.00 75.40           N
ANISOU 8654  N   PRO B 824     7136  11268  10243    887    233    610       N
ATOM   8655  CA  PRO B 824      53.509   9.448  79.921  1.00 69.01           C
ANISOU 8655  CA  PRO B 824     6316  10401   9502    907    369    609       C
ATOM   8656  CB  PRO B 824      55.003   9.063  79.962  1.00 71.95           C
ANISOU 8656  CB  PRO B 824     6567  10836   9936    960    435    670       C
ATOM   8657  CG  PRO B 824      55.044   7.832  80.757  1.00 70.34           C
ANISOU 8657  CG  PRO B 824     6372  10680   9672   1038    369    750       C
ATOM   8658  CD  PRO B 824      53.948   7.993  81.813  1.00 79.81           C
ANISOU 8658  CD  PRO B 824     7616  11907  10800    954    222    685       C
ATOM   8659  C   PRO B 824      52.829   8.855  78.695  1.00 69.81           C
ANISOU 8659  C   PRO B 824     6579  10367   9579   1029    463    680       C
ATOM   8660  O   PRO B 824      52.790   9.498  77.642  1.00 82.74           O
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ANISOU 8660  O   PRO B 824     8263  11918  11257   1036    569    661       O
ATOM   8661  N   GLU B 825      52.298   7.648  78.814  1.00 62.52           N
ANISOU 8661  N   GLU B 825     5755   9408   8591   1129    435    762       N
ATOM   8662  CA  GLU B 825      51.651   7.018  77.664  1.00 71.08           C
ANISOU 8662  CA  GLU B 825     7016  10338   9653   1257    522    838       C
ATOM   8663  CB  GLU B 825      51.441   5.516  77.928  1.00 72.52           C
ANISOU 8663  CB  GLU B 825     7291  10497   9768   1372    505    942       C
ATOM   8664  CG  GLU B 825      50.323   5.211  78.930  1.00 74.40           C
ANISOU 8664  CG  GLU B 825     7555  10774   9939   1314    352    903       C
ATOM   8665  CD  GLU B 825      50.705   5.548  80.364  1.00 89.31           C
ANISOU 8665  CD  GLU B 825     9298  12814  11822   1201    244    838       C
ATOM   8666  OE1 GLU B 825      51.900   5.829  80.621  1.00 86.49           O
ANISOU 8666  OE1 GLU B 825     8813  12541  11509   1183    275    839       O
ATOM   8667  OE2 GLU B 825      49.798   5.570  81.230  1.00100.43           O
ANISOU 8667  OE2 GLU B 825    10729  14242  13187   1133    132    787       O
ATOM   8668  C   GLU B 825      50.315   7.697  77.298  1.00 70.00           C
ANISOU 8668  C   GLU B 825     6970  10125   9501   1209    470    769       C
ATOM   8669  O   GLU B 825      49.683   7.330  76.314  1.00 76.84           O
ANISOU 8669  O   GLU B 825     8013  10831  10354   1305    526    812       O
ATOM   8670  N   LYS B 826      49.871   8.696  78.051  1.00 59.11           N
ANISOU 8670  N   LYS B 826     5508   8830   8122   1059    363    657       N
ATOM   8671  CA  LYS B 826      48.692   9.384  77.554  1.00 70.42           C
ANISOU 8671  CA  LYS B 826     7022  10186   9550   1025    333    603       C
ATOM   8672  CB  LYS B 826      47.768   9.847  78.687  1.00 70.70           C
ANISOU 8672  CB  LYS B 826     7026  10289   9548    888    177    515       C
ATOM   8673  CG  LYS B 826      47.848   9.008  79.944  1.00 76.05           C
ANISOU 8673  CG  LYS B 826     7675  11038  10182    877     88    537       C
ATOM   8674  CD  LYS B 826      46.831   9.441  80.984  1.00 76.56           C
ANISOU 8674  CD  LYS B 826     7752  11119  10216    763    -34    461       C
ATOM   8675  CE  LYS B 826      45.562   8.605  80.851  1.00 91.70           C
ANISOU 8675  CE  LYS B 826     9793  12949  12099    820    -89    500       C
ATOM   8676  NZ  LYS B 826      44.438   9.152  81.649  1.00103.16           N
ANISOU 8676  NZ  LYS B 826    11269  14386  13540    712   -185    426       N
ATOM   8677  C   LYS B 826      49.048  10.548  76.657  1.00 66.26           C
ANISOU 8677  C   LYS B 826     6533   9576   9065    963    433    526       C
ATOM   8678  O   LYS B 826      48.178  11.104  76.009  1.00 76.07           O
ANISOU 8678  O   LYS B 826     7957  10664  10283    909    414    452       O
ATOM   8679  N   LEU B 827      50.318  10.918  76.582  1.00 69.01           N
ANISOU 8679  N   LEU B 827     6726  10013   9479    968    540    542       N
ATOM   8680  CA  LEU B 827      50.700  11.907  75.581  1.00 62.33           C
ANISOU 8680  CA  LEU B 827     5960   9049   8674    923    663    474       C
ATOM   8681  CB  LEU B 827      52.077  12.463  75.847  1.00 62.14           C
ANISOU 8681  CB  LEU B 827     5721   9159   8731    878    745    466       C
ATOM   8682  CG  LEU B 827      52.383  13.133  77.172  1.00 63.10           C
ANISOU 8682  CG  LEU B 827     5683   9440   8853    715    611    372       C
ATOM   8683  CD1 LEU B 827      53.771  13.777  77.060  1.00 65.15           C
ANISOU 8683  CD1 LEU B 827     5812   9743   9199    660    706    338       C
ATOM   8684  CD2 LEU B 827      51.360  14.164  77.463  1.00 49.50           C
ANISOU 8684  CD2 LEU B 827     3987   7725   7096    593    535    270       C
ATOM   8685  C   LEU B 827      50.654  11.273  74.193  1.00 68.13           C
ANISOU 8685  C   LEU B 827     6967   9531   9390   1042    780    526       C
ATOM   8686  O   LEU B 827      51.251  10.229  73.972  1.00 77.34           O
ANISOU 8686  O   LEU B 827     8145  10676  10565   1172    854    639       O
ATOM   8687  N   LEU B 828      49.934  11.892  73.264  1.00 64.33           N
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ANISOU 8687  N   LEU B 828     6716   8851   8875   1003    796    446       N
ATOM   8688  CA  LEU B 828      49.864  11.388  71.894  1.00 64.73           C
ANISOU 8688  CA  LEU B 828     7059   8641   8896   1107    902    485       C
ATOM   8689  CB  LEU B 828      48.868  12.203  71.065  1.00 64.07           C
ANISOU 8689  CB  LEU B 828     7217   8363   8763   1042    870    380       C
ATOM   8690  CG  LEU B 828      47.435  11.667  71.197  1.00 53.70           C
ANISOU 8690  CG  LEU B 828     6050   6976   7377   1033    697    375       C
ATOM   8691  CD1 LEU B 828      46.891  12.044  72.549  1.00 56.18           C
ANISOU 8691  CD1 LEU B 828     6142   7504   7701    927    550    331       C
ATOM   8692  CD2 LEU B 828      46.501  12.151  70.103  1.00 49.86           C
ANISOU 8692  CD2 LEU B 828     5856   6250   6839   1013    672    304       C
ATOM   8693  C   LEU B 828      51.254  11.419  71.269  1.00 81.29           C
ANISOU 8693  C   LEU B 828     9114  10709  11064   1180   1108    538       C
ATOM   8694  O   LEU B 828      51.700  10.476  70.603  1.00 77.77           O
ANISOU 8694  O   LEU B 828     8797  10141  10612   1315   1216    640       O
ATOM   8695  N   MET B 829      51.947  12.514  71.533  1.00 93.34           N
ANISOU 8695  N   MET B 829    10452  12350  12662   1087   1165    471       N
ATOM   8696  CA  MET B 829      53.341  12.670  71.178  1.00 90.24           C
ANISOU 8696  CA  MET B 829     9941  11979  12367   1132   1353    517       C
ATOM   8697  CB  MET B 829      53.870  13.921  71.836  1.00 82.17           C
ANISOU 8697  CB  MET B 829     8665  11138  11417    987   1350    426       C
ATOM   8698  CG  MET B 829      55.246  14.313  71.469  1.00 82.41           C
ANISOU 8698  CG  MET B 829     8557  11190  11565   1001   1540    450       C
ATOM   8699  SD  MET B 829      55.674  15.417  72.804  1.00 83.37           S
ANISOU 8699  SD  MET B 829     8372  11592  11714    791   1397    337       S
ATOM   8700  CE  MET B 829      55.557  14.233  74.122  1.00102.75           C
ANISOU 8700  CE  MET B 829    10695  14229  14115    817   1186    407       C
ATOM   8701  C   MET B 829      54.160  11.458  71.604  1.00 98.86           C
ANISOU 8701  C   MET B 829    10884  13180  13498   1259   1389    664       C
ATOM   8702  O   MET B 829      55.101  11.053  70.921  1.00106.64           O
ANISOU 8702  O   MET B 829    11896  14081  14541   1368   1569    750       O
ATOM   8703  N   TYR B 830      53.791  10.866  72.731  1.00 96.38           N
ANISOU 8703  N   TYR B 830    10424  13045  13151   1252   1228    698       N
ATOM   8704  CA  TYR B 830      54.520   9.710  73.240  1.00 97.36           C
ANISOU 8704  CA  TYR B 830    10451  13264  13278   1340   1217    814       C
ATOM   8705  CB  TYR B 830      53.990   9.310  74.615  1.00 95.10           C
ANISOU 8705  CB  TYR B 830    10044  13159  12931   1277   1003    799       C
ATOM   8706  CG  TYR B 830      54.610   8.083  75.239  1.00 89.66           C
ANISOU 8706  CG  TYR B 830     9303  12547  12217   1351    966    898       C
ATOM   8707  CD1 TYR B 830      54.175   6.807  74.892  1.00 87.50           C
ANISOU 8707  CD1 TYR B 830     9197  12170  11881   1494    995   1008       C
ATOM   8708  CE1 TYR B 830      54.714   5.688  75.463  1.00 73.63           C
ANISOU 8708  CE1 TYR B 830     7402  10481  10092   1562    974   1100       C
ATOM   8709  CZ  TYR B 830      55.684   5.827  76.424  1.00 83.95           C
ANISOU 8709  CZ  TYR B 830     8501  11958  11436   1494    911   1082       C
ATOM   8710  OH  TYR B 830      56.231   4.702  77.004  1.00 94.08           O
ANISOU 8710  OH  TYR B 830     9752  13307  12688   1571    895   1177       O
ATOM   8711  CE2 TYR B 830      56.121   7.084  76.809  1.00 82.76           C
ANISOU 8711  CE2 TYR B 830     8186  11906  11353   1352    868    969       C
ATOM   8712  CD2 TYR B 830      55.585   8.198  76.217  1.00 81.25           C
ANISOU 8712  CD2 TYR B 830     8035  11649  11187   1277    898    877       C
ATOM   8713  C   TYR B 830      54.425   8.544  72.270  1.00 96.24           C
ANISOU 8713  C   TYR B 830    10548  12918  13100   1523   1342    935       C
ATOM   8714  O   TYR B 830      55.296   7.681  72.252  1.00 95.48           O
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ANISOU 8714  O   TYR B 830    10437  12830  13012   1603   1403   1035       O
ATOM   8715  N   HIS B 831      53.384   8.530  71.444  1.00100.50           N
ANISOU 8715  N   HIS B 831    11387  13237  13561   1532   1329    893       N
ATOM   8716  CA  HIS B 831      53.204   7.416  70.525  1.00 95.70           C
ANISOU 8716  CA  HIS B 831    11069  12404  12887   1673   1412    987       C
ATOM   8717  CB  HIS B 831      51.763   6.916  70.598  1.00 93.86           C
ANISOU 8717  CB  HIS B 831    11040  12082  12542   1647   1239    955       C
ATOM   8718  CG  HIS B 831      51.434   6.301  71.924  1.00 99.69           C
ANISOU 8718  CG  HIS B 831    11580  13036  13262   1637   1087    989       C
ATOM   8719  ND1 HIS B 831      50.185   6.431  72.511  1.00105.27           N
ANISOU 8719  ND1 HIS B 831    12308  13775  13915   1542    898    915       N
ATOM   8720  CE1 HIS B 831      50.197   5.809  73.671  1.00100.76           C
ANISOU 8720  CE1 HIS B 831    11549  13396  13338   1560    810    965       C
ATOM   8721  NE2 HIS B 831      51.395   5.286  73.865  1.00 99.90           N
ANISOU 8721  NE2 HIS B 831    11295  13389  13275   1663    924   1069       N
ATOM   8722  CD2 HIS B 831      52.177   5.585  72.771  1.00102.18           C
ANISOU 8722  CD2 HIS B 831    11679  13538  13608   1712   1101   1087       C
ATOM   8723  C   HIS B 831      53.563   7.749  69.083  1.00 96.31           C
ANISOU 8723  C   HIS B 831    11401  12221  12973   1722   1601    980       C
ATOM   8724  O   HIS B 831      53.894   6.852  68.316  1.00 94.01           O
ANISOU 8724  O   HIS B 831    11306  11761  12654   1860   1733   1084       O
ATOM   8725  N   HIS B 832      53.523   9.028  68.720  1.00 90.98           N
ANISOU 8725  N   HIS B 832    10732  11505  12330   1616   1625    862       N
ATOM   8726  CA  HIS B 832      53.619   9.409  67.313  1.00 79.47           C
ANISOU 8726  CA  HIS B 832     9570   9768  10856   1654   1784    836       C
ATOM   8727  CB  HIS B 832      52.390  10.196  66.907  1.00 76.77           C
ANISOU 8727  CB  HIS B 832     9437   9298  10435   1550   1659    702       C
ATOM   8728  CG  HIS B 832      51.122   9.409  66.953  1.00 79.59           C
ANISOU 8728  CG  HIS B 832     9983   9577  10682   1559   1480    711       C
ATOM   8729  ND1 HIS B 832      50.203   9.424  65.929  1.00 92.03           N
ANISOU 8729  ND1 HIS B 832    11912  10892  12165   1566   1442    668       N
ATOM   8730  CE1 HIS B 832      49.184   8.646  66.245  1.00 85.82           C
ANISOU 8730  CE1 HIS B 832    11206  10097  11306   1563   1270    688       C
ATOM   8731  NE2 HIS B 832      49.411   8.127  67.434  1.00 84.14           N
ANISOU 8731  NE2 HIS B 832    10716  10124  11131   1561   1207    742       N
ATOM   8732  CD2 HIS B 832      50.625   8.579  67.895  1.00 76.43           C
ANISOU 8732  CD2 HIS B 832     9467   9319  10253   1562   1330    759       C
ATOM   8733  C   HIS B 832      54.845  10.227  66.973  1.00 89.79           C
ANISOU 8733  C   HIS B 832    10744  11090  12283   1649   1987    826       C
ATOM   8734  O   HIS B 832      55.120  10.500  65.805  1.00103.35           O
ANISOU 8734  O   HIS B 832    12698  12571  13998   1699   2158    818       O
ATOM   8735  N   ASP B 833      55.570  10.644  67.994  1.00 94.85           N
ANISOU 8735  N   ASP B 833    11013  12001  13026   1582   1965    822       N
ATOM   8736  CA  ASP B 833      56.761  11.444  67.779  1.00 88.16           C
ANISOU 8736  CA  ASP B 833    10021  11188  12288   1529   2107    801       C
ATOM   8737  CB  ASP B 833      56.388  12.919  67.717  1.00 82.97           C
ANISOU 8737  CB  ASP B 833     9341  10532  11652   1392   2105    645       C
ATOM   8738  CG  ASP B 833      57.404  13.742  66.995  1.00 86.54           C
ANISOU 8738  CG  ASP B 833     9811  10894  12177   1345   2270    608       C
ATOM   8739  OD1 ASP B 833      58.347  13.177  66.414  1.00109.79           O
ANISOU 8739  OD1 ASP B 833    12810  13744  15160   1429   2399    706       O
ATOM   8740  OD2 ASP B 833      57.258  14.972  66.996  1.00 90.37           O
ANISOU 8740  OD2 ASP B 833    10261  11395  12680   1223   2275    481       O
ATOM   8741  C   ASP B 833      57.766  11.176  68.887  1.00 96.13           C
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ANISOU 8741  C   ASP B 833    10690  12470  13366   1480   2022    851       C
ATOM   8742  O   ASP B 833      58.176  12.097  69.598  1.00 98.15           O
ANISOU 8742  O   ASP B 833    10704  12908  13678   1340   1951    765       O
ATOM   8743  N   PRO B 834      58.165   9.900  69.036  1.00 93.28           N
ANISOU 8743  N   PRO B 834    10331  12123  12986   1594   2023    986       N
ATOM   8744  CA  PRO B 834      59.001   9.477  70.168  1.00 90.53           C
ANISOU 8744  CA  PRO B 834     9694  12023  12680   1563   1915   1033       C
ATOM   8745  CB  PRO B 834      59.270   7.997  69.883  1.00 85.61           C
ANISOU 8745  CB  PRO B 834     9198  11314  12016   1726   1981   1195       C
ATOM   8746  CG  PRO B 834      58.913   7.804  68.439  1.00 88.97           C
ANISOU 8746  CG  PRO B 834     9976  11429  12401   1829   2162   1231       C
ATOM   8747  CD  PRO B 834      57.825   8.767  68.158  1.00 84.29           C
ANISOU 8747  CD  PRO B 834     9497  10758  11773   1755   2121   1096       C
ATOM   8748  C   PRO B 834      60.308  10.236  70.275  1.00 86.79           C
ANISOU 8748  C   PRO B 834     9010  11644  12321   1481   1974   1000       C
ATOM   8749  O   PRO B 834      60.812  10.392  71.390  1.00 75.56           O
ANISOU 8749  O   PRO B 834     7324  10454  10930   1394   1838    967       O
ATOM   8750  N   GLN B 835      60.844  10.693  69.144  1.00 90.53           N
ANISOU 8750  N   GLN B 835     9616  11931  12852   1506   2170   1003       N
ATOM   8751  CA  GLN B 835      62.098  11.432  69.162  1.00101.53           C
ANISOU 8751  CA  GLN B 835    10817  13399  14361   1431   2239    972       C
ATOM   8752  CB  GLN B 835      62.631  11.673  67.745  1.00103.51           C
ANISOU 8752  CB  GLN B 835    11282  13385  14663   1494   2481   1008       C
ATOM   8753  C   GLN B 835      61.840  12.734  69.883  1.00104.87           C
ANISOU 8753  C   GLN B 835    11063  13990  14794   1249   2117    810       C
ATOM   8754  O   GLN B 835      62.641  13.187  70.697  1.00108.42           O
ANISOU 8754  O   GLN B 835    11249  14642  15304   1148   2039    764       O
ATOM   8755  N   THR B 836      60.686  13.316  69.595  1.00100.95           N
ANISOU 8755  N   THR B 836    10726  13401  14230   1207   2098    723       N
ATOM   8756  CA  THR B 836      60.298  14.559  70.226  1.00 94.31           C
ANISOU 8756  CA  THR B 836     9756  12697  13382   1036   1992    574       C
ATOM   8757  CB  THR B 836      59.108  15.187  69.519  1.00 88.21           C
ANISOU 8757  CB  THR B 836     9226  11743  12548   1023   2038    495       C
ATOM   8758  OG1 THR B 836      59.429  15.369  68.131  1.00 86.06           O
ANISOU 8758  OG1 THR B 836     9197  11201  12300   1094   2254    510       O
ATOM   8759  CG2 THR B 836      58.772  16.524  70.149  1.00 87.28           C
ANISOU 8759  CG2 THR B 836     8981  11760  12422    841   1947    347       C
ATOM   8760  C   THR B 836      59.970  14.330  71.689  1.00 87.69           C
ANISOU 8760  C   THR B 836     8706  12111  12500    961   1758    547       C
ATOM   8761  O   THR B 836      60.379  15.109  72.553  1.00 85.17           O
ANISOU 8761  O   THR B 836     8176  11981  12205    818   1659    454       O
ATOM   8762  N   TYR B 837      59.250  13.253  71.979  1.00 76.89           N
ANISOU 8762  N   TYR B 837     7414  10738  11064   1057   1671    626       N
ATOM   8763  CA  TYR B 837      58.960  12.939  73.373  1.00 78.52           C
ANISOU 8763  CA  TYR B 837     7455  11155  11226    995   1454    605       C
ATOM   8764  CB  TYR B 837      58.120  11.665  73.502  1.00 70.87           C
ANISOU 8764  CB  TYR B 837     6615  10141  10173   1120   1387    705       C
ATOM   8765  CG  TYR B 837      58.101  11.141  74.921  1.00 73.33           C
ANISOU 8765  CG  TYR B 837     6772  10645  10447   1078   1188    706       C
ATOM   8766  CD1 TYR B 837      57.253  11.685  75.879  1.00 67.44           C
ANISOU 8766  CD1 TYR B 837     5976   9999   9650    957   1017    606       C
ATOM   8767  CE1 TYR B 837      57.255  11.228  77.173  1.00 72.83           C
ANISOU 8767  CE1 TYR B 837     6557  10816  10298    922    851    606       C
ATOM   8768  CZ  TYR B 837      58.115  10.213  77.528  1.00 87.18           C
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ANISOU 8768  CZ  TYR B 837     8306  12687  12130   1012    850    704       C
ATOM   8769  OH  TYR B 837      58.147   9.722  78.816  1.00 92.72           O
ANISOU 8769  OH  TYR B 837     8926  13508  12795    990    697    710       O
ATOM   8770  CE2 TYR B 837      58.972   9.672  76.597  1.00 91.32           C
ANISOU 8770  CE2 TYR B 837     8857  13135  12707   1130   1014    805       C
ATOM   8771  CD2 TYR B 837      58.965  10.137  75.311  1.00 81.98           C
ANISOU 8771  CD2 TYR B 837     7788  11803  11560   1161   1182    806       C
ATOM   8772  C   TYR B 837      60.259  12.796  74.170  1.00 87.68           C
ANISOU 8772  C   TYR B 837     8377  12483  12454    958   1405    617       C
ATOM   8773  O   TYR B 837      60.344  13.217  75.325  1.00 78.50           O
ANISOU 8773  O   TYR B 837     7046  11488  11293    838   1250    533       O
ATOM   8774  N   GLN B 838      61.276  12.204  73.556  1.00 97.14           N
ANISOU 8774  N   GLN B 838     9574  13619  13718   1064   1543    721       N
ATOM   8775  CA  GLN B 838      62.536  12.049  74.255  1.00 93.49           C
ANISOU 8775  CA  GLN B 838     8882  13309  13333   1040   1505    740       C
ATOM   8776  CB  GLN B 838      63.479  11.165  73.461  1.00 92.92           C
ANISOU 8776  CB  GLN B 838     8852  13134  13321   1192   1671    889       C
ATOM   8777  CG  GLN B 838      63.242   9.697  73.726  1.00105.17           C
ANISOU 8777  CG  GLN B 838    10478  14674  14806   1334   1629   1025       C
ATOM   8778  CD  GLN B 838      63.388   9.341  75.195  1.00109.95           C
ANISOU 8778  CD  GLN B 838    10895  15491  15389   1286   1427   1006       C
ATOM   8779  OE1 GLN B 838      62.707   8.441  75.688  1.00111.30           O
ANISOU 8779  OE1 GLN B 838    11142  15677  15468   1348   1333   1060       O
ATOM   8780  NE2 GLN B 838      64.298  10.027  75.897  1.00106.05           N
ANISOU 8780  NE2 GLN B 838    10166  15148  14981   1179   1364    931       N
ATOM   8781  C   GLN B 838      63.167  13.405  74.548  1.00 96.03           C
ANISOU 8781  C   GLN B 838     9026  13736  13725    874   1495    604       C
ATOM   8782  O   GLN B 838      63.584  13.659  75.681  1.00104.62           O
ANISOU 8782  O   GLN B 838     9917  14994  14840    777   1353    539       O
ATOM   8783  N   LYS B 839      63.206  14.274  73.535  1.00 90.51           N
ANISOU 8783  N   LYS B 839     8418  12918  13053    843   1647    560       N
ATOM   8784  CA  LYS B 839      63.685  15.647  73.705  1.00 83.86           C
ANISOU 8784  CA  LYS B 839     7441  12168  12255    678   1653    428       C
ATOM   8785  CB  LYS B 839      63.577  16.435  72.387  1.00 71.24           C
ANISOU 8785  CB  LYS B 839     6021  10379  10670    681   1849    410       C
ATOM   8786  C   LYS B 839      62.915  16.348  74.838  1.00100.20           C
ANISOU 8786  C   LYS B 839     9433  14376  14261    523   1463    290       C
ATOM   8787  O   LYS B 839      63.517  17.074  75.636  1.00100.28           O
ANISOU 8787  O   LYS B 839     9254  14529  14319    388   1387    190       O
ATOM   8788  N   LEU B 840      61.602  16.107  74.930  1.00 96.93           N
ANISOU 8788  N   LEU B 840     9172  13901  13755    545   1389    286       N
ATOM   8789  CA  LEU B 840      60.808  16.628  76.050  1.00 86.54           C
ANISOU 8789  CA  LEU B 840     7810  12672  12400    416   1211    177       C
ATOM   8790  CB  LEU B 840      59.309  16.342  75.863  1.00 79.21           C
ANISOU 8790  CB  LEU B 840     7076  11651  11368    462   1165    195       C
ATOM   8791  CG  LEU B 840      58.402  16.763  77.029  1.00 88.56           C
ANISOU 8791  CG  LEU B 840     8244  12884  12522    348    984    123       C
ATOM   8792  CD1 LEU B 840      58.639  18.219  77.405  1.00 98.35           C
ANISOU 8792  CD1 LEU B 840     9401  14124  13842    173    988     12       C
ATOM   8793  CD2 LEU B 840      56.935  16.538  76.728  1.00 85.27           C
ANISOU 8793  CD2 LEU B 840     8010  12388  12003    393    950    139       C
ATOM   8794  C   LEU B 840      61.269  16.050  77.389  1.00 86.20           C
ANISOU 8794  C   LEU B 840     7609  12743  12399    403   1046    202       C
ATOM   8795  O   LEU B 840      61.527  16.798  78.331  1.00 86.43           O
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ANISOU 8795  O   LEU B 840     7515  12833  12491    272    950    126       O
ATOM   8796  N   LYS B 841      61.387  14.725  77.474  1.00 90.77           N
ANISOU 8796  N   LYS B 841     8211  13329  12950    547   1021    330       N
ATOM   8797  CA  LYS B 841      61.578  14.087  78.775  1.00 98.44           C
ANISOU 8797  CA  LYS B 841     9080  14406  13917    551    853    367       C
ATOM   8798  CB  LYS B 841      61.507  12.547  78.645  1.00 90.20           C
ANISOU 8798  CB  LYS B 841     8113  13345  12814    727    858    515       C
ATOM   8799  CG  LYS B 841      61.944  11.800  79.909  1.00 86.21           C
ANISOU 8799  CG  LYS B 841     7495  12960  12301    750    712    566       C
ATOM   8800  CD  LYS B 841      61.747  10.279  79.813  1.00 87.53           C
ANISOU 8800  CD  LYS B 841     7760  13103  12393    918    721    709       C
ATOM   8801  CE  LYS B 841      62.717   9.458  80.722  1.00108.27           C
ANISOU 8801  CE  LYS B 841    10243  15849  15047    977    650    787       C
ATOM   8802  NZ  LYS B 841      64.179   9.817  80.680  1.00112.30           N
ANISOU 8802  NZ  LYS B 841    10548  16431  15691    958    704    788       N
ATOM   8803  C   LYS B 841      62.884  14.550  79.437  1.00113.03           C
ANISOU 8803  C   LYS B 841    10701  16362  15882    473    822    331       C
ATOM   8804  O   LYS B 841      62.923  14.755  80.647  1.00115.41           O
ANISOU 8804  O   LYS B 841    10915  16741  16194    398    666    305       O
ATOM   8805  N   LEU B 842      63.923  14.767  78.632  1.00112.39           N
ANISOU 8805  N   LEU B 842    10535  16281  15888    490    970    335       N
ATOM   8806  CA  LEU B 842      65.216  15.162  79.160  1.00100.47           C
ANISOU 8806  CA  LEU B 842     8796  14876  14500    423    951    304       C
ATOM   8807  CB  LEU B 842      66.296  15.223  78.069  1.00121.44           C
ANISOU 8807  CB  LEU B 842    11389  17522  17231    472   1143    339       C
ATOM   8808  CG  LEU B 842      67.492  16.174  78.296  1.00115.71           C
ANISOU 8808  CG  LEU B 842    10439  16894  16632    348   1166    250       C
ATOM   8809  CD1 LEU B 842      68.199  15.784  79.566  1.00105.67           C
ANISOU 8809  CD1 LEU B 842     8971  15741  15439    338   1004    275       C
ATOM   8810  CD2 LEU B 842      68.475  16.026  77.162  1.00112.16           C
ANISOU 8810  CD2 LEU B 842     9959  16420  16236    428   1363    331       C
ATOM   8811  C   LEU B 842      65.088  16.508  79.836  1.00 97.30           C
ANISOU 8811  C   LEU B 842     8325  14489  14157    237    873    170       C
ATOM   8812  O   LEU B 842      65.600  16.693  80.952  1.00117.68           O
ANISOU 8812  O   LEU B 842    10758  17151  16803    172    737    165       O
ATOM   8813  N   ILE B 843      64.426  17.444  79.155  1.00 93.81           N
ANISOU 8813  N   ILE B 843     7997  13956  13692    158    962     82       N
ATOM   8814  CA  ILE B 843      64.222  18.766  79.730  1.00 96.50           C
ANISOU 8814  CA  ILE B 843     8304  14251  14112    -10    910      2       C
ATOM   8815  CB  ILE B 843      63.359  19.679  78.850  1.00 85.38           C
ANISOU 8815  CB  ILE B 843     7096  12701  12643    -66   1017    -47       C
ATOM   8816  CG1 ILE B 843      64.042  20.046  77.537  1.00 83.56           C
ANISOU 8816  CG1 ILE B 843     6886  12521  12344    -68   1208   -135       C
ATOM   8817  CD1 ILE B 843      64.976  21.290  77.656  1.00101.48           C
ANISOU 8817  CD1 ILE B 843     9056  14790  14712   -218   1250   -222       C
ATOM   8818  CG2 ILE B 843      63.024  20.959  79.591  1.00 88.34           C
ANISOU 8818  CG2 ILE B 843     7475  13027  13063   -205    932     14       C
ATOM   8819  C   ILE B 843      63.564  18.609  81.098  1.00107.89           C
ANISOU 8819  C   ILE B 843     9771  15736  15487    -38    689     61       C
ATOM   8820  O   ILE B 843      63.986  19.241  82.080  1.00111.21           O
ANISOU 8820  O   ILE B 843    10082  16219  15956   -140    574     63       O
ATOM   8821  N   MET B 844      62.317  17.285  84.707  1.00121.14           O
ANISOU 8821  O   ILE B 843    10082  16219  15956   -140    574     63       O
ATOM   8821  O   MET B 844      62.317  17.285  84.707  1.00121.14           O
ANISOU 8821  O   MET B 844    11510  17648  16869    -23    149    171       O
ATOM   8822  N   MET B 844      62.576  17.723  81.185  1.00111.10           N
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ANISOU 8822  N   MET B 844    10323  16136  15756     56    628    105       N
ATOM   8823  CA  MET B 844      61.788  17.714  82.400  1.00111.35           C
ANISOU 8823  CA  MET B 844    10413  16213  15681     14    440    125       C
ATOM   8824  C   MET B 844      62.477  16.916  83.527  1.00112.77           C
ANISOU 8824  C   MET B 844    10467  16520  15859     57    301    179       C
ATOM   8825  CB  MET B 844      60.354  17.227  82.114  1.00103.32           C
ANISOU 8825  CB  MET B 844     9603  15129  14524     76    427    138       C
ATOM   8826  CG  MET B 844      59.312  18.077  82.794  1.00 89.64           C
ANISOU 8826  CG  MET B 844     7977  13387  12696    -34    325     99       C
ATOM   8827  SD  MET B 844      57.742  18.380  82.077  1.00235.26           S
ANISOU 8827  SD  MET B 844    26635  31721  31031    -34    369     68       S
ATOM   8828  CE  MET B 844      57.982  20.128  82.134  1.00 88.04           C
ANISOU 8828  CE  MET B 844     7965  13073  12415   -204    398      8       C
ATOM   8829  N   GLU B 845      63.304  15.915  83.197  1.00108.67           N
ANISOU 8829  N   GLU B 845     9860  16043  15387    176    355    237       N
ATOM   8830  CA  GLU B 845      64.082  15.236  84.235  1.00111.32           C
ANISOU 8830  CA  GLU B 845    10059  16503  15736    216    231    295       C
ATOM   8831  CB  GLU B 845      65.005  14.154  83.686  1.00 98.45           C
ANISOU 8831  CB  GLU B 845     8341  14908  14156    359    321    378       C
ATOM   8832  CG  GLU B 845      64.540  13.155  82.650  1.00101.33           C
ANISOU 8832  CG  GLU B 845     8854  15196  14453    506    444    454       C
ATOM   8833  CD  GLU B 845      65.752  12.478  82.002  1.00120.46           C
ANISOU 8833  CD  GLU B 845    11162  17648  16960    617    565    538       C
ATOM   8834  OE1 GLU B 845      66.871  13.021  82.152  1.00138.40           O
ANISOU 8834  OE1 GLU B 845    13239  19989  19357    557    577    504       O
ATOM   8835  OE2 GLU B 845      65.602  11.439  81.324  1.00117.51           O
ANISOU 8835  OE2 GLU B 845    10895  17221  16535    762    655    645       O
ATOM   8836  C   GLU B 845      64.966  16.258  84.933  1.00121.96           C
ANISOU 8836  C   GLU B 845    11230  17919  17190     81    162    245       C
ATOM   8837  O   GLU B 845      65.117  16.260  86.163  1.00124.06           O
ANISOU 8837  O   GLU B 845    11435  18279  17422     41     -2    257       O
ATOM   8838  O   GLN B 846      66.900  19.682  86.206  1.00101.78           O
ANISOU 8838  O   GLN B 846     8293  15460  14919   -349     38    106       O
ATOM   8839  N   GLN B 846      65.556  17.114  84.104  1.00111.94           N
ANISOU 8839  N   GLN B 846     9885  16600  16049     14    295    188       N
ATOM   8840  CA  GLN B 846      66.617  18.010  84.513  1.00100.54           C
ANISOU 8840  CA  GLN B 846     8246  15211  14745   -102    267    149       C
ATOM   8841  C   GLN B 846      66.138  19.182  85.380  1.00104.62           C
ANISOU 8841  C   GLN B 846     8803  15733  15217   -261    144    114       C
ATOM   8842  CB  GLN B 846      67.341  18.535  83.268  1.00 67.44           C
ANISOU 8842  CB  GLN B 846     3978  10952  10695   -122    476     94       C
ATOM   8843  O   TYR B 847      62.695  21.719  87.192  1.00138.74           O
ANISOU 8843  O   TYR B 847    13638  20022  19057   -579   -115     -2       O
ATOM   8844  N   TYR B 847      64.898  19.639  85.203  1.00 97.33           N
ANISOU 8844  N   TYR B 847     8080  14730  14172   -299    153      94       N
ATOM   8845  CA  TYR B 847      64.507  20.880  85.872  1.00107.77           C
ANISOU 8845  CA  TYR B 847     9450  16068  15429   -455     67      55       C
ATOM   8846  C   TYR B 847      63.341  20.725  86.837  1.00124.11           C
ANISOU 8846  C   TYR B 847    11681  18173  17300   -465    -77      47       C
ATOM   8847  CB  TYR B 847      64.160  21.975  84.846  1.00105.16           C
ANISOU 8847  CB  TYR B 847     9207  15627  15121   -531    219      25       C
ATOM   8848  CG  TYR B 847      65.299  22.367  83.931  1.00117.78           C
ANISOU 8848  CG  TYR B 847    10654  17176  16920   -546    379      35       C
ATOM   8849  CD2 TYR B 847      65.903  23.622  84.020  1.00119.22           C
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ANISOU 8849  CD2 TYR B 847    10753  17376  17169   -690    393     27       C
ATOM   8850  CD1 TYR B 847      65.773  21.481  82.978  1.00119.51           C
ANISOU 8850  CD1 TYR B 847    10820  17338  17249   -419    525     41       C
ATOM   8851  CE2 TYR B 847      66.944  23.970  83.181  1.00126.57           C
ANISOU 8851  CE2 TYR B 847    11544  18255  18292   -701    551     58       C
ATOM   8852  CE1 TYR B 847      66.809  21.809  82.145  1.00127.30           C
ANISOU 8852  CE1 TYR B 847    11710  18275  18384   -427    684     26       C
ATOM   8853  CZ  TYR B 847      67.396  23.053  82.242  1.00137.51           C
ANISOU 8853  CZ  TYR B 847    12925  19563  19760   -562    698     55       C
ATOM   8854  OH  TYR B 847      68.441  23.369  81.391  1.00148.53           O
ANISOU 8854  OH  TYR B 847    14240  20891  21303   -563    865     59       O
ATOM   8855  O   GLY B 848      62.644  17.291  89.250  1.00122.79           O
ANISOU 8855  O   GLY B 848    11581  18199  16875   -168   -406    193       O
ATOM   8856  N   GLY B 848      63.069  19.498  87.269  1.00117.28           N
ANISOU 8856  N   GLY B 848    10846  17346  16370   -345   -147     92       N
ATOM   8857  CA  GLY B 848      61.955  19.274  88.170  1.00113.19           C
ANISOU 8857  CA  GLY B 848    10480  16850  15678   -345   -266     88       C
ATOM   8858  C   GLY B 848      62.358  18.480  89.389  1.00125.24           C
ANISOU 8858  C   GLY B 848    11930  18492  17165   -300   -416    130       C
ATOM   8859  O   ASP B 849      64.328  21.042  89.987  1.00157.23           O
ANISOU 8859  O   ASP B 849    15681  22652  21406   -615   -480     35       O
ATOM   8860  N   ASP B 849      62.404  19.101  90.574  1.00137.21           N
ANISOU 8860  N   ASP B 849    13428  20090  18616   -404   -553    100       N
ATOM   8861  CA  ASP B 849      62.138  20.531  90.817  1.00146.87           C
ANISOU 8861  CA  ASP B 849    14699  21307  19797   -566   -567     25       C
ATOM   8862  C   ASP B 849      63.172  21.453  90.142  1.00156.62           C
ANISOU 8862  C   ASP B 849    15791  22533  21186   -656   -487     -1       C
ATOM   8863  CB  ASP B 849      62.112  20.782  92.324  1.00151.62           C
ANISOU 8863  CB  ASP B 849    15300  22015  20294   -640   -739      7       C
ATOM   8864  CG  ASP B 849      63.294  20.141  93.036  1.00162.20           C
ANISOU 8864  CG  ASP B 849    16451  23468  21710   -601   -850     54       C
ATOM   8865  OD2 ASP B 849      63.625  20.579  94.158  1.00171.56           O
ANISOU 8865  OD2 ASP B 849    17588  24747  22849   -688   -990     31       O
ATOM   8866  OD1 ASP B 849      63.891  19.194  92.476  1.00166.50           O
ANISOU 8866  OD1 ASP B 849    16897  24010  22355   -480   -799    112       O
ATOM   8867  O   GLU B 850      60.222  21.780  88.914  1.00123.36           O
ANISOU 8867  O   GLU B 850    12033  18102  16737   -621   -322    -56       O
ATOM   8868  N   GLU B 850      62.818  22.682  89.734  1.00158.45           N
ANISOU 8868  N   GLU B 850    16098  22711  21393   -774   -419    -61       N
ATOM   8869  CA  GLU B 850      61.585  23.436  90.030  1.00154.41           C
ANISOU 8869  CA  GLU B 850    15787  22168  20715   -852   -432   -121       C
ATOM   8870  C   GLU B 850      60.249  22.850  89.514  1.00133.19           C
ANISOU 8870  C   GLU B 850    13287  19388  17931   -754   -372   -111       C
ATOM   8871  CB  GLU B 850      61.763  24.856  89.468  1.00157.65           C
ANISOU 8871  CB  GLU B 850    16209  22543  21149   -989   -341   -185       C
ATOM   8872  CG  GLU B 850      61.640  25.960  90.506  1.00151.60           C
ANISOU 8872  CG  GLU B 850    15485  21845  20270  -1146   -437   -258       C
ATOM   8873  CD  GLU B 850      62.098  27.303  89.976  1.00158.93           C
ANISOU 8873  CD  GLU B 850    16393  22752  21239  -1284   -347   -318       C
ATOM   8874  OE1 GLU B 850      62.144  27.466  88.736  1.00164.03           O
ANISOU 8874  OE1 GLU B 850    17050  23312  21962  -1254   -195   -311       O
ATOM   8875  OE2 GLU B 850      62.423  28.190  90.798  1.00161.08           O
ANISOU 8875  OE2 GLU B 850    16644  23096  21464  -1422   -426   -373       O
ATOM   8876  O   LYS B 851      57.264  21.506  87.734  1.00123.77           O
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ANISOU 8876  O   LYS B 851    12493  17947  16589   -528   -201    -86       O
ATOM   8877  N   LYS B 851      59.147  23.566  89.741  1.00122.25           N
ANISOU 8877  N   LYS B 851    12069  17970  16409   -822   -374   -169       N
ATOM   8878  CA  LYS B 851      57.809  23.002  89.516  1.00116.91           C
ANISOU 8878  CA  LYS B 851    11563  17219  15637   -740   -351   -161       C
ATOM   8879  C   LYS B 851      57.494  22.669  88.058  1.00119.81           C
ANISOU 8879  C   LYS B 851    11979  17477  16068   -656   -211   -142       C
ATOM   8880  CB  LYS B 851      56.722  23.939  90.056  1.00103.29           C
ANISOU 8880  CB  LYS B 851     9996  15481  13767   -836   -372   -232       C
ATOM   8881  CG  LYS B 851      55.819  23.259  91.083  1.00 99.23           C
ANISOU 8881  CG  LYS B 851     9573  14990  13141   -788   -470   -212       C
ATOM   8882  CD  LYS B 851      54.430  23.891  91.171  1.00 97.03           C
ANISOU 8882  CD  LYS B 851     9475  14651  12742   -832   -441   -265       C
ATOM   8883  CE  LYS B 851      53.528  23.071  92.090  1.00100.51           C
ANISOU 8883  CE  LYS B 851     9995  15100  13095   -767   -519   -232       C
ATOM   8884  NZ  LYS B 851      52.478  23.874  92.774  1.00105.14           N
ANISOU 8884  NZ  LYS B 851    10713  15678  13559   -849   -529   -286       N
ATOM   8885  N   ASN B 852      57.444  23.683  87.197  1.00105.48           N
ANISOU 8885  N   ASN B 852    10203  15604  14272   -727   -102   -191       N
ATOM   8886  CA  ASN B 852      57.302  23.470  85.752  1.00 89.95           C
ANISOU 8886  CA  ASN B 852     8269  13536  12371   -655     42   -174       C
ATOM   8887  C   ASN B 852      58.640  23.630  85.042  1.00100.09           C
ANISOU 8887  C   ASN B 852     9396  14823  13812   -659    137   -146       C
ATOM   8888  O   ASN B 852      59.052  24.750  84.729  1.00105.05           O
ANISOU 8888  O   ASN B 852    10006  15447  14463   -763    203   -191       O
ATOM   8889  CB  ASN B 852      56.281  24.438  85.154  1.00 76.97           C
ANISOU 8889  CB  ASN B 852     6790  11818  10638   -716    117   -246       C
ATOM   8890  CG  ASN B 852      56.302  24.467  83.609  1.00 83.19           C
ANISOU 8890  CG  ASN B 852     7608  12509  11491   -663    279   -240       C
ATOM   8891  OD1 ASN B 852      56.788  23.541  82.961  1.00 74.33           O
ANISOU 8891  OD1 ASN B 852     6416  11361  10467   -555    336   -172       O
ATOM   8892  ND2 ASN B 852      55.758  25.546  83.021  1.00 82.13           N
ANISOU 8892  ND2 ASN B 852     7590  12321  11295   -737    361   -320       N
ATOM   8893  N   PRO B 853      59.327  22.505  84.774  1.00 96.38           N
ANISOU 8893  N   PRO B 853     8814  14355  13452   -544    156    -76       N
ATOM   8894  CA  PRO B 853      60.658  22.517  84.139  1.00114.81           C
ANISOU 8894  CA  PRO B 853    10978  16685  15959   -531    257    -42       C
ATOM   8895  C   PRO B 853      60.774  23.263  82.830  1.00119.89           C
ANISOU 8895  C   PRO B 853    11656  17237  16661   -554    440    -49       C
ATOM   8896  O   PRO B 853      61.857  23.744  82.481  1.00133.36           O
ANISOU 8896  O   PRO B 853    13227  18947  18495   -596    522    -30       O
ATOM   8897  CB  PRO B 853      60.938  21.037  83.887  1.00103.79           C
ANISOU 8897  CB  PRO B 853     9528  15282  14625   -374    272     16       C
ATOM   8898  CG  PRO B 853      60.294  20.411  85.028  1.00100.47           C
ANISOU 8898  CG  PRO B 853     9166  14930  14078   -349    108     24       C
ATOM   8899  CD  PRO B 853      58.978  21.152  85.221  1.00 96.37           C
ANISOU 8899  CD  PRO B 853     8829  14374  13413   -423     76    -28       C
ATOM   8900  N   LEU B 854      59.684  23.314  82.086  1.00 95.04           N
ANISOU 8900  N   LEU B 854     8683  14007  13419   -519    509    -69       N
ATOM   8901  CA  LEU B 854      59.721  24.016  80.828  1.00 93.25           C
ANISOU 8901  CA  LEU B 854     8516  13704  13211   -531    685    -77       C
ATOM   8902  C   LEU B 854      59.682  25.502  81.091  1.00103.59           C
ANISOU 8902  C   LEU B 854     9871  15044  14446   -690    678   -166       C
ATOM   8903  O   LEU B 854      60.039  26.296  80.232  1.00107.78           O
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ANISOU 8903  O   LEU B 854    10422  15537  14994   -732    815   -192       O
ATOM   8904  CB  LEU B 854      58.575  23.591  79.923  1.00 88.48           C
ANISOU 8904  CB  LEU B 854     8088  13008  12522   -440    756    -85       C
ATOM   8905  CG  LEU B 854      58.920  22.666  78.764  1.00 87.98           C
ANISOU 8905  CG  LEU B 854     8009  12868  12551   -292    909     -7       C
ATOM   8906  CD2 LEU B 854      57.647  22.271  78.095  1.00 72.92           C
ANISOU 8906  CD2 LEU B 854     6284  10887  10533   -217    937    -32       C
ATOM   8907  CD1 LEU B 854      59.665  21.444  79.202  1.00100.68           C
ANISOU 8907  CD1 LEU B 854     9476  14492  14286   -205    868     27       C
ATOM   8908  N   TYR B 855      59.254  25.882  82.285  1.00107.15           N
ANISOU 8908  N   TYR B 855    10348  15560  14803   -778    526   -222       N
ATOM   8909  CA  TYR B 855      59.370  27.271  82.683  1.00123.72           C
ANISOU 8909  CA  TYR B 855    12474  17692  16842   -935    516   -313       C
ATOM   8910  C   TYR B 855      60.837  27.560  82.926  1.00135.77           C
ANISOU 8910  C   TYR B 855    13798  19284  18505   -996    519   -278       C
ATOM   8911  O   TYR B 855      61.329  28.627  82.586  1.00140.24           O
ANISOU 8911  O   TYR B 855    14353  19845  19085  -1098    601   -329       O
ATOM   8912  CB  TYR B 855      58.558  27.581  83.939  1.00126.49           C
ANISOU 8912  CB  TYR B 855    12910  18099  17053  -1007    365   -372       C
ATOM   8913  CG  TYR B 855      58.774  28.984  84.426  1.00135.16           C
ANISOU 8913  CG  TYR B 855    14029  19235  18091  -1170    358   -467       C
ATOM   8914  CD2 TYR B 855      59.684  29.261  85.443  1.00136.80           C
ANISOU 8914  CD2 TYR B 855    14098  19544  18334  -1259    257   -463       C
ATOM   8915  CD1 TYR B 855      58.097  30.040  83.842  1.00138.01           C
ANISOU 8915  CD1 TYR B 855    14552  19526  18361  -1237    459   -566       C
ATOM   8916  CE2 TYR B 855      59.889  30.555  85.874  1.00139.29           C
ANISOU 8916  CE2 TYR B 855    14440  19894  18591  -1415    255   -553       C
ATOM   8917  CE1 TYR B 855      58.293  31.330  84.266  1.00138.93           C
ANISOU 8917  CE1 TYR B 855    14700  19670  18416  -1386    466   -660       C
ATOM   8918  CZ  TYR B 855      59.186  31.585  85.278  1.00138.26           C
ANISOU 8918  CZ  TYR B 855    14479  19690  18364  -1477    366   -652       C
ATOM   8919  OH  TYR B 855      59.363  32.886  85.679  1.00134.54           O
ANISOU 8919  OH  TYR B 855    14050  19244  17825  -1632    380   -749       O
ATOM   8920  N   LYS B 856      61.523  26.583  83.507  1.00144.53           N
ANISOU 8920  N   LYS B 856    14748  20450  19716   -931    432   -198       N
ATOM   8921  CA  LYS B 856      62.924  26.715  83.874  1.00145.14           C
ANISOU 8921  CA  LYS B 856    14607  20596  19944   -981    408   -160       C
ATOM   8922  C   LYS B 856      63.846  26.677  82.667  1.00143.29           C
ANISOU 8922  C   LYS B 856    14267  20304  19873   -932    590    -89       C
ATOM   8923  O   LYS B 856      64.766  27.483  82.578  1.00158.69           O
ANISOU 8923  O   LYS B 856    16104  22284  21905  -1028    635    -89       O
ATOM   8924  CB  LYS B 856      63.317  25.617  84.863  1.00148.51           C
ANISOU 8924  CB  LYS B 856    14908  21098  20422   -913    259   -114       C
ATOM   8925  N   TYR B 857      63.619  25.738  81.750  1.00119.42           N
ANISOU 8925  N   TYR B 857    11280  17201  16892   -783    698    -23       N
ATOM   8926  CA  TYR B 857      64.412  25.675  80.520  1.00110.19           C
ANISOU 8926  CA  TYR B 857    10039  15980  15847   -718    896     68       C
ATOM   8927  C   TYR B 857      64.318  26.997  79.762  1.00123.22           C
ANISOU 8927  C   TYR B 857    11798  17624  17396   -819   1017      7       C
ATOM   8928  O   TYR B 857      65.328  27.585  79.371  1.00137.65           O
ANISOU 8928  O   TYR B 857    13514  19488  19299   -873   1109     38       O
ATOM   8929  CB  TYR B 857      63.949  24.527  79.630  1.00 87.94           C
ANISOU 8929  CB  TYR B 857     7323  13069  13022   -542    995    125       C
ATOM   8930  CG  TYR B 857      64.457  24.586  78.204  1.00 97.98           C
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ANISOU 8930  CG  TYR B 857     8640  14342  14245   -462   1194    221       C
ATOM   8931  CD2 TYR B 857      63.593  24.359  77.140  1.00101.50           C
ANISOU 8931  CD2 TYR B 857     9275  14779  14510   -376   1296    200       C
ATOM   8932  CD1 TYR B 857      65.800  24.855  77.915  1.00 96.02           C
ANISOU 8932  CD1 TYR B 857     8238  14200  14047   -480   1263    303       C
ATOM   8933  CE2 TYR B 857      64.038  24.398  75.826  1.00109.10           C
ANISOU 8933  CE2 TYR B 857    10275  15814  15366   -328   1474    142       C
ATOM   8934  CE1 TYR B 857      66.257  24.905  76.599  1.00102.15           C
ANISOU 8934  CE1 TYR B 857     9042  15129  14643   -439   1432    256       C
ATOM   8935  CZ  TYR B 857      65.369  24.670  75.557  1.00112.79           C
ANISOU 8935  CZ  TYR B 857    10584  16382  15890   -363   1556    143       C
ATOM   8936  OH  TYR B 857      65.794  24.710  74.243  1.00114.64           O
ANISOU 8936  OH  TYR B 857    10896  16498  16163   -311   1772     50       O
ATOM   8937  N   TYR B 858      63.100  27.466  79.561  1.00115.12           N
ANISOU 8937  N   TYR B 858    10996  16544  16202   -847   1018   -104       N
ATOM   8938  CA  TYR B 858      62.899  28.763  78.955  1.00124.66           C
ANISOU 8938  CA  TYR B 858    12338  17703  17324   -951   1125   -227       C
ATOM   8939  C   TYR B 858      63.386  29.882  79.874  1.00139.12           C
ANISOU 8939  C   TYR B 858    14098  19601  19160  -1127   1041   -301       C
ATOM   8940  O   TYR B 858      63.796  30.934  79.394  1.00145.41           O
ANISOU 8940  O   TYR B 858    14923  20370  19957  -1220   1149   -376       O
ATOM   8941  CB  TYR B 858      61.425  28.960  78.610  1.00119.90           C
ANISOU 8941  CB  TYR B 858    11986  17007  16563   -936   1136   -334       C
ATOM   8942  CG  TYR B 858      61.075  30.347  78.111  1.00123.20           C
ANISOU 8942  CG  TYR B 858    12569  17343  16898  -1046   1237   -487       C
ATOM   8943  CD2 TYR B 858      60.364  31.229  78.911  1.00127.49           C
ANISOU 8943  CD2 TYR B 858    13211  17902  17328  -1165   1144   -596       C
ATOM   8944  CD1 TYR B 858      61.435  30.765  76.834  1.00120.88           C
ANISOU 8944  CD1 TYR B 858    12352  16943  16633  -1023   1434   -530       C
ATOM   8945  CE2 TYR B 858      60.027  32.485  78.462  1.00128.29           C
ANISOU 8945  CE2 TYR B 858    13472  17919  17354  -1259   1245   -735       C
ATOM   8946  CE1 TYR B 858      61.107  32.022  76.377  1.00120.92           C
ANISOU 8946  CE1 TYR B 858    12525  16846  16572  -1117   1533   -678       C
ATOM   8947  CZ  TYR B 858      60.400  32.876  77.196  1.00129.61           C
ANISOU 8947  CZ  TYR B 858    13712  17969  17565  -1235   1437   -777       C
ATOM   8948  OH  TYR B 858      60.061  34.133  76.754  1.00135.84           O
ANISOU 8948  OH  TYR B 858    14676  18655  18283  -1323   1541   -921       O
ATOM   8949  O   GLU B 859      65.728  32.042  81.677  1.00154.55           O
ANISOU 8949  O   GLU B 859    15700  21751  21271  -1504    897   -373       O
ATOM   8950  N   GLU B 859      63.327  29.669  81.190  1.00142.51           N
ANISOU 8950  N   GLU B 859    14452  20113  19582  -1172    852   -296       N
ATOM   8951  CA  GLU B 859      63.813  30.682  82.129  1.00141.46           C
ANISOU 8951  CA  GLU B 859    14253  20055  19439  -1338    762   -366       C
ATOM   8952  C   GLU B 859      65.294  30.911  81.887  1.00145.95           C
ANISOU 8952  C   GLU B 859    14605  20665  20184  -1380    825   -300       C
ATOM   8953  CB  GLU B 859      63.579  30.275  83.585  1.00136.68           C
ANISOU 8953  CB  GLU B 859    13604  19540  18789  -1362    548   -365       C
ATOM   8954  O   GLU B 860      68.037  31.411  79.852  1.00132.56           O
ANISOU 8954  O   GLU B 860    12584  18977  18804  -1379   1185   -140       O
ATOM   8955  N   GLU B 860      66.062  29.825  81.904  1.00132.89           N
ANISOU 8955  N   GLU B 860    12761  19042  18690  -1274    805   -163       N
ATOM   8956  CA  GLU B 860      67.486  29.893  81.623  1.00116.81           C
ANISOU 8956  CA  GLU B 860    10494  17044  16842  -1293    872    -70       C
ATOM   8957  C   GLU B 860      67.710  30.266  80.155  1.00125.90           C
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ANISOU 8957  C   GLU B 860    11711  18143  17982  -1258   1104    -52       C
ATOM   8958  CB  GLU B 860      68.167  28.563  81.967  1.00102.54           C
ANISOU 8958  CB  GLU B 860     8482  15259  15219  -1168    809     60       C
ATOM   8959  O   THR B 861      65.955  31.161  78.039  1.00160.38           O
ANISOU 8959  O   THR B 861    14969  23689  22280  -1138   1870    879       O
ATOM   8960  N   THR B 861      67.512  29.313  79.247  1.00150.73           N
ANISOU 8960  N   THR B 861    13396  22622  21254   -892   1736    929       N
ATOM   8961  CA  THR B 861      67.712  29.544  77.810  1.00152.76           C
ANISOU 8961  CA  THR B 861    13667  23207  21168   -982   1994    629       C
ATOM   8962  C   THR B 861      66.764  30.630  77.289  1.00154.46           C
ANISOU 8962  C   THR B 861    14092  23241  21354  -1113   2045    689       C
ATOM   8963  CB  THR B 861      67.498  28.241  77.010  1.00142.23           C
ANISOU 8963  CB  THR B 861    12476  21991  19574   -813   2113    346       C
ATOM   8964  OG1 THR B 861      68.019  27.137  77.759  1.00144.03           O
ANISOU 8964  OG1 THR B 861    12587  22319  19818   -639   1984    387       O
ATOM   8965  CG2 THR B 861      68.195  28.301  75.661  1.00134.13           C
ANISOU 8965  CG2 THR B 861    11354  20977  18634   -878   2492     31       C
ATOM   8966  O   GLY B 862      63.839  31.745  74.270  1.00100.50           O
ANISOU 8966  O   GLY B 862     8020  16062  14103  -1172   2446    607       O
ATOM   8967  N   GLY B 862      66.856  30.982  76.015  1.00148.24           N
ANISOU 8967  N   GLY B 862    13348  22526  20452  -1191   2311    514       N
ATOM   8968  CA  GLY B 862      65.887  31.913  75.470  1.00133.79           C
ANISOU 8968  CA  GLY B 862    11743  20523  18568  -1282   2356    600       C
ATOM   8969  C   GLY B 862      64.709  31.155  74.899  1.00113.71           C
ANISOU 8969  C   GLY B 862     9495  17878  15832  -1127   2371    569       C
ATOM   8970  O   ASN B 863      62.450  28.023  75.818  1.00117.40           O
ANISOU 8970  O   ASN B 863    10483  17154  16972   -417   2274    931       O
ATOM   8971  N   ASN B 863      64.670  29.853  75.180  1.00111.09           N
ANISOU 8971  N   ASN B 863     9181  17611  15417   -949   2295    494       N
ATOM   8972  CA  ASN B 863      64.088  28.879  74.258  1.00110.66           C
ANISOU 8972  CA  ASN B 863     9318  17512  15216   -857   2458    204       C
ATOM   8973  C   ASN B 863      62.833  28.107  74.650  1.00115.53           C
ANISOU 8973  C   ASN B 863    10169  18035  15692   -688   2250    342       C
ATOM   8974  CB  ASN B 863      65.156  27.847  73.927  1.00100.31           C
ANISOU 8974  CB  ASN B 863     7843  16225  14044   -781   2664    -92       C
ATOM   8975  CG  ASN B 863      65.901  28.184  72.681  1.00111.86           C
ANISOU 8975  CG  ASN B 863     9209  17699  15594   -776   3030     -5       C
ATOM   8976  OD1 ASN B 863      65.680  29.243  72.093  1.00122.37           O
ANISOU 8976  OD1 ASN B 863    10598  18998  16900   -885   3144    148       O
ATOM   8977  ND2 ASN B 863      66.822  27.304  72.272  1.00112.86           N
ANISOU 8977  ND2 ASN B 863     9188  17861  15833   -639   3231    -77       N
ATOM   8978  O   TYR B 864      62.383  25.102  72.409  1.00114.48           O
ANISOU 8978  O   TYR B 864    10396  17229  15871   -377   2957   -322       O
ATOM   8979  N   TYR B 864      62.237  27.511  73.622  1.00113.19           N
ANISOU 8979  N   TYR B 864    10097  17454  15455   -756   2525   -216       N
ATOM   8980  CA  TYR B 864      61.096  26.616  73.746  1.00108.00           C
ANISOU 8980  CA  TYR B 864     9766  15794  15475   -609   2726   -334       C
ATOM   8981  C   TYR B 864      61.464  25.245  73.221  1.00105.82           C
ANISOU 8981  C   TYR B 864     9442  15768  14995   -420   2804   -339       C
ATOM   8982  CB  TYR B 864      59.895  27.143  72.955  1.00100.18           C
ANISOU 8982  CB  TYR B 864     9004  14978  14083   -698   2704   -342       C
ATOM   8983  CG  TYR B 864      59.377  28.462  73.445  1.00105.52           C
ANISOU 8983  CG  TYR B 864     9615  15717  14758   -414   2437    843       C
ATOM   8984  CD1 TYR B 864      58.382  28.513  74.399  1.00 99.51           C
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ANISOU 8984  CD1 TYR B 864     8984  14516  14309   -507   2318    624       C
ATOM   8985  CD2 TYR B 864       59.909  29.663  72.982  1.00116.11           C
ANISOU 8985  CD2 TYR B 864    10828  17620  15667   -741   2406    594       C
ATOM   8986  CE1 TYR B 864       57.903  29.708  74.869  1.00101.69           C
ANISOU 8986  CE1 TYR B 864     9268  14828  14541   -662   2145    691       C
ATOM   8987  CE2 TYR B 864       59.437  30.877  73.454  1.00120.54           C
ANISOU 8987  CE2 TYR B 864    11427  17920  16451   -827   2326    797       C
ATOM   8988  CZ  TYR B 864       58.429  30.889  74.399  1.00113.82           C
ANISOU 8988  CZ  TYR B 864    10711  16614  15921   -782   2180    835       C
ATOM   8989  OH  TYR B 864       57.943  32.084  74.880  1.00121.41           O
ANISOU 8989  OH  TYR B 864    11712  17478  16938   -948   2058    828       O
ATOM   8990  O   LEU B 865       59.464  23.632  71.258  1.00 85.95           O
ANISOU 8990  O   LEU B 865     7425  13329  11904    -50   3007   -127       O
ATOM   8991  N   LEU B 865       60.720  24.246  73.667  1.00 95.54           N
ANISOU 8991  N   LEU B 865     8253  14267  13781   -225   2711   -179       N
ATOM   8992  CA  LEU B 865       60.803  22.918  73.095  1.00 92.57           C
ANISOU 8992  CA  LEU B 865     7906  14073  13192    -22   2798   -192       C
ATOM   8993  C   LEU B 865       60.448  22.994  71.623  1.00 87.71           C
ANISOU 8993  C   LEU B 865     7463  13612  12249     28   3021   -164       C
ATOM   8994  CB  LEU B 865       59.856  21.961  73.828  1.00 95.21           C
ANISOU 8994  CB  LEU B 865     8336  14355  13484    114   2584   -109       C
ATOM   8995  CG  LEU B 865       59.522  20.583  73.238  1.00102.02           C
ANISOU 8995  CG  LEU B 865     9335  15354  14073    349   2628   -103       C
ATOM   8996  CD1 LEU B 865       60.668  19.606  73.478  1.00109.68           C
ANISOU 8996  CD1 LEU B 865    10142  16424  15109    499   2659   -131       C
ATOM   8997  CD2 LEU B 865       58.220  20.028  73.808  1.00 95.98           C
ANISOU 8997  CD2 LEU B 865     8745  14574  13148    400   2359    -68       C
ATOM   8998  O   THR B 866       61.353  19.882  69.567  1.00106.69           O
ANISOU 8998  O   THR B 866    10154  16209  14174    766   3413     47       O
ATOM   8999  N   THR B 866       61.249  22.360  70.772  1.00 78.16           N
ANISOU 8999  N   THR B 866     6210  12565  10924    195   3247   -128       N
ATOM   9000  CA  THR B 866       60.866  22.214  69.372  1.00 86.67           C
ANISOU 9000  CA  THR B 866     7570  13645  11715    358   3454     19       C
ATOM   9001  C   THR B 866       60.751  20.752  68.953  1.00 98.87           C
ANISOU 9001  C   THR B 866     9314  15166  13086    671   3485     94       C
ATOM   9002  CB  THR B 866       61.848  22.914  68.480  1.00 88.60           C
ANISOU 9002  CB  THR B 866     7739  13973  11952    334   3715     99       C
ATOM   9003  OG1 THR B 866       63.076  22.172  68.465  1.00110.24           O
ANISOU 9003  OG1 THR B 866    10296  16808  14784    470   3826     93       O
ATOM   9004  CG2 THR B 866       62.097  24.308  69.021  1.00 81.60           C
ANISOU 9004  CG2 THR B 866     6622  13179  11205     34   3643     35       C
ATOM   9005  O   LYS B 867       61.772  19.329  66.174  1.00126.23           O
ANISOU 9005  O   LYS B 867    13286  18561  16114   1271   4050    377       O
ATOM   9006  N   LYS B 867       59.968  20.489  67.913  1.00106.56           N
ANISOU 9006  N   LYS B 867    10650  16051  13786    842   3582    210       N
ATOM   9007  CA  LYS B 867       59.762  19.128  67.428  1.00110.48           C
ANISOU 9007  CA  LYS B 867    11404  16516  14056   1156   3599    275       C
ATOM   9008  C   LYS B 867       61.046  18.578  66.815  1.00120.59           C
ANISOU 9008  C   LYS B 867    12637  17843  15338   1333   3826    328       C
ATOM   9009  CB  LYS B 867       58.639  19.110  66.402  1.00110.63           C
ANISOU 9009  CB  LYS B 867    11867  16391  13777   1296   3652    369       C
ATOM   9010  CG  LYS B 867       58.239  17.739  65.970  1.00100.03           C
ANISOU 9010  CG  LYS B 867    10846  14996  12164   1613   3613    410       C
ATOM   9011  CD  LYS B 867       57.530  17.786  64.646  1.00103.80           C
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ANISOU 9011  CD  LYS B 867    11814  15284  12340   1786   3740    503       C
ATOM   9012  CE  LYS B 867      56.894  16.450  64.360  1.00109.83           C
ANISOU 9012  CE  LYS B 867    12943  15973  12813   2078   3618    507       C
ATOM   9013  NZ  LYS B 867      55.986  15.993  65.445  1.00111.61           N
ANISOU 9013  NZ  LYS B 867    13076  16284  13049   2028   3313    418       N
ATOM   9014  O   TYR B 868      61.833  16.418  64.266  1.00129.90           O
ANISOU 9014  O   TYR B 868    14531  18847  15978   2077   4268    578       O
ATOM   9015  N   TYR B 868      61.335  17.290  67.009  1.00109.00           N
ANISOU 9015  N   TYR B 868    11201  16414  13801   1554   3772    326       N
ATOM   9016  CA  TYR B 868      62.572  16.716  66.486  1.00114.04           C
ANISOU 9016  CA  TYR B 868    11780  17099  14451   1731   3983    377       C
ATOM   9017  C   TYR B 868      62.652  16.985  64.987  1.00131.27           C
ANISOU 9017  C   TYR B 868    14281  19157  16438   1873   4272    513       C
ATOM   9018  CB  TYR B 868      62.674  15.216  66.771  1.00111.21           C
ANISOU 9018  CB  TYR B 868    11507  16771  13976   1988   3877    372       C
ATOM   9019  CG  TYR B 868      63.788  14.539  65.998  1.00122.01           C
ANISOU 9019  CG  TYR B 868    12914  18154  15289   2224   4117    452       C
ATOM   9020  CD2 TYR B 868      65.102  14.579  66.453  1.00123.34           C
ANISOU 9020  CD2 TYR B 868    12694  18454  15714   2171   4197    411       C
ATOM   9021  CD1 TYR B 868      63.532  13.889  64.796  1.00124.69           C
ANISOU 9021  CD1 TYR B 868    13695  18361  15321   2504   4262    567       C
ATOM   9022  CE2 TYR B 868      66.116  13.976  65.748  1.00115.76           C
ANISOU 9022  CE2 TYR B 868    11757  17513  14713   2391   4426    491       C
ATOM   9023  CE1 TYR B 868      64.542  13.290  64.085  1.00127.21           C
ANISOU 9023  CE1 TYR B 868    14066  18679  15590   2725   4487    649       C
ATOM   9024  CZ  TYR B 868      65.831  13.339  64.563  1.00128.80           C
ANISOU 9024  CZ  TYR B 868    13851  19031  16057   2667   4578    616       C
ATOM   9025  OH  TYR B 868      66.839  12.739  63.846  1.00142.60           O
ANISOU 9025  OH  TYR B 868    15640  20781  17759   2896   4815    706       O
ATOM   9026  O   SER B 869      65.969  17.209  63.451  1.00161.00           O
ANISOU 9026  O   SER B 869    17702  23031  20439   2052   4985    689       O
ATOM   9027  N   SER B 869      63.559  17.824  64.449  1.00155.87           N
ANISOU 9027  N   SER B 869    17251  22292  19680   1785   4517    563       N
ATOM   9028  CA  SER B 869      64.745  18.572  64.975  1.00151.73           C
ANISOU 9028  CA  SER B 869    16264  21918  19467   1577   4591    507       C
ATOM   9029  C   SER B 869      65.997  17.905  64.466  1.00156.31           C
ANISOU 9029  C   SER B 869    16765  22550  20074   1780   4818    573       C
ATOM   9030  CB  SER B 869      64.880  18.722  66.504  1.00152.01           C
ANISOU 9030  CB  SER B 869    15904  22093  19762   1354   4317    340       C
ATOM   9031  OG  SER B 869      63.796  19.424  67.082  1.00162.00           O
ANISOU 9031  OG  SER B 869    17203  23313  21037   1143   4107    273       O
ATOM   9032  O   LYS B 870      70.070  17.873  63.066  1.00137.23           O
ANISOU 9032  O   LYS B 870    13754  20351  18037   2016   5626    772       O
ATOM   9033  N   LYS B 870      67.104  18.162  65.164  1.00153.59           N
ANISOU 9033  N   LYS B 870    15979  22370  20010   1648   4823    497       N
ATOM   9034  CA  LYS B 870      68.439  17.647  64.830  1.00152.41           C
ANISOU 9034  CA  LYS B 870    15655  22303  19950   1806   5037    546       C
ATOM   9035  C   LYS B 870      68.893  18.014  63.408  1.00149.77           C
ANISOU 9035  C   LYS B 870    15523  21869  19512   1927   5404    717       C
ATOM   9036  CB  LYS B 870      68.500  16.132  65.027  1.00150.08           C
ANISOU 9036  CB  LYS B 870    15470  22014  19541   2083   4953    541       C
ATOM   9037  O   LYS B 871      68.387  21.710  61.251  1.00158.36           O
ANISOU 9037  O   LYS B 871    16934  22664  20571   1509   5919    970       O
ATOM   9038  N   LYS B 871      67.942  18.456  62.587  1.00156.59           N
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ANISOU 9038  N   LYS B 871    16778  22556  20163   1944   5465    801       N
ATOM   9039  CA  LYS B 871      68.223  19.311  61.451  1.00155.41           C
ANISOU 9039  CA  LYS B 871    16778  22295  19976   1940   5770    935       C
ATOM   9040  C   LYS B 871      68.218  20.743  61.999  1.00154.67           C
ANISOU 9040  C   LYS B 871    16394  22279  20094   1586   5704    874       C
ATOM   9041  CB  LYS B 871      67.188  19.124  60.338  1.00146.20           C
ANISOU 9041  CB  LYS B 871    16195  20879  18473   2132   5843   1042       C
ATOM   9042  O   ASP B 872      66.610  24.009  64.433  1.00102.97           O
ANISOU 9042  O   ASP B 872     9342  15900  13883    646   5059    597       O
ATOM   9043  N   ASP B 872      67.985  20.848  63.315  1.00146.44           N
ANISOU 9043  N   ASP B 872    15056  21379  19204   1383   5395    715       N
ATOM   9044  CA  ASP B 872      68.047  22.096  64.093  1.00136.93           C
ANISOU 9044  CA  ASP B 872    13539  20281  18206   1045   5266    630       C
ATOM   9045  C   ASP B 872      66.891  23.031  63.736  1.00120.25           C
ANISOU 9045  C   ASP B 872    11704  18025  15959    915   5225    669       C
ATOM   9046  CB  ASP B 872      69.397  22.799  63.885  1.00144.28           C
ANISOU 9046  CB  ASP B 872    14146  21323  19353    950   5493    681       C
ATOM   9047  CG  ASP B 872      69.703  23.814  64.971  1.00155.81           C
ANISOU 9047  CG  ASP B 872    15210  22950  21041    628   5298    569       C
ATOM   9048  OD1 ASP B 872      70.475  23.475  65.894  1.00159.29           O
ANISOU 9048  OD1 ASP B 872    15290  23568  21666    586   5166    455       O
ATOM   9049  OD2 ASP B 872      69.172  24.945  64.907  1.00157.00           O
ANISOU 9049  OD2 ASP B 872    15426  23051  21177    428   5268    596       O
ATOM   9050  O   ASN B 873      63.956  21.242  62.579  1.00138.08           O
ANISOU 9050  O   ASN B 873    15064  19871  17530   1398   5049    750       O
ATOM   9051  N   ASN B 873      66.246  22.718  62.620  1.00122.78           N
ANISOU 9051  N   ASN B 873    12477  18146  16029   1122   5376    785       N
ATOM   9052  CA  ASN B 873      65.018  23.355  62.213  1.00120.38           C
ANISOU 9052  CA  ASN B 873    12506  17676  15557   1062   5324    817       C
ATOM   9053  C   ASN B 873      63.884  22.469  62.694  1.00131.22           C
ANISOU 9053  C   ASN B 873    14073  19011  16774   1157   5058    743       C
ATOM   9054  CB  ASN B 873      64.977  23.540  60.693  1.00112.88           C
ANISOU 9054  CB  ASN B 873    11971  16507  14411   1247   5636    979       C
ATOM   9055  N   GLY B 874      62.857  23.089  63.260  1.00120.77           N
ANISOU 9055  N   GLY B 874    12769  17669  15448    969   4840    677       N
ATOM   9056  CA  GLY B 874      61.687  22.374  63.735  1.00110.29           C
ANISOU 9056  CA  GLY B 874    11619  16300  13987   1036   4590    614       C
ATOM   9057  C   GLY B 874      60.754  23.397  64.337  1.00111.19           C
ANISOU 9057  C   GLY B 874    11686  16405  14157    776   4400    554       C
ATOM   9058  O   GLY B 874      61.211  24.470  64.714  1.00117.43           O
ANISOU 9058  O   GLY B 874    12216  17278  15125    536   4402    528       O
ATOM   9059  N   PRO B 875      59.446  23.092  64.408  1.00107.81           N
ANISOU 9059  N   PRO B 875    11519  15877  13566    830   4234    540       N
ATOM   9060  CA  PRO B 875      58.513  24.057  65.003  1.00105.76           C
ANISOU 9060  CA  PRO B 875    11214  15606  13365    588   4052    488       C
ATOM   9061  CB  PRO B 875      57.157  23.636  64.424  1.00101.40           C
ANISOU 9061  CB  PRO B 875    11098  14882  12547    756   4001    535       C
ATOM   9062  CG  PRO B 875      57.296  22.172  64.187  1.00104.69           C
ANISOU 9062  CG  PRO B 875    11671  15294  12813   1047   4003    548       C
ATOM   9063  CD  PRO B 875      58.744  21.945  63.800  1.00108.79           C
ANISOU 9063  CD  PRO B 875    12038  15879  13419   1125   4223    587       C
ATOM   9064  C   PRO B 875      58.481  24.017  66.532  1.00101.43           C
ANISOU 9064  C   PRO B 875    10305  15207  13026    393   3767    340       C
ATOM   9065  O   PRO B 875      58.782  22.993  67.150  1.00 95.02           O
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ANISOU 9065  O   PRO B 875     9372  14463  12269    490   3664    274       O
ATOM   9066  N   VAL B 876      58.118  25.153  67.118  1.00104.45           N
ANISOU 9066  N   VAL B 876    10553  15617  13516    130   3641    290       N
ATOM   9067  CA  VAL B 876      57.892  25.297  68.557  1.00 96.47           C
ANISOU 9067  CA  VAL B 876     9286  14683  12684    -71   3358    134       C
ATOM   9068  CB  VAL B 876      57.676  26.793  68.899  1.00 84.69           C
ANISOU 9068  CB  VAL B 876     7712  13227  11241   -331   3251    141       C
ATOM   9069  CG1 VAL B 876      57.544  27.011  70.381  1.00 78.47           C
ANISOU 9069  CG1 VAL B 876     6777  12416  10622   -500   2915     -7       C
ATOM   9070  CG2 VAL B 876      58.842  27.622  68.352  1.00 88.47           C
ANISOU 9070  CG2 VAL B 876     8038  13815  11761   -397   3464    232       C
ATOM   9071  C   VAL B 876      56.693  24.460  69.029  1.00 94.36           C
ANISOU 9071  C   VAL B 876     9177  14306  12369     22   3169    101       C
ATOM   9072  O   VAL B 876      55.818  24.108  68.233  1.00 97.99           O
ANISOU 9072  O   VAL B 876     9943  14686  12604    186   3217    203       O
ATOM   9073  N   ILE B 877      56.657  24.115  70.313  1.00 88.65           N
ANISOU 9073  N   ILE B 877     8286  13524  11873    -43   2956      3       N
ATOM   9074  CA  ILE B 877      55.509  23.400  70.849  1.00 90.29           C
ANISOU 9074  CA  ILE B 877     8612  13665  12027     54   2741     42       C
ATOM   9075  CB  ILE B 877      55.903  22.062  71.500  1.00 87.24           C
ANISOU 9075  CB  ILE B 877     8139  13352  11655    222   2610     25       C
ATOM   9076  CG1 ILE B 877      56.151  21.004  70.442  1.00 91.71           C
ANISOU 9076  CG1 ILE B 877     8880  14010  11954    490   2772     77       C
ATOM   9077  CD1 ILE B 877      57.424  21.145  69.744  1.00108.84           C
ANISOU 9077  CD1 ILE B 877    10971  16225  14161    528   3030     89       C
ATOM   9078  CG2 ILE B 877      54.758  21.527  72.325  1.00 96.01           C
ANISOU 9078  CG2 ILE B 877     9315  14471  12695    241   2306     21       C
ATOM   9079  C   ILE B 877      54.751  24.262  71.867  1.00 98.43           C
ANISOU 9079  C   ILE B 877     9590  14560  13250   -120   2520     67       C
ATOM   9080  O   ILE B 877      55.258  24.578  72.947  1.00103.75           O
ANISOU 9080  O   ILE B 877    10086  15167  14166   -195   2374     87       O
ATOM   9081  N   LYS B 878      53.528  24.642  71.511  1.00 88.04           N
ANISOU 9081  N   LYS B 878     8455  13224  11770   -154   2454    102       N
ATOM   9082  CA  LYS B 878      52.725  25.470  72.392  1.00 89.13           C
ANISOU 9082  CA  LYS B 878     8568  13281  12018   -308   2214    129       C
ATOM   9083  CB  LYS B 878      52.087  26.608  71.593  1.00 82.98           C
ANISOU 9083  CB  LYS B 878     7932  12440  11159   -403   2328    192       C
ATOM   9084  C   LYS B 878      51.659  24.649  73.149  1.00 85.17           C
ANISOU 9084  C   LYS B 878     8118  12836  11407   -285   1908     56       C
ATOM   9085  O   LYS B 878      51.400  24.926  74.314  1.00 97.15           O
ANISOU 9085  O   LYS B 878     9572  14286  13056   -381   1674     35       O
ATOM   9086  N   LYS B 879      51.054  23.643  72.514  1.00 69.76           N
ANISOU 9086  N   LYS B 879     6299  11000   9209   -142   1914     29       N
ATOM   9087  CA  LYS B 879      50.148  22.738  73.233  1.00 69.03           C
ANISOU 9087  CA  LYS B 879     6228  10963   9038   -106   1642    -40       C
ATOM   9088  C   LYS B 879      50.518  21.249  73.035  1.00 72.74           C
ANISOU 9088  C   LYS B 879     6718  11559   9361    130   1663    -53       C
ATOM   9089  O   LYS B 879      51.090  20.875  72.023  1.00 74.78           O
ANISOU 9089  O   LYS B 879     7064  11869   9481    307   1893      2       O
ATOM   9090  CB  LYS B 879      48.688  22.975  72.809  1.00 62.90           C
ANISOU 9090  CB  LYS B 879     5606  10189   8105   -161   1543    -61       C
ATOM   9091  N   ILE B 880      50.179  20.397  73.997  1.00 74.05           N
ANISOU 9091  N   ILE B 880     6843  11751   9543    156   1429   -115       N
ATOM   9092  CA  ILE B 880      50.407  18.954  73.854  1.00 76.33           C
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ANISOU 9092  CA  ILE B 880     7175  12152   9676    395   1423   -132       C
ATOM   9093  CB  ILE B 880      51.469  18.470  74.845  1.00 75.08           C
ANISOU 9093  CB  ILE B 880     6867  11983   9678    408   1364   -153       C
ATOM   9094  CG1 ILE B 880      52.843  19.015  74.434  1.00 78.55           C
ANISOU 9094  CG1 ILE B 880     7194  12398  10253    404   1605   -102       C
ATOM   9095  CD1 ILE B 880      54.000  18.568  75.319  1.00 67.85           C
ANISOU 9095  CD1 ILE B 880     5666  11049   9064    431   1566   -122       C
ATOM   9096  CG2 ILE B 880      51.445  16.952  74.944  1.00 71.74           C
ANISOU 9096  CG2 ILE B 880     6506  11660   9092    634   1288   -186       C
ATOM   9097  C   ILE B 880      49.123  18.135  74.063  1.00 63.36           C
ANISOU 9097  C   ILE B 880     5752  10413   7909    435   1155   -182       C
ATOM   9098  O   ILE B 880      48.495  18.225  75.112  1.00 59.28           O
ANISOU 9098  O   ILE B 880     5117   9909   7497    302    959   -236       O
ATOM   9099  N   LYS B 881      48.715  17.359  73.066  1.00 59.36           N
ANISOU 9099  N   LYS B 881     5605   9758   7192    610   1133   -159       N
ATOM   9100  CA  LYS B 881      47.471  16.595  73.204  1.00 64.91           C
ANISOU 9100  CA  LYS B 881     6549  10307   7807    627    854   -201       C
ATOM   9101  CB  LYS B 881      46.927  16.159  71.860  1.00 59.55           C
ANISOU 9101  CB  LYS B 881     6300   9420   6906    775    831   -169       C
ATOM   9102  CG  LYS B 881      46.710  17.289  70.886  1.00 59.59           C
ANISOU 9102  CG  LYS B 881     6445   9317   6878    708    950   -121       C
ATOM   9103  CD  LYS B 881      46.175  16.761  69.575  1.00 68.69           C
ANISOU 9103  CD  LYS B 881     8062  10248   7789    881    898    -97       C
ATOM   9104  CE  LYS B 881      46.030  17.871  68.555  1.00 72.80           C
ANISOU 9104  CE  LYS B 881     8758  10653   8252    842   1032    -47       C
ATOM   9105  NZ  LYS B 881      45.474  17.361  67.275  1.00 83.71           N
ANISOU 9105  NZ  LYS B 881    10627  11797   9383   1023    952    -30       N
ATOM   9106  C   LYS B 881      47.702  15.387  74.078  1.00 72.82           C
ANISOU 9106  C   LYS B 881     7469  11396   8805    729    737   -249       C
ATOM   9107  O   LYS B 881      48.825  14.858  74.141  1.00 75.93           O
ANISOU 9107  O   LYS B 881     7745  11927   9177    877    879   -240       O
ATOM   9108  N   TYR B 882      46.658  14.970  74.786  1.00 66.73           N
ANISOU 9108  N   TYR B 882     6747  10543   8064    653    488   -296       N
ATOM   9109  CA  TYR B 882      46.786  13.754  75.556  1.00 69.27           C
ANISOU 9109  CA  TYR B 882     7049  10915   8357    761    373   -338       C
ATOM   9110  CB  TYR B 882      47.464  14.027  76.898  1.00 67.06           C
ANISOU 9110  CB  TYR B 882     6397  10834   8248    678    393   -376       C
ATOM   9111  CG  TYR B 882      46.558  14.620  77.947  1.00 81.53           C
ANISOU 9111  CG  TYR B 882     8105  12640  10233    464    234   -411       C
ATOM   9112  CD1 TYR B 882      45.732  13.806  78.726  1.00 86.22           C
ANISOU 9112  CD1 TYR B 882     8777  13159  10823    460     35   -448       C
ATOM   9113  CE1 TYR B 882      44.908  14.347  79.686  1.00 92.70           C
ANISOU 9113  CE1 TYR B 882     9524  13918  11779    277    -80   -464       C
ATOM   9114  CZ  TYR B 882      44.916  15.722  79.898  1.00 90.25           C
ANISOU 9114  CZ  TYR B 882     9201  13494  11595     96    -15   -421       C
ATOM   9115  OH  TYR B 882      44.094  16.267  80.851  1.00100.08           O
ANISOU 9115  OH  TYR B 882    10534  14539  12955    -49   -105   -396       O
ATOM   9116  CE2 TYR B 882      45.739  16.550  79.149  1.00 74.25           C
ANISOU 9116  CE2 TYR B 882     7090  11542   9578     86    153   -393       C
ATOM   9117  CD2 TYR B 882      46.548  15.995  78.179  1.00 78.65           C
ANISOU 9117  CD2 TYR B 882     7587  12282  10014    267    292   -396       C
ATOM   9118  C   TYR B 882      45.445  13.076  75.753  1.00 70.94           C
ANISOU 9118  C   TYR B 882     7476  10947   8531    728    115   -366       C
ATOM   9119  O   TYR B 882      44.395  13.709  75.648  1.00 67.73           O
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ANISOU 9119  O   TYR B 882     7130  10416   8188    577      6   -363       O
ATOM   9120  N   TYR B 883      45.491  11.777  76.034  1.00 68.60           N
ANISOU 9120  N   TYR B 883     7290  10633   8140    873     21   -392       N
ATOM   9121  CA  TYR B 883      44.280  10.978  76.176  1.00 67.76           C
ANISOU 9121  CA  TYR B 883     7399  10345   8002    853   -216   -413       C
ATOM   9122  CB  TYR B 883      44.585   9.504  75.962  1.00 57.03           C
ANISOU 9122  CB  TYR B 883     6259   8944   6467   1073   -263   -425       C
ATOM   9123  CG  TYR B 883      45.149   9.166  74.605  1.00 57.73           C
ANISOU 9123  CG  TYR B 883     6607   8976   6350   1276   -149   -389       C
ATOM   9124  CD1 TYR B 883      44.372   9.268  73.452  1.00 66.92           C
ANISOU 9124  CD1 TYR B 883     8085   9931   7410   1284   -231   -366       C
ATOM   9125  CE1 TYR B 883      44.891   8.945  72.194  1.00 64.54           C
ANISOU 9125  CE1 TYR B 883     8069   9560   6895   1491   -120   -331       C
ATOM   9126  CZ  TYR B 883      46.199   8.507  72.106  1.00 80.73           C
ANISOU 9126  CZ  TYR B 883    10063  11762   8850   1690     93   -312       C
ATOM   9127  OH  TYR B 883      46.762   8.172  70.894  1.00 90.94           O
ANISOU 9127  OH  TYR B 883    11641  12987   9925   1915    235   -269       O
ATOM   9128  CE2 TYR B 883      46.973   8.386  73.246  1.00 78.54           C
ANISOU 9128  CE2 TYR B 883     9447  11702   8694   1680    166   -336       C
ATOM   9129  CD2 TYR B 883      46.444   8.704  74.480  1.00 64.60           C
ANISOU 9129  CD2 TYR B 883     7428   9993   7125   1476     35   -378       C
ATOM   9130  C   TYR B 883      43.644  11.166  77.546  1.00 74.43           C
ANISOU 9130  C   TYR B 883     8037  11218   9024    681   -338   -447       C
ATOM   9131  O   TYR B 883      44.233  10.815  78.571  1.00 80.36           O
ANISOU 9131  O   TYR B 883     8610  12105   9819    710   -318   -478       O
ATOM   9132  N   GLY B 884      42.439  11.714  77.569  1.00 65.73           N
ANISOU 9132  N   GLY B 884     6970   9982   8022    514   -464   -441       N
ATOM   9133  CA  GLY B 884      41.716  11.858  78.822  1.00 64.50           C
ANISOU 9133  CA  GLY B 884     6654   9825   8029    362   -568   -463       C
ATOM   9134  C   GLY B 884      40.790  10.672  79.038  1.00 67.82           C
ANISOU 9134  C   GLY B 884     7260  10082   8424    392   -754   -473       C
ATOM   9135  O   GLY B 884      41.035   9.598  78.520  1.00 61.51           O
ANISOU 9135  O   GLY B 884     6669   9226   7474    552   -790   -478       O
ATOM   9136  N   ASN B 885      39.709  10.869  79.780  1.00 65.54           N
ANISOU 9136  N   ASN B 885     6906   9708   8289    238   -864   -472       N
ATOM   9137  CA  ASN B 885      38.822   9.782  80.113  1.00 50.42           C
ANISOU 9137  CA  ASN B 885     5130   7639   6389    242  -1024   -476       C
ATOM   9138  CB  ASN B 885      37.745  10.289  81.056  1.00 58.80           C
ANISOU 9138  CB  ASN B 885     6046   8641   7656     57  -1084   -463       C
ATOM   9139  CG  ASN B 885      38.288  10.623  82.388  1.00 58.95           C
ANISOU 9139  CG  ASN B 885     5884   8776   7738     23   -959   -461       C
ATOM   9140  OD1 ASN B 885      39.412  10.266  82.691  1.00 57.27           O
ANISOU 9140  OD1 ASN B 885     5617   8718   7426    144   -883   -497       O
ATOM   9141  ND2 ASN B 885      37.480  11.262  83.226  1.00 60.20           N
ANISOU 9141  ND2 ASN B 885     6041   8785   8049   -127   -913   -376       N
ATOM   9142  C   ASN B 885      38.144   9.093  78.932  1.00 61.00           C
ANISOU 9142  C   ASN B 885     6766   8773   7640    298  -1173   -463       C
ATOM   9143  O   ASN B 885      38.122   9.611  77.821  1.00 59.19           O
ANISOU 9143  O   ASN B 885     6647   8492   7350    314  -1172   -449       O
ATOM   9144  N   LYS B 886      37.579   7.916  79.196  1.00 61.25           N
ANISOU 9144  N   LYS B 886     6939   8672   7661    329  -1309   -470       N
ATOM   9145  CA  LYS B 886      36.705   7.253  78.241  1.00 63.68           C
ANISOU 9145  CA  LYS B 886     7518   8749   7930    343  -1501   -461       C
ATOM   9146  CB  LYS B 886      36.439   5.806  78.667  1.00 51.69           C
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ANISOU 9146  CB  LYS B 886     6151   7119   6371    405  -1613   -473       C
ATOM   9147  C   LYS B 886      35.406   8.058  78.133  1.00 60.22           C
ANISOU 9147  C   LYS B 886     7006   8180   7696    151  -1620   -438       C
ATOM   9148  O   LYS B 886      34.912   8.576  79.122  1.00 61.86           O
ANISOU 9148  O   LYS B 886     6989   8425   8088     10  -1588   -425       O
ATOM   9149  N   LEU B 887      34.855   8.129  76.928  1.00 62.69           N
ANISOU 9149  N   LEU B 887     7523   8330   7967    160  -1761   -432       N
ATOM   9150  CA  LEU B 887      33.818   9.090  76.567  1.00 67.15           C
ANISOU 9150  CA  LEU B 887     8028   8791   8694     12  -1862   -413       C
ATOM   9151  CB  LEU B 887      33.512   8.932  75.077  1.00 70.13           C
ANISOU 9151  CB  LEU B 887     8714   8987   8943     93  -2026   -418       C
ATOM   9152  CG  LEU B 887      32.496   9.897  74.467  1.00 74.09           C
ANISOU 9152  CG  LEU B 887     9211   9364   9576    -23  -2159   -405       C
ATOM   9153  CD1 LEU B 887      32.891  11.315  74.814  1.00 78.06           C
ANISOU 9153  CD1 LEU B 887     9476  10045  10139    -98  -1956   -390       C
ATOM   9154  CD2 LEU B 887      32.413   9.719  72.961  1.00 76.79           C
ANISOU 9154  CD2 LEU B 887     9905   9534   9738     98  -2309   -418       C
ATOM   9155  C   LEU B 887      32.486   9.061  77.363  1.00 86.46           C
ANISOU 9155  C   LEU B 887    10326  11121  11405   -166  -1981   -390       C
ATOM   9156  O   LEU B 887      32.072  10.084  77.929  1.00102.30           O
ANISOU 9156  O   LEU B 887    12140  13190  13541   -286  -1819   -352       O
ATOM   9157  N   ASN B 888      31.799   7.931  77.384  1.00 64.57           N
ANISOU 9157  N   ASN B 888     7692   8175   8665   -168  -2104   -381       N
ATOM   9158  CA  ASN B 888      30.446   7.865  77.986  1.00 68.07           C
ANISOU 9158  CA  ASN B 888     8049   8486   9329   -310  -2073   -327       C
ATOM   9159  CB  ASN B 888      30.595   7.659  79.482  1.00 65.32           C
ANISOU 9159  CB  ASN B 888     7516   8251   9053   -354  -1908   -311       C
ATOM   9160  CG  ASN B 888      29.411   6.917  80.065  1.00 83.37           C
ANISOU 9160  CG  ASN B 888     9802  10366  11508   -437  -1943   -268       C
ATOM   9161  OD1 ASN B 888      28.596   6.343  79.325  1.00 63.82           O
ANISOU 9161  OD1 ASN B 888     7469   7688   9092   -451  -2114   -256       O
ATOM   9162  ND2 ASN B 888      29.307   6.913  81.389  1.00104.60           N
ANISOU 9162  ND2 ASN B 888    12341  13125  14277   -485  -1788   -244       N
ATOM   9163  C   ASN B 888      29.423   9.034  77.731  1.00 49.69           C
ANISOU 9163  C   ASN B 888     5635   6106   7138   -411  -2011   -284       C
ATOM   9164  O   ASN B 888      29.115   9.344  76.589  1.00 57.79           O
ANISOU 9164  O   ASN B 888     6797   7024   8137   -388  -2140   -290       O
ATOM   9165  N   ALA B 889      28.856   9.652  78.772  1.00 55.11           N
ANISOU 9165  N   ALA B 889     6136   6855   7948   -500  -1824   -243       N
ATOM   9166  CA  ALA B 889      27.994  10.866  78.609  1.00 45.05           C
ANISOU 9166  CA  ALA B 889     4795   5566   6758   -561  -1747   -210       C
ATOM   9167  CB  ALA B 889      27.604  11.457  79.971  1.00 30.76           C
ANISOU 9167  CB  ALA B 889     2821   3855   5010   -620  -1523   -179       C
ATOM   9168  C   ALA B 889      28.634  11.980  77.810  1.00 57.42           C
ANISOU 9168  C   ALA B 889     6371   7222   8225   -537  -1731   -234       C
ATOM   9169  O   ALA B 889      29.727  12.470  78.162  1.00 63.96           O
ANISOU 9169  O   ALA B 889     7112   8234   8956   -521  -1608   -256       O
ATOM   9170  N   HIS B 890      27.937  12.404  76.767  1.00 65.60           N
ANISOU 9170  N   HIS B 890     7506   8123   9297   -537  -1860   -226       N
ATOM   9171  CA  HIS B 890      28.431  13.455  75.878  1.00 64.13           C
ANISOU 9171  CA  HIS B 890     7361   7982   9025   -515  -1881   -247       C
ATOM   9172  CB  HIS B 890      29.600  12.948  75.048  1.00 61.31           C
ANISOU 9172  CB  HIS B 890     7157   7645   8494   -417  -2014   -297       C
ATOM   9173  CG  HIS B 890      29.211  11.873  74.085  1.00 68.79           C
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ANISOU 9173  CG  HIS B 890     8368   8381   9390   -341  -2258   -314       C
ATOM   9174  ND1 HIS B 890      29.074  10.557  74.467  1.00 63.41           N
ANISOU 9174  ND1 HIS B 890     7743   7627   8724   -321  -2321   -315       N
ATOM   9175  CE1 HIS B 890      28.697   9.837  73.426  1.00 64.11           C
ANISOU 9175  CE1 HIS B 890     8098   7509   8752   -252  -2540   -330       C
ATOM   9176  NE2 HIS B 890      28.576  10.637  72.385  1.00 68.43           N
ANISOU 9176  NE2 HIS B 890     8772   7992   9239   -218  -2621   -339       N
ATOM   9177  CD2 HIS B 890      28.875  11.922  72.775  1.00 68.71           C
ANISOU 9177  CD2 HIS B 890     8603   8198   9306   -278  -2453   -329       C
ATOM   9178  C   HIS B 890      27.325  13.919  74.949  1.00 64.63           C
ANISOU 9178  C   HIS B 890     7524   7868   9166   -523  -2019   -228       C
ATOM   9179  O   HIS B 890      26.210  13.436  75.008  1.00 59.49           O
ANISOU 9179  O   HIS B 890     6889   7073   8642   -543  -2093   -197       O
ATOM   9180  N   LEU B 891      27.668  14.854  74.079  1.00 71.34           N
ANISOU 9180  N   LEU B 891     8442   8726   9938   -501  -2065   -247       N
ATOM   9181  CA  LEU B 891      26.801  15.305  73.022  1.00 59.42           C
ANISOU 9181  CA  LEU B 891     7069   7040   8466   -483  -2232   -239       C
ATOM   9182  CB  LEU B 891      26.377  16.754  73.236  1.00 70.48           C
ANISOU 9182  CB  LEU B 891     8341   8507   9933   -539  -2107   -216       C
ATOM   9183  CG  LEU B 891      25.176  17.327  72.469  1.00 65.63           C
ANISOU 9183  CG  LEU B 891     7804   7720   9413   -531  -2248   -195       C
ATOM   9184  CD1 LEU B 891      25.217  18.826  72.586  1.00 67.89           C
ANISOU 9184  CD1 LEU B 891     7995   8102   9697   -569  -2125   -188       C
ATOM   9185  CD2 LEU B 891      25.101  16.902  71.041  1.00 58.04           C
ANISOU 9185  CD2 LEU B 891     7121   6559   8373   -446  -2521   -224       C
ATOM   9186  C   LEU B 891      27.616  15.179  71.756  1.00 64.14           C
ANISOU 9186  C   LEU B 891     7926   7576   8870   -384  -2410   -289       C
ATOM   9187  O   LEU B 891      28.633  15.855  71.605  1.00 67.79           O
ANISOU 9187  O   LEU B 891     8381   8169   9205   -366  -2347   -314       O
ATOM   9188  N   ASP B 892      27.157  14.344  70.837  1.00 74.06           N
ANISOU 9188  N   ASP B 892     9431   8622  10086   -309  -2631   -301       N
ATOM   9189  CA  ASP B 892      27.861  14.123  69.587  1.00 66.40           C
ANISOU 9189  CA  ASP B 892     8797   7563   8869   -172  -2794   -350       C
ATOM   9190  CB  ASP B 892      27.500  12.743  69.037  1.00 62.47           C
ANISOU 9190  CB  ASP B 892     8544   6862   8332    -92  -2979   -361       C
ATOM   9191  CG  ASP B 892      28.382  12.316  67.882  1.00 66.92           C
ANISOU 9191  CG  ASP B 892     9501   7349   8576     90  -3087   -409       C
ATOM   9192  OD1 ASP B 892      28.818  13.196  67.109  1.00 62.52           O
ANISOU 9192  OD1 ASP B 892     9108   6801   7846    164  -3087   -425       O
ATOM   9193  OD2 ASP B 892      28.629  11.092  67.743  1.00 80.00           O
ANISOU 9193  OD2 ASP B 892    11332   8928  10135    172  -3154   -425       O
ATOM   9194  C   ASP B 892      27.516  15.229  68.587  1.00 73.28           C
ANISOU 9194  C   ASP B 892     9815   8337   9693   -143  -2884   -355       C
ATOM   9195  O   ASP B 892      26.344  15.451  68.282  1.00 71.18           O
ANISOU 9195  O   ASP B 892     9552   7913   9578   -172  -2985   -331       O
ATOM   9196  N   ILE B 893      28.536  15.927  68.092  1.00 71.53           N
ANISOU 9196  N   ILE B 893     9723   8206   9248    -76  -2850   -385       N
ATOM   9197  CA  ILE B 893      28.330  16.965  67.094  1.00 60.98           C
ANISOU 9197  CA  ILE B 893     8587   6771   7814    -29  -2934   -395       C
ATOM   9198  CB  ILE B 893      28.548  18.402  67.669  1.00 57.56           C
ANISOU 9198  CB  ILE B 893     7898   6510   7463   -143  -2753   -377       C
ATOM   9199  CG1 ILE B 893      29.949  18.550  68.243  1.00 64.69           C
ANISOU 9199  CG1 ILE B 893     8666   7658   8254   -130  -2381   -354       C
ATOM   9200  CD1 ILE B 893      30.086  19.804  68.983  1.00 63.23           C
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ANISOU 9200  CD1 ILE B 893     8197   7633   8193   -260  -2177   -329       C
ATOM   9201  CG2 ILE B 893      27.520  18.741  68.749  1.00 50.51           C
ANISOU 9201  CG2 ILE B 893     6641   5661   6890   -296  -2661   -332       C
ATOM   9202  C   ILE B 893      29.262  16.748  65.915  1.00 64.54           C
ANISOU 9202  C   ILE B 893     9454   7158   7909    172  -2916   -414       C
ATOM   9203  O   ILE B 893      29.630  17.700  65.209  1.00 78.71           O
ANISOU 9203  O   ILE B 893    11406   8947   9554    236  -2790   -402       O
ATOM   9204  N   THR B 894      29.606  15.488  65.673  1.00 67.81           N
ANISOU 9204  N   THR B 894    10064   7511   8189    284  -2985   -431       N
ATOM   9205  CA  THR B 894      30.475  15.139  64.558  1.00 55.19           C
ANISOU 9205  CA  THR B 894     8879   5839   6251    504  -2904   -433       C
ATOM   9206  CB  THR B 894      30.797  13.642  64.558  1.00 58.85           C
ANISOU 9206  CB  THR B 894     9501   6254   6606    609  -2981   -451       C
ATOM   9207  OG1 THR B 894      31.177  13.247  65.879  1.00 69.64           O
ANISOU 9207  OG1 THR B 894    10491   7836   8133    500  -2817   -438       O
ATOM   9208  CG2 THR B 894      31.961  13.342  63.602  1.00 63.53           C
ANISOU 9208  CG2 THR B 894    10464   6833   6840    850  -2788   -438       C
ATOM   9209  C   THR B 894      29.894  15.538  63.203  1.00 69.79           C
ANISOU 9209  C   THR B 894    11133   7433   7951    616  -3129   -454       C
ATOM   9210  O   THR B 894      30.651  15.854  62.291  1.00 80.99           O
ANISOU 9210  O   THR B 894    12859   8819   9094    781  -2966   -439       O
ATOM   9211  N   ASP B 895      28.567  15.552  63.070  1.00 81.03           N
ANISOU 9211  N   ASP B 895    12497   8669   9620    525  -3355   -465       N
ATOM   9212  CA  ASP B 895      27.940  15.931  61.797  1.00 84.04           C
ANISOU 9212  CA  ASP B 895    13216   8789   9926    627  -3513   -481       C
ATOM   9213  CB  ASP B 895      26.416  15.890  61.899  1.00 86.34           C
ANISOU 9213  CB  ASP B 895    13334   8909  10562    509  -3717   -474       C
ATOM   9214  CG  ASP B 895      25.863  14.482  61.961  1.00 94.57           C
ANISOU 9214  CG  ASP B 895    14397   9801  11735    506  -3859   -478       C
ATOM   9215  OD1 ASP B 895      26.630  13.502  61.796  1.00 97.34           O
ANISOU 9215  OD1 ASP B 895    14940  10147  11897    606  -3824   -499       O
ATOM   9216  OD2 ASP B 895      24.641  14.362  62.196  1.00101.63           O
ANISOU 9216  OD2 ASP B 895    15113  10584  12919    408  -3997   -452       O
ATOM   9217  C   ASP B 895      28.358  17.327  61.324  1.00 96.61           C
ANISOU 9217  C   ASP B 895    14936  10436  11335    673  -3414   -472       C
ATOM   9218  O   ASP B 895      28.413  17.583  60.118  1.00100.16           O
ANISOU 9218  O   ASP B 895    15792  10701  11564    834  -3456   -484       O
ATOM   9219  N   ASP B 896      28.644  18.229  62.265  1.00 93.00           N
ANISOU 9219  N   ASP B 896    14137  10216  10981    531  -3253   -450       N
ATOM   9220  CA  ASP B 896      29.021  19.597  61.903  1.00 79.45           C
ANISOU 9220  CA  ASP B 896    12464   8552   9170    543  -3027   -421       C
ATOM   9221  CB  ASP B 896      29.058  20.497  63.137  1.00 75.24           C
ANISOU 9221  CB  ASP B 896    11444   8258   8888    336  -2813   -391       C
ATOM   9222  CG  ASP B 896      27.680  20.710  63.759  1.00 87.07           C
ANISOU 9222  CG  ASP B 896    12675   9700  10707    177  -3095   -410       C
ATOM   9223  OD1 ASP B 896      26.660  20.460  63.078  1.00 81.79           O
ANISOU 9223  OD1 ASP B 896    12175   8801  10099    227  -3363   -427       O
ATOM   9224  OD2 ASP B 896      27.619  21.139  64.934  1.00 93.20           O
ANISOU 9224  OD2 ASP B 896    13042  10661  11709     12  -2953   -387       O
ATOM   9225  C   ASP B 896      30.366  19.634  61.193  1.00 73.83           C
ANISOU 9225  C   ASP B 896    12035   7886  8133    717  -2702   -389       C
ATOM   9226  O   ASP B 896      30.735  20.645  60.602  1.00 74.69           O
ANISOU 9226  O   ASP B 896    12298   7981  8102    769  -2522   -363       O
ATOM   9227  N   TYR B 897      31.075  18.508  61.229  1.00 84.41           N
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ANISOU 9227  N   TYR B 897    13453   9266   9353    815  -2626   -387       N
ATOM   9228  CA  TYR B 897      32.425  18.402  60.686  1.00 90.28           C
ANISOU 9228  CA  TYR B 897    14410  10079   9815    985  -2285   -348       C
ATOM   9229  CB  TYR B 897      33.438  18.176  61.823  1.00 77.26           C
ANISOU 9229  CB  TYR B 897    12354   8731   8272    898  -1964   -317       C
ATOM   9230  CG  TYR B 897      33.150  19.201  62.881  1.00 81.08           C
ANISOU 9230  CG  TYR B 897    12386   9388   9033    665  -1880   -307       C
ATOM   9231  CD2 TYR B 897      32.247  18.937  63.906  1.00 82.91           C
ANISOU 9231  CD2 TYR B 897    12297   9657   9548    492  -2092   -335       C
ATOM   9232  CE2 TYR B 897      31.933  19.901  64.845  1.00 82.50           C
ANISOU 9232  CE2 TYR B 897    11869   9744   9734    297  -2018   -323       C
ATOM   9233  CZ  TYR B 897      32.498  21.150  64.756  1.00 73.67           C
ANISOU 9233  CZ  TYR B 897    10696   8722   8575    260  -1755   -290       C
ATOM   9234  OH  TYR B 897      32.174  22.091  65.696  1.00 83.88           O
ANISOU 9234  OH  TYR B 897    11641  10138  10091     73  -1693   -281       O
ATOM   9235  CE1 TYR B 897      33.378  21.450  63.742  1.00 77.99           C
ANISOU 9235  CE1 TYR B 897    11542   9230   8859    411  -1545   -262       C
ATOM   9236  CD1 TYR B 897      33.694  20.478  62.801  1.00 76.36           C
ANISOU 9236  CD1 TYR B 897    11713   8887   8412    619  -1601   -268       C
ATOM   9237  C   TYR B 897      32.447  17.309  59.642  1.00 97.06           C
ANISOU 9237  C   TYR B 897    15759  10711  10408   1214  -2467   -371       C
ATOM   9238  O   TYR B 897      32.182  16.145  59.932  1.00103.41           O
ANISOU 9238  O   TYR B 897    16559  11473  11257   1223  -2665   -402       O
ATOM   9239  N   PRO B 898      32.762  17.705  58.409  1.00104.18           N
ANISOU 9239  N   PRO B 898    17110  11451  11021   1405  -2394   -354       N
ATOM   9240  CA  PRO B 898      32.534  16.974  57.158  1.00108.24           C
ANISOU 9240  CA  PRO B 898    18207  11671  11250   1643  -2628   -382       C
ATOM   9241  CB  PRO B 898      33.262  17.826  56.122  1.00121.82           C
ANISOU 9241  CB  PRO B 898    20281  13324  12680   1816  -2338   -333       C
ATOM   9242  CG  PRO B 898      34.292  18.596  56.920  1.00124.49           C
ANISOU 9242  CG  PRO B 898    20193  13977  13131   1692  -1867   -268       C
ATOM   9243  CD  PRO B 898      33.634  18.877  58.221  1.00104.59           C
ANISOU 9243  CD  PRO B 898    17127  11628  10985   1414  -1989   -294       C
ATOM   9244  C   PRO B 898      33.082  15.562  57.176  1.00109.56           C
ANISOU 9244  C   PRO B 898    18456  11835  11337   1757  -2588   -393       C
ATOM   9245  O   PRO B 898      32.322  14.625  57.392  1.00121.55           O
ANISOU 9245  O   PRO B 898    19887  13240  13055   1685  -2846   -454       O
ATOM   9246  N   ASN B 899      34.378  15.404  56.953  1.00109.03           N
ANISOU 9246  N   ASN B 899    18531  11885  11009   1927  -2234   -332       N
ATOM   9247  CA  ASN B 899      34.960  14.069  56.921  1.00110.72           C
ANISOU 9247  CA  ASN B 899    18849  12094  11127   2063  -2181   -340       C
ATOM   9248  CB  ASN B 899      35.786  13.880  55.651  1.00121.12           C
ANISOU 9248  CB  ASN B 899    20617  13258  12144   2338  -1935   -316       C
ATOM   9249  CG  ASN B 899      34.956  13.990  54.394  1.00114.47           C
ANISOU 9249  CG  ASN B 899    20159  12059  11274   2417  -2152   -392       C
ATOM   9250  OD1 ASN B 899      35.259  14.797  53.521  1.00109.13           O
ANISOU 9250  OD1 ASN B 899    19753  11289  10423   2538  -1979   -363       O
ATOM   9251  ND2 ASN B 899      33.919  13.163  54.284  1.00105.43           N
ANISOU 9251  ND2 ASN B 899    19051  10708  10299   2352  -2517   -495       N
ATOM   9252  C   ASN B 899      35.827  13.781  58.131  1.00 98.41           C
ANISOU 9252  C   ASN B 899    16848  10861   9683   1975  -1919   -304       C
ATOM   9253  O   ASN B 899      36.947  13.304  57.998  1.00 95.77           O
ANISOU 9253  O   ASN B 899    16588  10623   9175   2137  -1625   -262       O
ATOM   9254  N   SER B 900      35.313  14.066  59.316  1.00 92.50           N
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ANISOU 9254  N   SER B 900    15604  10274   9267   1715  -1998   -324       N
ATOM   9255  CA  SER B 900      36.114  13.866  60.503  1.00 93.87           C
ANISOU 9255  CA  SER B 900    15321  10747   9599   1614  -1737   -301       C
ATOM   9256  CB  SER B 900      35.493  14.557  61.713  1.00 90.20           C
ANISOU 9256  CB  SER B 900    14346  10439   9488   1327  -1794   -316       C
ATOM   9257  OG  SER B 900      36.351  14.417  62.833  1.00 95.94           O
ANISOU 9257  OG  SER B 900    14662  11449  10342   1247  -1534   -295       O
ATOM   9258  C   SER B 900      36.271  12.377  60.767  1.00 89.87           C
ANISOU 9258  C   SER B 900    14891  10222   9033   1710  -1852   -326       C
ATOM   9259  O   SER B 900      35.281  11.661  60.925  1.00 96.23           O
ANISOU 9259  O   SER B 900    15754  10877   9932   1649  -2217   -376       O
ATOM   9260  N   ARG B 901      37.517  11.919  60.810  1.00 72.49           N
ANISOU 9260  N   ARG B 901    12688   8168   6686   1860  -1539   -287       N
ATOM   9261  CA  ARG B 901      37.801  10.538  61.151  1.00 75.53           C
ANISOU 9261  CA  ARG B 901    13123   8566   7010   1958  -1604   -306       C
ATOM   9262  CB  ARG B 901      39.315  10.288  61.177  1.00 66.27           C
ANISOU 9262  CB  ARG B 901    11902   7591   5686   2133  -1192   -253       C
ATOM   9263  C   ARG B 901      37.163  10.165  62.496  1.00 90.94           C
ANISOU 9263  C   ARG B 901    14659  10626   9268   1728  -1785   -346       C
ATOM   9264  O   ARG B 901      36.545   9.108  62.610  1.00106.32           O
ANISOU 9264  O   ARG B 901    16737  12435  11224   1735  -2069   -386       O
ATOM   9265  N   ASN B 902      37.278  11.043  63.496  1.00 75.57           N
ANISOU 9265  N   ASN B 902    12237   8907   7570   1523  -1626   -332       N
ATOM   9266  CA  ASN B 902      36.758  10.750  64.829  1.00 67.80           C
ANISOU 9266  CA  ASN B 902    10862   8035   6865   1318  -1748   -360       C
ATOM   9267  CB  ASN B 902      37.829  10.946  65.900  1.00 59.72           C
ANISOU 9267  CB  ASN B 902    9428   7322   5940   1268  -1427   -336       C
ATOM   9268  CG  ASN B 902      39.130  10.317  65.525  1.00 70.27           C
ANISOU 9268  CG  ASN B 902    10908   8745   7046   1502  -1177   -309       C
ATOM   9269  OD1 ASN B 902      39.924  10.916  64.807  1.00 84.31           O
ANISOU 9269  OD1 ASN B 902    12789  10563   8683   1616   -924   -266       O
ATOM   9270  ND2 ASN B 902      39.367   9.106  66.004  1.00 70.46           N
ANISOU 9270  ND2 ASN B 902    10943   8795   7033   1582  -1233   -329       N
ATOM   9271  C   ASN B 902      35.572  11.571  65.225  1.00 73.06           C
ANISOU 9271  C   ASN B 902    11323   8649   7787   1086  -1947   -377       C
ATOM   9272  O   ASN B 902      35.237  12.557  64.577  1.00 68.89           O
ANISOU 9272  O   ASN B 902    10891   8041   7243   1063  -1959   -367       O
ATOM   9273  N   LYS B 903      34.948  11.146  66.321  1.00 75.41           N
ANISOU 9273  N   LYS B 903    11339   8992   8321    923  -2089   -399       N
ATOM   9274  CA  LYS B 903      33.836  11.870  66.900  1.00 79.71           C
ANISOU 9274  CA  LYS B 903    11627   9514   9145    699  -2248   -408       C
ATOM   9275  CB  LYS B 903      33.216  11.082  68.050  1.00 76.59           C
ANISOU 9275  CB  LYS B 903    10989   9138   8973    564  -2392   -425       C
ATOM   9276  CG  LYS B 903      32.195  10.050  67.677  1.00 79.00           C
ANISOU 9276  CG  LYS B 903    11523   9186   9306    570  -2753   -456       C
ATOM   9277  CD  LYS B 903      31.447   9.608  68.928  1.00 82.94           C
ANISOU 9277  CD  LYS B 903    11706   9714  10093    385  -2854   -459       C
ATOM   9278  CE  LYS B 903      30.517   8.449  68.649  1.00 85.69           C
ANISOU 9278  CE  LYS B 903    12217   9809  10531    373  -3048   -462       C
ATOM   9279  NZ  LYS B 903      30.761   7.344  69.615  1.00101.00           N
ANISOU 9279  NZ  LYS B 903    14051  11812  12511    358  -3007   -463       N
ATOM   9280  C   LYS B 903      34.311  13.223  67.408  1.00 79.91           C
ANISOU 9280  C   LYS B 903    11340   9750   9273    588  -1976   -378       C
ATOM   9281  O   LYS B 903      35.352  13.294  68.065  1.00 75.79           O
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ANISOU 9281  O   LYS B 903    10602   9452   8743    597  -1703   -361       O
ATOM   9282  N   VAL B 904      33.560  14.284  67.097  1.00 80.65           N
ANISOU 9282  N   VAL B 904    11417   9764   9461    489  -2062   -375       N
ATOM   9283  CA  VAL B 904      33.753  15.584  67.751  1.00 74.56           C
ANISOU 9283  CA  VAL B 904    10323   9170   8838    342  -1857   -351       C
ATOM   9284  CB  VAL B 904      33.823  16.763  66.764  1.00 68.64           C
ANISOU 9284  CB  VAL B 904     9752   8353   7973    379  -1777   -332       C
ATOM   9285  CG1 VAL B 904      34.258  18.007  67.490  1.00 57.47           C
ANISOU 9285  CG1 VAL B 904     8010   7140   6687    238  -1526   -306       C
ATOM   9286  CG2 VAL B 904      34.790  16.473  65.632  1.00 61.65           C
ANISOU 9286  CG2 VAL B 904     9223   7421   6782    601  -1625   -315       C
ATOM   9287  C   VAL B 904      32.591  15.781  68.713  1.00 66.91           C
ANISOU 9287  C   VAL B 904     9069   8189   8166    143  -2038   -362       C
ATOM   9288  O   VAL B 904      31.438  15.526  68.365  1.00 74.79           O
ANISOU 9288  O   VAL B 904    10180   8986   9250    112  -2335   -380       O
ATOM   9289  N   VAL B 905      32.895  16.242  69.920  1.00 54.82           N
ANISOU 9289  N   VAL B 905     7171   6861   6795     12  -1860   -349       N
ATOM   9290  CA  VAL B 905      31.963  16.120  71.027  1.00 42.77           C
ANISOU 9290  CA  VAL B 905     5373   5342   5537   -148  -1985   -352       C
ATOM   9291  CB  VAL B 905      32.264  14.814  71.787  1.00 57.91           C
ANISOU 9291  CB  VAL B 905     7225   7314   7464   -119  -1990   -364       C
ATOM   9292  CG1 VAL B 905      33.298  15.039  72.916  1.00 53.75           C
ANISOU 9292  CG1 VAL B 905     6415   7044   6962   -153  -1713   -355       C
ATOM   9293  CG2 VAL B 905      31.043  14.270  72.349  1.00 74.12           C
ANISOU 9293  CG2 VAL B 905     9183   9244   9736   -228  -2218   -367       C
ATOM   9294  C   VAL B 905      31.996  17.333  72.008  1.00 57.18           C
ANISOU 9294  C   VAL B 905     6861   7332   7531   -304  -1811   -332       C
ATOM   9295  O   VAL B 905      33.035  17.986  72.171  1.00 61.43           O
ANISOU 9295  O   VAL B 905     7310   8039   7992   -296  -1559   -321       O
ATOM   9296  N   LYS B 906      30.860  17.635  72.648  1.00 48.94           N
ANISOU 9296  N   LYS B 906     5638   6233   6726   -442  -1945   -325       N
ATOM   9297  CA  LYS B 906      30.823  18.584  73.780  1.00 53.28           C
ANISOU 9297  CA  LYS B 906     5897   6934   7413   -565  -1728   -299       C
ATOM   9298  CB  LYS B 906      29.808  19.688  73.549  1.00 50.74           C
ANISOU 9298  CB  LYS B 906     5583   6526   7168   -618  -1717   -273       C
ATOM   9299  CG  LYS B 906      30.359  20.866  72.814  1.00 55.79           C
ANISOU 9299  CG  LYS B 906     6261   7185   7753   -643  -1746   -285       C
ATOM   9300  CD  LYS B 906      29.239  21.787  72.324  1.00 59.47           C
ANISOU 9300  CD  LYS B 906     6803   7515   8276   -662  -1812   -267       C
ATOM   9301  CE  LYS B 906      29.902  23.008  71.687  1.00 65.34           C
ANISOU 9301  CE  LYS B 906     7619   8291   8915   -674  -1737   -269       C
ATOM   9302  NZ  LYS B 906      28.978  23.998  71.152  1.00 52.55           N
ANISOU 9302  NZ  LYS B 906     6075   6540   7350   -701  -1861   -263       N
ATOM   9303  C   LYS B 906      30.487  17.811  75.055  1.00 66.22           C
ANISOU 9303  C   LYS B 906     7409   8631   9120   -587  -1585   -278       C
ATOM   9304  O   LYS B 906      29.971  16.695  74.960  1.00 70.93           O
ANISOU 9304  O   LYS B 906     8104   9111   9734   -548  -1705   -277       O
ATOM   9305  N   LEU B 907      30.742  18.358  76.246  1.00 58.71           N
ANISOU 9305  N   LEU B 907     6282   7842   8183   -643  -1267   -267       N
ATOM   9306  CA  LEU B 907      30.803  17.417  77.344  1.00 55.28           C
ANISOU 9306  CA  LEU B 907     5788   7467   7748   -634  -1258   -262       C
ATOM   9307  CB  LEU B 907      32.250  17.315  77.828  1.00 50.39           C
ANISOU 9307  CB  LEU B 907     5060   7039   7047   -617  -1151   -278       C
ATOM   9308  CG  LEU B 907      33.018  16.222  77.079  1.00 58.53           C
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ANISOU 9308  CG  LEU B 907     6159   8044   8035   -520  -1328   -312       C
ATOM   9309  CD1 LEU B 907      34.362  15.922  77.785  1.00 42.51           C
ANISOU 9309  CD1 LEU B 907     3987   6208   5957   -474  -1204   -331       C
ATOM   9310  CD2 LEU B 907      32.158  14.951  76.929  1.00 45.44           C
ANISOU 9310  CD2 LEU B 907     4651   6214   6400   -482  -1491   -310       C
ATOM   9311  C   LEU B 907      29.919  17.553  78.568  1.00 70.64           C
ANISOU 9311  C   LEU B 907     7679   9423   9737   -675  -1115   -240       C
ATOM   9312  O   LEU B 907      29.394  16.529  79.060  1.00 88.84           O
ANISOU 9312  O   LEU B 907    10004  11659  12092   -663  -1150   -227       O
ATOM   9313  N   SER B 908      29.764  18.718  79.152  1.00 44.63           N
ANISOU 9313  N   SER B 908     4329   6208   6418   -716   -965   -238       N
ATOM   9314  CA  SER B 908      29.117  18.599  80.481  1.00 57.53           C
ANISOU 9314  CA  SER B 908     5933   7850   8077   -730   -860   -220       C
ATOM   9315  CB  SER B 908      29.752  19.570  81.478  1.00 53.48           C
ANISOU 9315  CB  SER B 908     5353   7456   7512   -753   -713   -222       C
ATOM   9316  OG  SER B 908      29.054  19.576  82.701  1.00 47.75           O
ANISOU 9316  OG  SER B 908     4606   6670   6868   -756   -666   -189       O
ATOM   9317  C   SER B 908      27.602  18.818  80.370  1.00 58.41           C
ANISOU 9317  C   SER B 908     6070   7781   8342   -738   -935   -176       C
ATOM   9318  O   SER B 908      27.134  19.952  80.270  1.00 64.09           O
ANISOU 9318  O   SER B 908     6779   8474   9099   -756   -914   -161       O
ATOM   9319  N   LEU B 909      26.829  17.742  80.349  1.00 56.24           N
ANISOU 9319  N   LEU B 909     5824   7384   8161   -727  -1032   -153       N
ATOM   9320  CA  LEU B 909      25.392  17.870  79.969  1.00 58.62           C
ANISOU 9320  CA  LEU B 909     6144   7509   8621   -731  -1138   -109       C
ATOM   9321  CB  LEU B 909      24.829  16.539  79.491  1.00 48.70           C
ANISOU 9321  CB  LEU B 909     4944   6122   7438   -719  -1287   -100       C
ATOM   9322  CG  LEU B 909      24.928  16.194  78.003  1.00 65.66           C
ANISOU 9322  CG  LEU B 909     7206   8171   9571   -692  -1484   -120       C
ATOM   9323  CD2 LEU B 909      24.798  14.706  77.828  1.00 63.05           C
ANISOU 9323  CD2 LEU B 909     6942   7721   9293   -675  -1628   -115       C
ATOM   9324  CD1 LEU B 909      26.238  16.638  77.407  1.00 71.57           C
ANISOU 9324  CD1 LEU B 909     7988   9025  10180   -673  -1478   -161       C
ATOM   9325  C   LEU B 909      24.536  18.364  81.119  1.00 53.55           C
ANISOU 9325  C   LEU B 909     5425   6824   8098   -745  -1054    -59       C
ATOM   9326  O   LEU B 909      24.005  17.551  81.851  1.00 52.43           O
ANISOU 9326  O   LEU B 909     5254   6619   8048   -748  -1052    -29       O
ATOM   9327  N   LYS B 910      24.428  19.685  81.293  1.00 46.30           N
ANISOU 9327  N   LYS B 910     4478   5940   7174   -754   -984    -51       N
ATOM   9328  CA  LYS B 910      23.787  20.243  82.490  1.00 54.77           C
ANISOU 9328  CA  LYS B 910     5486   6994   8331   -759   -889     -9       C
ATOM   9329  CB  LYS B 910      23.802  21.776  82.433  1.00 36.23           C
ANISOU 9329  CB  LYS B 910     3128   4689   5950   -767   -832    -11       C
ATOM   9330  CG  LYS B 910      25.188  22.385  82.063  1.00 54.27           C
ANISOU 9330  CG  LYS B 910     5439   7123   8056   -782   -771    -68       C
ATOM   9331  CD  LYS B 910      26.325  21.731  82.829  1.00 45.54           C
ANISOU 9331  CD  LYS B 910     4323   6138   6844   -782   -688    -99       C
ATOM   9332  CE  LYS B 910      27.404  22.705  83.251  1.00 54.10           C
ANISOU 9332  CE  LYS B 910     5390   7361   7804   -802   -580   -133       C
ATOM   9333  NZ  LYS B 910      28.757  22.504  82.614  1.00 39.87           N
ANISOU 9333  NZ  LYS B 910     3591   5689   5869   -810   -567   -184       N
ATOM   9334  C   LYS B 910      22.354  19.702  82.660  1.00 53.65           C
ANISOU 9334  C   LYS B 910     5308   6691   8387   -755   -965     49       C
ATOM   9335  O   LYS B 910      21.587  19.623  81.681  1.00 65.65           O
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ANISOU 9335  O   LYS B 910     6845   8099  10001   -750  -1100     64       O
ATOM   9336  N   PRO B 911      22.019  19.269  83.886  1.00 55.94           N
ANISOU 9336  N   PRO B 911     5545   6965   8745   -757   -885     81       N
ATOM   9337  CA  PRO B 911      20.720  18.646  84.215  1.00 57.18           C
ANISOU 9337  CA  PRO B 911     5645   6978   9103   -759   -933    140       C
ATOM   9338  CB  PRO B 911      21.091  17.633  85.291  1.00 44.69           C
ANISOU 9338  CB  PRO B 911     4050   5428   7504   -765   -853    141       C
ATOM   9339  CG  PRO B 911      22.270  18.327  86.035  1.00 52.95           C
ANISOU 9339  CG  PRO B 911     5116   6630   8372   -758   -720    101       C
ATOM   9340  CD  PRO B 911      23.013  19.119  84.978  1.00 43.05           C
ANISOU 9340  CD  PRO B 911     3910   5454   6992   -757   -756     55       C
ATOM   9341  C   PRO B 911      19.652  19.596  84.767  1.00 66.73           C
ANISOU 9341  C   PRO B 911     6780   8125  10451   -753   -885    193       C
ATOM   9342  O   PRO B 911      19.923  20.356  85.676  1.00 67.34           O
ANISOU 9342  O   PRO B 911     6841   8273  10473   -747   -760    194       O
ATOM   9343  N   TYR B 912      18.435  19.513  84.236  1.00 73.87           N
ANISOU 9343  N   TYR B 912     7637   8892  11539   -752   -993    236       N
ATOM   9344  CA  TYR B 912      17.300  20.295  84.723  1.00 60.47           C
ANISOU 9344  CA  TYR B 912     5849   7121  10004   -742   -957    292       C
ATOM   9345  CB  TYR B 912      16.183  20.298  83.657  1.00 64.26           C
ANISOU 9345  CB  TYR B 912     6294   7461  10660   -741  -1127    320       C
ATOM   9346  CG  TYR B 912      14.961  21.132  84.012  1.00 64.13           C
ANISOU 9346  CG  TYR B 912     6172   7364  10830   -729  -1106    378       C
ATOM   9347  CD1 TYR B 912      15.104  22.442  84.411  1.00 76.80           C
ANISOU 9347  CD1 TYR B 912     7775   9039  12368   -713  -1003    375       C
ATOM   9348  CE1 TYR B 912      14.014  23.220  84.728  1.00 79.01           C
ANISOU 9348  CE1 TYR B 912     7960   9247  12815   -697   -981    427       C
ATOM   9349  CZ  TYR B 912      12.749  22.695  84.641  1.00 74.03           C
ANISOU 9349  CZ  TYR B 912     7220   8473  12434   -700  -1061    484       C
ATOM   9350  OH  TYR B 912      11.712  23.520  84.972  1.00 84.74           O
ANISOU 9350  OH  TYR B 912     8474   9766  13957   -683  -1027    536       O
ATOM   9351  CE2 TYR B 912      12.552  21.381  84.231  1.00 59.99           C
ANISOU 9351  CE2 TYR B 912     5436   6619  10741   -721  -1172    489       C
ATOM   9352  CD2 TYR B 912      13.657  20.609  83.914  1.00 71.83           C
ANISOU 9352  CD2 TYR B 912     7044   8189  12058   -734  -1196    435       C
ATOM   9353  C   TYR B 912      16.745  19.785  86.059  1.00 46.88           C
ANISOU 9353  C   TYR B 912     4048   5362   8402   -744   -847    344       C
ATOM   9354  O   TYR B 912      16.528  20.556  87.006  1.00 54.94           O
ANISOU 9354  O   TYR B 912     5028   6405   9440   -730   -723    370       O
ATOM   9355  N   ARG B 913      16.528  18.481  86.145  1.00 42.03           N
ANISOU 9355  N   ARG B 913     3416   4685   7867   -762   -891    359       N
ATOM   9356  CA  ARG B 913      15.749  17.888  87.238  1.00 52.82           C
ANISOU 9356  CA  ARG B 913     4692   5980   9399   -768   -807    420       C
ATOM   9357  CB  ARG B 913      14.270  18.334  87.119  1.00 54.36           C
ANISOU 9357  CB  ARG B 913     4767   6043   9843   -763   -847    488       C
ATOM   9358  CG  ARG B 913      13.198  17.207  87.169  1.00 68.43           C
ANISOU 9358  CG  ARG B 913     6447   7682  11870   -790   -911    545       C
ATOM   9359  CD  ARG B 913      11.731  17.741  87.047  1.00 95.32           C
ANISOU 9359  CD  ARG B 913     9714  10960  15544   -784   -950    614       C
ATOM   9360  NE  ARG B 913      11.107  17.518  85.732  1.00 99.73           N
ANISOU 9360  NE  ARG B 913    10254  11413  16226   -799  -1170    612       N
ATOM   9361  CZ  ARG B 913      10.169  16.608  85.464  1.00 98.13           C
ANISOU 9361  CZ  ARG B 913     9958  11074  16253   -829  -1283    654       C
ATOM   9362  NH1 ARG B 913       9.695  16.482  84.231  1.00100.53           N
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ANISOU 9362  NH1 ARG B 913    10266  11282  16649   -838  -1503    643       N
ATOM   9363  NH2 ARG B 913       9.661  15.859  86.435  1.00101.70          N
ANISOU 9363  NH2 ARG B 913    10310  11476  16854   -851  -1180    710       N
ATOM   9364  C   ARG B 913      15.860  16.378  87.178  1.00 55.66          C
ANISOU 9364  C   ARG B 913     5063   6298   9789   -796   -865    417       C
ATOM   9365  O   ARG B 913      16.112  15.820  86.100  1.00 64.91          O
ANISOU 9365  O   ARG B 913     6293   7448  10924   -809  -1012    384       O
ATOM   9366  N   PHE B 914      15.678  15.695  88.306  1.00 44.91          N
ANISOU 9366  N   PHE B 914     3655   4917   8490   -807   -754    452       N
ATOM   9367  CA  PHE B 914      15.465  14.254  88.211  1.00 61.52          C
ANISOU 9367  CA  PHE B 914     5748   6947  10681   -842   -821    464       C
ATOM   9368  CB  PHE B 914      16.636  13.532  88.837  1.00 59.15          C
ANISOU 9368  CB  PHE B 914     5530   6747  10198   -849   -742    419       C
ATOM   9369  CG  PHE B 914      16.748  13.680  90.330  1.00 57.80          C
ANISOU 9369  CG  PHE B 914     5333   6616  10012   -837   -549    445       C
ATOM   9370  CD1 PHE B 914      17.265  14.815  90.892  1.00 46.68          C
ANISOU 9370  CD1 PHE B 914     3950   5303   8481   -802   -442    427       C
ATOM   9371  CE1 PHE B 914      17.449  14.911  92.276  1.00 60.21          C
ANISOU 9371  CE1 PHE B 914     5662   7049  10168   -787   -275    447       C
ATOM   9372  CZ  PHE B 914      17.090  13.874  93.097  1.00 63.92          C
ANISOU 9372  CZ  PHE B 914     6100   7453  10736   -806   -199    488       C
ATOM   9373  CE2 PHE B 914      16.586  12.735  92.547  1.00 53.24          C
ANISOU 9373  CE2 PHE B 914     4715   6008   9505   -847   -294    506       C
ATOM   9374  CD2 PHE B 914      16.419  12.631  91.169  1.00 53.81          C
ANISOU 9374  CD2 PHE B 914     4791   6050   9603   -863   -476    483       C
ATOM   9375  C   PHE B 914      14.143  13.742  88.820  1.00 71.25          C
ANISOU 9375  C   PHE B 914     6846   8043  12182   -864   -787    546       C
ATOM   9376  O   PHE B 914      13.580  14.362  89.733  1.00 70.35          O
ANISOU 9376  O   PHE B 914     6655   7913  12162   -844   -648    596       O
ATOM   9377  N   ASP B 915      13.666  12.602  88.308  1.00 80.24          N
ANISOU 9377  N   ASP B 915     7959   9080  13448   -905   -911    561       N
ATOM   9378  CA  ASP B 915      12.360  12.030  88.694  1.00 68.55          C
ANISOU 9378  CA  ASP B 915     6336   7457  12252   -937   -905    640       C
ATOM   9379  CB  ASP B 915      11.440  11.882  87.472  1.00 70.01          C
ANISOU 9379  CB  ASP B 915     6463   7515  12622   -957  -1125    658       C
ATOM   9380  CG  ASP B 915      10.923  13.228  86.944  1.00 71.91          C
ANISOU 9380  CG  ASP B 915     6661   7744  12919   -919  -1168    668       C
ATOM   9381  OD1 ASP B 915      10.842  14.189  87.735  1.00 63.41          O
ANISOU 9381  OD1 ASP B 915     5546   6718  11831   -885  -1007    690       O
ATOM   9382  OD2 ASP B 915      10.569  13.319  85.744  1.00 73.02          O
ANISOU 9382  OD2 ASP B 915     6812   7814  13118   -922  -1368    653       O
ATOM   9383  C   ASP B 915      12.498  10.681  89.361  1.00 61.88          C
ANISOU 9383  C   ASP B 915     5495   6585  11431   -982   -848    653       C
ATOM   9384  O   ASP B 915      12.953   9.727  88.730  1.00 61.51          O
ANISOU 9384  O   ASP B 915     5526   6529  11316  -1015   -975    613       O
ATOM   9385  N   VAL B 916      12.084  10.600  90.624  1.00 57.00          N
ANISOU 9385  N   VAL B 916     4801   5945  10910   -983   -658    709       N
ATOM   9386  CA  VAL B 916      12.242   9.376  91.398  1.00 75.67          C
ANISOU 9386  CA  VAL B 916     7179   8285  13288  -1028   -570    724       C
ATOM   9387  CB  VAL B 916      12.494   9.720  92.873  1.00 73.35          C
ANISOU 9387  CB  VAL B 916     6891   8042  12936   -994   -320    751       C
ATOM   9388  CG1 VAL B 916      12.555   8.478  93.737  1.00 58.66          C
ANISOU 9388  CG1 VAL B 916     5047   6137  11104  -1042   -210    777       C
ATOM   9389  CG2 VAL B 916      13.793  10.484  92.968  1.00 77.75          C
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ANISOU 9389  CG2 VAL B 916     7577   8757  13207   -946   -288    678       C
ATOM   9390  C   VAL B 916      11.032   8.451  91.255  1.00 85.95           C
ANISOU 9390  C   VAL B 916     8355   9426  14876  -1090   -633    790       C
ATOM   9391  O   VAL B 916       9.886   8.869  91.421  1.00 85.63           O
ANISOU 9391  O   VAL B 916     8166   9294  15076  -1086   -599    860       O
ATOM   9392  N   TYR B 917      11.299   7.200  90.908  1.00 81.30           N
ANISOU 9392  N   TYR B 917     7825   8800  14267  -1152   -731    765       N
ATOM   9393  CA  TYR B 917      10.248   6.201  90.775  1.00 96.83           C
ANISOU 9393  CA  TYR B 917     9685  10612  16494  -1228   -801    822       C
ATOM   9394  CB  TYR B 917      10.264   5.578  89.372  1.00100.99           C
ANISOU 9394  CB  TYR B 917    10267  11080  17024  -1266  -1082    778       C
ATOM   9395  CG  TYR B 917       9.762   6.462  88.255  1.00102.92           C
ANISOU 9395  CG  TYR B 917    10467  11294  17346  -1227  -1264    774       C
ATOM   9396  CD2 TYR B 917      10.586   7.406  87.670  1.00 94.25           C
ANISOU 9396  CD2 TYR B 917     9477  10307  16027  -1160  -1307    713       C
ATOM   9397  CE2 TYR B 917      10.135   8.216  86.642  1.00102.86           C
ANISOU 9397  CE2 TYR B 917    10544  11358  17179  -1128  -1467    708       C
ATOM   9398  CZ  TYR B 917       8.842   8.089  86.177  1.00109.21           C
ANISOU 9398  CZ  TYR B 917    11209  12010  18277  -1159  -1602    764       C
ATOM   9399  OH  TYR B 917       8.399   8.901  85.148  1.00 99.49           O
ANISOU 9399  OH  TYR B 917     9964  10731  17107  -1127  -1770    757       O
ATOM   9400  CE1 TYR B 917       8.000   7.152  86.745  1.00112.52           C
ANISOU 9400  CE1 TYR B 917    11500  12318  18933  -1227  -1569    827       C
ATOM   9401  CD1 TYR B 917       8.464   6.342  87.777  1.00111.49           C
ANISOU 9401  CD1 TYR B 917    11401  12229  18732  -1262  -1394    832       C
ATOM   9402  C   TYR B 917      10.394   5.092  91.815  1.00103.32           C
ANISOU 9402  C   TYR B 917    10534  11404  17320  -1285   -643    846       C
ATOM   9403  O   TYR B 917      11.486   4.870  92.348  1.00102.29           O
ANISOU 9403  O   TYR B 917    10533  11360  16974  -1270   -550    805       O
ATOM   9404  N   LEU B 918       9.291   4.399  92.101  1.00103.89           N
ANISOU 9404  N   LEU B 918    10474  11334  17665  -1351   -616    921       N
ATOM   9405  CA  LEU B 918       9.361   3.087  92.743  1.00 95.01           C
ANISOU 9405  CA  LEU B 918     9383  10127  16591  -1428   -534    948       C
ATOM   9406  CB  LEU B 918       8.408   2.969  93.923  1.00 89.70           C
ANISOU 9406  CB  LEU B 918     8574   9363  16144  -1448   -294   1049       C
ATOM   9407  CG  LEU B 918       9.193   2.757  95.216  1.00 91.60           C
ANISOU 9407  CG  LEU B 918     8915   9631  16258  -1415    -45   1067       C
ATOM   9408  CD2 LEU B 918      10.357   1.767  95.004  1.00 92.57           C
ANISOU 9408  CD2 LEU B 918     9211   9757  16205  -1451   -131   1009       C
ATOM   9409  CD1 LEU B 918       8.262   2.321  96.346  1.00 71.01           C
ANISOU 9409  CD1 LEU B 918     6200   6894  13886  -1444    197   1175       C
ATOM   9410  C   LEU B 918       9.048   2.019  91.714  1.00 91.50           C
ANISOU 9410  C   LEU B 918     8944   9566  16256  -1515   -780    934       C
ATOM   9411  O   LEU B 918       8.078   2.124  90.981  1.00 98.14           O
ANISOU 9411  O   LEU B 918     9672  10334  17282  -1543   -927    954       O
ATOM   9412  N   ASP B 919       9.878   0.992  91.653  1.00 94.92           N
ANISOU 9412  N   ASP B 919     9516   9970  16578  -1555   -836    900       N
ATOM   9413  CA  ASP B 919       9.768   0.013  90.585  1.00103.23           C
ANISOU 9413  CA  ASP B 919    10621  10916  17687  -1625  -1100    872       C
ATOM   9414  CB  ASP B 919      10.759   0.340  89.468  1.00109.93           C
ANISOU 9414  CB  ASP B 919    11619  11853  18295  -1562  -1308    781       C
ATOM   9415  CG  ASP B 919      10.651  -0.592  88.287  1.00112.01           C
ANISOU 9415  CG  ASP B 919    11962  11997  18601  -1614  -1603    752       C
ATOM   9416  OD1 ASP B 919       9.920  -0.270  87.330  1.00112.17           O
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ANISOU 9416  OD1 ASP B 919    11919  11969  18730  -1611  -1790    752       O
ATOM   9417  OD2 ASP B 919      11.326  -1.636  88.303  1.00123.90           O
ANISOU 9417  OD2 ASP B 919    13608  13444  20022  -1653  -1658    728       O
ATOM   9418  C   ASP B 919      10.010  -1.370  91.161  1.00110.73           C
ANISOU 9418  C   ASP B 919    11652  11750  18669  -1712  -1043    894       C
ATOM   9419  O   ASP B 919      11.119  -1.901  91.097  1.00119.84           O
ANISOU 9419  O   ASP B 919    12982  12923  19628  -1704  -1085    843       O
ATOM   9420  N   ASN B 920       8.957  -1.931  91.748  1.00113.47           N
ANISOU 9420  N   ASN B 920    11875  11969  19271  -1795   -939    975       N
ATOM   9421  CA  ASN B 920       9.034  -3.211  92.416  1.00107.71           C
ANISOU 9421  CA  ASN B 920    11222  11109  18593  -1888   -842   1010       C
ATOM   9422  CB  ASN B 920       9.362  -4.308  91.402  1.00112.83           C
ANISOU 9422  CB  ASN B 920    12015  11655  19199  -1957  -1121    956       C
ATOM   9423  CG  ASN B 920       8.400  -5.475  91.482  1.00125.63           C
ANISOU 9423  CG  ASN B 920    13587  13079  21069  -2097  -1150   1014       C
ATOM   9424  OD1 ASN B 920       7.245  -5.373  91.064  1.00130.96           O
ANISOU 9424  OD1 ASN B 920    14081  13687  21992  -2145  -1244   1053       O
ATOM   9425  ND2 ASN B 920       8.871  -6.595  92.025  1.00124.72           N
ANISOU 9425  ND2 ASN B 920    13636  12857  20893  -2164  -1069   1021       N
ATOM   9426  C   ASN B 920      10.058  -3.196  93.555  1.00110.43           C
ANISOU 9426  C   ASN B 920    11698  11516  18745  -1837   -593   1011       C
ATOM   9427  O   ASN B 920      11.008  -3.977  93.558  1.00105.27           O
ANISOU 9427  O   ASN B 920    11235  10829  17934  -1854   -632    971       O
ATOM   9428  N   GLY B 921       9.859  -2.291  94.512  1.00119.47           N
ANISOU 9428  N   GLY B 921    12750  12737  19907  -1766   -347   1058       N
ATOM   9429  CA  GLY B 921      10.679  -2.213  95.717  1.00112.74           C
ANISOU 9429  CA  GLY B 921    12008  11924  18905  -1708    -89   1075       C
ATOM   9430  C   GLY B 921      12.075  -1.627  95.560  1.00 98.30           C
ANISOU 9430  C   GLY B 921    10314  10245  16791  -1616   -134    992       C
ATOM   9431  O   GLY B 921      12.887  -1.664  96.489  1.00 83.29           O
ANISOU 9431  O   GLY B 921     8525   8362  14761  -1569     49   1000       O
ATOM   9432  N   VAL B 922      12.355  -1.093  94.376  1.00 94.29           N
ANISOU 9432  N   VAL B 922     9801   9833  16190  -1587   -375    917       N
ATOM   9433  CA  VAL B 922      13.669  -0.564  94.050  1.00 89.32           C
ANISOU 9433  CA  VAL B 922     9289   9344  15304  -1509   -447    835       C
ATOM   9434  C   VAL B 922      13.599   0.856  93.500  1.00 87.80           C
ANISOU 9434  C   VAL B 922     9017   9305  15038  -1429   -503    798       C
ATOM   9435  O   VAL B 922      13.050   1.086  92.424  1.00 86.76           O
ANISOU 9435  O   VAL B 922     8833   9168  14962  -1440   -696    777       O
ATOM   9436  CB  VAL B 922      14.372  -1.437  93.017  1.00 86.91           C
ANISOU 9436  CB  VAL B 922     9126   8995  14901  -1545   -701    768       C
ATOM   9437  CG1 VAL B 922      15.724  -0.819  92.656  1.00 77.73           C
ANISOU 9437  CG1 VAL B 922     8063   7982  13489  -1458   -771    686       C
ATOM   9438  CG2 VAL B 922      14.543  -2.834  93.559  1.00 91.21           C
ANISOU 9438  CG2 VAL B 922     9795   9374  15485  -1622   -649    798       C
ATOM   9439  N   TYR B 923      14.161   1.812  94.220  1.00 81.58           N
ANISOU 9439  N   TYR B 923     8237   8639  14119  -1347   -340    791       N
ATOM   9440  CA  TYR B 923      14.081   3.178  93.738  1.00 76.13           C
ANISOU 9440  CA  TYR B 923     7498   8081  13347  -1279   -382    756       C
ATOM   9441  CB  TYR B 923      14.504   4.142  94.801  1.00 69.67           C
ANISOU 9441  CB  TYR B 923     6685   7363  12424  -1202   -168    766       C
ATOM   9442  CG  TYR B 923      13.486   4.385  95.863  1.00 80.78           C
ANISOU 9442  CG  TYR B 923     7989   8697  14007  -1193     49    856       C
ATOM   9443  CD1 TYR B 923      12.307   5.069  95.586  1.00 81.32           C
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ANISOU 9443  CD1 TYR B 923     7928   8744  14227  -1190     34    892       C
ATOM   9444  CE1 TYR B 923      11.375   5.312  96.586  1.00 81.70           C
ANISOU 9444  CE1 TYR B 923     7876   8717  14448  -1172    243    979       C
ATOM   9445  CZ  TYR B 923      11.638   4.883  97.868  1.00 77.38           C
ANISOU 9445  CZ  TYR B 923     7377   8116  13906  -1151    478   1031       C
ATOM   9446  OH  TYR B 923      10.757   5.122  98.870  1.00 77.72           O
ANISOU 9446  OH  TYR B 923     7338   8077  14115  -1119    704   1121       O
ATOM   9447  CE2 TYR B 923      12.803   4.217  98.166  1.00 88.43           C
ANISOU 9447  CE2 TYR B 923     8918   9534  15149  -1154    500    996       C
ATOM   9448  CD2 TYR B 923      13.719   3.969  97.168  1.00 90.59           C
ANISOU 9448  CD2 TYR B 923     9272   9882  15265  -1178    281    909       C
ATOM   9449  C   TYR B 923      14.934   3.397  92.501  1.00 80.10           C
ANISOU 9449  C   TYR B 923     8093   8674  13667  -1254   -603    666       C
ATOM   9450  O   TYR B 923      16.093   2.977  92.430  1.00 81.11           O
ANISOU 9450  O   TYR B 923     8335   8842  13641  -1242   -646    616       O
ATOM   9451  N   LYS B 924      14.355   4.080  91.529  1.00 70.17           N
ANISOU 9451  N   LYS B 924     6788   7440  12433  -1240   -736    649       N
ATOM   9452  CA  LYS B 924      15.080   4.392  90.320  1.00 76.62           C
ANISOU 9452  CA  LYS B 924     7700   8333  13080  -1206   -924    571       C
ATOM   9453  CB  LYS B 924      14.664   3.437  89.194  1.00 72.54           C
ANISOU 9453  CB  LYS B 924     7210   7687  12665  -1259  -1166    565       C
ATOM   9454  C   LYS B 924      14.812   5.866  89.987  1.00 78.05           C
ANISOU 9454  C   LYS B 924     7843   8618  13196  -1149   -901    555       C
ATOM   9455  O   LYS B 924      13.885   6.467  90.534  1.00 83.30           O
ANISOU 9455  O   LYS B 924     8395   9258  13996  -1144   -791    610       O
ATOM   9456  N   PHE B 925      15.643   6.479  89.150  1.00 71.36           N
ANISOU 9456  N   PHE B 925     7088   7875  12150  -1103   -991    485       N
ATOM   9457  CA  PHE B 925      15.294   7.821  88.693  1.00 73.86           C
ANISOU 9457  CA  PHE B 925     7360   8232  12472  -1054  -1006    487       C
ATOM   9458  CB  PHE B 925      15.889   8.926  89.592  1.00 63.64           C
ANISOU 9458  CB  PHE B 925     6069   7067  11045  -1001   -820    478       C
ATOM   9459  CG  PHE B 925      17.389   9.056  89.542  1.00 61.90           C
ANISOU 9459  CG  PHE B 925     5973   6999  10548   -973   -798    398       C
ATOM   9460  CD1 PHE B 925      18.017   9.822  88.563  1.00 67.94           C
ANISOU 9460  CD1 PHE B 925     6800   7841  11173   -937   -887    345       C
ATOM   9461  CE1 PHE B 925      19.413   9.977  88.550  1.00 82.20           C
ANISOU 9461  CE1 PHE B 925     8698   9794  12740   -910   -854    274       C
ATOM   9462  CZ  PHE B 925      20.195   9.367  89.533  1.00 74.63           C
ANISOU 9462  CZ  PHE B 925     7767   8901  11688   -915   -750    256       C
ATOM   9463  CE2 PHE B 925      19.574   8.610  90.523  1.00 79.00           C
ANISOU 9463  CE2 PHE B 925     8261   9347  12409   -946   -674    319       C
ATOM   9464  CD2 PHE B 925      18.173   8.471  90.526  1.00 70.07           C
ANISOU 9464  CD2 PHE B 925     7049   8090  11486   -979   -682    384       C
ATOM   9465  C   PHE B 925      15.678   8.067  87.261  1.00 72.27           C
ANISOU 9465  C   PHE B 925     7243   8043  12174  -1032  -1200    434       C
ATOM   9466  O   PHE B 925      16.508   7.368  86.695  1.00 63.18           O
ANISOU 9466  O   PHE B 925     6210   6921  10876  -1038  -1291    377       O
ATOM   9467  N   VAL B 926      15.007   9.050  86.680  1.00 72.33           N
ANISOU 9467  N   VAL B 926     7192   8014  12276  -1005  -1262    457       N
ATOM   9468  CA  VAL B 926      15.281   9.520  85.340  1.00 79.34           C
ANISOU 9468  CA  VAL B 926     8160   8906  13079   -976  -1428    413       C
ATOM   9469  CB  VAL B 926      14.002   9.504  84.474  1.00 82.24           C
ANISOU 9469  CB  VAL B 926     8455   9112  13682   -992  -1613    457       C
ATOM   9470  CG1 VAL B 926      14.222  10.205  83.136  1.00 71.38           C
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ANISOU 9470  CG1 VAL B 926     7169   7733  12219   -954  -1772    415       C
ATOM   9471  CG2 VAL B 926      13.574   8.079  84.252  1.00 92.04           C
ANISOU 9471  CG2 VAL B 926     9699  10230  15041  -1047  -1743    471       C
ATOM   9472  C   VAL B 926      15.828  10.929  85.465  1.00 79.94           C
ANISOU 9472  C   VAL B 926     8251   9106  13017   -926  -1320    390       C
ATOM   9473  O   VAL B 926      15.385  11.692  86.324  1.00 93.96           O
ANISOU 9473  O   VAL B 926     9938  10899  14865   -914  -1181    430       O
ATOM   9474  N   THR B 927      16.786  11.296  84.631  1.00 52.20           N
ANISOU 9474  N   THR B 927     4851   5676   9308   -898  -1379    326       N
ATOM   9475  CA  THR B 927      17.294  12.642  84.730  1.00 55.96           C
ANISOU 9475  CA  THR B 927     5337   6265   9660   -861  -1279    305       C
ATOM   9476  CB  THR B 927      18.857  12.703  84.902  1.00 58.13           C
ANISOU 9476  CB  THR B 927     5708   6707   9671   -843  -1191    235       C
ATOM   9477  OG1 THR B 927      19.497  12.874  83.642  1.00 72.45           O
ANISOU 9477  OG1 THR B 927     7619   8552  11359   -825  -1307    182       O
ATOM   9478  CG2 THR B 927      19.372  11.444  85.488  1.00 37.11           C
ANISOU 9478  CG2 THR B 927     3073   4063   6963   -864  -1161    220       C
ATOM   9479  C   THR B 927      16.861  13.366  83.473  1.00 67.70           C
ANISOU 9479  C   THR B 927     6846   7693  11185   -844  -1427    299       C
ATOM   9480  O   THR B 927      16.928  12.810  82.365  1.00 59.73           O
ANISOU 9480  O   THR B 927     5917   6620  10160   -846  -1600    273       O
ATOM   9481  N   VAL B 928      16.400  14.601  83.662  1.00 56.61           N
ANISOU 9481  N   VAL B 928     5379   6300   9829   -826  -1364    323       N
ATOM   9482  CA  VAL B 928      16.027  15.467  82.568  1.00 57.24           C
ANISOU 9482  CA  VAL B 928     5480   6335   9934   -807  -1485    315       C
ATOM   9483  CB  VAL B 928      14.656  16.129  82.807  1.00 67.47           C
ANISOU 9483  CB  VAL B 928     6646   7527  11461   -806  -1492    380       C
ATOM   9484  CG1 VAL B 928      14.147  16.737  81.533  1.00 61.14           C
ANISOU 9484  CG1 VAL B 928     5871   6644  10715   -790  -1667    370       C
ATOM   9485  CG2 VAL B 928      13.657  15.102  83.318  1.00 64.37           C
ANISOU 9485  CG2 VAL B 928     6147   7012  11299   -836  -1520    439       C
ATOM   9486  C   VAL B 928      17.088  16.529  82.387  1.00 56.12           C
ANISOU 9486  C   VAL B 928     5411   6338   9575   -784  -1401    264       C
ATOM   9487  O   VAL B 928      17.363  17.310  83.295  1.00 63.40           O
ANISOU 9487  O   VAL B 928     6297   7351  10440   -776  -1240    269       O
ATOM   9488  N   LYS B 929      17.697  16.543  81.213  1.00 67.23           N
ANISOU 9488  N   LYS B 929     6925   7760  10860   -772  -1513    214       N
ATOM   9489  CA  LYS B 929      18.731  17.517  80.909  1.00 71.30           C
ANISOU 9489  CA  LYS B 929     7503   8409  11177   -757  -1442    165       C
ATOM   9490  CB  LYS B 929      19.720  16.953  79.878  1.00 68.50           C
ANISOU 9490  CB  LYS B 929     7272   8092  10661   -748  -1533    105       C
ATOM   9491  CG  LYS B 929      20.072  15.481  80.047  1.00 71.29           C
ANISOU 9491  CG  LYS B 929     7662   8429  10996   -758  -1569     93       C
ATOM   9492  CD  LYS B 929      20.821  14.962  78.817  1.00 82.84           C
ANISOU 9492  CD  LYS B 929     9262   9892  12323   -738  -1699     38       C
ATOM   9493  CE  LYS B 929      20.208  13.657  78.322  1.00 93.01           C
ANISOU 9493  CE  LYS B 929    10605  11023  13712   -742  -1880     50       C
ATOM   9494  NZ  LYS B 929      20.556  13.385  76.907  1.00 96.90           N
ANISOU 9494  NZ  LYS B 929    11256  11435  14128   -706  -2075     12       N
ATOM   9495  C   LYS B 929      18.088  18.795  80.381  1.00 74.09           C
ANISOU 9495  C   LYS B 929     7836   8725  11591   -743  -1482    178       C
ATOM   9496  O   LYS B 929      17.063  18.737  79.702  1.00 79.85           O
ANISOU 9496  O   LYS B 929     8549   9314  12476   -738  -1635    204       O
ATOM   9497  N   ASN B 930      18.669  19.951  80.684  1.00 69.82           N
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ANISOU 9497  N   ASN B 930     7296   8301  10932   -738  -1357    160       N
ATOM   9498  CA  ASN B 930      18.207  21.173  80.050  1.00 65.02           C
ANISOU 9498  CA  ASN B 930     6688   7665  10352   -726  -1404    163       C
ATOM   9499  CB  ASN B 930      19.151  22.316  80.379  1.00 75.19           C
ANISOU 9499  CB  ASN B 930     7994   9103  11471   -730  -1259    132       C
ATOM   9500  CG  ASN B 930      19.216  22.591  81.843  1.00 74.69           C
ANISOU 9500  CG  ASN B 930     7863   9105  11410   -735  -1088    156       C
ATOM   9501  OD1 ASN B 930      18.264  22.324  82.565  1.00 75.63           O
ANISOU 9501  OD1 ASN B 930     7905   9143  11689   -731  -1071    207       O
ATOM   9502  ND2 ASN B 930      20.343  23.101  82.303  1.00 68.62           N
ANISOU 9502  ND2 ASN B 930     7124   8478  10471   -744   -964    119       N
ATOM   9503  C   ASN B 930      18.097  20.971  78.529  1.00 74.71           C
ANISOU 9503  C   ASN B 930     8008   8807  11573   -713  -1604    136       C
ATOM   9504  O   ASN B 930      17.241  21.561  77.853  1.00 73.68           O
ANISOU 9504  O   ASN B 930     7873   8577  11546   -699  -1722    150       O
ATOM   9505  N   LEU B 931      18.961  20.103  78.015  1.00 66.22           N
ANISOU 9505  N   LEU B 931     7023   7763  10373   -713  -1649     94       N
ATOM   9506  CA  LEU B 931      19.030  19.773  76.600  1.00 68.88           C
ANISOU 9506  CA  LEU B 931     7483   8020  10667   -692  -1839     61       C
ATOM   9507  CB  LEU B 931      20.225  18.844  76.375  1.00 69.15           C
ANISOU 9507  CB  LEU B 931     7607   8134  10534   -691  -1826     13       C
ATOM   9508  CG  LEU B 931      21.291  19.005  75.285  1.00 65.66           C
ANISOU 9508  CG  LEU B 931     7298   7742   9907   -668  -1885    -44       C
ATOM   9509  CD1 LEU B 931      21.589  20.433  74.946  1.00 56.40           C
ANISOU 9509  CD1 LEU B 931     6128   6635   8667   -669  -1834    -58       C
ATOM   9510  CD2 LEU B 931      22.551  18.347  75.795  1.00 77.48           C
ANISOU 9510  CD2 LEU B 931     8795   9371  11273   -676  -1774    -74       C
ATOM   9511  C   LEU B 931      17.716  19.119  76.130  1.00 75.50           C
ANISOU 9511  C   LEU B 931     8314   8659  11715   -683  -2040     97       C
ATOM   9512  O   LEU B 931      17.349  19.186  74.947  1.00 68.94           O
ANISOU 9512  O   LEU B 931     7580   7715  10901   -656  -2231     80       O
ATOM   9513  N   ASP B 932      17.011  18.513  77.086  1.00 69.84           N
ANISOU 9513  N   ASP B 932     7483   7895  11159   -705  -1997    147       N
ATOM   9514  CA  ASP B 932      15.767  17.779  76.845  1.00 67.59           C
ANISOU 9514  CA  ASP B 932     7154   7426  11100   -709  -2169    188       C
ATOM   9515  CB  ASP B 932      15.650  16.605  77.826  1.00 64.86           C
ANISOU 9515  CB  ASP B 932     6737   7074  10835   -740  -2103    220       C
ATOM   9516  CG  ASP B 932      16.643  15.499  77.543  1.00 78.65           C
ANISOU 9516  CG  ASP B 932     8601   8857  12425   -741  -2133    176       C
ATOM   9517  OD1 ASP B 932      17.014  15.324  76.351  1.00 81.82           O
ANISOU 9517  OD1 ASP B 932     9147   9214  12728   -715  -2286    133       O
ATOM   9518  OD2 ASP B 932      17.047  14.813  78.522  1.00 74.76           O
ANISOU 9518  OD2 ASP B 932     8066   8434  11907   -764  -2006    184       O
ATOM   9519  C   ASP B 932      14.478  18.615  76.954  1.00 73.50           C
ANISOU 9519  C   ASP B 932     7786   8082  12059   -705  -2208    236       C
ATOM   9520  O   ASP B 932      13.414  18.143  76.587  1.00 84.40           O
ANISOU 9520  O   ASP B 932     9124   9302  13642   -708  -2375    267       O
ATOM   9521  N   VAL B 933      14.568  19.828  77.488  1.00 66.12           N
ANISOU 9521  N   VAL B 933     6794   7243  11086   -701  -2057    243       N
ATOM   9522  CA  VAL B 933      13.415  20.717  77.595  1.00 55.91           C
ANISOU 9522  CA  VAL B 933     5393   5872   9977   -693  -2083    284       C
ATOM   9523  CB  VAL B 933      13.454  21.540  78.891  1.00 55.73           C
ANISOU 9523  CB  VAL B 933     5268   5960   9949   -699  -1851    314       C
ATOM   9524  CG1 VAL B 933      12.505  22.738  78.819  1.00 56.42           C
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ANISOU 9524  CG1 VAL B 933     5276   5994  10168   -682  -1871    342       C
ATOM   9525  CG2 VAL B 933       13.142  20.670  80.086  1.00 50.83           C
ANISOU 9525  CG2 VAL B 933     4544   5329   9439   -721  -1743    361       C
ATOM   9526  C   VAL B 933       13.389  21.657  76.410  1.00 75.04           C
ANISOU 9526  C   VAL B 933     7906   8263  12341   -663  -2214    247       C
ATOM   9527  O   VAL B 933       14.317  22.427  76.213  1.00 79.54           O
ANISOU 9527  O   VAL B 933     8555   8954  12712   -655  -2129    207       O
ATOM   9528  N   ILE B 934       12.326  21.612  75.613  1.00 93.93           N
ANISOU 9528  N   ILE B 934    10289  10488  14911   -647  -2426    259       N
ATOM   9529  CA  ILE B 934       12.303  22.439  74.412  1.00 91.14           C
ANISOU 9529  CA  ILE B 934    10048  10087  14493   -611  -2575    217       C
ATOM   9530  CB  ILE B 934       11.897  21.625  73.184  1.00 96.09           C
ANISOU 9530  CB  ILE B 934    10793  10538  15180   -587  -2857    194       C
ATOM   9531  CG1 ILE B 934       12.781  20.379  73.058  1.00 99.85           C
ANISOU 9531  CG1 ILE B 934    11377  11040  15522   -596  -2865    170       C
ATOM   9532  CD1 ILE B 934       14.153  20.650  72.453  1.00103.54           C
ANISOU 9532  CD1 ILE B 934    12018  11625  15696   -574  -2814    107       C
ATOM   9533  CG2 ILE B 934       12.029  22.476  71.933  1.00103.44           C
ANISOU 9533  CG2 ILE B 934    11879  11423  16000   -539  -3005    141       C
ATOM   9534  C   ILE B 934       11.371  23.624  74.553  1.00 78.19           C
ANISOU 9534  C   ILE B 934     8304   8412  12992   -599  -2574    243       C
ATOM   9535  O   ILE B 934       10.265  23.489  75.086  1.00 79.05           O
ANISOU 9535  O   ILE B 934     8260   8432  13341   -611  -2590    296       O
ATOM   9536  N   LYS B 935       11.835  24.785  74.089  1.00 77.50           N
ANISOU 9536  N   LYS B 935     8296   8396  12755   -577  -2549    207       N
ATOM   9537  CA  LYS B 935       10.983  25.978  73.975  1.00 95.91           C
ANISOU 9537  CA  LYS B 935    10562  10683  15197   -557  -2586    219       C
ATOM   9538  CB  LYS B 935       11.796  27.226  73.601  1.00 76.62           C
ANISOU 9538  CB  LYS B 935     8220   8357  12537   -541  -2515    176       C
ATOM   9539  C   LYS B 935        9.885  25.782  72.945  1.00101.11           C
ANISOU 9539  C   LYS B 935    11241  11136  16038   -526  -2869    212       C
ATOM   9540  O   LYS B 935       10.155  25.425  71.802  1.00 98.01           O
ANISOU 9540  O   LYS B 935    11017  10663  15558   -496  -3057    164       O
ATOM   9541  N   LYS B 936        8.647  26.005  73.373  1.00112.85           N
ANISOU 9541  N   LYS B 936    12561  12534  17783   -531  -2901    259       N
ATOM   9542  CA  LYS B 936        7.496  26.064  72.479  1.00113.46           C
ANISOU 9542  CA  LYS B 936    12628  12419  18062   -502  -3167    252       C
ATOM   9543  CB  LYS B 936        6.515  24.923  72.773  1.00 98.26           C
ANISOU 9543  CB  LYS B 936    10564  10353  16416   -531  -3268    301       C
ATOM   9544  C   LYS B 936        6.874  27.453  72.686  1.00122.16           C
ANISOU 9544  C   LYS B 936    13637  13542  19236   -483  -3121    262       C
ATOM   9545  O   LYS B 936        7.088  28.052  73.738  1.00121.97           O
ANISOU 9545  O   LYS B 936    13513  13653  19177   -502  -2883    297       O
ATOM   9546  N   GLU B 937        6.137  27.954  71.689  1.00121.09           N
ANISOU 9546  N   GLU B 937    13547  13271  19189   -441  -3354    229       N
ATOM   9547  CA  GLU B 937        5.671  29.362  71.605  1.00124.39           C
ANISOU 9547  CA  GLU B 937    13925  13698  19638   -409  -3357    222       C
ATOM   9548  CB  GLU B 937        4.200  29.399  71.194  1.00126.32           C
ANISOU 9548  CB  GLU B 937    14055  13756  20186   -390  -3584    232       C
ATOM   9549  C   GLU B 937        5.828  30.248  72.847  1.00123.73           C
ANISOU 9549  C   GLU B 937    13707  13789  19515   -431  -3064    267       C
ATOM   9550  O   GLU B 937        6.650  31.175  72.851  1.00114.85           O
ANISOU 9550  O   GLU B 937    12671  12770  18195   -418  -2965    244       O
ATOM   9551  N   ASN B 938        4.990  30.008  73.861  1.00128.27           N
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ANISOU 9551  N   ASN B 938    14069  14343  20323   -458  -2963    337       N
ATOM   9552  CA  ASN B 938       5.180  30.615  75.187  1.00131.44           C
ANISOU 9552  CA  ASN B 938    14358  14888  20696   -476  -2678    387       C
ATOM   9553  CB  ASN B 938       4.177  31.746  75.458  1.00143.02           C
ANISOU 9553  CB  ASN B 938    15685  16333  22323   -449  -2665    417       C
ATOM   9554  CG  ASN B 938       4.177  32.813  74.391  1.00148.36           C
ANISOU 9554  CG  ASN B 938    16475  16981  22914   -401  -2830    357       C
ATOM   9555  OD1 ASN B 938       4.193  32.527  73.206  1.00161.51           O
ANISOU 9555  OD1 ASN B 938    18268  18523  24575   -377  -3079    304       O
ATOM   9556  ND2 ASN B 938       4.231  34.064  74.818  1.00139.85           N
ANISOU 9556  ND2 ASN B 938    15364  15973  21798   -379  -2717    370       N
ATOM   9557  C   ASN B 938       5.081  29.627  76.333  1.00120.53           C
ANISOU 9557  C   ASN B 938    12850  13521  19424   -516  -2519    452       C
ATOM   9558  O   ASN B 938       4.378  29.875  77.308  1.00115.69           O
ANISOU 9558  O   ASN B 938    12069  12910  18978   -522  -2386    515       O
ATOM   9559  N   TYR B 939       5.806  28.522  76.215  1.00120.51           N
ANISOU 9559  N   TYR B 939    12938  13530  19321   -539  -2530    435       N
ATOM   9560  CA  TYR B 939       5.820  27.482  77.239  1.00114.92           C
ANISOU 9560  CA  TYR B 939    12137  12836  18691   -575  -2393    487       C
ATOM   9561  CB  TYR B 939       4.454  26.782  77.339  1.00122.28           C
ANISOU 9561  CB  TYR B 939    12890  13603  19967   -590  -2509    544       C
ATOM   9562  CG  TYR B 939       4.017  26.119  76.052  1.00125.76           C
ANISOU 9562  CG  TYR B 939    13390  13883  20512   -587  -2815    508       C
ATOM   9563  CD1 TYR B 939       3.544  26.878  74.983  1.00132.99           C
ANISOU 9563  CD1 TYR B 939    14355  14713  21462   -551  -3022    464       C
ATOM   9564  CE1 TYR B 939       3.150  26.288  73.800  1.00133.54           C
ANISOU 9564  CE1 TYR B 939    14502  14620  21618   -539  -3319    425       C
ATOM   9565  CZ  TYR B 939       3.221  24.919  73.670  1.00134.26           C
ANISOU 9565  CZ  TYR B 939    14614  14633  21764   -568  -3411    434       C
ATOM   9566  OH  TYR B 939       2.828  24.339  72.484  1.00132.84           O
ANISOU 9566  OH  TYR B 939    14530  14278  21668   -552  -3721    394       O
ATOM   9567  CE2 TYR B 939       3.690  24.141  74.716  1.00132.80           C
ANISOU 9567  CE2 TYR B 939    14370  14540  21546   -608  -3202    479       C
ATOM   9568  CD2 TYR B 939       4.086  24.745  75.898  1.00122.65           C
ANISOU 9568  CD2 TYR B 939    13015  13416  20171   -615  -2907    513       C
ATOM   9569  C   TYR B 939       6.911  26.460  76.930  1.00106.30           C
ANISOU 9569  C   TYR B 939    11192  11789  17407   -592  -2410    448       C
ATOM   9570  O   TYR B 939       7.313  26.309  75.781  1.00100.10           O
ANISOU 9570  O   TYR B 939    10555  10965  16512   -576  -2584    391       O
ATOM   9571  N   TYR B 940       7.394  25.756  77.947  1.00 98.57           N
ANISOU 9571  N   TYR B 940    10181  10888  16384   -618  -2232    477       N
ATOM   9572  CA  TYR B 940       8.435  24.760  77.729  1.00 93.41           C
ANISOU 9572  CA  TYR B 940     9655  10285  15552   -634  -2238    440       C
ATOM   9573  CB  TYR B 940       9.591  24.958  78.710  1.00 88.42           C
ANISOU 9573  CB  TYR B 940     9066   9834  14696   -643  -1989    431       C
ATOM   9574  CG  TYR B 940      10.491  26.098  78.343  1.00 82.11           C
ANISOU 9574  CG  TYR B 940     8380   9154  13662   -627  -1933    380       C
ATOM   9575  CD1 TYR B 940      11.442  25.953  77.348  1.00 79.64           C
ANISOU 9575  CD1 TYR B 940     8227   8880  13151   -623  -2021    318       C
ATOM   9576  CE1 TYR B 940      12.281  27.002  77.002  1.00 81.78           C
ANISOU 9576  CE1 TYR B 940     8594   9261  13217   -614  -1964    274       C
ATOM   9577  CZ  TYR B 940      12.160  28.216  77.639  1.00 75.05           C
ANISOU 9577  CZ  TYR B 940     7683   8478  12353   -610  -1831    290       C
ATOM   9578  OH  TYR B 940      12.992  29.251  77.268  1.00 76.50           O
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ANISOU 9578  OH  TYR B 940     7959   8766  12341   -609  -1783    248       O
ATOM   9579  CE2 TYR B 940      11.214  28.392  78.631  1.00 69.94           C
ANISOU 9579  CE2 TYR B 940     6889   7792  11893   -608  -1747    351       C
ATOM   9580  CD2 TYR B 940      10.380  27.334  78.977  1.00 76.64           C
ANISOU 9580  CD2 TYR B 940     7637   8532  12951   -616  -1794    397       C
ATOM   9581  C   TYR B 940       7.893  23.366  77.877  1.00 88.20           C
ANISOU 9581  C   TYR B 940     8923   9514  15073   -661  -2320    475       C
ATOM   9582  O   TYR B 940       7.127  23.089  78.805  1.00 88.12           O
ANISOU 9582  O   TYR B 940     8753   9466  15262   -678  -2231    539       O
ATOM   9583  N   GLU B 941       8.302  22.471  76.988  1.00 84.60           N
ANISOU 9583  N   GLU B 941     8589   9006  14548   -664  -2485    436       N
ATOM   9584  CA  GLU B 941       7.935  21.090  77.204  1.00 87.01           C
ANISOU 9584  CA  GLU B 941     8839   9223  14999   -695  -2549    467       C
ATOM   9585  CB  GLU B 941       6.811  20.683  76.254  1.00106.73           C
ANISOU 9585  CB  GLU B 941    11300  11516  17738   -694  -2832    475       C
ATOM   9586  CG  GLU B 941       7.212  19.855  75.063  1.00121.25           C
ANISOU 9586  CG  GLU B 941    13315  13269  19486   -683  -3064    424       C
ATOM   9587  CD  GLU B 941       6.066  19.700  74.095  1.00136.72           C
ANISOU 9587  CD  GLU B 941    15251  15016  21682   -673  -3361    425       C
ATOM   9588  OE1 GLU B 941       4.943  19.415  74.561  1.00145.06           O
ANISOU 9588  OE1 GLU B 941    16113  15972  23031   -703  -3393    485       O
ATOM   9589  OE2 GLU B 941       6.281  19.889  72.880  1.00139.84           O
ANISOU 9589  OE2 GLU B 941    15822  15339  21973   -632  -3563    366       O
ATOM   9590  C   GLU B 941       9.108  20.115  77.102  1.00 94.74           C
ANISOU 9590  C   GLU B 941     9958  10275  15762   -706  -2527    428       C
ATOM   9591  O   GLU B 941      10.007  20.240  76.257  1.00 92.08           O
ANISOU 9591  O   GLU B 941     9794   9984  15209   -684  -2590    367       O
ATOM   9592  N   VAL B 942       9.083  19.166  78.035  1.00 88.03           N
ANISOU 9592  N   VAL B 942     9028   9438  14980   -738  -2422    467       N
ATOM   9593  CA  VAL B 942       9.977  18.031  78.082  1.00 75.05           C
ANISOU 9593  CA  VAL B 942     7484   7841  13191   -756  -2410    441       C
ATOM   9594  CB  VAL B 942       9.783  17.246  79.390  1.00 73.25           C
ANISOU 9594  CB  VAL B 942     7132   7636  13064   -791  -2249    494       C
ATOM   9595  CG1 VAL B 942      10.712  16.057  79.445  1.00 65.84           C
ANISOU 9595  CG1 VAL B 942     6298   6746  11974   -809  -2242    463       C
ATOM   9596  CG2 VAL B 942       9.979  18.164  80.614  1.00 65.66           C
ANISOU 9596  CG2 VAL B 942     6095   6802  12050   -781  -1986    517       C
ATOM   9597  C   VAL B 942       9.722  17.108  76.905  1.00 82.67           C
ANISOU 9597  C   VAL B 942     8541   8657  14213   -756  -2684    419       C
ATOM   9598  O   VAL B 942       8.584  16.724  76.666  1.00 99.73           O
ANISOU 9598  O   VAL B 942    10605  10658  16629   -771  -2842    457       O
ATOM   9599  N   ASN B 943      10.771  16.747  76.175  1.00 84.49           N
ANISOU 9599  N   ASN B 943     8959   8932  14213   -739  -2744    359       N
ATOM   9600  CA  ASN B 943      10.620  15.888  75.007  1.00 93.97           C
ANISOU 9600  CA  ASN B 943    10288   9983  15434   -728  -3013    333       C
ATOM   9601  CB  ASN B 943      11.944  15.757  74.268  1.00 92.68           C
ANISOU 9601  CB  ASN B 943    10344   9899  14971   -696  -3028    262       C
ATOM   9602  CG  ASN B 943      11.776  15.200  72.875  1.00112.90           C
ANISOU 9602  CG  ASN B 943    13083  12290  17523   -661  -3323    227       C
ATOM   9603  OD1 ASN B 943      10.836  14.452  72.598  1.00125.61           O
ANISOU 9603  OD1 ASN B 943    14660  13728  19339   -674  -3519    256       O
ATOM   9604  ND2 ASN B 943      12.680  15.577  71.978  1.00119.22           N
ANISOU 9604  ND2 ASN B 943    14081  13130  18086   -613  -3362    166       N
ATOM   9605  C   ASN B 943      10.100  14.508  75.372  1.00109.15           C
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ANISOU 9605  C   ASN B 943    12141  11806  17524   -771  -3086    372       C
ATOM   9606  O   ASN B 943      10.826  13.733  75.991  1.00109.93           O
ANISOU 9606  O   ASN B 943    12263  11993  17512   -793  -2964    368       O
ATOM   9607  N   SER B 944       8.856  14.203  74.980  1.00106.18           N
ANISOU 9607  N   SER B 944    11680  11246  17419   -784  -3291    408       N
ATOM   9608  CA  SER B 944       8.221  12.924  75.323  1.00 99.49           C
ANISOU 9608  CA  SER B 944    10742  10290  16770   -835  -3373    453       C
ATOM   9609  CB  SER B 944       6.796  12.848  74.764  1.00105.85           C
ANISOU 9609  CB  SER B 944    11441  10885  17893   -847  -3619    489       C
ATOM   9610  OG  SER B 944       6.030  13.976  75.160  1.00122.13           O
ANISOU 9610  OG  SER B 944    13334  12956  20113   -841  -3531    523       O
ATOM   9611  C   SER B 944       9.048  11.751  74.811  1.00 97.84           C
ANISOU 9611  C   SER B 944    10724  10065  16387   -835  -3478    412       C
ATOM   9612  O   SER B 944       9.127  10.700  75.456  1.00101.34           O
ANISOU 9612  O   SER B 944    11123  10516  16866   -880  -3424    435       O
ATOM   9613  N   LYS B 945       9.666  11.934  73.646  1.00 94.16           N
ANISOU 9613  N   LYS B 945    10477   9571  15728   -780  -3626    350       N
ATOM   9614  CA  LYS B 945      10.611  10.947  73.156  1.00 92.56           C
ANISOU 9614  CA  LYS B 945    10481   9370  15316   -765  -3698    305       C
ATOM   9615  CB  LYS B 945      11.225  11.324  71.807  1.00 83.54           C
ANISOU 9615  CB  LYS B 945    9593   8185  13965   -691  -3856    238       C
ATOM   9616  C   LYS B 945      11.675  10.833  74.214  1.00112.67           C
ANISOU 9616  C   LYS B 945    13001  12126  17682   -786  -3408    296       C
ATOM   9617  O   LYS B 945      11.764   9.786  74.868  1.00119.85           O
ANISOU 9617  O   LYS B 945    13870  13043  18623   -830  -3359    315       O
ATOM   9618  N   ALA B 946      12.451  11.910  74.395  1.00106.50           N
ANISOU 9618  N   ALA B 946    12237  11507  16722   -758  -3223    266       N
ATOM   9619  CA  ALA B 946      13.586  11.897  75.314  1.00 89.13           C
ANISOU 9619  CA  ALA B 946    10030   9507  14329   -770  -2963    247       C
ATOM   9620  CB  ALA B 946      14.161  13.326  75.529  1.00 89.80           C
ANISOU 9620  CB  ALA B 946    10093   9749  14276   -745  -2779    226       C
ATOM   9621  C   ALA B 946      13.216  11.266  76.647  1.00 83.31           C
ANISOU 9621  C   ALA B 946    9124   8800  13730   -826  -2815    300       C
ATOM   9622  O   ALA B 946      13.990  10.480  77.201  1.00 84.75           O
ANISOU 9622  O   ALA B 946    9344   9064  13794   -844  -2714    283       O
ATOM   9623  N   TYR B 947      12.027  11.556  77.157  1.00 81.98           N
ANISOU 9623  N   TYR B 947    8773   8558  13818   -852  -2806    362       N
ATOM   9624  CA  TYR B 947      11.696  11.042  78.480  1.00 91.23           C
ANISOU 9624  CA  TYR B 947    9788   9762  15113   -901  -2638    414       C
ATOM   9625  CB  TYR B 947      10.444  11.713  79.018  1.00 89.47           C
ANISOU 9625  CB  TYR B 947    9362   9478  15156   -915  -2594    480       C
ATOM   9626  CG  TYR B 947      10.290  11.522  80.507  1.00 89.22           C
ANISOU 9626  CG  TYR B 947    9185   9513  15200   -947  -2356    529       C
ATOM   9627  CD1 TYR B 947       9.581  10.441  81.019  1.00 81.94           C
ANISOU 9627  CD1 TYR B 947    8156   8496  14483  -1002  -2376    579       C
ATOM   9628  CE1 TYR B 947       9.433  10.265  82.382  1.00 81.85           C
ANISOU 9628  CE1 TYR B 947    8024   8536  14539  -1028  -2150    625       C
ATOM   9629  CZ  TYR B 947      10.020  11.160  83.259  1.00 83.67           C
ANISOU 9629  CZ  TYR B 947    8252   8913  14626   -994  -1914    619       C
ATOM   9630  OH  TYR B 947       9.867  10.969  84.616  1.00 90.72           O
ANISOU 9630  OH  TYR B 947    9045   9842  15581  -1012  -1697    664       O
ATOM   9631  CE2 TYR B 947      10.746  12.237  82.780  1.00 69.03           C
ANISOU 9631  CE2 TYR B 947    6501   7159  12569   -943  -1900    568       C
ATOM   9632  CD2 TYR B 947      10.889  12.409  81.406  1.00 73.27           C
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ANISOU 9632  CD2 TYR B 947     7148   7649  13043   -923  -2112    524       C
ATOM   9633  C   TYR B 947       11.530   9.518  78.489  1.00107.76           C
ANISOU 9633  C   TYR B 947    11904  11759  17281   -946  -2751    425       C
ATOM   9634  O   TYR B 947       11.972   8.841  79.420  1.00115.40           O
ANISOU 9634  O   TYR B 947    12848  12801  18199   -977  -2601    430       O
ATOM   9635  N   GLU B 948       10.920   8.976  77.442  1.00111.53           N
ANISOU 9635  N   GLU B 948    12440  12066  17869   -948  -3024    424       N
ATOM   9636  CA  GLU B 948       10.674   7.546  77.400  1.00112.94           C
ANISOU 9636  CA  GLU B 948    12644  12137  18133   -996  -3155    437       C
ATOM   9637  CB  GLU B 948        9.695   7.198  76.278  1.00118.04           C
ANISOU 9637  CB  GLU B 948    13317  12566  18966   -997  -3477    450       C
ATOM   9638  CG  GLU B 948        8.305   7.790  76.493  1.00125.27           C
ANISOU 9638  CG  GLU B 948    14008  13385  20204  -1021  -3511    514       C
ATOM   9639  CD  GLU B 948        7.693   7.403  77.835  1.00128.95           C
ANISOU 9639  CD  GLU B 948    14246  13873  20874  -1091  -3321    581       C
ATOM   9640  OE1 GLU B 948        7.812   6.219  78.234  1.00135.08           O
ANISOU 9640  OE1 GLU B 948    15031  14628  21666  -1146  -3317    590       O
ATOM   9641  OE2 GLU B 948        7.110   8.298  78.495  1.00119.84           O
ANISOU 9641  OE2 GLU B 948    12918  12756  19859  -1088  -3170    624       O
ATOM   9642  C   GLU B 948       11.954   6.730  77.254  1.00116.75           C
ANISOU 9642  C   GLU B 948    13323  12694  18343   -984  -3138    378       C
ATOM   9643  O   GLU B 948       12.152   5.798  78.036  1.00112.09           O
ANISOU 9643  O   GLU B 948    12705  12130  17755  -1032  -3048    388       O
ATOM   9644  N   GLU B 949       12.827   7.044  76.289  1.00130.19           N
ANISOU 9644  N   GLU B 949    15225  14424  19818   -920  -3220    316       N
ATOM   9645  CA  GLU B 949       14.001   6.178  76.130  1.00139.00           C
ANISOU 9645  CA  GLU B 949    16523  15555  20738   -900  -3255    277       C
ATOM   9646  CB  GLU B 949       14.828   6.452  74.860  1.00147.82           C
ANISOU 9646  CB  GLU B 949    17880  16636  21649   -818  -3413    219       C
ATOM   9647  CG  GLU B 949       14.171   7.180  73.693  1.00162.64           C
ANISOU 9647  CG  GLU B 949    19821  18389  23585   -772  -3612    214       C
ATOM   9648  CD  GLU B 949       14.278   8.674  73.839  1.00175.87           C
ANISOU 9648  CD  GLU B 949    21408  20210  25205   -754  -3430    202       C
ATOM   9649  OE1 GLU B 949       14.732   9.106  74.914  1.00181.29           O
ANISOU 9649  OE1 GLU B 949    21968  21085  25828   -781  -3153    204       O
ATOM   9650  OE2 GLU B 949       13.963   9.418  72.878  1.00179.16           O
ANISOU 9650  OE2 GLU B 949    21900  20546  25628   -708  -3571    187       O
ATOM   9651  C   GLU B 949       14.884   6.338  77.369  1.00137.26           C
ANISOU 9651  C   GLU B 949    16228  15537  20387   -916  -2954    266       C
ATOM   9652  O   GLU B 949       15.635   5.430  77.727  1.00147.38           O
ANISOU 9652  O   GLU B 949    17586  16836  21578   -925  -2936    250       O
ATOM   9653  N   ALA B 950       14.779   7.482  78.036  1.00115.27           N
ANISOU 9653  N   ALA B 950    13308  12895  17595   -917  -2732    273       N
ATOM   9654  CA  ALA B 950       15.495   7.668  79.288  1.00 99.11           C
ANISOU 9654  CA  ALA B 950    11190  11025  15442   -931  -2458    267       C
ATOM   9655  CB  ALA B 950       15.368   9.102  79.787  1.00 86.08           C
ANISOU 9655  CB  ALA B 950     9427   9476  13804   -911  -2289    285       C
ATOM   9656  C   ALA B 950       14.947   6.684  80.308  1.00105.35           C
ANISOU 9656  C   ALA B 950    11873  11765  16392   -994  -2399    315       C
ATOM   9657  O   ALA B 950       15.702   6.040  81.038  1.00105.45           O
ANISOU 9657  O   ALA B 950    11911  11835  16320  -1008  -2298    304       O
ATOM   9658  N   LYS B 951       13.626   6.552  80.336  1.00105.03           N
ANISOU 9658  N   LYS B 951    11703  11590  16613  -1032  -2483    375       N
ATOM   9659  CA  LYS B 951       12.984   5.639  81.267  1.00102.00           C
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ANISOU 9659  CA  LYS B 951    11202  11146  16408  -1102  -2423    426       C
ATOM   9660  CB  LYS B 951      11.479   5.891  81.293  1.00 98.13           C
ANISOU 9660  CB  LYS B 951    10528  10521  16238  -1132  -2493    500       C
ATOM   9661  CG  LYS B 951      10.763   5.233  82.436  1.00 89.57           C
ANISOU 9661  CG  LYS B 951     9283   9393  15357  -1203  -2366    562       C
ATOM   9662  CD  LYS B 951       9.501   5.998  82.772  1.00 96.69           C
ANISOU 9662  CD  LYS B 951     9973  10228  16536  -1208  -2325    635       C
ATOM   9663  CE  LYS B 951       8.593   6.117  81.568  1.00103.83           C
ANISOU 9663  CE  LYS B 951    10852  10976  17621  -1206  -2603    647       C
ATOM   9664  NZ  LYS B 951       7.493   5.111  81.643  1.00114.95           N
ANISOU 9664  NZ  LYS B 951    12132  12220  19325  -1287  -2719    703       N
ATOM   9665  C   LYS B 951      13.304   4.196  80.883  1.00101.60           C
ANISOU 9665  C   LYS B 951    11275  10986  16342  -1133  -2595    411       C
ATOM   9666  O   LYS B 951      13.428   3.327  81.752  1.00100.72           O
ANISOU 9666  O   LYS B 951    11134  10866  16270  -1183  -2508    431       O
ATOM   9667  N   LYS B 952      13.464   3.955  79.581  1.00 97.76           N
ANISOU 9667  N   LYS B 952    10947  10399  15800  -1097  -2852    380       N
ATOM   9668  CA  LYS B 952      13.836   2.629  79.093  1.00 99.06           C
ANISOU 9668  CA  LYS B 952    11272  10438  15926  -1109  -3055    365       C
ATOM   9669  CB  LYS B 952      13.562   2.478  77.596  1.00 90.46           C
ANISOU 9669  CB  LYS B 952    10342   9189  14839  -1066  -3373    348       C
ATOM   9670  C   LYS B 952      15.300   2.383  79.388  1.00 99.87           C
ANISOU 9670  C   LYS B 952    11515  10654  15777  -1072  -2957    314       C
ATOM   9671  O   LYS B 952      15.660   1.325  79.886  1.00 95.75           O
ANISOU 9671  O   LYS B 952    11044  10097  15242  -1107  -2959    314       O
ATOM   9672  N   LEU B 953      16.145   3.370  79.106  1.00110.98           N
ANISOU 9672  N   LEU B 953    12980  12196  16992  -1004  -2871    269       N
ATOM   9673  CA  LEU B 953      17.566   3.255  79.426  1.00107.20           C
ANISOU 9673  CA  LEU B 953    12606  11840  16284   -967  -2767    217       C
ATOM   9674  CB  LEU B 953      18.322   4.501  78.992  1.00107.79           C
ANISOU 9674  CB  LEU B 953    12716  12058  16181   -901  -2680    171       C
ATOM   9675  CG  LEU B 953      18.795   4.494  77.544  1.00119.05           C
ANISOU 9675  CG  LEU B 953    14360  13403  17471   -831  -2902    126       C
ATOM   9676  CD1 LEU B 953      20.083   5.309  77.439  1.00117.27           C
ANISOU 9676  CD1 LEU B 953    14190  13351  17016   -774  -2773     67       C
ATOM   9677  CD2 LEU B 953      18.982   3.063  77.036  1.00123.36           C
ANISOU 9677  CD2 LEU B 953    15102  13782  17987   -820  -3134    115       C
ATOM   9678  C   LEU B 953      17.832   3.016  80.906  1.00103.84           C
ANISOU 9678  C   LEU B 953    12058  11517  15881  -1013  -2531    235       C
ATOM   9679  O   LEU B 953      18.912   2.584  81.284  1.00116.16           O
ANISOU 9679  O   LEU B 953    13701  13140  17295   -995  -2482    198       O
ATOM   9680  N   LYS B 954      16.855   3.300  81.748  1.00 94.39           N
ANISOU 9680  N   LYS B 954    10674  10325  14865  -1065  -2392    290       N
ATOM   9681  CA  LYS B 954      17.058   3.150  83.169  1.00 89.60           C
ANISOU 9681  CA  LYS B 954    9967   9799  14278  -1100  -2162    312       C
ATOM   9682  CB  LYS B 954      16.667   4.440  83.893  1.00 86.18           C
ANISOU 9682  CB  LYS B 954    9385   9492  13868  -1088  -1937    334       C
ATOM   9683  CG  LYS B 954      17.713   4.874  84.929  1.00 92.69           C
ANISOU 9683  CG  LYS B 954    10205  10482  14531  -1062  -1714    309       C
ATOM   9684  CD  LYS B 954      18.908   5.566  84.296  1.00 69.55           C
ANISOU 9684  CD  LYS B 954     7378   7683  11365   -996  -1726    240       C
ATOM   9685  CE  LYS B 954      19.876   5.987  85.376  1.00 75.71           C
ANISOU 9685  CE  LYS B 954     8134   8624  12009   -975  -1518    217       C
ATOM   9686  NZ  LYS B 954      19.268   6.917  86.341  1.00 78.55           N
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ANISOU 9686  NZ  LYS B 954     8376   9050  12420   -980  -1320    254       N
ATOM   9687  C   LYS B 954       16.280   1.961  83.714  1.00 96.78           C
ANISOU 9687  C   LYS B 954    10823  10563  15387  -1182  -2195    364       C
ATOM   9688  O   LYS B 954       16.029   1.876  84.923  1.00 88.41           O
ANISOU 9688  O   LYS B 954     9650   9530  14414  -1223  -1997    403       O
ATOM   9689  N   LYS B 955       15.920   1.046  82.812  1.00107.84           N
ANISOU 9689  N   LYS B 955    12319  11802  16852  -1204  -2446    364       N
ATOM   9690  CA  LYS B 955       15.181  -0.181  83.146  1.00105.56           C
ANISOU 9690  CA  LYS B 955    12002  11356  16751  -1293  -2515    408       C
ATOM   9691  CB  LYS B 955       16.127  -1.264  83.695  1.00 91.52           C
ANISOU 9691  CB  LYS B 955    10357   9554  14861  -1313  -2496    384       C
ATOM   9692  C   LYS B 955       14.055   0.114  84.140  1.00102.08           C
ANISOU 9692  C   LYS B 955    11333  10913  16540  -1356  -2324    478       C
ATOM   9693  O   LYS B 955       13.915  -0.557  85.169  1.00101.80           O
ANISOU 9693  O   LYS B 955    11244  10844  16593  -1420  -2185    513       O
ATOM   9694  N   ILE B 956       13.281   1.149  83.830  1.00 91.46           N
ANISOU 9694  N   ILE B 956     9869   9597  15283  -1331  -2313    498       N
ATOM   9695  CA  ILE B 956       12.149   1.536  84.653  1.00104.14           C
ANISOU 9695  CA  ILE B 956    11266  11194  17110  -1375  -2153    564       C
ATOM   9696  CB  ILE B 956       12.083   3.059  84.866  1.00 99.81           C
ANISOU 9696  CB  ILE B 956    10638  10786  16501  -1309  -1998    561       C
ATOM   9697  CG1 ILE B 956       13.328   3.540  85.613  1.00105.58           C
ANISOU 9697  CG1 ILE B 956    11441  11685  16990  -1258  -1796    523       C
ATOM   9698  CD1 ILE B 956       13.244   4.968  86.081  1.00103.34           C
ANISOU 9698  CD1 ILE B 956    11082  11534  16646  -1206  -1615    525       C
ATOM   9699  CG2 ILE B 956       10.817   3.448  85.623  1.00 92.14           C
ANISOU 9699  CG2 ILE B 956     9457   9773  15779  -1344  -1865    637       C
ATOM   9700  C   ILE B 956       10.885   1.053  83.982  1.00119.00           C
ANISOU 9700  C   ILE B 956    13065  12903  19247  -1433  -2357    604       C
ATOM   9701  O   ILE B 956       10.665   1.317  82.800  1.00124.92           O
ANISOU 9701  O   ILE B 956    13870  13596  19996  -1399  -2581    583       O
ATOM   9702  N   SER B 957       10.051   0.335  84.722  1.00131.89           N
ANISOU 9702  N   SER B 957    14569  14439  21106  -1522  -2285    665       N
ATOM   9703  CA  SER B 957        8.902  -0.284  84.086  1.00138.15           C
ANISOU 9703  CA  SER B 957    15282  15054  22155  -1592  -2499    702       C
ATOM   9704  CB  SER B 957        8.981  -1.803  84.197  1.00131.95           C
ANISOU 9704  CB  SER B 957    14577  14135  21422  -1683  -2589    708       C
ATOM   9705  OG  SER B 957        7.955  -2.398  83.425  1.00134.67           O
ANISOU 9705  OG  SER B 957    14868  14303  21997  -1748  -2840    734       O
ATOM   9706  C   SER B 957        7.573   0.187  84.641  1.00143.30           C
ANISOU 9706  C   SER B 957    15686  15666  23094  -1632  -2385    776       C
ATOM   9707  O   SER B 957        7.125  -0.281  85.689  1.00136.01           O
ANISOU 9707  O   SER B 957    14647  14710  22320  -1701  -2201    831       O
ATOM   9708  N   ASN B 958        6.953   1.120  83.926  1.00148.08           N
ANISOU 9708  N   ASN B 958    16208  16247  23807  -1581  -2510    788       N
ATOM   9709  CA  ASN B 958        5.534   1.364  84.088  1.00150.05           C
ANISOU 9709  CA  ASN B 958    16213  16376  24424  -1620  -2529    871       C
ATOM   9710  CB  ASN B 958        5.029   2.402  83.095  1.00153.37           C
ANISOU 9710  CB  ASN B 958    16589  16755  24929  -1552  -2717    870       C
ATOM   9711  CG  ASN B 958        5.298   2.007  81.665  1.00151.02           C
ANISOU 9711  CG  ASN B 958    16472  16375  24533  -1535  -3049    811       C
ATOM   9712  OD1 ASN B 958        4.574   1.194  81.091  1.00148.16           O
ANISOU 9712  OD1 ASN B 958    16079  15846  24367  -1600  -3279    829       O
ATOM   9713  ND2 ASN B 958        6.356   2.560  81.086  1.00148.02           N
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ANISOU 9713  ND2 ASN B 958    16291  16103  23846  -1449  -3075    741       N
ATOM   9714  C   ASN B 958       4.839   0.029  83.879  1.00140.50           C
ANISOU 9714  C   ASN B 958    14963  14995  23426  -1736  -2689    898       C
ATOM   9715  O   ASN B 958       5.170  -0.694  82.940  1.00136.26           O
ANISOU 9715  O   ASN B 958    14592  14390  22791  -1752  -2934    847       O
ATOM   9716  N   GLN B 959       3.909  -0.327  84.757  1.00148.07           N
ANISOU 9716  N   GLN B 959    15715  15876  24667  -1817  -2546    977       N
ATOM   9717  CA  GLN B 959       3.507   0.503  85.882  1.00142.58           C
ANISOU 9717  CA  GLN B 959    14841  15248  24085  -1787  -2250   1042       C
ATOM   9718  CB  GLN B 959       2.125   0.086  86.392  1.00153.58           C
ANISOU 9718  CB  GLN B 959    15975  16488  25890  -1880  -2201   1141       C
ATOM   9719  C   GLN B 959       4.516   0.431  87.012  1.00130.61           C
ANISOU 9719  C   GLN B 959    13436  13877  22311  -1769  -1951   1022       C
ATOM   9720  O   GLN B 959       4.763  -0.625  87.586  1.00125.22           O
ANISOU 9720  O   GLN B 959    12817  13168  21595  -1849  -1859   1023       O
ATOM   9721  N   ALA B 960       5.120   1.578  87.279  1.00134.29           N
ANISOU 9721  N   ALA B 960    13944  14490  22590  -1663  -1816    999       N
ATOM   9722  CA  ALA B 960       5.990   1.785  88.419  1.00120.62           C
ANISOU 9722  CA  ALA B 960    12294  12898  20640  -1627  -1527    988       C
ATOM   9723  CB  ALA B 960       7.454   1.784  87.999  1.00112.77           C
ANISOU 9723  CB  ALA B 960    11544  12037  19267  -1577  -1579    888       C
ATOM   9724  C   ALA B 960       5.577   3.120  89.031  1.00112.20           C
ANISOU 9724  C   ALA B 960    11092  11888  19650  -1545  -1346   1036       C
ATOM   9725  O   ALA B 960       5.344   4.090  88.312  1.00109.85           O
ANISOU 9725  O   ALA B 960    10761  11601  19377  -1483  -1467   1026       O
ATOM   9726  N   GLU B 961       5.451   3.167  90.350  1.00103.62           N
ANISOU 9726  N   GLU B 961     9943  10823  18607  -1543  -1059   1091       N
ATOM   9727  CA  GLU B 961       4.943   4.361  91.000  1.00110.42           C
ANISOU 9727  CA  GLU B 961    10676  11710  19567  -1467   -880   1147       C
ATOM   9728  CB  GLU B 961       4.600   4.054  92.458  1.00110.59           C
ANISOU 9728  CB  GLU B 961    10623  11701  19695  -1483   -572   1224       C
ATOM   9729  CG  GLU B 961       3.859   5.170  93.169  1.00116.94           C
ANISOU 9729  CG  GLU B 961    11278  12494  20660  -1408   -381   1300       C
ATOM   9730  CD  GLU B 961       3.739   4.919  94.653  1.00120.44           C
ANISOU 9730  CD  GLU B 961    11701  12918  21144  -1400    -54   1369       C
ATOM   9731  OE1 GLU B 961       4.217   3.859  95.112  1.00108.52           O
ANISOU 9731  OE1 GLU B 961    10294  11401  19539  -1460     19   1357       O
ATOM   9732  OE2 GLU B 961       3.188   5.790  95.360  1.00130.96           O
ANISOU 9732  OE2 GLU B 961    12932  14234  22591  -1329    133   1434       O
ATOM   9733  C   GLU B 961       5.938   5.533  90.916  1.00126.71           C
ANISOU 9733  C   GLU B 961    12875  13936  21334  -1362   -845   1082       C
ATOM   9734  O   GLU B 961       7.008   5.507  91.532  1.00132.16           O
ANISOU 9734  O   GLU B 961    13712  14742  21760  -1334   -709   1039       O
ATOM   9735  N   PHE B 962       5.587   6.545  90.123  1.00122.40           N
ANISOU 9735  N   PHE B 962    12279  13388  20837  -1311   -978   1075       N
ATOM   9736  CA  PHE B 962       6.301   7.814  90.112  1.00100.34           C
ANISOU 9736  CA  PHE B 962     9579  10727  17817  -1219   -922   1031       C
ATOM   9737  CB  PHE B 962       5.776   8.696  88.974  1.00102.31           C
ANISOU 9737  CB  PHE B 962     9780  10937  18155  -1189  -1124   1022       C
ATOM   9738  CG  PHE B 962       6.084  10.168  89.127  1.00111.26           C
ANISOU 9738  CG  PHE B 962    10948  12169  19154  -1105  -1029   1007       C
ATOM   9739  CD2 PHE B 962       5.208  11.013  89.798  1.00115.14           C
ANISOU 9739  CD2 PHE B 962    11294  12621  19835  -1071   -881   1080       C
ATOM   9740  CE2 PHE B 962       5.481  12.361  89.934  1.00111.71           C
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ANISOU 9740  CE2 PHE B 962    10901  12270  19273  -1001   -801   1065       C
ATOM   9741  CZ  PHE B 962       6.631  12.887  89.384  1.00107.82           C
ANISOU 9741  CZ  PHE B 962    10588  11905  18473   -968   -867    977       C
ATOM   9742  CE1 PHE B 962       7.502  12.063  88.700  1.00109.73           C
ANISOU 9742  CE1 PHE B 962    10967  12189  18538   -998  -1006    907       C
ATOM   9743  CD1 PHE B 962       7.224  10.712  88.567  1.00110.71           C
ANISOU 9743  CD1 PHE B 962    11057  12226  18780  -1063  -1090    922       C
ATOM   9744  C   PHE B 962       6.126   8.468  91.485  1.00 98.34           C
ANISOU 9744  C   PHE B 962     9264  10509  17591  -1171   -627   1088       C
ATOM   9745  O   PHE B 962       5.009   8.549  91.988  1.00107.69           O
ANISOU 9745  O   PHE B 962    10273  11588  19056  -1179   -528   1176       O
ATOM   9746  N   ILE B 963       7.227   8.916  92.087  1.00 87.89           N
ANISOU 9746  N   ILE B 963     8087   9324  15982  -1118   -489   1041       N
ATOM   9747  CA  ILE B 963       7.237   9.405  93.469  1.00 79.81           C
ANISOU 9747  CA  ILE B 963     7051   8333  14942  -1068   -209   1087       C
ATOM   9748  CB  ILE B 963       8.397   8.793  94.276  1.00 96.43           C
ANISOU 9748  CB  ILE B 963     9316  10529  16795  -1070    -78   1044       C
ATOM   9749  CG1 ILE B 963       8.554   7.308  93.978  1.00102.11           C
ANISOU 9749  CG1 ILE B 963    10072  11198  17529  -1159   -172   1027       C
ATOM   9750  CD1 ILE B 963       7.435   6.472  94.530  1.00 98.58           C
ANISOU 9750  CD1 ILE B 963     9481  10601  17376  -1220    -75   1119       C
ATOM   9751  CG2 ILE B 963       8.156   8.971  95.751  1.00 95.24           C
ANISOU 9751  CG2 ILE B 963     9139  10357  16692  -1031    210   1112       C
ATOM   9752  C   ILE B 963       7.365  10.924  93.610  1.00 82.08           C
ANISOU 9752  C   ILE B 963     7355   8694  15140   -984   -143   1080       C
ATOM   9753  O   ILE B 963       6.671  11.520  94.419  1.00 84.55           O
ANISOU 9753  O   ILE B 963     7572   8959  15594   -943     30   1152       O
ATOM   9754  N   ALA B 964       8.291  11.535  92.873  1.00 90.41           N
ANISOU 9754  N   ALA B 964     8539   9862  15951   -957   -266    996       N
ATOM   9755  CA  ALA B 964       8.454  12.998  92.884  1.00 82.25           C
ANISOU 9755  CA  ALA B 964     7532   8899  14821   -890   -225    982       C
ATOM   9756  CB  ALA B 964       8.951  13.485  94.243  1.00 70.50           C
ANISOU 9756  CB  ALA B 964     6106   7479  13202   -838     20    995       C
ATOM   9757  C   ALA B 964       9.399  13.522  91.811  1.00 91.69           C
ANISOU 9757  C   ALA B 964     8860  10200  15779   -880   -393    890       C
ATOM   9758  O   ALA B 964      10.094  12.778  91.115  1.00100.13           O
ANISOU 9758  O   ALA B 964    10021  11303  16721   -912   -527    831       O
ATOM   9759  N   SER B 965       9.426  14.837  91.703  1.00 87.87           N
ANISOU 9759  N   SER B 965     8389   9765  15235   -832   -373    881       N
ATOM   9760  CA  SER B 965      10.428  15.500  90.903  1.00 76.28           C
ANISOU 9760  CA  SER B 965     7054   8410  13518   -815   -476    797       C
ATOM   9761  CB  SER B 965       9.778  16.396  89.874  1.00 79.22           C
ANISOU 9761  CB  SER B 965     7377   8736  13986   -804   -615    801       C
ATOM   9762  OG  SER B 965       9.266  15.599  88.836  1.00 86.18           O
ANISOU 9762  OG  SER B 965     8217   9520  15006   -845   -815    801       O
ATOM   9763  C   SER B 965      11.330  16.297  91.820  1.00 75.07           C
ANISOU 9763  C   SER B 965     6995   8381  13149   -773   -310    769       C
ATOM   9764  O   SER B 965      10.870  16.855  92.818  1.00 78.87           O
ANISOU 9764  O   SER B 965     7423   8839  13705   -740   -145    822       O
ATOM   9765  N   PHE B 966      12.623  16.328  91.512  1.00 73.88           N
ANISOU 9765  N   PHE B 966     6983   8354  12734   -773   -349    687       N
ATOM   9766  CA  PHE B 966      13.529  17.116  92.337  1.00 67.20           C
ANISOU 9766  CA  PHE B 966     6223   7626  11685   -739   -214    655       C
ATOM   9767  CB  PHE B 966      14.461  16.195  93.122  1.00 56.77           C
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ANISOU 9767  CB  PHE B 966     4979   6368  10225   -751   -133    626       C
ATOM   9768  CG  PHE B 966      13.779  15.400  94.221  1.00 71.08           C
ANISOU 9768  CG  PHE B 966     6722   8089  12198   -755      6    697       C
ATOM   9769  CD2 PHE B 966      13.320  14.108  93.986  1.00 70.91           C
ANISOU 9769  CD2 PHE B 966     6650   7980  12311   -800    -50    722       C
ATOM   9770  CE2 PHE B 966      12.704  13.376  94.982  1.00 61.17           C
ANISOU 9770  CE2 PHE B 966     5355   6660  11229   -809     92    790       C
ATOM   9771  CZ  PHE B 966      12.556  13.912  96.242  1.00 62.60           C
ANISOU 9771  CZ  PHE B 966     5533   6835  11418   -763    298    835       C
ATOM   9772  CE1 PHE B 966      13.000  15.192  96.503  1.00 66.52           C
ANISOU 9772  CE1 PHE B 966     6083   7412  11778   -713    346    810       C
ATOM   9773  CD1 PHE B 966      13.620  15.930  95.493  1.00 73.60           C
ANISOU 9773  CD1 PHE B 966     7034   8403  12529   -714    197    740       C
ATOM   9774  C   PHE B 966      14.303  18.135  91.474  1.00 74.24           C
ANISOU 9774  C   PHE B 966     7200   8619  12389   -728   -301    587       C
ATOM   9775  O   PHE B 966      14.922  17.788  90.458  1.00 87.77           O
ANISOU 9775  O   PHE B 966     8979  10372  13996   -747   -433    531       O
ATOM   9776  N   TYR B 967      14.201  19.400  91.876  1.00 69.07           N
ANISOU 9776  N   TYR B 967     6542   7994  11707   -695   -220    597       N
ATOM   9777  CA  TYR B 967      14.882  20.525  91.242  1.00 60.34           C
ANISOU 9777  CA  TYR B 967     5510   6984  10434   -686   -268    541       C
ATOM   9778  CB  TYR B 967      13.902  21.664  90.950  1.00 67.01           C
ANISOU 9778  CB  TYR B 967     6284   7767  11412   -666   -280    582       C
ATOM   9779  CG  TYR B 967      12.831  21.311  89.964  1.00 67.60           C
ANISOU 9779  CG  TYR B 967     6269   7722  11695   -680   -420    617       C
ATOM   9780  CD2 TYR B 967      13.027  21.527  88.621  1.00 59.76           C
ANISOU 9780  CD2 TYR B 967     5319   6738  10649   -692   -582    573       C
ATOM   9781  CE2 TYR B 967      12.063  21.220  87.715  1.00 73.00           C
ANISOU 9781  CE2 TYR B 967     6923   8298  12517   -704   -729    600       C
ATOM   9782  CZ  TYR B 967      10.874  20.683  88.137  1.00 71.49           C
ANISOU 9782  CZ  TYR B 967     6595   7980  12586   -710   -715    675       C
ATOM   9783  OH  TYR B 967       9.937  20.369  87.187  1.00 88.30           O
ANISOU 9783  OH  TYR B 967     8646   9989  14914   -726   -884    698       O
ATOM   9784  CE1 TYR B 967      10.645  20.442  89.469  1.00 66.10           C
ANISOU 9784  CE1 TYR B 967     5858   7289  11968   -699   -538    725       C
ATOM   9785  CD1 TYR B 967      11.619  20.752  90.378  1.00 72.72           C
ANISOU 9785  CD1 TYR B 967     6787   8241  12603   -682   -392    695       C
ATOM   9786  C   TYR B 967      15.938  21.012  92.196  1.00 66.59           C
ANISOU 9786  C   TYR B 967     6383   7892  11027   -671   -146    504       C
ATOM   9787  O   TYR B 967      15.845  20.691  93.392  1.00 60.75           O
ANISOU 9787  O   TYR B 967     5629   7135  10318   -658    -17    537       O
ATOM   9788  N   ASN B 968      16.892  21.823  91.710  1.00 65.51           N
ANISOU 9788  N   ASN B 968     6327   7865  10700   -674   -182    440       N
ATOM   9789  CA  ASN B 968      17.918  22.386  92.594  1.00 66.06           C
ANISOU 9789  CA  ASN B 968     6465   8046  10588   -666    -83    401       C
ATOM   9790  CB  ASN B 968      18.832  23.399  91.873  1.00 71.03           C
ANISOU 9790  CB  ASN B 968     7161   8783  11042   -677   -134    337       C
ATOM   9791  C   ASN B 968      17.315  23.064  93.814  1.00 59.59           C
ANISOU 9791  C   ASN B 968     5610   7184   9846   -635     56    456       C
ATOM   9792  O   ASN B 968      16.494  23.991  93.678  1.00 64.08           O
ANISOU 9792  O   ASN B 968     6132   7701  10516   -617     68    494       O
ATOM   9793  N   ASN B 969      17.743  22.573  94.982  1.00 51.37           N
ANISOU 9793  N   ASN B 969     4597   6165   8756   -625    162    459       N
ATOM   9794  CA  ASN B 969      17.378  23.076  96.310  1.00 63.51           C
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ANISOU 9794  CA  ASN B 969     6126   7669  10336   -590    317    508       C
ATOM   9795  CB  ASN B 969      17.457  24.608  96.373  1.00 62.28           C
ANISOU 9795  CB  ASN B 969     5993   7555  10117   -575    340    498       C
ATOM   9796  CG  ASN B 969      18.708  25.090  97.067  1.00 63.47           C
ANISOU 9796  CG  ASN B 969     6232   7823  10062   -582    380    440       C
ATOM   9797  OD1 ASN B 969      19.391  24.331  97.749  1.00 63.92           O
ANISOU 9797  OD1 ASN B 969     6326   7918  10042   -585    418    421       O
ATOM   9798  ND2 ASN B 969      19.011  26.349  96.902  1.00 55.92           N
ANISOU 9798  ND2 ASN B 969     5303   6922   9023   -587    368    413       N
ATOM   9799  C   ASN B 969      15.995  22.638  96.809  1.00 72.55           C
ANISOU 9799  C   ASN B 969     7177   8667  11721   -563    406    604       C
ATOM   9800  O   ASN B 969      15.530  23.133  97.833  1.00 82.23           O
ANISOU 9800  O   ASN B 969     8392   9845  13006   -522    549    657       O
ATOM   9801  N   ASP B 970      15.336  21.730  96.089  1.00 69.55           N
ANISOU 9801  N   ASP B 970     6728   8211  11487   -584    325    628       N
ATOM   9802  CA  ASP B 970      14.229  21.001  96.681  1.00 71.75           C
ANISOU 9802  CA  ASP B 970     6915   8358  11988   -569    419    714       C
ATOM   9803  CB  ASP B 970      13.556  20.068  95.672  1.00 76.91           C
ANISOU 9803  CB  ASP B 970     7486   8934  12801   -606    289    731       C
ATOM   9804  CG  ASP B 970      12.401  20.738  94.950  1.00 79.34           C
ANISOU 9804  CG  ASP B 970     7687   9157  13301   -599    225    777       C
ATOM   9805  OD1 ASP B 970      11.801  21.678  95.537  1.00 69.99           O
ANISOU 9805  OD1 ASP B 970     6463   7937  12195   -559    334    828       O
ATOM   9806  OD2 ASP B 970      12.119  20.334  93.798  1.00 64.37           O
ANISOU 9806  OD2 ASP B 970     5753   7228  11475   -632     63    763       O
ATOM   9807  C   ASP B 970      14.786  20.219  97.852  1.00 74.55           C
ANISOU 9807  C   ASP B 970     7328   8727  12270   -560    546    718       C
ATOM   9808  O   ASP B 970      15.980  19.916  97.886  1.00 72.26           O
ANISOU 9808  O   ASP B 970     7130   8544  11783   -579    508    647       O
ATOM   9809  N   LEU B 971      13.938  19.887  98.817  1.00 77.83           N
ANISOU 9809  N   LEU B 971     7691   9034  12847   -528    705    802       N
ATOM   9810  CA  LEU B 971      14.414  19.089  99.938  1.00 75.48           C
ANISOU 9810  CA  LEU B 971     7460   8735  12485   -515    839    812       C
ATOM   9811  CB  LEU B 971      13.748  19.532 101.225  1.00 77.85           C
ANISOU 9811  CB  LEU B 971     7758   8944  12876   -447   1063    896       C
ATOM   9812  CG  LEU B 971      13.929  21.017 101.501  1.00 65.64           C
ANISOU 9812  CG  LEU B 971     6257   7446  11236   -405   1101    887       C
ATOM   9813  CD1 LEU B 971      13.245  21.393 102.805  1.00 54.51           C
ANISOU 9813  CD1 LEU B 971     4862   5932   9916   -325   1339    978       C
ATOM   9814  CD2 LEU B 971      15.400  21.352 101.546  1.00 53.21           C
ANISOU 9814  CD2 LEU B 971     4803   6023   9390   -426   1031    789       C
ATOM   9815  C   LEU B 971      14.157  17.608  99.680  1.00 74.02           C
ANISOU 9815  C   LEU B 971     7231   8489  12403   -557    804    827       C
ATOM   9816  O   LEU B 971      13.092  17.216  99.170  1.00 65.46           O
ANISOU 9816  O   LEU B 971     6031   7302  11539   -575    767    880       O
ATOM   9817  N   ILE B 972      15.145  16.784 100.011  1.00 64.79           N
ANISOU 9817  N   ILE B 972     6151   7385  11080   -577    806    781       N
ATOM   9818  CA  ILE B 972      15.001  15.349  99.829  1.00 65.30           C
ANISOU 9818  CA  ILE B 972     6191   7396  11222   -623    779    792       C
ATOM   9819  CB  ILE B 972      15.800  14.842  98.594  1.00 57.71           C
ANISOU 9819  CB  ILE B 972     5260   6526  10143   -678    566    707       C
ATOM   9820  CG1 ILE B 972      15.539  13.367  98.334  1.00 55.62           C
ANISOU 9820  CG1 ILE B 972     4967   6192   9975   -731    526    723       C
ATOM   9821  CD1 ILE B 972      15.908  12.910  96.894  1.00 43.48           C
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ANISOU 9821  CD1 ILE B 972     3433   4696   8390   -780    304    659       C
ATOM   9822  CG2 ILE B 972      17.320  15.073  98.755  1.00 71.80           C
ANISOU 9822  CG2 ILE B 972     7162   8464  11654   -674    537    620       C
ATOM   9823  C   ILE B 972      15.426  14.615 101.088  1.00 73.61           C
ANISOU 9823  C   ILE B 972     7314   8407  12249   -596    957    825       C
ATOM   9824  O   ILE B 972      16.440  14.936 101.714  1.00 77.32           O
ANISOU 9824  O   ILE B 972     7873   8935  12569   -561   1015    795       O
ATOM   9825  N   LYS B 973      14.606  13.652 101.484  1.00 86.21           N
ANISOU 9825  N   LYS B 973     8850   9862  14046   -601   1063    904       N
ATOM   9826  CA  LYS B 973      14.921  12.814 102.625  1.00 79.26           C
ANISOU 9826  CA  LYS B 973     8031   8885  13199   -564   1260    956       C
ATOM   9827  CB  LYS B 973      13.745  12.748 103.582  1.00 80.56           C
ANISOU 9827  CB  LYS B 973     8148   8887  13574   -509   1496   1071       C
ATOM   9828  CG  LYS B 973      14.128  12.451 105.005  1.00 81.39           C
ANISOU 9828  CG  LYS B 973     8374   8896  13653   -422   1766   1128       C
ATOM   9829  CD  LYS B 973      12.920  12.600 105.894  1.00 88.32           C
ANISOU 9829  CD  LYS B 973     9215   9618  14727   -349   2010   1240       C
ATOM   9830  CE  LYS B 973      13.306  12.697 107.353  1.00102.93           C
ANISOU 9830  CE  LYS B 973    11235  11372  16501   -225   2303   1294       C
ATOM   9831  NZ  LYS B 973      12.173  13.245 108.164  1.00107.84           N
ANISOU 9831  NZ  LYS B 973    11834  11860  17282   -131   2535   1397       N
ATOM   9832  C   LYS B 973      15.288  11.435 102.108  1.00 77.87           C
ANISOU 9832  C   LYS B 973     7855   8692  13040   -633   1164    934       C
ATOM   9833  O   LYS B 973      14.452  10.751 101.538  1.00 87.12           O
ANISOU 9833  O   LYS B 973     8937   9794  14369   -690   1097    961       O
ATOM   9834  N   ILE B 974      16.554  11.057 102.261  1.00 63.39           N
ANISOU 9834  N   ILE B 974     6116   6919  11048   -631   1146    882       N
ATOM   9835  CA  ILE B 974      17.047   9.749 101.812  1.00 62.66           C
ANISOU 9835  CA  ILE B 974     6041   6806  10962   -692   1059    860       C
ATOM   9836  CB  ILE B 974      18.354   9.814 101.024  1.00 67.55           C
ANISOU 9836  CB  ILE B 974     6704   7576  11385   -716    868    756       C
ATOM   9837  CG1 ILE B 974      18.290  10.883  99.950  1.00 85.45           C
ANISOU 9837  CG1 ILE B 974     8939   9979  13551   -731    681    687       C
ATOM   9838  CD1 ILE B 974      17.382  10.460  98.843  1.00105.51           C
ANISOU 9838  CD1 ILE B 974    11409  12477  16204   -792    533    690       C
ATOM   9839  CG2 ILE B 974      18.599   8.484 100.370  1.00 61.18           C
ANISOU 9839  CG2 ILE B 974     5898   6724  10622   -783    753    740       C
ATOM   9840  C   ILE B 974      17.308   8.924 103.042  1.00 69.59           C
ANISOU 9840  C   ILE B 974     7007   7558  11877   -650   1298    926       C
ATOM   9841  O   ILE B 974      17.986   9.394 103.960  1.00 62.91           O
ANISOU 9841  O   ILE B 974     6258   6724  10922   -573   1449    931       O
ATOM   9842  N   ASN B 975      16.763   7.711 103.059  1.00 73.07           N
ANISOU 9842  N   ASN B 975     7434   7869  12461   -697   1341    978       N
ATOM   9843  CA  ASN B 975      16.832   6.842 104.220  1.00 69.91           C
ANISOU 9843  CA  ASN B 975     7148   7318  12095   -655   1599   1053       C
ATOM   9844  CB  ASN B 975      18.099   6.009 104.146  1.00 72.47           C
ANISOU 9844  CB  ASN B 975     7592   7650  12294   -674   1559   1012       C
ATOM   9845  CG  ASN B 975      18.202   5.253 102.843  1.00 81.13           C
ANISOU 9845  CG  ASN B 975     8618   8779  13428   -785   1288    957       C
ATOM   9846  OD1 ASN B 975      17.195   4.850 102.271  1.00 74.47           O
ANISOU 9846  OD1 ASN B 975     7679   7881  12734   -853   1202    980       O
ATOM   9847  ND2 ASN B 975      19.424   5.080 102.349  1.00 93.18           N
ANISOU 9847  ND2 ASN B 975    10191  10391  14823   -801   1151    883       N
ATOM   9848  C   ASN B 975      16.752   7.623 105.531  1.00 69.23           C
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ANISOU 9848  C   ASN B 975     7154   7185  11966   -531   1869   1108       C
ATOM   9849  O   ASN B 975      17.613   7.495 106.402  1.00 72.60           O
ANISOU 9849  O   ASN B 975     7751   7577  12255   -455   2035   1118       O
ATOM   9850  N   GLY B 976      15.724   8.464 105.635  1.00 72.48           N
ANISOU 9850  N   GLY B 976     7469   7585  12486   -502   1911   1145       N
ATOM   9851  CA  GLY B 976      15.454   9.197 106.854  1.00 69.88           C
ANISOU 9851  CA  GLY B 976     7226   7183  12143   -379   2173   1208       C
ATOM   9852  C   GLY B 976      16.355  10.363 107.189  1.00 84.59           C
ANISOU 9852  C   GLY B 976     9180   9149  13810   -308   2177   1160       C
ATOM   9853  O   GLY B 976      16.308  10.862 108.307  1.00 98.84           O
ANISOU 9853  O   GLY B 976    11111  10875  15567   -191   2413   1212       O
ATOM   9854  N   GLU B 977      17.169  10.814 106.242  1.00 91.41           N
ANISOU 9854  N   GLU B 977     9993  10183  14554   -372   1924   1062       N
ATOM   9855  CA  GLU B 977      17.992  12.002 106.477  1.00 82.87           C
ANISOU 9855  CA  GLU B 977     8973   9213  13300   -322   1906   1012       C
ATOM   9856  CB  GLU B 977      19.466  11.673 106.365  1.00 88.89           C
ANISOU 9856  CB  GLU B 977     9809  10072  13893   -335   1834    941       C
ATOM   9857  CG  GLU B 977      20.108  11.343 107.664  1.00 96.26           C
ANISOU 9857  CG  GLU B 977    10949  10904  14722   -226   2107    991       C
ATOM   9858  CD  GLU B 977      21.365  10.566 107.448  1.00108.58           C
ANISOU 9858  CD  GLU B 977    12563  12522  16170   -249   2052    942       C
ATOM   9859  OE1 GLU B 977      21.587  10.132 106.291  1.00113.66           O
ANISOU 9859  OE1 GLU B 977    13065  13261  16859   -356   1805    875       O
ATOM   9860  OE2 GLU B 977      22.124  10.386 108.423  1.00116.25           O
ANISOU 9860  OE2 GLU B 977    13774  13453  16943   -124   2206    943       O
ATOM   9861  C   GLU B 977      17.655  13.090 105.498  1.00 71.80           C
ANISOU 9861  C   GLU B 977     7448   7939  11893   -374   1688    956       C
ATOM   9862  O   GLU B 977      17.612  12.850 104.297  1.00 77.18           O
ANISOU 9862  O   GLU B 977     8038   8705  12582   -462   1457    899       O
ATOM   9863  N   LEU B 978      17.429  14.292 106.002  1.00 72.21           N
ANISOU 9863  N   LEU B 978     7528   7996  11915   -310   1773    975       N
ATOM   9864  CA  LEU B 978      16.954  15.367 105.143  1.00 73.34           C
ANISOU 9864  CA  LEU B 978     7575   8233  12059   -350   1603    937       C
ATOM   9865  CB  LEU B 978      15.941  16.206 105.902  1.00 61.00           C
ANISOU 9865  CB  LEU B 978     6010   6563  10605   -270   1788   1022       C
ATOM   9866  CG  LEU B 978      15.226  17.193 104.997  1.00 62.00           C
ANISOU 9866  CG  LEU B 978     6030   6754  10774   -308   1635   1002       C
ATOM   9867  CD1 LEU B 978      14.272  16.424 104.080  1.00 69.66           C
ANISOU 9867  CD1 LEU B 978     6867   7688  11911   -379   1522   1017       C
ATOM   9868  CD2 LEU B 978      14.513  18.267 105.829  1.00 61.10           C
ANISOU 9868  CD2 LEU B 978     5935   6552  10728   -216   1823   1078       C
ATOM   9869  C   LEU B 978      18.056  16.289 104.589  1.00 71.54           C
ANISOU 9869  C   LEU B 978     7373   8185  11626   -379   1427    833       C
ATOM   9870  O   LEU B 978      18.797  16.923 105.345  1.00 74.53           O
ANISOU 9870  O   LEU B 978     7838   8587  11891   -325   1520    824       O
ATOM   9871  N   TYR B 979      18.113  16.389 103.263  1.00 73.11           N
ANISOU 9871  N   TYR B 979     7505   8500  11774   -459   1185    759       N
ATOM   9872  CA  TYR B 979      19.084  17.236 102.566  1.00 68.34           C
ANISOU 9872  CA  TYR B 979     6924   8070  10973   -492   1013    658       C
ATOM   9873  CB  TYR B 979      20.094  16.375 101.808  1.00 54.39           C
ANISOU 9873  CB  TYR B 979     5165   6402   9099   -544    857    580       C
ATOM   9874  CG  TYR B 979      20.867  15.351 102.605  1.00 62.58           C
ANISOU 9874  CG  TYR B 979     6240   7394  10142   -519    961    595       C
ATOM   9875  CD1 TYR B 979      22.089  15.675 103.217  1.00 70.79           C
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ANISOU 9875  CD1 TYR B 979     7330   8511  11058   -483   1000    552       C
ATOM   9876  CE1 TYR B 979      22.820  14.718 103.917  1.00 56.17           C
ANISOU 9876  CE1 TYR B 979     5514   6615   9213   -448   1110    565       C
ATOM   9877  CZ  TYR B 979      22.331  13.429 104.002  1.00 66.16           C
ANISOU 9877  CZ  TYR B 979     6782   7751  10605   -459   1183    624       C
ATOM   9878  OH  TYR B 979      23.031  12.477 104.689  1.00 72.58           O
ANISOU 9878  OH  TYR B 979     7654   8506  11416   -419   1321    645       O
ATOM   9879  CE2 TYR B 979      21.137  13.085 103.393  1.00 56.96           C
ANISOU 9879  CE2 TYR B 979     5563   6511   9569   -506   1130    665       C
ATOM   9880  CD2 TYR B 979      20.419  14.038 102.692  1.00 56.40           C
ANISOU 9880  CD2 TYR B 979     5442   6493   9496   -532   1018    648       C
ATOM   9881  C   TYR B 979      18.417  18.178 101.553  1.00 71.85           C
ANISOU 9881  C   TYR B 979     7322   8573  11407   -524    881    631       C
ATOM   9882  O   TYR B 979      17.284  17.937 101.118  1.00 73.33           O
ANISOU 9882  O   TYR B 979     7437   8682  11744   -538    868    677       O
ATOM   9883  N   ARG B 980      19.138  19.217 101.135  1.00 66.34           N
ANISOU 9883  N   ARG B 980     6660   8008  10539   -538    783    558       N
ATOM   9884  CA  ARG B 980      18.751  19.952  99.928  1.00 61.22           C
ANISOU 9884  CA  ARG B 980     5960   7377   9924   -560    652    538       C
ATOM   9885  CB  ARG B 980      18.956  21.460 100.092  1.00 55.97           C
ANISOU 9885  CB  ARG B 980     5322   6765   9180   -541    669    521       C
ATOM   9886  CG  ARG B 980      20.424  21.881 100.136  1.00 49.67           C
ANISOU 9886  CG  ARG B 980     4596   6121   8156   -562    607    433       C
ATOM   9887  CD  ARG B 980      20.554  23.395 100.258  1.00 45.18           C
ANISOU 9887  CD  ARG B 980     4047   5593   7524   -553    620    419       C
ATOM   9888  NE  ARG B 980      21.912  23.789 100.561  1.00 60.28           N
ANISOU 9888  NE  ARG B 980     6017   7642   9243   -573    585    346       N
ATOM   9889  CZ  ARG B 980      22.797  24.200  99.660  1.00 58.06           C
ANISOU 9889  CZ  ARG B 980     5744   7471   8843   -613    459    275       C
ATOM   9890  NH1 ARG B 980      24.017  24.529 100.056  1.00 42.12           N
ANISOU 9890  NH1 ARG B 980     3761   5573   6670   -630    435    217       N
ATOM   9891  NH2 ARG B 980      22.456  24.311  98.384  1.00 43.12           N
ANISOU 9891  NH2 ARG B 980     3824   5567   6993   -632    364    266       N
ATOM   9892  C   ARG B 980      19.564  19.447  98.731  1.00 69.48           C
ANISOU 9892  C   ARG B 980     7017   8515  10867   -607    478    461       C
ATOM   9893  O   ARG B 980      20.744  19.106  98.860  1.00 67.45           O
ANISOU 9893  O   ARG B 980     6816   8365  10446   -620    445    398       O
ATOM   9894  N   VAL B 981      18.917  19.405  97.573  1.00 65.73           N
ANISOU 9894  N   VAL B 981     6487   7993  10495   -627    372    469       N
ATOM   9895  CA  VAL B 981      19.494  18.875  96.341  1.00 58.92           C
ANISOU 9895  CA  VAL B 981     5640   7188   9560   -662    218    410       C
ATOM   9896  CB  VAL B 981      18.385  18.548  95.320  1.00 56.63           C
ANISOU 9896  CB  VAL B 981     5275   6790   9452   -677    129    450       C
ATOM   9897  CG1 VAL B 981      18.990  18.096  93.978  1.00 50.13           C
ANISOU 9897  CG1 VAL B 981     4485   6019   8544   -706    -29    390       C
ATOM   9898  CG2 VAL B 981      17.461  17.522  95.873  1.00 55.30           C
ANISOU 9898  CG2 VAL B 981     5044   6500   9468   -681    195    519       C
ATOM   9899  C   VAL B 981      20.460  19.813  95.629  1.00 61.10           C
ANISOU 9899  C   VAL B 981     5966   7586   9662   -670    136    338       C
ATOM   9900  O   VAL B 981      20.168  20.999  95.463  1.00 62.01           O
ANISOU 9900  O   VAL B 981     6074   7703   9786   -659    142    345       O
ATOM   9901  N   ILE B 982      21.588  19.290  95.156  1.00 48.01           N
ANISOU 9901  N   ILE B 982     4356   6029   7858   -688     64    271       N
ATOM   9902  CA  ILE B 982      22.301  20.057  94.160  1.00 45.77           C
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ANISOU 9902  CA  ILE B 982     4104   5836   7452   -698    -20    215       C
ATOM   9903  CB  ILE B 982      23.813  19.945  94.319  1.00 51.16           C
ANISOU 9903  CB  ILE B 982     4835   6665   7939   -704    -30    145       C
ATOM   9904  CG1 ILE B 982      24.223  20.356  95.738  1.00 46.31           C
ANISOU 9904  CG1 ILE B 982     4233   6095   7268   -689     70    146       C
ATOM   9905  CD1 ILE B 982      23.737  21.749  96.140  1.00 46.53           C
ANISOU 9905  CD1 ILE B 982     4257   6099   7325   -681    125    171       C
ATOM   9906  CG2 ILE B 982      24.477  20.907  93.397  1.00 43.67           C
ANISOU 9906  CG2 ILE B 982     3910   5801   6882   -716    -87     98       C
ATOM   9907  C   ILE B 982      21.870  19.635  92.757  1.00 52.54           C
ANISOU 9907  C   ILE B 982     4946   6642   8375   -714   -137    215       C
ATOM   9908  O   ILE B 982      21.355  20.434  91.985  1.00 56.25           O
ANISOU 9908  O   ILE B 982     5401   7079   8891   -714   -183    225       O
ATOM   9909  N   GLY B 983      22.045  18.377  92.407  1.00 55.44           N
ANISOU 9909  N   GLY B 983     5319   6995   8750   -726   -191    204       N
ATOM   9910  CA  GLY B 983      21.717  18.005  91.043  1.00 44.31           C
ANISOU 9910  CA  GLY B 983     3908   5537   7391   -739   -314    200       C
ATOM   9911  C   GLY B 983      21.994  16.559  90.757  1.00 48.88           C
ANISOU 9911  C   GLY B 983     4502   6102   7967   -754   -373    185       C
ATOM   9912  O   GLY B 983      22.387  15.813  91.648  1.00 50.90           O
ANISOU 9912  O   GLY B 983     4764   6383   8192   -754   -312    182       O
ATOM   9913  N   VAL B 984      21.775  16.126  89.525  1.00 53.32           N
ANISOU 9913  N   VAL B 984     5075   6617   8566   -766   -497    177       N
ATOM   9914  CA  VAL B 984      22.217  14.777  89.224  1.00 48.77           C
ANISOU 9914  CA  VAL B 984     4531   6041   7960   -779   -559    152       C
ATOM   9915  CB  VAL B 984      21.520  14.168  88.006  1.00 51.94           C
ANISOU 9915  CB  VAL B 984     4936   6331   8469   -796   -709    166       C
ATOM   9916  CG1 VAL B 984      22.149  12.799  87.686  1.00 57.53           C
ANISOU 9916  CG1 VAL B 984     5696   7050   9114   -808   -778    130       C
ATOM   9917  CG2 VAL B 984      20.060  14.057  88.269  1.00 44.94           C
ANISOU 9917  CG2 VAL B 984     3970   5296   7808   -811   -718    239       C
ATOM   9918  C   VAL B 984      23.706  14.862  88.980  1.00 55.14           C
ANISOU 9918  C   VAL B 984     5394   7002   8555   -765   -555     80       C
ATOM   9919  O   VAL B 984      24.155  15.563  88.083  1.00 55.78           O
ANISOU 9919  O   VAL B 984     5501   7139   8555   -758   -597     48       O
ATOM   9920  N   ASN B 985      24.469  14.161  89.796  1.00 52.02           N
ANISOU 9920  N   ASN B 985     5008   6678   8078   -759   -501     57       N
ATOM   9921  CA  ASN B 985      25.890  14.048  89.580  1.00 43.54           C
ANISOU 9921  CA  ASN B 985     3968   5754   6822   -739   -508     -7       C
ATOM   9922  CB  ASN B 985      26.604  13.649  90.862  1.00 54.83           C
ANISOU 9922  CB  ASN B 985     5388   7268   8179   -723   -425    -20       C
ATOM   9923  CG  ASN B 985      28.068  13.528  90.637  1.00 49.45           C
ANISOU 9923  CG  ASN B 985     4718   6750   7320   -692   -442    -76       C
ATOM   9924  OD1 ASN B 985      28.606  12.420  90.467  1.00 56.39           O
ANISOU 9924  OD1 ASN B 985     5602   7648   8174   -673   -498    -96       O
ATOM   9925  ND2 ASN B 985      28.724  14.676  90.522  1.00 60.50           N
ANISOU 9925  ND2 ASN B 985     6113   8249   8626   -685   -412    -93       N
ATOM   9926  C   ASN B 985      26.297  13.038  88.508  1.00 55.02           C
ANISOU 9926  C   ASN B 985     5460   7211   8236   -736   -619    -41       C
ATOM   9927  O   ASN B 985      27.213  13.272  87.724  1.00 64.44           O
ANISOU 9927  O   ASN B 985     6676   8503   9304   -717   -653    -85       O
ATOM   9928  N   ASN B 986      25.644  11.890  88.500  1.00 52.13           N
ANISOU 9928  N   ASN B 986     5101   6733   7973   -757   -675    -18       N
ATOM   9929  CA  ASN B 986      26.010  10.876  87.528  1.00 57.27           C
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ANISOU 9929  CA  ASN B 986     5793   7340   8628   -749   -815    -40       C
ATOM   9930  CB  ASN B 986      27.109   9.967  88.095  1.00 43.41           C
ANISOU 9930  CB  ASN B 986     4031   5641   6823   -715   -827    -66       C
ATOM   9931  CG  ASN B 986      27.675   9.048  87.074  1.00 50.44           C
ANISOU 9931  CG  ASN B 986     4975   6497   7692   -687   -989    -98       C
ATOM   9932  OD1 ASN B 986      26.925   8.428  86.305  1.00 61.39           O
ANISOU 9932  OD1 ASN B 986     6413   7730   9184   -712  -1122    -78       O
ATOM   9933  ND2 ASN B 986      29.018   8.937  87.037  1.00 49.45           N
ANISOU 9933  ND2 ASN B 986     4847   6515   7428   -624   -998   -147       N
ATOM   9934  C   ASN B 986      24.773  10.078  87.153  1.00 53.60           C
ANISOU 9934  C   ASN B 986     5334   6679   8353   -786   -919      9       C
ATOM   9935  O   ASN B 986      24.267   9.312  87.954  1.00 47.27           O
ANISOU 9935  O   ASN B 986     4501   5782   7679   -811   -901     50       O
ATOM   9936  N   ASP B 987      24.289  10.263  85.938  1.00 62.85           N
ANISOU 9936  N   ASP B 987     6543   7784   9552   -791  -1032      8       N
ATOM   9937  CA  ASP B 987      23.063   9.598  85.537  1.00 67.26           C
ANISOU 9937  CA  ASP B 987     7101   8158  10297   -826  -1148     56       C
ATOM   9938  CB  ASP B 987      22.568  10.134  84.191  1.00 76.45           C
ANISOU 9938  CB  ASP B 987     8306   9267  11474   -819  -1270     51       C
ATOM   9939  CG  ASP B 987      21.269   9.459  83.718  1.00 88.91           C
ANISOU 9939  CG  ASP B 987     9877  10650  13254   -852  -1416    100       C
ATOM   9940  OD1 ASP B 987      20.478   8.959  84.563  1.00 76.20           O
ANISOU 9940  OD1 ASP B 987     8194   8966  11791   -888  -1370    150       O
ATOM   9941  OD2 ASP B 987      21.044   9.445  82.484  1.00 92.97           O
ANISOU 9941  OD2 ASP B 987    10459  11081  13785   -839  -1584     91       O
ATOM   9942  C   ASP B 987      23.264   8.094  85.462  1.00 74.06           C
ANISOU 9942  C   ASP B 987     8008   8908  11225   -837  -1277     59       C
ATOM   9943  O   ASP B 987      22.565   7.345  86.134  1.00 82.46           O
ANISOU 9943  O   ASP B 987     9031   9861  12438   -877  -1270    106       O
ATOM   9944  N   LEU B 988      24.212   7.652  84.642  1.00 76.93           N
ANISOU 9944  N   LEU B 988     8460   9291  11477   -801  -1400      9       N
ATOM   9945  CA  LEU B 988      24.448   6.213  84.454  1.00 70.76           C
ANISOU 9945  CA  LEU B 988     7762   8391  10734   -803  -1561      2       C
ATOM   9946  CB  LEU B 988      25.636   5.972  83.510  1.00 64.70           C
ANISOU 9946  CB  LEU B 988     7112   7679   9791   -735  -1690    -66       C
ATOM   9947  CG  LEU B 988      26.361   4.614  83.543  1.00 79.02           C
ANISOU 9947  CG  LEU B 988     9037   9435  11550   -700  -1835   -102       C
ATOM   9948  CD1 LEU B 988      25.755   3.572  82.611  1.00 69.90           C
ANISOU 9948  CD1 LEU B 988     8046   8060  10452   -711  -2076    -96       C
ATOM   9949  CD2 LEU B 988      27.898   4.741  83.342  1.00 51.17           C
ANISOU 9949  CD2 LEU B 988     5552   6089   7801   -596  -1838   -176       C
ATOM   9950  C   LEU B 988      24.687   5.493  85.777  1.00 62.98           C
ANISOU 9950  C   LEU B 988     6725   7407   9799   -823  -1475     18       C
ATOM   9951  O   LEU B 988      24.411   4.315  85.884  1.00 60.99           O
ANISOU 9951  O   LEU B 988     6520   7009   9645   -854  -1584     36       O
ATOM   9952  N   LEU B 989      25.185   6.189  86.794  1.00 72.91           N
ANISOU 9952  N   LEU B 989     7897   8812  10992   -806  -1288     12       N
ATOM   9953  CA  LEU B 989      25.563   5.512  88.036  1.00 63.36           C
ANISOU 9953  CA  LEU B 989     6647   7601   9824   -811  -1219     22       C
ATOM   9954  CB  LEU B 989      26.975   5.901  88.442  1.00 57.38           C
ANISOU 9954  CB  LEU B 989     5870   7043   8890   -736  -1156    -39       C
ATOM   9955  CG  LEU B 989      28.131   4.986  88.055  1.00 67.99           C
ANISOU 9955  CG  LEU B 989     7285   8424  10124   -662  -1313   -105       C
ATOM   9956  CD1 LEU B 989      27.843   4.403  86.732  1.00 60.36           C
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ANISOU 9956  CD1 LEU B 989     6446   7335   9152   -667  -1512   -118       C
ATOM   9957  CD2 LEU B 989      29.499   5.737  88.055  1.00 45.10           C
ANISOU 9957  CD2 LEU B 989     4350   5768   7020   -563  -1246   -169       C
ATOM   9958  C   LEU B 989      24.607   5.821  89.172  1.00 64.26           C
ANISOU 9958  C   LEU B 989     6672   7665  10080   -858  -1051     91       C
ATOM   9959  O   LEU B 989      24.865   5.445  90.318  1.00 55.98           O
ANISOU 9959  O   LEU B 989     5583   6610   9078   -862   -957    110       O
ATOM   9960  N   ASN B 990      23.514   6.511  88.854  1.00 59.26           N
ANISOU 9960  N   ASN B 990     6009   6991   9516   -884  -1019    129       N
ATOM   9961  CA  ASN B 990      22.499   6.895  89.840  1.00 57.71           C
ANISOU 9961  CA  ASN B 990     5732   6748   9449   -913   -868    194       C
ATOM   9962  CB  ASN B 990      21.738   5.662  90.275  1.00 63.77           C
ANISOU 9962  CB  ASN B 990     6477   7333  10420   -972   -892    256       C
ATOM   9963  CG  ASN B 990      20.912   5.106  89.151  1.00 85.37           C
ANISOU 9963  CG  ASN B 990     9239   9938  13261  -1008  -1071    269       C
ATOM   9964  OD1 ASN B 990      21.401   4.327  88.343  1.00 98.02           O
ANISOU 9964  OD1 ASN B 990    10930  11490  14823  -1009  -1245    234       O
ATOM   9965  ND2 ASN B 990      19.676   5.565  89.042  1.00 97.28           N
ANISOU 9965  ND2 ASN B 990    10674  11391  14897  -1030  -1049    316       N
ATOM   9966  C   ASN B 990      23.003   7.655  91.061  1.00 57.40           C
ANISOU 9966  C   ASN B 990     5653   6826   9329   -882   -684    193       C
ATOM   9967  O   ASN B 990      22.664   7.368  92.211  1.00 57.75           O
ANISOU 9967  O   ASN B 990     5654   6807   9481   -897   -564    245       O
ATOM   9968  N   ARG B 991      23.818   8.656  90.816  1.00 51.50           N
ANISOU 9968  N   ARG B 991     4928   6244   8394   -838   -658    137       N
ATOM   9969  CA  ARG B 991      24.318   9.403  91.930  1.00 56.35           C
ANISOU 9969  CA  ARG B 991     5519   6965   8926   -808   -511    131       C
ATOM   9970  CB  ARG B 991      25.869   9.386  91.988  1.00 48.67           C
ANISOU 9970  CB  ARG B 991     4564   6147   7783   -757   -529     62       C
ATOM   9971  CG  ARG B 991      26.436   7.978  91.756  1.00 67.54           C
ANISOU 9971  CG  ARG B 991     6964   8478  10221   -750   -648     44       C
ATOM   9972  CD  ARG B 991      27.822   7.748  92.389  1.00 63.51           C
ANISOU 9972  CD  ARG B 991     6429   8096   9605   -679   -640      -9       C
ATOM   9973  NE  ARG B 991      28.904   8.032  91.472  1.00 62.73           N
ANISOU 9973  NE  ARG B 991     6360   8155   9320   -622   -722    -81       N
ATOM   9974  CZ  ARG B 991      30.049   7.352  91.433  1.00 69.93           C
ANISOU 9974  CZ  ARG B 991     7268   9149  10152   -540   -809   -140       C
ATOM   9975  NH1 ARG B 991      30.245   6.329  92.253  1.00 72.76           N
ANISOU 9975  NH1 ARG B 991     7601   9442  10602   -501   -849   -151       N
ATOM   9976  NH2 ARG B 991      30.997   7.705  90.575  1.00 64.01           N
ANISOU 9976  NH2 ARG B 991     6542   8545   9234   -482   -856   -190       N
ATOM   9977  C   ARG B 991      23.777  10.776  91.750  1.00 56.32           C
ANISOU 9977  C   ARG B 991     5516   7020   8865   -805   -454    132       C
ATOM   9978  O   ARG B 991      23.848  11.345  90.642  1.00 58.28           O
ANISOU 9978  O   ARG B 991     5796   7320   9026   -802   -526     96       O
ATOM   9979  N   ILE B 992      23.226  11.308  92.832  1.00 55.46           N
ANISOU 9979  N   ILE B 992     5372   6888   8813   -803   -327    176       N
ATOM   9980  CA  ILE B 992      22.816  12.703  92.855  1.00 47.89           C
ANISOU 9980  CA  ILE B 992     4401   5960   7836   -788   -279    186       C
ATOM   9981  CB  ILE B 992      21.290  12.862  93.166  1.00 79.71           C
ANISOU 9981  CB  ILE B 992     8363   9837  12087   -801   -235    270       C
ATOM   9982  CG1 ILE B 992      21.020  12.651  94.638  1.00 73.56           C
ANISOU 9982  CG1 ILE B 992     7566   9023  11359   -796    -80    316       C
ATOM   9983  CD1 ILE B 992      19.913  13.519  95.112  1.00 91.19           C
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ANISOU 9983  CD1 ILE B 992     9737  11171  13740   -778      4    383       C
ATOM   9984  CG2 ILE B 992      20.402  11.877  92.342  1.00 37.16           C
ANISOU 9984  CG2 ILE B 992     2944   4318   6856   -839   -344    301       C
ATOM   9985  C   ILE B 992      23.642  13.441  93.905  1.00 53.22           C
ANISOU 9985  C   ILE B 992     5090   6749   8382   -758   -173    163       C
ATOM   9986  O   ILE B 992      24.028  12.863  94.935  1.00 58.97           O
ANISOU 9986  O   ILE B 992     5811   7474   9120   -747   -101    174       O
ATOM   9987  N   GLU B 993      23.947  14.709  93.645  1.00 56.62           N
ANISOU 9987  N   GLU B 993     5526   7247   8738   -740   -173    141       N
ATOM   9988  CA  GLU B 993      24.609  15.506  94.650  1.00 56.93           C
ANISOU 9988  CA  GLU B 993     5576   7379   8675   -717    -86    124       C
ATOM   9989  CB  GLU B 993      25.632  16.430  94.003  1.00 51.53           C
ANISOU 9989  CB  GLU B 993     4916   6825   7838   -709   -135     65       C
ATOM   9990  CG  GLU B 993      26.404  17.207  95.069  1.00 45.28           C
ANISOU 9990  CG  GLU B 993     4131   6133   6941   -691    -64     46       C
ATOM   9991  CD  GLU B 993      27.699  17.852  94.578  1.00 63.14           C
ANISOU 9991  CD  GLU B 993     6406   8545   9039   -688   -112     -8       C
ATOM   9992  OE1 GLU B 993      27.986  17.814  93.345  1.00 46.72           O
ANISOU 9992  OE1 GLU B 993     4335   6494   6924   -698   -182    -32       O
ATOM   9993  OE2 GLU B 993      28.436  18.360  95.470  1.00 53.86           O
ANISOU 9993  OE2 GLU B 993     5230   7457   7779   -675    -76    -16       O
ATOM   9994  C   GLU B 993      23.635  16.331  95.523  1.00 55.98           C
ANISOU 9994  C   GLU B 993     5430   7173   8666   -708     16    185       C
ATOM   9995  O   GLU B 993      22.732  16.992  95.014  1.00 58.45           O
ANISOU 9995  O   GLU B 993     5715   7411   9082   -711     -0    219       O
ATOM   9996  N   VAL B 994      23.838  16.305  96.837  1.00 48.38           N
ANISOU 9996  N   VAL B 994     4475   6225   7680   -691    124    200       N
ATOM   9997  CA  VAL B 994      23.053  17.135  97.754  1.00 56.07           C
ANISOU 9997  CA  VAL B 994     5437   7129   8739   -671    239    256       C
ATOM   9998  CB  VAL B 994      22.100  16.262  98.645  1.00 59.20           C
ANISOU 9998  CB  VAL B 994     5805   7377   9311   -662    359    339       C
ATOM   9999  CG1 VAL B 994      21.087  15.473  97.797  1.00 39.00           C
ANISOU 9999  CG1 VAL B 994     3203   4718   6898   -694    296    374       C
ATOM  10000  CG2 VAL B 994      22.911  15.324  99.506  1.00 46.12           C
ANISOU10000  CG2 VAL B 994     4150   5696   7676   -639    428    347       C
ATOM  10001  C   VAL B 994      23.959  17.954  98.674  1.00 57.81           C
ANISOU10001  C   VAL B 994     5691   7454   8820   -649    295    223       C
ATOM  10002  O   VAL B 994      25.193  17.947  98.525  1.00 74.50           O
ANISOU10002  O   VAL B 994     7820   9694  10794   -648    233    159       O
ATOM  10003  N   ASN B 995      23.354  18.625  99.650  1.00 43.14           N
ANISOU10003  N   ASN B 995     3826   5514   7050   -621    418    280       N
ATOM  10004  CA  ASN B 995      24.100  19.400 100.645  1.00 57.65           C
ANISOU10004  CA  ASN B 995     5680   7390   8834   -589    491    269       C
ATOM  10005  CB  ASN B 995      24.471  20.811 100.125  1.00 57.41           C
ANISOU10005  CB  ASN B 995     5673   7481   8659   -615    413    216       C
ATOM  10006  CG  ASN B 995      25.733  21.376 100.799  1.00 54.49           C
ANISOU10006  CG  ASN B 995     5308   7202   8194   -602    415    172       C
ATOM  10007  OD1 ASN B 995      26.070  21.051 101.961  1.00 49.79           O
ANISOU10007  OD1 ASN B 995     4698   6545   7676   -556    523    194       O
ATOM  10008  ND2 ASN B 995      26.442  22.221 100.064  1.00 42.53           N
ANISOU10008  ND2 ASN B 995     3811   5828   6519   -640    308    113       N
ATOM  10009  C   ASN B 995      23.278  19.548 101.901  1.00 57.70           C
ANISOU10009  C   ASN B 995     5686   7238   8997   -537    686    363       C
ATOM  10010  O   ASN B 995      22.061  19.334 101.877  1.00 73.19           O
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ANISOU10010  O   ASN B 995     7630   9085  11095   -530    746    432       O
ATOM  10011  N   MET B 996      23.927  19.959 102.982  1.00 55.06           N
ANISOU10011  N   MET B 996     5375   6896   8649   -491    797    368       N
ATOM  10012  CA  MET B 996      23.245  20.158 104.249  1.00 56.49           C
ANISOU10012  CA  MET B 996     5596   6917   8949   -418   1033    465       C
ATOM  10013  CB  MET B 996      24.264  20.227 105.377  1.00 48.09           C
ANISOU10013  CB  MET B 996     4582   5850   7841   -354   1171    458       C
ATOM  10014  CG  MET B 996      24.795  18.869 105.752  1.00 42.94           C
ANISOU10014  CG  MET B 996     3941   5165   7210   -318   1242    461       C
ATOM  10015  SD  MET B 996      26.239  18.916 106.827  1.00 65.33           S
ANISOU10015  SD  MET B 996     6952   8053   9817   -190   1260    373       S
ATOM  10016  CE  MET B 996      26.394  17.175 107.225  1.00 38.10           C
ANISOU10016  CE  MET B 996     3649   4522   6306   -103   1300    381       C
ATOM  10017  C   MET B 996      22.355  21.402 104.242  1.00 64.31           C
ANISOU10017  C   MET B 996     6593   7871   9971   -410   1067    503       C
ATOM  10018  O   MET B 996      22.488  22.266 103.380  1.00 72.31           O
ANISOU10018  O   MET B 996     7585   8994  10895   -462    916    443       O
ATOM  10019  N   ILE B 997      21.448  21.485 105.211  1.00 66.22           N
ANISOU10019  N   ILE B 997     6876   7950  10335   -334   1284    605       N
ATOM  10020  CA  ILE B 997      20.400  22.489 105.165  1.00 57.08           C
ANISOU10020  CA  ILE B 997     5704   6736   9247   -315   1326    654       C
ATOM  10021  CB  ILE B 997      19.043  21.852 105.456  1.00 60.07           C
ANISOU10021  CB  ILE B 997     6058   6955   9811   -271   1460    755       C
ATOM  10022  CG1 ILE B 997      18.633  20.918 104.318  1.00 67.13           C
ANISOU10022  CG1 ILE B 997     6861   7886  10761   -347   1290    726       C
ATOM  10023  CD1 ILE B 997      17.219  20.398 104.487  1.00 65.75           C
ANISOU10023  CD1 ILE B 997     6626   7560  10797   -317   1401    823       C
ATOM  10024  CG2 ILE B 997      17.992  22.903 105.616  1.00 52.99           C
ANISOU10024  CG2 ILE B 997     5143   5984   9005   -227   1543    817       C
ATOM  10025  C   ILE B 997      20.602  23.673 106.116  1.00 56.57           C
ANISOU10025  C   ILE B 997     5721   6630   9143   -248   1480    684       C
ATOM  10026  O   ILE B 997      20.258  24.820 105.774  1.00 52.26           O
ANISOU10026  O   ILE B 997     5154   6113   8589   -261   1433    678       O
ATOM  10027  N   ASP B 998      21.172  23.401 107.289  1.00 67.91           N
ANISOU10027  N   ASP B 998     7270   7993  10541   -167   1676    719       N
ATOM  10028  CA  ASP B 998      21.428  24.440 108.298  1.00 68.41           C
ANISOU10028  CA  ASP B 998     7464   7995  10533    -80   1861    754       C
ATOM  10029  CB  ASP B 998      21.257  23.875 109.707  1.00 76.88           C
ANISOU10029  CB  ASP B 998     8740   8889  11582     71   2174    851       C
ATOM  10030  CG  ASP B 998      22.231  22.747 110.004  1.00 76.14           C
ANISOU10030  CG  ASP B 998     8709   8823  11400     89   2203    815       C
ATOM  10031  OD2 ASP B 998      22.749  22.666 111.145  1.00 75.85           O
ANISOU10031  OD2 ASP B 998     8949   8704  11165    237   2352    817       O
ATOM  10032  OD1 ASP B 998      22.467  21.945 109.080  1.00 71.12           O
ANISOU10032  OD1 ASP B 998     7914   8288  10821     -17   2002    756       O
ATOM  10033  C   ASP B 998      22.825  25.026 108.166  1.00 71.29           C
ANISOU10033  C   ASP B 998     7823   8503  10759   -129   1755    653       C
ATOM  10034  O   ASP B 998      23.159  26.018 108.823  1.00 80.55           O
ANISOU10034  O   ASP B 998     9101   9649  11856    -77   1877    662       O
ATOM  10035  N   ILE B 999      23.626  24.403 107.307  1.00 57.15           N
ANISOU10035  N   ILE B 999     5918   6860   8937   -225   1532    557       N
ATOM  10036  CA  ILE B 999      25.035  24.748 107.120  1.00 55.17           C
ANISOU10036  CA  ILE B 999     5618   6756   8586   -277   1404    446       C
ATOM  10037  CB  ILE B 999      25.910  24.176 108.261  1.00 56.62           C
ANISOU10037  CB  ILE B 999     5910   6955   8646   -167   1554    446       C
ATOM  10038  CG1 ILE B 999      25.910  22.648 108.232  1.00 56.62           C
ANISOU10038  CG1 ILE B 999     5918   6860   8937   -225   1532    557       C
ATOM  10039  CD1 ILE B 999      26.794  22.020 109.290  1.00 56.62           C
ANISOU10039  CD1 ILE B 999     6027   6877   8811   -114   1685    553       C
ATOM  10040  CG2 ILE B 999      25.468  24.703 109.630  1.00 56.62           C
ANISOU10040  CG2 ILE B 999     6027   6860   8826   -114   1685    553       C
ATOM  10041  C   ILE B 999      25.570  24.243 105.783  1.00 56.62           C
ANISOU10041  C   ILE B 999     5918   6860   8937   -225   1532    557       C
ATOM  10042  O   ILE B 999      25.035  23.298 105.232  1.00 56.62           O
ANISOU10042  O   ILE B 999     5823   6860   8937   -225   1532    557       O
ATOM  10043  N   ILE B 1000     26.618  24.882 105.274  1.00 56.62           N
ANISOU10043  N   ILE B 1000     5918   6860   8937   -225   1532    557       N
ATOM  10044  CA  ILE B 1000     27.227  24.482 104.008  1.00 56.62           C
ANISOU10044  CA  ILE B 1000     5918   6860   8937   -225   1532    557       C
ATOM  10045  CB  ILE B 1000     27.227  25.654 103.000  1.00 56.62           C
ANISOU10045  CB  ILE B 1000     5918   6860   8937   -225   1532    557       C
ATOM  10046  CG1 ILE B 1000     25.793  26.104 102.715  1.00 56.62           C
ANISOU10046  CG1 ILE B 1000     5918   6860   8937   -225   1532    557       C
ATOM  10047  CD1 ILE B 1000     25.693  27.454 102.035  1.00 56.62           C
ANISOU10047  CD1 ILE B 1000     5918   6860   8937   -225   1532    557       C
ATOM  10048  CG2 ILE B 1000     27.227  25.654 103.000  1.00 56.62           C
ANISOU10048  CG2 ILE B 1000     5918   6860   8937   -225   1532    557       C
ATOM  10049  C   ILE B 1000     28.654  24.000 104.252  1.00 56.62           C
ANISOU10049  C   ILE B 1000     5918   6860   8937   -225   1532    557       C
ATOM  10050  O   ILE B 1000     29.388  24.600 105.035  1.00 56.62           O
ANISOU10050  O   ILE B 1000     5918   6860   8937   -225   1532    557       O
ATOM  10051  N   ASP B 1001     29.035  22.911 103.592  1.00 56.62           N
ANISOU10051  N   ASP B 1001     5918   6860   8937   -225   1532    557       N
ATOM  10052  CA  ASP B 1001     30.387  22.373 103.722  1.00 56.62           C
ANISOU10052  CA  ASP B 1001     5918   6860   8937   -225   1532    557       C
ATOM  10053  CB  ASP B 1001     30.387  20.847 103.615  1.00 56.62           C
ANISOU10053  CB  ASP B 1001     5918   6860   8937   -225   1532    557       C
ATOM  10054  CG  ASP B 1001     31.787  20.268 103.722  1.00 56.62           C
ANISOU10054  CG  ASP B 1001     5918   6860   8937   -225   1532    557       C
ATOM  10055  OD2 ASP B 1001     32.735  21.045 103.964  1.00 56.62           O
ANISOU10055  OD2 ASP B 1001     5918   6860   8937   -225   1532    557       O
ATOM  10056  OD1 ASP B 1001     31.939  19.037 103.564  1.00 56.62           O
ANISOU10056  OD1 ASP B 1001     5918   6860   8937   -225   1532    557       O
ATOM  10057  C   ASP B 1001     31.287  22.973 102.643  1.00 56.62           C
ANISOU10057  C   ASP B 1001     5918   6860   8937   -225   1532    557       C
ATOM  10058  O   ASP B 1001     31.287  22.525 101.496  1.00 56.62           O
ANISOU10058  O   ASP B 1001     5918   6860   8937   -225   1532    557       O
ATOM  10059  N   ILE B 1002     32.054  23.990 103.023  1.00 56.62           N
ANISOU10059  N   ILE B 1002     5918   6860   8937   -225   1532    557       N
ATOM  10060  CA  ILE B 1002     32.966  24.654 102.094  1.00 56.62           C
ANISOU10060  CA  ILE B 1002     5918   6860   8937   -225   1532    557       C
ATOM  10061  CB  ILE B 1002     32.966  26.180 102.315  1.00 56.62           C
ANISOU10061  CB  ILE B 1002     5918   6860   8937   -225   1532    557       C
ATOM  10062  CG1 ILE B 1002     31.533  26.717 102.315  1.00 56.62           C
ANISOU10062  CG1 ILE B 1002     5918   6860   8937   -225   1532    557       C
ATOM  10063  CD1 ILE B 1002     31.433  28.203 102.589  1.00 56.62           C
ANISOU10063  CD1 ILE B 1002     5918   6860   8937   -225   1532    557       C
ATOM  10064  CG2 ILE B 1002     33.787  26.852 101.249  1.00 56.62           C
ANISOU10064  CG2 ILE B 1002     5918   6860   8937   -225   1532    557       C
ATOM  10065  C   ILE B 1002     34.387  24.109 102.227  1.00 56.62           C
ANISOU10065  C   ILE B 1002     5918   6860   8937   -225   1532    557       C
ATOM  10066  O   ILE B 1002     35.121  24.048 101.241  1.00 56.62           O
ANISOU10066  O   ILE B 1002     5918   6860   8937   -225   1532    557       O
ATOM  10067  N   ASP B 1003     34.770  23.715 103.440  1.00 56.62           N
ANISOU10067  N   ASP B 1003     5918   6860   8937   -225   1532    557       N
ATOM  10068  CA  ASP B 1003     36.109  23.178 103.688  1.00 56.62           C
ANISOU10068  CA  ASP B 1003     5918   6860   8937   -225   1532    557       C
ATOM  10069  CB  ASP B 1003     36.387  23.107 105.191  1.00 56.62           C
ANISOU10069  CB  ASP B 1003     5918   6860   8937   -225   1532    557       C
ATOM  10070  CG  ASP B 1003     36.387  24.475 105.846  1.00 56.62           C
ANISOU10070  CG  ASP B 1003     5918   6860   8937   -225   1532    557       C
ATOM  10071  OD2 ASP B 1003     36.387  25.484 105.109  1.00 56.62           O
ANISOU10071  OD2 ASP B 1003     5918   6860   8937   -225   1532    557       O
ATOM  10072  OD1 ASP B 1003     36.387  24.541 107.094  1.00 56.62           O
ANISOU10072  OD1 ASP B 1003     5918   6860   8937   -225   1532    557       O
ATOM  10073  C   ASP B 1003     36.387  21.800 103.088  1.00 56.62           C
ANISOU10073  C   ASP B 1003     5918   6860   8937   -225   1532    557       C
ATOM  10074  O   ASP B 1003     37.543  21.400 102.966  1.00 56.62           O
ANISOU10074  O   ASP B 1003     5918   6860   8937   -225   1532    557       O
ATOM  10075  N   ASP B 1004     35.330  21.076 102.724  1.00 56.62           N
ANISOU10075  N   ASP B 1004     5918   6860   8937   -225   1532    557       N
ATOM  10076  CA  ASP B 1004     35.466  19.744 102.135  1.00 56.62           C
ANISOU10076  CA  ASP B 1004     5918   6860   8937   -225   1532    557       C
ATOM  10077  CB  ASP B 1004     34.109  19.041 102.071  1.00 56.62           C
ANISOU10077  CB  ASP B 1004     5918   6860   8937   -225   1532    557       C
ATOM  10078  CG  ASP B 1004     34.222  17.541 101.870  1.00 56.62           C
ANISOU10078  CG  ASP B 1004     5918   6860   8937   -225   1532    557       C
ATOM  10079  OD2 ASP B 1004     34.222  17.096 100.702  1.00 56.62           O
ANISOU10079  OD2 ASP B 1004     5918   6860   8937   -225   1532    557       O
ATOM  10080  OD1 ASP B 1004     34.313  16.806 102.877  1.00 56.62           O
ANISOU10080  OD1 ASP B 1004     5918   6860   8937   -225   1532    557       O
ATOM  10081  C   ASP B 1004     36.109  19.800 100.750  1.00 56.62           C
ANISOU10081  C   ASP B 1004     5918   6860   8937   -225   1532    557       C
ATOM  10082  O   ASP B 1004     36.387  18.764 100.145  1.00 56.62           O
ANISOU10082  O   ASP B 1004     5918   6860   8937   -225   1532    557       O
ATOM  10083  N   ILE B 1005     36.339  21.010 100.251  1.00 56.62           N
ANISOU10083  N   ILE B 1005     5918   6860   8937   -225   1532    557       N
ATOM  10084  CA  ILE B 1005     36.956  21.201 98.944  1.00 56.62           C
ANISOU10084  CA  ILE B 1005     5918   6860   8937   -225   1532    557       C
ATOM  10085  CB  ILE B 1005     36.387  22.450 98.236  1.00 56.62           C
ANISOU10085  CB  ILE B 1005     5918   6860   8937   -225   1532    557       C
ATOM  10086  CG1 ILE B 1005     34.863  22.337 98.124  1.00 56.62           C
ANISOU10086  CG1 ILE B 1005     5918   6860   8937   -225   1532    557       C
ATOM  10087  CD1 ILE B 1005     34.150  23.660 97.933  1.00 56.62           C
ANISOU10087  CD1 ILE B 1005     5918   6860   8937   -225   1532    557       C
ATOM  10088  CG2 ILE B 1005     37.000  22.618 96.858  1.00 56.62           C
ANISOU10088  CG2 ILE B 1005     5918   6860   8937   -225   1532    557       C
ATOM  10089  C   ILE B 1005     38.475  21.329 99.060  1.00 56.62           C
ANISOU10089  C   ILE B 1005     5918   6860   8937   -225   1532    557       C
ATOM  10090  O   ILE B 1005     39.208  20.931 98.154  1.00 56.62           O
ANISOU10090  O   ILE B 1005     5918   6860   8937   -225   1532    557       O
ATOM  10091  N   ASP B 1006     38.940  21.888 100.175  1.00 56.62           N
ANISOU10091  N   ASP B 1006     5918   6860   8937   -225   1532    557       N
ATOM  10092  CA  ASP B 1006     40.372  22.060 100.407  1.00 56.62           C
ANISOU10092  CA  ASP B 1006     5918   6860   8937   -225   1532    557       C
ATOM  10093  CB  ASP B 1006     40.636  23.284 101.287  1.00 56.62           C
ANISOU10093  CB  ASP B 1006     5918   6860   8937   -225   1532    557       C
ATOM  10094  CG  ASP B 1006     40.387  24.592 100.560  1.00 56.62           C
ANISOU10094  CG  ASP B 1006     5918   6860   8937   -225   1532    557       C
ATOM  10095  OD2 ASP B 1006     40.387  24.592 99.309  1.00 56.62           O
ANISOU10095  OD2 ASP B 1006     5918   6860   8937   -225   1532    557       O
ATOM  10096  OD1 ASP B 1006     40.196  25.625 101.236  1.00 56.62           O
ANISOU10096  OD1 ASP B 1006     5918   6860   8937   -225   1532    557       O
ATOM  10097  C   ASP B 1006     40.972  20.815 101.060  1.00 56.62           C
ANISOU10097  C   ASP B 1006     5918   6860   8937   -225   1532    557       C
ATOM  10098  O   ASP B 1006     42.191  20.636 101.060  1.00 56.62           O
ANISOU10098  O   ASP B 1006     5918   6860   8937   -225   1532    557       O
ATOM  10099  N   ASP B 1007     40.107  19.960 101.604  1.00 56.62           N
ANISOU10099  N   ASP B 1007     5918   6860   8937   -225   1532    557       N
ATOM  10100  CA  ASP B 1007     40.537  18.729 102.263  1.00 56.62           C
ANISOU10100  CA  ASP B 1007     5918   6860   8937   -225   1532    557       C
ATOM  10101  CB  ASP B 1007     39.337  18.000 102.871  1.00 56.62           C
ANISOU10101  CB  ASP B 1007     5918   6860   8937   -225   1532    557       C
ATOM  10102  CG  ASP B 1007     38.787  18.703 104.098  1.00 56.62           C
ANISOU10102  CG  ASP B 1007     5918   6860   8937   -225   1532    557       C
ATOM  10103  OD2 ASP B 1007     39.587  19.284 104.862  1.00 56.62           O
ANISOU10103  OD2 ASP B 1007     5918   6860   8937   -225   1532    557       O
ATOM  10104  OD1 ASP B 1007     37.552  18.677 104.296  1.00 56.62           O
ANISOU10104  OD1 ASP B 1007     5918   6860   8937   -225   1532    557       O
ATOM  10105  C   ASP B 1007     41.284  17.800 101.307  1.00 56.62           C
ANISOU10105  C   ASP B 1007     5918   6860   8937   -225   1532    557       C
ATOM  10106  O   ASP B 1007     42.284  17.183 101.677  1.00 56.62           O
ANISOU10106  O   ASP B 1007     5918   6860   8937   -225   1532    557       O
ATOM  10107  N   ILE B 1008     40.795  17.710 100.073  1.00 56.62           N
ANISOU10107  N   ILE B 1008     5918   6860   8937   -225   1532    557       N
ATOM  10108  CA  ILE B 1008     41.419  16.862 99.063  1.00 56.62           C
ANISOU10108  CA  ILE B 1008     5918   6860   8937   -225   1532    557       C
ATOM  10109  CB  ILE B 1008     40.387  16.423 98.000  1.00 56.62           C
ANISOU10109  CB  ILE B 1008     5918   6860   8937   -225   1532    557       C
ATOM  10110  CG1 ILE B 1008     39.252  15.643 98.667  1.00 56.62           C
ANISOU10110  CG1 ILE B 1008     5918   6860   8937   -225   1532    557       C
ATOM  10111  CD1 ILE B 1008     38.102  15.324 97.736  1.00 56.62           C
ANISOU10111  CD1 ILE B 1008     5918   6860   8937   -225   1532    557       C
ATOM  10112  CG2 ILE B 1008     41.045  15.581 96.904  1.00 56.62           C
ANISOU10112  CG2 ILE B 1008     5918   6860   8937   -225   1532    557       C
ATOM  10113  C   ILE B 1008     42.618  17.548 98.410  1.00 56.62           C
ANISOU10113  C   ILE B 1008     5918   6860   8937   -225   1532    557       C
ATOM  10114  O   ILE B 1008     43.600  16.894 98.060  1.00 56.62           O
ANISOU10114  O   ILE B 1008     5918   6860   8937   -225   1532    557       O
ATOM  10115  N   ASP B 1009     42.537  18.866 98.249  1.00 56.62           N
ANISOU10115  N   ASP B 1009     5918   6860   8937   -225   1532    557       N
ATOM  10116  CA  ASP B 1009     43.618  19.634 97.634  1.00 56.62           C
ANISOU10116  CA  ASP B 1009     5918   6860   8937   -225   1532    557       C
ATOM  10117  CB  ASP B 1009     43.124  21.035 97.268  1.00 56.62           C
ANISOU10117  CB  ASP B 1009     5918   6860   8937   -225   1532    557       C
ATOM  10118  CG  ASP B 1009     42.124  21.021 96.128  1.00 56.62           C
ANISOU10118  CG  ASP B 1009     5918   6860   8937   -225   1532    557       C
ATOM  10119  OD2 ASP B 1009     42.124  20.071 95.317  1.00 56.62           O
ANISOU10119  OD2 ASP B 1009     5918   6860   8937   -225   1532    557       O
ATOM  10120  OD1 ASP B 1009     41.337  21.981 96.040  1.00 56.62           O
ANISOU10120  OD1 ASP B 1009     5918   6860   8937   -225   1532    557       O
ATOM  10121  C   ASP B 1009     44.850  19.722 98.535  1.00 56.62           C
ANISOU10121  C   ASP B 1009     5918   6860   8937   -225   1532    557       C
ATOM  10122  O   ASP B 1009     45.980  19.722 98.045  1.00 56.62           O
ANISOU10122  O   ASP B 1009     5918   6860   8937   -225   1532    557       O
ATOM  10123  N   ASP B 1010     44.628  19.800 99.845  1.00 56.62           N
ANISOU10123  N   ASP B 1010     5918   6860   8937   -225   1532    557       N
ATOM  10124  CA  ASP B 1010     45.724  19.894 100.805  1.00 56.62           C
ANISOU10124  CA  ASP B 1010     5918   6860   8937   -225   1532    557       C
ATOM  10125  CB  ASP B 1010     45.172  20.178 102.203  1.00 56.62           C
ANISOU10125  CB  ASP B 1010     5918   6860   8937   -225   1532    557       C
ATOM  10126  CG  ASP B 1010     44.387  21.475 102.268  1.00 56.62           C
ANISOU10126  CG  ASP B 1010     5918   6860   8937   -225   1532    557       C
ATOM  10127  OD2 ASP B 1010     44.387  22.224 101.268  1.00 56.62           O
ANISOU10127  OD2 ASP B 1010     5918   6860   8937   -225   1532    557       O
ATOM  10128  OD1 ASP B 1010     43.766  21.744 103.317  1.00 56.62           O
ANISOU10128  OD1 ASP B 1010     5918   6860   8937   -225   1532    557       O
ATOM  10129  C   ASP B 1010     46.587  18.630 100.800  1.00 56.62           C
ANISOU10129  C   ASP B 1010     5918   6860   8937   -225   1532    557       C
ATOM  10130  O   ASP B 1010     47.815  18.707 100.837  1.00 56.62           O
ANISOU10130  O   ASP B 1010     5918   6860   8937   -225   1532    557       O
ATOM  10131  N   ILE B 1011     45.941  17.469 100.750  1.00 56.62           N
ANISOU10131  N   ILE B 1011     5918   6860   8937   -225   1532    557       N
ATOM  10132  CA  ILE B 1011     46.654  16.196 100.737  1.00 56.62           C
ANISOU10132  CA  ILE B 1011     5918   6860   8937   -225   1532    557       C
ATOM  10133  CB  ILE B 1011     45.677  15.015 100.911  1.00 56.62           C
ANISOU10133  CB  ILE B 1011     5918   6860   8937   -225   1532    557       C
ATOM  10134  CG1 ILE B 1011     44.987  15.085 102.276  1.00 56.62           C
ANISOU10134  CG1 ILE B 1011     5918   6860   8937   -225   1532    557       C
ATOM  10135  CD1 ILE B 1011     43.888  14.060 102.463  1.00 56.62           C
ANISOU10135  CD1 ILE B 1011     5918   6860   8937   -225   1532    557       C
ATOM  10136  CG2 ILE B 1011     46.387  13.677 100.760  1.00 56.62           C
ANISOU10136  CG2 ILE B 1011     5918   6860   8937   -225   1532    557       C
ATOM  10137  C   ILE B 1011     47.466  16.035 99.454  1.00 56.62           C
ANISOU10137  C   ILE B 1011     5918   6860   8937   -225   1532    557       C
ATOM  10138  O   ILE B 1011     48.615  15.592 99.488  1.00 56.62           O
ANISOU10138  O   ILE B 1011     5918   6860   8937   -225   1532    557       O
ATOM  10139  N   ASP B 1012     46.866  16.403 98.326  1.00 56.62           N
ANISOU10139  N   ASP B 1012     5918   6860   8937   -225   1532    557       N
ATOM  10140  CA  ASP B 1012     47.537  16.299 97.033  1.00 56.62           C
ANISOU10140  CA  ASP B 1012     5918   6860   8937   -225   1532    557       C
ATOM  10141  CB  ASP B 1012     46.537  16.525 95.897  1.00 56.62           C
ANISOU10141  CB  ASP B 1012     5918   6860   8937   -225   1532    557       C
ATOM  10142  CG  ASP B 1012     45.537  15.393 95.765  1.00 56.62           C
ANISOU10142  CG  ASP B 1012     5918   6860   8937   -225   1532    557       C
ATOM  10143  OD2 ASP B 1012     45.537  14.485 96.624  1.00 56.62           O
ANISOU10143  OD2 ASP B 1012     5918   6860   8937   -225   1532    557       O
ATOM  10144  OD1 ASP B 1012     44.750  15.412 94.797  1.00 56.62           O
ANISOU10144  OD1 ASP B 1012     5918   6860   8937   -225   1532    557       O
ATOM  10145  C   ASP B 1012     48.708  17.274 96.923  1.00 56.62           C
ANISOU10145  C   ASP B 1012     5918   6860   8937   -225   1532    557       C
ATOM  10146  O   ASP B 1012     49.744  16.944 96.345  1.00 56.62           O
ANISOU10146  O   ASP B 1012     5918   6860   8937   -225   1532    557       O
ATOM  10147  N   ASP B 1013     48.537  18.473 97.475  1.00 56.62           N
ANISOU10147  N   ASP B 1013     5918   6860   8937   -225   1532    557       N
ATOM  10148  CA  ASP B 1013     49.585  19.488 97.434  1.00 56.62           C
ANISOU10148  CA  ASP B 1013     5918   6860   8937   -225   1532    557       C
ATOM  10149  CB  ASP B 1013     49.037  20.824 97.941  1.00 56.62           C
ANISOU10149  CB  ASP B 1013     5918   6860   8937   -225   1532    557       C
ATOM  10150  CG  ASP B 1013     48.037  21.446 96.985  1.00 56.62           C
ANISOU10150  CG  ASP B 1013     5918   6860   8937   -225   1532    557       C
ATOM  10151  OD2 ASP B 1013     48.037  21.088 95.788  1.00 56.62           O
ANISOU10151  OD2 ASP B 1013     5918   6860   8937   -225   1532    557       O
ATOM  10152  OD1 ASP B 1013     47.250  22.302 97.435  1.00 56.62           O
ANISOU10152  OD1 ASP B 1013     5918   6860   8937   -225   1532    557       O
ATOM  10153  C   ASP B 1013     50.809  19.060 98.242  1.00 56.62           C
ANISOU10153  C   ASP B 1013     5918   6860   8937   -225   1532    557       C
ATOM  10154  O   ASP B 1013     51.944  19.322 97.842  1.00 56.62           O
ANISOU10154  O   ASP B 1013     5918   6860   8937   -225   1532    557       O
ATOM  10155  N   ILE B 1014     50.572  18.400 99.372  1.00 56.62           N
ANISOU10155  N   ILE B 1014     5918   6860   8937   -225   1532    557       N
ATOM  10156  CA  ILE B 1014     51.655  17.923 100.227  1.00 56.62           C
ANISOU10156  CA  ILE B 1014     5918   6860   8937   -225   1532    557       C
ATOM  10157  CB  ILE B 1014     51.107  17.400 101.570  1.00 56.62           C
ANISOU10157  CB  ILE B 1014     5918   6860   8937   -225   1532    557       C
ATOM  10158  CG1 ILE B 1014     50.387  18.519 102.326  1.00 56.62           C
ANISOU10158  CG1 ILE B 1014     5918   6860   8937   -225   1532    557       C
ATOM  10159  CD1 ILE B 1014     49.587  18.035 103.516  1.00 56.62           C
ANISOU10159  CD1 ILE B 1014     5918   6860   8937   -225   1532    557       C
ATOM  10160  CG2 ILE B 1014     52.230  16.800 102.412  1.00 56.62           C
ANISOU10160  CG2 ILE B 1014     5918   6860   8937   -225   1532    557       C
ATOM  10161  C   ILE B 1014     52.468  16.837 99.525  1.00 56.62           C
ANISOU10161  C   ILE B 1014     5918   6860   8937   -225   1532    557       C
ATOM  10162  O   ILE B 1014     53.697  16.837 99.585  1.00 56.62           O
ANISOU10162  O   ILE B 1014     5918   6860   8937   -225   1532    557       O
ATOM  10163  N   ASP B 1015     51.776  15.917 98.858  1.00 56.62           N
ANISOU10163  N   ASP B 1015     5918   6860   8937   -225   1532    557       N
ATOM  10164  CA  ASP B 1015     52.434  14.829 98.140  1.00 56.62           C
ANISOU10164  CA  ASP B 1015     5918   6860   8937   -225   1532    557       C
ATOM  10165  CB  ASP B 1015     51.396  13.788 97.715  1.00 56.62           C
ANISOU10165  CB  ASP B 1015     5918   6860   8937   -225   1532    557       C
ATOM  10166  CG  ASP B 1015     50.787  13.060 98.898  1.00 56.62           C
ANISOU10166  CG  ASP B 1015     5918   6860   8937   -225   1532    557       C
ATOM  10167  OD2 ASP B 1015     51.537  12.744 99.847  1.00 56.62           O
ANISOU10167  OD2 ASP B 1015     5918   6860   8937   -225   1532    557       O
ATOM  10168  OD1 ASP B 1015     49.559  12.806 98.881  1.00 56.62           O
ANISOU10168  OD1 ASP B 1015     5918   6860   8937   -225   1532    557       O
ATOM  10169  C   ASP B 1015     53.220  15.350 96.936  1.00 56.62           C
ANISOU10169  C   ASP B 1015     5918   6860   8937   -225   1532    557       C
ATOM  10170  O   ASP B 1015     54.316  14.866 96.646  1.00 56.62           O
ANISOU10170  O   ASP B 1015     5918   6860   8937   -225   1532    557       O
ATOM  10171  N   ASP B 1016     52.654  16.339 96.248  1.00 56.62           N
ANISOU10171  N   ASP B 1016     5918   6860   8937   -225   1532    557       N
ATOM  10172  CA  ASP B 1016     53.303  16.923 95.078  1.00 56.62           C
ANISOU10172  CA  ASP B 1016     5918   6860   8937   -225   1532    557       C
ATOM  10173  CB  ASP B 1016     52.337  17.870 94.364  1.00 56.62           C
ANISOU10173  CB  ASP B 1016     5918   6860   8937   -225   1532    557       C
ATOM  10174  CG  ASP B 1016     51.337  17.137 93.490  1.00 56.62           C
ANISOU10174  CG  ASP B 1016     5918   6860   8937   -225   1532    557       C
ATOM  10175  OD2 ASP B 1016     51.337  15.886 93.490  1.00 56.62           O
ANISOU10175  OD2 ASP B 1016     5918   6860   8937   -225   1532    557       O
ATOM  10176  OD1 ASP B 1016     50.550  17.815 92.795  1.00 56.62           O
ANISOU10176  OD1 ASP B 1016     5918   6860   8937   -225   1532    557       O
ATOM  10177  C   ASP B 1016     54.588  17.664 95.439  1.00 56.62           C
ANISOU10177  C   ASP B 1016     5918   6860   8937   -225   1532    557       C
ATOM  10178  O   ASP B 1016     55.577  17.611 94.708  1.00 56.62           O
ANISOU10178  O   ASP B 1016     5918   6860   8937   -225   1532    557       O
ATOM  10179  N   ILE B 1017     54.569  18.350 96.578  1.00 56.62           N
ANISOU10179  N   ILE B 1017     5918   6860   8937   -225   1532    557       N
ATOM  10180  CA  ILE B 1017     55.734  19.102 97.035  1.00 56.62           C
ANISOU10180  CA  ILE B 1017     5918   6860   8937   -225   1532    557       C
ATOM  10181  CB  ILE B 1017     55.337  20.124 98.120  1.00 56.62           C
ANISOU10181  CB  ILE B 1017     5918   6860   8937   -225   1532    557       C
ATOM  10182  CG1 ILE B 1017     54.337  21.134 97.553  1.00 56.62           C
ANISOU10182  CG1 ILE B 1017     5918   6860   8937   -225   1532    557       C
ATOM  10183  CD1 ILE B 1017     53.837  22.134 98.572  1.00 56.62           C
ANISOU10183  CD1 ILE B 1017     5918   6860   8937   -225   1532    557       C
ATOM  10184  CG2 ILE B 1017     56.574  20.837 98.653  1.00 56.62           C
ANISOU10184  CG2 ILE B 1017     5918   6860   8937   -225   1532    557       C
ATOM  10185  C   ILE B 1017     56.837  18.164 97.525  1.00 56.62           C
ANISOU10185  C   ILE B 1017     5918   6860   8937   -225   1532    557       C
ATOM  10186  O   ILE B 1017     58.022  18.417 97.299  1.00 56.62           O
ANISOU10186  O   ILE B 1017     5918   6860   8937   -225   1532    557       O
ATOM  10187  N   ASP B 1018     56.441  17.080 98.189  1.00 56.62           N
ANISOU10187  N   ASP B 1018     5918   6860   8937   -225   1532    557       N
ATOM  10188  CA  ASP B 1018     57.395  16.102 98.708  1.00 56.62           C
ANISOU10188  CA  ASP B 1018     5918   6860   8937   -225   1532    557       C
ATOM  10189  CB  ASP B 1018     56.665  15.000 99.479  1.00 56.62           C
ANISOU10189  CB  ASP B 1018     5918   6860   8937   -225   1532    557       C
ATOM  10190  CG  ASP B 1018     56.137  15.466 100.822  1.00 56.62           C
ANISOU10190  CG  ASP B 1018     5918   6860   8937   -225   1532    557       C
ATOM  10191  OD2 ASP B 1018     56.137  16.691 101.071  1.00 56.62           O
ANISOU10191  OD2 ASP B 1018     5918   6860   8937   -225   1532    557       O
ATOM  10192  OD1 ASP B 1018     55.722  14.606 101.627  1.00 56.62           O
ANISOU10192  OD1 ASP B 1018     5918   6860   8937   -225   1532    557       O
ATOM  10193  C   ASP B 1018     58.222  15.485 97.580  1.00 56.62           C
ANISOU10193  C   ASP B 1018     5918   6860   8937   -225   1532    557       C
ATOM  10194  O   ASP B 1018     59.437  15.307 97.708  1.00 56.62           O
ANISOU10194  O   ASP B 1018     5918   6860   8937   -225   1532    557       O
ATOM  10195  N   ASP B 1019     57.555  15.164 96.474  1.00 56.62           N
ANISOU10195  N   ASP B 1019     5918   6860   8937   -225   1532    557       N
ATOM  10196  CA  ASP B 1019     58.227  14.577 95.319  1.00 56.62           C
ANISOU10196  CA  ASP B 1019     5918   6860   8937   -225   1532    557       C
ATOM  10197  CB  ASP B 1019     57.208  14.284 94.215  1.00 56.62           C
ANISOU10197  CB  ASP B 1019     5918   6860   8937   -225   1532    557       C
ATOM  10198  CG  ASP B 1019     56.337  13.083 94.526  1.00 56.62           C
ANISOU10198  CG  ASP B 1019     5918   6860   8937   -225   1532    557       C
ATOM  10199  OD2 ASP B 1019     56.337  12.644 95.696  1.00 56.62           O
ANISOU10199  OD2 ASP B 1019     5918   6860   8937   -225   1532    557       O
ATOM  10200  OD1 ASP B 1019     55.650  12.579 93.611  1.00 56.62           O
ANISOU10200  OD1 ASP B 1019     5918   6860   8937   -225   1532    557       O
ATOM  10201  C   ASP B 1019     59.337  15.485 94.795  1.00 56.62           C
ANISOU10201  C   ASP B 1019     5918   6860   8937   -225   1532    557       C
ATOM  10202  O   ASP B 1019     60.437  15.016 94.490  1.00 56.62           O
ANISOU10202  O   ASP B 1019     5918   6860   8937   -225   1532    557       O
ATOM  10203  N   ILE B 1020     59.041  16.780 94.703  1.00 56.62           N
ANISOU10203  N   ILE B 1020     5918   6860   8937   -225   1532    557       N
ATOM  10204  CA  ILE B 1020     60.010  17.764 94.228  1.00 56.62           C
ANISOU10204  CA  ILE B 1020     5918   6860   8937   -225   1532    557       C
ATOM  10205  CB  ILE B 1020     59.337  19.139 94.035  1.00 56.62           C
ANISOU10205  CB  ILE B 1020     5918   6860   8937   -225   1532    557       C
ATOM  10206  CG1 ILE B 1020     58.337  19.091 92.878  1.00 56.62           C
ANISOU10206  CG1 ILE B 1020     5918   6860   8937   -225   1532    557       C
ATOM  10207  CD1 ILE B 1020     57.337  20.227 92.878  1.00 56.62           C
ANISOU10207  CD1 ILE B 1020     5918   6860   8937   -225   1532    557       C
ATOM  10208  CG2 ILE B 1020     60.337  20.227 93.878  1.00 56.62           C
ANISOU10208  CG2 ILE B 1020     5918   6860   8937   -225   1532    557       C
ATOM  10209  C   ILE B 1020     61.210  17.858 95.170  1.00 56.62           C
ANISOU10209  C   ILE B 1020     5918   6860   8937   -225   1532    557       C
ATOM  10210  O   ILE B 1020     62.354  17.931 94.722  1.00 56.62           O
ANISOU10210  O   ILE B 1020     5918   6860   8937   -225   1532    557       O
ATOM  10211  N   ASP B 1021     60.941  17.850 96.472  1.00 56.62           N
ANISOU10211  N   ASP B 1021     5918   6860   8937   -225   1532    557       N
ATOM  10212  CA  ASP B 1021     61.997  17.934 97.477  1.00 56.62           C
ANISOU10212  CA  ASP B 1021     5918   6860   8937   -225   1532    557       C
ATOM  10213  CB  ASP B 1021     61.387  18.178 98.858  1.00 56.62           C
ANISOU10213  CB  ASP B 1021     5918   6860   8937   -225
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ANISOU10037  CB  ILE B 999     6076   6903   8532   -135   1403    386       C
ATOM  10038  CG1 ILE B 999      27.270  24.861 108.341  1.00 56.41           C
ANISOU10038  CG1 ILE B 999     6140   7004   8289   -139   1169    239       C
ATOM  10039  CD1 ILE B 999      28.126  24.340 109.463  1.00 52.93           C
ANISOU10039  CD1 ILE B 999     5982   6522   7606     13   1124    168       C
ATOM  10040  CG2 ILE B 999      26.100  22.682 108.086  1.00 47.67           C
ANISOU10040  CG2 ILE B 999     4912   5782   7419   -125   1376    377       C
ATOM  10041  C   ILE B 999      25.515  24.193 105.784  1.00 54.15           C
ANISOU10041  C   ILE B 999     5368   6791   8415   -385   1108    350       C
ATOM  10042  O   ILE B 999      24.861  23.374 105.146  1.00 66.55           O
ANISOU10042  O   ILE B 999     6917   8348  10021   -405   1045    372       O
ATOM  10043  N   THR B1000     26.672  24.637 105.356  1.00 65.76           N
ANISOU10043  N   THR B1000     6783   8412   9793   -446    937    243       N
ATOM  10044  CA  THR B1000     27.233  24.144 104.126  1.00 65.24           C
ANISOU10044  CA  THR B1000     6665   8501   9621   -517    696    166       C
ATOM  10045  CB  THR B1000     28.115  25.209 103.498  1.00 53.57           C
ANISOU10045  CB  THR B1000     5172   7170   8012   -586    528     89       C
ATOM  10046  OG1 THR B1000     28.002  25.138 102.086  1.00 88.41           O
ANISOU10046  OG1 THR B1000     9606  11692  12295   -638    382     81       O
ATOM  10047  CG2 THR B1000     29.527  25.008 103.901  1.00 51.61           C
ANISOU10047  CG2 THR B1000     4869   7008   7732   -583    447     -8       C
ATOM  10048  C   THR B1000      28.000  22.881 104.521  1.00 59.97           C
ANISOU10048  C   THR B1000     5961   7848   8976   -474    705    128       C
ATOM  10049  O   THR B1000      28.393  22.755 105.674  1.00 61.36           O
ANISOU10049  O   THR B1000     6267   7962   9087   -371    793    113       O
ATOM  10050  N   TYR B1001     28.178  21.920 103.620  1.00 63.07           N
ANISOU10050  N   TYR B1001     6335   8316   9312   -500    571    103       N
ATOM  10051  CA  TYR B1001     28.909  20.704 104.008  1.00 61.84           C
ANISOU10051  CA  TYR B1001     6135   8171   9189   -448    579     60       C
ATOM  10052  CB  TYR B1001     28.701  19.601 102.995  1.00 57.34           C
ANISOU10052  CB  TYR B1001     5568   7632   8588   -476    478     69       C
ATOM  10053  CG  TYR B1001     29.284  18.266 103.363  1.00 63.89           C
ANISOU10053  CG  TYR B1001     6352   8449   9473   -415    498     36       C
ATOM  10054  CD1 TYR B1001     28.850  17.575 104.484  1.00 65.01           C
ANISOU10054  CD1 TYR B1001     6666   8439   9597   -306    661     93       C
ATOM  10055  CE1 TYR B1001     29.384  16.327 104.802  1.00 59.88           C
ANISOU10055  CE1 TYR B1001     6147   7778   8826   -208    627     56       C
ATOM  10056  CZ  TYR B1001     30.364  15.770 103.979  1.00 60.83           C
ANISOU10056  CZ  TYR B1001     6194   8049   8869   -219    433    -38       C
ATOM  10057  OH  TYR B1001     30.916  14.540 104.270  1.00 71.00           O
ANISOU10057  OH  TYR B1001     7618   9329  10029   -110    393    -77       O
ATOM  10058  CE2 TYR B1001     30.788  16.432 102.855  1.00 56.80           C
ANISOU10058  CE2 TYR B1001     5486   7689   8406   -328    292    -89       C
ATOM  10059  CD2 TYR B1001     30.250  17.672 102.553  1.00 72.24           C
ANISOU10059  CD2 TYR B1001     7378   9648  10420   -419    315    -47       C
ATOM  10060  C   TYR B1001      30.393  20.964 104.173  1.00 62.54           C
ANISOU10060  C   TYR B1001     6232   8402   9127   -420    422    -71       C
ATOM  10061  O   TYR B1001      31.033  20.384 105.048  1.00 72.87           O
ANISOU10061  O   TYR B1001     7715   9696  10275   -296    400   -119       O
ATOM  10062  N   ARG B1002     30.925  21.847 103.338  1.00 64.02           N
ANISOU10062  N   ARG B1002     6365   8718   9242   -503    277   -103       N
ATOM  10063  CA  ARG B1002     32.313  22.272 103.435  1.00 65.13           C
ANISOU10063  CA  ARG B1002     6479   8986   9280   -500    125   -221       C
ATOM  10064  CB  ARG B1002     32.598  23.384 102.427  1.00 67.04           C
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ANISOU10064  CB  ARG B1002     6780   9254   9439   -568     20   -130       C
ATOM  10065  CG  ARG B1002      34.051  23.664 102.156  1.00 79.55           C
ANISOU10065  CG  ARG B1002     8377  10897  10952   -563   -129   -195       C
ATOM  10066  CD  ARG B1002      34.204  24.493 100.866  1.00104.10           C
ANISOU10066  CD  ARG B1002    11543  13945  14064   -608   -182    -69       C
ATOM  10067  NE  ARG B1002      33.377  24.034  99.732  1.00 98.33           N
ANISOU10067  NE  ARG B1002    10884  13160  13317   -599   -154     58       N
ATOM  10068  CZ  ARG B1002      33.843  23.296  98.719  1.00 92.99           C
ANISOU10068  CZ  ARG B1002    10206  12481  12646   -583   -196     45       C
ATOM  10069  NH1 ARG B1002      33.051  22.918  97.714  1.00 73.39           N
ANISOU10069  NH1 ARG B1002     7745  10000  10140   -600   -178     92       N
ATOM  10070  NH2 ARG B1002      35.118  22.924  98.716  1.00100.53           N
ANISOU10070  NH2 ARG B1002    11126  13475  13597   -558   -262    -31       N
ATOM  10071  C   ARG B1002      32.611  22.742 104.853  1.00 70.12           C
ANISOU10071  C   ARG B1002     7285   9557   9801   -403    155   -275       C
ATOM  10072  O   ARG B1002      33.632  22.394 105.426  1.00 60.40           O
ANISOU10072  O   ARG B1002     6150   8377   8420   -314     40   -362       O
ATOM  10073  N   GLU B1003      31.692  23.498 105.439  1.00 72.92           N
ANISOU10073  N   GLU B1003     7737   9777  10191   -393    301   -198       N
ATOM  10074  CA  GLU B1003      31.962  24.097 106.734  1.00 75.76           C
ANISOU10074  CA  GLU B1003     8342  10051  10394   -286    315   -225       C
ATOM  10075  CB  GLU B1003      31.084  25.315 106.967  1.00 79.95           C
ANISOU10075  CB  GLU B1003     8919  10478  10981   -319    443   -152       C
ATOM  10076  CG  GLU B1003      31.426  26.019 108.253  1.00 83.85           C
ANISOU10076  CG  GLU B1003     9691  10876  11292   -206    436   -188       C
ATOM  10077  CD  GLU B1003      30.776  27.358 108.357  1.00 87.21           C
ANISOU10077  CD  GLU B1003    10158  11224  11752   -248    525   -136       C
ATOM  10078  OE1 GLU B1003      29.741  27.566 107.671  1.00 96.13           O
ANISOU10078  OE1 GLU B1003    11135  12330  13062   -323    659    -39       O
ATOM  10079  OE2 GLU B1003      31.318  28.195 109.114  1.00 78.32           O
ANISOU10079  OE2 GLU B1003     9223  10059  10477   -203    444   -195       O
ATOM  10080  C   GLU B1003      31.758  23.104 107.860  1.00 75.28           C
ANISOU10080  C   GLU B1003     8521   9857  10224   -113    417   -197       C
ATOM  10081  O   GLU B1003      32.446  23.155 108.889  1.00 71.86           O
ANISOU10081  O   GLU B1003     8312   9387   9604     10    348   -263       O
ATOM  10082  N   TYR B1004      30.803  22.208 107.658  1.00 67.08           N
ANISOU10082  N   TYR B1004     7444   8736   9307   -105    577    -98       N
ATOM  10083  CA  TYR B1004      30.534  21.140 108.604  1.00 68.59           C
ANISOU10083  CA  TYR B1004     7854   8791   9416     46    701    -57       C
ATOM  10084  CB  TYR B1004      29.331  20.337 108.140  1.00 58.65           C
ANISOU10084  CB  TYR B1004     6483   7442   8361     -1    881     67       C
ATOM  10085  CG  TYR B1004      29.086  19.053 108.887  1.00 68.96           C
ANISOU10085  CG  TYR B1004     7977   8616   9608    128   1006    112       C
ATOM  10086  CD1 TYR B1004      28.328  19.039 110.049  1.00 70.21           C
ANISOU10086  CD1 TYR B1004     8374   8574   9730    251   1246    207       C
ATOM  10087  CE1 TYR B1004      28.075  17.866 110.725  1.00 73.94           C
ANISOU10087  CE1 TYR B1004     9032   8911  10150    366   1382    256       C
ATOM  10088  CZ  TYR B1004      28.576  16.674 110.242  1.00 82.59           C
ANISOU10088  CZ  TYR B1004    10079  10073  11228    358   1265    207       C
ATOM  10089  OH  TYR B1004      28.329  15.506 110.920  1.00 88.41           O
ANISOU10089  OH  TYR B1004    11022  10665  11906    472   1403    256       O
ATOM  10090  CE2 TYR B1004      29.324  16.650 109.083  1.00 80.01           C
ANISOU10090  CE2 TYR B1004     9518   9948  10934    244   1023    112       C
ATOM  10091  CD2 TYR B1004      29.573  17.840 108.409  1.00 81.36           C
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ANISOU10091  CD2 TYR B1004     9501  10253  11161    130    903     68       C
ATOM  10092  C   TYR B1004      31.778  20.251 108.759  1.00 67.72           C
ANISOU10092  C   TYR B1004     7813   8777   9141    130    515   -173       C
ATOM  10093  O   TYR B1004      32.189  19.938 109.876  1.00 70.17           O
ANISOU10093  O   TYR B1004     8390   9007   9266    290    512   -208       O
ATOM  10094  N   LEU B1005      32.393  19.874 107.641  1.00 63.67           N
ANISOU10094  N   LEU B1005     7073   8433   8687     34    358   -233       N
ATOM  10095  CA  LEU B1005      33.632  19.098 107.701  1.00 77.99           C
ANISOU10095  CA  LEU B1005     8921  10357  10356    116    176   -344       C
ATOM  10096  CB  LEU B1005      34.070  18.631 106.306  1.00 69.25           C
ANISOU10096  CB  LEU B1005     7550   9417   9346      8     57   -379       C
ATOM  10097  CG  LEU B1005      33.156  17.587 105.689  1.00 64.29           C
ANISOU10097  CG  LEU B1005     6862   8720   8846    -26    172   -290       C
ATOM  10098  CD1 LEU B1005      33.820  16.959 104.475  1.00 70.17           C
ANISOU10098  CD1 LEU B1005     7425   9620   9618    -80     28   -345       C
ATOM  10099  CD2 LEU B1005      32.791  16.549 106.744  1.00 50.65           C
ANISOU10099  CD2 LEU B1005     5386   6831   7027    125    294   -247       C
ATOM  10100  C   LEU B1005      34.785  19.863 108.350  1.00 82.99           C
ANISOU10100  C   LEU B1005     9645  11059  10828    173     -3   -461       C
ATOM  10101  O   LEU B1005      35.663  19.254 108.957  1.00 92.36           O
ANISOU10101  O   LEU B1005    10966  12268  11858    306   -123   -543       O
ATOM  10102  N   GLU B1006      34.804  21.186 108.215  1.00 69.27           N
ANISOU10102  N   GLU B1006     7836   9351   9132     74    -36   -472       N
ATOM  10103  CA  GLU B1006      35.923  21.954 108.760  1.00 73.58           C
ANISOU10103  CA  GLU B1006     8448   9959   9551    104   -231   -586       C
ATOM  10104  CB  GLU B1006      36.070  23.323 108.087  1.00 73.32           C
ANISOU10104  CB  GLU B1006     8233  10011   9615    -67   -293   -603       C
ATOM  10105  CG  GLU B1006      36.326  23.168 106.602  1.00 98.71           C
ANISOU10105  CG  GLU B1006    11131  13396  12977   -215   -342   -609       C
ATOM  10106  CD  GLU B1006      36.662  24.452 105.862  1.00106.39           C
ANISOU10106  CD  GLU B1006    11924  14464  14033   -382   -415   -637       C
ATOM  10107  OE1 GLU B1006      36.041  25.507 106.131  1.00104.32           O
ANISOU10107  OE1 GLU B1006    11735  14111  13792   -430   -341   -594       O
ATOM  10108  OE2 GLU B1006      37.530  24.376 104.958  1.00123.92           O
ANISOU10108  OE2 GLU B1006    13944  16840  16299   -458   -530   -689       O
ATOM  10109  C   GLU B1006      35.772  22.111 110.249  1.00 79.11           C
ANISOU10109  C   GLU B1006     9498  10483  10078    270   -187   -586       C
ATOM  10110  O   GLU B1006      36.760  22.003 110.990  1.00 98.45           O
ANISOU10110  O   GLU B1006    12093  12946  12368    383   -364   -690       O
ATOM  10111  N   ASN B1007      34.540  22.344 110.686  1.00 79.62           N
ANISOU10111  N   ASN B1007     9702  10376  10176    296     48   -469       N
ATOM  10112  CA  ASN B1007      34.239  22.394 112.103  1.00 76.57           C
ANISOU10112  CA  ASN B1007     9685   9790   9617    477    144   -446       C
ATOM  10113  CB  ASN B1007      32.753  22.616 112.320  1.00 71.89           C
ANISOU10113  CB  ASN B1007     9168   9026   9120    482    450   -291       C
ATOM  10114  CG  ASN B1007      32.324  24.011 111.955  1.00 80.26           C
ANISOU10114  CG  ASN B1007    10126  10094  10277    358    480   -259       C
ATOM  10115  OD1 ASN B1007      33.147  24.915 111.887  1.00 82.73           O
ANISOU10115  OD1 ASN B1007    10412  10490  10531    301    282   -355       O
ATOM  10116  ND2 ASN B1007      31.032  24.202 111.729  1.00 89.33           N
ANISOU10116  ND2 ASN B1007    11213  11147  11580    317    726   -123       N
ATOM  10117  C   ASN B1007      34.692  21.116 112.785  1.00 89.17           C
ANISOU10117  C   ASN B1007    11480  11341  11061    654    110   -484       C
ATOM  10118  O   ASN B1007      35.415  21.148 113.773  1.00105.65           O
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ANISOU10118  O   ASN B1007    13823  13373  12947    803    -23   -568       O
ATOM  10119  N   MET B1008      34.290  19.987 112.226  1.00 90.21           N
ANISOU10119  N   MET B1008    11499  11490  11286    639    211   -428       N
ATOM  10120  CA  MET B1008      34.717  18.693 112.725  1.00 88.62           C
ANISOU10120  CA  MET B1008    11469  11254  10949    797    180   -462       C
ATOM  10121  CB  MET B1008      33.803  17.627 112.167  1.00 76.14           C
ANISOU10121  CB  MET B1008     9797   9625   9509    757    377   -353       C
ATOM  10122  CG  MET B1008      33.270  16.726 113.197  1.00 76.29           C
ANISOU10122  CG  MET B1008    10135   9438   9412    931    564   -285       C
ATOM  10123  SD  MET B1008      31.680  16.195 112.622  1.00127.10           S
ANISOU10123  SD  MET B1008    16430  15758  16106    817    875   -105       S
ATOM  10124  CE  MET B1008      30.815  17.745 112.725  1.00 92.51           C
ANISOU10124  CE  MET B1008    11993  11314  11841    731   1017    -25       C
ATOM  10125  C   MET B1008      36.167  18.353 112.382  1.00 94.60           C
ANISOU10125  C   MET B1008    12111  12202  11629    813   -118   -610       C
ATOM  10126  O   MET B1008      36.656  17.280 112.729  1.00 99.12           O
ANISOU10126  O   MET B1008    12811  12768  12082    951   -177   -653       O
ATOM  10127  N   ASN B1009      36.840  19.276 111.703  1.00 96.52           N
ANISOU10127  N   ASN B1009    12113  12611  11948    675   -292   -681       N
ATOM  10128  CA  ASN B1009      38.195  19.078 111.198  1.00 99.16           C
ANISOU10128  CA  ASN B1009    12263  13147  12266    660   -555   -809       C
ATOM  10129  CB  ASN B1009      39.210  19.188 112.326  1.00102.95           C
ANISOU10129  CB  ASN B1009    12972  13599  12545    823   -766   -927       C
ATOM  10130  CG  ASN B1009      40.459  19.911 111.888  1.00112.89           C
ANISOU10130  CG  ASN B1009    13996  15046  13851    731  -1035  -1048       C
ATOM  10131  OD1 ASN B1009      41.497  19.296 111.634  1.00113.23           O
ANISOU10131  OD1 ASN B1009    13917  15230  13876    781  -1214  -1136       O
ATOM  10132  ND2 ASN B1009      40.358  21.233 111.762  1.00111.89           N
ANISOU10132  ND2 ASN B1009    13794  14922  13797    593  -1056  -1046       N
ATOM  10133  C   ASN B1009      38.350  17.747 110.467  1.00 99.79           C
ANISOU10133  C   ASN B1009    12220  13313  12383    680   -547   -803       C
ATOM  10134  O   ASN B1009      39.336  17.033 110.627  1.00103.82           O
ANISOU10134  O   ASN B1009    12753  13903  12789    793   -711   -894       O
ATOM  10135  N   ASP B1010      37.338  17.434 109.669  1.00 95.59           N
ANISOU10135  N   ASP B1010    11563  12754  12002    573   -361   -694       N
ATOM  10136  CA  ASP B1010      37.303  16.260 108.816  1.00 72.51           C
ANISOU10136  CA  ASP B1010     8518   9895   9138    561   -341   -673       C
ATOM  10137  CB  ASP B1010      35.865  15.814 108.630  1.00 68.01           C
ANISOU10137  CB  ASP B1010     7981   9172   8687    510    -95   -534       C
ATOM  10138  CG  ASP B1010      35.742  14.390 108.122  1.00 83.83           C
ANISOU10138  CG  ASP B1010     9976  11171  10705    544    -66   -509       C
ATOM  10139  OD1 ASP B1010      36.544  13.967 107.241  1.00 79.95           O
ANISOU10139  OD1 ASP B1010     9316  10843  10219    522   -214   -575       O
ATOM  10140  OD2 ASP B1010      34.798  13.711 108.602  1.00 80.48           O
ANISOU10140  OD2 ASP B1010     9718  10568  10293    593    119   -416       O
ATOM  10141  C   ASP B1010      37.944  16.634 107.487  1.00 74.15           C
ANISOU10141  C   ASP B1010     8393  10314   9468    412   -469   -720       C
ATOM  10142  O   ASP B1010      37.751  17.749 107.004  1.00 83.82           O
ANISOU10142  O   ASP B1010     9463  11583  10802    265   -463   -704       O
ATOM  10143  N   LYS B1011      38.707  15.724 106.895  1.00 67.81           N
ANISOU10143  N   LYS B1011     7493   9634   8638    457   -574   -774       N
ATOM  10144  CA  LYS B1011      39.513  16.074 105.726  1.00 68.21           C
ANISOU10144  CA  LYS B1011     7251   9887   8777    348   -696   -826       C
ATOM  10145  CB  LYS B1011      41.006  15.795 106.006  1.00 63.02           C
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ANISOU10145  CB  LYS B1011     6565   9372   8010    468   -904   -951       C
ATOM  10146  C   LYS B1011      39.024  15.328 104.465  1.00 75.43           C
ANISOU10146  C   LYS B1011     8029  10834   9796    274   -621   -765       C
ATOM  10147  O   LYS B1011      39.653  15.415 103.398  1.00 77.12           O
ANISOU10147  O   LYS B1011     8033  11202  10069    206   -696   -797       O
ATOM  10148  N   ARG B1012      37.904  14.603 104.598  1.00 62.09           N
ANISOU10148  N   ARG B1012     6473   8985   8133    288   -471   -674       N
ATOM  10149  CA  ARG B1012      37.167  14.076 103.445  1.00 71.18           C
ANISOU10149  CA  ARG B1012     7511  10120   9413    189   -399   -602       C
ATOM  10150  CB  ARG B1012      35.893  13.363 103.894  1.00 74.20           C
ANISOU10150  CB  ARG B1012     8057  10295   9839    205   -232   -498       C
ATOM  10151  CG  ARG B1012      36.091  11.952 104.393  1.00 81.20           C
ANISOU10151  CG  ARG B1012     9142  11113  10598    361   -229   -510       C
ATOM  10152  CD  ARG B1012      34.802  11.415 104.966  1.00 84.49           C
ANISOU10152  CD  ARG B1012     9720  11306  11076    363    -36   -398       C
ATOM  10153  NE  ARG B1012      34.294  12.300 106.002  1.00 93.47           N
ANISOU10153  NE  ARG B1012    10964  12338  12214    373     81   -358       N
ATOM  10154  CZ  ARG B1012      33.041  12.278 106.449  1.00107.23           C
ANISOU10154  CZ  ARG B1012    12788  13892  14064    340    286   -242       C
ATOM  10155  NH1 ARG B1012      32.173  11.412 105.941  1.00109.53           N
ANISOU10155  NH1 ARG B1012    13047  14081  14489    278    378   -158       N
ATOM  10156  NH2 ARG B1012      32.650  13.125 107.398  1.00108.74           N
ANISOU10156  NH2 ARG B1012    13092  13990  14235    371    400   -206       N
ATOM  10157  C   ARG B1012      36.802  15.191 102.457  1.00 71.17           C
ANISOU10157  C   ARG B1012     7292  10179   9570      4   -386   -570       C
ATOM  10158  O   ARG B1012      36.545  16.317 102.864  1.00 72.27           O
ANISOU10158  O   ARG B1012     7420  10292   9747    -59   -352   -558       O
ATOM  10159  N   PRO B1013      36.802  14.879 101.149  1.00 73.24           N
ANISOU10159  N   PRO B1013     7502  10441   9884    -70   -398   -513       N
ATOM  10160  CA  PRO B1013      36.400  15.871 100.148  1.00 66.50           C
ANISOU10160  CA  PRO B1013     6681   9474   9111   -208   -355   -377       C
ATOM  10161  CB  PRO B1013      36.536  15.101  98.821  1.00 68.19           C
ANISOU10161  CB  PRO B1013     6922   9661   9328   -216   -383   -323       C
ATOM  10162  CG  PRO B1013      37.513  14.005  99.111  1.00 75.24           C
ANISOU10162  CG  PRO B1013     7805  10674  10109    -91   -453   -438       C
ATOM  10163  CD  PRO B1013      37.205  13.606 100.525  1.00 82.26           C
ANISOU10163  CD  PRO B1013     8658  11624  10973      3   -450   -535       C
ATOM  10164  C   PRO B1013      34.953  16.358 100.397  1.00 66.82           C
ANISOU10164  C   PRO B1013     6706   9410   9272   -286   -245   -292       C
ATOM  10165  O   PRO B1013      34.058  15.558 100.646  1.00 51.93           O
ANISOU10165  O   PRO B1013     4786   7480   7467   -280   -173   -288       O
ATOM  10166  N   PRO B1014      34.739  17.679 100.364  1.00 57.31           N
ANISOU10166  N   PRO B1014     5525   8160   8090   -355   -222   -226       N
ATOM  10167  CA  PRO B1014      33.494  18.214 100.903  1.00 63.74           C
ANISOU10167  CA  PRO B1014     6323   8910   8985   -403   -108   -170       C
ATOM  10168  CB  PRO B1014      33.865  19.653 101.223  1.00 62.19           C
ANISOU10168  CB  PRO B1014     6143   8722   8763   -434   -127   -178       C
ATOM  10169  CG  PRO B1014      34.855  20.000 100.161  1.00 47.33           C
ANISOU10169  CG  PRO B1014     4308   6841   6834   -447   -230   -143       C
ATOM  10170  CD  PRO B1014      35.664  18.751  99.963  1.00 52.98           C
ANISOU10170  CD  PRO B1014     5012   7619   7498   -380   -287   -217       C
ATOM  10171  C   PRO B1014      32.341  18.146  99.901  1.00 55.95           C
ANISOU10171  C   PRO B1014     5373   7886   8000    -71    -38   -477       C
ATOM  10172  O   PRO B1014      31.863  19.153  99.433  1.00 63.84           O
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ANISOU10172  O   PRO B1014     6430   8885   8942   -530    -60     19       O
ATOM  10173  N   ARG B1015      31.922  16.942  99.564  1.00 47.04           N
ANISOU10173  N   ARG B1015     4234   6740   6900   -470    -60    -51       N
ATOM  10174  CA  ARG B1015      30.791  16.777  98.699  1.00 45.69           C
ANISOU10174  CA  ARG B1015     4102   6532   6725   -534    -34    -23       C
ATOM  10175  CB  ARG B1015      31.208  16.578  97.245  1.00 33.59           C
ANISOU10175  CB  ARG B1015     2629   5062   5073   -549   -130     -3       C
ATOM  10176  CG  ARG B1015      31.735  17.867  96.629  1.00 33.76           C
ANISOU10176  CG  ARG B1015     2715   5104   5008   -561   -169     55       C
ATOM  10177  CD  ARG B1015      32.214  17.626  95.210  1.00 53.07           C
ANISOU10177  CD  ARG B1015     5174   7540   7449   -563   -241     71       C
ATOM  10178  NE  ARG B1015      31.178  17.655  94.177  1.00 57.10           N
ANISOU10178  NE  ARG B1015     5687   8060   7948   -617   -224     -5       N
ATOM  10179  CZ  ARG B1015      31.474  17.689  92.879  1.00 62.72           C
ANISOU10179  CZ  ARG B1015     6413   8782   8634   -626   -275     -3       C
ATOM  10180  NH1 ARG B1015      32.759  17.705  92.501  1.00 54.30           N
ANISOU10180  NH1 ARG B1015     5354   7670   7608   -581   -340     88       N
ATOM  10181  NH2 ARG B1015      30.513  17.751  91.959  1.00 39.62           N
ANISOU10181  NH2 ARG B1015     3479   5813   5762   -663   -278    -65       N
ATOM  10182  C   ARG B1015      30.004  15.614  99.234  1.00 51.58           C
ANISOU10182  C   ARG B1015     4820   7131   7648   -515     44    -25       C
ATOM  10183  O   ARG B1015      30.567  14.709  99.817  1.00 74.89           O
ANISOU10183  O   ARG B1015     7722  10068  10663   -452     48    -61       O
ATOM  10184  N   ILE B1016      28.691  15.704  99.114  1.00 34.74           N
ANISOU10184  N   ILE B1016     2714   4872   5614   -560    113     30       N
ATOM  10185  CA  ILE B1016      27.814  14.639  99.520  1.00 54.63           C
ANISOU10185  CA  ILE B1016     5215   7220   8321   -558    197     91       C
ATOM  10186  CB  ILE B1016      26.668  15.128 100.421  1.00 56.94           C
ANISOU10186  CB  ILE B1016     5520   7366   8750   -558    358    176       C
ATOM  10187  CG1 ILE B1016      27.217  15.816 101.675  1.00 62.32           C
ANISOU10187  CG1 ILE B1016     6193   8057   9429   -502    473    172       C
ATOM  10188  CD1 ILE B1016      26.107  16.455 102.542  1.00 45.51           C
ANISOU10188  CD1 ILE B1016     4100   5783   7410   -487    656    266       C
ATOM  10189  CG2 ILE B1016      25.794  13.965 100.786  1.00 49.74           C
ANISOU10189  CG2 ILE B1016     4598   6275   8026   -561    464    259       C
ATOM  10190  C   ILE B1016      27.235  14.032  98.256  1.00 58.36           C
ANISOU10190  C   ILE B1016     5708   7664   8802   -607    105     97       C
ATOM  10191  O   ILE B1016      26.588  14.702  97.471  1.00 43.30           O
ANISOU10191  O   ILE B1016     3832   5765   6853   -645     70    101       O
ATOM  10192  N   ILE B1017      27.485  12.760  98.041  1.00 58.63           N
ANISOU10192  N   ILE B1017     5718   7657   8901   -600     61     92       N
ATOM  10193  CA  ILE B1017      26.958  12.118  96.872  1.00 47.47           C
ANISOU10193  CA  ILE B1017     4322   6196   7517   -644    -33     97       C
ATOM  10194  CB  ILE B1017      28.091  11.651  95.938  1.00 48.10           C
ANISOU10194  CB  ILE B1017     4409   6402   7466   -621   -167     23       C
ATOM  10195  CG1 ILE B1017      29.019  12.822  95.613  1.00 29.39           C
ANISOU10195  CG1 ILE B1017     2063   4222   4883   -601   -191    -29       C
ATOM  10196  CD1 ILE B1017      28.363  13.875  94.612  1.00 56.69           C
ANISOU10196  CD1 ILE B1017     5570   7701   8268   -651   -201    -26       C
ATOM  10197  CG2 ILE B1017      27.531  11.065  94.656  1.00 53.43           C
ANISOU10197  CG2 ILE B1017     5111   7011   8177   -663   -267     27       C
ATOM  10198  C   ILE B1017      26.115  10.963  97.348  1.00 57.73           C
ANISOU10198  C   ILE B1017     5594   7304   9035   -666     30    172       C
ATOM  10199  O   ILE B1017      26.580  10.108  98.100  1.00 48.36           O
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ANISOU10199  O   ILE B1017     4376   6069   7931   -637     82    182       O
ATOM  10200  N   LYS B1018      24.853  10.958  96.946  1.00 62.71           N
ANISOU10200  N   LYS B1018     6233   7823   9771   -712     35    227       N
ATOM  10201  CA  LYS B1018      23.964   9.887  97.363  1.00 54.96           C
ANISOU10201  CA  LYS B1018     5228   6654   9002   -743    102    309       C
ATOM  10202  CB  LYS B1018      22.657  10.451  97.920  1.00 67.11           C
ANISOU10202  CB  LYS B1018     6750   8091  10658   -749    228    388       C
ATOM  10203  CG  LYS B1018      22.778  11.141  99.258  1.00 67.72           C
ANISOU10203  CG  LYS B1018     6835   8162  10732   -697    411    422       C
ATOM  10204  CD  LYS B1018      23.375  10.228 100.296  1.00 58.39           C
ANISOU10204  CD  LYS B1018     5666   6904   9618   -668    550    456       C
ATOM  10205  CE  LYS B1018      23.034  10.720 101.693  1.00 68.42           C
ANISOU10205  CE  LYS B1018     6969   8087  10939   -610    795    530       C
ATOM  10206  NZ  LYS B1018      23.883  10.010 102.697  1.00 82.02           N
ANISOU10206  NZ  LYS B1018     8738   9757  12668   -558    965    551       N
ATOM  10207  C   LYS B1018      23.708   8.993  96.172  1.00 48.66           C
ANISOU10207  C   LYS B1018     4435   5805   8249   -790    -55    296       C
ATOM  10208  O   LYS B1018      23.558   9.472  95.051  1.00 74.72           O
ANISOU10208  O   LYS B1018     7757   9168  11467   -801   -170    256       O
ATOM  10209  N   THR B1019      23.664   7.693  96.404  1.00 59.09           N
ANISOU10209  N   THR B1019     5749   6997   9707   -819    -55    331       N
ATOM  10210  CA  THR B1019      23.353   6.748  95.346  1.00 57.96           C
ANISOU10210  CA  THR B1019     5623   6772   9629   -870   -216    325       C
ATOM  10211  CB  THR B1019      24.337   5.592  95.341  1.00 58.21           C
ANISOU10211  CB  THR B1019     5676   6773   9667   -873   -299    293       C
ATOM  10212  OG1 THR B1019      25.654   6.106  95.081  1.00 60.19           O
ANISOU10212  OG1 THR B1019     5925   7222   9724   -802   -371    200       O
ATOM  10213  CG2 THR B1019      23.944   4.560  94.266  1.00 48.76           C
ANISOU10213  CG2 THR B1019     4526   5456   8543   -932   -486    291       C
ATOM  10214  C   THR B1019      21.939   6.214  95.501  1.00 54.40           C
ANISOU10214  C   THR B1019     5147   6140   9381   -926   -165    412       C
ATOM  10215  O   THR B1019      21.570   5.737  96.570  1.00 67.95           O
ANISOU10215  O   THR B1019     6854   7739  11224   -937     -2    484       O
ATOM  10216  N   ILE B1020      21.143   6.316  94.440  1.00 66.93           N
ANISOU10216  N   ILE B1020     6724   7703  11003   -956   -291    408       N
ATOM  10217  CA  ILE B1020      19.766   5.816  94.454  1.00 67.16           C
ANISOU10217  CA  ILE B1020     6702   7578  11238  -1008   -274    482       C
ATOM  10218  CB  ILE B1020      18.806   6.698  93.683  1.00 62.49           C
ANISOU10218  CB  ILE B1020     6062   7010  10671  -1005   -336    483       C
ATOM  10219  CG1 ILE B1020      18.961   8.187  94.040  1.00 58.57           C
ANISOU10219  CG1 ILE B1020     5560   6646  10046   -948   -238    463       C
ATOM  10220  CD1 ILE B1020      18.296   8.570  95.311  1.00 52.42           C
ANISOU10220  CD1 ILE B1020     4728   5817   9371   -929    -40    534       C
ATOM  10221  CG2 ILE B1020      17.384   6.231  93.930  1.00 57.33           C
ANISOU10221  CG2 ILE B1020     5322   6206  10257  -1052   -293    565       C
ATOM  10222  C   ILE B1020      19.714   4.445  93.810  1.00 78.93           C
ANISOU10222  C   ILE B1020     8230   8943  12817  -1069   -423    483       C
ATOM  10223  O   ILE B1020      19.586   4.335  92.586  1.00 81.57           O
ANISOU10223  O   ILE B1020     8587   9275  13130  -1083   -613    446       O
ATOM  10224  N   ALA B1021      19.790   3.406  94.635  1.00 77.02           N
ANISOU10224  N   ALA B1021     8015   8576  12674  -1105   -333    529       N
ATOM  10225  CA  ALA B1021      19.903   2.037  94.152  1.00 78.22           C
ANISOU10225  CA  ALA B1021     8243   8590  12888  -1168   -475    526       C
ATOM  10226  CB  ALA B1021      21.377   1.599  94.141  1.00 80.24           C
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ANISOU10226  CB  ALA B1021     8598   8880  13009  -1144   -550    463       C
ATOM  10227  C   ALA B1021      19.084   1.102  95.022  1.00 73.54           C
ANISOU10227  C   ALA B1021     7653   7812  12477  -1229   -329    615       C
ATOM  10228  O   ALA B1021      18.299   1.552  95.853  1.00 80.68           O
ANISOU10228  O   ALA B1021     8479   8701  13474  -1218   -134    681       O
ATOM  10229  N   SER B1022      19.313  -0.197  94.855  1.00 76.76           N
ANISOU10229  N   SER B1022     8176   8069  12920  -1287   -417    617       N
ATOM  10230  CA  SER B1022      18.574  -1.227  95.583  1.00 90.69           C
ANISOU10230  CA  SER B1022     9983   9639  14835  -1353   -284    699       C
ATOM  10231  CB  SER B1022      18.996  -2.608  95.092  1.00 96.95           C
ANISOU10231  CB  SER B1022    10958  10270  15610  -1408   -451    674       C
ATOM  10232  OG  SER B1022      20.400  -2.782  95.240  1.00101.40           O
ANISOU10232  OG  SER B1022    11671  10836  16018  -1352   -489    622       O
ATOM  10233  C   SER B1022      18.755  -1.148  97.101  1.00 85.37           C
ANISOU10233  C   SER B1022     9348   8920  14167  -1311     28    768       C
ATOM  10234  O   SER B1022      17.893  -1.592  97.857  1.00 94.20           O
ANISOU10234  O   SER B1022    10462   9916  15412  -1341    209    851       O
ATOM  10235  N   LYS B1023      19.874  -0.582  97.536  1.00 77.45           N
ANISOU10235  N   LYS B1023     8388   8011  13028  -1234     94    734       N
ATOM  10236  CA  LYS B1023      20.169  -0.418  98.955  1.00 76.59           C
ANISOU10236  CA  LYS B1023     8350   7855  12896  -1167    395    796       C
ATOM  10237  CB  LYS B1023      21.673  -0.174  99.148  1.00 70.40           C
ANISOU10237  CB  LYS B1023     7703   7201  11846  -1039    370    710       C
ATOM  10238  C   LYS B1023      19.361   0.726  99.596  1.00 79.23           C
ANISOU10238  C   LYS B1023     8543   8287  13274  -1119    576    840       C
ATOM  10239  O   LYS B1023      19.329   0.852 100.821  1.00 87.73           O
ANISOU10239  O   LYS B1023     9687   9303  14344  -1056    846    905       O
ATOM  10240  N   THR B1024      18.708   1.551  98.775  1.00 69.74           N
ANISOU10240  N   THR B1024     7187   7210  12101  -1132    430    807       N
ATOM  10241  CA  THR B1024      17.962   2.708  99.278  1.00 69.25           C
ANISOU10241  CA  THR B1024     7019   7220  12072  -1077    566    840       C
ATOM  10242  CB  THR B1024      17.703   3.753  98.172  1.00 72.41           C
ANISOU10242  CB  THR B1024     7317   7771  12423  -1070    365    776       C
ATOM  10243  OG1 THR B1024      18.909   4.006  97.435  1.00 79.92           O
ANISOU10243  OG1 THR B1024     8318   8854  13193  -1052    197    682       O
ATOM  10244  CG2 THR B1024      17.162   5.044  98.777  1.00 66.68           C
ANISOU10244  CG2 THR B1024     6527   7111  11698  -1002    506    803       C
ATOM  10245  C   THR B1024      16.618   2.318  99.862  1.00 89.20           C
ANISOU10245  C   THR B1024     9490   9606  14796  -1105    723    936       C
ATOM  10246  O   THR B1024      15.781   1.733  99.164  1.00 91.54           O
ANISOU10246  O   THR B1024     9719   9832  15230  -1186    597    948       O
ATOM  10247  N   GLN B1025      16.396   2.664 101.127  1.00 91.72           N
ANISOU10247  N   GLN B1025     9835   9879  15133  -1034    997   1003       N
ATOM  10248  CA  GLN B1025      15.155   2.291 101.809  1.00 98.16           C
ANISOU10248  CA  GLN B1025    10600  10555  16141  -1047   1183   1100       C
ATOM  10249  CB  GLN B1025      15.341   2.327 103.320  1.00105.86           C
ANISOU10249  CB  GLN B1025    11703  11449  17071   -947   1514   1169       C
ATOM  10250  CG  GLN B1025      16.311   1.301 103.850  1.00124.59           C
ANISOU10250  CG  GLN B1025    14298  13721  19320   -935   1614   1177       C
ATOM  10251  CD  GLN B1025      16.474   1.405 105.347  1.00139.26           C
ANISOU10251  CD  GLN B1025    16329  15489  21095   -808   1956   1244       C
ATOM  10252  OE1 GLN B1025      15.511   1.243 106.100  1.00145.17           O
ANISOU10252  OE1 GLN B1025    17067  16128  21963   -780   2167   1325       O
ATOM  10253  NE2 GLN B1025      17.691   1.703 105.790  1.00140.08           N
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ANISOU10253  NE2 GLN B1025    16604  15632  20989   -718   2019   1212       N
ATOM  10254  C   GLN B1025      13.981   3.181 101.449  1.00105.41           C
ANISOU10254  C   GLN B1025    11336  11514  17199  -1045   1139   1119       C
ATOM  10255  O   GLN B1025      12.917   2.696 101.084  1.00112.96           O
ANISOU10255  O   GLN B1025    12184  12383  18353  -1116   1094   1160       O
ATOM  10256  N   SER B1026      14.180   4.488 101.568  1.00107.04           N
ANISOU10256  N   SER B1026    11520  11842  17310   -964   1153   1090       N
ATOM  10257  CA  SER B1026      13.087   5.437 101.443  1.00103.70           C
ANISOU10257  CA  SER B1026    10958  11433  17011   -941   1159   1120       C
ATOM  10258  CB  SER B1026      12.443   5.646 102.801  1.00103.55           C
ANISOU10258  CB  SER B1026    10940  11306  17098   -864   1470   1218       C
ATOM  10259  OG  SER B1026      13.409   6.139 103.707  1.00111.28           O
ANISOU10259  OG  SER B1026    12064  12327  17890   -766   1625   1205       O
ATOM  10260  C   SER B1026      13.531   6.778 100.884  1.00101.71           C
ANISOU10260  C   SER B1026    10700  11344  16601   -895   1026   1046       C
ATOM  10261  O   SER B1026      14.592   7.289 101.240  1.00 96.84           O
ANISOU10261  O   SER B1026    10186  10819  15790   -840   1058   1001       O
ATOM  10262  N   ILE B1027      12.693   7.338 100.016  1.00 95.27           N
ANISOU10262  N   ILE B1027     9770  10554  15875   -921    883   1038       N
ATOM  10263  CA  ILE B1027      12.884   8.673  99.459  1.00 86.75           C
ANISOU10263  CA  ILE B1027     8689   9607  14664   -881    774    979       C
ATOM  10264  CB  ILE B1027      13.267   8.618  97.973  1.00 73.46           C
ANISOU10264  CB  ILE B1027     7016   8012  12881   -934    496    892       C
ATOM  10265  CG1 ILE B1027      14.690   8.092  97.796  1.00 73.50           C
ANISOU10265  CG1 ILE B1027     7146   8095  12685   -942    423    820       C
ATOM  10266  CD1 ILE B1027      15.051   7.853  96.344  1.00 65.12           C
ANISOU10266  CD1 ILE B1027     6107   7093  11543   -987    169    744       C
ATOM  10267  CG2 ILE B1027      13.139   9.983  97.338  1.00 67.93           C
ANISOU10267  CG2 ILE B1027     6298   7408  12106   -897    405    853       C
ATOM  10268  C   ILE B1027      11.603   9.490  99.599  1.00 89.88           C
ANISOU10268  C   ILE B1027     8963   9951  15237   -854    844   1043       C
ATOM  10269  O   ILE B1027      10.570   9.103  99.064  1.00 95.17           O
ANISOU10269  O   ILE B1027     9510  10538  16110   -906    775   1081       O
ATOM  10270  N   LYS B1028      11.659  10.610 100.313  1.00 83.32           N
ANISOU10270  N   LYS B1028     8160   9157  14339   -773    976   1057       N
ATOM  10271  CA  LYS B1028      10.500  11.495 100.400  1.00 77.53           C
ANISOU10271  CA  LYS B1028     7306   8360  13794   -735   1040   1122       C
ATOM  10272  CB  LYS B1028       9.830  11.370 101.770  1.00 71.00           C
ANISOU10272  CB  LYS B1028     6458   7410  13106   -678   1328   1225       C
ATOM  10273  C   LYS B1028      10.869  12.962 100.111  1.00 82.29           C
ANISOU10273  C   LYS B1028     7938   9058  14269   -680    981   1079       C
ATOM  10274  O   LYS B1028      11.903  13.462 100.558  1.00 84.17           O
ANISOU10274  O   LYS B1028     8310   9402  14268   -645   1018   1026       O
ATOM  10275  N   LYS B1029      10.024  13.633  99.333  1.00 71.99           N
ANISOU10275  N   LYS B1029     6511   7714  13128   -680    882   1103       N
ATOM  10276  CA  LYS B1029      10.210  15.044  99.030  1.00 72.75           C
ANISOU10276  CA  LYS B1029     6629   7881  13132   -635    835   1074       C
ATOM  10277  CB  LYS B1029       9.657  15.384  97.651  1.00 66.52           C
ANISOU10277  CB  LYS B1029     5742   7075  12456   -668    622   1059       C
ATOM  10278  CG  LYS B1029       9.753  16.886  97.337  1.00 64.34           C
ANISOU10278  CG  LYS B1029     5488   6860  12097   -625    587   1036       C
ATOM  10279  CD  LYS B1029       9.389  17.191  95.887  1.00 66.81           C
ANISOU10279  CD  LYS B1029     5740   7166  12480   -658    362   1009       C
ATOM  10280  CE  LYS B1029       9.767  18.616  95.516  1.00 69.25           C
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ANISOU10280  CE  LYS B1029     6107   7558  12645   -624    320    968       C
ATOM  10281  NZ  LYS B1029       9.446  18.932  94.102  1.00 69.08           N
ANISOU10281  NZ  LYS B1029     6044   7524  12678   -651    110    940       N
ATOM  10282  C   LYS B1029       9.549  15.945 100.062  1.00 67.98           C
ANISOU10282  C   LYS B1029     5994   7213  12622   -558   1049   1153       C
ATOM  10283  O   LYS B1029       8.405  15.747 100.412  1.00 77.37           O
ANISOU10283  O   LYS B1029     7058   8273  14067   -544   1160   1247       O
ATOM  10284  N   TYR B1030      10.285  16.934 100.543  1.00 64.87           N
ANISOU10284  N   TYR B1030     5715   6908  12026   -507   1106   1117       N
ATOM  10285  CA  TYR B1030       9.749  17.920 101.457  1.00 74.03           C
ANISOU10285  CA  TYR B1030     6870   8014  13245   -428   1296   1185       C
ATOM  10286  CB  TYR B1030      10.490  17.929 102.784  1.00 76.55           C
ANISOU10286  CB  TYR B1030     7341   8357  13386   -371   1488   1185       C
ATOM  10287  CG  TYR B1030      10.177  16.797 103.733  1.00 85.22           C
ANISOU10287  CG  TYR B1030     8452   9351  14576   -355   1676   1251       C
ATOM  10288  CD1 TYR B1030      10.282  15.465 103.337  1.00 86.36           C
ANISOU10288  CD1 TYR B1030     8569   9484  14761   -427   1597   1233       C
ATOM  10289  CE1 TYR B1030      10.020  14.440 104.231  1.00 97.33           C
ANISOU10289  CE1 TYR B1030     9966  10745  16269   -402   1795   1306       C
ATOM  10290  CZ  TYR B1030       9.653  14.744 105.540  1.00 99.87           C
ANISOU10290  CZ  TYR B1030    10339  10947  16661   -293   2086   1398       C
ATOM  10291  OH  TYR B1030       9.381  13.741 106.451  1.00108.76           O
ANISOU10291  OH  TYR B1030    11493  11931  17899   -256   2312   1475       O
ATOM  10292  CE2 TYR B1030       9.552  16.052 105.946  1.00 85.06           C
ANISOU10292  CE2 TYR B1030     8501   9082  14738   -215   2165   1417       C
ATOM  10293  CD2 TYR B1030       9.816  17.065 105.052  1.00 84.40           C
ANISOU10293  CD2 TYR B1030     8397   9132  14537   -253   1954   1341       C
ATOM  10294  C   TYR B1030       9.855  19.288 100.831  1.00 81.64           C
ANISOU10294  C   TYR B1030     7837   9048  14134   -414   1192   1149       C
ATOM  10295  O   TYR B1030      10.296  19.417  99.692  1.00 91.02           O
ANISOU10295  O   TYR B1030     9029  10315  15238   -464    983   1075       O
ATOM  10296  N   SER B1031       9.471  20.310 101.591  1.00 76.36           N
ANISOU10296  N   SER B1031     7179   8344  13490   -343   1348   1203       N
ATOM  10297  CA  SER B1031       9.488  21.679 101.095  1.00 71.02           C
ANISOU10297  CA  SER B1031     6506   7723  12754   -328   1273   1178       C
ATOM  10298  CB  SER B1031       8.354  21.919 100.109  1.00 59.98           C
ANISOU10298  CB  SER B1031     4944   6253  11594   -350   1165   1221       C
ATOM  10299  OG  SER B1031       8.389  23.266  99.684  1.00 84.44           O
ANISOU10299  OG  SER B1031     8057   9403  14623   -333   1107   1198       O
ATOM  10300  C   SER B1031       9.385  22.675 102.228  1.00 70.90           C
ANISOU10300  C   SER B1031     6559   7685  12697   -243   1477   1228       C
ATOM  10301  O   SER B1031       9.154  22.292 103.366  1.00 86.35           O
ANISOU10301  O   SER B1031     8551   9560  14696   -186   1686   1294       O
ATOM  10302  N   THR B1032       9.584  23.952 101.923  1.00 69.63           N
ANISOU10302  N   THR B1032     6429   7587  12439   -230   1424   1198       N
ATOM  10303  CA  THR B1032       9.279  24.987 102.895  1.00 79.62           C
ANISOU10303  CA  THR B1032     7743   8811  13698   -145   1614   1259       C
ATOM  10304  CB  THR B1032      10.543  25.588 103.555  1.00 78.94           C
ANISOU10304  CB  THR B1032     7838   8836  13320   -126   1648   1189       C
ATOM  10305  OG1 THR B1032      11.473  26.019 102.553  1.00 97.45           O
ANISOU10305  OG1 THR B1032    10214  11323  15489   -198   1431   1078       O
ATOM  10306  CG2 THR B1032      11.207  24.568 104.474  1.00 78.04           C
ANISOU10306  CG2 THR B1032     7828   8718  13104   -114   1750   1180       C
ATOM  10307  C   THR B1032       8.465  26.108 102.278  1.00 78.65           C
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ANISOU10307  C   THR B1032     7525   8664  13695   -132   1570   1294       C
ATOM  10308  O   THR B1032       8.253  26.158 101.062  1.00 74.51           O
ANISOU10308  O   THR B1032     6912   8166  13231   -190   1379   1258       O
ATOM  10309  N   ASP B1033       7.959  26.966 103.153  1.00 86.88           N
ANISOU10309  N   ASP B1033     8590   9642  14777    -47   1762   1371       N
ATOM  10310  CA  ASP B1033       7.447  28.262 102.752  1.00 88.14           C
ANISOU10310  CA  ASP B1033     8705   9804  14980    -24   1740   1393       C
ATOM  10311  CB  ASP B1033       6.409  28.780 103.746  1.00 77.47           C
ANISOU10311  CB  ASP B1033     7326   8321  13790     82   1993   1525       C
ATOM  10312  CG  ASP B1033       6.941  28.842 105.166  1.00 92.88           C
ANISOU10312  CG  ASP B1033     9448  10232  15611    173   2222   1559       C
ATOM  10313  OD1 ASP B1033       8.094  28.422 105.397  1.00100.62           O
ANISOU10313  OD1 ASP B1033    10552  11289  16388    145   2178   1478       O
ATOM  10314  OD2 ASP B1033       6.193  29.278 106.066  1.00104.27           O
ANISOU10314  OD2 ASP B1033    10900  11534  17186    286   2468   1684       O
ATOM  10315  C   ASP B1033       8.639  29.189 102.680  1.00 77.57           C
ANISOU10315  C   ASP B1033     7512   8606  13354    -39   1663   1293       C
ATOM  10316  O   ASP B1033       9.744  28.790 103.023  1.00 83.00           O
ANISOU10316  O   ASP B1033     8320   9375  13842    -63   1643   1222       O
ATOM  10317  N   ILE B1034       8.399  30.434 102.290  1.00 78.76           N
ANISOU10317  N   ILE B1034     7649   8784  13493    -26   1631   1294       N
ATOM  10318  CA  ILE B1034       9.444  31.447 102.202  1.00 83.33           C
ANISOU10318  CA  ILE B1034     8353   9488  13820    -43   1566   1206       C
ATOM  10319  CB  ILE B1034       8.862  32.801 101.718  1.00 99.70           C
ANISOU10319  CB  ILE B1034    10379  11561  15940    -20   1549   1229       C
ATOM  10320  CG1 ILE B1034       7.764  32.549 100.666  1.00108.87           C
ANISOU10320  CG1 ILE B1034    11363  12657  17346    -47   1440   1270       C
ATOM  10321  CD1 ILE B1034       6.722  33.667 100.491  1.00 97.50           C
ANISOU10321  CD1 ILE B1034     9836  11161  16049      4   1494   1344       C
ATOM  10322  CG2 ILE B1034       9.976  33.700 101.141  1.00 80.28           C
ANISOU10322  CG2 ILE B1034     8013   9242  13248    -74   1410   1119       C
ATOM  10323  C   ILE B1034      10.156  31.628 103.549  1.00 82.34           C
ANISOU10323  C   ILE B1034     8377   9339  13571     27   1756   1227       C
ATOM  10324  O   ILE B1034      11.229  32.215 103.618  1.00 86.83           O
ANISOU10324  O   ILE B1034     9051   9997  13944      6   1713   1155       O
ATOM  10325  N   LEU B1035       9.592  31.049 104.599  1.00 73.48           N
ANISOU10325  N   LEU B1035     7263   8079  12577    111   1972   1330       N
ATOM  10326  CA  LEU B1035       9.979  31.392 105.952  1.00 82.84           C
ANISOU10326  CA  LEU B1035     8603   9182  13691    219   2212   1389       C
ATOM  10327  CB  LEU B1035       8.745  31.942 106.672  1.00 90.14           C
ANISOU10327  CB  LEU B1035     9507   9934  14807    348   2459   1540       C
ATOM  10328  CG  LEU B1035       8.839  32.706 107.979  1.00103.52           C
ANISOU10328  CG  LEU B1035    11385  11511  16436    498   2739   1629       C
ATOM  10329  CD1 LEU B1035       7.566  33.501 108.097  1.00108.11           C
ANISOU10329  CD1 LEU B1035    11896  11974  17207    589   2887   1757       C
ATOM  10330  CD2 LEU B1035       8.940  31.758 109.143  1.00119.88           C
ANISOU10330  CD2 LEU B1035    13580  13466  18504    584   2949   1687       C
ATOM  10331  C   LEU B1035      10.602  30.199 106.687  1.00 81.93           C
ANISOU10331  C   LEU B1035     8575   9044  13512    228   2284   1377       C
ATOM  10332  O   LEU B1035      11.174  30.352 107.760  1.00 70.26           O
ANISOU10332  O   LEU B1035     7260   7510  11926    312   2460   1403       O
ATOM  10333  N   GLY B1036      10.509  29.010 106.100  1.00 92.05           N
ANISOU10333  N   GLY B1036     9762  10361  14852    146   2154   1339       N
ATOM  10334  CA  GLY B1036      11.254  27.872 106.607  1.00 93.99           C
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ANISOU10334  CA  GLY B1036    10085  10611  15016    136   2184   1310       C
ATOM  10335  C   GLY B1036      10.488  26.804 107.371  1.00102.81           C
ANISOU10335  C   GLY B1036    11185  11573  16308    201   2379   1411       C
ATOM  10336  O   GLY B1036      11.091  26.006 108.089  1.00 98.67           O
ANISOU10336  O   GLY B1036    10765  11014  15710    229   2476   1408       O
ATOM  10337  N   ASN B1037       9.166  26.789 107.220  1.00108.25           N
ANISOU10337  N   ASN B1037    11738  12159  17232    225   2445   1502       N
ATOM  10338  CA  ASN B1037       8.321  25.757 107.820  1.00100.42           C
ANISOU10338  CA  ASN B1037    10695  11016  16442    274   2625   1601       C
ATOM  10339  CB  ASN B1037       6.953  26.334 108.227  1.00 95.99           C
ANISOU10339  CB  ASN B1037    10053  10303  16116    368   2823   1741       C
ATOM  10340  CG  ASN B1037       7.064  27.529 109.163  1.00 88.08           C
ANISOU10340  CG  ASN B1037     9211   9231  15023    502   3031   1804       C
ATOM  10341  OD1 ASN B1037       7.368  27.383 110.356  1.00 76.59           O
ANISOU10341  OD1 ASN B1037     7941   7669  13492    619   3269   1857       O
ATOM  10342  ND2 ASN B1037       6.824  28.723 108.623  1.00 84.01           N
ANISOU10342  ND2 ASN B1037     8648   8767  14505    494   2950   1798       N
ATOM  10343  C   ASN B1037       8.133  24.612 106.830  1.00 94.93           C
ANISOU10343  C   ASN B1037     9854  10378  15836    151   2423   1549       C
ATOM  10344  O   ASN B1037       7.816  24.850 105.664  1.00 93.85           O
ANISOU10344  O   ASN B1037     9594  10324  15740     66   2208   1500       O
ATOM  10345  N   LEU B1038       8.307  23.374 107.280  1.00 87.02           N
ANISOU10345  N   LEU B1038     8880   9324  14861    150   2500   1561       N
ATOM  10346  CA  LEU B1038       8.302  22.237 106.353  1.00 84.80           C
ANISOU10346  CA  LEU B1038     8489   9101  14631     33   2303   1503       C
ATOM  10347  CB  LEU B1038       9.174  21.113 106.884  1.00 88.13           C
ANISOU10347  CB  LEU B1038     9021   9522  14944     29   2354   1473       C
ATOM  10348  CG  LEU B1038      10.611  21.388 107.272  1.00 79.25           C
ANISOU10348  CG  LEU B1038     8077   8492  13542     44   2335   1393       C
ATOM  10349  CD1 LEU B1038      10.678  21.967 108.686  1.00 92.78           C
ANISOU10349  CD1 LEU B1038     9953  10085  15213    191   2628   1473       C
ATOM  10350  CD2 LEU B1038      11.333  20.089 107.183  1.00 74.28           C
ANISOU10350  CD2 LEU B1038     7481   7895  12846    -12   2275   1343       C
ATOM  10351  C   LEU B1038       6.945  21.630 106.033  1.00 94.04           C
ANISOU10351  C   LEU B1038     9468  10158  16105     12   2333   1588       C
ATOM  10352  O   LEU B1038       5.971  21.847 106.741  1.00102.80           O
ANISOU10352  O   LEU B1038    10528  11125  17405     96   2552   1706       O
ATOM  10353  N   TYR B1039       6.905  20.854 104.956  1.00 91.82           N
ANISOU10353  N   TYR B1039     9071   9912  15904    -88   2125   1542       N
ATOM  10354  CA  TYR B1039       5.750  20.034 104.633  1.00 91.97           C
ANISOU10354  CA  TYR B1039     8900   9807  16235   -120   2140   1621       C
ATOM  10355  CB  TYR B1039       4.589  20.897 104.141  1.00 92.72           C
ANISOU10355  CB  TYR B1039     8827   9834  16568   -104   2125   1693       C
ATOM  10356  CG  TYR B1039       4.829  21.694 102.886  1.00101.09           C
ANISOU10356  CG  TYR B1039     9854  11000  17555   -159   1865   1613       C
ATOM  10357  CD2 TYR B1039       4.397  21.227 101.648  1.00101.31           C
ANISOU10357  CD2 TYR B1039     9738  11021  17733   -244   1644   1590       C
ATOM  10358  CE2 TYR B1039       4.599  21.969 100.494  1.00108.55           C
ANISOU10358  CE2 TYR B1039    10644  12021  18578   -283   1419   1521       C
ATOM  10359  CZ  TYR B1039       5.226  23.202 100.575  1.00112.38           C
ANISOU10359  CZ  TYR B1039    11249  12602  18848   -246   1418   1474       C
ATOM  10360  OH  TYR B1039       5.429  23.951  99.439  1.00110.47           O
ANISOU10360  OH  TYR B1039    11003  12438  18532   -282   1210   1407       O
ATOM  10361  CE1 TYR B1039       5.652  23.691 101.796  1.00114.43           C
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ANISOU10361  CE1 TYR B1039    11638  12873  18965   -170   1626   1496       C
ATOM  10362  CD1 TYR B1039       5.444  22.941 102.942  1.00114.57           C
ANISOU10362  CD1 TYR B1039    11679  12801  19051   -123   1847   1566       C
ATOM  10363  C   TYR B1039       6.106  18.958 103.606  1.00105.88           C
ANISOU10363  C   TYR B1039    10608  11626  17995   -231   1910   1546       C
ATOM  10364  O   TYR B1039       7.276  18.655 103.400  1.00109.64           O
ANISOU10364  O   TYR B1039    11213  12221  18225   -270   1795   1446       O
ATOM  10365  N   GLU B1040       5.091  18.382 102.972  1.00102.37           N
ANISOU10365  N   GLU B1040     9975  11090  17832   -281   1843   1598       N
ATOM  10366  CA  GLU B1040       5.267  17.223 102.114  1.00 83.09           C
ANISOU10366  CA  GLU B1040     7481   8667  15423   -380   1654   1547       C
ATOM  10367  CB  GLU B1040       5.517  15.983 102.979  1.00 77.79           C
ANISOU10367  CB  GLU B1040     6871   7949  14735   -386   1808   1568       C
ATOM  10368  CG  GLU B1040       5.263  14.623 102.331  1.00105.58           C
ANISOU10368  CG  GLU B1040    10294  11427  18393   -484   1684   1562       C
ATOM  10369  CD  GLU B1040       5.679  13.431 103.227  1.00118.48           C
ANISOU10369  CD  GLU B1040    12026  13029  19962   -493   1843   1573       C
ATOM  10370  OE1 GLU B1040       5.568  13.534 104.471  1.00126.55           O
ANISOU10370  OE1 GLU B1040    13121  13985  20976   -410   2112   1637       O
ATOM  10371  OE2 GLU B1040       6.099  12.381 102.686  1.00123.23           O
ANISOU10371  OE2 GLU B1040    12643  13662  20518   -579   1703   1521       O
ATOM  10372  C   GLU B1040       3.994  17.119 101.300  1.00115.04           C
ANISOU10372  C   GLU B1040    11303  12611  19797   -423   1556   1609       C
ATOM  10373  O   GLU B1040       2.909  17.300 101.866  1.00130.74           O
ANISOU10373  O   GLU B1040    13165  14472  22038   -379   1733   1722       O
ATOM  10374  N   VAL B1041       4.080  16.921  99.982  1.00127.93           N
ANISOU10374  N   VAL B1041    12883  14288  21436   -500   1282   1544       N
ATOM  10375  CA  VAL B1041       2.865  16.552  99.217  1.00146.72           C
ANISOU10375  CA  VAL B1041    15045  16551  24149   -553   1173   1603       C
ATOM  10376  CB  VAL B1041       2.009  17.803  98.742  1.00141.73           C
ANISOU10376  CB  VAL B1041    14295  15884  23674   -520   1127   1645       C
ATOM  10377  CG1 VAL B1041       2.461  19.124  99.378  1.00132.64           C
ANISOU10377  CG1 VAL B1041    13269  14805  22325   -433   1260   1638       C
ATOM  10378  CG2 VAL B1041       1.968  17.923  97.221  1.00143.28           C
ANISOU10378  CG2 VAL B1041    14444  16110  23884   -583    816   1578       C
ATOM  10379  C   VAL B1041       3.206  15.682  97.997  1.00144.96           C
ANISOU10379  C   VAL B1041    14818  16363  23896   -647    895   1524       C
ATOM  10380  O   VAL B1041       4.271  15.847  97.394  1.00144.51           O
ANISOU10380  O   VAL B1041    14908  16432  23566   -661    743   1420       O
ATOM  10381  N   LYS B1042       2.297  14.757  97.656  1.00138.38           N
ANISOU10381  N   LYS B1042    13818  15412  23349   -710    838   1578       N
ATOM  10382  CA  LYS B1042       2.496  13.794  96.559  1.00126.33           C
ANISOU10382  CA  LYS B1042    12283  13889  21827   -801    582   1517       C
ATOM  10383  CB  LYS B1042       1.826  12.454  96.886  1.00105.23           C
ANISOU10383  CB  LYS B1042     9488  11095  19400   -867    642   1583       C
ATOM  10384  C   LYS B1042       1.970  14.317  95.217  1.00123.67           C
ANISOU10384  C   LYS B1042    11854  13527  21607   -827    322   1495       C
ATOM  10385  O   LYS B1042       1.565  15.475  95.118  1.00129.89           O
ANISOU10385  O   LYS B1042    12598  14314  22441   -777    336   1517       O
ATOM  10386  N   SER B1043       1.984  13.463  94.191  1.00111.36           N
ANISOU10386  N   SER B1043    10279  11943  20090   -903     84   1452       N
ATOM  10387  CA  SER B1043       1.520  13.854  92.857  1.00102.89           C
ANISOU10387  CA  SER B1043     9140  10832  19121   -926   -183   1426       C
ATOM  10388  CB  SER B1043       2.485  14.842  92.217  1.00103.59           C
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ANISOU10388  CB  SER B1043     9406  11055  18900   -883   -288   1332       C
ATOM  10389  OG  SER B1043       2.150  15.004  90.849  1.00112.53           O
ANISOU10389  OG  SER B1043    10506  12143  20107   -910   -561   1297       O
ATOM  10390  C   SER B1043       1.313  12.693  91.886  1.00109.65           C
ANISOU10390  C   SER B1043     9955  11615  20092  -1013   -426   1402       C
ATOM  10391  O   SER B1043       1.758  11.569  92.128  1.00116.62           O
ANISOU10391  O   SER B1043    10896  12504  20912  -1061   -410   1385       O
ATOM  10392  N   LYS B1044       0.660  12.997  90.765  1.00119.14           N
ANISOU10392  N   LYS B1044    11071  12745  21453  -1032   -661   1396       N
ATOM  10393  CA  LYS B1044       0.124  11.982  89.854  1.00121.73           C
ANISOU10393  CA  LYS B1044    11316  12958  21980  -1113   -905   1395       C
ATOM  10394  CB  LYS B1044      -1.162  12.493  89.195  1.00114.84           C
ANISOU10394  CB  LYS B1044    10240  11951  21441  -1122  -1052   1447       C
ATOM  10395  C   LYS B1044       1.108  11.564  88.771  1.00121.43           C
ANISOU10395  C   LYS B1044    11475  12982  21680  -1132  -1144   1289       C
ATOM  10396  O   LYS B1044       1.521  10.405  88.711  1.00110.55           O
ANISOU10396  O   LYS B1044    10160  11598  20244  -1187  -1197   1265       O
ATOM  10397  N   LYS B1045       1.461  12.508  87.902  1.00125.40           N
ANISOU10397  N   LYS B1045    12077  13539  22031  -1086  -1283   1229       N
ATOM  10398  CA  LYS B1045       2.396  12.233  86.816  1.00119.07           C
ANISOU10398  CA  LYS B1045    11471  12791  20979  -1091  -1498   1132       C
ATOM  10399  CB  LYS B1045       1.664  12.185  85.468  1.00113.21           C
ANISOU10399  CB  LYS B1045    10677  11918  20421  -1115  -1810   1122       C
ATOM  10400  C   LYS B1045       3.516  13.276  86.779  1.00117.87           C
ANISOU10400  C   LYS B1045    11503  12801  20482  -1023  -1424   1063       C
ATOM  10401  O   LYS B1045       3.502  14.252  87.529  1.00127.73           O
ANISOU10401  O   LYS B1045    12727  14111  21695   -974  -1233   1088       O
ATOM  10402  N   HIS B1046       4.489  13.052  85.905  1.00106.22           N
ANISOU10402  N   HIS B1046    10213  11388  18758  -1020  -1575    978       N
ATOM  10403  CA  HIS B1046       5.604  13.974  85.731  1.00 97.29           C
ANISOU10403  CA  HIS B1046     9255  10405  17306   -966  -1524    908       C
ATOM  10404  CB  HIS B1046       6.799  13.213  85.159  1.00 73.68           C
ANISOU10404  CB  HIS B1046     6457   7487  14052   -978  -1620    830       C
ATOM  10405  C   HIS B1046       5.255  15.180  84.825  1.00103.03           C
ANISOU10405  C   HIS B1046     9983  11111  18051   -929  -1651    890       C
ATOM  10406  O   HIS B1046       4.906  14.999  83.650  1.00 85.80           O
ANISOU10406  O   HIS B1046     7818   8835  15948   -941  -1897    868       O
ATOM  10407  N   PRO B1047       5.356  16.417  85.371  1.00107.85           N
ANISOU10407  N   PRO B1047    10589  11802  18586   -882  -1489    897       N
ATOM  10408  CA  PRO B1047       5.094  17.663  84.629  1.00 96.60           C
ANISOU10408  CA  PRO B1047     9174  10374  17157   -847  -1578    878       C
ATOM  10409  CB  PRO B1047       5.568  18.752  85.584  1.00 95.69           C
ANISOU10409  CB  PRO B1047     9089  10384  16885   -804  -1341    881       C
ATOM  10410  CG  PRO B1047       5.377  18.161  86.923  1.00116.93           C
ANISOU10410  CG  PRO B1047    11694  13072  19663   -813  -1134    942       C
ATOM  10411  CD  PRO B1047       5.682  16.689  86.782  1.00114.15           C
ANISOU10411  CD  PRO B1047    11373  12690  19307   -860  -1210    928       C
ATOM  10412  C   PRO B1047       5.861  17.738  83.333  1.00 91.99           C
ANISOU10412  C   PRO B1047     8763   9820  16368   -839  -1774    793       C
ATOM  10413  O   PRO B1047       7.070  17.637  83.349  1.00101.08           O
ANISOU10413  O   PRO B1047    10070  11093  17242   -830  -1718    736       O
ATOM  10414  N   GLN B1048       5.172  17.891  82.218  1.00 98.56           N
ANISOU10414  N   GLN B1048     9571  10536  17341   -841  -2005    786       N
ATOM  10415  CA  GLN B1048       5.867  17.957  80.956  1.00 95.08           C
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ANISOU10415  CA  GLN B1048     9309  10107  16711   -826  -2193    708       C
ATOM  10416  CB  GLN B1048       5.290  16.935  79.966  1.00 92.40           C
ANISOU10416  CB  GLN B1048     8967   9604  16536   -855  -2469    705       C
ATOM  10417  C   GLN B1048       5.792  19.379  80.408  1.00100.61           C
ANISOU10417  C   GLN B1048    10043  10833  17353   -785  -2223    681       C
ATOM  10418  O   GLN B1048       6.401  19.676  79.392  1.00111.95           O
ANISOU10418  O   GLN B1048    11633  12289  18613   -764  -2350    616       O
ATOM  10419  N   ILE B1049       5.071  20.270  81.088  1.00 97.74           N
ANISOU10419  N   ILE B1049     9540  10468  17128   -771  -2098    731       N
ATOM  10420  CA  ILE B1049       4.923  21.648  80.596  1.00 97.82           C
ANISOU10420  CA  ILE B1049     9573  10499  17096   -735  -2129    708       C
ATOM  10421  CB  ILE B1049       3.484  21.930  80.082  1.00105.25           C
ANISOU10421  CB  ILE B1049    10356  11275  18357   -736  -2300    746       C
ATOM  10422  CG1 ILE B1049       2.909  20.732  79.322  1.00100.76           C
ANISOU10422  CG1 ILE B1049     9758  10547  17980   -769  -2546    749       C
ATOM  10423  CD1 ILE B1049       2.020  19.835  80.160  1.00108.93           C
ANISOU10423  CD1 ILE B1049    10591  11495  19304   -812  -2486    832       C
ATOM  10424  CG2 ILE B1049       3.474  23.187  79.213  1.00104.26           C
ANISOU10424  CG2 ILE B1049    10305  11159  18151   -698  -2403    698       C
ATOM  10425  C   ILE B1049       5.252  22.719  81.643  1.00 98.43           C
ANISOU10425  C   ILE B1049     9632  10707  17059   -710  -1872    726       C
ATOM  10426  O   ILE B1049       4.724  22.685  82.752  1.00101.87           O
ANISOU10426  O   ILE B1049     9934  11136  17635   -713  -1706    793       O
ATOM  10427  N   ILE B1050       6.114  23.672  81.280  1.00 90.25           N
ANISOU10427  N   ILE B1050     8735   9783  15773   -683  -1845    667       N
ATOM  10428  CA  ILE B1050       6.493  24.786  82.160  1.00 85.58           C
ANISOU10428  CA  ILE B1050     8148   9314  15054   -659  -1629    675       C
ATOM  10429  CB  ILE B1050       8.013  24.686  82.654  1.00107.33           C
ANISOU10429  CB  ILE B1050    11055  12235  17491   -661  -1478    627       C
ATOM  10430  CG1 ILE B1050       8.377  23.289  83.241  1.00114.94           C
ANISOU10430  CG1 ILE B1050    12020  13201  18449   -688  -1425    639       C
ATOM  10431  CD1 ILE B1050       8.792  22.164  82.245  1.00 70.48           C
ANISOU10431  CD1 ILE B1050     6480   7530  12769   -710  -1607    595       C
ATOM  10432  CG2 ILE B1050       8.385  25.831  83.635  1.00 69.89           C
ANISOU10432  CG2 ILE B1050     6319   7606  12628   -638  -1266    636       C
ATOM  10433  C   ILE B1050       6.247  26.094  81.398  1.00 91.99           C
ANISOU10433  C   ILE B1050     8983  10124  15844   -632  -1714    648       C
ATOM  10434  O   ILE B1050       6.667  26.214  80.250  1.00 84.85           O
ANISOU10434  O   ILE B1050     8199   9215  14824   -627  -1876    587       O
ATOM  10435  N   LYS B1051       5.550  27.059  82.008  1.00105.67           N
ANISOU10435  N   LYS B1051    10607  11855  17690   -611  -1610    694       N
ATOM  10436  CA  LYS B1051       5.264  28.333  81.331  1.00105.35           C
ANISOU10436  CA  LYS B1051    10580  11813  17635   -583  -1689    669       C
ATOM  10437  CB  LYS B1051       4.033  29.035  81.917  1.00 91.58           C
ANISOU10437  CB  LYS B1051     8654  10006  16136   -564  -1624    740       C
ATOM  10438  C   LYS B1051       6.447  29.263  81.430  1.00107.20           C
ANISOU10438  C   LYS B1051    10961  12204  17567   -570  -1574    618       C
ATOM  10439  O   LYS B1051       7.008  29.413  82.507  1.00105.41           O
ANISOU10439  O   LYS B1051    10748  12075  17228   -570  -1371    634       O
ATOM  10440  N   LYS B1052       6.805  29.889  80.310  1.00118.28           N
ANISOU10440  N   LYS B1052    12473  13622  18845   -558  -1712    556       N
ATOM  10441  CA  LYS B1052       7.885  30.878  80.255  1.00133.49           C
ANISOU10441  CA  LYS B1052    14529  15689  20500   -551  -1623    507       C
ATOM  10442  CB  LYS B1052       9.230  30.243  80.613  1.00134.87           C
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ANISOU10442  CB  LYS B1052    14818  15979  20446   -575  -1514    474       C
ATOM  10443  C   LYS B1052       7.980  31.527  78.874  1.00148.77           C
ANISOU10443  C   LYS B1052    16564  17600  22360   -533  -1810    448       C
ATOM  10444  O   LYS B1052       7.353  31.067  77.920  1.00155.19           O
ANISOU10444  O   LYS B1052    17376  18289  23302   -526  -2022    435       O
ATOM  10445  O   GLY B1053       7.397  34.976  78.234  1.00172.78           O
ANISOU10445  O   GLY B1053    19615  20705  25328   -462  -1836    418       O
ATOM  10446  N   GLY B1053       8.766  32.597  78.772  1.00153.39           N
ANISOU10446  N   GLY B1053    17244  18299  22739   -527  -1738    411       N
ATOM  10447  CA  GLY B1053       8.951  33.291  77.510  1.00159.21           C
ANISOU10447  CA  GLY B1053    18091  19023  23379   -508  -1898    354       C
ATOM  10448  C   GLY B1053       8.300  34.663  77.456  1.00168.61           C
ANISOU10448  C   GLY B1053    19232  20207  24624   -475  -1909    362       C
ATOM  10449  OXT GLY B1053       8.658  35.505  76.629  1.00171.25           O
ANISOU10449  OXT GLY B1053    19660  20515  24893   -456  -2021    328       O
TER
HETATM10450  O   HOH C   1      30.196  10.578  89.078  1.00 43.30           O
TER
END
```

Example 3: Experimental protocols

SURVEYOR nuclease assay for genome modification and western blots.

[00586] HEK 293FT cells were transfected with DNA, as described above. Cells were incubated at 37°C for 72 h post-transfection, prior to genomic DNA extraction. Genomic DNA was extracted using QuickExtract DNA Extraction Solution (Epicentre), according to the manufacturer's protocol. Briefly, pelleted cells were resuspended in QuickExtract solution and incubated at 65°C for 15 min, 68°C for 15 min, and 98°C for 10 min. The genomic region flanking the CRISPR target site for each gene was PCR-amplified, and the products were purified using a QiaQuick Spin Column (Qiagen), according to the manufacturer's protocol. The purified PCR products (400 ng) were mixed with 2 ml of 10X Taq DNA Polymerase PCR buffer (Enzymatics) and ultrapure water to a final volume of 20 ml, and subjected to a re-annealing process to enable heteroduplex formation: 95°C for 10 min, 95°C to 85°C ramping at – 2°C/s, 85°C to 25°C at – 0.25°C/s, and 25°C hold for 1 min. After re-annealing, the products were treated with SURVEYOR nuclease and SURVEYOR enhancer S (Transgenomics), following the manufacturer's recommended protocol, and analyzed on 4–20% Novex TBE polyacrylamide gels (Life Technologies). The gels were stained with SYBR Gold DNA stain (Life Technologies) for 30 min and imaged with a Gel Doc gel imaging system (Bio-Rad). Quantification was based on relative band intensities. Indel percentage was determined by the following formula: 100 x (1 - (1 -

$(b + c) / (a + b + c))^{1/2}$), where a is the integrated intensity of the undigested PCR product, and b and c are the integrated intensities of each cleavage product.

[00587] HEK 293FT cells were transfected and lysed in 1X RIPA buffer (Sigma-Aldrich) supplemented with Protease Inhibitor (Roche). The lysates were loaded onto Bolt 4–12% Bis-Tris Plus Gels (Invitrogen) and transferred to nitrocellulose membranes. The membranes were blocked in Tris-buffered saline containing 0.1% Tween-20 and 5% blocking agent (G-Biosciences). The membranes were probed with rabbit anti-FLAG (1:5,000, Abcam), HRP-conjugated anti-GAPDH (1:5,000 Cell Signaling Technology), and HRP-conjugated anti-rabbit (1:1,000) antibodies and visualized with a Gel Doc XR+ System (Bio-Rad).

***In vitro* Cleavage Assay**

[00588] *In vitro* plasmid DNA cleavage experiments were performed essentially as described (Anders et al., 2014). The *Eco*RI-linearized pUC119 plasmid (150 ng) containing the 20-nt target sequence and the 5′-TTGAAT-3′ PAM was incubated at 37°C for 1 h with the SaCas9–sgRNA complex (8, 16, 32 nM), in 20 mM HEPES pH 7.5, 100 mM KCl, 5% glycerol, 1 mM DTT and 2 mM $MgCl_2$ (10 µl total volume). Reaction products were resolved on an ethidium bromide-stained 1% agarose gel, and then visualized using a Typhoon FLA 9500 scanner (GE Healthcare).

Cell Culture and Transfection

[00589] Human embryonic kidney 293FT (Life Technologies) cells were maintained in Dulbecco's modified Eagle's Medium (DMEM) supplemented with 10% FBS and 2 mM GlutaMAX in incubators at 37°C with 5% CO_2 supply.

[00590] Around 24 h prior to transfection, cells were seeded into 24-well plates (Corning) at a density of 250,000 cells per well, and transfected at 70–80% confluency using Lipofectamine 2000 (Life Technologies), according to the manufacturer's recommended protocol. A total of 600 ng DNA was used for each well on a 24-well plate.

Detection and Quantification of Genomic Modification

[00591] About 72 h after transfection, genomic DNA was extracted using QuickExtract DNA Extraction Solution (Epicentre). Briefly, pelleted cells were resuspended in QuickExtract solution and incubated at 65°C for 15 min, 68°C for 15 min, and 98°C for 10 min (Cong et al., 2013).

[00592] Indel analyses by the SURVEYOR assay and targeted deep sequencing were carried out, as previously described (Cong et al., 2013). Briefly, targeted genomic region was amplified using primers for the SURVRYOR assay or next-generation sequencing. For the SURVEYOR assay, the purified PCR product was re-annealed, subjected to SURVEYOR nuclease digestion, then analyzed and quantified using polyacrylamide gel electrophoresis (4–20% TBE PAGE gel, Life Technologies). For deep sequencing, the purified PCR products were amplified again to attach Illumina sequencing adapater and barcodes, and then subjected to sequencing analysis using the Miseq sequencing system (Illumina).

Transcriptional Activation Assay

[00593] HEK 293FT cells were seeded into 24- or 96-well plates (Bio-coat, Corning) one day prior to transfection at densities of 2.5×10^5 cells/well or 2.5×10^4 cells/well, respectively. Cells were transfected using Lipofectamine 2000 (Life Technology), according to the manufacturer's recommended protocol. For 24-well plates we used 600 ng total plasmids DNA containing 50 ng of reporter plasmid per well. For 96-well plates we used 250 ng total plasmids containing 10 ng of reporter plasmid per well. For reporter assay, the transcriptional activation reporter was co-transfected into 293FT cells with plasmids carrying SaCas9 activator system in 24-well plates, and the MS2-p65-HSF1 plasmids are the same as previously reported (Konermann et al., 2015). For endogenous gene transcriptional activation, a total of 600 ng of plasmids containing the SaCas9 activation system were transfected in 96-well format.

Flow Cytometry Analysis of Reporter Activation

[00594] Levels of reporter activation were measured by flow cytometry using an LSRFortessa cell analyzer (BD Biosciences). Cells were trypsinized from their culturing plates approximately 48 h after transfection and re-suspended in 200 μl of PBS for flow cytometry analysis. The flow cytometry data were analyzed using FlowJo (FlowJo LLC). At least 10,000 events were analyzed for each transfection sample. The fold induction of reporter gene expression was determined by flow cytometry analysis of *mKate2* expression mean intensity over that from the control group where sgRNA bearing non-binding guide is expressed. The results were further normalized by the fluorescent intensity measured with a control plasmid that expresses GFP (spiked into the DNA mix for all experiments) to control for transfection differences between each experiment.

Endogenous Gene Activation Assay

[00595] HEK 293FT cells were seeded in 96-well plates and transfected as in previous section. Transfected cells were incubated for at least 48 h, and then harvested for RNA extraction, cDNA synthesis, and quantitative real-time PCR (qRT-PCR) analysis to measure human *ASCL1* and *MYOD1* gene expression levels using TaqMan Gene Expression Assays (Life Technology), as described previously (Konermann et al., 2015).

Construction of Split and Inducible SaCas9

[00596] Split-SaCas9 fragments where constructed by Gibson Assembly (NEB). SaCas9 fragments and fragments for inducible dimers FRB/FKBP and ABI/PYL where amplified from previously described (Konermann et al., 2015; Zetsche et al., 2015). DmC was amplified from iDimerize plasmid system (Takara Clontech).

Genome Cleavage Test of Split and Inducible SaCas9

[00597] HEK293FT cells were plated in 24-well plates as in previous sections. Cells were transfected with 200 ng plasmid DNA for each SaCas9 fragment and 100 ng PCR amplified U6::sgRNA targeting *EMX1*. Dimerization was induced at time of transfection with 100 nM rapamycin (Sigma) for SaCas9(N)FRB/SaCas9(C)FKBP, 100 nM A/C heterodimerizer (Takara Clontech) for SaCas9(N)DmC/SaCas9(C)FKBP and 200 μM abscisic acid (Sigma) for SaCas9(N)ABI/SaCas9(C)PYL. DNA was harvested three days after transfection and analyzed with the SURVEYOR nuclease assay, as described previously (Cong et al., 2013).

Sequence Information

1. NLS-dSaCas9 (D10A/N580A)-linker-NLS-VP64

Underlined: NLS sequences

Italic: linker

Underlined and Italic: VP64 activator domain

MAPKKKRKVGIHGVPAAKRNYILGLAIGITSVGYGIIDYETRDVIDAGVRLFKEANVENNEGRRSKRGARRLKRRRRHRIQRVKKL
LFDYNLLTDHSELSGINPYEARVKGLSQKLSEEEFSAALLHLAKRRGVHNVNEVEEDTGNELSTKEQISRNSKALEEKYVAELQLE
RLKKDGEVRGSINRFKTSDYVKEAKQLLKVQKAYHQLDQSFIDTYIDLLETRRTYYEGPGEGSPFGWKDIKEWYEMLMGHCTYFPE
ELRSVKYAYNADLYNALNDLNNLVITRDENEKLEYYEKFQIIENVFKQKKKPTLKQIAKEILVNEEDIKGYRVTSTGKPEFTNLKV
YHDIKDITARKEIIENAELLDQIAKILTIYQSSEDIQEELTNLNSELTQEEIEQISNLKGYTGTHNLSLKAINLILDELWHTNDNQ
IAIFNRLKLVPKKVDLSQQKEIPTTLVDDFILSPVVKRSFIQSIKVINAIIKKYGLPNDIIIELAREKNSKDAQKMINEMQKRNRQ
TNERIEEIIRTTGKENAKYLIEKIKLHDMQEGKCLYSLEAIPLEDLLNNPFNYEVDHIIPRSVSFDNSFNNKVLVKQEEASKKGNR
TPFQYLSSSDSKISYETFKKHILNLAKGKGRISKTKKEYLLEERDINRFSVQKDFINRNLVDTRYATRGLMNLLRSYFRVNNLDVK
VKSINGGFTSFLRRKWKFKKERNKGYKHHAEDALIIANADFIFKEWKKLDKAKKVMENQMFEEKQAESMPEIETEQEYKEIFITPH
QIKHIKDFKDYKYSHRVDKKPNRELINDTLYSTRKDDKGNTLIVNNLNGLYDKDNDKLKKLINKSPEKLLMYHHDPQTYQKLKLIM
EQYGDEKNPLYKYYEETGNYLTKYSKKDNGPVIKKIKYYGNKLNAHLDITDDYPNSRNKVVKLSLKPYRFDVYLDNGVYKFVTVKN
LDVIKKENYYEVNSKCYEEAKKLKKISNQAEFIASFYNNDLIKINGELYRVIGVNNDLLNRIEVNMIDITYREYLENMNDKRPPRI
IKTIASKTQSIKKYSTDILGNLYEVKSKKHPQIIKKGSA*GGGGSGGGGSGGGGS*GPKKKRKVAAA*GSGRADALDDFDLDMLGSDAL*
*DDFDLDMLGSDALDDFDLDMLGSDALDDFDLDMLINAS**

2. MS2-linker-NLS-p65-linker-HSF1

Underlined: NLS sequences

Italic: linker

MASNFTQFVLVDNGGTGDVTVAPSNFANGVAEWISSNSRSQAYKVTCSVRQSSAQKRKYTIKVEVPKVATQTVGGVELPVAAWRSY
LNMELTIPIFATNSDCELIVKAMQGLLKDGNPIPSAIAANSGIYSA*GGGGSGGGGSGGGGSG*PKKKRKVAAAGSPSGQISNQALAL
APSSAPVLAQTMVPSSAMVPLAQPPAPAPVLTPGPPQSLSAPVPKSTQAGEGTLSEALLHLQFDADEDLGALLGNSTDPGVFTDLA
SVDNSEFQQLLNQGVSMSHSTAEPMLMEYPEAITRLVTGSQRPPDPAPTPLGTSGLPNGLSGDEDFSSIADMDFSALLSQISSSGQ
GGGGSGFSVDTSALLDLFSPSVTVPDMSLPDLDSSLASIQELLSPQEPPRPPEAENSSPDSGKQLVHYTAQPLFLLDPGSVDTGSN
DLPVLFELGEGSYFSEGDGFAEDPTISLLTGSEPPKAKDPTVS

3. SaCas9-sgRNA MS2-fusion (TL) scaffold sequence (RNA)

GUUUUAGUACUCUGGGCCAACAUGAGGAUCACCCAUGUCUGCAGGGCCCAGAAUCUACUAAAACAAGGCAAAAUGCCGU
GUUUAUCUCGUCAACUUGUUGGCGAGAU

4. SaCas9-sgRNA MS2-fusion (SL1) scaffold sequence (RNA)

GUUUUAGUACUCUGGAAACAGAAUCUACUAAAACAAGGCAGGCCAACAUGAGGAUCACCCAUGUCUGCAGGGCCUGCCG
UGUUUAUCUCGUCAACUUGUUGGCGAGAU

5. SaCas9-sgRNA MS2-fusion (SL2) scaffold sequence (RNA)

GUUUUAGUACUCUGGAAACAGAAUCUACUAAAACAAGGCAAAAUGCCGUGUUUAUCUCGUCAAGGCCAACAUGAGGAUC
ACCCAUGUCUGCAGGGCCUUGGCGAGAU

6. SaCas9-sgRNA MS2-fusion (TL+SL1) scaffold sequence (RNA)

GUUUUAGUACUCUGGGCCAACAUGAGGAUCACCCAUGUCUGCAGGGCCCAGAAUCUACUAAAACAAGGCAGGCCAACAU
GAGGAUCACCCAUGUCUGCAGGGCCUGCCGUGUUUAUCUCGUCAACUUGUUGGCGAGAU

7. SaCas9-sgRNA MS2-fusion (TL+SL2) scaffold sequence (RNA)

GUUUUAGUACUCUGGGCCAACAUGAGGAUCACCCAUGUCUGCAGGGCCCAGAAUCUACUAAAACAAGGCAAAAUGCCGU
GUUUAUCUCGUCAAGGCCAACAUGAGGAUCACCCAUGUCUGCAGGGCCUUGGCGAGAU

Mammalian sgRNA guide sequences

Gene	Guide target	PAM sequence
DYRK1A	ATGGTTCCTTAAATAAGAACTT	TAGGAT
EMX1-sg1	TGGCCAGGCTTTGGGGAGGCC	TGGAGT
EMX1-sg2	GGCCTCCCCAAAGCCTGGCCA	GGGAGT

SURVEYOR assay primers

Gene	Surveyor primer F	Surveyor primer R
DYRK1A	GGAGCTGGTCTGTTGGAGAA	TCCCAATCCATAATCCCACGTT
EMX1	CCATCCCCTTCTGTGAATGT	GGAGATTGGAGACACGGAGA

Targeted sequencing primers

Gene	NGS primer F (only priming sequence, without adapter)	NGS primer R (only priming sequence, without adapter)
DYRK1A	CTGTTGTGTTGAGTAACATATACCTG	TTGCATGCTGAAGTCTCTCC
EMX1	AAGAAGGGCTCCCATCACAT	AGTGGCCAGAGTCCAGCTT

SaCas9 self-assembly primer

Constructs	Forward (N-term)	Reverse (N-term)
SaCas9 Split 1	ggtaggcgtgtacggtgggagg	cacagtcgaggctgatcagcgagctcta

		ggaattcttaggacaggtccaccttctt gggc
	Forward (C-term)	Reverse (C-term)
	agcagagctctctggctaactaccggtgcc accATGCAGCAGAAAGAGATCCCCACCACC	cagtcgaggctgatcagcgagc
	Forward (N-term)	Reverse (N-term)
	ggtaggcgtgtacggtgggagg	gcacagtcgaggctgatcagcgagctct aggaattcttactcggcctgcttttcct cgaa
SaCas9 Split 2		
	Forward (C-term)	Reverse (C-term)
	ataagcagagctctctggctaactaccggt gccaccATGAGCATGCCCGAGATCGAAACC	cagtcgaggctgatcagcgagc
	Forward (N-term)	Reverse (N-term)
	ggtaggcgtgtacggtgggagg	cacagtcgaggctgatcagcgagctcta ggaattcttagatcagggtgttgcccttt gtcg
SaCas9 Split 3		
	Forward (C-term)	Reverse (C-term)
	gcagagctctctggctaactaccggtgcca ccATGGTGAACAATCTGAACGGCCTGTACG	cagtcgaggctgatcagcgagc

SaCas9 dimer fusion primer

Constructs	Forward (N-term)	Reverse (N-term)
	taagcagagctctctggctaactaccggtg ccaccATGAAGCGGAACTACATCCTGGGCC	gcacagtcgaggctgatcagcgagctct aggaattcttactcggcctgcttttcct cgaa
SaCas9 Dimer Fusion	Forward (C-term)	Reverse (C-term)
	ataagcagagctctctggctaactaccggt gccaccATGAGCATGCCCGAGATCGAAACC	cagtcgaggctgatcagcgagctctagg aattcttagccctttttgatgatctgag ggtg

Example 4: SaCas9 nickases D10A and N580A

[00598] Editas Medicine reported data demonstrating nickase activity of D10A and N580A mutants of SaCas9. (Figure 22).

***

While preferred embodiments of the present invention have been shown and described herein, it will be obvious to those skilled in the art that such embodiments are provided by way of example only. Numerous variations, changes, and substitutions will now occur to those skilled in the art without departing from the invention. It should be understood that various alternatives to the

embodiments of the invention described herein may be employed in practicing the invention. It is intended that the following claims define the scope of the invention and that methods and structures within the scope of these claims and their equivalents be covered thereby.

What is claimed is:

1. An engineered SaCas9 protein, wherein:

the protein complexes with a nucleic acid molecule comprising RNA to form a CRISPR complex,

wherein when in the CRISPR complex, the nucleic acid molecule targets one or more target polynucleotide loci,

the protein comprises at least one modification compared to the unmodified protein,

wherein the CRISPR complex comprising the modified protein has altered activity as compared to the complex comprising the unmodified protein.

2. The engineered SaCas9 protein of claim 1, wherein the altered activity comprises an altered binding property as to the nucleic acid molecule comprising RNA or to the target polynucleotide loci, altered binding kinetics as to the nucleic acid molecule comprising RNA or to the target polynucleotide loci, or altered binding specificity as to the nucleic acid molecule comprising RNA or to the target polynucleotide loci compared to off-target polynucleotide loci.

3. The engineered SaCas9 protein of claim 1 or 2, wherein the altered activity comprises increased targeting efficiency or decreased off-target binding.

4. The engineered SaCas9 protein of any one of claims 1 to 3, wherein the altered activity comprises modified cleavage activity.

5. The engineered SaCas9 protein of claim 4, wherein the modified cleavage activity comprises increased cleavage activity as to the target polynucleotide loci.

6. The engineered SaCas9 protein of claim 4, wherein the modified cleavage activity comprises decreased cleavage activity as to the target polynucleotide loci.

7. The engineered SaCas9 protein of any one of claims 4 to 6, wherein the modified cleavage activity comprises decreased cleavage activity as to off-target polynucleotide loci.

8. The engineered SaCas9 protein of any one of claims 4 to 6, wherein the modified cleavage activity comprises increased cleavage activity as to off-target polynucleotide loci.

9. The engineered SaCas9 protein of any one of claims 1 to 8 wherein the altered activity comprises altered helicase kinetics.

10. The engineered SaCas9 protein of any one of claims 1 to 9 wherein the SaCas9 protein comprises a modification that alters association of the protein with the nucleic acid molecule comprising RNA, with the target polynucleotide loci, or with the off-target polynucleotide loci.

11. The engineered SaCas9 protein of any one of claims 1 to 10 wherein the SaCas9 protein comprises a modification that alters formation of the CRISPR complex.

12. The engineered SaCas9 protein of any one of claims 1 to 11 wherein the SaCas9 protein comprises a modification that alters targeting of the nucleic acid molecule to the target polynucleotide loci.

13. The engineered SaCas9 protein of any one of claims 10 to 12, wherein the modification comprises a mutation in a region of the protein that associates with the nucleic acid molecule.

14. The engineered SaCas9 protein of any one of claims 10 to 12, wherein the modification comprises a mutation in a region of the protein that associates with the target polynucleotide loci.

15. The engineered SaCas9 protein of any one of claims 10 to 12, wherein the modification comprises a mutation in a region of the protein that associates with the off-target polynucleotide loci.

16. The engineered SaCas9 protein of any one of claims 10 to 15, wherein the modification or mutation comprises decreased positive charge in a region of the protein that associates with the nucleic acid molecule comprising RNA, with the target polynucleotide loci, or with the off-target polynucleotide loci.

17. The engineered SaCas9 protein of any one of claims 10 to 15, wherein the modification or mutation comprises decreased negative charge in a region of the protein that

associates with the nucleic acid molecule comprising RNA, with the target polynucleotide loci, or with the off-target polynucleotide loci.

18. The engineered SaCas9 protein of any one of claims 10 to 15, wherein the modification or mutation comprises increased positive charge in a region of the protein that associates with the nucleic acid molecule comprising RNA, with the target polynucleotide loci, or with the off-target polynucleotide loci.

19. The engineered SaCas9 protein of any one of claims 10 to 15, wherein the modification or mutation comprises increased negative charge in a region of the protein that associates with the nucleic acid molecule comprising RNA, with the target polynucleotide loci, or with the off-target polynucleotide loci.

20. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the modification or mutation increases steric hindrance between the protein and the nucleic acid molecule comprising RNA, the target polynucleotide loci, or the off-target polynucleotide loci.

21. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the modification or mutation comprises a modification or a mutation of one or more nuclease domains.

22. The engineered SaCas9 protein of claim 21, wherein the modification or mutation comprises a modification or a mutation of a RuvC domain or an HNH domain.

23. The engineered SaCas9 protein of claim 21, wherein the modification or mutation comprises a substitution of a nuclease domain of a SaCas9 ortholog.

24. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the modification or mutation comprises a substitution of Asp, Asn, Glu, or His with a different amino acid.

25. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the modification or mutation comprises a substitution of one or more amino acids with Ala or Asp.

26. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the modification or mutation comprises a substitution selected from the group consisting of E477A, N580D, N580A, D10A, H701A, D704A, H577A and a combination thereof.

27. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the modification or mutation comprises an amino acid substitution in a binding groove.

28. The engineered SaCas9 protein of claim 27, wherein the binding groove comprises one or more RuvC domains, RuvC-III domains, HNH domains, or a combination thereof.

29. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the binding groove is between the RuvC and the HNH domains.

30. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the modification or mutation comprises a modification or a mutation of one or more PAM-interacting residues or PAM-interacting domains.

31. The engineered SaCas9 protein of claim 30, wherein the modification or mutation comprises a PAM recognition region comprising one or more PAM-interacting residues of an Cas9 ortholog.

32. The engineered SaCas9 protein of claim 30, wherein the modification comprises a substitution of a PAM recognition region of an Cas9 ortholog.

33. The engineered SaCas9 protein of claim 30, wherein the modification comprises a substitution of one or more WED or PI domains with an analogous domain of a Cas9 ortholog.

34. The engineered SaCas9 protein of claim 30, wherein the modification comprises a substitution at one or more of the following amino acids: Y789, Y882, K886, N888, A889, L909, N985, N986, R991, E993, and R1015.

35. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the modification or mutation comprises an addition of one or more heterologous functional domains.

36. The engineered SaCas9 protein of claim 35, wherein the heterologous function domain comprises a transcription activation domain, a transcription repressor domain, or a nuclease domain.

37. The engineered SaCas9 protein of claim 35, wherein the heterologous functional domain is inserted into a linker loop between amino acids 430 and 431.

38. The engineered SaCas9 protein of claim 35, wherein the heterologous functional domain is inserted in a RuvC-III domain between amino acids 739 and 740.

39. The engineered SaCas9 protein of any one of claims 35 to 38, wherein the heterologous functional domain comprises VP64, a KRAB domain, a SID domain, or FokI.

40. The engineered SaCas9 protein of any one of claims 35 to 38, wherein the one or more heterologous functional domains comprise one or more of the following activities: methylase activity, demethylase activity, transcription activation activity, transcription repression activity, transcription release factor activity, histone modification activity, nuclease activity, single-strand RNA cleavage activity, double-strand RNA cleavage activity, single-strand DNA cleavage activity, double-strand DNA cleavage activity and nucleic acid binding activity.

41. The engineered SaCas9 protein of any one of claims 10 to 19, wherein the modification or mutation comprises a split SaCas9 dimer.

42. The engineered SaCas9 protein of claim 41, wherein the modification or mutation comprises a split in a RuvC domain.

43. The engineered SaCas9 protein of claim 41, wherein the modification or mutation comprises a split between amino acid 739 and amino acid 740.

44. The engineered SaCas9 protein of claim 41, wherein the modification or mutation comprises a split in a linker between a RuvC-II domain and an HNH domain.

45. The engineered SaCas9 protein of claim 41, wherein the modification or mutation comprises a split between amino acid 430 and amino acid 431.

46. The engineered SaCas9 protein of any one of claims 1 to 45, wherein the the SaCas9 protein comprises one or more nuclear localization signal (NLS) domains.

47. The engineered SaCas9 protein of any one of claims 1 to 46, wherein the SaCas9 protein comprises at least two or more NLSs.

48. The engineered SaCas9 protein of any one of claims 1 to 47, wherein the SaCas9 protein comprises one or more heterologous functional domains.

49. An engineered SaCas9 protein according to any one of claims 1 to 48, wherein the SaCas9 protein is encoded by a nucleotide sequence which is codon optimized for expression in a eukaryote.

50. A composition comprising the engineered SaCas9 protein of any one of claims 1 to 49.

51. A system comprising the engineered SaCas9 protein of any one of claims 1 to 51 and a nucleic acid molecule comprising RNA that targets one or more target polynucleotide loci.

52. A vector system comprising one or more vectors, wherein the one or more vectors comprises:
a) a first regulatory element operably linked to a nucleotide sequence encoding the engineered SaCas9 protein of any one of the preceding claims; and
b) a second regulatory element operably linked to one or more nucleotide sequences encoding one or more nucleic acid molecules comprising a guide RNA comprising a guide sequence, a tracr sequence, and a tracr mate sequence, wherein components (a) and (b) are located on same or different vectors.

53. The vector system of claim 55, wherein the guide RNA is chimeric, truncated, dead, escorted, protected or modified.

54. A method of modifying a locus of interest in a cell comprising contacting the cell with the engineered SaCas9 protein or composition or system or vector system of any one of the preceding claims.

55. A method of modulating gene expression, wherein the method comprises introducing the engineered SaCas9 protein of any one of the preceding claims into a cell.

56. The method of claim 55, wherein the cell is a eukaryotic or a prokaryotic cell.

57. The method of claim 55, wherein the method is *ex vivo* or *in vitro*.

58. A method of treating a disease, disorder or infection in an individual in need thereof comprising administering an effective amount of the engineered SaCas9 protein or composition or system or vector system of any one of the preceding claims.

59. A non-naturally occurring or engineered CRISPR-Cas system or a non-naturally occurring or engineered composition comprising a CRISPR-Cas system comprising a single guide RNA (sgRNA), wherein when the sgRNA is in complex with a CRISPR enzyme within a prokaryotic or eukaryotic cell forming a CRISPR-SaCas9 quarternary complex having a conformation, the CRISPR enzyme is capable of effecting the manipulation of a target nucleic acid within the cell,

wherein the sgRNA comprises a guide sequence capable of hybridizing to the complement of a target DNA sequence in a genomic locus of interest in a prokaryotic or eukaryotic cell,

wherein the sgRNA is modified, and

wherein the sgRNA is a *Staphylococcus aureus* (Sa) sgRNA and the CRISPR enzyme is a SaCas9.

60. The CRISPR-Cas system or composition of claim 59, wherein the modification of the architecture of the sgRNA comprises addition of one or more nucleotides to a tetraloop, stem loop 1 and/or stem loop 2 as indicated in Fig 2A.

61. The CRISPR-Cas system or composition of claim 60, wherein the modification of the architecture of the sgRNA affects the binding of the complement of the target DNA to a RuvC domain.

62. The CRISPR-Cas system or composition of claim 59, wherein the modification of the sgRNA alters the conformation of the CRISPR-SaCas9 quaternary complex.

63. The CRISPR-Cas system or composition of claim 59, wherein the modification of the sgRNA alters the association of the sgRNA with a REC lobe of the SaCas9.

64. The CRISPR-Cas system or composition of any one of claims 59 to 63, wherein the Sa sgRNA further comprises one or more RNA sequence(s) that binds to one or more adaptor protein(s), wherein the adaptor protein(s) is associated with one or more functional domain(s).

65. The CRISPR-Cas system or composition of claim 64, wherein at least one of the one or more RNA sequences is an aptamer sequence that binds to the adaptor protein.

66. The CRISPR-Cas system or composition of claim 64 comprising at least two aptamer sequences that bind to the same or different adaptor protein(s).

67. The CRISPR-Cas system or composition of claim 64, wherein the adaptor protein comprises MS2, PP7, Qβ, F2, GA, fr, JP501, M12, R17, BZ13, JP34, JP500, KU1, M11, MX1, TW18, VK, SP, FI, ID2, NL95, TW19, AP205, ϕCb5, ϕCb8r, ϕCb12r, ϕCb23r, 7s, and PRR1.

68. The CRISPR-Cas system or composition of any of claims 64 to 67, wherein the functional domain comprises a transcriptional activation domain, a transcriptional repressor domain or a nuclease domain.

69. A non-naturally occurring or engineered composition comprising the Sa sgRNA of any one of claims 1 to 68 and a type II CRISPR enzyme.

70. The composition of claim 69, wherein the type II CRISPR enzyme is a Cas9 enzyme.

71. The composition of claim 70, wherein the type II CRISPR enzyme is *Staphylococcus aureus* Cas9 (SaCas9).

72. The composition of claim 69, wherein the type II CRISPR enzyme is SaCas9 comprising a REC lobe and/or a NUC lobe, which comprises all or a portion of a REC lobe and/or NUC lobe of a SaCas9 ortholog.

73. The composition of claim 72, wherein the SaCas9 ortholog is SpCas9 or AnCas9.

74. The composition of claim 69, wherein the type II CRISPR enzyme is SaCas9 and wherein the PAM recognition region comprises one or more PAM-interacting residue(s) of an Cas9 ortholog.

75. The composition of claim 74, wherein the PAM recognition region comprises one or more PAM-interacting residues of SpCas9.

76. The composition of claim 69, wherein the type II CRISPR enzyme is SaCas9, wherein one or more nuclease domains comprises all or a portion of a corresponding nuclease domain of a Cas9 ortholog.

77. The composition of claim 76, wherein the one or more nuclease domains comprises all or a portion of a corresponding nuclease domain of SpCas9.

78. The composition of claim 77, wherein the nuclease domain is a RuvC domain.

79. The composition of claim 77, wherein the nuclease domain is a HNH domain.

80. The composition of claim 69, wherein the type II CRISPR enzyme is SaCas9, wherein the REC lobe and/or the NUC lobe comprises all or a portion of a REC lobe and/or NUC lobe of a SaCas9 ortholog.

81. The composition of claim 80, wherein the REC lobe and/or the NUC lobe comprises all or a portion of a REC lobe and/or NUC lobe of SpCas9 and/or AnCas9.

82. The composition of claim 69, wherein the type II CRISPR enzyme comprises one or more heterologous functional domains.

83. The composition of claim 82, wherein the heterologous functional domain comprises a transcriptional activation domain, a transcriptional repressor domain or a nuclease domain.

84. The composition of claim 82, wherein the type II CRISPR enzyme is SaCas9 and the heterologous functional domain is inserted in the linker loop between amino acids 430 and 431.

85. The composition of claim 69, wherein the CRISPR enzyme comprises a split-Cas9 dimer.

86. The composition of claim 69, wherein the type II CRISPR enzyme comprises a split in the RuvC domain.

87. The composition of claim 85, wherein the type II CRISPR enzyme is SaCas9.

88. The composition of claim 85, wherein the type II CRISPR enzyme is SaCas9 and comprises a split between amino acid 739 and amino acid 740.

89. The composition of claim 69, wherein the type II CRISPR enzyme comprises a split in the linker between the RuvCII domain and the HNH domain.

90. The composition of claim 89, wherein the type II CRISPR enzyme is SaCas9.

91. The composition of claim 89, wherein the type II CRISPR enzyme is SaCas9 and comprises a split between amino acid 430 and amino acid 431.

92. The composition of any one of claims 85 to 91, wherein one or more components of the split-Cas9 is operably linked to one or more nuclear localization signals (NLS(s)).

93. The composition of any one of claims 85 to 91, wherein the split-Cas9 is inducible.

94. The composition of claim 70, wherein the type II CRISPR enzyme comprises a modification of one or more residues located in a nucleic acid binding groove.

95. The composition of claim 94, wherein the nucleic acid binding groove comprises one or more of a RuvC domain, a RuvC-III domain, and an HNH domain.

96. The composition of claim 94, wherein the modification comprises a modification of one or more residues wherein the one or more residues comprises arginine, histidine or lysine.

97. The composition of claim 70, wherein the modification comprises a modification of one or more PAM-interacting residues.

98. The CRISPR-Cas system or composition of any of claims 59 to 97, wherein the cell is a eukaryotic cell.

99. The CRISPR-Cas system or composition of claim 98, wherein the eukaryotic cell is a mammalian cell.

100. The CRISPR-Cas system or composition of claim 99, wherein the mammalian cell is a human cell or a rodent cell, optionally a mouse cell.

101. A polynucleotide encoding the Sa sgRNA of any one of claims 59 to 100.

102. A vector comprising the polynucleotide of claim 101 operably linked to a suitable promoter.

103. The vector of claim 102, which comprises a polynucleotide encoding a Type II CRISPR enzyme.

104. The vector of claim 103, wherein the Type II CRISPR enzyme is the Type II CRISPR enzyme of any one of claims 71 to 96.

105. A vector system, comprising one vector according to claim 101 and a second vector according to claim 104.

106. A organism or model transformed with a vector or vector system of any one of claims 102 to 105 to thereby express the Sa sgRNA.

107. The organism or model of claim 106, which expresses the type II CRISPR enzyme of any one of claims 71 to 96.

108. An *in vivo, ex vivo* or *in vitro* host cell or cell line comprising or modified by the composition or enzyme according to any one of claims 59 to 105, or a progeny thereof.

109. The *in vivo, ex vivo* or *in vitro* host cell, cell line or progeny thereof of claim 108, which is a stem cell or a stem cell line.

110. A method of modifying a genomic locus of interest to alter gene expression in a cell, which comprises introducing into the cell the Sa sgRNA or composition, polynucleotide, vector , or vector system of any of claims 59 to 105.

111. The composition of any of claims 59 to 105, wherein the sgRNA comprises a tracrRNA sequence that is 30 or more nucleotides in length.

112. The composition of any of claims 59 to 105, wherein the sgRNA comprises a tracrRNA sequence that is 50 or more nucleotides in length.

113. The composition of any of claims 59 to 105, wherein the Type II CRISPR enzyme further comprises one or more nuclear localization sequences (NLSs).

114. The composition or enzyme of any of claims 59 to 105, for use in medicine or for use in therapy.

115. Use of the composition or enzyme according to any one of claims 59 to 105

- in the preparation of a medicament;

- in the preparation of a medicament for *ex vivo* gene or genome editing; or

- in *ex vivo* gene or genome editing.

116. A composition for use, method or the use according to any of claims 59 to 105 to correct ocular defects that arise from genetic mutations.

117. A computer-assisted method for identifying or designing i) a potential compound to fit within or bind to a CRISPR-Cas9 system or a portion thereof, which comprises:

a) providing the co-ordinates of at least two atoms of the CRISPR-Cas9 system of the Crystal Structure of Table 7,

b) providing the structure of a candidate molecule i) for binding to or within the CRISPR-Cas9 system, or ii) for manipulating a portion of the CRISPR-Cas9 system,

c) fitting the structure of the candidate molecule to the at least two atoms of the CRISPR-Cas9 system, wherein fitting comprises determining interactions between one or more atoms of the candidate molecule and atoms of the CRISPR-SpCas9 system, and

d) selecting the candidate molecule if it is predicted to bind to or within the CRISPR-Cas9 system.

118. The method of claim 117, wherein the candidate molecule comprises atoms of the CRISPR-Cas9 system of the Crystal Structure Table.

119. The method of claim 117, wherein the candidate molecule comprises atoms of the sgRNA:DNA duplex, which comprises comparing atoms of the sgRNA:DNA duplex to atoms of the SaCas9.

120. The method of claim 119, wherein the atoms of the SaCas9 comprise atoms of the REC lobe and/or the NUC lobe.

121. The method of claim 117, wherein the candidate molecule comprises atoms of the sgRNA repeat:anti-repeat duplex, which comprises comparing atoms of the sgRNA repeat:anti-repeat duplex to atoms of the SpCas9.

122. The method of claim 121, wherein the atoms of the SpCas9 comprise atoms of the REC lobe and/or atoms of the NUC lobe.

123. The method of claim 117, wherein the candidate molecule comprises atoms of the non-complementary strand of the target DNA, which comprises comparing atoms of the non-complementary strand of the target DNA to atoms of the SpCas9.

124. The method of claim 123, wherein the atoms of the SpCas9 comprise atoms of the PAM-interacting (PI) domain.

125. The method of claim 123, wherein the atoms of the SpCas9 comprise atoms of the RuvC domain.

126. The method of claim 117, wherein the candidate molecule comprises atoms of the complementary strand of the target DNA, which comprises comparing atoms of the complementary strand of the target DNA to atoms of the SpCas9.

127. The method of claim 126, wherein the atoms of the SpCas9 comprise atoms of the HNH domain.

128. The method of claim 117, wherein the candidate molecule comprises atoms of the guide RNA:DNA duplex, which comprises comparing atoms of the guide RNA:DNA duplex to atoms of the SpCas9.

129. The method of claim 117, wherein the candidate molecule comprises atoms of the sgRNA, which comprises comparing atoms of the sgRNA to atoms of the SpCas9.

130. The method of claim 129, wherein the candidate molecule comprises atoms of the sgRNA.

131. The method of claim 117, which further comprises synthesizing and testing the binding or activity of the compound.

132. The method of claim 117, which further comprises testing a CRISPR-Cas9 system comprising the compound to alter expression of a DNA molecule in a cell.

133. The method of claim 117, which comprises fitting the structure of the the candidate molecule comprises to atomic coordinates comprising at least 2 atoms, or at least 5 atoms, or at least 10 atoms, or at least 50 atoms, or at least 100 atoms of the CRISPR-Cas9 complex.

134. The method of any one of claims 117 to 133, wherein the the candidate molecule comprises atoms of the SpCas9 and a transcriptional repressor, a transcriptional activator, a nuclease domain, a DNA methyl transferase, a protein acetyltransferase, a protein deacetylase, a protein methyltransferase, a protein deaminase, a protein kinase, a protein phosphatase, or an epigenetic regulator.

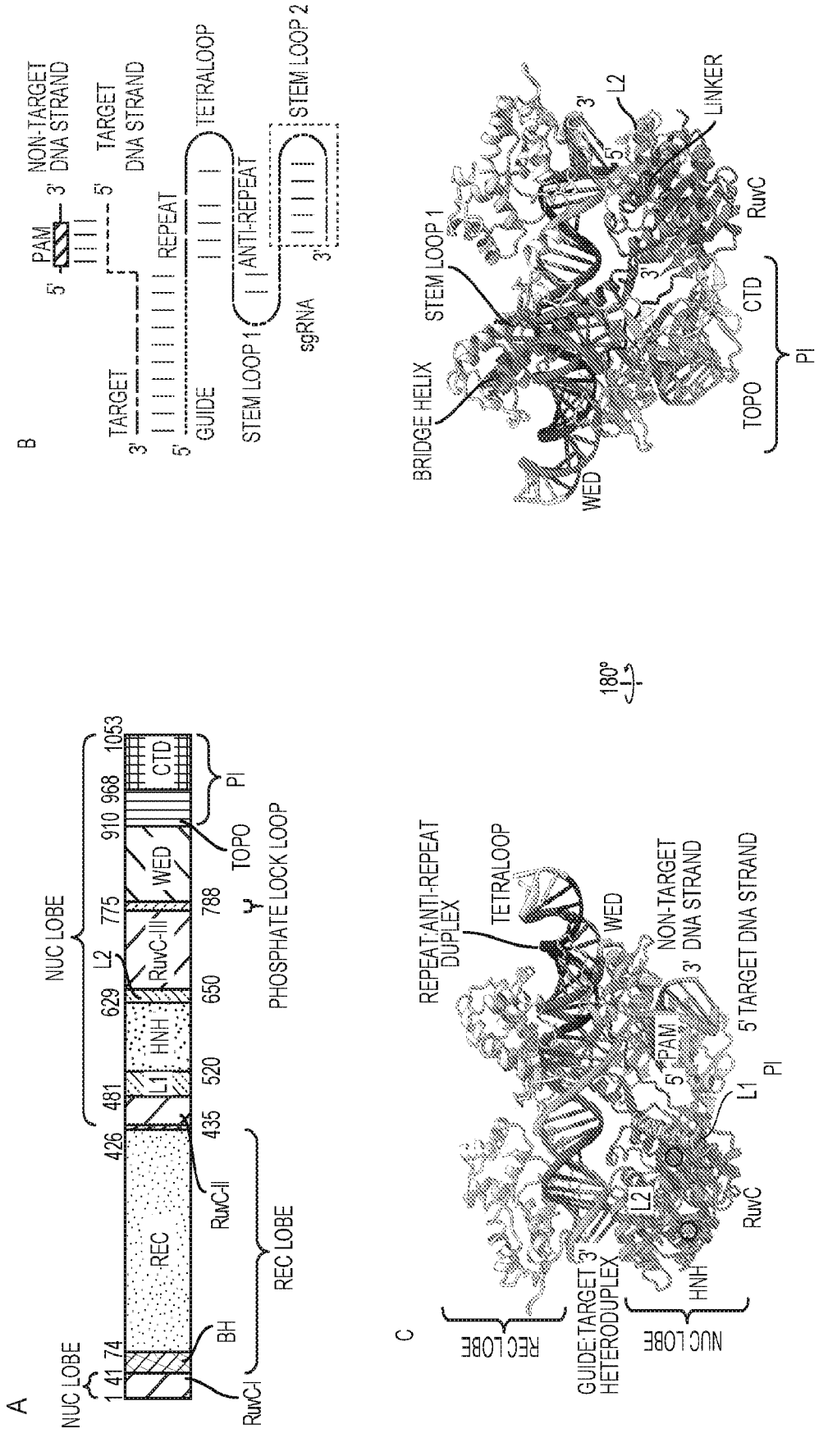

A
NUC LOBE
1 41 74
BH
RuvCI
REC
RuvCII
426 435
NUC LOBE
481 520
L1
HNH
629 650
L2
RuvCIII
775 788
WED
910 968
CTD
1053
TOPO
PI
PHOSPHATE LOCK LOOP
REC LOBE
B
PAM
5'
3'
NON-TARGET DNA STRAND
TARGET DNA STRAND
TARGET
3'
5'
REPEAT
GUIDE
5'
TETRALOOP
STEM LOOP 1
ANTI-REPEAT
STEM LOOP 2
sgRNA
3'
BRIDGE HELIX
STEM LOOP 1
WED
3'
5'
L2
3'
LINKER
TOPO
CTD
RuvC
PI
C
180°
REPEAT:ANTI-REPEAT DUPLEX
TETRALOOP
WED
NON-TARGET DNA STRAND
3'
PAM
5'
L1
5' TARGET DNA STRAND
PI
GUIDE:TARGET HETERODUPLEX
3'
L2
RuvC
HNH
REC LOBE
NUC LOBE

Fig. 1A-1C

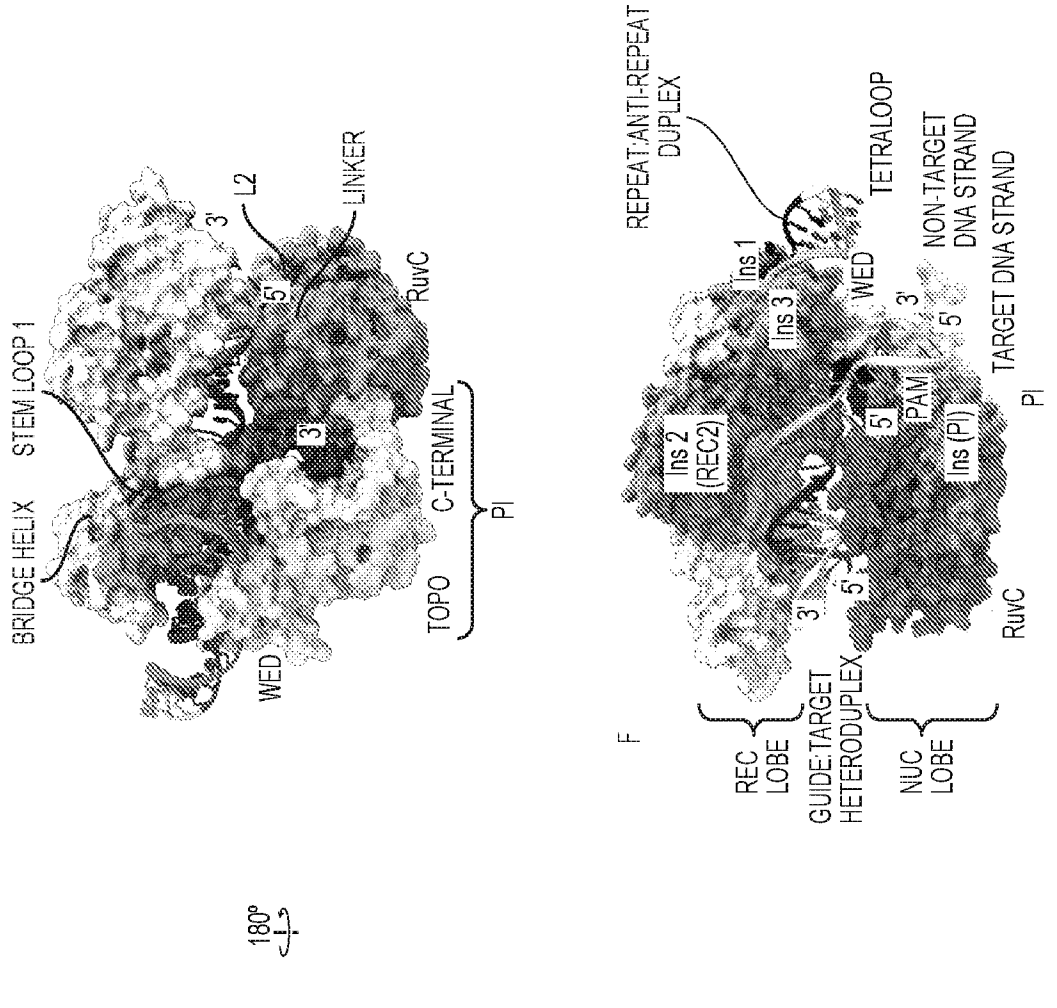

D
REC LOBE
NUC LOBE
GUIDE:TARGET HETERODUPLEX
REPEAT:ANTI-REPEAT DUPLEX
TETRALOOP
WED
NON-TARGET DNA STRAND
TARGET DNA STRAND
HNH
RuvC
PAM
L1
L2
PI
180°
BRIDGE HELIX
STEM LOOP 1
LINKER
TOPO
C-TERMINAL
E
F
Ins 1
Ins 2 (REC2)
Ins 3
Ins (PI)

Fig. 1D-1F

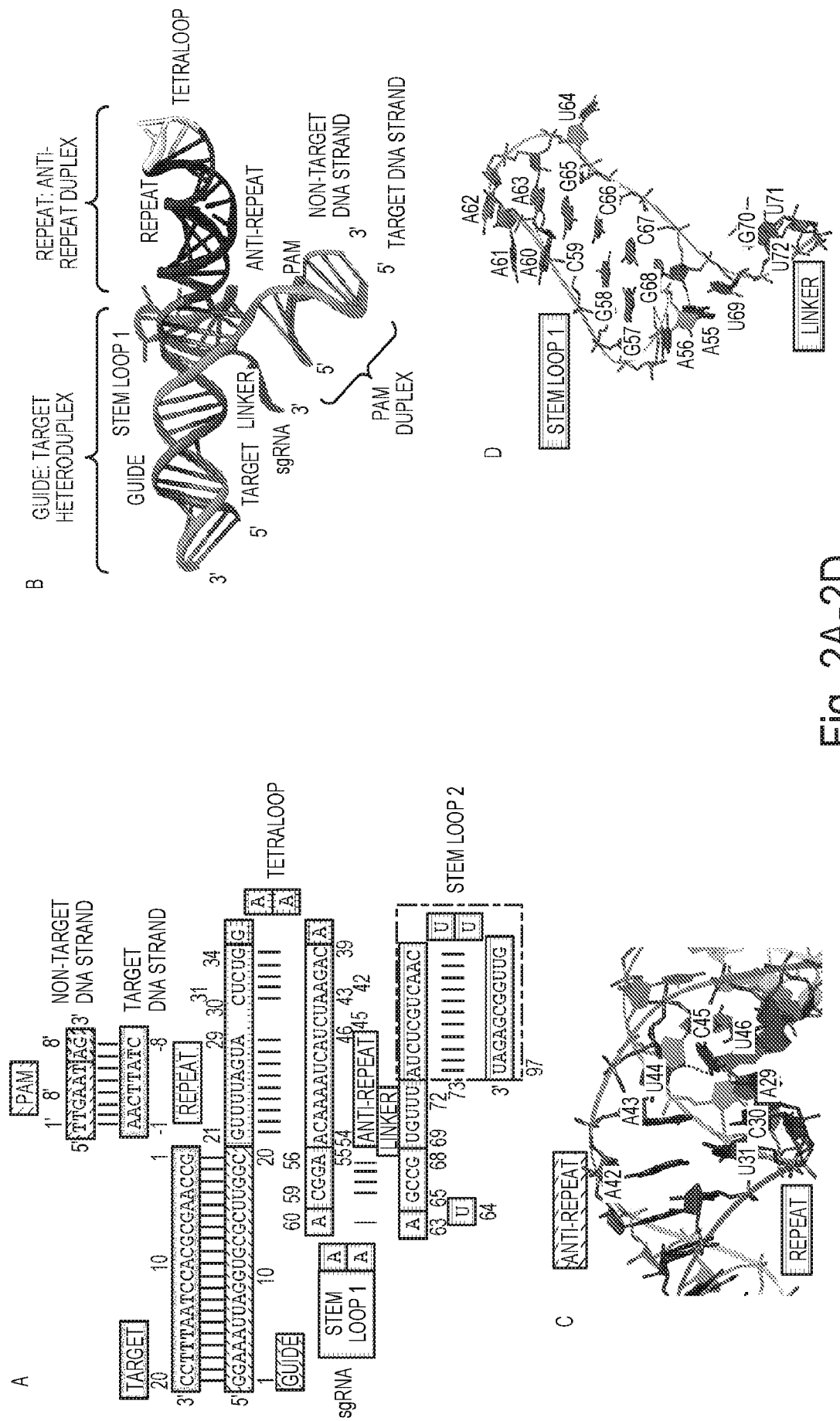

A
PAM
NON-TARGET DNA STRAND
TARGET DNA STRAND
TARGET
GUIDE
REPEAT
TETRALOOP
STEM LOOP 1
ANTI-REPEAT
LINKER
STEM LOOP 2
sgRNA
B
GUIDE: TARGET HETERODUPLEX
REPEAT: ANTI-REPEAT DUPLEX
GUIDE
STEM LOOP 1
REPEAT
TETRALOOP
TARGET
LINKER
ANTI-REPEAT
sgRNA
PAM
NON-TARGET DNA STRAND
TARGET DNA STRAND
PAM DUPLEX
C
ANTI-REPEAT
REPEAT
D
STEM LOOP 1
LINKER

Fig. 2A-2D

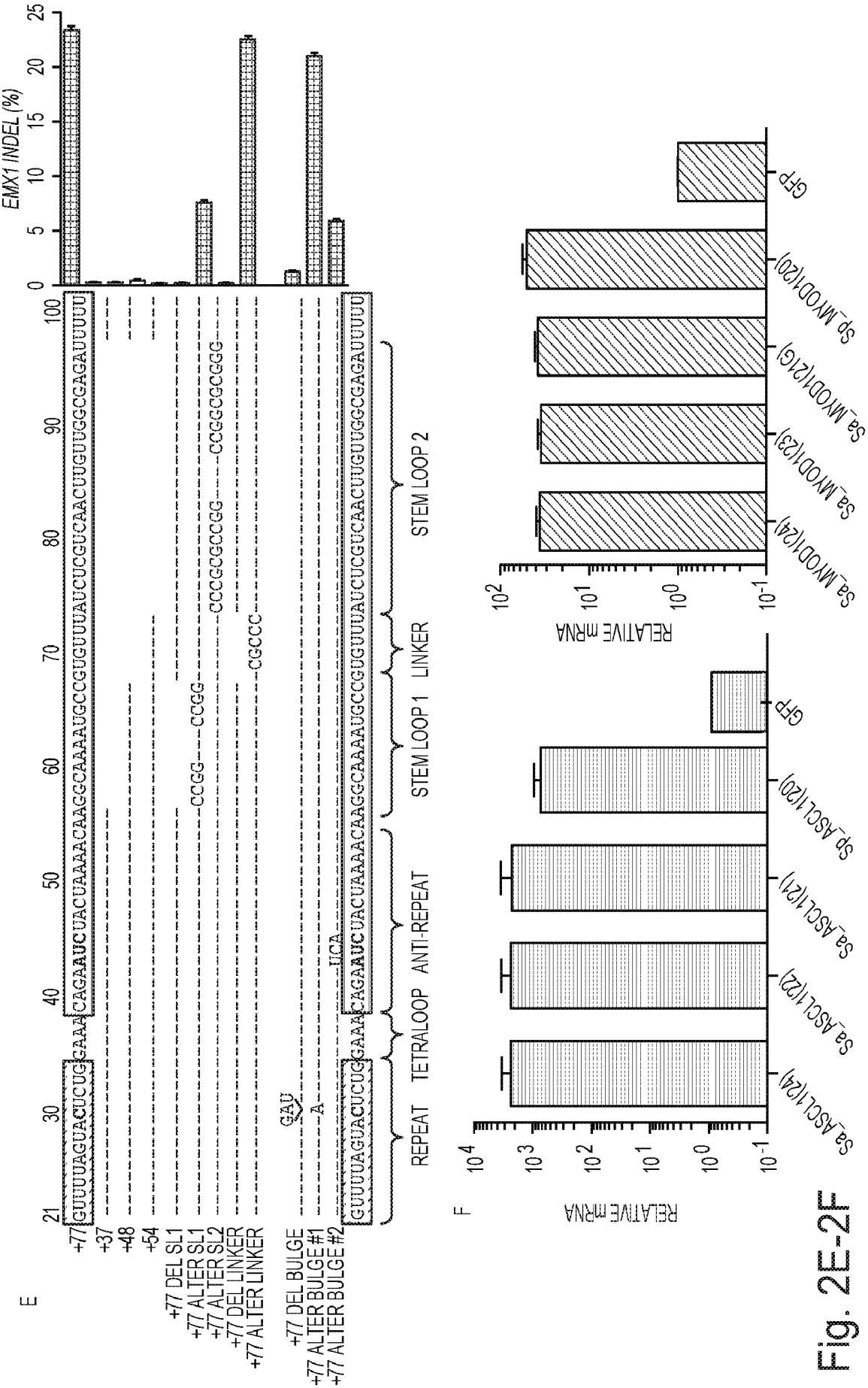

E
EMX1 INDEL (%)
0
5
10
15
20
25
21
30
40
50
60
70
80
90
100
+77
+37
+48
+54
+77 DEL SL1
+77 ALTER SL1
+77 ALTER SL2
+77 DEL LINKER
+77 ALTER LINKER
+77 DEL BULGE
+77 ALTER BULGE #1
+77 ALTER BULGE #2
GUUUUAGUACUCUGGAAACAGAAUCUACUAAAACAAGGCAAAAUGCCGUGUUUAUCUCGUCAACUUGUUGGCGAGAUUUUU
GAU
A
UCA
REPEAT
TETRALOOP
ANTI-REPEAT
STEM LOOP 1
LINKER
STEM LOOP 2
F
RELATIVE mRNA
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{-1}
Sa_ASCL1(24)
Sa_ASCL1(22)
Sa_ASCL1(21)
Sp_ASCL1(20)
GFP
RELATIVE mRNA
10^{2}
10^{1}
10^{0}
10^{-1}
Sa_MYOD1(24)
Sa_MYOD1(23)
Sa_MYOD1(21G)
Sp_MYOD1(20)
GFP

Fig. 2E-2F

G

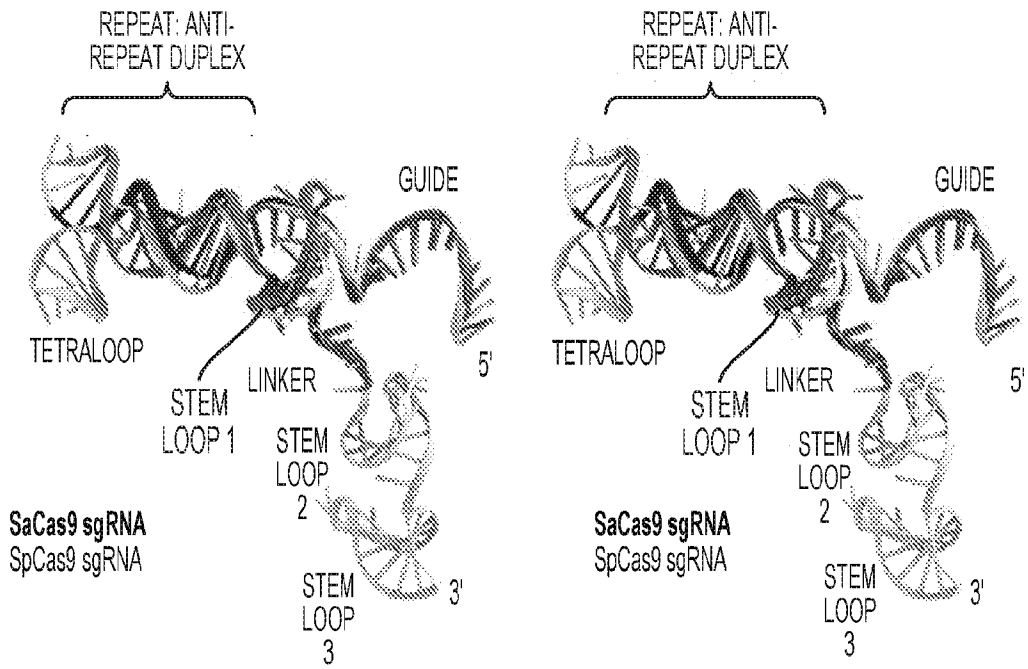

REPEAT: ANTI-REPEAT DUPLEX
GUIDE
TETRALOOP
LINKER
5'
STEM LOOP 1
STEM LOOP 2
STEM LOOP 3
3'
SaCas9 sgRNA
SpCas9 sgRNA
REPEAT: ANTI-REPEAT DUPLEX
GUIDE
TETRALOOP
LINKER
5'
STEM LOOP 1
STEM LOOP 2
STEM LOOP 3
3'
SaCas9 sgRNA
SpCas9 sgRNA

Fig. 2G

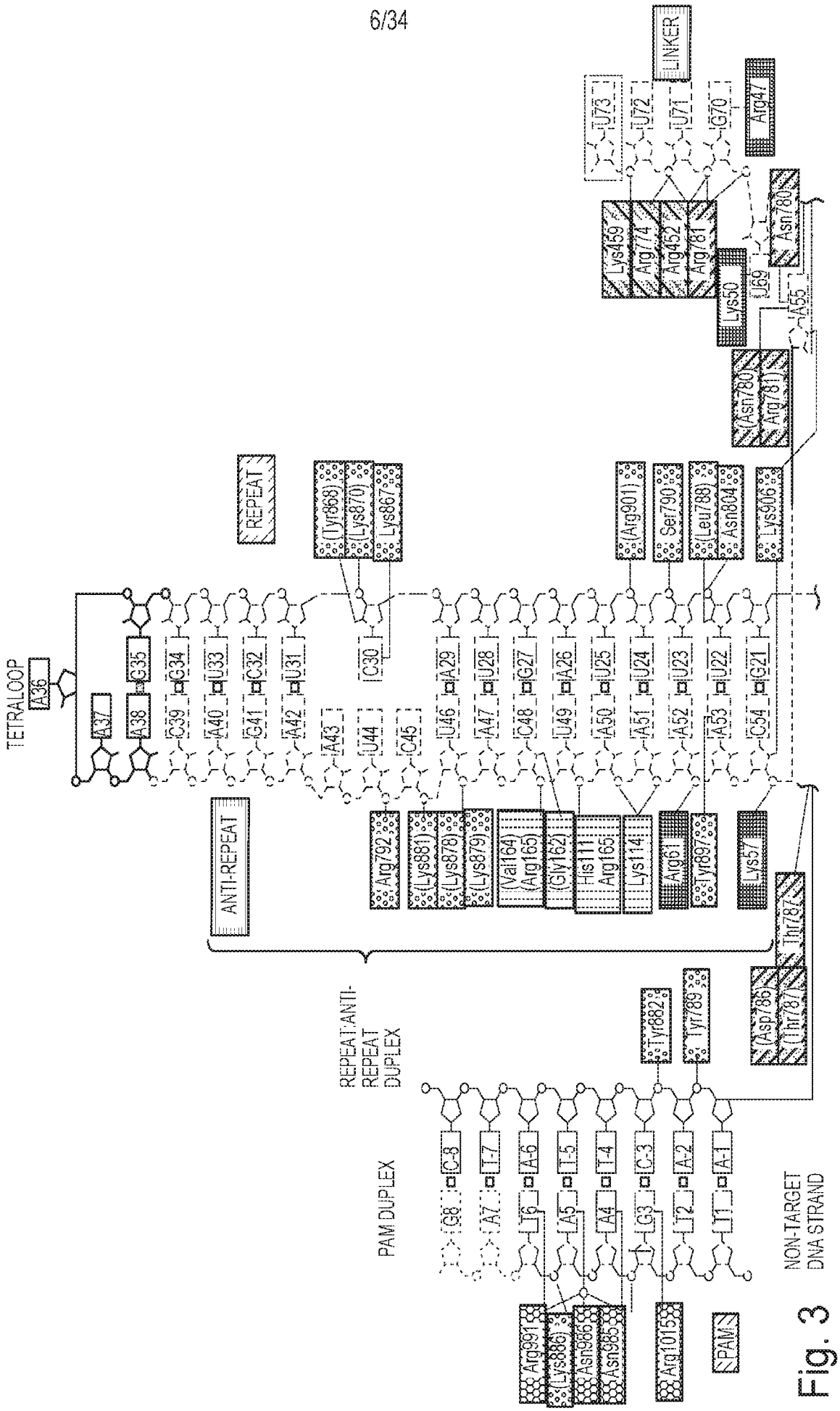

TETRALOOP
A36
A37
A38
G35
G34
U33
C32
U31
C30
A29
U28
G27
A26
U25
U24
U23
U22
G21
C39
A40
G41
A42
A43
U44
C45
U46
A47
C48
U49
A50
A51
A52
A53
C54
REPEAT
ANTI-REPEAT
(Tyr868)
(Lys870)
Lys867
(Arg901)
Ser790
(Leu788)
Asn804
Lys905
Arg792
(Lys881)
(Lys878)
(Lys879)
(Val164)
(Arg165)
(Gly162)
His111
Arg165
Lys114
Arg61
Tyr897
Lys57
Thr787
(Asp786)
(Thr787)
Tyr682
Tyr789
REPEAT:ANTI-REPEAT DUPLEX
PAM DUPLEX
G8
A7
T6
A5
A4
G3
T2
T1
C-8
T-7
A-6
T-5
T-4
C-3
A-2
A-1
Arg991
(Lys886)
Asn986
Asn985
Arg1015
PAM
NON-TARGET DNA STRAND
U73
U72
U71
G70
LINKER
Arg47
Lys459
Arg774
Arg452
Arg781
Asn780
Lys50
U69
A55
(Asn780)
Arg781

Fig. 3

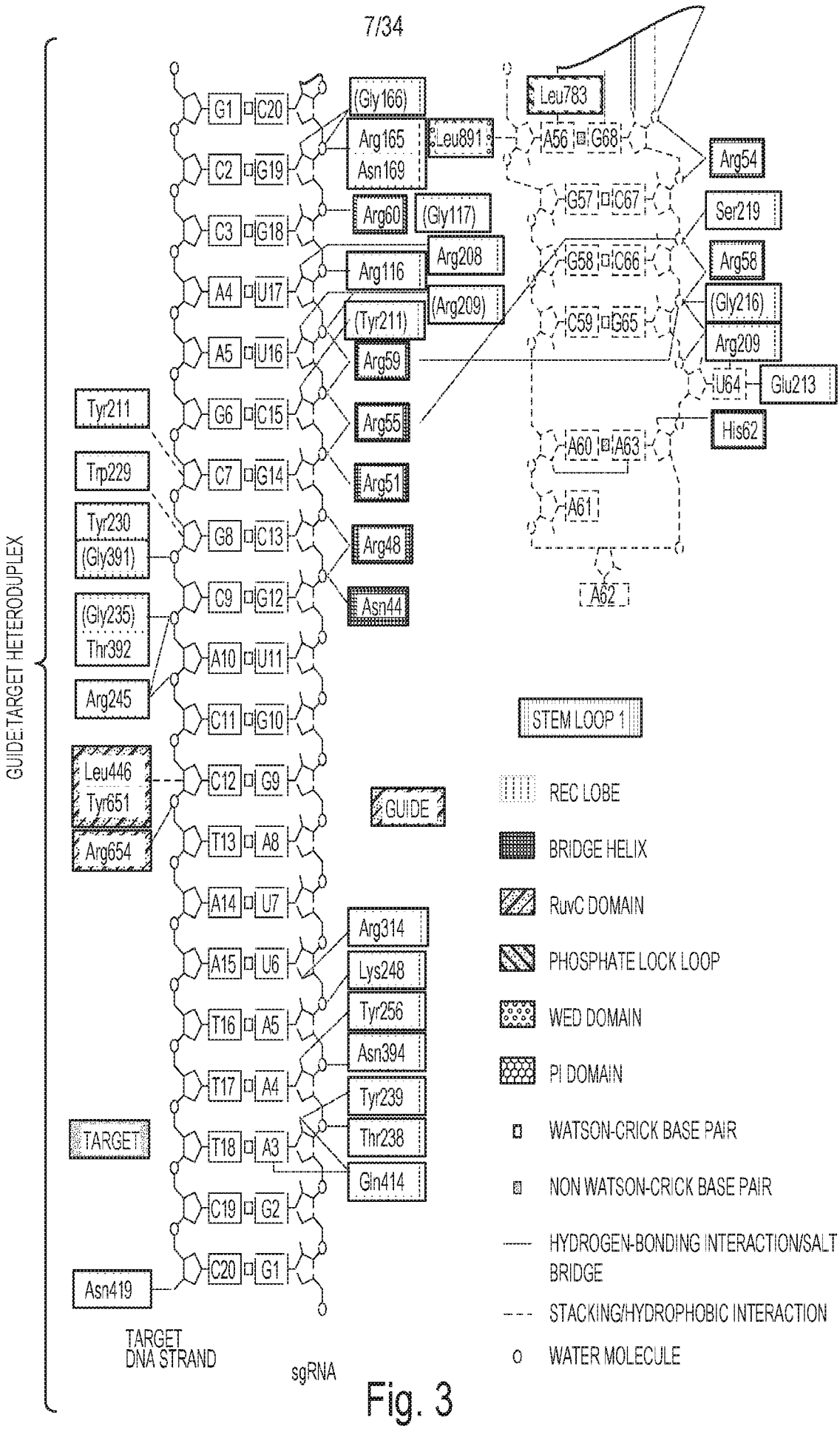


Fig. 3
CONTINUED

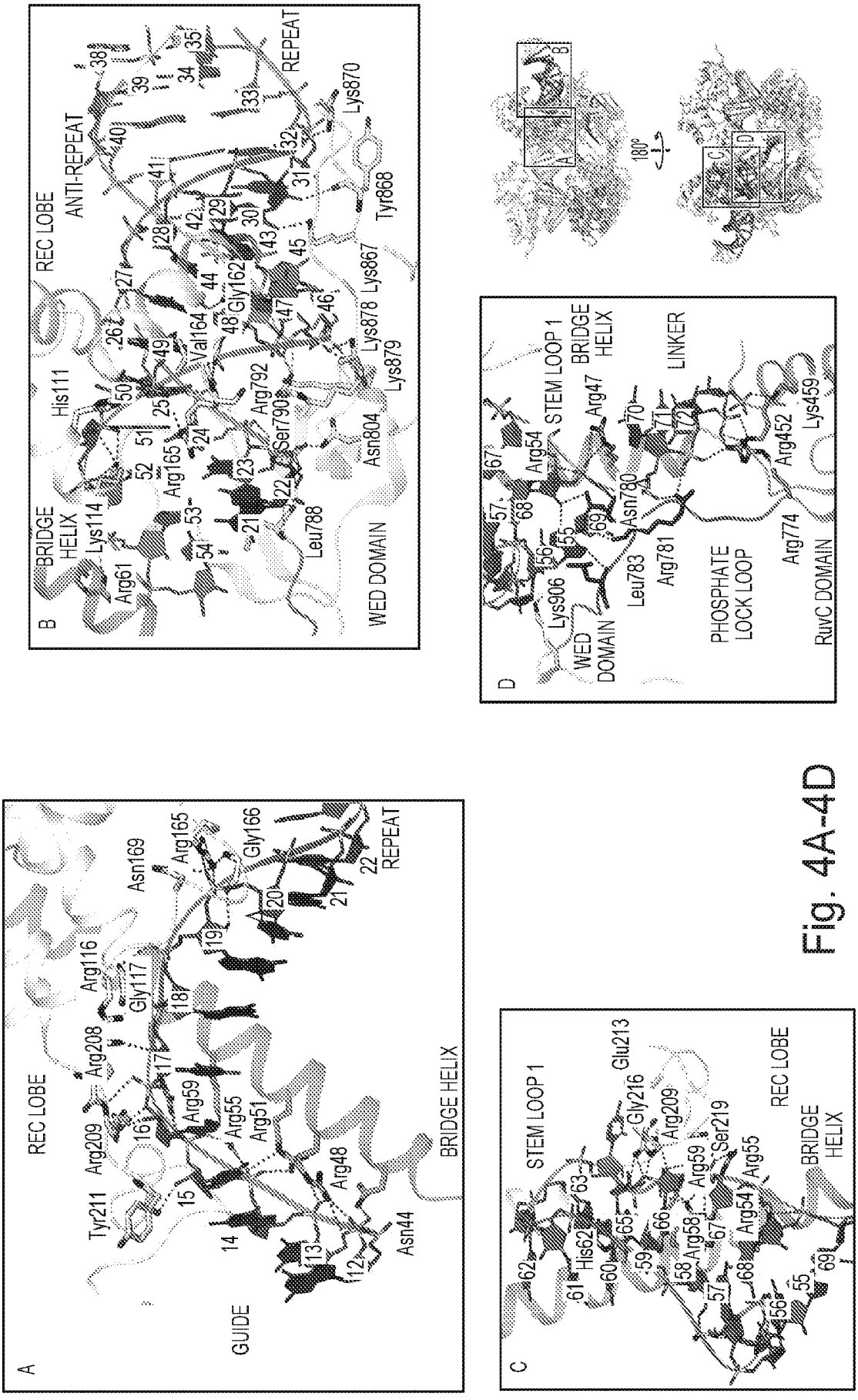

A
REC LOBE
Tyr211
Arg209
Arg208
Arg116
Gly117
Asn169
Arg165
Gly166
Arg59
Arg55
Arg51
Arg48
Asn44
GUIDE
BRIDGE HELIX
REPEAT
B
BRIDGE HELIX
Lys114
Arg61
His111
REC LOBE
ANTI-REPEAT
Arg165
Val164
Gly162
Arg792
Ser790
Leu788
Asn804
Lys879
Lys878
Lys867
Tyr868
Lys870
REPEAT
WED DOMAIN
C
STEM LOOP 1
His62
Glu213
Gly216
Arg209
Arg59
Ser219
Arg58
Arg54
Arg55
REC LOBE
BRIDGE HELIX
D
STEM LOOP 1
BRIDGE HELIX
Lys906
Arg54
Arg47
WED DOMAIN
Leu783
Asn780
Arg781
LINKER
PHOSPHATE LOCK LOOP
Arg774
Arg452
Lys459
RuvC DOMAIN
180°

Fig. 4A-4D

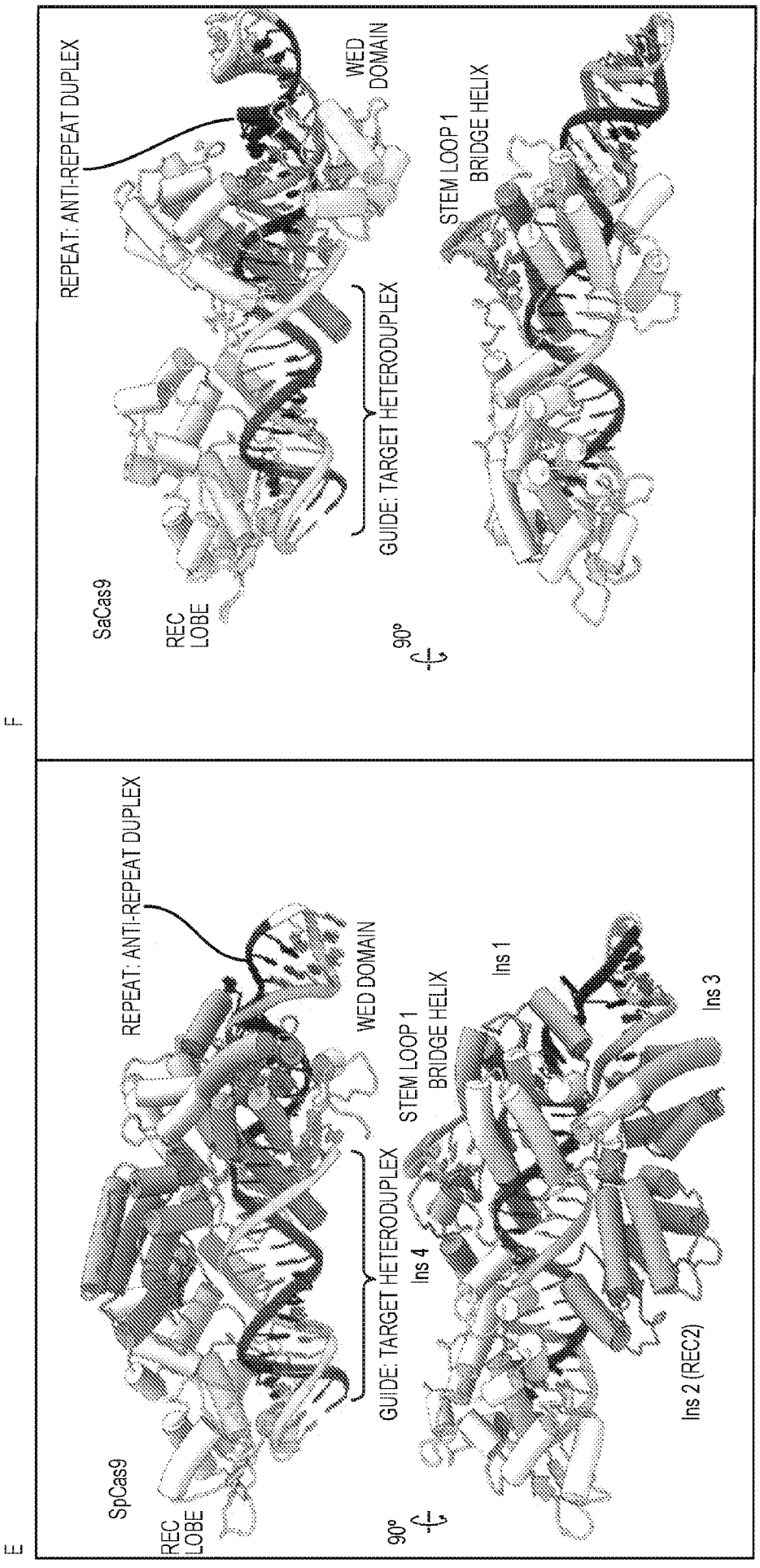

E
SpCas9
REC LOBE
REPEAT: ANTI-REPEAT DUPLEX
WED DOMAIN
GUIDE: TARGET HETERODUPLEX
STEM LOOP 1
BRIDGE HELIX
Ins 4
Ins 1
Ins 3
Ins 2 (REC2)
90°
F
SaCas9
REC LOBE
REPEAT: ANTI-REPEAT DUPLEX
WED DOMAIN
GUIDE: TARGET HETERODUPLEX
STEM LOOP 1
BRIDGE HELIX
90°

Fig. 4E-4F

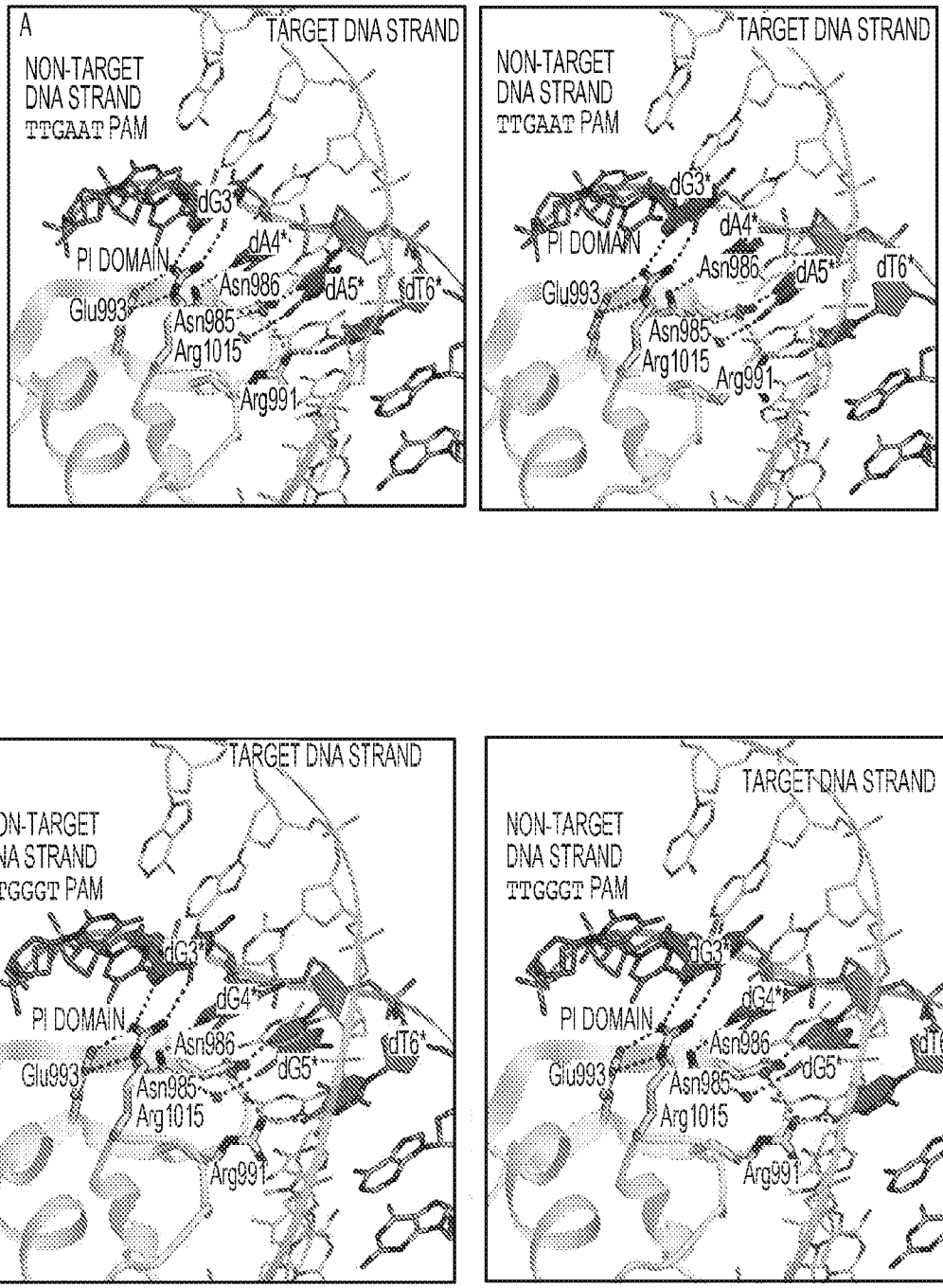

A
TARGET DNA STRAND
NON-TARGET
DNA STRAND
TTGAAT PAM
dG3*
dA4*
PI DOMAIN
Asn986
dA5*
dT6*
Glu993
Asn985
Arg1015
Arg991
TARGET DNA STRAND
NON-TARGET
DNA STRAND
TTGAAT PAM
dG3*
dA4*
PI DOMAIN
Asn986
dA5*
dT6*
Glu993
Asn985
Arg1015
Arg991
B
TARGET DNA STRAND
NON-TARGET
DNA STRAND
TTGGGT PAM
dG3*
dG4*
PI DOMAIN
Asn986
dT6*
Glu993
dG5*
Asn985
Arg1015
Arg991
TARGET DNA STRAND
NON-TARGET
DNA STRAND
TTGGGT PAM
dG3*
dG4*
PI DOMAIN
Asn986
dT6*
Glu993
dG5*
Asn985
Arg1015
Arg991

Fig. 5A-5B

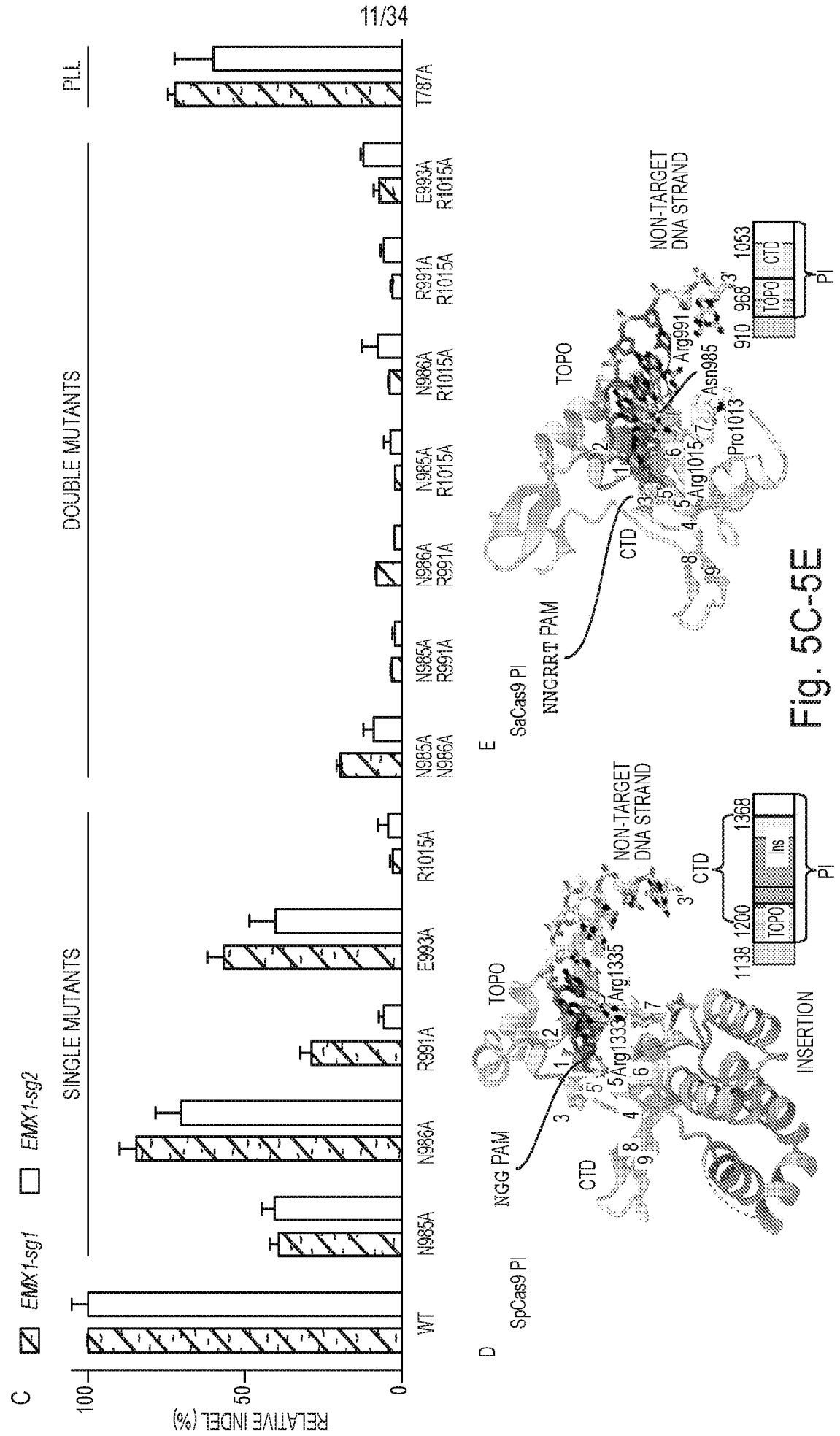

C
EMX1-sg1
EMX1-sg2
RELATIVE INDEL (%)
100
50
0
SINGLE MUTANTS
DOUBLE MUTANTS
PLL
WT
N985A
N986A
R991A
E993A
R1015A
N985A N986A
N985A R991A
N986A R991A
N985A R1015A
N986A R1015A
R991A R1015A
E993A R1015A
T787A
D
SpCas9 PI
NGG PAM
TOPO
CTD
NON-TARGET DNA STRAND
Arg1335
INSERTION
1138 1200 1368
TOPO
Ins
CTD
PI
E
SaCas9 PI
NNGRRT PAM
TOPO
CTD
NON-TARGET DNA STRAND
Arg991
Asn985
Pro1013
Arg1015
910 968 1053
TOPO
CTD
PI

Fig. 5C-5E

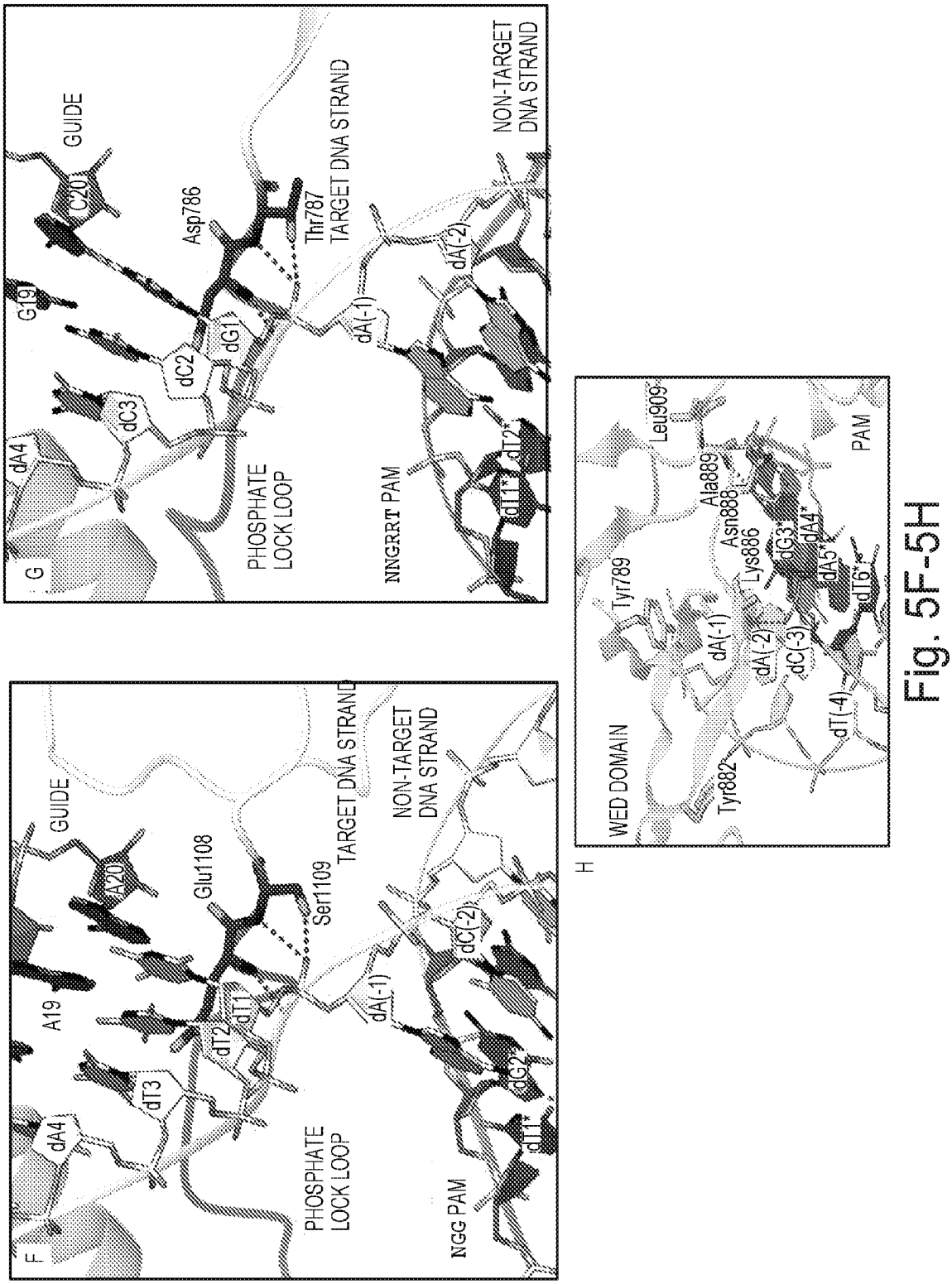

G
GUIDE
C20
G19
Asp786
Thr787
TARGET DNA STRAND
NON-TARGET DNA STRAND
dA4
dC3
dC2
dG1
dA(-1)
dA(-2)
PHOSPHATE LOCK LOOP
NNGRRT PAM
dT1*
dT2*
F
GUIDE
A20
A19
Glu1108
Ser1109
TARGET DNA STRAND
NON-TARGET DNA STRAND
dA4
dT3
dT2
dT1
dA(-1)
dC(-2)
dG2
dT1*
PHOSPHATE LOCK LOOP
NGG PAM
H
WED DOMAIN
Tyr789
Leu909
Ala889
Asn888
Lys886
Tyr882
dA(-1)
dA(-2)
dC(-3)
dT(-4)
dG3*
dA4*
dA5*
dT6*
PAM

Fig. 5F-5H

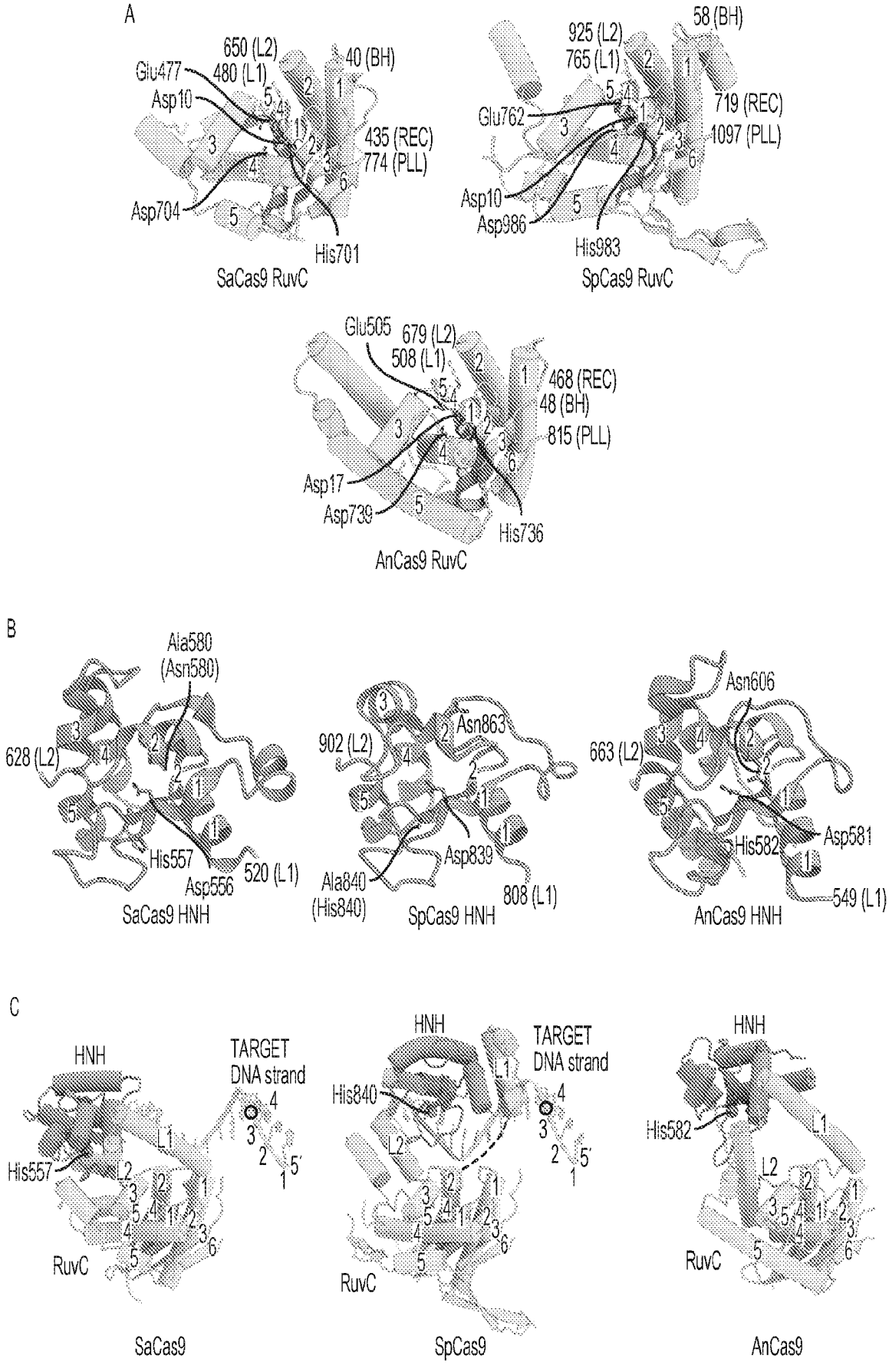

A
650 (L2)
480 (L1)
Glu477
Asp10
Asp704
40 (BH)
435 (REC)
774 (PLL)
His701
SaCas9 RuvC
925 (L2)
765 (L1)
Glu762
Asp10
Asp986
58 (BH)
719 (REC)
1097 (PLL)
His983
SpCas9 RuvC
Glu505
679 (L2)
508 (L1)
Asp17
Asp739
468 (REC)
48 (BH)
815 (PLL)
His736
AnCas9 RuvC
B
Ala580
(Asn580)
628 (L2)
His557
Asp556
520 (L1)
SaCas9 HNH
902 (L2)
Asn863
Ala840
(His840)
Asp839
808 (L1)
SpCas9 HNH
Asn606
663 (L2)
His582
Asp581
549 (L1)
AnCas9 HNH
C
HNH
TARGET
DNA strand
His557
RuvC
SaCas9
HNH
TARGET
DNA strand
His840
RuvC
SpCas9
HNH
His582
RuvC
AnCas9

Fig. 6A-6C

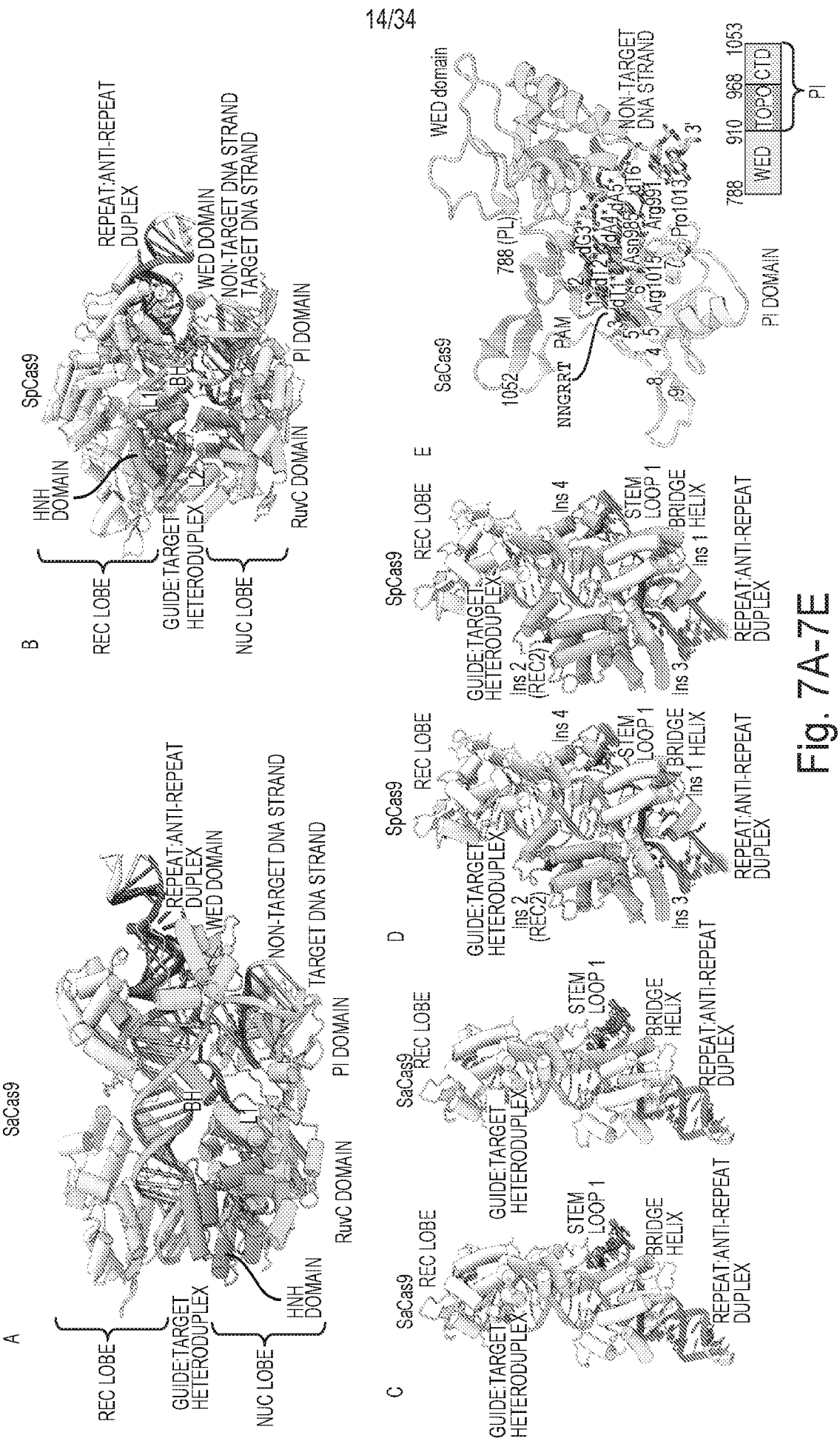

A
SaCas9
REC LOBE
GUIDE:TARGET HETERODUPLEX
NUC LOBE
HNH DOMAIN
RuvC DOMAIN
PI DOMAIN
REPEAT:ANTI-REPEAT DUPLEX
WED DOMAIN
NON-TARGET DNA STRAND
TARGET DNA STRAND
B
SpCas9
REC LOBE
GUIDE:TARGET HETERODUPLEX
NUC LOBE
HNH DOMAIN
RuvC DOMAIN
PI DOMAIN
REPEAT:ANTI-REPEAT DUPLEX
WED DOMAIN
NON-TARGET DNA STRAND
TARGET DNA STRAND
C
SaCas9
REC LOBE
GUIDE:TARGET HETERODUPLEX
STEM LOOP 1
BRIDGE HELIX
REPEAT:ANTI-REPEAT DUPLEX
D
SpCas9
REC LOBE
GUIDE:TARGET HETERODUPLEX
Ins 2 (REC2)
Ins 4
STEM LOOP 1
BRIDGE Ins 1 HELIX
Ins 3
REPEAT:ANTI-REPEAT DUPLEX
E
SaCas9
WED domain
788 (PL)
1052
NNGRRT PAM
NON-TARGET DNA STRAND
PI DOMAIN
788
910
968
1053
WED
TOPO
CTD
PI

Fig. 7A-7E

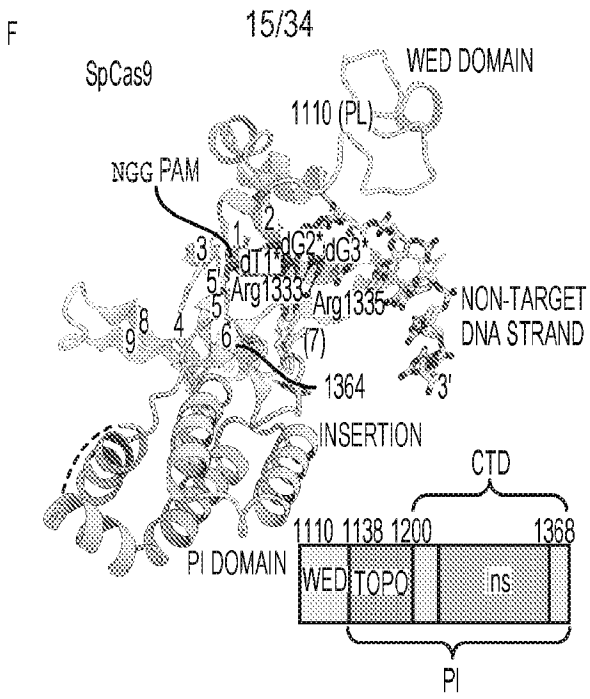


Fig. 7F

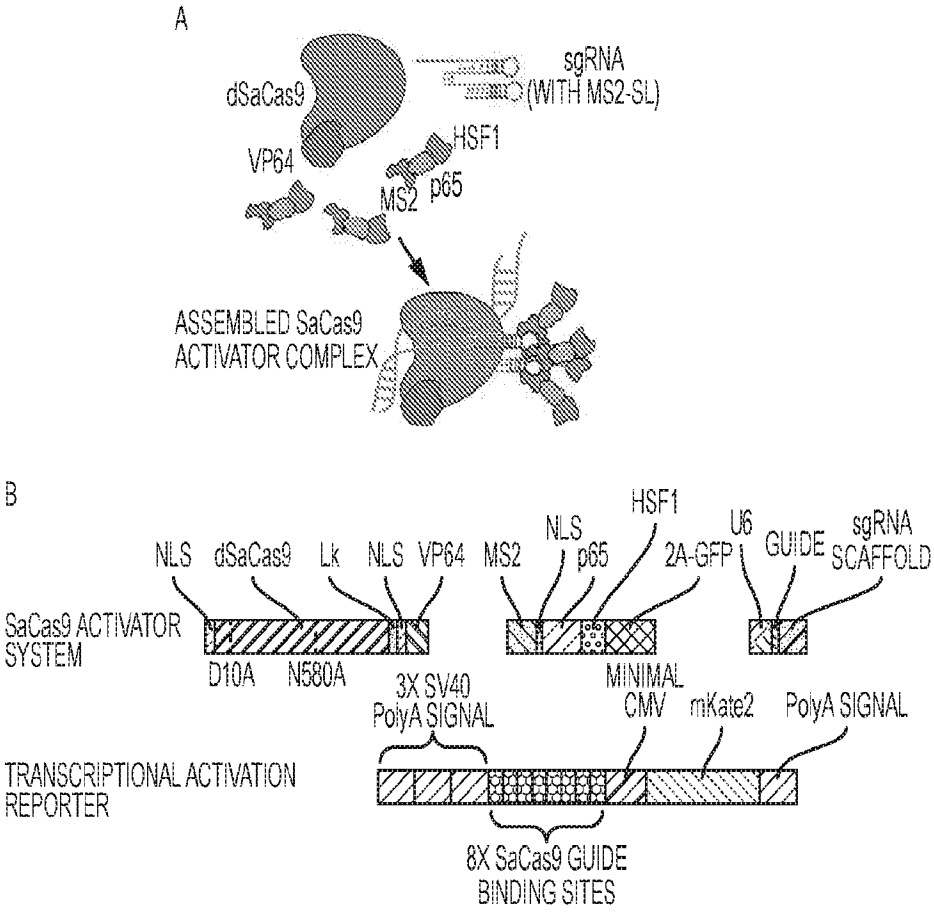


Fig. 8A-8B

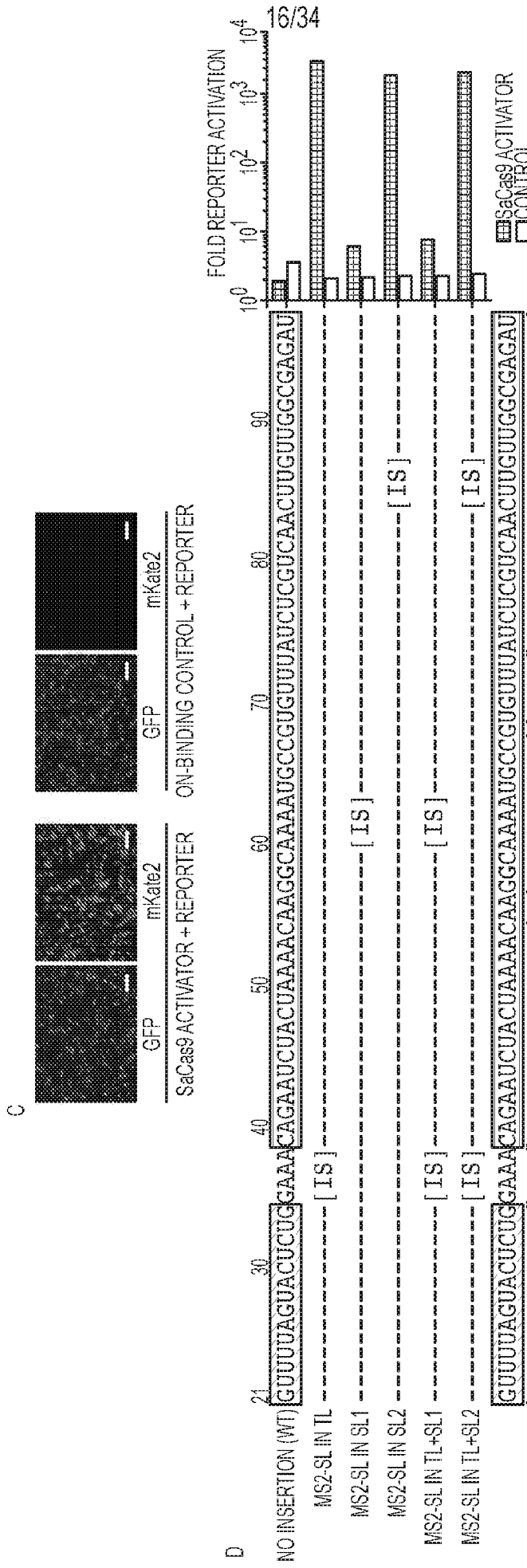

C
GFP
mKate2
SaCas9 ACTIVATOR + REPORTER
GFP
mKate2
ON-BINDING CONTROL + REPORTER
FOLD REPORTER ACTIVATION
SaCas9 ACTIVATOR
CONTROL
D
NO INSERTION (WT)
MS2-SL IN TL
MS2-SL IN SL1
MS2-SL IN SL2
MS2-SL IN TL+SL1
MS2-SL IN TL+SL2
REPEAT
TETRALOOP
ANTI-REPEAT
STEM LOOP 1
LINKER
STEM LOOP 2

Fig. 8C-8D

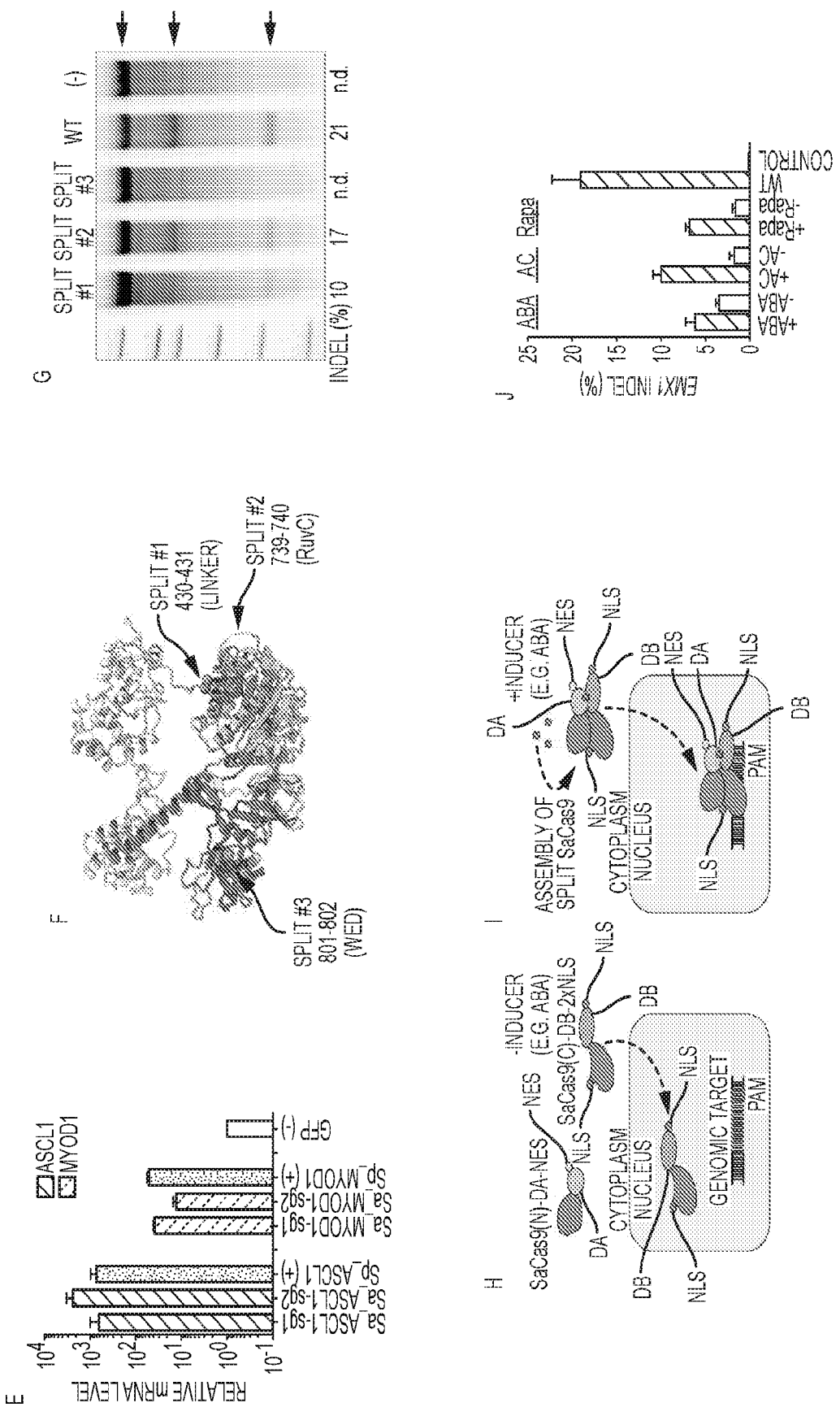

E
RELATIVE mRNA LEVEL
ASCL1
MYOD1
GFP (-)
Sp_MYOD1 (+)
Sa_MYOD1-sg2
Sa_MYOD1-sg1
Sp_ASCL1 (+)
Sa_ASCL1-sg2
Sa_ASCL1-sg1
F
SPLIT #1
430-431
(LINKER)
SPLIT #2
739-740
(RuvC)
SPLIT #3
801-802
(WED)
G
SPLIT #1
SPLIT #2
SPLIT #3
WT
(-)
INDEL (%) 10
17
n.d.
n.d.
21
n.d.
H
SaCas9(N)-DA-NES
NLS
SaCas9(C)-DB-2xNLS
NLS
-INDUCER
(E.G. ABA)
DB
DA
CYTOPLASM
NUCLEUS
NLS
GENOMIC TARGET
PAM
DB
NLS
I
DA
+INDUCER
(E.G. ABA)
NES
NLS
ASSEMBLY OF
SPLIT SaCas9
NLS
CYTOPLASM
NUCLEUS
DB
NES
DA
NLS
PAM
NLS
DB
J
EMX1 INDEL (%)
25
20
15
10
5
0
ABA
AC
Rapa
+ABA
-ABA
+AC
-AC
+Rapa
-Rapa
WT
CONTROL

Fig. 8E-8J

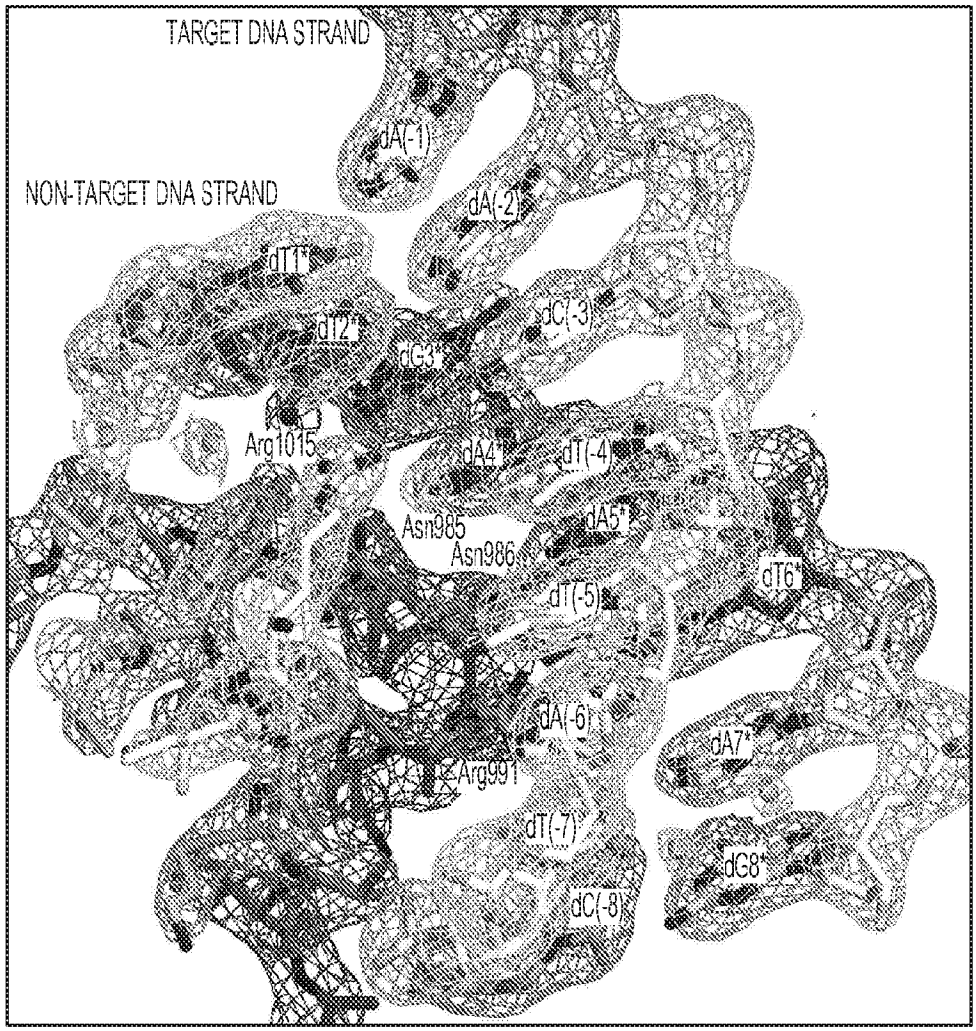

TARGET DNA STRAND
NON-TARGET DNA STRAND
dA(-1)
dA(-2)
dT1*
dT2*
dC(-3)
dG3*
Arg1015
dA4*
dT(-4)
Asn985
Asn986
dA5*
dT6*
dT(-5)
dA(-6)
dA7*
Arg991
dT(-7)
dG8*
dC(-8)

Fig. 9


A
TARGET
PAM
HUMAN
DYRK1A
LOCUS
5'..ACATATCTAATGGTTCCTTAAATAAGAACTTTAGGATATT..3'
3'..TGTATAGATTACCAAGGAATTTATTCTTGAAATCCTATAA..5'
5' GAUGGUUCCUUAAAUAAGAACUU.. 3'
sgRNA
GUIDE

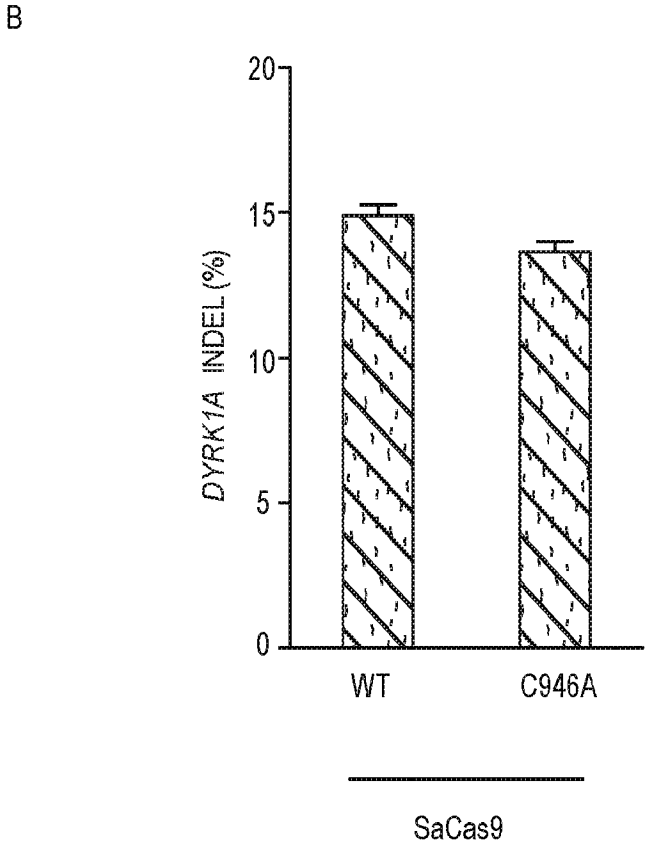

B
20
15
10
5
0
DYRK1A INDEL (%)
WT
C946A
SaCas9

Fig. 10A-10B

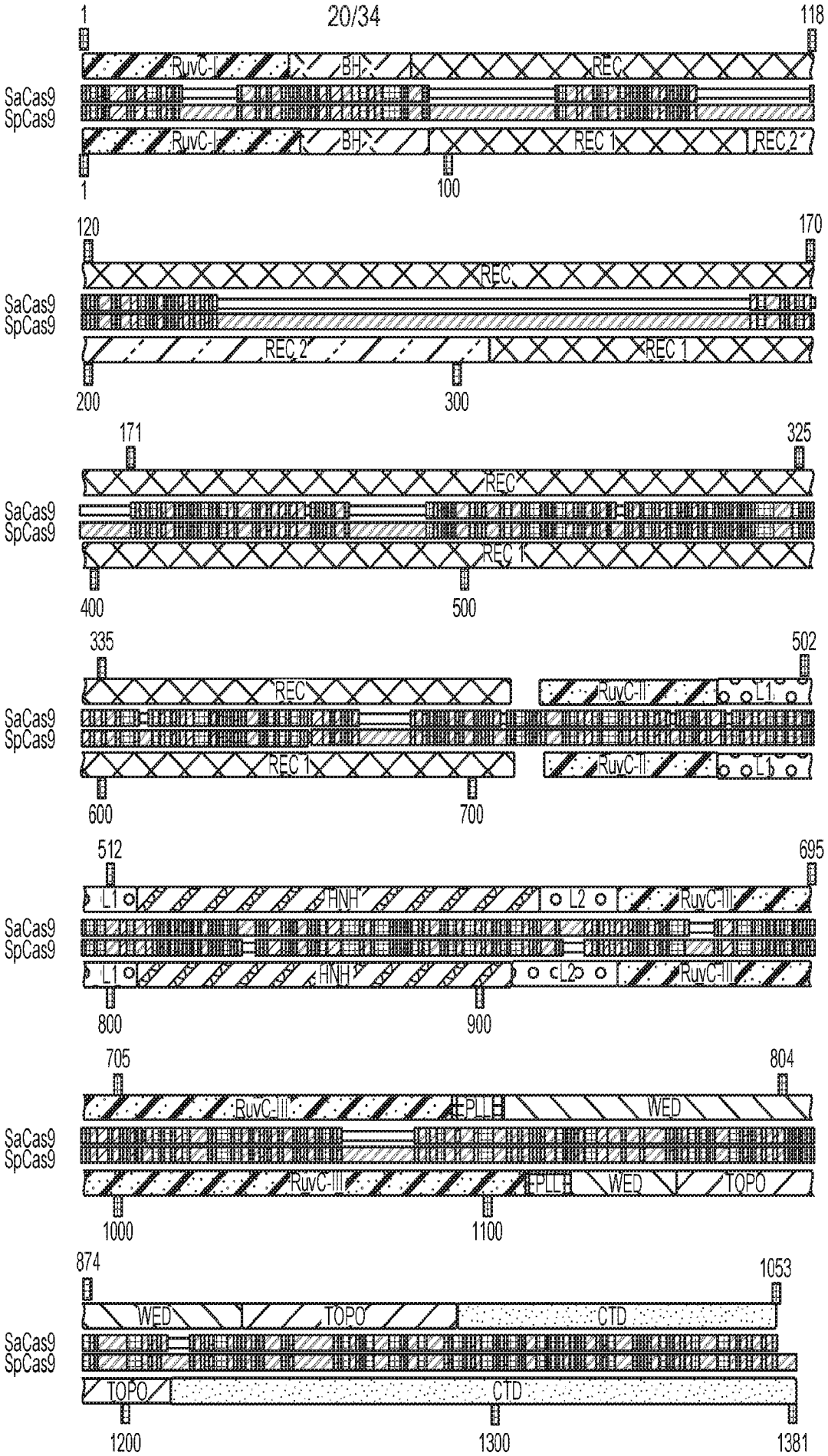

1
118
RuvC-I
BH
REC
SaCas9
SpCas9
RuvC-I
BH
REC 1
REC 2
1
100
120
170
REC
SaCas9
SpCas9
REC 2
REC 1
200
300
171
325
REC
SaCas9
SpCas9
REC 1
400
500
335
502
REC
RuvC-II
L1
SaCas9
SpCas9
REC 1
RuvC-II
L1
600
700
512
695
L1
HNH
L2
RuvC-III
SaCas9
SpCas9
L1
HNH
L2
RuvC-III
800
900
705
804
RuvC-III
PI
WED
SaCas9
SpCas9
RuvC-III
PI
WED
TOPO
1000
1100
874
1053
WED
TOPO
CTD
SaCas9
SpCas9
TOPO
CTD
1200
1300
1381

Fig. 11

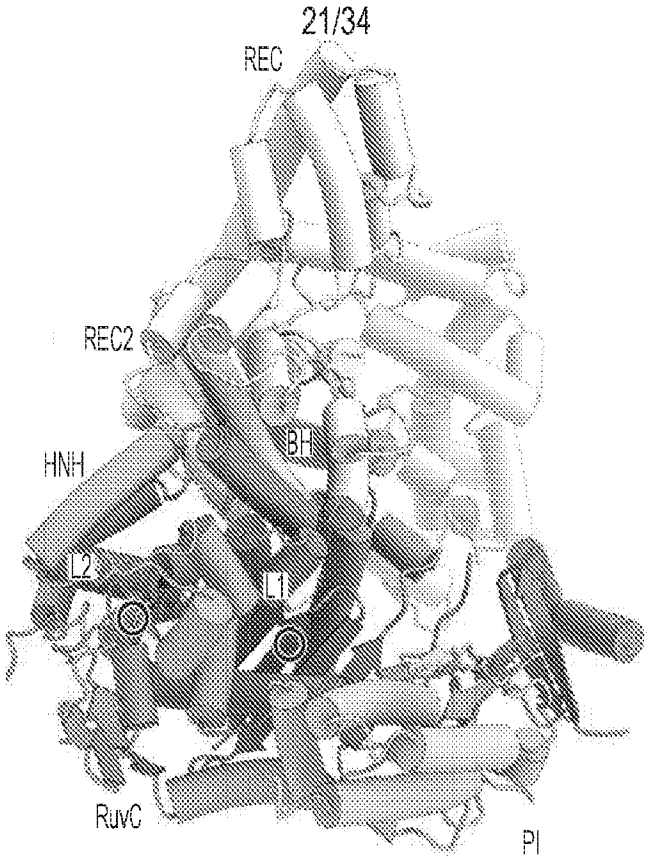

REC
REC2
BH
HNH
L2
L1
RuvC
PI
Apo SpCas9 (PDB ID 4CMP)
POORLY ORDERED REGION
225
137
170
98
REC
BH
WED
HNH
L1
L2
RuvC
PI
Apo AnCas9 (PDB ID 4OGE)

Fig. 12

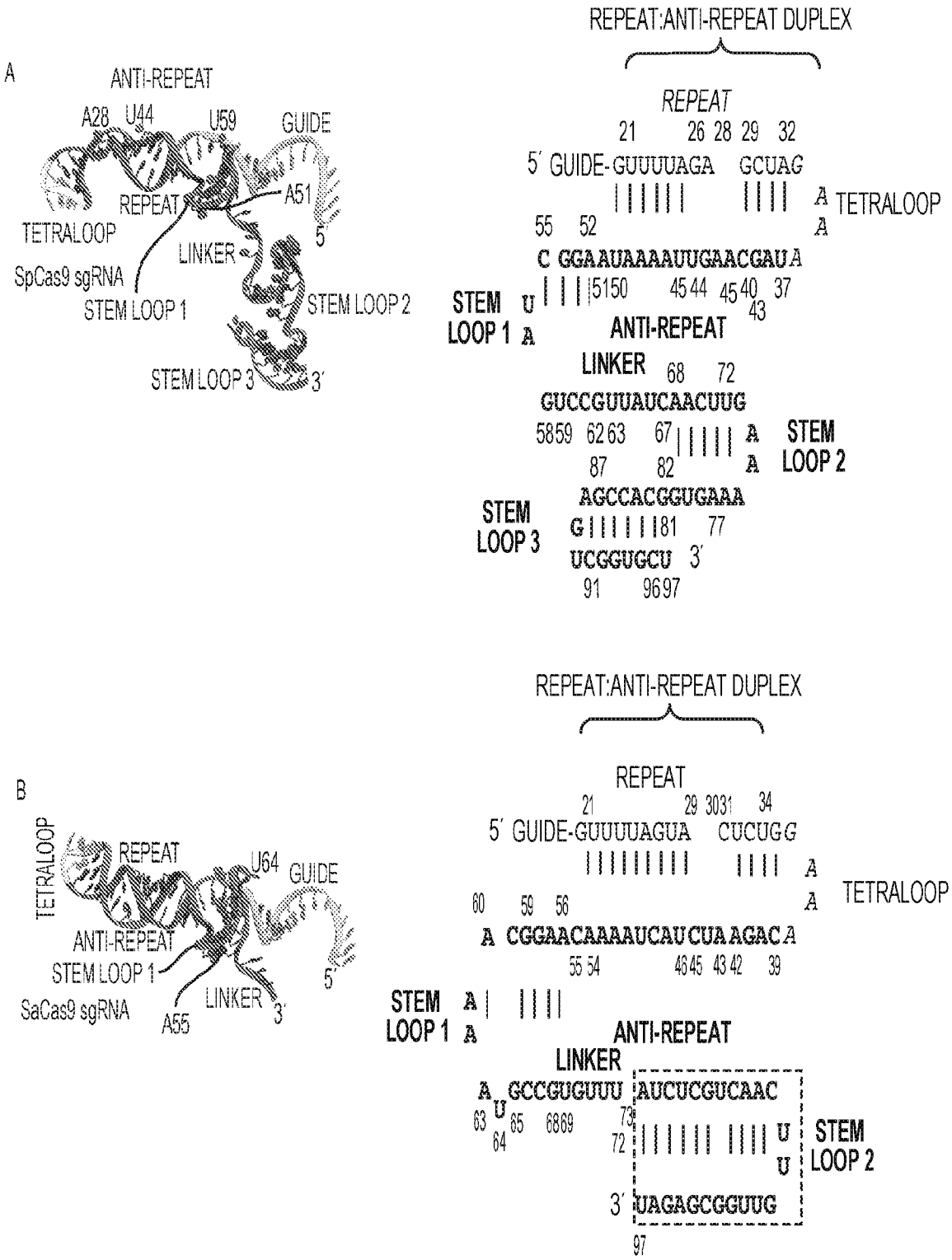
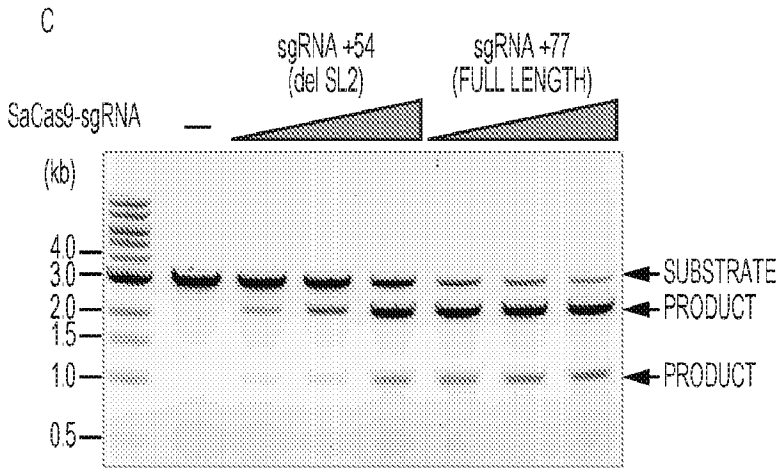
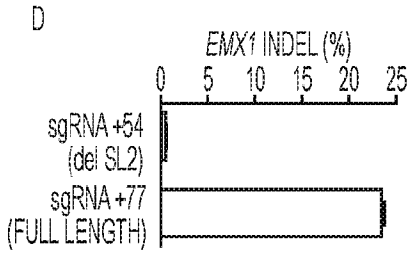

A
ANTI-REPEAT
A28
U44
U59
GUIDE
A51
REPEAT
TETRALOOP
LINKER
5′
SpCas9 sgRNA
STEM LOOP 1
STEM LOOP 2
STEM LOOP 3
3′
REPEAT:ANTI-REPEAT DUPLEX
REPEAT
21 26 28 29 32
5′ GUIDE-GUUUUAGA GCUAG
A
TETRALOOP
A
55 52
C GGAAUAAAAUUGAACGAU A
5150 4544 4540 37
43
STEM U
LOOP 1 A
ANTI-REPEAT
LINKER 68 72
GUCCGUUAUCAACUUG
5859 6263 67
A
STEM
87 82
A
LOOP 2
AGCCACGGUGAAA
STEM
G 81 77
LOOP 3
UCGGUGCU 3′
91 9697
B
TETRALOOP
REPEAT
U64
GUIDE
ANTI-REPEAT
STEM LOOP 1
5′
SaCas9 sgRNA
LINKER
3′
A55
REPEAT:ANTI-REPEAT DUPLEX
REPEAT
21 29 3031 34
5′ GUIDE-GUUUUAGUA CUCUG G
A
TETRALOOP
A
60 59 56
A CGGAACAAAAUCAU CUA AGAC A
55 54 4645 43 42 39
STEM A
LOOP 1 A
ANTI-REPEAT
LINKER
A GCCGUGUUU AUCUCGUCAAC
63 U 65 6869 73
64 72
U
STEM
U
LOOP 2
3′ UAGAGCGGUUG
97

Fig. 13A-13B


C
sgRNA +54
(del SL2)
sgRNA +77
(FULL LENGTH)
SaCas9-sgRNA
(kb)
4.0
3.0
2.0
1.5
1.0
0.5
SUBSTRATE
PRODUCT
PRODUCT


D
EMX1 INDEL (%)
0 5 10 15 20 25
sgRNA +54
(del SL2)
sgRNA +77
(FULL LENGTH)

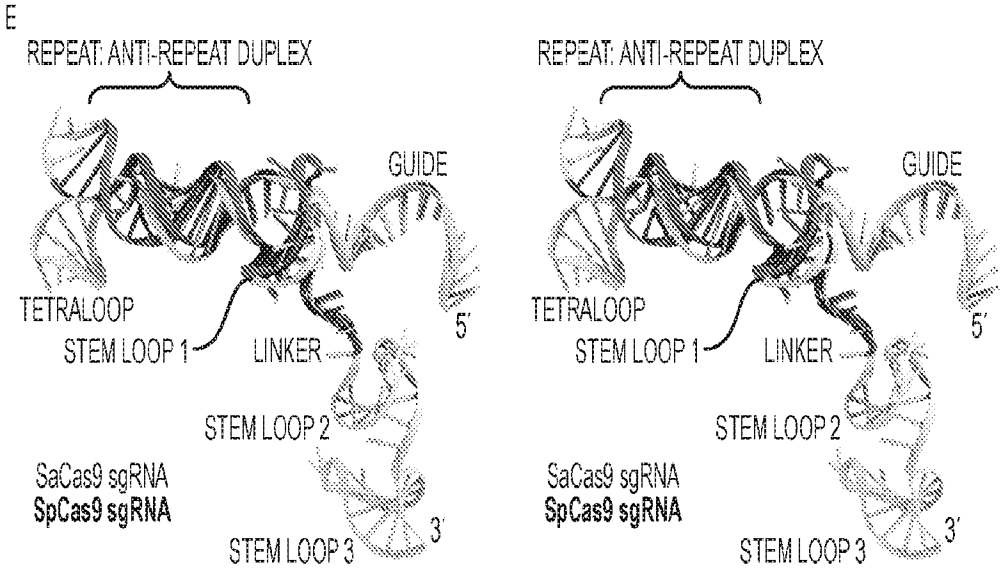

E
REPEAT: ANTI-REPEAT DUPLEX
GUIDE
TETRALOOP
STEM LOOP 1
LINKER
5′
STEM LOOP 2
SaCas9 sgRNA
SpCas9 sgRNA
3′
STEM LOOP 3
REPEAT: ANTI-REPEAT DUPLEX
GUIDE
TETRALOOP
STEM LOOP 1
LINKER
5′
STEM LOOP 2
SaCas9 sgRNA
SpCas9 sgRNA
3′
STEM LOOP 3

Fig. 13C-13E

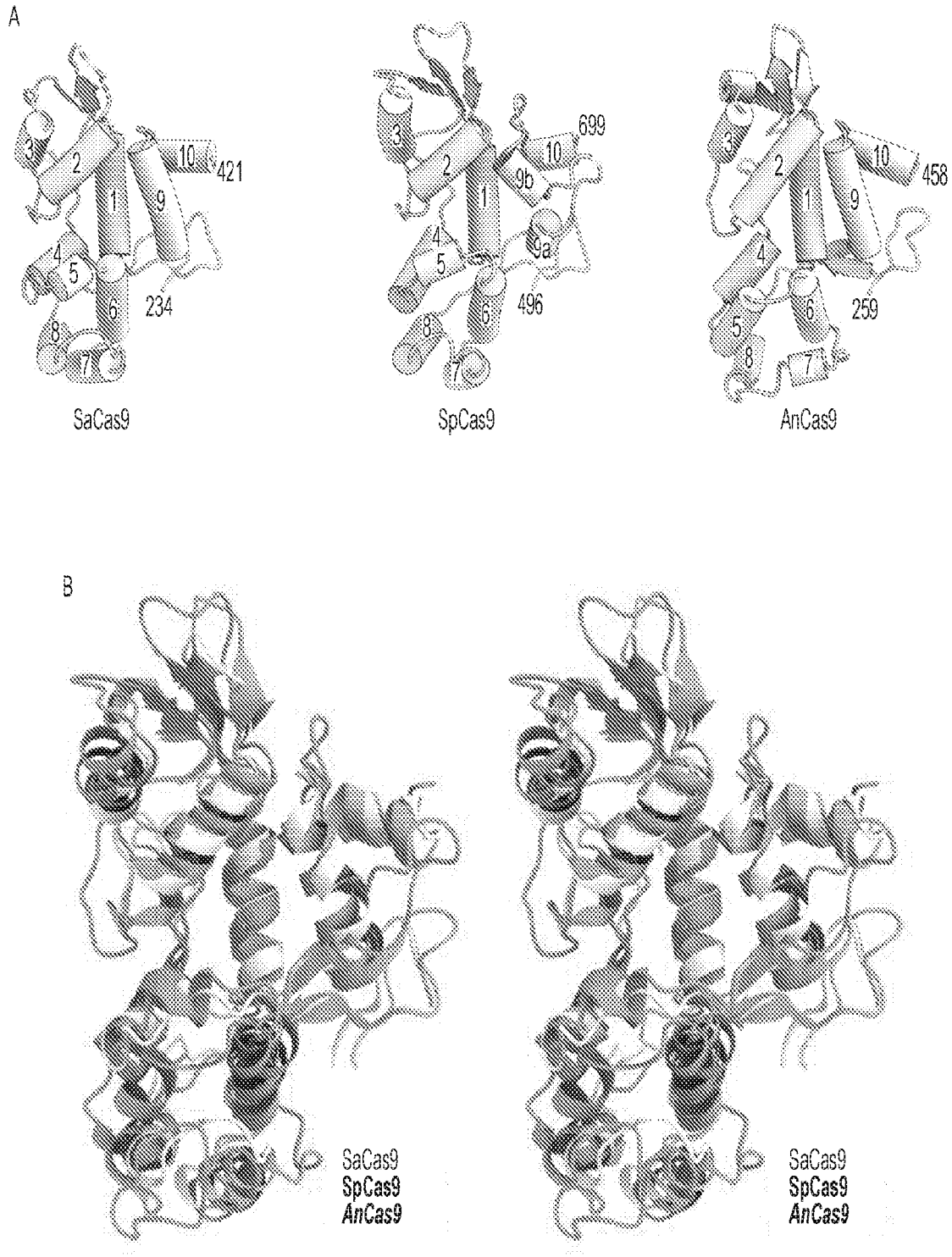

A
SaCas9
SpCas9
AnCas9
B
SaCas9
SpCas9
AnCas9
SaCas9
SpCas9
AnCas9

Fig. 14A-14B

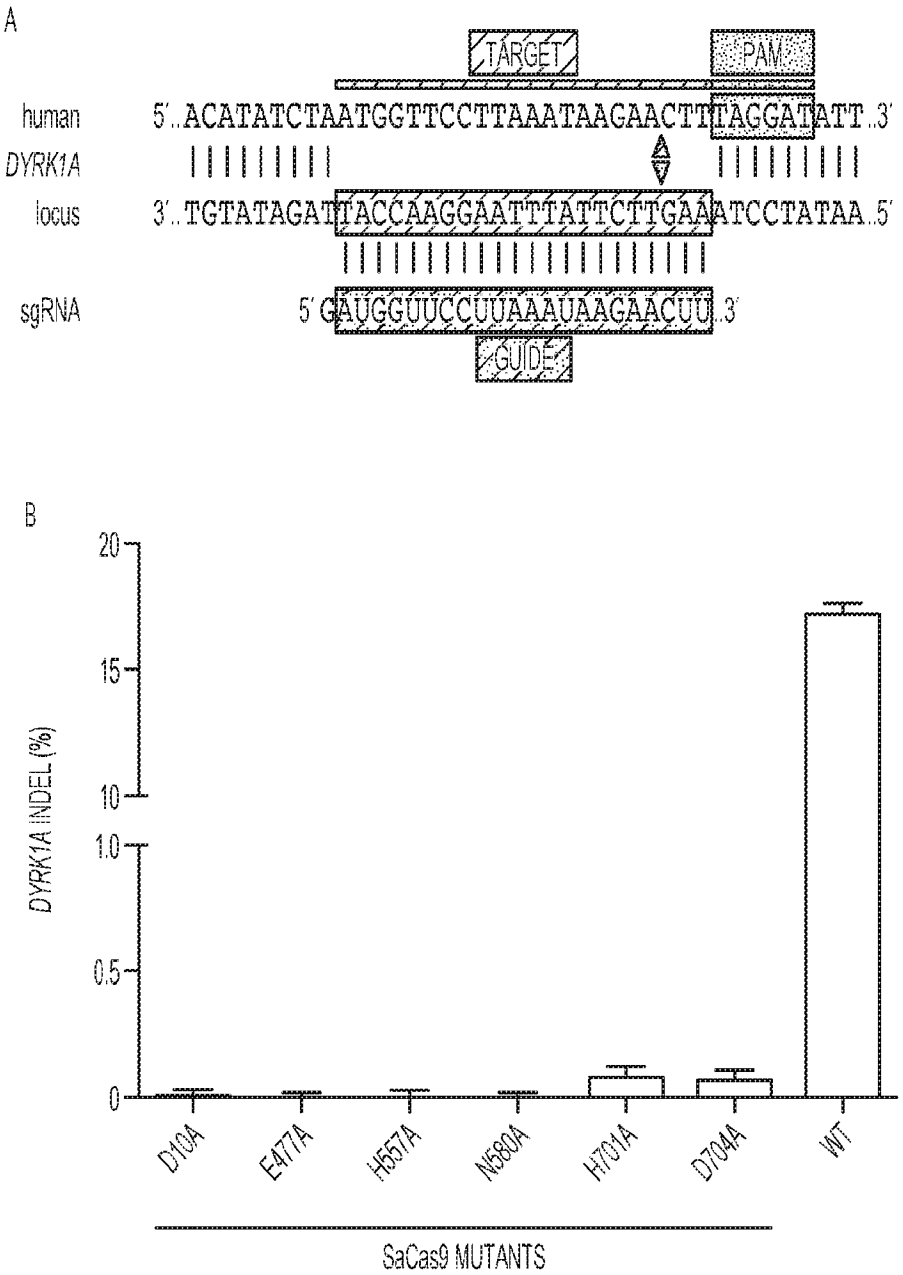
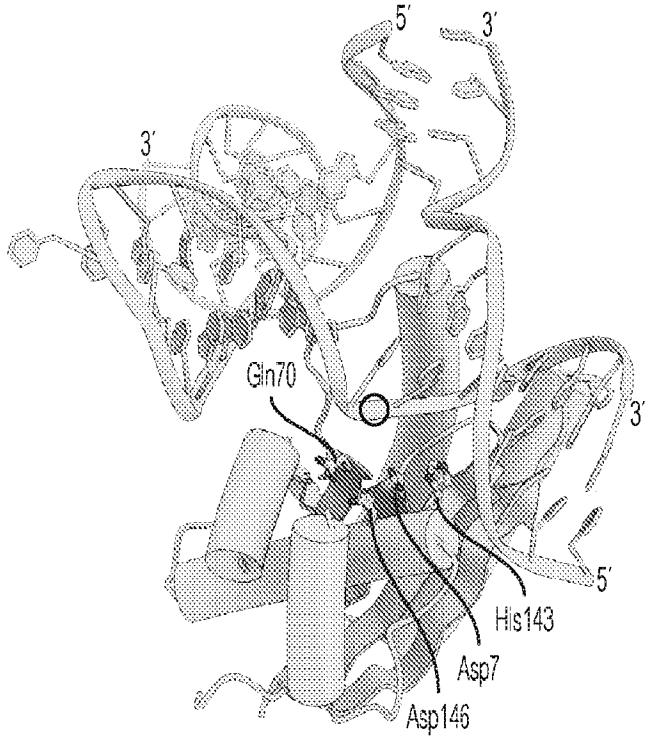
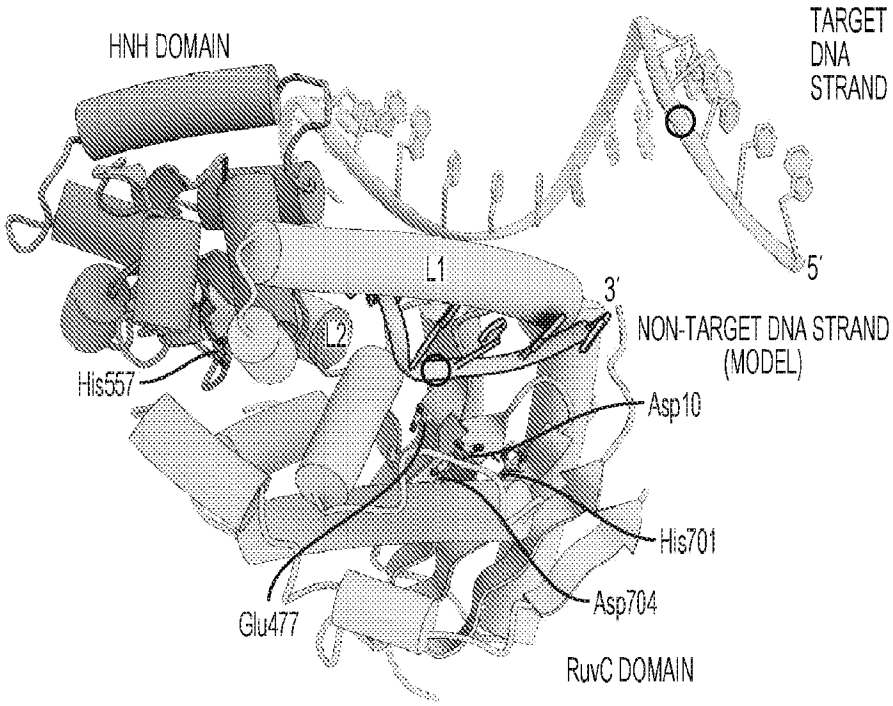

A
TARGET
PAM
human
5'..ACATATCTAATGGTTCCTTAAATAAGAACTTTAGGATATT..3'
DYRK1A
locus
3'..TGTATAGATTACCAAGGAATTTATTCTTGAAATCCTATAA..5'
sgRNA
5' GAUGGUUCCUUAAAUAAGAACUU..3'
GUIDE
B
DYRK1A INDEL (%)
20
15
10
1.0
0.5
0
D10A
E477A
H557A
N580A
H701A
D704A
WT
SaCas9 MUTANTS

Fig. 15A-15B



T. thermophilus RuvC-SUBSTRATE DNA
(PDB ID 4LD0)



SaCas9-sgRNA-TARGET DNA-NON-TARGET DNA (MODEL)

Fig. 16

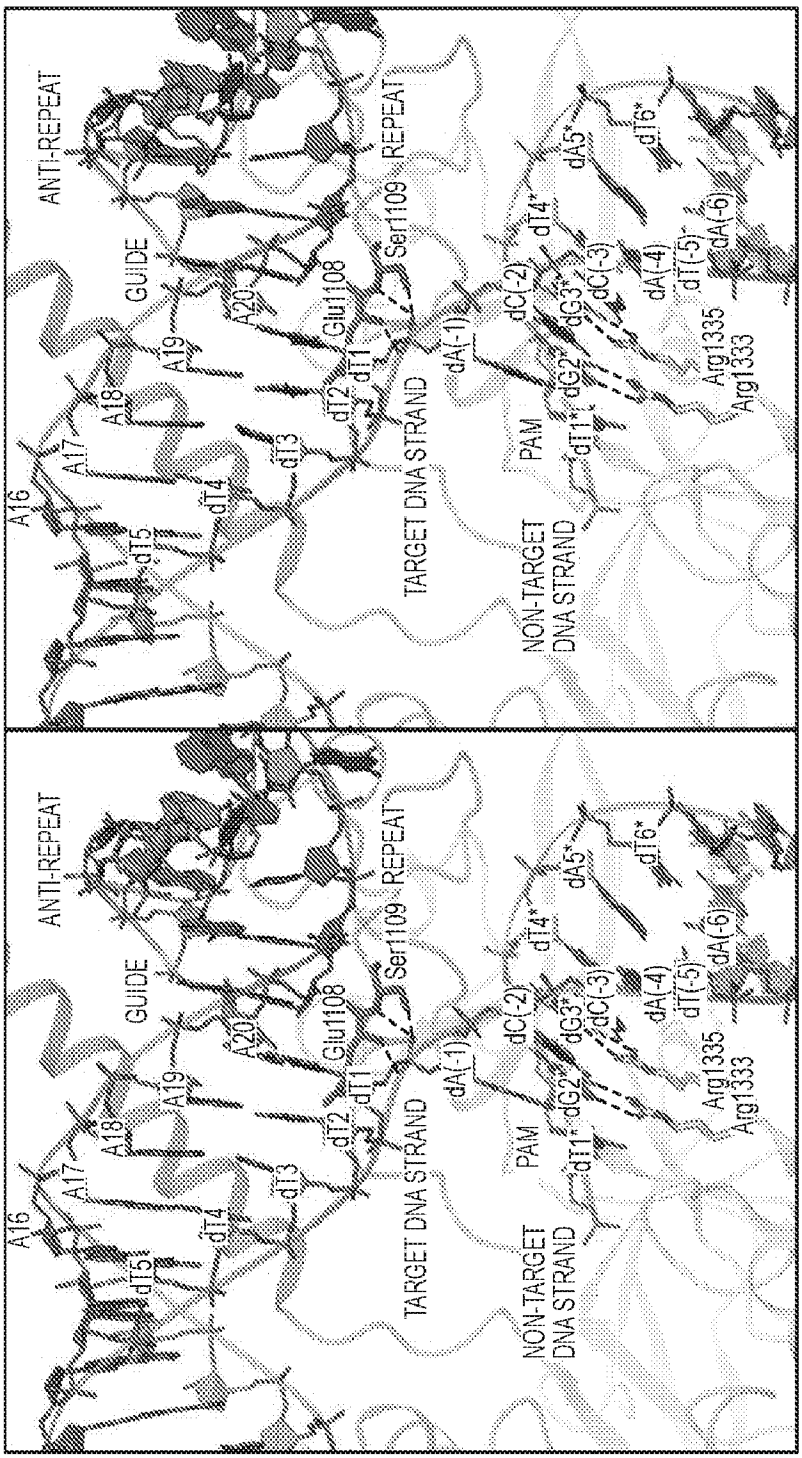

ANTI-REPEAT
GUIDE
REPEAT
TARGET DNA STRAND
NON-TARGET DNA STRAND
PAM
A16
A17
A18
A19
A20
dT1
dT2
dT3
dT4
dT5
Glu1108
Ser1109
dA(-1)
dC(-2)
dG3*
dT4*
dA5*
dT6*
dA(-4)
dT(-5)
dA(-6)
Arg1335
Arg1333

Fig. 17

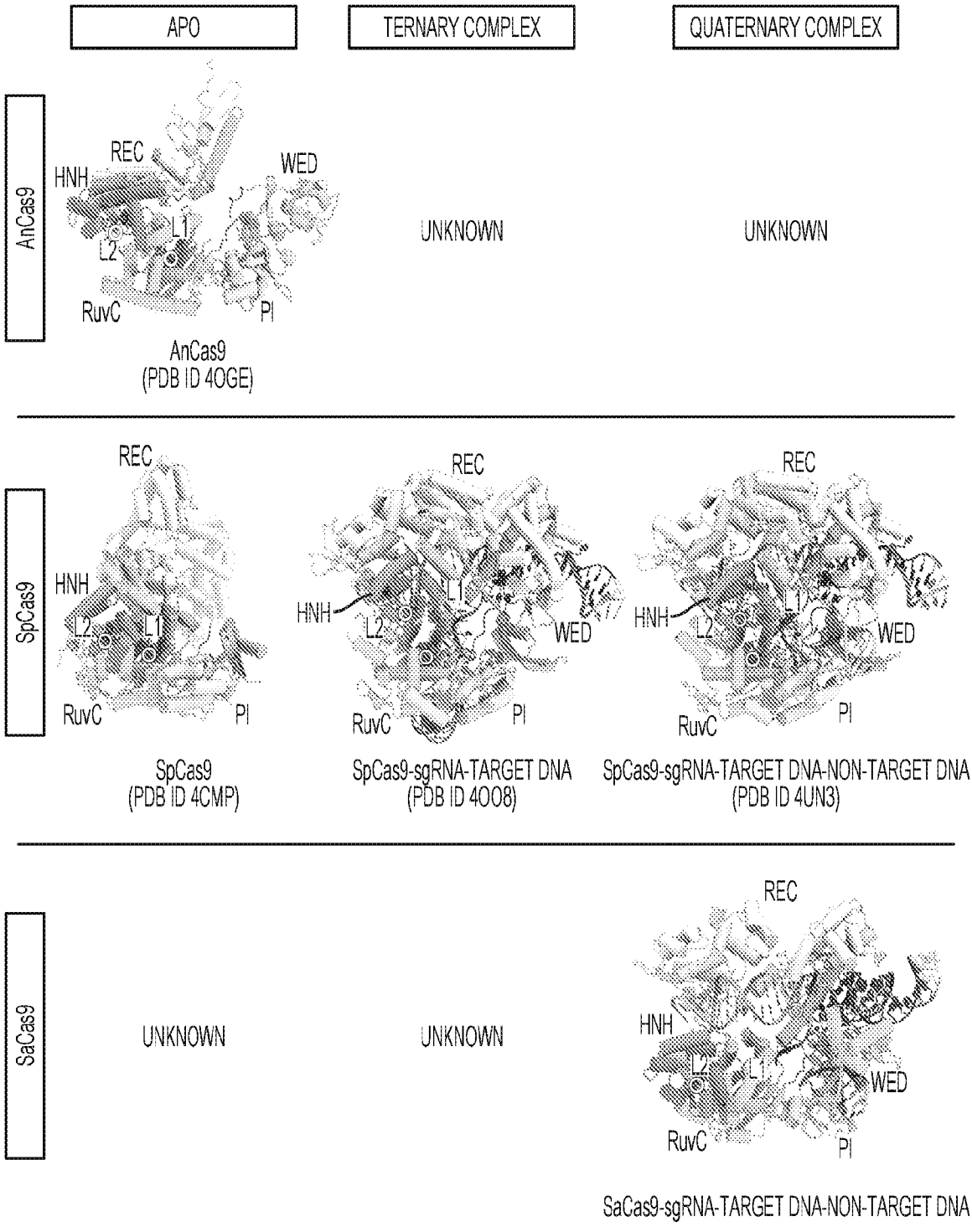

APO
TERNARY COMPLEX
QUATERNARY COMPLEX
AnCas9
REC
HNH
WED
L1
L2
RuvC
PI
UNKNOWN
UNKNOWN
AnCas9
(PDB ID 4OGE)
SpCas9
REC
HNH
L2
L1
RuvC
PI
WED
SpCas9
(PDB ID 4CMP)
SpCas9-sgRNA-TARGET DNA
(PDB ID 4008)
SpCas9-sgRNA-TARGET DNA-NON-TARGET DNA
(PDB ID 4UN3)
SaCas9
UNKNOWN
UNKNOWN
SaCas9-sgRNA-TARGET DNA-NON-TARGET DNA

Fig. 18

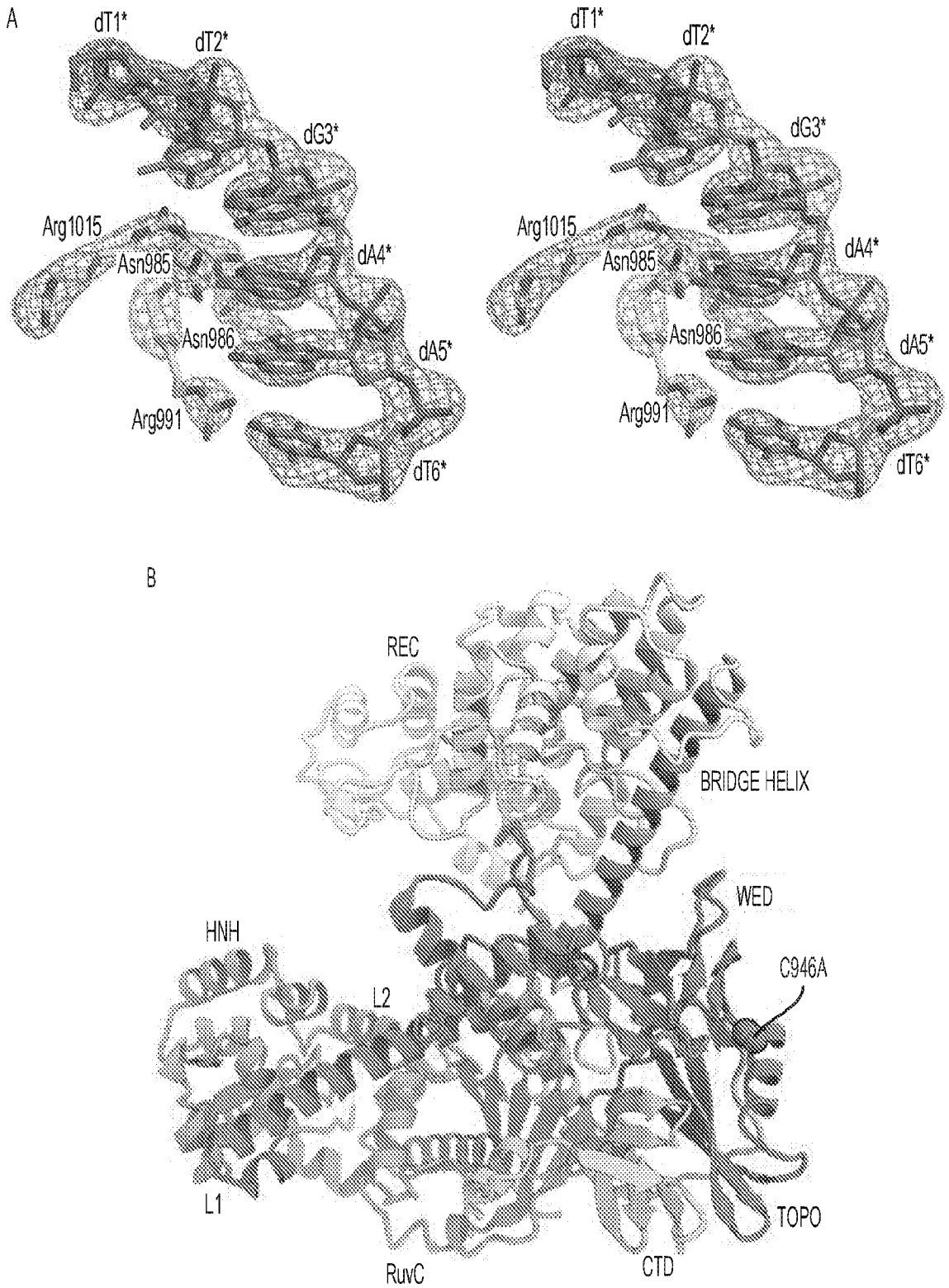

A
dT1*
dT2*
dG3*
Arg1015
Asn985
dA4*
Asn986
dA5*
Arg991
dT6*
dT1*
dT2*
dG3*
Arg1015
Asn985
dA4*
Asn986
dA5*
Arg991
dT6*
B
REC
BRIDGE HELIX
WED
HNH
C946A
L2
L1
TOPO
RuvC
CTD

Fig. 19A-19B

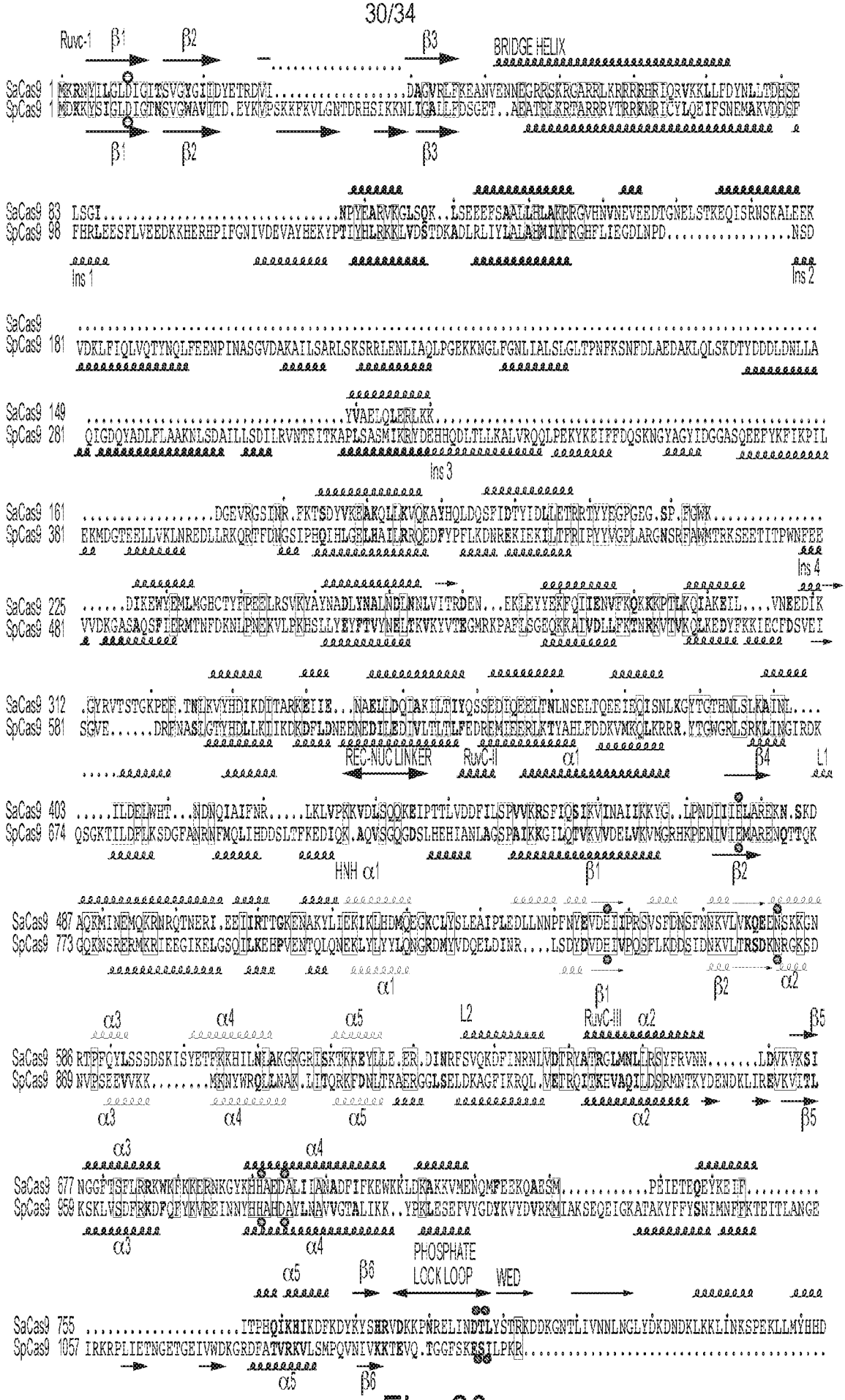

Ruvc-1
β1
β2
β3
BRIDGE HELIX
SaCas9 1
SpCas9 1
SaCas9 83
SpCas9 98
Ins 1
Ins 2
SaCas9
SpCas9 161
SaCas9 149
SpCas9 281
Ins 3
SaCas9 161
SpCas9 381
Ins 4
SaCas9 225
SpCas9 481
SaCas9 312
SpCas9 581
REC-NUC LINKER
RuvC-II
α1
β4
L1
SaCas9 403
SpCas9 674
HNH α1
β1
β2
SaCas9 487
SpCas9 773
α1
β1
β2
α2
α3
α4
α5
L2
RuvC-III
α2
β5
SaCas9 586
SpCas9 869
α3
α4
α5
α2
β5
α3
α4
SaCas9 677
SpCas9 959
α3
α4
PHOSPHATE
LOCK LOOP
α5
β6
WED
SaCas9 755
SpCas9 1057
α5
β6

Fig. 20

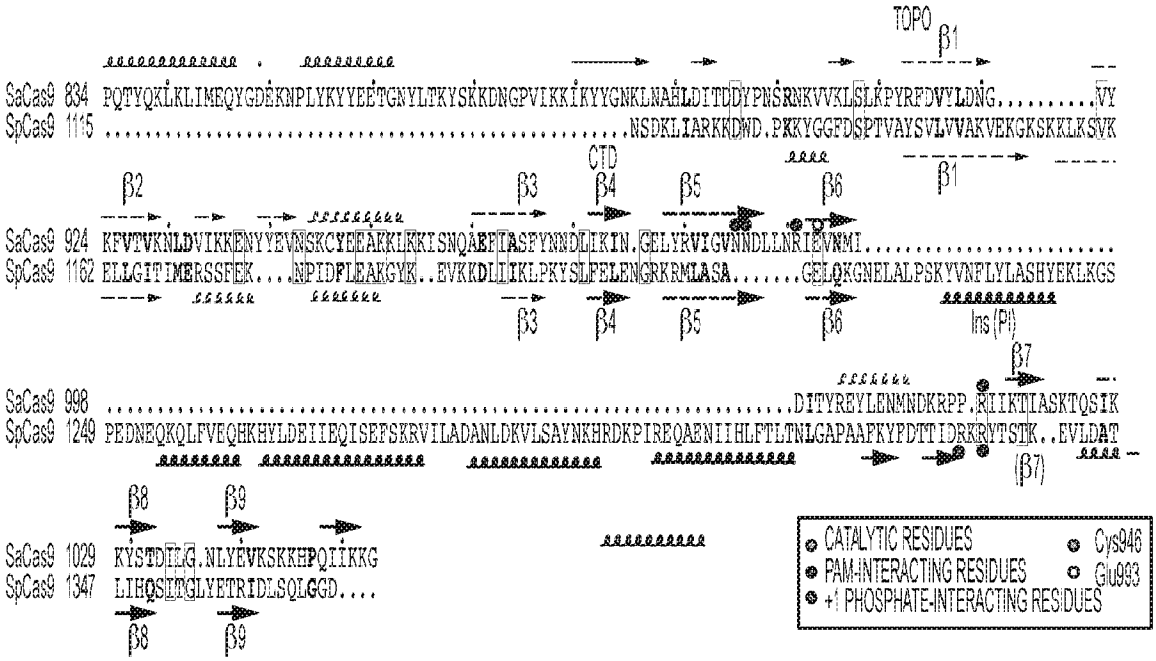


Fig. 20
CONTINUED

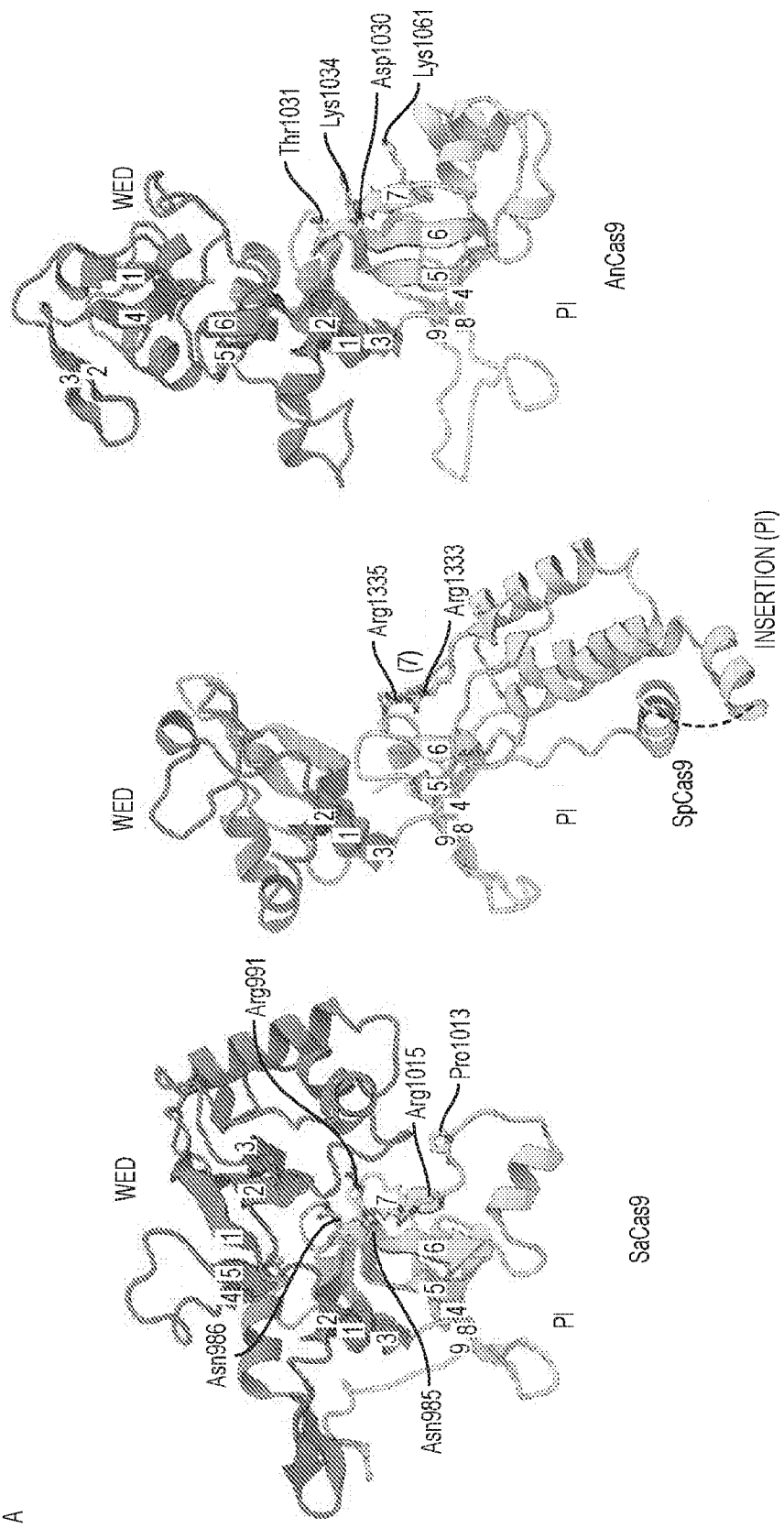

A
WED
PI
SaCas9
Asn986
Arg991
Arg1015
Pro1013
Asn985
WED
PI
SpCas9
Arg1335
(7)
Arg1333
INSERTION (PI)
WED
PI
AnCas9
Thr1031
Lys1034
Asp1030
Lys1061

Fig. 21A

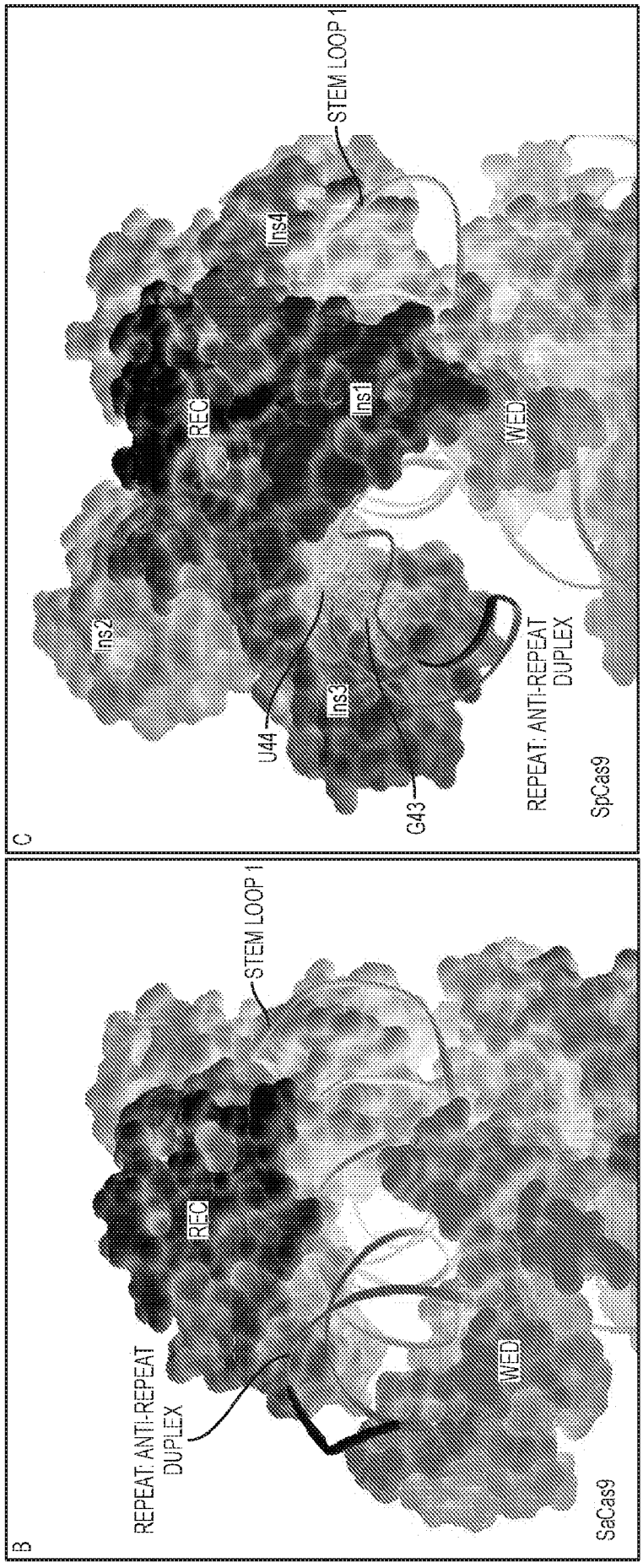

B
REPEAT: ANTI-REPEAT DUPLEX
STEM LOOP 1
REC
WED
SaCas9
C
STEM LOOP 1
Ins4
Ins2
REC
Ins1
WED
U44
Ins3
G43
REPEAT: ANTI-REPEAT DUPLEX
SpCas9

Fig. 21B-21C

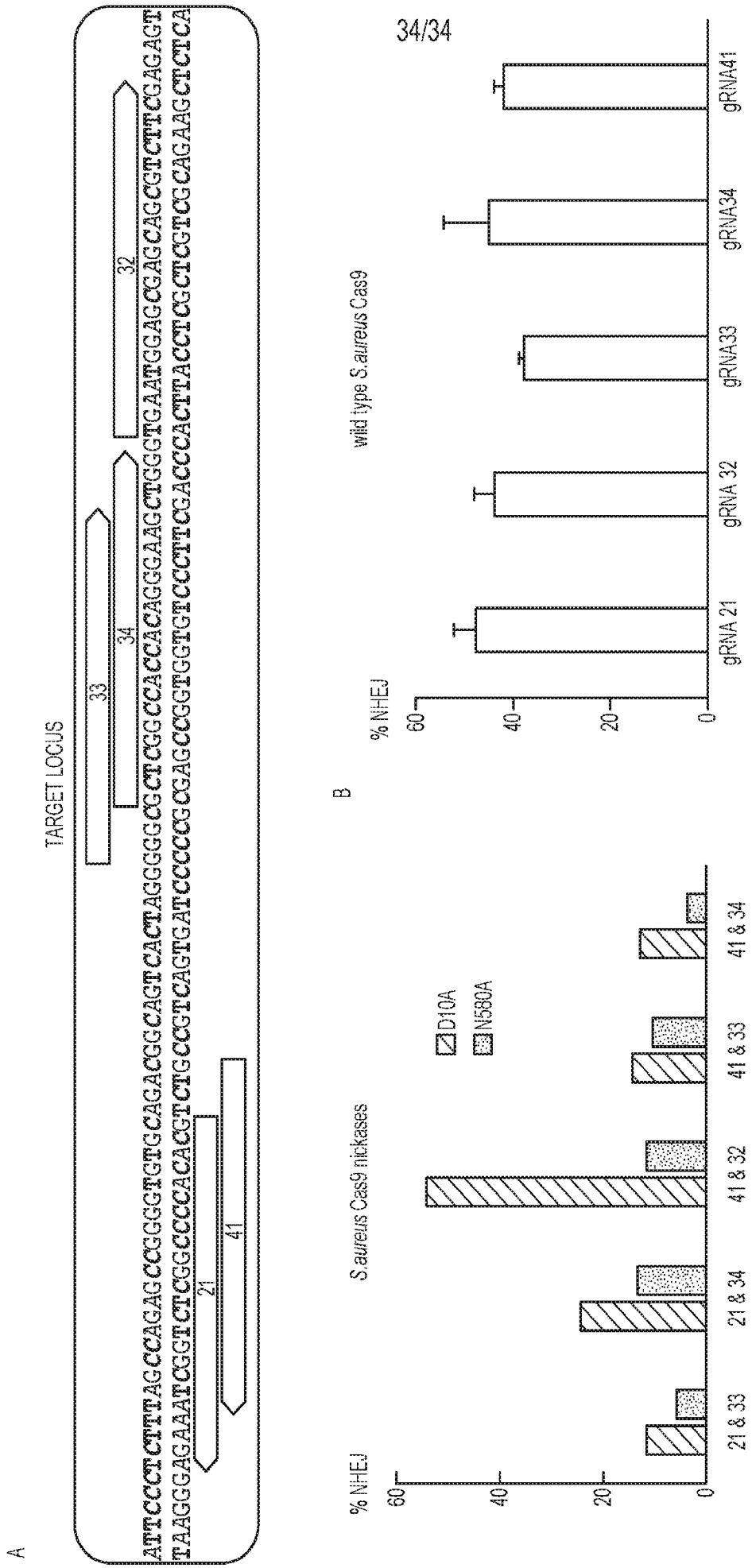

A
TARGET LOCUS
ATTCCCTCTTTAGCCAGAGCCGGGGGTGTGCAGACGGCAGTCACTAGGGGGGCGCTCGGCCACCACAGGGAAGCTGGGGTGAATGGAGCCGAGCAGCGTCTTCGAGAGT
TAAGGGAGAAATCGGTCTCGGCCCCACACGTCTGCCGTCAGTGATCCCCCCGCGAGCCGGTGGTGTCCCTTCGACCCACTTACCTCGCTCGTCGCAGAAGCTCTCA
21
41
33
34
32
B
S.aureus Cas9 nickases
% NHEJ
D10A
N580A
21 & 33
21 & 34
41 & 32
41 & 33
41 & 34
gRNA PAIRS
wild type S.aureus Cas9
% NHEJ
gRNA 21
gRNA 32
gRNA33
gRNA34
gRNA41
34/34

Fig. 22A-22B

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/038252

A. CLASSIFICATION OF SUBJECT MATTER
INV. C12N9/22 G06F19/16 A61K48/00 C12N15/63 C12N15/79
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C12N G06F C07K A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, BIOSIS, CHEM ABS Data, EMBASE, INSPEC, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	F. ANN RAN ET AL: "In vivo genome editing using Staphylococcus aureus Cas9", NATURE, vol. 520, no. 7546, 9 April 2015 (2015-04-09), pages 186-191, XP055206733, ISSN: 0028-0836, DOI: 10.1038/nature14299 the whole document ----- -/--	1-134

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 September 2016	04/10/2016

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Bayer, Martin

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/038252

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	NISHIMASU HIROSHI ET AL: "Crystal Structure of Cas9 in Complex with Guide RNA and Target DNA", CELL, CELL PRESS, US, vol. 156, no. 5, 13 February 2014 (2014-02-13), pages 935-949, XP028667665, ISSN: 0092-8674, DOI: 10.1016/J.CELL.2014.02.001 the whole document	1-134
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