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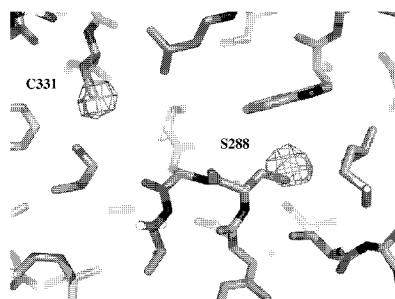
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(54) Title: ISOPRENE SYNTHASE VARIANTS WITH IMPROVED SOLUBILITY FOR PRODUCTION OF ISOPRENE

Figure 19



(57) Abstract: The present invention provides methods and compositions of variant polypeptides having isoprene synthase activity with improved solubility. In particular, the present invention provides isoprene synthase variant for increased isoprene production in recombinant host cells.

ISOPRENE SYNTHASE VARIANTS WITH IMPROVED SOLUBILITY FOR PRODUCTION OF ISOPRENE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application No. 61/552,453, filed October 27, 2011; the disclosure of which is hereby incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present invention provides methods and compositions comprising isoprene synthase variants. In particular, the present invention provides variant plant isoprene synthases for increased isoprene production in host cells.

BACKGROUND OF THE INVENTION

[0003] Isoprene (2-methyl-1,3-butadiene) is a volatile hydrocarbon that is insoluble in water and soluble in alcohol. Commercially viable quantities of isoprene can be obtained by direct isolation from petroleum C5 cracking fractions or by dehydration of C5 isoalkanes or isoalkenes (Weissermel and Arpe, Industrial Organic Chemistry, 4th ed., Wiley-VCH, pp. 117-122, 2003). The C5 skeleton can also be synthesized from smaller subunits. It would be desirable, however, to have a commercially viable method of producing isoprene that was independent of nonrenewable resources.

[0004] Isoprene monomer is employed in the manufacture of polyisoprene and various copolymers (with isobutylene, butadiene, styrene, or other monomers). Building a strain (prokaryotic or eukaryotic) capable of producing commercially viable levels of isoprene requires optimization of part of or the entire DXP or MVA pathway or both MVA and DXP pathways. A key enzyme in the pathway is isoprene synthase (IspS), which converts the precursor DMAPP to isoprene. Isoprene synthases (IspS) that have been identified include those from plants such as poplar, English oak and kudzu vine. Some of the plant IspS enzymes identified have been partially characterized in part by expression in *E. coli* and some of the kinetic parameters of these enzymes have been determined *in vitro* with purified protein. However, the solubility of the native IspS enzymes and even some of the recombinant

enzymes are insufficient for commercial production of isoprene in a biological host. Thus, one problem to be solved is the provision of isoprene synthase variants (e.g. with substitutions at specific residues) which have improved solubility such that a greater amount of isoprene can be biologically produced. To solve this problem as described herein, an isoprene synthase with improved solubility may be expressed in a host (e.g. a bacterial host).

[0005] All patents, patent applications, articles and publications mentioned herein are hereby expressly incorporated herein by reference.

SUMMARY OF THE INVENTION

[0006] The invention provides compositions of variant polypeptides having isoprene activity with improved solubility and methods for making and using such variants for the production of isoprene.

[0007] Accordingly, in one aspect, the invention provides for isolated polypeptides having isoprene synthase activity, wherein the polypeptide variant comprises a substitution at residue X288 corresponding to SEQ ID NO:1, and wherein the polypeptide has increased protein solubility compared a parent polypeptide which does not comprise the substitution at residue X288. In one embodiment, the substitution is at S288. In another embodiment, the substitution is S288C. In another embodiment, the polypeptide has at least about 5% to at least about 75% increased protein solubility compared to the parent polypeptide. In another embodiment, the polypeptide is derived from a parent polypeptide isolated from a plant. In another embodiment, the parent polypeptide is isolated from a plant species selected from poplar (*Populus sp.*), kudzu (*Pueraria sp.*), English oak (*Quercus sp.*) or willow (*Salix sp.*). In another embodiment, the parent species is *Populus sp.* In another embodiment, in the parent is *P. alba*, *P. tremuloides*, *P. trichocarpa*, *P. nigra*. In another embodiment, the parent species is *Pueraria sp.* In another embodiment, in the parent species is *Pueraria montana*. In another embodiment, the parent species is *Quercus sp.* In another embodiment, the parent species is *Quercus rubur*. In another embodiment, the parent species is *Salix sp.* In another embodiment, the parent species is *S. alba* or *S. baylonica*.

[0008] In another aspect, the invention provides for recombinant host cells comprising any of the polypeptides described herein. In one embodiment, the host cell is selected from the group consisting of a bacterial, algal, fungal, yeast,

cyanobacterial, or Clostridial cell. In another embodiment, the host cell is a bacterial cell. In another embodiment, the bacterial cell is a gram-positive bacterial cell or gram-negative bacterial cell. In another embodiment, the bacterial cell is selected from the group consisting of *E. coli*, *L. acidophilus*, *P. citrea*, *B. subtilis*, *B. licheniformis*, *B. lentus*, *B. brevis*, *B. stearothermophilus*, *B. alkalophilus*, *B. amyloliquefaciens*, *B. clausii*, *B. halodurans*, *B. megaterium*, *B. coagulans*, *B. circulans*, *B. lautus*, *B. thuringiensis*, *S. albus*, *S. lividans*, *S. coelicolor*, *S. griseus*, *Pseudomonas sp.*, *P. alcaligenes*, *Clostridium sp.*, *Corynebacterium sp.*, and *C. glutamicum* cells. In another embodiment, the host cell is an algal cell. In another embodiment, the algal cell is selected from the group consisting of green algae, red algae, glaucophytes, chlorarachniophytes, euglenids, chromista, or dinoflagellates. In another embodiment, the host cell is a fungal cell. In another embodiment, the fungal cell is a filamentous fungi. In another embodiment, the host cell is a yeast cell. In another embodiment, the yeast cell is selected from the group consisting of *Saccharomyces sp.*, *Schizosaccharomyces sp.*, *Pichia sp.*, or *Candida sp.* In another embodiment, the yeast cell is a *Saccharomyces cerevisiae* cell.

[0009] In another aspect, the invention provides for a crystalline form of a polypeptide comprising the amino acid residues of SEQ ID NO:2 (DW614). In another aspect, the invention provides for a polynucleotide that encodes for isolated polypeptides having isoprene synthase activity, wherein the polypeptide variant comprises a substitution at residue X288 corresponding to SEQ ID NO:1, and wherein the polypeptide has increased protein solubility compared a parent polypeptide which does not comprise the substitution at residue X288. In another aspect, the invention provides for a vector comprising a polynucleotide that encodes for isolated polypeptides having isoprene synthase activity, wherein the polypeptide variant comprises a substitution at residue X288 corresponding to SEQ ID NO:1, and wherein the polypeptide has increased protein solubility compared a parent polypeptide which does not comprise the substitution at residue X288. In another aspect, the invention provides for a recombinant host cell comprising the vector described above. In another aspect, the invention provides for methods of producing isoprene comprising: (a) culturing the recombinant cell of above under conditions suitable for the production of isoprene and (b) producing isoprene. In another aspect, the invention provides for methods of producing isoprene comprising: (a) culturing the recombinant cell comprising polypeptides having isoprene synthase activity, wherein the

polypeptide variant comprises a substitution at residue X288 corresponding to SEQ ID NO:1, and wherein the polypeptide has increased protein solubility compared a parent polypeptide which does not comprise the substitution at residue X288 under conditions suitable for the production of isoprene and (b) producing isoprene.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Figure 1 shows a monomer view of wild type IspS showing the location of sites located approximately 8Å from the active site (A). Dimethylallyl s-thiolodiphosphate and Mg²⁺ (spheres) are placed based on a structural alignment with PDB 3N0G. B) Close-up view of sites in A.

[0011] Figure 2 shows a plasmid maps for pDW218 – MEA *P. alba* IspS S288C.

[0012] Figure 3 shows a map of pCHL243, containing *P. alba* Isoprene Synthase with the G491S mutation.

[0013] Figure 4 shows a plasmid map for B. pDW161 pTrc MEA *P. alba* IspS (S288C G491S)-mMVK.

[0014] Figure 5 shows MEA *P. alba* IspS containing the S288C mutation is soluble.

[0015] Figure 6 shows MEA *P. alba* IspS S288C G491S is significantly more soluble than the G491S parent enzyme.

[0016] Figure 7 shows Clustal W alignment between *P. alba* IspS and *S. alba* IspS.

[0017] Figure 8 shows a plasmid map of pEWL792.

[0018] Figure 9 shows a plasmid map of pEWL795.

[0019] Figure 10 shows Clustal W alignment between *P. alba* IspS and *S. babylonica* IspS.

[0020] Figure 11 shows a plasmid map of pEWL834.

[0021] Figure 12 shows a plasmid map of pEWL851.

[0022] Figure 13 shows western blot analysis of IspS in the supernatant and pellet fraction.

[0023] Figure 14 shows protein solubility analysis of IspS by comparison of IspS in the supernatant and pellet fraction.

[0024] Figure 15 shows a plasmid map of pEWL906.

[0025] Figure 16 shows a plasmid map of pEWL907.

[0026] Figure 17 is a coomassie stained NuPage gel that shows improved Salix IspS solubility due to the S288C mutation.

[0027] Figure 18 is a western blot that shows improved Salix IspS solubility due to the S288C mutation.

[0028] Figure 19 shows wild type IspS with anomalous difference map contoured at 5σ showing location of sulfur atoms.

[0029] Figure 20 shows dimer view of IspS variant A3T/S288C. Chain A is light gray, chain B is dark gray.

[0030] Figure 21 shows a structural alignment of wild type IspS (dark gray) and variant A3T/S288C (light gray).

[0031] Figure 22 shows a structural alignment of wild type IspS (light gray) and variant A3T/S288C (dark gray) showing environment around position 288.

[0032] Figure 23 shows plasmid map pDW196.

[0033] Figure 24 shows plasmid maps pDW204.

[0034] Figure 25 shows positions where the sequence of *S. alba* differs from *P. alba* are highlighted. Mg^{2+} (spheres) are placed based on a structural alignment with PDB 1N24.

[0035] Figure 26 shows positions where the sequence of *S. babylonica* differs from *P. alba* are highlighted. Mg^{2+} (spheres) are placed based on a structural alignment with PDB 1N24.

DETAILED DESCRIPTION OF THE INVENTION

[0036] The invention provides compositions of variant polypeptides having isoprene activity with improved solubility and methods for making and using such variants for the production of isoprene. In one embodiment, the variant polypeptide has a substitution at X288 residue corresponding to reference sequence SEQ ID NO:1. The sequence of MEA *P. alba* isoprene synthase is as follows:

MEARRSANYEPNSWDYDYLLSSDTDESIEVYKDKAKKLEAEVRREINNEKAE
 FLTLLELIDNVQRLGLGYRFESDIRGALDRFVSSGGFDAVTKTSLHGTALSFRLL
 LRQHGFEVSQEAQSGFKDQNGNFLENLKEDIKAILSLYEASFLALEGENILDEA
 KVFAISHLKELSEEKIGKELAEQVNHAELEPLHRRTQRLEAVWSIEAYRKKEDE
 ANQVLLELAILDYNMIQSVYQRDLRETSRWWRRVGLATKLHFARDRLIESFY
 WAVGVAFEPQYSDCRNSVAKMFSFVTIIDDYDVYGTLDLELELFTDAVERWD
 VNAINDLDPDYMKLCFLALYNTINEIAYDNLKDKGENILPYLTKAWADLCNAF
 LQEAQWLYNKSTPTFDDYFGNAWKSSSGPLQLVFAYFAVVQNIKKEEIEENLQ

KYHDTISRPSHIFRLCNDLASASAEIARGETANSVSCYMRTKGISEELATESVM
 NLIDETWKKMNKEKLGGSLFAKPFVETAINLARQSHCTYHNGDAHTSPDELT
 RKRVLSPVITEPILPFER (SEQ ID NO:1).

[0037] The practice of the present invention will employ, unless otherwise indicated, conventional techniques of protein chemistry, molecular biology (including recombinant techniques), microbiology, cell biology, biochemistry, nucleic acid chemistry, and enzymology, which are within the skill of the art. Such techniques are explained fully in the literature, such as, *Molecular Cloning: A Laboratory Manual*, second edition (Sambrook et al., 1989) and *Molecular Cloning: A Laboratory Manual*, third edition (Sambrook and Russel, 2001), (jointly and individually referred to herein as “Sambrook”). *Oligonucleotide Synthesis* (M. J. Gait, ed., 1984); *Animal Cell Culture* (R.I. Freshney, ed., 1987); *Handbook of Experimental Immunology* (D.M. Weir & C.C. Blackwell, eds.); *Gene Transfer Vectors for Mammalian Cells* (J.M. Miller & M.P. Calos, eds., 1987); *Current Protocols in Molecular Biology* (F.M. Ausubel et al., eds., 1987, including supplements through 2001); *PCR: The Polymerase Chain Reaction*, (Mullis et al., eds., 1994); *Current Protocols in Nucleic Acid Chemistry* John Wiley & Sons, Inc., New York, 2000); and Agrawal, ed., *Protocols for Oligonucleotides and Analogs, Synthesis and Properties* Humana Press Inc., New Jersey, 1993). Accordingly, the terms defined immediately below are more fully described by reference to the Specification as a whole.

[0038] Furthermore, the headings provided herein are not limitations of the various aspects or embodiments of the invention, which can be had by reference to the specification as a whole. Accordingly, the terms defined immediately below are more fully defined by reference to the specification as a whole. Nonetheless, in order to facilitate understanding of the invention, a number of terms are defined below.

Definitions

[0039] Unless defined otherwise herein, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention pertains. Although any methods and materials similar or equivalent to those described herein find use in the practice of the present invention, the preferred methods and materials are described herein. Accordingly, the terms

defined immediately below are more fully described by reference to the Specification as a whole.

[0040] “X” refers to any amino acid residue. However, when in the context of an amino acid substitution (e.g. “X003C”), it is to be understood that “X” refers to an amino acid residue other than the amino acid residue resulting from the substitution (e.g., X is an amino acid residue other than C). In some embodiments, the additional zeros in front of the residue position are not included, thus for example “X003” can also be referred to as “X3” to refer to residue position 3.

[0041] “Isoprene” refers to 2-methyl-1,3-butadiene (CAS# 78-79-5). It can refer to the direct and final volatile C5 hydrocarbon product from the elimination of pyrophosphate from 3,3-dimethylallyl pyrophosphate (DMAPP). It may not involve the linking or polymerization of one or more isopentenyl diphosphate (IPP) molecules to one or more DMAPP molecules. Isoprene is not limited by the method of its manufacture.

[0042] As used herein, the terms “isoprene synthase,” “isoprene synthase variant”, and “IspS,” refer to enzymes that catalyze the elimination of pyrophosphate from diemethylallyl diphosphate (DMAPP) to form isoprene. An “isoprene synthase” may be a wild type sequence or an isoprene synthase variant.

[0043] An “isoprene synthase variant” indicates a non-wild type polypeptide having isoprene synthase activity. One skilled in the art can measure isoprene synthase activity using known methods. See, for example, by GC-MS (see, e.g., WO 2009/132220, Example 3) or Silver *et al.*, J. Biol. Chem. 270:13010-13016, 1995. Variants may have substitutions, additions, deletions, and/or truncations from a wild type isoprene synthase sequence. Variants may have substitutions, additions, deletions, and/or truncations from a non-wild type isoprene synthase sequence. The variants described herein contain at least one amino acid residue substitution from a parent isoprene synthase polypeptide. In some embodiments, the parent isoprene synthase polypeptide is a wild type sequence. In some embodiments, the parent isoprene synthase polypeptide is a non-wild type sequence. In various embodiments, the variant will have at least about 10%, at least about 20%, at least about 30%, at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 100%, at least about 110%, at least about 120%, at least about 130%, at least about 140%, at least about 150%, at least about 160%, at least about 170%, at least about 180%, at least about 190%, at least

about 200% of the activity of a wild type isoprene synthase. In various embodiments, the variant will have at least about 40%, at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 91%, at least about 92%, at least about 93%, at least about 94%, at least about 95%, at least about 96%, at least about 97%, at least about 98%, at least about 99% sequence identity to a wild type isoprene synthase. In various embodiments, the number of differing amino acid residues between the variant and the wild type may be one or more, e.g. 1, 2, 3, 4, 5, 10, 15, 20, 30, 40, 50, or more amino acid residues. Wild type isoprene synthases can include any isoprene synthases from plants, for example, kudzu isoprene synthases, poplar isoprene synthases, English oak isoprene synthases, and willow isoprene synthases.

[0044] As used herein, an amino acid residue of an amino acid sequence of interest that “corresponds to” or is “corresponding to” or in “correspondence with” an amino acid residue of a reference amino acid sequence indicates that the amino acid residue of the sequence of interest is at a location homologous or equivalent to an enumerated residue in the reference amino acid sequence. One skilled in the art can determine whether a particular amino acid residue position in a polypeptide corresponds to that of a homologous reference sequence. For example, the sequence of an isoprene synthase polypeptide may be aligned with that of a reference sequence (e.g. SEQ ID NO: 1 using known techniques (e.g., basic local alignment search tool (BLAST), ClustalW2, Structure based sequences alignment program (STRAP), or the like). In addition, crystal structure coordinates of a reference sequence may be used as an aid in determining a homologous polypeptide residue’s three dimensional structure (see, for example, PCT/US2010/032134 (WO 2010/124146)). In another aspect, equivalent residues may be identified by determining homology at the level of tertiary structure. Using such methods, the amino acid residues of an isoprene synthase polypeptide or isoprene synthase variant may be numbered according to the corresponding amino acid residue position numbering of the reference sequence. For example, the amino acid sequence of SEQ ID NO: 1 may be used for determining amino acid residue position numbering of each amino acid residue of an isoprene synthase variant of interest.

[0045] The term “identical” in the context of two nucleic acids or polypeptide sequences refers to the residues in the two sequences that are the same when aligned

for maximum correspondence, as measured using one of the following sequence comparison or analysis algorithms.

[0046] As used herein, “homology” refers to sequence similarity or identity, with identity being preferred. Homology may be determined using standard techniques known in the art (see, e.g., Smith and Waterman, *Adv. Appl. Math.* 2:482 [1981]; Needleman and Wunsch, *J. Mol. Biol.* 48:443 [1970]; Pearson and Lipman, *Proc. Natl. Acad. Sci. USA* 85:2444 [1988]; software programs such as GAP, BESTFIT, FASTA, and TFASTA in the Wisconsin Genetics Software Package (Genetics Computer Group, Madison, WI); and Devereux et al., *Nucl. Acid Res.* 12:387-395 [1984]). One example of a useful algorithm is PILEUP. PILEUP creates a multiple sequence alignment from a group of related sequences using progressive, pair-wise alignments. It can also plot a tree showing the clustering relationships used to create the alignment. PILEUP uses a simplification of the progressive alignment method of Feng and Doolittle (see Feng and Doolittle, *J. Mol. Evol.* 35:351-360 [1987]). The method is similar to that described by Higgins and Sharp (see Higgins and Sharp, *CABIOS* 5:151-153 [1989]). Useful PILEUP parameters including a default gap weight of 3.00, a default gap length weight of 0.10, and weighted end gaps. Another example of a useful algorithm is the BLAST algorithm, described by Altschul et al., (see Altschul et al., *J. Mol. Biol.* 215:403-410 [1990]; and Karlin and Altschul, *Proc. Natl. Acad. Sci. USA* 90:5873-5787 [1993]). A particularly useful BLAST program is the WU-BLAST-2 program (see Altschul et al., *Meth. Enzymol.* 266:460-480 [1996]). WU-BLAST-2 uses several search parameters, most of which are set to the default values. The adjustable parameters are set with the following values: overlap span = 1, overlap fraction = 0.125, word threshold (T) = 11. The HSP S and HSP S2 parameters are dynamic values and are established by the program itself depending upon the composition of the particular sequence and composition of the particular database against which the sequence of interest is being searched. However, the values may be adjusted to increase sensitivity.

[0047] The percent sequence identity between a reference sequence and a test sequence of interest may be readily determined by one skilled in the art. The percent identity shared by polynucleotide or polypeptide sequences is determined by direct comparison of the sequence information between the molecules by aligning the sequences and determining the identity by methods known in the art. An example of an algorithm that is suitable for determining sequence similarity is the BLAST

algorithm, (see Altschul, et al., J. Mol. Biol., 215:403-410 [1990]). Software for performing BLAST analyses is publicly available through the National Center for Biotechnology Information. This algorithm involves first identifying high scoring sequence pairs (HSPs) by identifying short words of length W in the query sequence that either match or satisfy some positive-valued threshold score T when aligned with a word of the same length in a database sequence. These initial neighborhood word hits act as starting points to find longer HSPs containing them. The word hits are expanded in both directions along each of the two sequences being compared for as far as the cumulative alignment score can be increased. Extension of the word hits is stopped when: the cumulative alignment score falls off by the quantity X from a maximum achieved value; the cumulative score goes to zero or below; or the end of either sequence is reached. The BLAST algorithm parameters W , T , and X determine the sensitivity and speed of the alignment. The BLAST program uses as defaults a wordlength (W) of 11, the BLOSUM62 scoring matrix (see Henikoff and Henikoff, Proc. Natl. Acad. Sci. USA 89:10915 [1992]) alignments (B) of 50, expectation (E) of 10, $M'5$, $N'-4$, and a comparison of both strands.

[0048] The BLAST algorithm then performs a statistical analysis of the similarity between two sequences (see, e.g., Karlin and Altschul, *supra*). One measure of similarity provided by the BLAST algorithm is the smallest sum probability ($P(N)$), which provides an indication of the probability by which a match between two nucleotide or amino acid sequences would occur by chance. For example, a nucleic acid is considered similar to a isoprene synthase nucleic acid of this invention if the smallest sum probability in a comparison of the test nucleic acid to a isoprene synthase nucleic acid is less than about 0.1, more preferably less than about 0.01, and most preferably less than about 0.001. Where the test nucleic acid encodes an isoprene synthase polypeptide, it is considered similar to a specified isoprene synthase nucleic acid if the comparison results in a smallest sum probability of less than about 0.5, and more preferably less than about 0.2.

[0049] Percent “identical” or “identity” in the context of two or more nucleic acid or polypeptide sequences refers to two or more sequences that are the same or have a specified percentage of nucleic acid residues or amino acid residues, respectively, that are the same, when compared and aligned for maximum similarity, as determined using a sequence comparison algorithm or by visual inspection. “Percent sequence identity” or “% identity” or “% sequence identity” or “% amino acid

sequence identity” of a subject amino acid sequence to a reference amino acid sequence means that the subject amino acid sequence is identical (i.e., on an amino acid-by-amino acid basis) by a specified percentage to the reference amino acid sequence over a comparison length when the sequences are optimally aligned. Thus, 80% amino acid sequence identity or 80% identity with respect to two amino acid sequences means that 80% of the amino acid residues in two optimally aligned amino acid sequences are identical.

[0050] “Percent sequence identity” or “% identity” or “% sequence identity” of a subject nucleic acid sequence to a reference nucleic acid sequence means that the subject nucleic acid sequence is identical (i.e., on a nucleotide-by-nucleotide basis for a polynucleotide sequence) by a specified percentage to the reference sequence over a comparison length when the sequences are optimally aligned. Thus, 80% nucleotide sequence identity or 80% identity with respect to two nucleic acid sequences means that 80% of the nucleotide residues in two optimally aligned nucleic acid sequences are identical.

[0051] The “percent sequence identity” or “% sequence identity” or “% identity” of a subject sequence to a reference sequence can be calculated by optimally aligning the two sequences and comparing the two optimally aligned sequences over the comparison length. The number of positions in the optimal alignment at which identical residues occur in both sequences is determined, thereby providing the number of matched positions, and the number of matched positions is then divided by the total number of positions of the comparison length (which, unless otherwise specified, is the length of the reference sequence). The resulting number is multiplied by 100 to yield the percent sequence identity of the subject sequence to the reference sequence.

[0052] “Optimal alignment” or “optimally aligned” refers to the alignment of two (or more) sequences giving the highest percent identity score. For example, optimal alignment of two polypeptide sequences can be achieved by manually aligning the sequences such that the maximum number of identical amino acid residues in each sequence are aligned together or by using software programs or procedures described herein or known in the art. Optimal alignment of two nucleic acid sequences can be achieved by manually aligning the sequences such that the maximum number of identical nucleotide residues in each sequence are aligned

together or by using software programs or procedures described herein or known in the art.

[0053] Two sequences (e.g., polypeptide sequences) may be deemed “optimally aligned” when they are aligned using defined parameters, such as a defined amino acid substitution matrix, gap existence penalty (also termed gap open penalty), and gap extension penalty, so as to achieve the highest similarity score possible for that pair of sequences. The BLOSUM62 scoring matrix (see Henikoff and Henikoff, *supra*) is often used as a default scoring substitution matrix in polypeptide sequence alignment algorithms (e.g., BLASTP). The gap existence penalty is imposed for the introduction of a single amino acid gap in one of the aligned sequences, and the gap extension penalty is imposed for each residue position in the gap. Exemplary alignment parameters employed are: BLOSUM62 scoring matrix, gap existence penalty=11, and gap extension penalty=1. The alignment score is defined by the amino acid positions of each sequence at which the alignment begins and ends (e.g., the alignment window), and optionally by the insertion of a gap or multiple gaps into one or both sequences, so as to achieve the highest possible similarity score.

[0054] Optimal alignment between two or more sequences can be determined manually by visual inspection or by using a computer, such as, but not limited to e.g., the BLASTP program for amino acid sequences and the BLASTN program for nucleic acid sequences (see, e.g., Altschul et al., *Nucleic Acids Res.* 25(17):3389-3402 (1997); see also the National Center for Biotechnology Information (NCBI website) or CLUSTALW program.

[0055] A polypeptide of interest may be said to be “substantially identical” to a reference polypeptide if the polypeptide of interest comprises an amino acid sequence having at least about 60%, at least about 70%, at least about 75%, at least about 80%, at least about 85%, at least about 90%, at least about 91%, at least about 92%, at least about 93%, at least about 94%, at least about 95%, at least about 96%, at least about 97%, at least about 98%, at least about 99%, or at least about 99.5% sequence identity to the amino acid sequence of the reference polypeptide. The percent identity between two such polypeptides can be determined manually by inspection of the two optimally aligned polypeptide sequences or by using software programs or algorithms (e.g., BLAST, ALIGN, CLUSTAL) using standard parameters. One indication that two polypeptides are substantially identical is that the first polypeptide is immunologically cross-reactive with the second polypeptide.

Typically, polypeptides that differ by conservative amino acid substitutions are immunologically cross-reactive. Thus, a polypeptide is substantially identical to a second polypeptide, e.g., where the two peptides differ only by a conservative amino acid substitution or one or more conservative amino acid substitutions.

[0056] A nucleic acid of interest may be said to be “substantially identical” to a reference nucleic acid if the nucleic acid of interest comprises a nucleotide sequence having at least about 60%, at least about 70%, at least about 75%, at least about 80%, at least about 85%, at least about 90%, at least about 91%, at least about 92%, at least about 93%, at least about 94%, at least about 95%, at least about 96%, at least about 97%, at least about 98%, at least about 99%, or at least about 99.5% sequence identity to the nucleotide sequence of the reference nucleic acid. The percent identity between two such nucleic acids can be determined manually by inspection of the two optimally aligned nucleic acid sequences or by using software programs or algorithms (e.g., BLAST, ALIGN, CLUSTAL) using standard parameters. One indication that two nucleic acid sequences are substantially identical is that the two nucleic acid molecules hybridize to each other under stringent conditions (e.g., within a range of medium to high stringency).

[0057] A “nucleic acid” refers to two or more deoxyribonucleotides and/or ribonucleotides in either single or double-stranded form. It is to be understood that mutations, including single nucleotide mutations, can occur within a nucleic acid as defined herein.

[0058] A “recombinant nucleic acid” refers to a nucleic acid of interest that is free of one or more nucleic acids (e.g., genes) which, in the genome occurring in nature of the organism from which the nucleic acid of interest is derived, flank the nucleic acid of interest. The term therefore includes, for example, a recombinant DNA which is incorporated into a vector, into an autonomously replicating plasmid or virus, or into the genomic DNA of an anaerobic microorganism, or which exists as a separate molecule (e.g., a cDNA, a genomic DNA fragment, or a cDNA fragment produced by PCR or restriction endonuclease digestion) independent of other sequences. A recombinant nucleic acid may be obtained using molecular biology techniques that are known in the art, or part or all of a recombinant nucleic acid may be chemically synthesized.

[0059] A “heterologous nucleic acid” can be a nucleic acid whose nucleic acid sequence is from another species than the host cell or another strain of the same

species of the host cell. In some embodiments, the sequence is not identical to that of another nucleic acid naturally found in the same host cell. In some embodiments, a heterologous nucleic acid is not identical to a wild-type nucleic acid that is found in the same host cell in nature.

[0060] An “endogenous nucleic acid” is a nucleic acid whose nucleic acid sequence is naturally found in the host cell. In some embodiments, an endogenous nucleic acid is identical to a wild-type nucleic acid that is found in the host cell in nature. In some embodiments, one or more copies of endogenous nucleic acids are introduced into a host cell.

[0061] A nucleic acid or protein of the invention may be in isolated or purified form. As used herein, “isolated,” with respect to nucleic acid or protein, means separated from other components, such as, but not limited to a cell or cell culture. It is preferably in a homogeneous state although it can be in either a dry or aqueous solution. Purity and homogeneity are typically determined using analytical chemistry techniques, such as polyacrylamide gel electrophoresis or high performance liquid chromatography. A protein or nucleic acid that is the predominant species present in a preparation is substantially purified. The term “purified” denotes that a nucleic acid or protein gives rise to essentially one band in an electrophoretic gel. Particularly, “purified” means that when isolated, the isolate contains at least 90%, at least 95%, at least 98%, or more preferably at least 99% of nucleic acid or protein by weight of the isolate.

[0062] Purified polypeptides may be obtained by a number of methods including, for example, laboratory synthesis, chromatography, preparative electrophoresis, gel electrophoresis, centrifugation, precipitation, affinity purification, etc. (see, generally, R Scopes, Protein Purification, Springer-Verlag, N.Y. (1982), Deutscher, Methods in Enzymology Vol. 182: Guide to Protein Purification, Academic Press, Inc. N.Y. (1990)).

[0063] “Polypeptides” includes polypeptides, proteins, peptides, fragments of polypeptides, and fusion polypeptides. It is also understood that a polypeptide may be coded for by more than one nucleotide sequence due to the degeneracy of the genetic code.

[0064] A “heterologous polypeptide” is a polypeptide encoded by a heterologous nucleic acid. In some embodiments, the sequence is not identical to that of another polypeptide encoded by a nucleic acid naturally found in the same host

cell. Examples of heterologous proteins include enzymes such as isoprene synthases. In some embodiments, the genes encoding the proteins are naturally occurring genes, while in other embodiments mutated and/or synthetic genes are used.

[0065] An “endogenous polypeptide” is a polypeptide whose amino acid sequence is naturally found in the host cell. In some embodiments, an endogenous polypeptide is identical to a wild-type polypeptide that is found in the host cell in nature.

[0066] As used herein, the singular terms “a,” “an,” and “the” include the plural reference unless the context clearly indicates otherwise.

[0067] Unless otherwise indicated, nucleic acids are written left to right in 5’ to 3’ orientation; amino acid sequences are written left to right in amino to carboxy orientation, respectively.

[0068] It is intended that every maximum numerical limitation given throughout this specification includes every lower numerical limitation, as if such lower numerical limitations were expressly written herein. Every minimum numerical limitation given throughout this specification will include every higher numerical limitation, as if such higher numerical limitations were expressly written herein. Every numerical range given throughout this specification will include every narrower numerical range that falls within such broader numerical range, as if such narrower numerical ranges were all expressly written herein.

[0069] Reference to “about” a value or parameter herein also includes (and describes) embodiments that are directed to that value or parameter per se.

[0070] It is understood that all aspects and embodiments of the invention described herein include “comprising,” “consisting,” and “consisting essentially of” aspects and embodiments. It is to be understood that methods or compositions “consisting essentially of” the recited elements include only the specified steps or materials and those that do not materially affect the basic and novel characteristics of those methods and compositions. It is to be understood that this invention is not limited to the particular methodology, protocols, and reagents described, as these may vary, depending upon the context they are used by those of skill in the art.

Isoprene Synthase Variants with Improved Solubility

[0071] The invention features compositions of variant polypeptides having isoprene synthase activity and having improved solubility as well as methods for

making such polypeptides and methods for producing increased amounts of isoprene. In some embodiments, the polypeptide has at least about 5% to at least about 75% increased protein solubility compared to a parent polypeptide. In some embodiments, the polypeptide has at least about 5%, at least about 10%, at least about 15%, at least about 20%, at least about 25%, at least about 30%, at least about 35%, at least about 40%, at least about 45%, at least about 50%, at least about 55%, at least about 60%, at least about 65%, at least about 70%, or at least about 75% increased protein solubility compared to a parent polypeptide. In particular, these compositions and methods may increase the rate of isoprene production and the total amount of isoprene that is produced. The biosynthetic processes for isoprene production described herein are a desirable alternative to using natural rubber. As discussed further below, the amount of isoprene produced by cells can be greatly increased by introducing a heterologous nucleic acid encoding an isoprene synthase (IspS) variant into the cells.

[0072] Additionally, isoprene production by cells containing a heterologous isoprene synthase nucleic acid can be enhanced by increasing the amount of one or more DXP pathway polypeptides (e.g., a 1-deoxy-D-xylulose-5-phosphate synthase (DXS) polypeptide) and/or an isopentenyl diphosphate isomerase (IDI) polypeptide, expressed by the cells. For example, a DXS nucleic acid and/or an IDI nucleic acid can be introduced into the cells. The DXS nucleic acid may be a heterologous nucleic acid or a duplicate copy of an endogenous nucleic acid. Similarly, the IDI nucleic acid may be a heterologous nucleic acid or a duplicate copy of an endogenous nucleic acid. In some embodiments, the amount of DXS and/or IDI polypeptide is increased by replacing the endogenous DXS and/or IDI promoters or regulatory regions with other promoters and/or regulatory regions that result in greater transcription of the DXS and/or IDI nucleic acids. In some embodiments, the cells contain both a heterologous nucleic acid encoding an isoprene synthase polypeptide (e.g., a plant isoprene synthase nucleic acid) and a duplicate copy of an endogenous nucleic acid encoding an isoprene synthase polypeptide.

[0073] The encoded DXS and IDI polypeptides are part of the DXP pathway for the biosynthesis of isoprene. DXS polypeptides convert pyruvate and D-glyceraldehyde-3-phosphate into 1-deoxy-D-xylulose-5-phosphate. While not intending to be bound by any particular theory, it is believed that increasing the amount of DXS polypeptide increases the flow of carbon through the DXP pathway, leading to greater isoprene production. IDI polypeptides catalyze the interconversion

of isopentenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP). While not intending to be bound by any particular theory, it is believed that increasing the amount of IDI polypeptide in cells increases the amount of IPP that is converted into DMAPP, which in turn is converted into isoprene.

[0074] As is further detailed below, in some embodiments, the production of isoprene by cells containing a heterologous isoprene synthase nucleic acid can be augmented by increasing expression of one or more MVA polypeptide(s) in the cells. Exemplary MVA pathway polypeptides include any of the following polypeptides: acetyl-CoA acetyltransferase (AA-CoA thiolase) polypeptides, 3-hydroxy-3-methylglutaryl-CoA synthase (HMG-CoA synthase) polypeptides, 3-hydroxy-3-methylglutaryl-CoA reductase (HMG-CoA reductase) polypeptides, mevalonate kinase (MVK) polypeptides, phosphomevalonate kinase (PMK) polypeptides, diphosphomevalonate decarboxylase (MVD) polypeptides, IDI polypeptides, and polypeptides (*e.g.*, fusion polypeptides) having an activity of two or more MVA pathway polypeptides. For example, one or more MVA pathway nucleic acids can be introduced into the cells. In some embodiments, the cells contain the upper MVA pathway, which includes AA-CoA thiolase, HMG-CoA synthase, and HMG-CoA reductase nucleic acids. In some embodiments, the cells contain the lower MVA pathway, which includes MVK, PMK, MVD, and IDI nucleic acids. In some embodiments, the cells contain the entire MVA pathway, which includes AA-CoA thiolase, HMG-CoA synthase, HMG-CoA reductase, MVK, PMK, MVD, and IDI nucleic acids. The MVA pathway nucleic acids may be heterologous nucleic acids or duplicate copies of endogenous nucleic acids. In some embodiments, the amount of one or more MVA pathway polypeptides is increased by replacing the endogenous promoters or regulatory regions for the MVA pathway nucleic acids with other promoters and/or regulatory regions that result in greater transcription of the MVA pathway nucleic acids. In some embodiments, the cells contain both a heterologous nucleic acid encoding an isoprene synthase polypeptide (*e.g.*, a plant isoprene synthase nucleic acid) and a duplicate copy of an endogenous nucleic acid encoding an isoprene synthase polypeptide.

[0075] In some embodiments, at least a portion of the cells maintain the heterologous isoprene synthase, DXS, IDI, other DXP pathway and/or MVA pathway nucleic acids for at least about 5, 10, 20, 50, 75, 100, 200, 300, or more cell divisions in a continuous culture (such as a continuous culture without dilution). In some

embodiments of any of the aspects of the invention, the nucleic acid comprising the heterologous or duplicate copy of an endogenous isoprene synthase, DXS, IDI, other DXP pathway and/or MVA pathway nucleic acids also comprises a selective marker, such as a kanamycin, ampicillin, carbenicillin, gentamicin, hygromycin, phleomycin, bleomycin, neomycin, or chloramphenicol antibiotic resistance nucleic acid

[0076] Isoprene synthase polypeptides convert dimethylallyl diphosphate (DMAPP) into isoprene. Exemplary isoprene synthase polypeptides include polypeptides, fragments of polypeptides, peptides, and fusions polypeptides that have at least one activity of an isoprene synthase polypeptide. Standard methods can be used to determine whether a polypeptide has isoprene synthase polypeptide activity by measuring the ability of the polypeptide to convert DMAPP into isoprene *in vitro*, in a cell extract, or *in vivo*. Isoprene synthase polypeptide activity in the cell extract can be measured, for example, as described in Silver *et al.*, J. Biol. Chem. 270:13010-13016, 1995 and references therein.

[0077] In one embodiment, DMAPP (Sigma) is evaporated to dryness under a stream of nitrogen and rehydrated to a concentration of 100 mM in 100 mM potassium phosphate buffer pH 8.2 and stored at -20 °C. To perform the assay, a solution of 5 µl of 1M MgCl₂, 1 mM (250 µg/ml) DMAPP, 65 µl of Plant Extract Buffer (PEB) (50 mM Tris-HCl, pH 8.0, 20 mM MgCl₂, 5% glycerol, and 2 mM DTT) is added to 25 µl of cell extract in a 20 ml Headspace vial with a metal screw cap and teflon coated silicon septum (Agilent Technologies) and cultured at 37 °C for 15 minutes with shaking. The reaction is quenched by adding 200 µl of 250 mM EDTA or by heat inactivation, and isoprene is quantified by GC/MS.

Isoprene Synthase Parent Sequences

[0078] Isoprene synthase variants may be generated from a parent isoprene synthase, wherein the parent isoprene synthase may be an isoprene synthase as described herein, including wild type and non-wild type isoprene synthases. Exemplary parent isoprene synthase nucleic acids include nucleic acids that encode a polypeptide, fragment of a polypeptide, peptide, or fusion polypeptide that has at least one activity of an isoprene synthase polypeptide. Exemplary parent isoprene synthase polypeptides and nucleic acids include naturally-occurring polypeptides and nucleic acids from any of the source organisms described herein as well as variant

polypeptides and nucleic acids derived from any of the source organisms described herein.

[0079] In some embodiments, the parent isoprene synthase is from the family Fabaceae, the family Salicaceae, or the family Fagaceae. In some embodiments, the parent isoprene synthase polypeptide or nucleic acid is a naturally-occurring polypeptide or nucleic acid from *Pueraria montana* (kudzu) (Sharkey *et al.*, Plant Physiology 137: 700-712, 2005), poplar (such as *Populus alba x tremula* CAC35696, Miller *et al.*, Planta 213: 483-487, 2001) or *Populus alba*, aspen (such as *Populus tremuloides*) Silver *et al.*, JBC 270(22): 13010-1316, 1995), or English Oak (*Quercus robur*) (Zimmer *et al.*, WO 98/02550). Suitable parent isoprene synthases include, but are not limited to, those identified by GenBank Accession Nos. AY341431, AY316691, AB198180, AJ294819.1, EU693027.1, EF638224.1, AM410988.1, EF147555.1, AY279379, AJ457070, and AY182241. Additional parent sequences are described in PCT/US2009/041581 (WO 2009/132220) and PCT/US2010/032134 (WO 2010/124146).

[0080] In various embodiments, the parent isoprene synthase has at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 92%, at least about 94%, at least about 96%, at least about 98%, at least about 99% sequence identity with MEA *P. alba*. In other embodiments, the parent isoprene synthase has at least about 50%, at least about 60%, at least about 70%, at least about 80%, at least about 90%, at least about 92%, at least about 94%, at least about 96%, at least about 98%, at least about 99% sequence identity with full-length *P. alba* or complete *P. alba*.

[0081] Several methods are known in the art that are suitable for generating variants of the enzymes of the present invention, including but not limited to site-saturation mutagenesis, scanning mutagenesis, insertional mutagenesis, random mutagenesis, site-directed mutagenesis, and directed-evolution, as well as various other recombinatorial approaches.

[0082] Variants with improved solubility can be made by including a mutation at X288 corresponding to SEQ ID NO:1. In one aspect, X288 is S288. In another aspect, the mutation is S288C. Exemplary methods of measuring solubility is described below in the Examples.

Exemplary Nucleic Acids

[0083] Nucleic acids encoding the isoprene synthase variants of the invention are provided and contemplated within the scope of the invention. In various embodiments, the nucleic acid is a recombinant nucleic acid. For instance, in some embodiments, an isoprene synthase variant nucleic acid is operably linked to another nucleic acid encoding all or a portion of another polypeptide such that the recombinant nucleic acid encodes a fusion polypeptide that includes an isoprene synthase variant and all or part of another polypeptide (*e.g.*, a peptide that facilitates purification or detection of the fusion polypeptide, such as a His-tag). In some embodiments, part or all of a recombinant nucleic acid is chemically synthesized. In some aspects, the nucleic acid is a heterologous nucleic acid. By “heterologous nucleic acid” is meant a nucleic acid whose nucleic acid sequence is not identical to that of another nucleic acid naturally found in the same host cell.

[0084] In some embodiments, the nucleic acid includes at least or about 50, 100, 150, 200, 300, 400, 500, 600, 700, 800, or more contiguous nucleotides from a naturally-occurring isoprene synthase nucleic acid. In some aspects, the nucleic acid has one or more mutations compared to the sequence of a wild-type (*i.e.*, a sequence occurring in nature) isoprene synthase nucleic acid. In some embodiments, the nucleic acid has one or more mutations (*e.g.*, a silent mutation) that increase the transcription or translation of isoprene synthase nucleic acid. In some embodiments, the nucleic acid is a degenerate variant of any nucleic acid encoding an isoprene synthase polypeptide.

[0085] An isoprene synthase nucleic acid can be incorporated into a vector, such as an expression vector, using standard techniques known to one of skill in the art. Methods used to ligate the DNA construct comprising a nucleic acid of interest such as isoprene synthase, a promoter, a terminator, and other sequences and to insert them into a suitable vector are well known in the art. Additionally, vectors can be constructed using known recombination techniques (*e.g.*, Invitrogen Life Technologies, Gateway Technology).

[0086] In some embodiments, it may be desirable to over-express isoprene synthase nucleic acids at levels far higher than currently found in naturally-occurring cells. This result may be accomplished by the selective cloning of the nucleic acids encoding those polypeptides into multicopy plasmids or placing those nucleic acids under a strong inducible or constitutive promoter. Methods for over-expressing desired polypeptides are common and well known in the art of molecular biology and

examples may be found in Sambrook *et al.*, Molecular Cloning: A Laboratory Manual, 2nd ed., Cold Spring Harbor, 2001.

Exemplary Pathway Polypeptides

[0087] As noted above, one or more polypeptides from the DXP pathway and/or MVA pathway can be used to increase the production of isoprene in conjunction with using the isoprene synthase variants described herein. Accordingly, in certain aspects, the one or more nucleic acids encoding one or more MVA pathway polypeptides is a heterologous nucleic acid. In other aspects, the one or more nucleic acids encoding one or more MVA pathway polypeptides is a copy of an endogenous nucleic acid. In any of the aspects herein, one or more MVA pathway polypeptides can be selected from (a) an enzyme that condenses two molecules of acetyl-CoA to form acetoacetyl-CoA; (b) an enzyme that condenses acetoacetyl-CoA with acetyl-CoA to form HMG-CoA (e.g., HMG synthase); (c) an enzyme that converts HMG-CoA to mevalonate; (d) an enzyme that phosphorylates mevalonate to mevalonate 5-phosphate; (e) an enzyme that converts mevalonate 5-phosphate to mevalonate 5-pyrophosphate; (f) an enzyme that converts mevalonate 5-pyrophosphate to isopentenyl pyrophosphate; and (g) an enzyme that converts isopentenyl pyrophosphate to dimethylallyl diphosphate. In any of the aspects herein, one or more MVA pathway polypeptides is selected from (a) an enzyme that condenses acetoacetyl-CoA with acetyl-CoA to form HMG-CoA (e.g., HMG synthase); (b) an enzyme that converts HMG-CoA to mevalonate; (c) an enzyme that phosphorylates mevalonate to mevalonate 5-phosphate; (d) an enzyme that converts mevalonate 5-phosphate to mevalonate 5-pyrophosphate; and (e) an enzyme that converts mevalonate 5-pyrophosphate to isopentenyl pyrophosphate.

[0088] In any of the aspects herein, the enzyme that phosphorylates mevalonate to mevalonate 5-phosphate can be selected from the group consisting of *M. mazei* mevalonate kinase, *Lactobacillus* mevalonate kinase polypeptide, *Lactobacillus sakei* mevalonate kinase polypeptide, yeast mevalonate kinase polypeptide, *Saccharomyces cerevisiae* mevalonate kinase polypeptide, *Streptococcus* mevalonate kinase polypeptide, *Streptococcus pneumoniae* mevalonate kinase polypeptide, and *Streptomyces* mevalonate kinase polypeptide, *M. Burtonii* mevalonate kinase, or *Streptomyces CL190* mevalonate kinase polypeptide. In any of

the aspects herein, the enzyme that phosphorylates mevalonate to mevalonate 5-phosphate is *M. mazei* mevalonate kinase.

Upper MVA pathway polypeptides

[0089] The upper portion of the MVA pathway uses acetyl Co-A produced during cellular metabolism as the initial substrate for conversion to mevalonate via the actions of polypeptides having either: (a) (i) thiolase activity or (ii) acetoacetyl-CoA synthase activity, (b) HMG-CoA reductase, and (c) HMG-CoA synthase enzymatic activity. First, acetyl Co-A is converted to acetoacetyl CoA via the action of a thiolase or an acetoacetyl-CoA synthase (which utilizes acetyl-CoA and malonyl-CoA). Next, acetoacetyl-CoA is converted to 3-hydroxy-3-methylglutaryl-CoA (HMG-CoA) by the enzymatic action of HMG-CoA synthase. This Co-A derivative is reduced to mevalonate by HMG-CoA reductase, which is the rate-limiting step of the mevalonate pathway of isoprenoid production.

[0090] Non-limiting examples of upper MVA pathway polypeptides include acetyl-CoA acetyltransferase (AA-CoA thiolase) polypeptides, acetoacetyl-CoA synthase polypeptides, 3-hydroxy-3-methylglutaryl-CoA synthase (HMG-CoA synthase) polypeptides, 3-hydroxy-3-methylglutaryl-CoA reductase (HMG-CoA reductase) polypeptides. Upper MVA pathway polypeptides can include polypeptides, fragments of polypeptides, peptides, and fusions polypeptides that have at least one activity of an upper MVA pathway polypeptide. Exemplary upper MVA pathway nucleic acids include nucleic acids that encode a polypeptide, fragment of a polypeptide, peptide, or fusion polypeptide that has at least one activity of an upper MVA pathway polypeptide. Exemplary MVA pathway polypeptides and nucleic acids include naturally-occurring polypeptides and nucleic acids from any of the source organisms described herein. Thus, it is contemplated herein that any gene encoding an upper MVA pathway polypeptide can be used in the present invention.

[0091] In certain embodiments, various options of *mvaE* and *mvaS* genes from *L. grayi*, *E. faecium*, *E. gallinarum*, *E. casseliflavus* and/or *E. faecalis* alone or in combination with one or more other *mvaE* and *mvaS* genes encoding proteins from the upper MVA pathway are contemplated within the scope of the invention. In other embodiments, an acetoacetyl-CoA synthase gene is contemplated within the scope of the present invention in combination with one or more other genes encoding: (i) 3-hydroxy-3-methylglutaryl-CoA synthase (HMG-CoA synthase) polypeptides and 3-

hydroxy-3-methylglutaryl-CoA reductase (HMG-CoA reductase) polypeptides. Thus, in certain aspects, any of the combinations of genes contemplated in can be expressed in recombinant cells in any of the ways described herein.

[0092] Additional non-limiting examples of upper MVA pathway polypeptides which can be used herein are described in International Patent Application Publication No. WO2009/076676; WO2010/003007 and WO2010/148150.

Genes encoding *mvaE* and *mvaS* polypeptides

[0093] In certain embodiments, various options of *mvaE* and *mvaS* genes from *L. grayi*, *E. faecium*, *E. gallinarum*, *E. casseliflavus* and/or *E. faecalis* alone or in combination with one or more other *mvaE* and *mvaS* genes encoding proteins from the upper MVA pathway are contemplated within the scope of the invention. In *L. grayi*, *E. faecium*, *E. gallinarum*, *E. casseliflavus*, and *E. faecalis*, the *mvaE* gene encodes a polypeptide that possesses both thiolase and HMG-CoA reductase activities. In fact, the *mvaE* gene product represented the first bifunctional enzyme of IPP biosynthesis found in eubacteria and the first example of HMG-CoA reductase fused to another protein in nature (Hedl, et al., *J Bacteriol.* 2002 April; 184(8): 2116–2122). The *mvaS* gene, on the other hand, encodes a polypeptide having an HMG-CoA synthase activity.

[0094] Accordingly, recombinant cells (e.g., *E. coli*) can be engineered to express one or more *mvaE* and *mvaS* genes from *L. grayi*, *E. faecium*, *E. gallinarum*, *E. casseliflavus* and/or *E. faecalis*, to produce mevalonate. The one or more *mvaE* and *mvaS* genes can be expressed on a multicopy plasmid. The plasmid can be a high copy plasmid, a low copy plasmid, or a medium copy plasmid. Alternatively, the one or more *mvaE* and *mvaS* genes can be integrated into the host cell's chromosome. For both heterologous expression of the one or more *mvaE* and *mvaS* genes on a plasmid or as an integrated part of the host cell's chromosome, expression of the genes can be driven by either an inducible promoter or a constitutively expressing promoter. The promoter can be a strong driver of expression, it can be a weak driver of expression, or it can be a medium driver of expression of the one or more *mvaE* and *mvaS* genes.

[0095] In any of the aspects herein, the recombinant host cells can further comprise one or more nucleic acids encoding one or more 1-deoxy-D-xylulose 5-phosphate (DXP) pathway polypeptides. In one aspect, one or more nucleic acids that encode for one or more DXP pathway polypeptides is a heterologous nucleic acid. In

another aspect, the one or more nucleic acids encoding one or more DXP pathway polypeptides is a copy of an endogenous nucleic acid. In another aspect, the one or more DXP pathway polypeptides is selected from (a) 1-deoxy-D-xylulose-5-phosphate synthase (DXS), (b) 1-deoxy-D-xylulose-5-phosphate reductoisomerase (DXR), (c) 4-diphosphocytidyl-2C-methyl-D-erythritol synthase (MCT), (d) 4-diphosphocytidyl-2-C-methyl-D-erythritol kinase (CMK), (e) 2C-methyl-D-erythritol 2,4-cyclodiphosphate synthase (MCS), (f) 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate synthase (HDS), and (g) 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate reductase (HDR). In another aspect, the DXP pathway polypeptide is DXS.

[0096] In another aspect, one of skill in the art can use an alternate metabolic process which can potentially produce three molecules of acetyl-CoA from one molecule of glucose using a pathway which does not rely on the Wood-Ljungdahl pathway enzymes. Instead, it makes use of a phosphoketolase enzyme found in certain organisms, particularly among Bifidobacteria [see, for example, Biology of the Prokaryotes (ed. Lengeler, Drews and Schlegel); Blackwell Science, New York, 1999, p. 299-301; Meile et al., *J. of Bacteriology*, 2001, 183:9, 2929-36; Jeong et al., *J. Microbiol. Biotechnol.*, 2007, 17:5, 822-829]. Phosphoketolase enzymes allow for formation of acetyl-CoA (via acetyl-phosphate) from xylulose 5-phosphate or fructose 6-phosphate rather than through oxidation of pyruvate as in typical metabolism. Increased biosynthesis of acetyl CoA by the use of a phosphoketolase polypeptide can result in increased productivity of the upper mevalonate-dependent biosynthetic pathway which can substantially increase biosynthesis of mevalonate and, consequently, of downstream isoprenoid precursor molecules such as DMAPP and IPP. Standard methods can be used to determine whether a polypeptide has phosphoketolase peptide activity by measuring the ability of the peptide to convert D-fructose 6-phosphate or D-xylulose 5-phosphate into acetyl-P. Acetyl-P can then be converted into ferryl acetyl hydroxamate, which can be detected spectrophotometrically (Meile *et al.*, *J. Bact.* 183:2929-2936, 2001). Any polypeptide identified as having phosphoketolase peptide activity is suitable for use in the present invention. Exemplary phosphoketolase nucleic acids include, but are not limited to, a phosphoketolase isolated from *Lactobacillus reuteri*, *Bifidobacterium longum*, *Ferrimonas balearica*, *Pedobactor saltans*, *Streptomyces griseus*, and/or *Nocardiopsis dassonvillei*.

Lower MVA pathway polypeptides

[0097] In some aspects of the invention, the cells described in any of the compositions or methods described herein further comprise one or more nucleic acids encoding a lower mevalonate (MVA) pathway polypeptide(s). In some aspects, the lower MVA pathway polypeptide is an endogenous polypeptide. In some aspects, the endogenous nucleic acid encoding a lower MVA pathway polypeptide is operably linked to a constitutive promoter. In some aspects, the endogenous nucleic acid encoding a lower MVA pathway polypeptide is operably linked to an inducible promoter. In some aspects, the endogenous nucleic acid encoding a lower MVA pathway polypeptide is operably linked to a strong promoter. In a particular aspect, the cells are engineered to over-express the endogenous lower MVA pathway polypeptide relative to wild-type cells. In some aspects, the endogenous nucleic acid encoding a lower MVA pathway polypeptide is operably linked to a weak promoter.

[0098] The lower mevalonate biosynthetic pathway comprises mevalonate kinase (MVK), phosphomevalonate kinase (PMK), and diphosphomevalonate decarboxylase (MVD). In some aspects, the lower MVA pathway can further comprise isopentenyl diphosphate isomerase (IDI). Cells provided herein can comprise at least one nucleic acid encoding isoprene synthase, one or more upper MVA pathway polypeptides, and/or one or more lower MVA pathway polypeptides. Polypeptides of the lower MVA pathway can be any enzyme (a) that phosphorylates mevalonate to mevalonate 5-phosphate; (b) that converts mevalonate 5-phosphate to mevalonate 5-pyrophosphate; and (c) that converts mevalonate 5-pyrophosphate to isopentenyl pyrophosphate. More particularly, the enzyme that phosphorylates mevalonate to mevalonate 5-phosphate can be from the group consisting of *M. mazei* mevalonate kinase, *Lactobacillus* mevalonate kinase polypeptide, *Lactobacillus sakei* mevalonate kinase polypeptide, yeast mevalonate kinase polypeptide, *Saccharomyces cerevisiae* mevalonate kinase polypeptide, *Streptococcus* mevalonate kinase polypeptide, *Streptococcus pneumoniae* mevalonate kinase polypeptide, *Streptomyces* mevalonate kinase polypeptide, *Streptomyces CL190* mevalonate kinase polypeptide, and *M. Burtonii* mevalonate kinase polypeptide. In another aspect, the enzyme that phosphorylates mevalonate to mevalonate 5-phosphate is *M. mazei* mevalonate kinase.

[0099] In some aspects, the lower MVA pathway polypeptide is a heterologous polypeptide. In some aspects, the cells comprise more than one copy of a heterologous nucleic acid encoding a lower MVA pathway polypeptide. In some aspects, the heterologous nucleic acid encoding a lower MVA pathway polypeptide is operably linked to a constitutive promoter. In some aspects, the heterologous nucleic acid encoding a lower MVA pathway polypeptide is operably linked to an inducible promoter. In some aspects, the heterologous nucleic acid encoding a lower MVA pathway polypeptide is operably linked to a strong promoter. In some aspects, the heterologous nucleic acid encoding a lower MVA pathway polypeptide is operably linked to a weak promoter. In some aspects, the heterologous lower MVA pathway polypeptide is a polypeptide from *Saccharomyces cerevisiae*, *Enterococcus faecalis*, or *Methanosarcina mazei*.

[0100] The nucleic acids encoding a lower MVA pathway polypeptide(s) can be integrated into a genome of the cells or can be stably expressed in the cells. The nucleic acids encoding a lower MVA pathway polypeptide(s) can additionally be on a vector.

[0101] Exemplary lower MVA pathway polypeptides are also provided below: (i) mevalonate kinase (MVK); (ii) phosphomevalonate kinase (PMK); (iii) diphosphomevalonate decarboxylase (MVD); and (iv) isopentenyl diphosphate isomerase (IDI). In particular, the lower MVK polypeptide can be from the genus *Methanosarcina* and, more specifically, the lower MVK polypeptide can be from *Methanosarcina mazei*. In some embodiments, the lower MVK polypeptide can be from *M. burtonii*. Additional examples of lower MVA pathway polypeptides can be found in U.S. Patent Application Publication 2010/0086978 the contents of which are expressly incorporated herein by reference in their entirety with respect to lower MVK pathway polypeptides and lower MVK pathway polypeptide variant.

[0102] Lower MVA pathway polypeptides include polypeptides, fragments of polypeptides, peptides, and fusion polypeptides that have at least one activity of a lower MVA pathway polypeptide. Exemplary lower MVA pathway nucleic acids include nucleic acids that encode a polypeptide, fragment of a polypeptide, peptide, or fusion polypeptide that has at least one activity of a lower MVA pathway polypeptide. Exemplary lower MVA pathway polypeptides and nucleic acids include naturally-occurring polypeptides and nucleic acids from any of the source organisms described

herein. In addition, variants of lower MVA pathway polypeptides that confer the result of better isoprene production can also be used as well.

[0103] In some aspects, the lower MVA pathway polypeptide is a polypeptide from *Saccharomyces cerevisiae*, *Enterococcus faecalis*, or *Methanosarcina mazei*. In some aspects, the MVK polypeptide is selected from the group consisting of *Lactobacillus* mevalonate kinase polypeptide, *Lactobacillus sakei* mevalonate kinase polypeptide, yeast mevalonate kinase polypeptide, *Saccharomyces cerevisiae* mevalonate kinase polypeptide, *Streptococcus* mevalonate kinase polypeptide, *Streptococcus pneumoniae* mevalonate kinase polypeptide, *Streptomyces* mevalonate kinase polypeptide, *Streptomyces* CL190 mevalonate kinase polypeptide, *Methanosarcina mazei* mevalonate kinase polypeptide, and *M. Burtonii* mevalonate kinase polypeptide. Any one of the promoters described herein (*e.g.*, promoters described herein and identified in the Examples of the present disclosure including inducible promoters and constitutive promoters) can be used to drive expression of any of the MVA polypeptides described herein.

[0104] Any one of the cells described herein can comprise IDI nucleic acid(s) (*e.g.*, endogenous or heterologous nucleic acid(s) encoding IDI). Isopentenyl diphosphate isomerase polypeptides (isopentenyl-diphosphate delta-isomerase or IDI) catalyzes the interconversion of isopentenyl diphosphate (IPP) and dimethylallyl diphosphate (DMAPP) (*e.g.*, converting IPP into DMAPP and/or converting DMAPP into IPP). Exemplary IDI polypeptides include polypeptides, fragments of polypeptides, peptides, and fusions polypeptides that have at least one activity of an IDI polypeptide. Standard methods (such as those described herein) can be used to determine whether a polypeptide has IDI polypeptide activity by measuring the ability of the polypeptide to interconvert IPP and DMAPP *in vitro*, in a cell extract, or *in vivo*. Exemplary IDI nucleic acids include nucleic acids that encode a polypeptide, fragment of a polypeptide, peptide, or fusion polypeptide that has at least one activity of an IDI polypeptide. Exemplary IDI polypeptides and nucleic acids include naturally-occurring polypeptides and nucleic acids from any of the source organisms described herein as well as mutant polypeptides and nucleic acids derived from any of the source organisms described herein.

Acetoacetyl-CoA Synthase Gene

[0105] In another aspect, acetoacetyl-CoA synthase gene (aka *nphT7*) can be used. The acetoacetyl-CoA synthase gene is a gene encoding an enzyme having the activity of synthesizing acetoacetyl-CoA from malonyl-CoA and acetyl-CoA and having minimal activity (e.g., no activity) of synthesizing acetoacetyl-CoA from two acetyl-CoA molecules. *See, e.g.*, Okamura et al., *PNAS* Vol 107, No. 25, pp. 11265-11270 (2010), the contents of which are expressly incorporated herein for teaching about *nphT7*. An acetoacetyl-CoA synthase gene from an actinomycete of the genus *Streptomyces* CL190 strain was described in JP Patent Publication (Kokai) No. 2008-61506 A and US2010/0285549. Acetoacetyl-CoA synthase can also be referred to as acetyl CoA:malonyl CoA acyltransferase. A representative acetoacetyl-CoA synthase (or acetyl CoA:malonyl CoA acyltransferase) that can be used is Genbank AB540131.1.

[0106] In any of the aspects or embodiments described herein, an enzyme that has the ability to synthesize acetoacetyl-CoA from malonyl-CoA and acetyl-CoA can be used. In certain embodiments described herein, an acetoacetyl-CoA synthase gene derived from an actinomycete of the genus *Streptomyces* having the activity of synthesizing acetoacetyl-CoA from malonyl-CoA and acetyl-CoA can be used.

Exemplary Host Cells

[0107] A variety of host cells can be used to make a recombinant host cell that can express isoprene synthase variants and to produce isoprene in the methods of the claimed invention. The host cell may be a cell that naturally produces isoprene or a cell that does not naturally produce isoprene. In some embodiments, the host cell naturally produces isoprene using the DXP pathway, and an isoprene synthase variant, DXP pathway polypeptide (e.g., DXS), and/or IDI nucleic acid is added to enhance production of isoprene using this pathway. In some embodiments, the host cell naturally produces isoprene using the MVA pathway, and an isoprene synthase variant and/or one or more MVA pathway nucleic acids are added to enhance production of isoprene using this pathway. In some embodiments, the host cell naturally produces isoprene using the DXP pathway and one or more MVA pathway nucleic acids are added to produce isoprene using part or all of the MVA pathway as well as the DXP pathway. In some embodiments, the host cell naturally produces isoprene using both the DXP and MVA pathways and one or more isoprene synthase

variants, DXS, IDI, or MVA pathway nucleic acids are added to enhance production of isoprene by one or both of these pathways.

[0108] In some embodiments, the host cell is a yeast, such as *Saccharomyces* sp., *Schizosaccharomyces* sp., *Pichia* sp., *Candida* sp. or *Y. lipolytica*.

[0109] In some embodiments, the host cell is a bacterium, such as strains of *Bacillus* such as *B. licheniformis* or *B. subtilis*, strains of *Pantoea* such as *P. citrea*, strains of *Pseudomonas* such as *P. alcaligenes*, strains of *Streptomyces* such as *S. lividans* or *S. rubiginosus*, strains of *Escherichia* such as *E. coli*, strains of *Enterobacter*, strains of *Streptococcus*, strains of *Archaea* such as *Methanosarcina mazei* or strains of *Corynebacterium* such as *C. glutamicum*.

[0110] As used herein, “the genus *Bacillus*” includes all species within the genus “*Bacillus*,” as known to those of skill in the art, including but not limited to *B. subtilis*, *B. licheniformis*, *B. lentus*, *B. brevis*, *B. stearothermophilus*, *B. alkalophilus*, *B. amyloliquefaciens*, *B. clausii*, *B. halodurans*, *B. megaterium*, *B. coagulans*, *B. circulans*, *B. lautus*, and *B. thuringiensis*. It is recognized that the genus *Bacillus* continues to undergo taxonomical reorganization. Thus, it is intended that the genus include species that have been reclassified, including but not limited to such organisms as *B. stearothermophilus*, which is now named “*Geobacillus stearothermophilus*.” The production of resistant endospores in the presence of oxygen is considered the defining feature of the genus *Bacillus*, although this characteristic also applies to the recently named *Alicyclobacillus*, *Amphibacillus*, *Aneurinibacillus*, *Anoxybacillus*, *Brevibacillus*, *Filobacillus*, *Gracilibacillus*, *Halobacillus*, *Paenibacillus*, *Salibacillus*, *Thermobacillus*, *Ureibacillus*, and *Virgibacillus*.

[0111] In some embodiments, the host cell is a gram-positive bacterium. Non-limiting examples include strains of *Streptomyces* (e.g., *S. lividans*, *S. coelicolor*, or *S. griseus*) and *Bacillus*. In some embodiments, the source organism is a gram-negative bacterium, such as *E. coli* or *Pseudomonas* sp.

[0112] In some embodiments, the host cell is a plant, such as a plant from the family *Fabaceae*, such as the *Faboideae* subfamily. In some embodiments, the source organism is kudzu, poplar (such as *Populus alba* x *tremula* CAC35696), aspen (such as *Populus tremuloides*), or *Quercus robur*.

[0113] In some embodiments, the host cell is an algae, such as a green algae, red algae, glaucophytes, chlorarachniophytes, euglenids, chromista, or dinoflagellates.

[0114] In some embodiments, the host cell is a cyanobacteria, such as cyanobacteria classified into any of the following groups based on morphology: Chroococcales, Pleurocapsales, Oscillatoriales, Nostocales, or Stigonematales.

[0115] In some embodiments, the host cell is an anaerobic organisms. An “anaerobe” is an organism that does not require oxygen for growth. An anaerobe can be an obligate anaerobe, a facultative anaerobe, or an aerotolerant organism. Such organisms can be any of the organisms listed above, bacteria, yeast, etc. An “obligate anaerobe” is an anaerobe for which atmospheric levels of oxygen can be lethal. Examples of obligate anaerobes include, but are not limited to, Clostridium, Eurobacterium, Bacteroides, Peptostreptococcus, Butyribacterium, Veillonella, and Actinomyces. In one embodiment, the obligate anaerobes can be any one or combination selected from the group consisting of Clostridium ljungdahlii, Clostridium autoethanogenum, Eurobacterium limosum, Clostridium carboxydivorans, Peptostreptococcus productus, and Butyribacterium methylotrophicum. A “facultative anaerobe” is an anaerobe that is capable of performing aerobic respiration in the presence of oxygen and is capable of performing anaerobic fermentation under oxygen-limited or oxygen-free conditions. Examples of facultative anaerobes include, but are not limited to, Escherichia, Pantoea, yeast, and Yarrowia.

[0116] In some embodiments, the host cell is a photosynthetic cell. In other embodiments, the host cell is a non-photosynthetic cell.

[0117] Other exemplary host cells that can be used are described in US Pub. 2009/0203102, WO 2009/076676, WO 2010/003007, WO 2009/132220, WO 2010/031062, WO 2010/031068, WO 2010/031076, WO 2010/031077, and WO 2010/031079.

Exemplary Transformation Methods

[0118] Isoprene synthase, DXS, IDI, and/or MVA pathway nucleic acids or vectors containing them can be inserted into a host cell (*e.g.*, a bacterial cell) using standard techniques for expression of the encoded isoprene synthase, DXS, IDI, and/or MVA pathway polypeptide. Introduction of a DNA construct or vector into a host cell can be performed using techniques such as transformation, electroporation, nuclear microinjection, transduction, transfection (*e.g.*, lipofection mediated or

DEAE-Dextrin mediated transfection or transfection using a recombinant phage virus), incubation with calcium phosphate DNA precipitate, high velocity bombardment with DNA-coated microprojectiles, and protoplast fusion. General transformation techniques are known in the art (see, *e.g.*, Current Protocols in Molecular Biology (F. M. Ausubel *et al.* (eds) Chapter 9, 1987; Sambrook *et al.*, Molecular Cloning: A Laboratory Manual, 3rd ed., Cold Spring Harbor, 2001; and Campbell *et al.*, Curr Genet, 16:53-56, 1989, which are each hereby incorporated by reference in their entireties, particularly with respect to transformation methods). The introduced nucleic acids may be integrated into chromosomal DNA or maintained as extrachromosomal replicating sequences.

[0119] Other exemplary transformation methods that can be used are described in US Pub. 2009/0203102, WO 2009/076676, WO 2010/003007, WO 2009/132220, WO 2010/031062, WO 2010/031068, WO 2010/031076, WO 2010/031077, and WO 2010/031079.

Exemplary Cell Culture Media

[0120] Any carbon source can be used to cultivate the host cells. The term “carbon source” refers to one or more carbon-containing compounds capable of being metabolized by a host cell or organism. For example, the cell medium used to cultivate the host cells may include any carbon source suitable for maintaining the viability or growing the host cells.

[0121] In some embodiments, the carbon source is a carbohydrate (such as monosaccharide, disaccharide, oligosaccharide, or polysaccharides), invert sugar (*e.g.*, enzymatically treated sucrose syrup), glycerol, glycerine (*e.g.*, a glycerine byproduct of a biodiesel or soap-making process), dihydroxyacetone, one-carbon source, fatty acid (*e.g.*, a saturated fatty acid, unsaturated fatty acid, or polyunsaturated fatty acid), lipid, phospholipid, glycerolipid, monoglyceride, diglyceride, triglyceride, polypeptide (*e.g.*, a microbial or plant protein or peptide), renewable carbon source (*e.g.*, a biomass carbon source such as a hydrolyzed biomass carbon source; beet sugar or cane sugar molasses), yeast extract, component from a yeast extract, polymer, acid, alcohol, aldehyde, ketone, amino acid, succinate, lactate, acetate, ethanol, or any combination of two or more of the foregoing. In some embodiments,

the carbon source is a product of photosynthesis, including, but not limited to, glucose.

[0122] Exemplary monosaccharides include glucose and fructose; exemplary oligosaccharides include lactose and sucrose, and exemplary polysaccharides include starch and cellulose. Exemplary carbohydrates include C6 sugars (*e.g.*, fructose, mannose, galactose, or glucose) and C5 sugars (*e.g.*, xylose or arabinose). In some embodiments, the cell medium includes a carbohydrate as well as a carbon source other than a carbohydrate (*e.g.*, glycerol, glycerine, dihydroxyacetone, one-carbon source, fatty acid, lipid, phospholipid, glycerolipid, monoglyceride, diglyceride, triglyceride, renewable carbon source, or a component from a yeast extract). In some embodiments, the cell medium includes a carbohydrate as well as a polypeptide (*e.g.*, a microbial or plant protein or peptide). In some embodiments, the microbial polypeptide is a polypeptide from yeast or bacteria. In some embodiments, the plant polypeptide is a polypeptide from soy, corn, canola, jatropha, palm, peanut, sunflower, coconut, mustard, rapeseed, cottonseed, palm kernel, olive, safflower, sesame, or linseed.

[0123] In some embodiments, the concentration of the carbohydrate is at least or about 5 grams per liter of broth (g/L, wherein the volume of broth includes both the volume of the cell medium and the volume of the cells), such as at least or about 10, 15, 20, 30, 40, 50, 60, 80, 100, 150, 200, 300, 400, or more g/L. In some embodiments, the concentration of the carbohydrate is between about 50 and about 400 g/L, such as between about 100 and about 360 g/L, between about 120 and about 360 g/L, or between about 200 and about 300 g/L. In some embodiments, this concentration of carbohydrate includes the total amount of carbohydrate that is added before and/or during the culturing of the host cells.

[0124] Exemplary lipids are any substance containing one or more fatty acids that are C4 and above fatty acids that are saturated, unsaturated, or branched.

[0125] Exemplary fatty acids include compounds of the formula R-COOH, where "R" is a hydrocarbon. Exemplary unsaturated fatty acids include compounds where "R" includes at least one carbon-carbon double bond. Exemplary unsaturated fatty acids include, but are not limited to, oleic acid, vaccenic acid, linoleic acid, palmitelaidic acid, and arachidonic acid. Exemplary polyunsaturated fatty acids include compounds where "R" includes a plurality of carbon-carbon double bonds. Exemplary saturated fatty acids include compounds where "R" is a saturated aliphatic

group. In some embodiments, the carbon source includes one or more C12-C22 fatty acids, such as a C12 saturated fatty acid, a C14 saturated fatty acid, a C16 saturated fatty acid, a C18 saturated fatty acid, a C20 saturated fatty acid, or a C22 saturated fatty acid. In an exemplary embodiment, the fatty acid is palmitic acid. In some embodiments, the carbon source is a salt of a fatty acid (*e.g.*, an unsaturated fatty acid), a derivative of a fatty acid (*e.g.*, an unsaturated fatty acid), or a salt of a derivative of fatty acid (*e.g.*, an unsaturated fatty acid). Suitable salts include, but are not limited to, lithium salts, potassium salts, sodium salts, and the like. Di- and triglycerols are fatty acid esters of glycerol.

[0126] In some embodiments, the concentration of the lipid, fatty acid, monoglyceride, diglyceride, or triglyceride is at least or about 1 gram per liter of broth (g/L, wherein the volume of broth includes both the volume of the cell medium and the volume of the cells), such as at least or about 5, 10, 15, 20, 30, 40, 50, 60, 80, 100, 150, 200, 300, 400, or more g/L. In some embodiments, the concentration of the lipid, fatty acid, monoglyceride, diglyceride, or triglyceride is between about 10 and about 400 g/L, such as between about 25 and about 300 g/L, between about 60 and about 180 g/L, or between about 75 and about 150 g/L. In some embodiments, the concentration includes the total amount of the lipid, fatty acid, monoglyceride, diglyceride, or triglyceride that is added before and/or during the culturing of the host cells. In some embodiments, the carbon source includes both (i) a lipid, fatty acid, monoglyceride, diglyceride, or triglyceride and (ii) a carbohydrate, such as glucose. In some embodiments, the ratio of the lipid, fatty acid, monoglyceride, diglyceride, or triglyceride to the carbohydrate is about 1:1 on a carbon basis (*i.e.*, one carbon in the lipid, fatty acid, monoglyceride, diglyceride, or triglyceride per carbohydrate carbon). In particular embodiments, the amount of the lipid, fatty acid, monoglyceride, diglyceride, or triglyceride is between about 60 and 180 g/L, and the amount of the carbohydrate is between about 120 and 360 g/L.

[0127] Exemplary microbial polypeptide carbon sources include one or more polypeptides from yeast or bacteria. Exemplary plant polypeptide carbon sources include one or more polypeptides from soy, corn, canola, jatropha, palm, peanut, sunflower, coconut, mustard, rapeseed, cottonseed, palm kernel, olive, safflower, sesame, or linseed.

[0128] Exemplary renewable carbon sources include cheese whey permeate, cornsteep liquor, sugar beet molasses, barley malt, and components from any of the

foregoing. Exemplary renewable carbon sources also include glucose, hexose, pentose and xylose present in biomass, such as corn, switchgrass, sugar cane, cell waste of fermentation processes, and protein by-product from the milling of soy, corn, or wheat. In some embodiments, the biomass carbon source is a lignocellulosic, hemicellulosic, or cellulosic material such as, but are not limited to, a grass, wheat, wheat straw, bagasse, sugar cane bagasse, soft wood pulp, corn, corn cob or husk, corn kernel, fiber from corn kernels, corn stover, switch grass, rice hull product, or a by-product from wet or dry milling of grains (*e.g.*, corn, sorghum, rye, triticale, barley, wheat, and/or distillers grains). Exemplary cellulosic materials include wood, paper and pulp waste, herbaceous plants, and fruit pulp. In some embodiments, the carbon source includes any plant part, such as stems, grains, roots, or tubers. In some embodiments, all or part of any of the following plants are used as a carbon source: corn, wheat, rye, sorghum, triticale, rice, millet, barley, cassava, legumes, such as beans and peas, potatoes, sweet potatoes, bananas, sugarcane, and/or tapioca. In some embodiments, the carbon source is a biomass hydrolysate, such as a biomass hydrolysate that includes both xylose and glucose or that includes both sucrose and glucose.

[0129] In some embodiments, the renewable carbon source (such as biomass) is pretreated before it is added to the cell culture medium. In some embodiments, the pretreatment includes enzymatic pretreatment, chemical pretreatment, or a combination of both enzymatic and chemical pretreatment (*see*, for example, Farzaneh *et al.*, Bioresource Technology 96 (18): 2014-2018, 2005; U.S. Patent No. 6,176,176; U.S. Patent No. 6,106,888). In some embodiments, the renewable carbon source is partially or completely hydrolyzed before it is added to the cell culture medium.

[0130] In some embodiments, the renewable carbon source (such as corn stover) undergoes ammonia fiber expansion (AFEX) pretreatment before it is added to the cell culture medium (*see*, for example, Farzaneh *et al.*, Bioresource Technology 96 (18): 2014-2018, 2005). During AFEX pretreatment, a renewable carbon source is treated with liquid anhydrous ammonia at moderate temperatures (such as about 60 to about 100 °C) and high pressure (such as about 250 to about 300 psi) for about 5 minutes. Then, the pressure is rapidly released. In this process, the combined chemical and physical effects of lignin solubilization, hemicellulose hydrolysis, cellulose decrystallization, and increased surface area enables near complete enzymatic

conversion of cellulose and hemicellulose to fermentable sugars. AFEX pretreatment has the advantage that nearly all of the ammonia can be recovered and reused, while the remaining serves as nitrogen source for microbes in downstream processes. Also, a wash stream is not required for AFEX pretreatment. Thus, dry matter recovery following the AFEX treatment is essentially 100%. AFEX is basically a dry-to-dry process. The treated renewable carbon source is stable for long periods and can be fed at very high solid loadings in enzymatic hydrolysis or fermentation processes. Cellulose and hemicellulose are well preserved in the AFEX process, with little or no degradation. There is no need for neutralization prior to the enzymatic hydrolysis of a renewable carbon source that has undergone AFEX pretreatment. Enzymatic hydrolysis of AFEX-treated carbon sources produces clean sugar streams for subsequent fermentation use.

[0131] In some embodiments, the concentration of the carbon source (*e.g.*, a renewable carbon source) is equivalent to at least or about 0.1, 0.5, 1, 1.5, 2, 3, 4, 5, 10, 15, 20, 30, 40, or 50% glucose (w/v). The equivalent amount of glucose can be determined by using standard HPLC methods with glucose as a reference to measure the amount of glucose generated from the carbon source. In some embodiments, the concentration of the carbon source (*e.g.*, a renewable carbon source) is equivalent to between about 0.1 and about 20% glucose, such as between about 0.1 and about 10% glucose, between about 0.5 and about 10% glucose, between about 1 and about 10% glucose, between about 1 and about 5% glucose, or between about 1 and about 2% glucose.

[0132] In some embodiments, the carbon source includes yeast extract or one or more components of yeast extract. In some embodiments, the concentration of yeast extract is at least 1 gram of yeast extract per liter of broth (g/L, wherein the volume of broth includes both the volume of the cell medium and the volume of the cells), such as at least or about 5, 10, 15, 20, 30, 40, 50, 60, 80, 100, 150, 200, 300, or more g/L. In some embodiments, the concentration of yeast extract is between about 1 and about 300 g/L, such as between about 1 and about 200 g/L, between about 5 and about 200 g/L, between about 5 and about 100 g/L, or between about 5 and about 60 g/L. In some embodiments, the concentration includes the total amount of yeast extract that is added before and/or during the culturing of the host cells. In some embodiments, the carbon source includes both yeast extract (or one or more components thereof) and another carbon source, such as glucose. In some

embodiments, the ratio of yeast extract to the other carbon source is about 1:5, about 1:10, or about 1:20 (w/w).

[0133] Additionally the carbon source may also be one-carbon substrates such as carbon dioxide, or methanol. Glycerol production from single carbon sources (*e.g.*, methanol, formaldehyde, or formate) has been reported in methylotrophic yeasts (Yamada *et al.*, *Agric. Biol. Chem.*, 53(2) 541-543, 1989) and in bacteria (Hunter *et al.*, *Biochemistry*, 24, 4148-4155, 1985). These organisms can assimilate single carbon compounds, ranging in oxidation state from methane to formate, and produce glycerol. The pathway of carbon assimilation can be through ribulose monophosphate, through serine, or through xylulose-momophosphate (Gottschalk, *Bacterial Metabolism*, Second Edition, Springer-Verlag: New York, 1986, which is hereby incorporated by reference in its entirety, particularly with respect to carbon sources). The ribulose monophosphate pathway involves the condensation of formate with ribulose-5-phosphate to form a six carbon sugar that becomes fructose and eventually the three carbon product glyceraldehyde-3-phosphate. Likewise, the serine pathway assimilates the one-carbon compound into the glycolytic pathway via methylenetetrahydrofolate.

[0134] In addition to one and two carbon substrates, methylotrophic organisms are also known to utilize a number of other carbon containing compounds such as methylamine, glucosamine and a variety of amino acids for metabolic activity. For example, methylotrophic yeast are known to utilize the carbon from methylamine to form trehalose or glycerol (Bellion *et al.*, *Microb. Growth Cl Compd.*, Int. Symp., 7th ed., 415-32. Editors: Murrell *et al.*, Publisher: Intercept, Andover, UK, 1993). Similarly, various species of *Candida* metabolize alanine or oleic acid (Sulter *et al.*, *Arch. Microbiol.* 153(5), 485-9, 1990).

[0135] In some embodiments, cells are cultured in a standard medium containing physiological salts and nutrients (*see, e.g.*, Pourquie, J. *et al.*, *Biochemistry and Genetics of Cellulose Degradation*, eds. Aubert *et al.*, Academic Press, pp. 71-86, 1988; and Ilmen *et al.*, *Appl. Environ. Microbiol.* 63:1298-1306, 1997). Exemplary growth media are common commercially prepared media such as Luria Bertani (LB) broth, Sabouraud Dextrose (SD) broth, or Yeast medium (YM) broth. One skilled in the art of microbiology or fermentation science would know other defined or synthetic growth media that may also be used, and the appropriate medium for growth of particular host cells.

[0136] In addition to an appropriate carbon source, the cell medium desirably contains suitable minerals, salts, cofactors, buffers, and other components known to those skilled in the art suitable for the growth of the cultures or the enhancement of isoprene production (*see*, for example, WO 2004/033646 and references cited therein and WO 96/35796 and references cited therein). In some embodiments where an isoprene synthase, DXS, IDI, and/or MVA pathway nucleic acid is under the control of an inducible promoter, the inducing agent (*e.g.*, a sugar, metal salt or antimicrobial), is desirably added to the medium at a concentration effective to induce expression of an isoprene synthase, DXS, IDI, and/or MVA pathway polypeptide. In some embodiments, cell medium has an antibiotic (such as kanamycin) that corresponds to the antibiotic resistance nucleic acid (such as a kanamycin resistance nucleic acid) on a vector that has one or more DXS, IDI, or MVA pathway nucleic acids.

[0137] Other exemplary cell culture media that can be used are described in US Pub. 2009/0203102, WO 2009/076676, WO 2010/003007, WO 2009/132220, WO 2010/031062, WO 2010/031068, WO 2010/031076, WO 2010/031077, and WO 2010/031079.

Exemplary Production of Isoprene

[0138] In some embodiments, the cells are cultured in a culture medium under conditions permitting the production of isoprene by the cells. In some embodiments, the cells in culture produce isoprene at greater than or about 1, 10, 25, 50, 100, 150, 200, 250, 300, 400, 500, 600, 700, 800, 900, 1,000, 1,250, 1,500, 1,750, 2,000, 2,500, 3,000, 4,000, 5,000, or more nmole of isoprene/gram of cells for the wet weight of the cells/hour (nmole/gwcm/hr). In some embodiments, the amount of isoprene is between about 2 to about 5,000 nmole/gwcm/hr, such as between about 2 to about 100 nmole/gwcm/hr, about 100 to about 500 nmole/gwcm/hr, about 150 to about 500 nmole/gwcm/hr, about 500 to about 1,000 nmole/gwcm/hr, about 1,000 to about 2,000 nmole/gwcm/hr, or about 2,000 to about 5,000 nmole/gwcm/hr. The amount of isoprene in units of nmole/gwcm/hr can be measured as disclosed in U.S. Patent No. 5,849,970. For example, two mL of headspace (*e.g.*, headspace from a culture such as 2 mL of culture cultured in sealed vials at 32°C with shaking at 200 rpm for approximately 3 hours) are analyzed for isoprene using a standard gas

chromatography system, such as a system operated isothermally (85°C) with an n-octane/porasil C column (Alltech Associates, Inc., Deerfield, IL) and coupled to a RGD2 mercuric oxide reduction gas detector (Trace Analytical, Menlo Park, CA) (*see, e.g.*, Greenberg *et al.*, Atmos. Environ. 27A: 2689-2692, 1993; Silver *et al.*, Plant Physiol. 97:1588-1591, 1991). The gas chromatography area units are converted to nmol isoprene via a standard isoprene concentration calibration curve. In some embodiments, the value for the grams of cells for the wet weight of the cells is calculated by obtaining the A_{600} value for a sample of the cell culture, and then converting the A_{600} value to grams of cells based on a calibration curve of wet weights for cell cultures with a known A_{600} value. In some embodiments, the grams of the cells is estimated by assuming that one liter of broth (including cell medium and cells) with an A_{600} value of 1 has a wet cell weight of 1 gram. The value is also divided by the number of hours the culture has been incubating for, such as three hours.

[0139] In some embodiments, the cells in culture produce isoprene at greater than or about 1, 10, 25, 50, 100, 150, 200, 250, 300, 400, 500, 600, 700, 800, 900, 1,000, 1,250, 1,500, 1,750, 2,000, 2,500, 3,000, 4,000, 5,000, 10,000, 100,000, or more ng of isoprene/gram of cells for the wet weight of the cells/hr (ng/gwcm/h). In some embodiments, the amount of isoprene is between about 2 to about 5,000 ng/gwcm/h, such as between about 2 to about 100 ng/gwcm/h, about 100 to about 500 ng/gwcm/h, about 500 to about 1,000 ng/gwcm/h, about 1,000 to about 2,000 ng/gwcm/h, or about 2,000 to about 5,000 ng/gwcm/h. The amount of isoprene in ng/gwcm/h can be calculated by multiplying the value for isoprene production in the units of nmole/gwcm/hr discussed above by 68.1 (as described in Equation 5 below).

[0140] In some embodiments, the cells in culture produce a cumulative titer (total amount) of isoprene at greater than or about 1, 10, 25, 50, 100, 150, 200, 250, 300, 400, 500, 600, 700, 800, 900, 1,000, 1,250, 1,500, 1,750, 2,000, 2,500, 3,000, 4,000, 5,000, 10,000, 50,000, 100,000, or more mg of isoprene/L of broth (mg/L broth, wherein the volume of broth includes the volume of the cells and the cell medium). In some embodiments, the amount of isoprene is between about 2 to about 5,000 mg/L broth, such as between about 2 to about 100 mg/L broth, about 100 to about 500 mg/L broth, about 500 to about 1,000 mg/L broth, about 1,000 to about 2,000 mg/L broth, or about 2,000 to about 5,000 mg/L broth. The specific productivity of isoprene in mg of isoprene/L of headspace from shake flask or similar

cultures can be measured by taking a 1 ml sample from the cell culture at an OD₆₀₀ value of approximately 1.0, putting it in a 20 mL vial, incubating for 30 minutes, and then measuring the amount of isoprene in the headspace. If the OD₆₀₀ value is not 1.0, then the measurement can be normalized to an OD₆₀₀ value of 1.0 by dividing by the OD₆₀₀ value. The value of mg isoprene/L headspace can be converted to mg/Lbroth/hr/OD₆₀₀ of culture broth by multiplying by a factor of 38. The value in units of mg/Lbroth/hr/OD₆₀₀ can be multiplied by the number of hours and the OD₆₀₀ value to obtain the cumulative titer in units of mg of isoprene/L of broth.

[0141] The instantaneous isoprene production rate in mg/L broth/hr in a fermentor can be measured by taking a sample of the fermentor off-gas, analyzing it for the amount of isoprene (in units such as mg of isoprene per L of gas), and multiplying this value by the rate at which off-gas is passed through each liter of broth (*e.g.*, at 1 vvm (volume of air/volume of broth/minute) this is 60 Lgas per hour). Thus, an off-gas level of 1 mg/Lgas corresponds to an instantaneous production rate of 60 mg/Lbroth/hr at air flow of 1 vvm. If desired, the value in the units mg/Lbroth/hr can be divided by the OD₆₀₀ value to obtain the specific rate in units of mg/Lbroth/hr/OD. The average value of mg isoprene/Lgas can be converted to the total product productivity (grams of isoprene per liter of fermentation broth, mg/Lbroth) by multiplying this average off-gas isoprene concentration by the total amount of off-gas sparged per liter of fermentation broth during the fermentation. Thus, an average off-gas isoprene concentration of 0.5 mg/Lbroth/hr over 10 hours at 1 vvm corresponds to a total product concentration of 300 mg isoprene/Lbroth.

[0142] In some embodiments, the cells in culture convert greater than or about 0.0015, 0.002, 0.005, 0.01, 0.02, 0.05, 0.1, 0.12, 0.14, 0.16, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.2, 1.4, or 1.6% of the carbon in the cell culture medium into isoprene. In some embodiments, the percent conversion of carbon into isoprene is between about 0.002 to about 1.6%, such as about 0.002 to about 0.005%, about 0.005 to about 0.01%, about 0.01 to about 0.05%, about 0.05 to about 0.15%, 0.15 to about 0.2%, about 0.2 to about 0.3%, about 0.3 to about 0.5%, about 0.5 to about 0.8%, about 0.8 to about 1.0%, or about 1.0 to about 1.6%. The percent conversion of carbon into isoprene (also referred to as “% carbon yield”) can be measured by dividing the moles carbon in the isoprene produced by the moles carbon in the carbon source (such as the moles of carbon in batched and fed glucose and yeast extract). This number is multiplied by 100% to give a percentage value (as indicated in Equation 1).

Equation 1

$\% \text{ Carbon Yield} = (\text{moles carbon in isoprene produced}) / (\text{moles carbon in carbon source}) * 100$

[0143] For this calculation, yeast extract can be assumed to contain 50% w/w carbon.

Equation 2

$\% \text{ Carbon Yield} = (39.1 \text{ g isoprene} * 1/68.1 \text{ mol/g} * 5 \text{ C/mol}) / [(181221 \text{ g glucose} * 1/180 \text{ mol/g} * 6 \text{ C/mol}) + (17780 \text{ g yeast extract} * 0.5 * 1/12 \text{ mol/g})] * 100$
 $= 0.042\%$

[0144] One skilled in the art can readily convert the rates of isoprene production or amount of isoprene produced into any other units. Exemplary equations are listed below for interconverting between units.

Units for Rate of Isoprene production (total and specific)

Equation 3

$1 \text{ g isoprene/L}_{\text{broth}}/\text{hr} = 14.7 \text{ mmol isoprene/L}_{\text{broth}}/\text{hr}$ (total volumetric rate)

Equation 4

$1 \text{ nmol isoprene/g}_{\text{wcm}}/\text{hr} = 1 \text{ nmol isoprene/L}_{\text{broth}}/\text{hr}/\text{OD}_{600}$ (This conversion assumes that one liter of broth with an OD_{600} value of 1 has a wet cell weight of 1 gram.)

Equation 5

$1 \text{ nmol isoprene/g}_{\text{wcm}}/\text{hr} = 68.1 \text{ ng isoprene/g}_{\text{wcm}}/\text{hr}$ (given the molecular weight of isoprene)

Equation 6

$1 \text{ nmol isoprene/L}_{\text{gas}} \text{ O}_2/\text{hr} = 90 \text{ nmol isoprene/L}_{\text{broth}}/\text{hr}$ (at an O_2 flow rate of 90 L/hr per L of culture broth)

Equation 7

$1 \mu\text{g isoprene}/L_{\text{gas}} \text{ isoprene in off-gas} = 60 \mu\text{g isoprene}/L_{\text{broth}}/\text{hr}$ at a flow rate of $60 L_{\text{gas}}$ per L_{broth} (1 vvm)

Units for Titer (total and specific)

Equation 8

$1 \text{ nmol isoprene}/\text{mg cell protein} = 150 \text{ nmol isoprene}/L_{\text{broth}}/\text{OD}_{600}$ (This conversion assumes that one liter of broth with an OD_{600} value of 1 has a total cell protein of approximately 150 mg) (specific productivity)

Equation 9

$1 \text{ g isoprene}/L_{\text{broth}} = 14.7 \text{ mmol isoprene}/L_{\text{broth}}$ (total titer)

[0145] If desired, Equation 10 can be used to convert any of the units that include the wet weight of the cells into the corresponding units that include the dry weight of the cells.

Equation 10

$\text{Dry weight of cells} = (\text{wet weight of cells})/3.3$

[0146] In some embodiments encompassed by the invention, a cell comprising a heterologous nucleic acid encoding an isoprene synthase variant polypeptide produces an amount of isoprene that is at least or about 2-fold, 3-fold, 5-fold, 10-fold, 25-fold, 50-fold, 100-fold, 150-fold, 200-fold, 400-fold, or greater than the amount of isoprene produced from a corresponding cell grown under essentially the same conditions without the heterologous nucleic acid encoding the isoprene synthase variant polypeptide.

[0147] In some embodiments encompassed by the invention, a cell comprising a heterologous nucleic acid encoding an isoprene synthase variant polypeptide and one or more heterologous nucleic acids encoding a DXS, IDI, and/or MVA pathway polypeptide produces an amount of isoprene that is at least or about 2-fold, 3-fold, 5-fold, 10-fold, 25-fold, 50-fold, 100-fold, 150-fold, 200-fold, 400-fold, or greater than

the amount of isoprene produced from a corresponding cell grown under essentially the same conditions without the heterologous nucleic acids.

Exemplary Isoprene Purification Methods

[0148] In some embodiments, any of the methods described herein further include recovering the isoprene. For example, the isoprene produced using the compositions and methods of the invention can be recovered using standard techniques, such as gas stripping, fractionation, adsorption/desorption, pervaporation, thermal or vacuum desorption of isoprene from a solid phase, or extraction of isoprene immobilized or absorbed to a solid phase with a solvent (*see*, for example, U.S. Patent Nos. 4,703,007 and 4,570,029). In some embodiments, the recovery of isoprene involves the isolation of isoprene in a liquid form (such as a neat solution of isoprene or a solution of isoprene in a solvent). Gas stripping involves the removal of isoprene vapor from the fermentation off-gas stream in a continuous manner. Such removal can be achieved in several different ways including, but not limited to, adsorption to a solid phase, partition into a liquid phase, or direct condensation. In some embodiments, membrane enrichment of a dilute isoprene vapor stream above the dew point of the vapor resulting in the condensation of liquid isoprene. In some embodiments, the recovery is performed as described in U.S. Provisional Patent Appl. No. 61/288,142, filed on December 18, 2009.

[0149] The recovery of isoprene may involve one step or multiple steps. In some embodiments, the removal of isoprene vapor from the fermentation off-gas and the conversion of isoprene to a liquid phase are performed simultaneously. For example, isoprene can be directly condensed from the off-gas stream to form a liquid. In some embodiments, the removal of isoprene vapor from the fermentation off-gas and the conversion of isoprene to a liquid phase are performed sequentially. For example, isoprene may be adsorbed to a solid phase and then extracted from the solid phase with a solvent.

[0150] In some embodiments, any of the methods described herein further include purifying the isoprene. For example, the isoprene produced using the compositions and methods of the invention can be purified using standard techniques. Purification refers to a process through which isoprene is separated from one or more components that are present when the isoprene is produced. In some embodiments,

the isoprene is obtained as a substantially pure liquid. Examples of purification methods include (i) distillation from a solution in a liquid extractant and (ii) chromatography. As used herein, “purified isoprene” means isoprene that has been separated from one or more components that are present when the isoprene is produced. *See, e.g.* U.S. Patent Application Publication No. 2009/0203102, PCT publication WO 2009/076676 and U.S. Patent Application Serial No. 12/496,573. In some embodiments, the isoprene is at least about 20%, by weight, free from other components that are present when the isoprene is produced. In various embodiments, the isoprene is at least or about 25%, 30%, 40%, 50%, 60%, 70%, 75%, 80%, 90%, 95%, or 99%, by weight, pure. Purity can be assayed by any appropriate method, *e.g.*, by column chromatography, HPLC analysis, or GC-MS analysis.

[0151] All publications and patents mentioned in the above specification are herein incorporated by reference. Various modifications and variations of the described method and system of the invention will be apparent to those skilled in the art without departing from the scope and spirit of the invention. Although the invention has been described in connection with specific embodiments, it should be understood that the invention as claimed should not be unduly limited to such specific embodiments. It is also to be understood that one, some, or all of the properties of the various embodiments described herein may be combined to form other embodiments of the present invention. These and other aspects of the invention will become apparent to one of skill in the art.

EXAMPLES

[0152] A pool of mutants located near the active site of MEA *P. alba* was screened for the ability to convert DMAPP to isoprene and confer improved growth to the host expression strain. After several rounds of enrichment, the S288C mutation was the predominant variant in the mutant pool. S288C conferred significantly increased solubility to MEA *P. alba* when expressed in host cells. S288C conferred increased solubility to IspS during large scale fermentation, and also significantly increased the solubility of IspS enzymes derived from *Salix alba* and *Salix babylonica* willow species.

Example 1. Enrichment of a pool of MEA *P. alba* mutants near the enzyme active site identified the S288C mutation

[0153] A pool of mutants located near the active site of MEA *P. alba* was screened for the ability to convert DMAPP to isoprene and confer improved growth to the host expression strain.

Methods

[0154] The entire MEA *P. alba* IspS enzyme (544 positions) was mutagenized by QuikChange (Stratagene) PCR using NNK/MNN oligonucleotide primer pairs at every position. Substitution of NNK (32 possible codons) at each position in the coding sequence of MEA *P. alba* allowed for all 20 possible amino acids to be represented in mutant pools. NNK primers were systematically generated to have 10 bases upstream and 20 bases downstream of the codon to be mutagenized. The complementary MNN primers were systematically generated in the exact same way with a 23 base overlap between the primer pair. Quikchange PCR reactions were carried out according to the manufacturer's recommended protocol. Recombinant mutants were generated after transformation of the PCR products.

[0155] To identify individual variants of MEA *P. alba* IspS that allow for increased activity within the host, 51 positions within an approximate radius of 8 angstroms from the active site (PDB 3N0G) were selected for pooling (see Table 1 and Figure 1). NNK PCR products from each of these positions were pooled and transformed into electrocompetent MD09-170 cells. Approximately 7,500 independent transformants were isolated and then pooled prior to the enrichment procedure. The 7,500 transformants represented an approximate 5-fold oversampling of the possible mutants at each position (32 codons for NNK at each position, 1,632 possible codons in a pool of 51 positions). This pool was then subjected to several rounds of enrichment by growth under MVA supplement and induction of IspS by IPTG as previously described in US 2010/0003716. After round three of enrichment, the IspS ORF in either 8 or 16 individual isolates was fully sequenced prior to the next round of enrichment. The enrichment procedure was stopped after round six.

Results

[0156] Enrichment of the pool of individual mutants in the 51 positions near the active site of MEA *P. alba* IspS (see Table 1) identified the S288C variant as the predominant mutation after 5 rounds of selection. Table 2 shows that 13 out of 16

sequenced variants randomly isolated after round 5 harbored the S288C mutation. S288C was not present in any of 8 isolated variants post earlier rounds 3 or 4, and was only present in 2 isolated variants (out of 16) after round 6. Table 2 also shows that after round 6, the predominant mutation was a silent R435R (CGT to CGG), which likely caused a simple IspS expression increase in the host strain. This indicates that in the enrichment procedure there is a narrow window for identification of variants that convey beneficial properties to IspS, prior to the proliferation of variants that simply improve expression.

Table 1. Positions near the enzyme active site located approximately 8Å from the active site as defined by the substrate analog and coordinated metals in the PDB 3N0G.

Residue	Position
ARG	259
SER	263
TRP	266
MET	286
PHE	287
SER	288
PHE	289
VAL	290
THR	291
ILE	292
ILE	293
ASP	294
ASP	295
ILE	296
TYR	297
ASP	298
VAL	299
LEU	365
CYS	366
ALA	368
PHE	369

LEU	370
GLN	371
GLU	372
ALA	373
ASN	390
ALA	391
TRP	392
LYS	393
SER	394
SER	395
SER	396
GLY	397
GLN	400
PHE	434
ARG	435
LEU	436
CYS	437
ASN	438
ASP	439
LEU	440
ALA	441
SER	442
ALA	443
GLU	446
GLU	451
THR	452
ALA	453
ASN	454
SER	455
SER	510

Table 2. Variants isolated in each round of enrichment of active site pool. Isolates that did not produce clear sequencing results are labeled “ND.”

	Round 3	Round 4	Round 5	Round 6
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Isolate 1	A368T	T452H	S288C	R435R (cgt - cgg)
Isolate 2	T452Y	N390W	S288C	R435R (cgt - cgg)
Isolate 3	A368T	A391A (gca - gct)	S288C	V299L
Isolate 4	C437Q	T452E	ND	R435R (cgt - cgg)
Isolate 5	V299V (gta - gtt)	N390W	S288C	R435R (cgt - cgg)
Isolate 6	A368N	R435R (cgt - cgg)	S288C	R435R (cgt - cgg)
Isolate 7	T452S	N390W	S288C	R435R (cgt - cgg)
Isolate 8	ND	ND	S288C	R435R (cgt - cgg)
Isolate 9			S288C	V299L
Isolate 10			S288C	S288C
Isolate 11			S288C	R435R (cgt - cgg)
Isolate 12			S288C	R435R (cgt - cgg)
Isolate 13			S288C	S288C
Isolate 14			A443G	R435R (cgt - cgg)
Isolate 15			V299L	I292L
Isolate 16			S288C	V299L

Example 2. The S288C variant confers solubility to MEA *P. alba* Isoprene

Synthase

[0157] A pool of mutants located near the active site of MEA *P. alba* was screened for the ability to convert DMAPP to isoprene and confer improved growth to the host expression strain. Since S288C was the predominant mutation after several rounds of enrichment (described in Example 1), and conveyed a clear benefit to intracellular activity of IspS, various strains harboring the mutation were isolated for further analysis.

Methods

[0158] To examine solubility of the MEA *P. alba* IspS S288C variant in comparison to wild type, strain DW425 containing the pCL201 plasmid encoding wild type IspS and strain DW526 containing the pDW218 plasmid encoding the S288C variant (Figure 2) were inoculated into LB medium, grown, and induced with IPTG according to standard molecular biology practices (See Table 5 and Table 6). The S288C mutation was introduced into pCHL243 (Figure 3), which contains the G491S variant of isoprene synthase, by the QuikChange procedure described above using primers shown in Table 4. The pCHL243 was generated by introduction of the G491S mutation into pDW34 (see below for pDW34 generation), which encodes the wild-type isoprene synthase, by QuikChange (Stratagene) mutagenesis (see below for PCR cycling parameters).

PCR mixture for QuikChange reaction:

Template DNA (pTrc-MEA-Alba-mMVK)	~100ng
G507S QC 2 For	50uM
G507S QC 2 Rev	50uM
dNTPs (Roche)	1 ul
10X pfu II fusion buffer	5 ul
Pfu Ultra II	1 ul
Water	add enough to reach 50ul total

PCR cycling parameters for QuikChange reaction:

95°C - 1 minute
 (95°C 50 seconds, 60°C 50 seconds, 68°C 3 minutes) 18 rounds
 68°C - 10 minutes

Table 3 Primers

G507S QC 2 For	GAAAAACTGAGTGGTAGCCTGTTTCGCGAAAC
G507S QC 2 Rev	AGGCTACCACTCAGTTTTTCCTTGTTTCATCT

[0159] The resultant plasmid from introduction of S288C into pCHL243 was termed pDW161 and was confirmed by sequencing to harbor the MEA *P. alba* S288C G491S variant of IspS (See Figure 4 and Table 4). Strain DW532 was generated by co-transformation of plasmid pMCM82 and pDW161 into strain CMP451 using standard molecular biology practices (Table 6). Positive strains resistant to both carbenicillin and spectinomycin were selected for fermentation at the 14 L scale.

Samples from either shake flask experiments or fermentation were subjected to centrifugation and frozen at -80°C prior to analysis.

[0160] Frozen samples were thawed and resuspended in lysis buffer (100 mM Tris, 100 mM NaCl pH 7.6 buffer, 0.1 mg/ml DNase, 0.5 mM PMSF/AEBSF, 5 mM MgCl₂) and passed through a French pressure cell as previously described. Lysed cultures were then spun at full speed in a table-top microcentrifuge for 10 minutes at 4°C. The supernatants were removed, and the pellets were washed 1X in lysis buffer before a second centrifugation step in the microcentrifuge. Samples were removed from the centrifuge, and pellets were resuspended in lysis buffer to exactly the same volume as the supernatant from the first centrifugation step. Equivalent volumes were then treated with loading buffer (Invitrogen) and run on Coomassie gels according to the manufacturer's recommended protocol (Invitrogen, NuPage). Proteins that were soluble were present in the lane carrying samples from supernatants, and insoluble proteins were present in the lanes carrying samples from resuspended pellets. Samples from fermentation strains CMP563 (see Table 6) and DW532 were also fractionated following the procedure described above, in order to observe the effect of the S288C variant at large scale. Soluble and insoluble IspS fractions from fermentation samples were detected by Western blot analysis (Invitrogen, WesternBreeze) and quantification using a Storm 860 Molecular Imager (GMI, Inc.), as previously described and according to the manufacturer's recommended protocol. Generation of plasmids pDW34 and pMCM82, and strains CMP563, DW532, and CMP451 was previously described in WO2009/076676, WO2010/003007, WO2009132220, WO2010/031062, WO2010/031068, WO2010/031076, WO2010/031077, WO2010/031079, WO2010/148150, WO2010/005525, WO2010/078457, WO2010/124146, WO2011/075534, WO2010/148144, WO2011/079314, WO2011/075748, and WO2002/010398 all incorporated herein for reference.

Table 4. Primers used for QuikChange mutagenesis

Primer	Sequence
HgS QC S288C Forward	AAAAATGTTTTGTTTCGTAACCATTATCGACGA
HgS QC S288C	TGGTTACGAAACAAAACATTTTTGCGACGGAGT

Reverse	
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Table 5. Plasmids used in this study

Plasmid	Resistance	Description
pDW218	Kan	pET MEA <i>P. alba</i> IspS S288C
pDW161	Carb	pTrc MEA <i>P. alba</i> IspS G491S S288C

Table 6. Strains used in this study

Strain	Plasmid(s)	Description
DW425	pCL201	BL21 (DE3) PL.2-mKKDyI, pET MEA <i>P. alba</i> IspS (control)
DW526	pDW218	BL21 (DE3) PL.2-mKKDyI, pET MEA <i>P. alba</i> IspS S288C
CMP563	pMCM82, pCHL243	BL21 pgl+ PL.2 mKKDyI GI1.2 gltA, pTrc-MEA <i>P. alba</i> (G491S)-mMVK, MCM82 (pCL-Upper MVA pathway)
DW532	pMCM82, pDW161	BL21 pgl+ PL.2 mKKDyI GI1.2 gltA, pTrc-MEA <i>P. alba</i> (S288C G491S)-mMVK, MCM82 (pCL-Upper MVA pathway)

Results

[0161] Strain DW526 was isolated directly from the enrichment pool, induced and fractionated to determine the effect of S288C on solubility in comparison to wild type. Figure 5 shows that the MEA *P. alba* IspS S288C variant is absent from the insoluble fraction compared to the control molecule (lane 2 compared to lane 4 of the Coomassie gel). Figure 5 also shows that the control IspS enzyme was present in the soluble and insoluble fractions at an approximate ratio of 1:1, while the S288C was found exclusively in the soluble fraction. Figure 6 shows the effect of the S288C mutation on the solubility of IspS in a larger scale fermentation experiment. In this study, the parental IspS enzyme harbored the G491S mutation, which previously was shown to have a positive effect on cell viability, yet no effect on solubility. In comparison to the parent enzyme, the IspS G491S S288C enzyme displayed significantly increased solubility in a fermentation strain. Figure 6 shows that solubility of the S288C G491S molecule was increased to 90% of the total amount of IspS, in comparison to the G491S molecule alone, which was only 78% soluble.

Amino acid sequence of MEA *P. alba* IspS S288C

MEARRSANYEPNSWDYDYLLSSDTDESIEVYKDKAKKLEAEVRREINNEKAE
 FLTLLELIDNVQRLGLGYRFESDIRGALDRFVSSGGFDAVTKTSLHGTALSFRL
 LRQHGFEVSQEAFFSGFKDQNGNLFLENLKEDIKAILSLYEASFLALEGENILDEA
 KVFAISHLKELSEEKIGKELAEQVNHAELEPLHRRRTQRLEAVWSIEAYRKKE
 ANQVLLELAILDYNMIQSVYQRDLRETSRWWRRVGLATKLHFARDRLIESFY
 WAVGVAFEPQYSDCRNSVAKMFCFVTIIDDYDVYGTLDLELELFTDAVERWD
 VNAINDLDPYMKLCFLALYNTINEIAYDNLKDKGENILPYLTKAWADLCNAF
 LQEAQWLYNKSTPTFDDYFGNAWKSSSGPLQLVFAYFAVVQNIKKEEENLQ
 KYHDTISRPSHIFRLCNDLASASAEIARGETANSVSCYMRKGISEELATESVM
 NLIDETWKKMNKEKLGGSLFAKPFVETAINLARQSHCTYHNGDAHTSPDELT
 RKRVLVITEPILPFER

DNA sequence of pDW218 harboring MEA *P. alba* IspS S288C

tggcgaatgggacgcgccctgtagcggcgccattaagcgcggcgggtgtggtgttacgcgcagcgtgaccgctacatt
 gccagcgccctagcgcccgtcctttcgtttcttcccttcttctcgcacgttcgcggcgtttccccgtcaagctctaaatc
 gggggctcccttaggggtccgatttagtgctttacggcacctcgaccccaaaaacttgattaggggtgatggtcacgtagt
 gggccatcgccctgatagacgggttttcgcccttgacgttgagtcacgttcttaatagtggactctgtccaaactggaa
 caaactcaacctatctcggtctattctttgattataagggattttgccgatttcggcctattggttaaaaaatgagctgattta
 acaaaaatttaacgcgaatttaacaaaatattaacgtttacaatttcaggtggcacttttcggggaatgtgcgcggaacccc
 tatttgtttattttctaaatacatcacaatatgtatccgctcatgaattaattcttagaaaaactcatcgagcatcaaatgaaactgc
 aatttattcatatcaggattatcaataccatattttgaaaaagccgtttctgtaataaggagaaaaactcaccgaggcaggttc
 ataggatggcaagatcctggtatcggtctgcgattccgactcgtccaacatcaatacaacctattaatttcccctcgtcaaaaa
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DNA sequence of pCHL243 harboring MEA *P. alba* IspS G491S

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Amino acid sequence of MEA *P. alba* IspS S288C G491S

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DNA sequence of pDW161 harboring MEA *P. alba* IspS S288C G491S

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 tgagcgcaacgcaattaatgtgagttagcgcgaattgatctg

**Example 3. The S288C mutation increases the solubility of IspS enzymes from
Salix alba and *Salix babylonica***

[0162] The effect of S288C mutation on solubility of IspS from *Salix alba* and *Salix babylonica* was investigated.

Methods and Results

Construction of plasmid pEWL792 (pTrc *S. alba* IspS)

[0163] Generation of a synthetic gene encoding *Salix alba* isoprene synthase (*S. alba* IspS) was performed by Gene Oracle Inc. (Mountain View, CA) utilizing a codon optimization method specific for *E. coli* expression. The synthetic gene was cloned into plasmid pGOv4 with an engineered NcoI restriction site on the 5'-end and a PstI restriction site on the 3'-end. Clustal W sequence alignment between *P. alba* IspS and *S. alba* IspS shows 91.73% identity (Figure 7).

[0164] 1µg of the pGOv4 *S. alba* IspS plasmid was digested with restriction endonucleases NcoI and PstI (Roche) based on the manufacturer's protocol at 37°C. The digested *S. alba* IspS fragment was then purified using a 1% EX gel (Invitrogen) and extracted using the QIAquick Gel Extraction Kit (Qiagen). 0.5µg of pTrcHis2B plasmid (Invitrogen) was digested with restriction endonucleases NcoI and PstI based on the manufacturer's protocol at 37°C. The pTrcHis2B plasmid was then purified using a 1% EX gel and extracted using the QIAquick Gel Extraction Kit. The *S. alba* IspS gene was ligated into the pTrcHis2B plasmid using T4 DNA ligase (New England Biolabs) based on the manufacturer's protocol at room temperature. The ligation mixture was desalted by floating a 0.025µm nitrocellulose membrane filter (Millipore) in a petri dish of ddH₂O and applying the ligation mixture gently on

top of the nitrocellulose membrane filter for 30 minutes at room temperature. Strain MCM446 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 5µl of desalted pTrc *S. alba* IspS ligation mix. The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µFd using a Gene Pulser Xcell Electroporator (BioRad). Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking. Transformants were selected on LA + 50µg/µl carbenicillin + 10mM mevalonic acid plates and incubated overnight at 37°C. The next day, several transformants were picked and grown in 5ml LB + 50µg/µl carbenicillin tubes overnight at 30°C. Plasmid preps were performed on the overnight cultures using QIAquick Spin Miniprep Kit (Qiagen). Plasmids were digested with restriction endonucleases NcoI and PstI at 37°C and analyzed on a 1.2% E-gel (Invitrogen) to ensure correct sized fragments were obtained. Plasmids from several transformants were shipped to Sequetech (Mountain View, CA) for sequencing with primers EL1005, EL1006, EL1270, and EL1271 (Table 7). DNA sequencing results showed that plasmids were correct. One plasmid was selected and designated as pEWL792 (Figure 8, Table 8).

Construction of plasmid pEWL795 (pTrc *S. alba* IspS-mMVK)

[0165] A PCR reaction was performed to amplify the *Methanosarcina mazei* MVK gene using plasmid MCM376 as the template, primers MCM165 and MCM177, and Pfu Ultra II Fusion DNA polymerase (Agilent) according to manufacturer's protocol. PCR conditions were as follows: 95°C for 2 minutes (first cycle only), 95°C for 25 seconds, 55°C for 25 seconds, 72°C for 18 seconds, repeat for 29 cycles, with final extension at 72°C for 2 minutes. The *M. mazei* MVK PCR product was purified using QIAquick PCR Purification Kit (Qiagen).

[0166] The *M. mazei* MVK PCR product was digested with restriction endonuclease PmeI (New England Biolabs) based on manufacturer's protocol at 37°C. The digested PCR fragment was then purified using the QIAquick PCR Purification Kit. A sequential restriction digest was performed with restriction endonuclease NsiI (Roche) based on manufacturer's protocol at 37°C. The digested *M. mazei* MVK fragment was then purified using the QIAquick PCR Purification Kit. Plasmid pEWL792 was digested with restriction endonuclease PmeI based on manufacturer's protocol at 37°C. The digested pEWL792 fragment was then purified

using the QIAquick PCR Purification Kit. A sequential restriction digest was performed with restriction endonuclease NsiI based on manufacturer's protocol at 37°C. The digested pEWL792 fragment was then gel purified using a 1% EX gel and extracted using the QIAquick Gel Extraction Kit. The *M. mazei* MVK gene was ligated into the pEWL792 plasmid using T4 DNA ligase based on the manufacturer's protocol overnight at 16°C. The next day, the ligation mixture was desalted by floating a 0.025µm nitrocellulose membrane filter in a petri dish of ddH₂O and applying the ligation mixture gently on top of the nitrocellulose membrane filter for 30 minutes at room temperature. MCM446 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 5µl of desalted pTrc *S.alba* IspS-mMVK ligation mix. The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µFd using a Gene Pulser Xcell Electroporator. Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking. Transformants were selected on LA + 50µg/µl carbenicillin + 10mM mevalonic acid plates and incubated overnight at 37°C. The next day, several transformants were picked and grown in 5ml LB + 50µg/µl carbenicillin tubes overnight at 30°C. Plasmid preps were performed on the overnight cultures using QIAquick Spin Miniprep Kit (Qiagen). Plasmids were digested with restriction endonucleases NcoI (Roche) and PmeI (New England Biolabs) using Buffer 4 (New England Biolabs) at 37°C and analyzed on a 1.2% E-gel to ensure correct sized fragments were obtained. Plasmids from several transformants were shipped to Sequetech for sequencing with primers EL1003, EL1005, EL1006, EL1270, EL1271, and EL1272 (Table 7). DNA sequencing results showed that plasmids were correct. One plasmid was selected and designated as pEWL795 (Figure 9, Table 8).

Construction of strain EWL804 (BL21, pgl+ PL.2-mKKDyI, GI1.2-gltA, pTrc *S.alba* IspS-mMVK)

[0167] Strain CMP451 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 1µl of plasmid pEWL795. The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µFd using a Gene Pulser Xcell Electroporator. Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking.

Transformants were selected on LA + 50µg/µl carbenicillin + 5mM mevalonic acid plates and incubated overnight at 37°C. One colony was selected and designated as strain EWL804 (Table 9).

Construction of strain EWL810 (BL21, pgl+ PL.2-mKKDyI, GI1.2-gltA, pTrc *S. alba* IspS-mMVK, pCL Ptrc-Upper MVA)

[0168] Strain EWL804 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 1µl of plasmid MCM82 (pCL Ptrc Upper MVA). The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µFd using a Gene Pulser Xcell Electroporator. Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking. Transformants were selected on LA + 50µg/µl carbenicillin + 50µg/µl spectinomycin plates and incubated overnight at 37°C. One colony was selected and designated as strain EWL810 (Table 9)

Construction of plasmid pEWL834 (pTrc *S. babylonica* IspS)

[0169] Generation of a synthetic gene encoding *Salix babylonica* isoprene synthase (*S. babylonica* IspS) was performed by Gene Oracle Inc. (Mountain View, CA) utilizing a codon optimization method specific for *E. coli* expression. The synthetic gene was cloned into plasmid pGOv4 with an engineered NcoI restriction site on the 5'-end and a PstI restriction site on the 3'-end. Clustal W sequence alignment between *P. alba* IspS and *S. babylonica* IspS shows 92.28% identity (Figure 10).

[0170] 1µg of the pGOv4 *S. babylonica* IspS plasmid was digested with restriction endonucleases NcoI and PstI based on the manufacturer's protocol at 37°C. The digested *S. babylonica* IspS fragment was then purified using a 1% EX gel and extracted using the QIAquick Gel Extraction Kit. Digested 0.5µg of pTrcHis2B plasmid with restriction endonucleases NcoI and PstI based on the manufacturer's protocol at 37°C. The pTrcHis2B plasmid was then purified using a 1% EX gel and extracted using the QIAquick Gel Extraction Kit. The *S. babylonica* IspS gene was ligated into the pTrcHis2B plasmid using T4 DNA ligase based on the manufacturer's protocol at room temperature. The ligation mixture was desalted by floating a 0.025µm nitrocellulose membrane filter (Millipore) in a petri dish of ddH₂O and

applying the ligation mixture gently on top of the nitrocellulose membrane filter for 30 minutes at room temperature. Strain MCM446 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 5µl of desalted pTrc *S.baylonica* IspS ligation mix. The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µFd using a Gene Pulser Xcell Electroporator. Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking. Transformants were selected on LA + 50µg/µl carbenicillin + 10mM mevalonic acid plates and incubated overnight at 37°C. The next day, several transformants were picked and grown in 5ml LB + 50µg/µl carbenicillin tubes overnight at 30°C. Plasmid preps were performed on the overnight cultures using QIAquick Spin Miniprep Kit. Plasmids were digested with restriction endonucleases NcoI and PstI at 37°C and analyzed on a 1.2% E-gel to ensure correct sized fragments were obtained. Plasmids from several transformants were shipped to Sequetech for sequencing with primers EL1004, EL1006, EL1285, EL1286, EL1287 (Table 7). DNA sequencing results showed that plasmids were correct. One plasmid was selected and designated as pEWL834 (Figure 11, Table 8).

Construction of plasmid pEWL851 (pTrc *S. baylonica* IspS-mMVK)

[0171] A PCR reaction was performed to amplify the *Methanosarcina mazei* MVK gene using plasmid MCM376 as the template, primers MCM165 and MCM177, and Pfu Ultra II Fusion DNA polymerase (Agilent) according to manufacturer's protocol. PCR conditions were as follows: 95°C for 2 minutes (first cycle only), 95°C for 25 seconds, 55°C for 25 seconds, 72°C for 18 seconds, repeat for 29 cycles, with final extension at 72°C for 2 minutes. The *M. mazei* MVK PCR product was purified using QIAquick PCR Purification Kit.

[0172] The *M. mazei* MVK PCR product was digested with restriction endonuclease PmeI (New England Biolabs) based on manufacturer's protocol at 37°C. The digested PCR fragment was then purified using the QIAquick PCR Purification Kit. A sequential restriction digest was performed with restriction endonuclease NsiI based on manufacturer's protocol at 37°C. The digested *M. mazei* MVK fragment was then purified using the QIAquick PCR Purification Kit. Plasmid pEWL834 was digested with restriction endonuclease PmeI based on manufacturer's protocol at 37°C. The digested pEWL834 fragment was then purified using the

QIAquick PCR Purification Kit. A sequential restriction digest was performed with restriction endonuclease NsiI based on manufacturer's protocol at 37°C. The digested pEWL834 fragment was then gel purified using a 1% EX gel and extracted using the QIAquick Gel Extraction Kit. The *M. mazei* MVK gene was ligated into the pEWL834 plasmid using T4 DNA ligase based on the manufacturer's protocol overnight at 16°C. The next day, the ligation mixture was desalted by floating a 0.025µm nitrocellulose membrane filter in a petri dish of ddH₂O and applying the ligation mixture gently on top of the nitrocellulose membrane filter for 30 minutes at room temperature. MCM446 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 5µl of desalted pTrc *S. babylonica* IspS-mMVK ligation mix. The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µF using a Gene Pulser Xcell Electroporator. Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking. Transformants were selected on LA + 50µg/µl carbenicillin + 10mM mevalonic acid plates and incubated overnight at 37°C. The next day, several transformants were picked and grown in 5ml LB + 50µg/µl carbenicillin tubes overnight at 30°C. Plasmid preps were performed on the overnight cultures using QIAquick Spin Miniprep Kit. Plasmids were digested with restriction endonucleases NcoI and PmeI using Buffer 4 (New England Biolabs) at 37°C and analyzed on a 1.2% E-gel to ensure correct sized fragments were obtained. Plasmids from several transformants were shipped to Sequetech for sequencing with primers EL1004, EL1005, EL1006, EL1285, EL1286, and EL1287 (Table 6). DNA sequencing confirmed the plasmid sequences. One plasmid was selected and designated as pEWL851 (Figure 12, Table 8).

Construction of strain EWL887 (BL21, pgl+ PL.2-mKKDyI, GI1.2-gltA, pTrc *S. babylonica* IspS-mMVK)

[0173] Strain CMP451 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 1µl of plasmid pEWL851. The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µF using a Gene Pulser Xcell Electroporator. Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking. Transformants were selected on LA + 50µg/µl carbenicillin + 5mM mevalonic acid

plates and incubated overnight at 37°C. One colony was selected and designated as strain EWL887 (Table 9).

Construction of strain EWL893 (BL21, pgl+ PL.2-mKKDyI, GI1.2-gltA, pTrc *S. babylonica* IspS-mMVK, MCM82)

[0174] Strain EWL887 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 1µl of plasmid MCM82. The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µF using a Gene Pulser Xcell Electroporator. Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking. Transformants were selected on LA + 50µg/µl carbenicillin + 50µg/µl spectinomycin plates and incubated overnight at 37°C. One colony was selected and designated as strain EWL893 (Table 9).

Construction of strain EWL900 (BL21, PL.2-mKKDyI, pTrc *S. alba* IspS) and EWL903 (BL21, PL.2-mKKDyI, pTrc *S. babylonica* IspS)

[0175] Strain MCM531 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 1µl of plasmid pEWL792 (pTrc *S. alba* IspS) or pEWL834 (pTrc *S. babylonica* IspS). The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µF using a Gene Pulser Xcell Electroporator. Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking. Transformants were selected on LA + 50µg/µl carbenicillin + 5mM mevalonic acid plates and incubated overnight at 37°C. For transformants harboring the plasmid pEWL792, one colony was selected and designated as strain EWL900 (Table 9). For transformants harboring the plasmid pEWL834, one colony was selected and designated as strain EWL903 (Table 9).

Comparing solubility of *P. alba* IspS, *S. alba* IspS, and *S. babylonica* IspS

[0176] Strains expressing pTrc *P. alba* IspS (DW194), pTrc *S. alba* IspS (EWL900) and pTrc *S. babylonica* IspS (EWL903) were grown in LB media, induced at OD₆₀₀ ~ 0.5 with 200µM IPTG, and induced for 4 hours. Cell pellets were collected by centrifugation and stored at -80°C. The cells were lysed by French Press and analyzed for protein solubility by Western Blot. Results showed that *S. alba* IspS

and *S. babylonica* IspS are more insoluble than *P. alba* IspS (Figure 13 and Figure 14).

Construction of pEWL906 (pTrc *S. alba* IspS S288C) and pEWL907 (pTrc *S. babylonica* IspS S288C)

[0177] Primers were designed to introduce the S288C mutation into *S. alba* IspS (primers EL1288 and EL1289, see Table 7) and *S. babylonica* IspS (primers EL1290 and EL1291, see Table 7). Plasmid pEWL792 (pTrc *S. alba* IspS) and pEWL834 (pTrc *S. babylonica* IspS) were used as the starting templates for PCR reactions with the Pfu Ultra II Fusion DNA Polymerase. PCR conditions were as follows: 95°C for 2 minutes (first cycle only), 95°C for 30 seconds, 55°C for 1 minute, 68°C for 6 minute, repeat for 16 cycles. The parental template for each PCR reaction were digested by addition of 2µl DpnI restriction endonuclease (Roche) and incubated at 37°C for 2 hours. Strain MCM531 cells were grown in LB to midlog phase and then washed three times in ice-cold, sterile water. Mixed 50µl of cell suspension with 2µl of each PCR reaction. The cell suspension mixture was electroporated in a 2mm cuvette at 2.5 Volts and 25µF using a Gene Pulser Xcell Electroporator. Cells were recovered in 1ml of LB and incubated for 2 hours at 30°C with shaking. Transformants were selected on LA + 50µg/µl carbenicillin + 5mM mevalonic acid plates and incubated overnight at 37°C. The next day, several transformants were picked from each and grown in 5ml LB + 50µg/µl carbenicillin tubes overnight at 30°C. Plasmid preps were performed on the overnight cultures using QIAquick Spin Miniprep Kit. Plasmids from several transformants were shipped to Sequetech for sequencing. Primers EL1005, EL1006, EL1270, EL1271, and EL1272 were used for sequencing pTrc *S. alba* IspS S288C (see Table 7). Primers EL1005, EL1006, EL1285, EL1286, and EL1287 were used for sequencing pTrc *S. babylonica* IspS S288C (see Table 7).

[0178] DNA sequencing results showed that plasmids were correct and contained the S288C mutation. Plasmid pTrc *S. alba* IspS S288C was designated pEWL906 (Figure 15, Table 8). Plasmid pTrc *S. babylonica* IspS S288C was designated pEWL907 (Figure 16, Table 8). Plasmid pEWL906 was transformed into MCM531 cells to generate the expression strain EWL913 (Table 9). Plasmid

pEWL907 was transformed into MCM531 cells to generate expression strain EWL916 (Table 9).

Comparing solubility of *P. alba* IspS, *S. alba* IspS, *S. alba* IspS S288C, *S. babylonica* IspS, and *S. babylonica* IspS S288C

[0179] Strains expressing *P. alba* IspS (DW194), *S. alba* IspS (EWL900), *S. alba* IspS S288C (EWL913), *S. babylonica* IspS (EWL903), or *S. babylonica* IspS S288C (EWL916) were grown in LB + 50µg/µl carbenicillin. Cells were induced with 200µM IPTG when OD₆₀₀ ~ 0.5 and grown for 4 hours at 34°C. Cell pellets were collected by centrifugation and stored at -80°C. The cells were lysed by French Press and analyzed for protein solubility on 10% NuPage gel (Invitrogen) by Coomassie staining (Figure 17) and Western blot (Figure 18). Results showed that the S288C mutation improved solubility of both *S. alba* IspS and *S. babylonica* IspS.

Table 7. Primer sequences

Primer name	Primer sequence
EL1003	GATAGTAACGGCTGCGCTGCTACC
EL1004	ACAATTTACACAGGAAACAGC
EL1005	CCAGGCAAATTCTGTTTTATCAG
EL1006	GACAGCTTATCATCGACTGCACG
EL1270	CCTCCTTTCACTTCACGAAGC
EL1271	GCTTTTCACTGACGCAGTTGAG
EL1272	GATAACAATGAGACCGCAG
EL1285	GGAGAACTTGAAAGAGGAC
EL1286	GTACAACACAATCAATGAGATAG
EL1287	GATGCACATACATCACCTGATG
EL1288	GCAGAATTTCTGTCGCTAAGATGTTCTGTTTCGTAACCATT ATCGACGAC
EL1289	GTCGTCGATAATGGTTACGAAACAGAACATCTTAGCGACA GAAATTCTGC
EL1290	CGCAAATCTGTGGCTAAAATGTTTTGTTTCGTGACCATAAT TGATGAC
EL1291	GTCATCAATTATGGTCACGAAACAAAACATTTTAGCCACA GATTGCG
MCM165	GCGAACGATGCATAAAGGAGGTAAAAAACATGGTATCCT

	GTTCTGCGCCGGGTAAGATTACCTG
MCM177	GGGCCCCGTTTAAACTTTAACTAGACTTTAATCTACTTTTCAG ACCTTGC

Table 8. Plasmids used in this study

Plasmid name	Antibiotic resistance	Description
pEWL792	Carbenicillin	pTrc <i>S. alba</i> IspS
pEWL795	Carbenicillin	pTrc <i>S. alba</i> IspS-mMVK
pEWL834	Carbenicillin	pTrc <i>S. babylonica</i> IspS
pEWL851	Carbenicillin	pTrc <i>S. babylonica</i> IspS-mMVK
pEWL906	Carbenicillin	pTrc <i>S. alba</i> IspS S288C
pEWL907	Carbenicillin	pTrc <i>S. babylonica</i> IspS S288C

Table 9. Strains used in this study

Strain name	Antibiotic resistance	Description
EWL804	Carbenicillin	BL21, pgl+ PL.2-mKKDyI, GI1.2-gltA, pTrc <i>S. alba</i> IspS-mMVK
EWL810	Carbenicillin, Spectinomycin	BL21, pgl+ PL.2-mKKDyI, GI1.2-gltA, pTrc <i>S. alba</i> IspS-mMVK, pCL Ptrc-Upper MVA
EWL887	Carbenicillin	BL21, pgl+ PL.2-mKKDyI, GI1.2-gltA, pTrc <i>S. babylonica</i> IspS-mMVK
EWL893	Carbenicillin, Spectinomycin	BL21, pgl+ PL.2-mKKDyI, GI1.2-gltA, pTrc <i>S. babylonica</i> IspS-mMVK, pCL Ptrc-Upper MVA
EWL900	Carbenicillin	BL21, PL.2-mKKDyI, pTrc <i>S. alba</i> IspS
EWL903	Carbenicillin	BL21, PL.2-mKKDyI, pTrc <i>S. babylonica</i> IspS
EWL913	Carbenicillin	BL21, PL.2-mKKDyI, pTrc <i>S. alba</i> IspS S288C
EWL916	Carbenicillin	BL21, PL.2-mKKDyI, pTrc <i>S. babylonica</i> IspS S288C

Sequence of codon optimized *S. alba* IspS with engineered NcoI restriction site on the 5'-end and an and PstI sites

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GATTACCTGCTTTCTTCGGATACGGAAGATGCCATAGAGGTATACAAAGA
CAAAGCGAAGAACTGGATGCTGAAGTACGCTCGAAGATAAACAATGAG
ACCGCAGAATTTTAAACGCAATTAGAAGTATTGACACTATCCAGCGCCT
GGGTTTGGGTTATCGTTTCGAAAGCGACATTAGACGCGCCTTGGATCGTTT
CGTGAGTAGTGGTGGGTTTCGAGGCTGTCGCGAAAACCTTCACTGCAAGCTA
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DNA Sequence of pEWL792

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DNA sequence of pEWL795

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 GTCAACCACCATCAAACAGGATTTTCGCCTGCTGGGGCAAACCAGCGTGG
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 AACCGCCTCTCCCCGCGCGTTGGCCGATTCATTAATGCAGCTGGCACGAC
 AGGTTTCCCGACTGGAAAGCGGGCAGTGAGCGCAACGCAATTAATGTGAG
 TTAGCGCGAATTGATCTG

Sequence of codon optimized *S. babylonica* IspS with engineered NcoI restriction site on the 5'-end and an and PstI sites

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DNA sequence of pEWL834

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DNA sequence of pEWL851

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DNA sequence of pEWL906

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DNA sequence of pEWL907

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CGCAATTAATGTGAGTTAGCGCGAATTGATCTG

Example 4. Crystal Structure of MEA *P. alba* A3T S288C

[0180] The S288C mutation was introduced into the MD09-163 vector (previously described) by QuikChange (Stratagene) mutagenesis using the primers listed in Table 10. Mutagenesis was carried out according to the manufacturer's recommended protocol. PCR products were transformed into chemically competent Top10 *E. coli* (Invitrogen) cells, and positive transformants were selected for plasmid isolation and complete sequencing. A single plasmid, pDW196 (Table 11, Fig. 23), was verified and used for additional mutagenesis. The A3T mutation was introduced in the pDW196 vector by the same procedure as described above. The fully verified plasmid, pDW204 (Table 11, Fig. 24), was transformed into chemically competent BL21 DE3 pLysS cells (Invitrogen) according to the manufacturer's recommended protocol. This strain, DW614 was used for purification and subsequent crystallization for structural analysis of the MEA *P. alba* IspS A3T S288C variant.

Table 10. Primers used in this study

Primer	Sequence
HgS pET QC A3T Forward	ACATATGGAAACGCGTCGTTCTGCGAACTACGA
HgS pET QC A3T Reverse	CAGAACGACGCGTTTCCATATGTATATCTCCTT
HgS QC S288C Forward	AAAAATGTTTTGTTTCGTAACCATTATCGACGA
HgS QC S288C Reverse	TGGTTACGAAACAAAACATTTTTGCGACGGAGT

Table 11. Plasmids/Strains used in this study

Plasmid/Strain	Resistance	Description
pDW196	Kan	pET MEA <i>P. alba</i> IspS S288C TEV 6X His
pDW204	Kan	pET MEA <i>P. alba</i> IspS A3T S288C TEV 6X His
DW614	Chlor, Kan	BL21 (DE3), pLysS, pDW204 = pET MEA <i>P. alba</i> IspS A3T S288C TEV 6X His

Amino acid sequence of MEA *P. alba* IspS S288C TEV 6XHis

MEARRSANYEPNSWDYDYLLSSDTDESIEVYKDKAKKLEAEVRREINNEKAE
 FLTLLELIDNVQRLGLGYRFESDIRGALDRFVSSGGFDAVTKTSLHGTALSFR
 LRQHGFEVSQEA FSGFKDQNGN FLENLKEDIKAILSLYEASFLALEGENILDEA
 KVFAISHLKELSEEKIGKELAEQVNHAELEPLHRRRTQRLEAVWSIEAYRKKE
 ANQVLLELAILDYNMIQSVYQRDLRETSRWWRRVGLATKLHFARDRLIESFY
 WAVGVAFEPQYSDCRNSVAKMFCFVTIIDDYDVYGTLDLELFTDAVERWD
 VNAINDLDPYMKLCFLALYNTINEIAYDNLKDKGENILPYLTKAWADLCNAF
 LQEA KWLYNKSTPTFDDYFGNAWKSSSGPLQLVFAYFAVVQNIKKEEIE
 NQ KYHDTISRPSHIFRLCNDLASASAEIARGETANSVSCYMR TKGISEELATESVM

NLIDETWKKMNKEKLGGSLFAKPFVETAINLARQSHCTYHNGDAHTSPDELT
RKRVL SVITEPILP FERENLYFQGLEHHHHHH

DNA sequence of pDW196 harboring MEA *P. alba* IspS S288C TEV 6XHis

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Amino acid sequence of MEA *P. alba* IspS A3T S288C TEV 6XHis

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The sequence of SEQ ID NO:2 is

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DNA sequence of pDW204 harboring MEA *P. alba* IspS A3T S288C TEV 6XHis

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Expression and Purification of MEA *P. Alba* A3T S288C

Expression of 6XHis-tagged MEA *P. Alba* A3T S288C

[0181] N-terminally 6XHis-tagged MEA *P. Alba* A3T S288C was expressed and purified from strain DW614. The growth procedure is suitable for histidine tagged enzymes expressed in BL21(λDE3)pLysS cells. A 10 ml of overnight culture was prepared for each 1 L of planned growth. The appropriate antibiotics (50 mg/ml kanamycin, 50 mg/ml chloramphenicol) was added to 10 ml of LB medium in a 25 ml flask and was inoculated with 1 colony from a fresh plate of cells or directly from glycerol frozen cell stock. Cultures were grown at 30 °C overnight with shaking at ~220 rpm. Day cultures were prepared in 1 liter of LB medium with appropriate antibiotics for each culture. Each 1L day culture was inoculated with 10 ml of overnight culture and grown at 30-37 °C with shaking at ~220 rpm until the OD600 reached ~0.4-0.6. Day cultures were then induced with 400 μM IPTG and allowed to continue growing at 30°C with shaking at 220 rpm for ~5-6 hours. Cells were then harvested by centrifugation at 10,000 x g for 10 min, 4 °C. Following Harvest, cells were used directly or stored at -80°C until ready to process.

Purification of 6XHis-tagged MEA *P. Alba* A3T S288C

[0182] For purification of histidine tagged enzymes from BL21(λDE3)pLysS cells, cells were gently resuspended in fresh Lysis buffer (Lysis buffer: Ni wash buffer + 0.5 mM PMST, 0.01% Tween-20, 1 mg/ml lysozyme, 0.2 mg/ml DNaseI; Ni wash buffer: 50 mM NaH₂PO₄, 300 mM NaCl, 20 mM Imidazole, pH 8.0). Approximately 40-50 ml of lysis buffer was used per 1L of cell pellet. Cells were then incubated on ice for approximately 30 min. The cell suspension was then lysed fully by passing 2-3 times through a french pressure cell (large french press cell at 1200 psi/High setting) until lysate started to look clear. A sample of the lysate was saved for activity assay and gel analysis (~100 μl). The lysate was then clarified by centrifuging the lysate at 30,000xg for 30 min, 4°C in a Sorvall Discovery 90SE ultracentrifuge. The supernatant was removed and retained. A sample of the “clarified lysate” was saved for activity assay and gel analysis (~100 μl).

[0183] The clarified lysate was run over HisTrap HP columns (GE healthcare) using a gradient from 0-100% Ni buffer B. Following loading of the lysate on the

column, the column was washed with Ni wash buffer (50 mM NaH₂PO₄, 300 mM NaCl, 20 mM imidazole, pH 8.0). The his-tagged IspS was then eluted from the column using a gradient from 0-100% Ni elution buffer (50 mM NaH₂PO₄, 300 mM NaCl, 500 mM imidazole, pH 8.0) and fractions containing the his-tagged IspS were collected. The column was then washed with Ni stripping buffer (20 mM NaH₂PO₄, 0.5 M NaCl, 50 mM EDTA, pH 7.4). Samples were then analyzed by SDS-PAGE gel (4-12% gel NUPAGE, Invitrogen) according to manufacturer's directions. Desired fractions were concentrated on spin filters (Vivaspin-20, Sartoris,) and then desalted over a Hi Prep 26/10 Desalting column (GE healthcare) packed with Sephadex G25 resin. The G-25 buffer consisted of 50 mM HEPES, 50 mM NaCl, and 1 mM DTT, pH 7.4. Fractions were then analyzed and concentrated. The samples were then stored at -80 °C.

TEV Cleavage of MEA P. Alba A3T S288C from strain DW614

[0184] Strain DW614 is described above. Digestion was performed with TurboTEV Protease from Eton Bioscience Inc. One unit of TurboTEV per 10 µg of purified protein was used. The digest was performed at 4°C overnight. Samples were passed through another Ni column equilibrated in the Ni buffer to remove uncleaved enzyme, tag, TurboTEV protease (which is also tagged), and impurities. The Ni column pass through and washes were analyzed using SDS-PAGE gel (NUPAGE, Invitrogen) and DMAPP activity assays. Samples containing pure enzyme were pooled and desalted into 50 mM NaCl pH 7.4 buffer containing 1 mM DTT and stored at -80°C.

Crystal Structure Determination

[0185] Construct DW614 was purified as described and a concentrated protein solution was then prepared for surveying possible crystallization conditions. The construct was purified independently and surveyed as described below. At a minimum, the construct was surveyed using the following commercial screens: the Crystal Screen from Hampton Research (Aliso Viejo, CA) and the JCSG+ Suite from Qiagen (Valencia, CA).

[0186] Initial crystallization screens were setup using the Crystal Screen from Hampton Research and the JCSG+ Suite from Qiagen. Crystals from this construct were observed in numerous conditions; optimization included 50 variations of pH,

precipitating agents, and concentrations. From the optimization experiments, five different DW614 crystals were screened for diffraction. A crystal composed of MEA *P. Alba* A3T S288C was obtained that diffracted to 2.5 Å. The large, rod-shaped crystals belong to the tetragonal space group $P4_32_12$, and have unit cell dimensions $a = b = 156.84$, $c = 143.41$. The crystals were grown by mixing 2 μ L of protein (9 mg/ml protein) with 2 μ L of precipitant solution [0.2 M Malic Acid, pH 7.0, 8% (wt/vol) Polyethylene glycol 8000] and equilibrated against 500 μ L of precipitant. Prior to flash-freezing the crystal in liquid nitrogen, the crystals were cryoprotected by swishing through 0.2 M Malic Acid, pH 7.0, 8% (wt/vol) Polyethylene glycol 8000, and 25 % (wt/vol) ethylene glycol.

[0187] Single-wavelength anomalous dispersion data (SAD) were collected to verify the presence of the serine to cysteine substitution. Data were integrated using Mosflm (Leslie, A. (1998) J. of Appl. Crystallography 30, 1036-1040) and scaled using SCALA (Collaborative Computational Project, N. (1994) Acta Crystallographica Section D 50, 760-763). The data were phased with MOLREP (Vagin, A., and Teplyakov, A. (1997) J. of Appl. Crystallography 30, 1022-1025), using the previously determined structure of Isoprene synthase from *P. alba* as the starting model (US2009/0076743). The crystal contains one dimer in the asymmetric unit with a solvent content of 63%. The SAD data were phased using Phaser EP (Read, R. J., and McCoy, A. J. (2011) Acta Crystallographica Section D 67, 338-344). The resulting anomalous difference maps clearly indicate the presence of cysteine at position 288 (Figure 19).

[0188] The same crystal was sent to Stanford Synchrotron Radiation Laboratory, and data were collected at Beamline 11-1 to 1.98 Å resolution. Data were processed as described above and were used for model refinement. Refinement with Refmac5 (Collaborative Computational Project, N. (1994) Acta Crystallographica Section D 50, 760-763) was used with iterative manual rebuilding steps using the visualization program Coot (Emsley, P., et al. (2010) Acta Crystallographica Section D 66, 486-501). During refinement, the geometry of the protein was checked using Molprobity (Davis, I. W., et al. (2007) Nucl. Acids Res., 35:W375-W383). The current model has an RWork value of 17.8% and an RFree value of 20.9%.

[0189] The structure consists of a homo dimer in the asymmetric unit (Figure 20). Each monomer is comprised of two helical domains, a C-terminal domain containing the active site and an N-terminal domain with unknown function.

Structural alignment of the wild type IspS and MEA *P. Alba* A3T S288C shows that the overall fold is unchanged, though the variant structure contains a few residues that were disordered in the previous structure (Figure 21). The replacement of serine with cysteine does not result in any local structural perturbations (Figure 22). Coordinates are provided in Appendix A.

Example 5. Differences between *P. alba* and *Salix* spp. IspS enzymes

[0190] Amino acid differences between MEA *P. alba* and *Salix* spp. IspS enzymes are listed in Table 12. Charge changes for individual amino acid substitutions are shown in Table 12, as well as % surface accessibility of each position in the crystal structure of MEA *P. alba*. Surface accessibility was calculated using the program MOE, which is written and supported by the Chemical Computing Group, Inc. An estimate for the water-accessible surface area of each residue was determined using a probe having a specified radius. The estimate was then compared against a library of peptides and the ratio between them was reported as the percent surface accessibility. Positions where the sequence of *S. alba* differs from *P. alba* are shown in Figure 25. Positions where the sequence of *S. babylonica* differs from *P. alba* are shown in Figure 26.

Table 12. Differences between *P. alba* and *Salix* spp. isoprene synthase enzymes. Charge changes and surface accessibilities of positions in the *P. alba* MEA crystal structure are indicated.

Position	MEA <i>P. alba</i>	<i>S. alba</i>	<i>S.</i> <i>babylonica</i>	<i>S. alba</i> Δ Charge	<i>S.</i> <i>babylonica</i> Δ Charge	% Surface Accessibility
3	A	T	T	0	0	Not calc.
6	S		T		0	Not calc.
24	T		N		0	84
25	D	E		0		55
26	E	D	D	0	0	86
27	S	A	A	0	0	65
30	V		L		0	60
39	E	D	D	0	0	13
44	R	S	S	-1	-1	55
45	E	K	K	2	2	31
50	K	T		-1		89
56	L	Q	Q	0	0	5
62	N	T	T	0	0	13
63	V	I	I	0	0	0

78	G	R	R	1	1	29
80	L		I		0	0
83	F		Y		0	1
90	D	E	E	0	0	54
93	T	A	A	0	0	8
98	H	Q		0		10
99	G	A	A	0	0	0
118	A	V	V	0	0	10
120	S	N		0		52
130	L	M	M	0	0	33
132	N	D		-1		63
140	I	L		0		1
144	Y	H		0		2
164	A	T	T	0	0	0
172	S	N	N	0	0	47
179	E	D	D	0	0	46
180	L	M		0		28
181	A	V		0		8
182	E		D		0	40
213	D		G		1	83
216	Q	R	R	1	1	45
217	V		A		0	20
229	I	V	V	0	0	0
281	N	I	K	0	1	10
304	D	E		0		66
319	N	S	S	0	0	37
321	I		V		0	3
322	N	D	D	-1	-1	54
349	D	E	E	0	0	64
374	K	R		0		23
375	W	F	F	0	0	14
385	D	S		1		47
417	I	T	T	0	0	6
421	Q	L		0		23
426	T	I	I	0	0	0
429	R	W	W	-1	-1	5
432	H	Y	Y	0	0	6
460	M		I		0	21
490	L		V		0	19
492	G	D	D	-1	-1	89
498	P	H	Q	0	0	57
542	F	L		0		17

[0191] Various modifications and variations of the described method and system of the invention will be apparent to those skilled in the art without departing from the scope and spirit of the invention. Although the invention has been described in connection with specific preferred embodiments, it should be understood that the

invention as claimed should not be unduly limited to such specific embodiments. Indeed, various modifications of the described modes for carrying out the invention, which are obvious to those skilled in the relevant fields, are intended to be within the scope of the following claims.

APPENDIX A

P. alba 3T288C coordinates

ATOM 1 N SER A 6 57.986 -35.273 -30.156 1.00 72.58 A N
 ATOM 2 CA SER A 6 58.480 -33.880 -30.355 1.00 68.61 A C
 ATOM 3 CB SER A 6 57.316 -32.894 -30.340 1.00 61.40 A C
 ATOM 4 OG SER A 6 57.743 -31.589 -30.698 1.00 58.19 A O
 ATOM 5 C SER A 6 59.509 -33.500 -29.283 1.00 75.11 A C
 ATOM 6 O SER A 6 59.271 -33.694 -28.080 1.00 66.06 A O
 ATOM 7 N ALA A 7 60.650 -32.967 -29.734 1.00 55.83 A N
 ATOM 8 CA ALA A 7 61.745 -32.563 -28.846 1.00 37.95 A C
 ATOM 9 CB ALA A 7 63.101 -32.683 -29.571 1.00 35.03 A C
 ATOM 10 C ALA A 7 61.520 -31.137 -28.346 1.00 34.22 A C
 ATOM 11 O ALA A 7 60.884 -30.305 -29.015 1.00 33.25 A O
 ATOM 12 N ASN A 8 62.042 -30.855 -27.159 1.00 31.53 A N
 ATOM 13 CA ASN A 8 62.004 -29.521 -26.602 1.00 41.19 A C
 ATOM 14 CB ASN A 8 61.256 -29.534 -25.259 1.00 43.35 A C
 ATOM 15 CG ASN A 8 61.257 -28.175 -24.574 1.00 38.99 A C
 ATOM 16 OD1 ASN A 8 61.277 -27.124 -25.221 1.00 47.85 A O
 ATOM 17 ND2 ASN A 8 61.227 -28.195 -23.246 1.00 65.44 A N
 ATOM 18 C ASN A 8 63.431 -29.020 -26.417 1.00 39.96 A C
 ATOM 19 O ASN A 8 64.147 -29.495 -25.529 1.00 46.00 A O
 ATOM 20 N TYR A 9 63.845 -28.090 -27.272 1.00 34.27 A N
 ATOM 21 CA TYR A 9 65.157 -27.460 -27.165 1.00 35.68 A C
 ATOM 22 CB TYR A 9 65.835 -27.435 -28.549 1.00 30.73 A C
 ATOM 23 CG TYR A 9 66.034 -28.818 -29.146 1.00 27.98 A C
 ATOM 24 CD1 TYR A 9 66.744 -29.815 -28.449 1.00 22.86 A C
 ATOM 25 CE1 TYR A 9 66.919 -31.070 -28.996 1.00 23.00 A C
 ATOM 26 CZ TYR A 9 66.392 -31.361 -30.263 1.00 19.46 A C
 ATOM 27 OH TYR A 9 66.559 -32.617 -30.842 1.00 19.25 A O
 ATOM 28 CE2 TYR A 9 65.680 -30.412 -30.944 1.00 20.38 A C
 ATOM 29 CD2 TYR A 9 65.515 -29.138 -30.403 1.00 20.74 A C
 ATOM 30 C TYR A 9 65.053 -26.029 -26.583 1.00 39.07 A C
 ATOM 31 O TYR A 9 66.045 -25.297 -26.512 1.00 42.20 A O
 ATOM 32 N GLU A 10 63.862 -25.632 -26.144 1.00 43.68 A N
 ATOM 33 CA GLU A 10 63.653 -24.239 -25.734 1.00 51.14 A C
 ATOM 34 CB GLU A 10 62.175 -23.842 -25.891 1.00 63.92 A C
 ATOM 35 CG GLU A 10 61.624 -24.061 -27.347 1.00 73.92 A C
 ATOM 36 CD GLU A 10 62.612 -23.648 -28.477 1.00 85.85 A C
 ATOM 37 OE1 GLU A 10 63.165 -22.528 -28.397 1.00 73.86 A O
 ATOM 38 OE2 GLU A 10 62.831 -24.435 -29.443 1.00 75.20 A O
 ATOM 39 C GLU A 10 64.198 -24.048 -24.323 1.00 37.85 A C
 ATOM 40 O GLU A 10 64.234 -24.992 -23.557 1.00 32.89 A O
 ATOM 41 N PRO A 11 64.689 -22.845 -24.000 1.00 44.76 A N
 ATOM 42 CA PRO A 11 65.387 -22.665 -22.723 1.00 46.27 A C
 ATOM 43 CB PRO A 11 66.119 -21.335 -22.922 1.00 54.27 A C
 ATOM 44 CG PRO A 11 65.182 -20.535 -23.821 1.00 55.02 A C
 ATOM 45 CD PRO A 11 64.500 -21.564 -24.721 1.00 51.34 A C
 ATOM 46 C PRO A 11 64.411 -22.569 -21.533 1.00 42.77 A C
 ATOM 47 O PRO A 11 63.275 -22.169 -21.729 1.00 45.64 A O
 ATOM 48 N ASN A 12 64.852 -22.959 -20.334 1.00 36.56 A N
 ATOM 49 CA ASN A 12 64.098 -22.713 -19.087 1.00 37.47 A C
 ATOM 50 CB ASN A 12 64.272 -23.862 -18.096 1.00 38.59 A C
 ATOM 51 CG ASN A 12 64.111 -25.195 -18.745 1.00 49.28 A C
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 ATOM 53 ND2 ASN A 12 65.227 -25.877 -19.000 1.00 52.57 A N
 ATOM 54 C ASN A 12 64.496 -21.418 -18.389 1.00 38.56 A C
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 ATOM 57 CA SER A 13 63.768 -19.565 -16.967 1.00 47.84 A C
 ATOM 58 CB SER A 13 62.462 -19.064 -16.345 1.00 42.98 A C
 ATOM 59 OG SER A 13 61.847 -20.123 -15.628 1.00 43.24 A O
 ATOM 60 C SER A 13 64.844 -19.690 -15.885 1.00 39.53 A C
 ATOM 61 O SER A 13 65.430 -18.690 -15.484 1.00 39.12 A O
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 ATOM 63 CA TRP A 14 66.150 -21.196 -14.425 1.00 34.62 A C
 ATOM 64 CB TRP A 14 65.588 -22.154 -13.360 1.00 31.14 A C
 ATOM 65 CG TRP A 14 64.834 -23.336 -13.913 1.00 37.51 A C
 ATOM 66 CD1 TRP A 14 63.461 -23.457 -14.081 1.00 46.88 A C
 ATOM 67 NE1 TRP A 14 63.143 -24.667 -14.618 1.00 48.46 A N
 ATOM 68 CE2 TRP A 14 64.251 -25.407 -14.820 1.00 39.74 A C
 ATOM 69 CD2 TRP A 14 65.385 -24.609 -14.375 1.00 30.24 A C
 ATOM 70 CE3 TRP A 14 66.651 -25.128 -14.491 1.00 47.63 A C
 ATOM 71 CZ3 TRP A 14 66.803 -26.425 -15.013 1.00 54.86 A C
 ATOM 72 CH2 TRP A 14 65.705 -27.181 -15.419 1.00 55.53 A C
 ATOM 73 CZ2 TRP A 14 64.403 -26.682 -15.326 1.00 52.45 A C
 ATOM 74 C TRP A 14 67.500 -21.691 -14.975 1.00 35.77 A C
 ATOM 75 O TRP A 14 68.442 -21.945 -14.213 1.00 29.88 A O
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 ATOM 77 CA ASP A 15 68.926 -22.238 -16.858 1.00 30.12 A C
 ATOM 78 CB ASP A 15 68.886 -22.314 -18.387 1.00 35.22 A C
 ATOM 79 CG ASP A 15 68.006 -23.457 -18.916 1.00 35.51 A C
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 ATOM 81 OD2 ASP A 15 67.562 -23.353 -20.077 1.00 46.90 A O
 ATOM 82 C ASP A 15 70.003 -21.240 -16.427 1.00 29.97 A C
 ATOM 83 O ASP A 15 69.726 -20.035 -16.282 1.00 27.48 A O
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 ATOM 86 CB TYR A 16 73.587 -21.740 -15.393 1.00 24.08 A C
 ATOM 87 CG TYR A 16 73.367 -22.522 -14.085 1.00 21.97 A C
 ATOM 88 CD1 TYR A 16 73.002 -21.865 -12.899 1.00 20.51 A C
 ATOM 89 CE1 TYR A 16 72.795 -22.573 -11.715 1.00 17.26 A C
 ATOM 90 CZ TYR A 16 72.923 -23.922 -11.715 1.00 18.76 A C
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 ATOM 92 CE2 TYR A 16 73.269 -24.611 -12.869 1.00 20.65 A C
 ATOM 93 CD2 TYR A 16 73.511 -23.906 -14.045 1.00 21.95 A C
 ATOM 94 C TYR A 16 72.731 -19.918 -16.906 1.00 29.38 A C
 ATOM 95 O TYR A 16 73.185 -18.812 -16.600 1.00 32.24 A O
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 ATOM 98 CB ASP A 17 72.589 -20.099 -20.623 1.00 33.68 A C
 ATOM 99 CG ASP A 17 73.757 -21.003 -21.016 1.00 33.51 A C
 ATOM 100 OD1 ASP A 17 74.920 -20.713 -20.659 1.00 39.78 A O
 ATOM 101 OD2 ASP A 17 73.506 -22.002 -21.718 1.00 33.90 A O
 ATOM 102 C ASP A 17 71.927 -18.126 -19.150 1.00 38.47 A C
 ATOM 103 O ASP A 17 72.400 -17.000 -19.350 1.00 39.61 A O
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 ATOM 105 CA TYR A 18 69.679 -17.312 -18.474 1.00 38.99 A C
 ATOM 106 CB TYR A 18 68.322 -18.001 -18.304 1.00 57.51 A C
 ATOM 107 CG TYR A 18 67.110 -17.380 -18.946 1.00 76.08 A C
 ATOM 108 CD1 TYR A 18 66.449 -16.309 -18.344 1.00 93.77 A C
 ATOM 109 CE1 TYR A 18 65.305 -15.764 -18.914 1.00 99.10 A C
 ATOM 110 CZ TYR A 18 64.795 -16.315 -20.081 1.00 101.95 A C
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 ATOM 113 CD2 TYR A 18 66.560 -17.931 -20.108 1.00 85.18 A C
 ATOM 114 C TYR A 18 70.049 -16.539 -17.174 1.00 42.81 A C
 ATOM 115 O TYR A 18 70.299 -15.343 -17.213 1.00 34.84 A O
 ATOM 116 N LEU A 19 70.122 -17.235 -16.032 1.00 39.87 A N
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 ATOM 118 CB LEU A 19 69.875 -17.580 -13.586 1.00 34.82 A C
 ATOM 119 CG LEU A 19 68.416 -18.018 -13.434 1.00 37.78 A C
 ATOM 120 CD1 LEU A 19 68.275 -19.058 -12.276 1.00 29.08 A C
 ATOM 121 CD2 LEU A 19 67.489 -16.786 -13.219 1.00 30.96 A C
 ATOM 122 C LEU A 19 71.695 -16.041 -14.373 1.00 40.09 A C
 ATOM 123 O LEU A 19 71.822 -15.105 -13.588 1.00 36.68 A O
 ATOM 124 N LEU A 20 72.748 -16.645 -14.916 1.00 38.96 A N

ATOM 125 CA LEU A 20 74.113 -16.187 -14.645 1.00 43.59 A C
 ATOM 126 CB LEU A 20 75.023 -17.350 -14.186 1.00 42.50 A C
 ATOM 127 CG LEU A 20 74.766 -18.088 -12.860 1.00 42.59 A C
 ATOM 128 CD1 LEU A 20 75.842 -19.151 -12.616 1.00 34.09 A C
 ATOM 129 CD2 LEU A 20 74.697 -17.094 -11.706 1.00 45.62 A C
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 ATOM 134 CB SER A 21 74.005 -13.478 -18.617 1.00 70.83 A C
 ATOM 135 OG SER A 21 74.122 -14.749 -19.235 1.00 68.52 A O
 ATOM 136 C SER A 21 74.719 -12.077 -16.645 1.00 88.35 A C
 ATOM 137 O SER A 21 75.120 -11.118 -17.305 1.00 98.79 A O
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 ATOM 139 CA SER A 22 74.314 -10.721 -14.634 1.00 99.45 A C
 ATOM 140 CB SER A 22 73.092 -9.875 -14.992 1.00 94.35 A C
 ATOM 141 OG SER A 22 72.999 -8.745 -14.147 1.00 89.75 A O
 ATOM 142 C SER A 22 74.340 -11.011 -13.134 1.00 93.31 A C
 ATOM 143 O SER A 22 75.174 -11.787 -12.661 1.00 86.27 A O
 ATOM 144 N GLU A 26 81.547 -9.426 -13.066 1.00 77.98 A N
 ATOM 145 CA GLU A 26 81.323 -9.634 -14.494 1.00 81.96 A C
 ATOM 146 CB GLU A 26 81.137 -8.290 -15.197 1.00 81.82 A C
 ATOM 147 CG GLU A 26 79.899 -7.547 -14.719 1.00 83.63 A C
 ATOM 148 CD GLU A 26 79.387 -6.539 -15.730 1.00 86.04 A C
 ATOM 149 OE1 GLU A 26 80.202 -5.766 -16.271 1.00 81.48 A O
 ATOM 150 OE2 GLU A 26 78.164 -6.518 -15.982 1.00 99.87 A O
 ATOM 151 C GLU A 26 82.403 -10.494 -15.184 1.00 82.65 A C
 ATOM 152 O GLU A 26 82.764 -10.263 -16.341 1.00 72.41 A O
 ATOM 153 N SER A 27 82.936 -11.463 -14.447 1.00 83.75 A N
 ATOM 154 CA SER A 27 83.361 -12.726 -15.039 1.00 81.10 A C
 ATOM 155 CB SER A 27 84.878 -12.932 -14.991 1.00 78.85 A C
 ATOM 156 OG SER A 27 85.289 -13.594 -13.814 1.00 78.66 A O
 ATOM 157 C SER A 27 82.577 -13.797 -14.276 1.00 94.31 A C
 ATOM 158 O SER A 27 83.095 -14.861 -13.927 1.00 100.03 A O
 ATOM 159 N ILE A 28 81.306 -13.470 -14.017 1.00 92.06 A N
 ATOM 160 CA ILE A 28 80.292 -14.426 -13.590 1.00 83.46 A C
 ATOM 161 CB ILE A 28 78.923 -13.698 -13.339 1.00 79.85 A C
 ATOM 162 CG1 ILE A 28 78.999 -12.785 -12.096 1.00 75.89 A C
 ATOM 163 CD1 ILE A 28 79.113 -13.507 -10.743 1.00 64.21 A C
 ATOM 164 CG2 ILE A 28 77.773 -14.681 -13.196 1.00 77.42 A C
 ATOM 165 C ILE A 28 80.183 -15.522 -14.671 1.00 84.44 A C
 ATOM 166 O ILE A 28 79.486 -16.521 -14.489 1.00 75.29 A O
 ATOM 167 N GLU A 29 80.872 -15.294 -15.796 1.00 79.42 A N
 ATOM 168 CA GLU A 29 81.163 -16.298 -16.833 1.00 69.34 A C
 ATOM 169 CB GLU A 29 82.075 -15.677 -17.898 1.00 70.95 A C
 ATOM 170 CG GLU A 29 81.339 -14.975 -19.010 1.00 80.65 A C
 ATOM 171 CD GLU A 29 80.700 -15.953 -19.977 1.00 78.28 A C
 ATOM 172 OE1 GLU A 29 81.451 -16.734 -20.604 1.00 63.52 A O
 ATOM 173 OE2 GLU A 29 79.454 -15.938 -20.109 1.00 67.73 A O
 ATOM 174 C GLU A 29 81.848 -17.570 -16.343 1.00 67.94 A C
 ATOM 175 O GLU A 29 81.490 -18.677 -16.759 1.00 54.47 A O
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 ATOM 177 CA VAL A 30 83.629 -18.554 -15.006 1.00 55.26 A C
 ATOM 178 CB VAL A 30 85.025 -18.151 -14.446 1.00 50.13 A C
 ATOM 179 CG1 VAL A 30 85.940 -19.367 -14.387 1.00 43.43 A C
 ATOM 180 CG2 VAL A 30 85.669 -17.054 -15.305 1.00 49.92 A C
 ATOM 181 C VAL A 30 82.793 -19.297 -13.954 1.00 45.40 A C
 ATOM 182 O VAL A 30 82.865 -20.523 -13.870 1.00 43.51 A O
 ATOM 183 N TYR A 31 81.998 -18.548 -13.177 1.00 41.39 A N
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 ATOM 185 CB TYR A 31 80.376 -17.939 -11.430 1.00 47.10 A C
 ATOM 186 CG TYR A 31 79.407 -18.221 -10.261 1.00 54.66 A C
 ATOM 187 CD1 TYR A 31 79.865 -18.624 -8.995 1.00 55.24 A C
 ATOM 188 CE1 TYR A 31 78.948 -18.818 -7.896 1.00 58.05 A C
 ATOM 189 CZ TYR A 31 77.565 -18.576 -8.070 1.00 70.02 A C
 ATOM 190 OH TYR A 31 76.618 -18.756 -7.021 1.00 31.58 A O

ATOM 191 CE2 TYR A 31 77.116 -18.143 -9.324 1.00 70.34 A C
 ATOM 192 CD2 TYR A 31 78.033 -17.951 -10.394 1.00 69.01 A C
 ATOM 193 C TYR A 31 79.915 -19.902 -13.011 1.00 38.65 A C
 ATOM 194 O TYR A 31 79.559 -21.013 -12.620 1.00 30.30 A O
 ATOM 195 N LYS A 32 79.419 -19.335 -14.115 1.00 37.41 A N
 ATOM 196 CA LYS A 32 78.408 -19.989 -14.969 1.00 32.39 A C
 ATOM 197 CB LYS A 32 77.920 -19.032 -16.068 1.00 34.41 A C
 ATOM 198 CG LYS A 32 77.173 -19.718 -17.212 1.00 40.68 A C
 ATOM 199 CD LYS A 32 76.327 -18.748 -18.034 1.00 49.83 A C
 ATOM 200 CE LYS A 32 77.138 -17.767 -18.852 1.00 49.40 A C
 ATOM 201 NZ LYS A 32 77.502 -18.323 -20.169 1.00 53.46 A N
 ATOM 202 C LYS A 32 78.932 -21.292 -15.586 1.00 24.83 A C
 ATOM 203 O LYS A 32 78.275 -22.315 -15.500 1.00 25.50 A O
 ATOM 204 N ASP A 33 80.109 -21.262 -16.194 1.00 24.37 A N
 ATOM 205 CA ASP A 33 80.701 -22.478 -16.752 1.00 25.75 A C
 ATOM 206 CB ASP A 33 82.001 -22.192 -17.499 1.00 33.04 A C
 ATOM 207 CG ASP A 33 81.767 -21.560 -18.869 1.00 40.42 A C
 ATOM 208 OD1 ASP A 33 80.634 -21.654 -19.398 1.00 45.69 A O
 ATOM 209 OD2 ASP A 33 82.729 -20.981 -19.421 1.00 41.92 A O
 ATOM 210 C ASP A 33 80.941 -23.532 -15.677 1.00 29.91 A C
 ATOM 211 O ASP A 33 80.847 -24.721 -15.956 1.00 22.59 A O
 ATOM 212 N LYS A 34 81.229 -23.088 -14.454 1.00 28.83 A N
 ATOM 213 CA LYS A 34 81.440 -23.997 -13.335 1.00 27.61 A C
 ATOM 214 CB LYS A 34 82.071 -23.229 -12.149 1.00 33.30 A C
 ATOM 215 CG LYS A 34 82.285 -23.993 -10.832 1.00 32.01 A C
 ATOM 216 CD LYS A 34 83.474 -24.963 -10.867 1.00 49.59 A C
 ATOM 217 CE LYS A 34 83.183 -26.189 -11.757 1.00 50.50 A C
 ATOM 218 NZ LYS A 34 83.640 -27.463 -11.181 1.00 41.90 A N
 ATOM 219 C LYS A 34 80.103 -24.658 -12.968 1.00 22.42 A C
 ATOM 220 O LYS A 34 80.017 -25.884 -12.834 1.00 20.81 A O
 ATOM 221 N ALA A 35 79.053 -23.862 -12.821 1.00 18.29 A N
 ATOM 222 CA ALA A 35 77.732 -24.397 -12.506 1.00 18.56 A C
 ATOM 223 CB ALA A 35 76.730 -23.280 -12.355 1.00 23.87 A C
 ATOM 224 C ALA A 35 77.252 -25.393 -13.555 1.00 17.36 A C
 ATOM 225 O ALA A 35 76.787 -26.498 -13.228 1.00 16.12 A O
 ATOM 226 N LYS A 36 77.418 -25.038 -14.821 1.00 15.09 A N
 ATOM 227 CA LYS A 36 76.989 -25.916 -15.911 1.00 16.19 A C
 ATOM 228 CB LYS A 36 77.195 -25.206 -17.251 1.00 20.04 A C
 ATOM 229 CG LYS A 36 76.070 -24.130 -17.446 1.00 20.11 A C
 ATOM 230 CD LYS A 36 76.355 -23.138 -18.530 1.00 19.35 A C
 ATOM 231 CE LYS A 36 76.571 -23.797 -19.854 1.00 21.87 A C
 ATOM 232 NZ LYS A 36 76.850 -22.796 -20.953 1.00 24.73 A N
 ATOM 233 C LYS A 36 77.657 -27.290 -15.904 1.00 16.32 A C
 ATOM 234 O LYS A 36 77.001 -28.299 -16.145 1.00 17.53 A O
 ATOM 235 N LYS A 37 78.959 -27.325 -15.631 1.00 15.35 A N
 ATOM 236 CA LYS A 37 79.733 -28.589 -15.646 1.00 15.48 A C
 ATOM 237 CB LYS A 37 81.247 -28.252 -15.606 1.00 18.37 A C
 ATOM 238 CG LYS A 37 82.147 -29.422 -15.470 1.00 22.75 A C
 ATOM 239 CD LYS A 37 83.628 -29.045 -15.576 1.00 26.96 A C
 ATOM 240 CE LYS A 37 84.463 -30.314 -15.779 1.00 30.90 A C
 ATOM 241 NZ LYS A 37 85.904 -30.113 -15.499 1.00 41.14 A N
 ATOM 242 C LYS A 37 79.291 -29.500 -14.476 1.00 14.16 A C
 ATOM 243 O LYS A 37 79.087 -30.727 -14.627 1.00 12.16 A O
 ATOM 244 N LEU A 38 79.095 -28.888 -13.319 1.00 12.16 A N
 ATOM 245 CA LEU A 38 78.557 -29.611 -12.169 1.00 12.46 A C
 ATOM 246 CB LEU A 38 78.569 -28.705 -10.943 1.00 11.62 A C
 ATOM 247 CG LEU A 38 79.948 -28.214 -10.491 1.00 13.13 A C
 ATOM 248 CD1 LEU A 38 79.786 -27.177 -9.428 1.00 13.41 A C
 ATOM 249 CD2 LEU A 38 80.845 -29.365 -10.003 1.00 15.16 A C
 ATOM 250 C LEU A 38 77.131 -30.088 -12.431 1.00 12.95 A C
 ATOM 251 O LEU A 38 76.788 -31.249 -12.177 1.00 11.60 A O
 ATOM 252 N GLU A 39 76.275 -29.193 -12.919 1.00 11.82 A N
 ATOM 253 CA GLU A 39 74.891 -29.586 -13.221 1.00 12.20 A C
 ATOM 254 CB GLU A 39 74.127 -28.385 -13.767 1.00 16.05 A C
 ATOM 255 CG GLU A 39 72.731 -28.656 -14.294 1.00 21.03 A C
 ATOM 256 CD GLU A 39 72.130 -27.381 -14.877 1.00 23.31 A C

ATOM 257 OE1 GLU A 39 72.820 -26.681 -15.648 1.00 23.15 A O
 ATOM 258 OE2 GLU A 39 70.986 -27.071 -14.533 1.00 22.30 A O
 ATOM 259 C GLU A 39 74.816 -30.756 -14.184 1.00 10.69 A C
 ATOM 260 O GLU A 39 74.012 -31.673 -14.001 1.00 11.30 A O
 ATOM 261 N ALA A 40 75.685 -30.741 -15.197 1.00 11.54 A N
 ATOM 262 CA ALA A 40 75.767 -31.785 -16.201 1.00 10.76 A C
 ATOM 263 CB ALA A 40 76.918 -31.447 -17.199 1.00 12.41 A C
 ATOM 264 C ALA A 40 76.041 -33.164 -15.575 1.00 14.03 A C
 ATOM 265 O ALA A 40 75.409 -34.180 -15.911 1.00 10.38 A O
 ATOM 266 N GLU A 41 77.024 -33.200 -14.687 1.00 16.09 A N
 ATOM 267 CA GLU A 41 77.390 -34.441 -14.017 1.00 13.91 A C
 ATOM 268 CB GLU A 41 78.665 -34.237 -13.212 1.00 19.27 A C
 ATOM 269 CG GLU A 41 79.138 -35.483 -12.508 1.00 25.02 A C
 ATOM 270 CD GLU A 41 80.607 -35.425 -12.091 1.00 28.02 A C
 ATOM 271 OE1 GLU A 41 81.375 -34.548 -12.576 1.00 24.47 A O
 ATOM 272 OE2 GLU A 41 80.970 -36.273 -11.257 1.00 29.52 A O
 ATOM 273 C GLU A 41 76.272 -34.965 -13.108 1.00 12.87 A C
 ATOM 274 O GLU A 41 76.090 -36.165 -13.024 1.00 13.64 A O
 ATOM 275 N VAL A 42 75.532 -34.091 -12.434 1.00 12.85 A N
 ATOM 276 CA VAL A 42 74.421 -34.563 -11.586 1.00 14.03 A C
 ATOM 277 CB VAL A 42 73.924 -33.454 -10.695 1.00 14.90 A C
 ATOM 278 CG1 VAL A 42 72.584 -33.857 -10.061 1.00 13.47 A C
 ATOM 279 CG2 VAL A 42 74.995 -33.110 -9.638 1.00 12.19 A C
 ATOM 280 C VAL A 42 73.276 -35.141 -12.475 1.00 15.79 A C
 ATOM 281 O VAL A 42 72.718 -36.203 -12.205 1.00 14.89 A O
 ATOM 282 N ARG A 43 73.021 -34.478 -13.604 1.00 16.80 A N
 ATOM 283 CA ARG A 43 72.115 -35.001 -14.629 1.00 15.60 A C
 ATOM 284 CB ARG A 43 72.092 -34.051 -15.853 1.00 15.25 A C
 ATOM 285 CG ARG A 43 71.211 -34.540 -17.003 1.00 16.80 A C
 ATOM 286 CD ARG A 43 71.932 -35.504 -17.942 1.00 16.08 A C
 ATOM 287 NE ARG A 43 71.013 -35.995 -18.967 1.00 19.00 A N
 ATOM 288 CZ ARG A 43 71.278 -36.953 -19.843 1.00 21.10 A C
 ATOM 289 NH1 ARG A 43 72.472 -37.567 -19.874 1.00 16.27 A N
 ATOM 290 NH2 ARG A 43 70.323 -37.315 -20.694 1.00 19.98 A N
 ATOM 291 C ARG A 43 72.536 -36.396 -15.060 1.00 13.27 A C
 ATOM 292 O ARG A 43 71.722 -37.295 -15.093 1.00 12.89 A O
 ATOM 293 N ARG A 44 73.819 -36.583 -15.386 1.00 12.23 A N
 ATOM 294 CA ARG A 44 74.287 -37.877 -15.802 1.00 13.34 A C
 ATOM 295 CB ARG A 44 75.778 -37.854 -16.129 1.00 13.24 A C
 ATOM 296 CG ARG A 44 76.300 -39.154 -16.657 1.00 14.52 A C
 ATOM 297 CD ARG A 44 77.795 -39.105 -16.917 1.00 16.25 A C
 ATOM 298 NE ARG A 44 78.513 -38.905 -15.676 1.00 15.34 A N
 ATOM 299 CZ ARG A 44 79.791 -38.554 -15.561 1.00 22.40 A C
 ATOM 300 NH1 ARG A 44 80.581 -38.337 -16.624 1.00 18.24 A N
 ATOM 301 NH2 ARG A 44 80.285 -38.413 -14.338 1.00 26.00 A N
 ATOM 302 C ARG A 44 74.029 -38.934 -14.726 1.00 15.66 A C
 ATOM 303 O ARG A 44 73.596 -40.025 -15.046 1.00 14.32 A O
 ATOM 304 N GLU A 45 74.309 -38.612 -13.464 1.00 16.48 A N
 ATOM 305 CA GLU A 45 74.179 -39.621 -12.394 1.00 15.18 A C
 ATOM 306 CB GLU A 45 74.884 -39.173 -11.117 1.00 17.44 A C
 ATOM 307 CG GLU A 45 76.398 -39.065 -11.261 1.00 23.45 A C
 ATOM 308 CD GLU A 45 77.009 -40.405 -11.686 1.00 30.59 A C
 ATOM 309 OE1 GLU A 45 76.904 -41.378 -10.908 1.00 41.70 A O
 ATOM 310 OE2 GLU A 45 77.554 -40.495 -12.820 1.00 34.07 A O
 ATOM 311 C GLU A 45 72.706 -39.958 -12.106 1.00 14.08 A C
 ATOM 312 O GLU A 45 72.401 -41.076 -11.798 1.00 12.78 A O
 ATOM 313 N ILE A 46 71.799 -39.015 -12.285 1.00 15.21 A N
 ATOM 314 CA ILE A 46 70.360 -39.321 -12.129 1.00 14.92 A C
 ATOM 315 CB ILE A 46 69.546 -38.073 -11.941 1.00 13.75 A C
 ATOM 316 CG1 ILE A 46 69.968 -37.340 -10.668 1.00 13.13 A C
 ATOM 317 CD1 ILE A 46 69.335 -35.917 -10.521 1.00 13.11 A C
 ATOM 318 CG2 ILE A 46 68.010 -38.395 -11.900 1.00 15.50 A C
 ATOM 319 C ILE A 46 69.857 -40.187 -13.291 1.00 18.05 A C
 ATOM 320 O ILE A 46 69.013 -41.083 -13.103 1.00 18.68 A O
 ATOM 321 N ASN A 47 70.398 -39.976 -14.487 1.00 18.26 A N
 ATOM 322 CA ASN A 47 69.952 -40.743 -15.668 1.00 16.25 A C

ATOM 323 CB ASN A 47 70.181 -39.936 -16.926 1.00 16.08 A C
 ATOM 324 CG ASN A 47 69.170 -38.835 -17.085 1.00 22.48 A C
 ATOM 325 OD1 ASN A 47 68.166 -39.047 -17.712 1.00 21.93 A O
 ATOM 326 ND2 ASN A 47 69.411 -37.668 -16.490 1.00 18.56 A N
 ATOM 327 C ASN A 47 70.585 -42.115 -15.828 1.00 18.89 A C
 ATOM 328 O ASN A 47 70.184 -42.892 -16.689 1.00 21.16 A O
 ATOM 329 N ASN A 48 71.615 -42.392 -15.040 1.00 20.07 A N
 ATOM 330 CA ASN A 48 72.411 -43.614 -15.177 1.00 21.07 A C
 ATOM 331 CB ASN A 48 73.524 -43.561 -14.128 1.00 22.12 A C
 ATOM 332 CG ASN A 48 74.333 -44.833 -14.027 1.00 24.42 A C
 ATOM 333 OD1 ASN A 48 74.362 -45.670 -14.931 1.00 22.04 A O
 ATOM 334 ND2 ASN A 48 75.046 -44.955 -12.920 1.00 22.68 A N
 ATOM 335 C ASN A 48 71.551 -44.840 -14.953 1.00 22.60 A C
 ATOM 336 O ASN A 48 71.037 -45.017 -13.878 1.00 24.75 A O
 ATOM 337 N GLU A 49 71.404 -45.677 -15.965 1.00 25.27 A N
 ATOM 338 CA GLU A 49 70.534 -46.838 -15.873 1.00 31.45 A C
 ATOM 339 CB GLU A 49 69.971 -47.183 -17.248 1.00 33.69 A C
 ATOM 340 CG GLU A 49 69.010 -46.083 -17.720 1.00 43.39 A C
 ATOM 341 CD GLU A 49 68.043 -46.506 -18.832 1.00 49.09 A C
 ATOM 342 OE1 GLU A 49 68.038 -47.692 -19.225 1.00 45.42 A O
 ATOM 343 OE2 GLU A 49 67.282 -45.626 -19.308 1.00 40.84 A O
 ATOM 344 C GLU A 49 71.177 -48.050 -15.241 1.00 34.38 A C
 ATOM 345 O GLU A 49 70.520 -49.055 -15.058 1.00 37.08 A O
 ATOM 346 N LYS A 50 72.455 -47.958 -14.906 1.00 31.70 A N
 ATOM 347 CA LYS A 50 73.159 -49.048 -14.255 1.00 36.67 A C
 ATOM 348 CB LYS A 50 74.573 -49.191 -14.827 1.00 40.64 A C
 ATOM 349 CG LYS A 50 74.689 -49.329 -16.371 1.00 51.97 A C
 ATOM 350 CD LYS A 50 75.923 -48.546 -16.896 1.00 56.91 A C
 ATOM 351 CE LYS A 50 76.546 -49.104 -18.184 1.00 54.15 A C
 ATOM 352 NZ LYS A 50 75.666 -48.933 -19.373 1.00 52.48 A N
 ATOM 353 C LYS A 50 73.275 -48.787 -12.758 1.00 33.26 A C
 ATOM 354 O LYS A 50 73.835 -49.595 -12.057 1.00 33.42 A O
 ATOM 355 N ALA A 51 72.780 -47.654 -12.270 1.00 30.39 A N
 ATOM 356 CA ALA A 51 72.905 -47.331 -10.843 1.00 30.68 A C
 ATOM 357 CB ALA A 51 72.301 -45.928 -10.554 1.00 29.95 A C
 ATOM 358 C ALA A 51 72.173 -48.388 -10.015 1.00 26.77 A C
 ATOM 359 O ALA A 51 71.125 -48.866 -10.439 1.00 23.61 A O
 ATOM 360 N GLU A 52 72.720 -48.742 -8.851 1.00 25.28 A N
 ATOM 361 CA GLU A 52 71.998 -49.553 -7.854 1.00 27.96 A C
 ATOM 362 CB GLU A 52 72.881 -49.902 -6.643 1.00 31.71 A C
 ATOM 363 CG GLU A 52 74.162 -50.669 -6.959 1.00 49.71 A C
 ATOM 364 CD GLU A 52 73.925 -52.024 -7.623 1.00 61.36 A C
 ATOM 365 OE1 GLU A 52 72.763 -52.463 -7.743 1.00 70.03 A O
 ATOM 366 OE2 GLU A 52 74.920 -52.659 -8.033 1.00 80.38 A O
 ATOM 367 C GLU A 52 70.793 -48.786 -7.336 1.00 26.09 A C
 ATOM 368 O GLU A 52 70.879 -47.583 -7.079 1.00 24.96 A O
 ATOM 369 N PHE A 53 69.682 -49.490 -7.160 1.00 26.53 A N
 ATOM 370 CA PHE A 53 68.388 -48.872 -6.808 1.00 35.85 A C
 ATOM 371 CB PHE A 53 67.340 -49.942 -6.445 1.00 49.50 A C
 ATOM 372 CG PHE A 53 66.862 -50.770 -7.617 1.00 61.54 A C
 ATOM 373 CD1 PHE A 53 66.522 -50.159 -8.837 1.00 61.58 A C
 ATOM 374 CE1 PHE A 53 66.072 -50.919 -9.922 1.00 53.87 A C
 ATOM 375 CZ PHE A 53 65.942 -52.308 -9.794 1.00 69.22 A C
 ATOM 376 CE2 PHE A 53 66.265 -52.937 -8.574 1.00 66.79 A C
 ATOM 377 CD2 PHE A 53 66.718 -52.163 -7.494 1.00 69.27 A C
 ATOM 378 C PHE A 53 68.495 -47.922 -5.634 1.00 27.28 A C
 ATOM 379 O PHE A 53 68.084 -46.754 -5.726 1.00 22.90 A O
 ATOM 380 N LEU A 54 69.065 -48.423 -4.544 1.00 24.77 A N
 ATOM 381 CA LEU A 54 69.123 -47.682 -3.302 1.00 28.10 A C
 ATOM 382 CB LEU A 54 69.596 -48.572 -2.154 1.00 34.39 A C
 ATOM 383 CG LEU A 54 68.736 -48.556 -0.887 1.00 49.21 A C
 ATOM 384 CD1 LEU A 54 68.322 -47.145 -0.451 1.00 51.57 A C
 ATOM 385 CD2 LEU A 54 67.515 -49.439 -1.132 1.00 50.67 A C
 ATOM 386 C LEU A 54 70.013 -46.443 -3.396 1.00 27.68 A C
 ATOM 387 O LEU A 54 69.681 -45.416 -2.834 1.00 23.39 A O
 ATOM 388 N THR A 55 71.142 -46.549 -4.101 1.00 23.55 A N

ATOM 389 CA THR A 55 72.040 -45.423 -4.318 1.00 21.92 A C
 ATOM 390 CB THR A 55 73.281 -45.871 -5.101 1.00 23.88 A C
 ATOM 391 OG1 THR A 55 73.801 -47.016 -4.452 1.00 25.50 A O
 ATOM 392 CG2 THR A 55 74.332 -44.782 -5.130 1.00 23.93 A C
 ATOM 393 C THR A 55 71.343 -44.343 -5.108 1.00 17.55 A C
 ATOM 394 O THR A 55 71.434 -43.173 -4.792 1.00 18.91 A O
 ATOM 395 N LEU A 56 70.607 -44.748 -6.113 1.00 18.24 A N
 ATOM 396 CA LEU A 56 69.862 -43.800 -6.928 1.00 20.04 A C
 ATOM 397 CB LEU A 56 69.227 -44.539 -8.105 1.00 22.20 A C
 ATOM 398 CG LEU A 56 68.464 -43.635 -9.061 1.00 26.34 A C
 ATOM 399 CD1 LEU A 56 69.434 -42.666 -9.723 1.00 31.96 A C
 ATOM 400 CD2 LEU A 56 67.690 -44.445 -10.097 1.00 33.31 A C
 ATOM 401 C LEU A 56 68.777 -43.049 -6.149 1.00 19.87 A C
 ATOM 402 O LEU A 56 68.634 -41.841 -6.283 1.00 17.72 A O
 ATOM 403 N LEU A 57 68.017 -43.771 -5.330 1.00 18.78 A N
 ATOM 404 CA LEU A 57 66.988 -43.158 -4.532 1.00 17.43 A C
 ATOM 405 CB LEU A 57 66.169 -44.211 -3.795 1.00 17.26 A C
 ATOM 406 CG LEU A 57 65.336 -45.160 -4.639 1.00 18.53 A C
 ATOM 407 CD1 LEU A 57 64.868 -46.280 -3.736 1.00 17.73 A C
 ATOM 408 CD2 LEU A 57 64.168 -44.475 -5.338 1.00 17.09 A C
 ATOM 409 C LEU A 57 67.585 -42.177 -3.549 1.00 16.16 A C
 ATOM 410 O LEU A 57 67.023 -41.110 -3.319 1.00 14.89 A O
 ATOM 411 N GLU A 58 68.693 -42.559 -2.927 1.00 16.26 A N
 ATOM 412 CA GLU A 58 69.381 -41.681 -2.008 1.00 17.82 A C
 ATOM 413 CB GLU A 58 70.460 -42.434 -1.225 1.00 25.14 A C
 ATOM 414 CG GLU A 58 69.819 -43.406 -0.193 1.00 35.32 A C
 ATOM 415 CD GLU A 58 70.827 -44.166 0.686 1.00 48.33 A C
 ATOM 416 OE1 GLU A 58 72.054 -44.054 0.456 1.00 40.98 A O
 ATOM 417 OE2 GLU A 58 70.376 -44.885 1.608 1.00 38.51 A O
 ATOM 418 C GLU A 58 69.973 -40.453 -2.712 1.00 17.55 A C
 ATOM 419 O GLU A 58 69.926 -39.353 -2.157 1.00 14.34 A O
 ATOM 420 N LEU A 59 70.524 -40.624 -3.921 1.00 14.91 A N
 ATOM 421 CA LEU A 59 70.938 -39.466 -4.720 1.00 14.26 A C
 ATOM 422 CB LEU A 59 71.528 -39.906 -6.055 1.00 16.83 A C
 ATOM 423 CG LEU A 59 71.832 -38.771 -7.070 1.00 17.41 A C
 ATOM 424 CD1 LEU A 59 72.898 -37.834 -6.529 1.00 14.87 A C
 ATOM 425 CD2 LEU A 59 72.258 -39.366 -8.400 1.00 17.18 A C
 ATOM 426 C LEU A 59 69.780 -38.486 -4.976 1.00 13.47 A C
 ATOM 427 O LEU A 59 69.901 -37.259 -4.762 1.00 18.07 A O
 ATOM 428 N ILE A 60 68.654 -39.009 -5.456 1.00 14.22 A N
 ATOM 429 CA ILE A 60 67.510 -38.174 -5.735 1.00 15.30 A C
 ATOM 430 CB ILE A 60 66.311 -39.013 -6.215 1.00 15.27 A C
 ATOM 431 CG1 ILE A 60 66.569 -39.514 -7.634 1.00 18.44 A C
 ATOM 432 CD1 ILE A 60 65.650 -40.585 -8.070 1.00 18.66 A C
 ATOM 433 CG2 ILE A 60 65.001 -38.220 -6.118 1.00 13.95 A C
 ATOM 434 C ILE A 60 67.108 -37.415 -4.450 1.00 16.70 A C
 ATOM 435 O ILE A 60 66.807 -36.196 -4.457 1.00 16.26 A O
 ATOM 436 N ASP A 61 67.064 -38.145 -3.358 1.00 15.80 A N
 ATOM 437 CA ASP A 61 66.694 -37.530 -2.066 1.00 18.86 A C
 ATOM 438 CB ASP A 61 66.698 -38.587 -0.971 1.00 19.67 A C
 ATOM 439 CG ASP A 61 65.989 -38.130 0.318 1.00 26.40 A C
 ATOM 440 OD1 ASP A 61 65.096 -37.229 0.280 1.00 21.55 A O
 ATOM 441 OD2 ASP A 61 66.330 -38.722 1.376 1.00 23.18 A O
 ATOM 442 C ASP A 61 67.630 -36.378 -1.688 1.00 16.98 A C
 ATOM 443 O ASP A 61 67.185 -35.298 -1.260 1.00 18.46 A O
 ATOM 444 N ASN A 62 68.939 -36.607 -1.826 1.00 19.40 A N
 ATOM 445 CA ASN A 62 69.916 -35.574 -1.529 1.00 15.80 A C
 ATOM 446 CB ASN A 62 71.364 -36.120 -1.610 1.00 17.49 A C
 ATOM 447 CG ASN A 62 71.717 -37.018 -0.442 1.00 20.29 A C
 ATOM 448 OD1 ASN A 62 71.275 -36.780 0.657 1.00 23.89 A O
 ATOM 449 ND2 ASN A 62 72.522 -38.057 -0.689 1.00 18.30 A N
 ATOM 450 C ASN A 62 69.761 -34.380 -2.472 1.00 16.16 A C
 ATOM 451 O ASN A 62 69.742 -33.232 -2.018 1.00 15.22 A O
 ATOM 452 N VAL A 63 69.630 -34.648 -3.772 1.00 15.09 A N
 ATOM 453 CA VAL A 63 69.406 -33.553 -4.758 1.00 14.55 A C
 ATOM 454 CB VAL A 63 69.167 -34.127 -6.161 1.00 15.48 A C

ATOM 455 CG1 VAL A 63 68.662 -33.057 -7.117 1.00 15.19 A C
 ATOM 456 CG2 VAL A 63 70.487 -34.805 -6.685 1.00 13.61 A C
 ATOM 457 C VAL A 63 68.235 -32.660 -4.332 1.00 15.51 A C
 ATOM 458 O VAL A 63 68.340 -31.431 -4.333 1.00 18.72 A O
 ATOM 459 N GLN A 64 67.133 -33.285 -3.920 1.00 15.10 A N
 ATOM 460 CA GLN A 64 65.957 -32.562 -3.455 1.00 15.57 A C
 ATOM 461 CB GLN A 64 64.747 -33.526 -3.344 1.00 17.68 A C
 ATOM 462 CG GLN A 64 64.318 -34.015 -4.711 1.00 17.50 A C
 ATOM 463 CD GLN A 64 62.971 -34.726 -4.748 1.00 20.03 A C
 ATOM 464 OE1 GLN A 64 62.382 -34.802 -5.810 1.00 19.14 A O
 ATOM 465 NE2 GLN A 64 62.489 -35.252 -3.609 1.00 14.20 A N
 ATOM 466 C GLN A 64 66.175 -31.788 -2.143 1.00 14.86 A C
 ATOM 467 O GLN A 64 65.873 -30.605 -2.042 1.00 15.46 A O
 ATOM 468 N ARG A 65 66.705 -32.453 -1.137 1.00 14.05 A N
 ATOM 469 CA ARG A 65 66.904 -31.822 0.161 1.00 15.82 A C
 ATOM 470 CB ARG A 65 67.355 -32.847 1.196 1.00 16.25 A C
 ATOM 471 CG ARG A 65 66.247 -33.875 1.445 1.00 19.90 A C
 ATOM 472 CD ARG A 65 66.533 -34.782 2.609 1.00 20.04 A C
 ATOM 473 NE ARG A 65 66.639 -33.958 3.802 1.00 27.75 A N
 ATOM 474 CZ ARG A 65 66.875 -34.416 5.027 1.00 47.19 A C
 ATOM 475 NH1 ARG A 65 67.009 -35.722 5.231 1.00 44.64 A N
 ATOM 476 NH2 ARG A 65 66.958 -33.559 6.054 1.00 35.23 A N
 ATOM 477 C ARG A 65 67.873 -30.645 0.090 1.00 15.18 A C
 ATOM 478 O ARG A 65 67.618 -29.607 0.698 1.00 18.75 A O
 ATOM 479 N LEU A 66 68.909 -30.769 -0.734 1.00 14.43 A N
 ATOM 480 CA LEU A 66 69.898 -29.699 -0.937 1.00 15.85 A C
 ATOM 481 CB LEU A 66 71.120 -30.253 -1.690 1.00 14.34 A C
 ATOM 482 CG LEU A 66 71.936 -31.227 -0.849 1.00 16.97 A C
 ATOM 483 CD1 LEU A 66 72.981 -31.901 -1.711 1.00 21.09 A C
 ATOM 484 CD2 LEU A 66 72.608 -30.479 0.299 1.00 18.12 A C
 ATOM 485 C LEU A 66 69.351 -28.524 -1.693 1.00 18.23 A C
 ATOM 486 O LEU A 66 70.037 -27.523 -1.853 1.00 18.00 A O
 ATOM 487 N GLY A 67 68.139 -28.661 -2.215 1.00 17.75 A N
 ATOM 488 CA GLY A 67 67.432 -27.546 -2.817 1.00 15.94 A C
 ATOM 489 C GLY A 67 67.409 -27.543 -4.328 1.00 17.22 A C
 ATOM 490 O GLY A 67 66.988 -26.556 -4.918 1.00 19.11 A O
 ATOM 491 N LEU A 68 67.851 -28.634 -4.963 1.00 17.17 A N
 ATOM 492 CA LEU A 68 68.050 -28.660 -6.409 1.00 15.10 A C
 ATOM 493 CB LEU A 68 69.433 -29.273 -6.746 1.00 14.65 A C
 ATOM 494 CG LEU A 68 70.654 -28.481 -6.265 1.00 17.60 A C
 ATOM 495 CD1 LEU A 68 71.899 -29.411 -6.237 1.00 14.01 A C
 ATOM 496 CD2 LEU A 68 70.888 -27.248 -7.175 1.00 14.30 A C
 ATOM 497 C LEU A 68 66.955 -29.409 -7.148 1.00 17.27 A C
 ATOM 498 O LEU A 68 67.045 -29.590 -8.371 1.00 16.93 A O
 ATOM 499 N GLY A 69 65.902 -29.851 -6.447 1.00 19.21 A N
 ATOM 500 CA GLY A 69 64.864 -30.621 -7.100 1.00 21.34 A C
 ATOM 501 C GLY A 69 64.274 -29.941 -8.319 1.00 22.17 A C
 ATOM 502 O GLY A 69 64.052 -30.579 -9.363 1.00 22.04 A O
 ATOM 503 N TYR A 70 64.083 -28.631 -8.205 1.00 20.57 A N
 ATOM 504 CA TYR A 70 63.435 -27.864 -9.258 1.00 24.61 A C
 ATOM 505 CB TYR A 70 63.178 -26.404 -8.827 1.00 22.29 A C
 ATOM 506 CG TYR A 70 64.422 -25.554 -8.871 1.00 19.75 A C
 ATOM 507 CD1 TYR A 70 65.402 -25.637 -7.864 1.00 18.08 A C
 ATOM 508 CE1 TYR A 70 66.566 -24.891 -7.942 1.00 18.63 A C
 ATOM 509 CZ TYR A 70 66.746 -24.025 -9.014 1.00 19.34 A C
 ATOM 510 OH TYR A 70 67.887 -23.263 -9.175 1.00 16.26 A O
 ATOM 511 CE2 TYR A 70 65.789 -23.954 -10.015 1.00 20.55 A C
 ATOM 512 CD2 TYR A 70 64.650 -24.705 -9.938 1.00 19.66 A C
 ATOM 513 C TYR A 70 64.228 -27.898 -10.550 1.00 25.17 A C
 ATOM 514 O TYR A 70 63.661 -27.687 -11.608 1.00 22.72 A O
 ATOM 515 N ARG A 71 65.539 -28.130 -10.477 1.00 18.92 A N
 ATOM 516 CA ARG A 71 66.392 -28.102 -11.666 1.00 18.69 A C
 ATOM 517 CB ARG A 71 67.809 -27.634 -11.190 1.00 22.29 A C
 ATOM 518 CG ARG A 71 68.902 -27.719 -12.174 1.00 33.98 A C
 ATOM 519 CD ARG A 71 70.148 -26.850 -11.726 1.00 34.42 A C
 ATOM 520 NE ARG A 71 69.737 -25.505 -11.451 1.00 22.66 A N

ATOM 521 CZ ARG A 71 69.603 -24.529 -12.349 1.00 20.28 A C
 ATOM 522 NH1 ARG A 71 69.910 -24.686 -13.614 1.00 25.84 A N
 ATOM 523 NH2 ARG A 71 69.164 -23.355 -11.943 1.00 18.66 A N
 ATOM 524 C ARG A 71 66.450 -29.454 -12.393 1.00 19.16 A C
 ATOM 525 O ARG A 71 66.865 -29.549 -13.549 1.00 16.93 A O
 ATOM 526 N PHE A 72 66.040 -30.510 -11.710 1.00 19.98 A N
 ATOM 527 CA PHE A 72 66.189 -31.877 -12.212 1.00 18.22 A C
 ATOM 528 CB PHE A 72 67.167 -32.615 -11.297 1.00 18.72 A C
 ATOM 529 CG PHE A 72 68.556 -32.062 -11.352 1.00 15.33 A C
 ATOM 530 CD1 PHE A 72 69.334 -32.258 -12.476 1.00 17.79 A C
 ATOM 531 CE1 PHE A 72 70.602 -31.747 -12.543 1.00 16.36 A C
 ATOM 532 CZ PHE A 72 71.113 -30.998 -11.499 1.00 16.15 A C
 ATOM 533 CE2 PHE A 72 70.350 -30.793 -10.385 1.00 14.98 A C
 ATOM 534 CD2 PHE A 72 69.068 -31.326 -10.320 1.00 14.87 A C
 ATOM 535 C PHE A 72 64.925 -32.662 -12.295 1.00 22.11 A C
 ATOM 536 O PHE A 72 64.968 -33.900 -12.347 1.00 20.25 A O
 ATOM 537 N GLU A 73 63.787 -31.965 -12.329 1.00 25.45 A N
 ATOM 538 CA GLU A 73 62.514 -32.638 -12.154 1.00 27.06 A C
 ATOM 539 CB GLU A 73 61.344 -31.649 -12.123 1.00 29.03 A C
 ATOM 540 CG GLU A 73 60.061 -32.289 -11.662 1.00 36.46 A C
 ATOM 541 CD GLU A 73 58.884 -31.321 -11.634 1.00 54.40 A C
 ATOM 542 OE1 GLU A 73 59.116 -30.091 -11.532 1.00 48.00 A O
 ATOM 543 OE2 GLU A 73 57.728 -31.805 -11.711 1.00 42.07 A O
 ATOM 544 C GLU A 73 62.282 -33.701 -13.208 1.00 23.81 A C
 ATOM 545 O GLU A 73 61.900 -34.844 -12.873 1.00 22.20 A O
 ATOM 546 N SER A 74 62.519 -33.358 -14.467 1.00 22.35 A N
 ATOM 547 CA ASER A 74 62.290 -34.318 -15.548 0.50 24.87 A C
 ATOM 548 CA BSER A 74 62.341 -34.306 -15.575 0.50 24.62 A C
 ATOM 549 CB ASER A 74 62.379 -33.663 -16.937 0.50 27.13 A C
 ATOM 550 CB BSER A 74 62.668 -33.651 -16.909 0.50 27.23 A C
 ATOM 551 OG ASER A 74 63.690 -33.692 -17.476 0.50 32.13 A O
 ATOM 552 OG BSER A 74 61.765 -32.616 -17.190 0.50 30.66 A O
 ATOM 553 C SER A 74 63.227 -35.526 -15.419 1.00 23.45 A C
 ATOM 554 O SER A 74 62.809 -36.654 -15.663 1.00 23.95 A O
 ATOM 555 N ASP A 75 64.477 -35.303 -15.017 1.00 19.65 A N
 ATOM 556 CA ASP A 75 65.427 -36.412 -14.826 1.00 20.84 A C
 ATOM 557 CB ASP A 75 66.835 -35.869 -14.535 1.00 22.51 A C
 ATOM 558 CG ASP A 75 67.319 -34.911 -15.609 1.00 29.28 A C
 ATOM 559 OD1 ASP A 75 67.561 -35.386 -16.734 1.00 26.21 A O
 ATOM 560 OD2 ASP A 75 67.438 -33.696 -15.342 1.00 35.89 A O
 ATOM 561 C ASP A 75 64.972 -37.340 -13.661 1.00 16.01 A C
 ATOM 562 O ASP A 75 65.069 -38.559 -13.741 1.00 14.80 A O
 ATOM 563 N ILE A 76 64.549 -36.729 -12.569 1.00 13.98 A N
 ATOM 564 CA ILE A 76 64.037 -37.461 -11.393 1.00 14.87 A C
 ATOM 565 CB ILE A 76 63.704 -36.489 -10.249 1.00 14.39 A C
 ATOM 566 CG1 ILE A 76 65.026 -35.919 -9.708 1.00 15.22 A C
 ATOM 567 CD1 ILE A 76 64.910 -34.789 -8.807 1.00 15.21 A C
 ATOM 568 CG2 ILE A 76 62.950 -37.214 -9.100 1.00 12.91 A C
 ATOM 569 C ILE A 76 62.811 -38.292 -11.791 1.00 15.71 A C
 ATOM 570 O ILE A 76 62.735 -39.470 -11.500 1.00 17.94 A O
 ATOM 571 N ARG A 77 61.870 -37.684 -12.470 1.00 18.65 A N
 ATOM 572 CA AARG A 77 60.670 -38.385 -12.938 0.50 19.96 A C
 ATOM 573 CA BARG A 77 60.672 -38.409 -12.891 0.50 21.56 A C
 ATOM 574 CB AARG A 77 59.818 -37.453 -13.790 0.50 22.64 A C
 ATOM 575 CB BARG A 77 59.669 -37.479 -13.580 0.50 26.61 A C
 ATOM 576 CG AARG A 77 59.104 -36.376 -13.062 0.50 22.43 A C
 ATOM 577 CG BARG A 77 58.541 -37.048 -12.690 0.50 33.00 A C
 ATOM 578 CD AARG A 77 58.085 -35.708 -14.032 0.50 24.82 A C
 ATOM 579 CD BARG A 77 57.233 -36.819 -13.483 0.50 41.27 A C
 ATOM 580 NE AARG A 77 57.084 -36.686 -14.465 0.50 27.82 A N
 ATOM 581 NE BARG A 77 57.430 -36.132 -14.766 0.50 38.02 A N
 ATOM 582 CZ AARG A 77 56.062 -37.076 -13.710 0.50 32.47 A C
 ATOM 583 CZ BARG A 77 57.743 -34.845 -14.906 0.50 38.80 A C
 ATOM 584 NH1AARG A 77 55.895 -36.544 -12.499 0.50 28.27 A N
 ATOM 585 NH1BARG A 77 57.920 -34.070 -13.842 0.50 36.68 A N
 ATOM 586 NH2AARG A 77 55.203 -37.976 -14.169 0.50 30.50 A N

ATOM 587 NH2BARG A 77 57.892 -34.330 -16.121 0.50 39.56 A N
 ATOM 588 C ARG A 77 61.001 -39.588 -13.783 1.00 21.28 A C
 ATOM 589 O ARG A 77 60.401 -40.664 -13.637 1.00 23.22 A O
 ATOM 590 N GLY A 78 61.944 -39.398 -14.706 1.00 22.93 A N
 ATOM 591 CA GLY A 78 62.399 -40.504 -15.558 1.00 21.83 A C
 ATOM 592 C GLY A 78 63.046 -41.619 -14.781 1.00 20.05 A C
 ATOM 593 O GLY A 78 62.836 -42.793 -15.072 1.00 19.81 A O
 ATOM 594 N ALA A 79 63.850 -41.272 -13.778 1.00 19.76 A N
 ATOM 595 CA ALA A 79 64.509 -42.292 -12.967 1.00 19.48 A C
 ATOM 596 CB ALA A 79 65.542 -41.631 -12.006 1.00 16.46 A C
 ATOM 597 C ALA A 79 63.466 -43.102 -12.180 1.00 17.42 A C
 ATOM 598 O ALA A 79 63.564 -44.316 -12.041 1.00 18.48 A O
 ATOM 599 N LEU A 80 62.469 -42.415 -11.652 1.00 17.25 A N
 ATOM 600 CA LEU A 80 61.433 -43.067 -10.833 1.00 17.10 A C
 ATOM 601 CB LEU A 80 60.588 -42.013 -10.113 1.00 18.65 A C
 ATOM 602 CG LEU A 80 61.318 -41.248 -9.018 1.00 18.83 A C
 ATOM 603 CD1 LEU A 80 60.504 -40.080 -8.548 1.00 18.36 A C
 ATOM 604 CD2 LEU A 80 61.697 -42.202 -7.848 1.00 16.67 A C
 ATOM 605 C LEU A 80 60.546 -43.948 -11.703 1.00 20.72 A C
 ATOM 606 O LEU A 80 60.159 -45.046 -11.299 1.00 22.37 A O
 ATOM 607 N ASP A 81 60.232 -43.466 -12.899 1.00 21.72 A N
 ATOM 608 CA ASP A 81 59.467 -44.254 -13.840 1.00 22.96 A C
 ATOM 609 CB ASP A 81 59.214 -43.462 -15.118 1.00 34.55 A C
 ATOM 610 CG ASP A 81 58.294 -44.203 -16.076 1.00 48.66 A C
 ATOM 611 OD1 ASP A 81 57.059 -44.159 -15.876 1.00 47.13 A O
 ATOM 612 OD2 ASP A 81 58.813 -44.858 -17.001 1.00 53.22 A O
 ATOM 613 C ASP A 81 60.161 -45.583 -14.159 1.00 26.16 A C
 ATOM 614 O ASP A 81 59.536 -46.638 -14.175 1.00 29.06 A O
 ATOM 615 N ARG A 82 61.465 -45.549 -14.398 1.00 25.91 A N
 ATOM 616 CA ARG A 82 62.185 -46.777 -14.703 1.00 26.78 A C
 ATOM 617 CB ARG A 82 63.562 -46.481 -15.281 1.00 34.17 A C
 ATOM 618 CG ARG A 82 63.492 -45.835 -16.668 1.00 42.87 A C
 ATOM 619 CD ARG A 82 64.892 -45.671 -17.266 1.00 49.93 A C
 ATOM 620 NE ARG A 82 65.763 -44.879 -16.390 1.00 44.21 A N
 ATOM 621 CZ ARG A 82 65.865 -43.549 -16.409 1.00 37.72 A C
 ATOM 622 NH1 ARG A 82 65.166 -42.830 -17.278 1.00 35.82 A N
 ATOM 623 NH2 ARG A 82 66.688 -42.932 -15.552 1.00 29.76 A N
 ATOM 624 C ARG A 82 62.309 -47.652 -13.485 1.00 29.77 A C
 ATOM 625 O ARG A 82 62.282 -48.887 -13.589 1.00 31.34 A O
 ATOM 626 N PHE A 83 62.440 -47.028 -12.321 1.00 24.68 A N
 ATOM 627 CA PHE A 83 62.444 -47.775 -11.076 1.00 25.58 A C
 ATOM 628 CB PHE A 83 62.638 -46.834 -9.889 1.00 25.29 A C
 ATOM 629 CG PHE A 83 62.662 -47.524 -8.546 1.00 25.27 A C
 ATOM 630 CD1 PHE A 83 63.674 -48.403 -8.223 1.00 31.55 A C
 ATOM 631 CE1 PHE A 83 63.705 -49.036 -6.959 1.00 33.76 A C
 ATOM 632 CZ PHE A 83 62.723 -48.761 -6.027 1.00 25.63 A C
 ATOM 633 CE2 PHE A 83 61.688 -47.908 -6.363 1.00 23.21 A C
 ATOM 634 CD2 PHE A 83 61.671 -47.275 -7.603 1.00 24.70 A C
 ATOM 635 C PHE A 83 61.153 -48.571 -10.920 1.00 23.30 A C
 ATOM 636 O PHE A 83 61.192 -49.699 -10.442 1.00 28.14 A O
 ATOM 637 N VAL A 84 60.008 -48.011 -11.304 1.00 22.28 A N
 ATOM 638 CA VAL A 84 58.766 -48.779 -11.191 1.00 24.82 A C
 ATOM 639 CB VAL A 84 57.544 -47.879 -11.140 1.00 34.14 A C
 ATOM 640 CG1 VAL A 84 56.265 -48.737 -11.170 1.00 34.45 A C
 ATOM 641 CG2 VAL A 84 57.610 -47.028 -9.895 1.00 24.63 A C
 ATOM 642 C VAL A 84 58.648 -49.778 -12.355 1.00 36.68 A C
 ATOM 643 O VAL A 84 58.466 -50.966 -12.117 1.00 28.56 A O
 ATOM 644 N SER A 85 58.821 -49.303 -13.592 1.00 37.14 A N
 ATOM 645 CA ASER A 85 58.620 -50.142 -14.794 0.50 37.10 A C
 ATOM 646 CA BSER A 85 58.622 -50.140 -14.791 0.50 39.01 A C
 ATOM 647 CB ASER A 85 58.845 -49.327 -16.072 0.50 32.00 A C
 ATOM 648 CB BSER A 85 58.830 -49.307 -16.061 0.50 36.25 A C
 ATOM 649 OG ASER A 85 60.229 -49.189 -16.324 0.50 28.69 A O
 ATOM 650 OG BSER A 85 58.016 -48.150 -16.027 0.50 36.93 A O
 ATOM 651 C SER A 85 59.536 -51.355 -14.824 1.00 37.47 A C
 ATOM 652 O SER A 85 59.177 -52.400 -15.354 1.00 41.76 A O

ATOM 653 N SER A 86 60.725 -51.225 -14.260 1.00 36.59 A N
 ATOM 654 CA SER A 86 61.617 -52.354 -14.202 1.00 33.40 A C
 ATOM 655 CB SER A 86 63.043 -51.872 -13.933 1.00 32.66 A C
 ATOM 656 OG SER A 86 63.174 -51.413 -12.608 1.00 38.52 A O
 ATOM 657 C SER A 86 61.213 -53.407 -13.129 1.00 42.41 A C
 ATOM 658 O SER A 86 61.752 -54.504 -13.116 1.00 37.89 A O
 ATOM 659 N GLY A 87 60.286 -53.085 -12.229 1.00 46.93 A N
 ATOM 660 CA GLY A 87 60.046 -53.937 -11.038 1.00 46.12 A C
 ATOM 661 C GLY A 87 60.922 -53.651 -9.810 1.00 46.43 A C
 ATOM 662 O GLY A 87 60.874 -54.385 -8.823 1.00 42.81 A O
 ATOM 663 N GLY A 88 61.727 -52.591 -9.843 1.00 37.85 A N
 ATOM 664 CA GLY A 88 62.551 -52.234 -8.678 1.00 30.02 A C
 ATOM 665 C GLY A 88 61.734 -51.937 -7.421 1.00 27.92 A C
 ATOM 666 O GLY A 88 62.124 -52.306 -6.306 1.00 27.72 A O
 ATOM 667 N PHE A 89 60.592 -51.268 -7.592 1.00 28.80 A N
 ATOM 668 CA PHE A 89 59.756 -50.909 -6.437 1.00 28.02 A C
 ATOM 669 CB PHE A 89 58.610 -49.969 -6.826 1.00 26.31 A C
 ATOM 670 CG PHE A 89 57.765 -49.546 -5.651 1.00 25.79 A C
 ATOM 671 CD1 PHE A 89 58.349 -48.920 -4.562 1.00 22.35 A C
 ATOM 672 CE1 PHE A 89 57.592 -48.532 -3.464 1.00 24.18 A C
 ATOM 673 CZ PHE A 89 56.227 -48.769 -3.456 1.00 24.74 A C
 ATOM 674 CE2 PHE A 89 55.637 -49.412 -4.520 1.00 29.64 A C
 ATOM 675 CD2 PHE A 89 56.405 -49.802 -5.618 1.00 29.08 A C
 ATOM 676 C PHE A 89 59.204 -52.188 -5.830 1.00 30.78 A C
 ATOM 677 O PHE A 89 59.256 -52.396 -4.631 1.00 24.38 A O
 ATOM 678 N ASP A 90 58.703 -53.071 -6.677 1.00 34.48 A N
 ATOM 679 CA ASP A 90 58.272 -54.369 -6.178 1.00 39.02 A C
 ATOM 680 CB ASP A 90 57.660 -55.229 -7.270 1.00 44.69 A C
 ATOM 681 CG ASP A 90 56.172 -55.280 -7.138 1.00 62.48 A C
 ATOM 682 OD1 ASP A 90 55.516 -54.248 -7.424 1.00 68.76 A O
 ATOM 683 OD2 ASP A 90 55.680 -56.325 -6.662 1.00 53.84 A O
 ATOM 684 C ASP A 90 59.346 -55.114 -5.438 1.00 33.99 A C
 ATOM 685 O ASP A 90 59.083 -55.632 -4.369 1.00 40.51 A O
 ATOM 686 N ALA A 91 60.549 -55.144 -5.996 1.00 35.72 A N
 ATOM 687 CA ALA A 91 61.684 -55.738 -5.321 1.00 37.79 A C
 ATOM 688 CB ALA A 91 62.949 -55.644 -6.189 1.00 37.01 A C
 ATOM 689 C ALA A 91 61.926 -55.119 -3.934 1.00 39.48 A C
 ATOM 690 O ALA A 91 62.084 -55.874 -2.967 1.00 42.14 A O
 ATOM 691 N VAL A 92 61.958 -53.779 -3.795 1.00 30.00 A N
 ATOM 692 CA VAL A 92 62.289 -53.209 -2.463 1.00 21.89 A C
 ATOM 693 CB VAL A 92 62.599 -51.672 -2.377 1.00 31.87 A C
 ATOM 694 CG1 VAL A 92 63.882 -51.298 -3.087 1.00 39.58 A C
 ATOM 695 CG2 VAL A 92 61.418 -50.850 -2.847 1.00 18.63 A C
 ATOM 696 C VAL A 92 61.206 -53.499 -1.442 1.00 19.55 A C
 ATOM 697 O VAL A 92 61.519 -53.618 -0.261 1.00 21.56 A O
 ATOM 698 N THR A 93 59.947 -53.614 -1.854 1.00 21.70 A N
 ATOM 699 CA THR A 93 58.895 -53.860 -0.866 1.00 22.09 A C
 ATOM 700 CB THR A 93 57.459 -53.705 -1.425 1.00 25.99 A C
 ATOM 701 OG1 THR A 93 57.160 -54.784 -2.301 1.00 26.79 A O
 ATOM 702 CG2 THR A 93 57.287 -52.384 -2.193 1.00 25.32 A C
 ATOM 703 C THR A 93 59.092 -55.251 -0.213 1.00 29.92 A C
 ATOM 704 O THR A 93 58.533 -55.516 0.855 1.00 31.66 A O
 ATOM 705 N LYS A 94 59.903 -56.112 -0.832 1.00 33.47 A N
 ATOM 706 CA LYS A 94 60.181 -57.449 -0.275 1.00 35.78 A C
 ATOM 707 CB LYS A 94 60.334 -58.483 -1.392 1.00 37.52 A C
 ATOM 708 CG LYS A 94 59.155 -58.590 -2.351 1.00 44.02 A C
 ATOM 709 CD LYS A 94 57.883 -59.051 -1.649 1.00 53.84 A C
 ATOM 710 CE LYS A 94 57.079 -59.996 -2.537 1.00 64.77 A C
 ATOM 711 NZ LYS A 94 56.701 -59.367 -3.837 1.00 57.51 A N
 ATOM 712 C LYS A 94 61.444 -57.517 0.549 1.00 39.98 A C
 ATOM 713 O LYS A 94 61.650 -58.511 1.215 1.00 42.42 A O
 ATOM 714 N THR A 95 62.295 -56.488 0.507 1.00 33.33 A N
 ATOM 715 CA ATHR A 95 63.656 -56.589 1.055 0.50 35.43 A C
 ATOM 716 CA BTHR A 95 63.650 -56.590 1.067 0.50 33.00 A C
 ATOM 717 CB ATHR A 95 64.721 -56.623 -0.080 0.50 39.50 A C
 ATOM 718 CB BTHR A 95 64.721 -56.620 -0.047 0.50 33.60 A C

ATOM 719 OG1ATHR A 95 64.258 -57.437 -1.168 0.50 40.50 A O
 ATOM 720 OG1BTHR A 95 64.663 -55.399 -0.793 0.50 26.73 A O
 ATOM 721 CG2ATHR A 95 66.052 -57.167 0.437 0.50 39.23 A C
 ATOM 722 CG2BTHR A 95 64.502 -57.798 -0.988 0.50 35.05 A C
 ATOM 723 C THR A 95 64.039 -55.461 2.013 1.00 39.07 A C
 ATOM 724 O THR A 95 64.768 -55.703 2.951 1.00 35.25 A O
 ATOM 725 N SER A 96 63.570 -54.219 1.763 1.00 29.44 A N
 ATOM 726 CA SER A 96 64.102 -53.048 2.502 1.00 27.71 A C
 ATOM 727 CB SER A 96 65.123 -52.359 1.584 1.00 30.94 A C
 ATOM 728 OG SER A 96 65.567 -51.129 2.099 1.00 26.14 A O
 ATOM 729 C SER A 96 63.040 -52.033 2.950 1.00 24.39 A C
 ATOM 730 O SER A 96 62.370 -51.436 2.111 1.00 22.56 A O
 ATOM 731 N LEU A 97 62.890 -51.820 4.254 1.00 19.43 A N
 ATOM 732 CA LEU A 97 61.966 -50.803 4.758 1.00 20.25 A C
 ATOM 733 CB LEU A 97 61.838 -50.828 6.286 1.00 21.08 A C
 ATOM 734 CG LEU A 97 60.990 -49.694 6.890 1.00 23.72 A C
 ATOM 735 CD1 LEU A 97 59.524 -49.800 6.439 1.00 23.79 A C
 ATOM 736 CD2 LEU A 97 61.130 -49.747 8.412 1.00 21.02 A C
 ATOM 737 C LEU A 97 62.449 -49.431 4.319 1.00 21.53 A C
 ATOM 738 O LEU A 97 61.667 -48.597 3.914 1.00 19.58 A O
 ATOM 739 N HIS A 98 63.749 -49.183 4.443 1.00 20.39 A N
 ATOM 740 CA HIS A 98 64.302 -47.908 4.040 1.00 23.40 A C
 ATOM 741 CB HIS A 98 65.811 -47.859 4.296 1.00 22.80 A C
 ATOM 742 CG HIS A 98 66.449 -46.591 3.812 1.00 26.94 A C
 ATOM 743 ND1 HIS A 98 65.853 -45.383 3.956 1.00 31.63 A N
 ATOM 744 CE1 HIS A 98 66.628 -44.426 3.408 1.00 26.07 A C
 ATOM 745 NE2 HIS A 98 67.721 -45.016 2.904 1.00 39.12 A N
 ATOM 746 CD2 HIS A 98 67.642 -46.358 3.136 1.00 41.20 A C
 ATOM 747 C HIS A 98 63.994 -47.632 2.578 1.00 18.12 A C
 ATOM 748 O HIS A 98 63.453 -46.575 2.221 1.00 18.83 A O
 ATOM 749 N GLY A 99 64.274 -48.605 1.728 1.00 19.83 A N
 ATOM 750 CA GLY A 99 64.028 -48.451 0.296 1.00 19.95 A C
 ATOM 751 C GLY A 99 62.559 -48.225 -0.023 1.00 19.49 A C
 ATOM 752 O GLY A 99 62.215 -47.410 -0.890 1.00 20.61 A O
 ATOM 753 N THR A 100 61.680 -48.937 0.682 1.00 18.03 A N
 ATOM 754 CA THR A 100 60.225 -48.836 0.422 1.00 16.81 A C
 ATOM 755 CB THR A 100 59.460 -49.948 1.171 1.00 19.24 A C
 ATOM 756 OG1 THR A 100 59.892 -51.230 0.697 1.00 20.71 A O
 ATOM 757 CG2 THR A 100 57.968 -49.818 0.950 1.00 15.65 A C
 ATOM 758 C THR A 100 59.681 -47.471 0.842 1.00 16.08 A C
 ATOM 759 O THR A 100 58.909 -46.822 0.109 1.00 15.43 A O
 ATOM 760 N ALA A 101 60.054 -47.040 2.038 1.00 16.07 A N
 ATOM 761 CA ALA A 101 59.614 -45.746 2.551 1.00 18.24 A C
 ATOM 762 CB ALA A 101 59.971 -45.571 4.067 1.00 15.42 A C
 ATOM 763 C ALA A 101 60.133 -44.569 1.731 1.00 16.77 A C
 ATOM 764 O ALA A 101 59.395 -43.610 1.464 1.00 17.48 A O
 ATOM 765 N LEU A 102 61.397 -44.630 1.354 1.00 19.20 A N
 ATOM 766 CA LEU A 102 61.989 -43.597 0.558 1.00 17.07 A C
 ATOM 767 CB LEU A 102 63.514 -43.759 0.447 1.00 19.30 A C
 ATOM 768 CG LEU A 102 64.275 -42.701 -0.339 1.00 20.35 A C
 ATOM 769 CD1 LEU A 102 63.946 -41.212 0.095 1.00 18.24 A C
 ATOM 770 CD2 LEU A 102 65.767 -42.977 -0.157 1.00 21.12 A C
 ATOM 771 C LEU A 102 61.350 -43.544 -0.813 1.00 19.36 A C
 ATOM 772 O LEU A 102 60.910 -42.479 -1.258 1.00 18.06 A O
 ATOM 773 N SER A 103 61.256 -44.686 -1.470 1.00 15.50 A N
 ATOM 774 CA SER A 103 60.689 -44.690 -2.798 1.00 17.71 A C
 ATOM 775 CB SER A 103 61.019 -46.015 -3.528 1.00 18.18 A C
 ATOM 776 OG SER A 103 60.455 -47.104 -2.871 1.00 17.47 A O
 ATOM 777 C SER A 103 59.188 -44.382 -2.765 1.00 15.07 A C
 ATOM 778 O SER A 103 58.667 -43.712 -3.651 1.00 16.88 A O
 ATOM 779 N PHE A 104 58.496 -44.820 -1.719 1.00 17.99 A N
 ATOM 780 CA PHE A 104 57.087 -44.477 -1.573 1.00 15.40 A C
 ATOM 781 CB PHE A 104 56.492 -45.119 -0.305 1.00 17.80 A C
 ATOM 782 CG PHE A 104 55.047 -44.773 -0.062 1.00 17.24 A C
 ATOM 783 CD1 PHE A 104 54.693 -43.584 0.512 1.00 14.51 A C
 ATOM 784 CE1 PHE A 104 53.343 -43.270 0.748 1.00 18.89 A C

ATOM 785 CZ PHE A 104 52.349 -44.154 0.380 1.00 14.12 A C
 ATOM 786 CE2 PHE A 104 52.699 -45.359 -0.165 1.00 18.32 A C
 ATOM 787 CD2 PHE A 104 54.028 -45.674 -0.395 1.00 19.18 A C
 ATOM 788 C PHE A 104 56.889 -42.949 -1.573 1.00 14.21 A C
 ATOM 789 O PHE A 104 56.015 -42.433 -2.269 1.00 13.20 A O
 ATOM 790 N ARG A 105 57.667 -42.247 -0.765 1.00 15.27 A N
 ATOM 791 CA ARG A 105 57.594 -40.801 -0.677 1.00 14.68 A C
 ATOM 792 CB ARG A 105 58.499 -40.268 0.421 1.00 17.00 A C
 ATOM 793 CG ARG A 105 58.556 -38.738 0.484 1.00 19.27 A C
 ATOM 794 CD ARG A 105 59.130 -38.281 1.770 1.00 17.80 A C
 ATOM 795 NE ARG A 105 60.520 -38.658 1.963 1.00 17.60 A N
 ATOM 796 CZ ARG A 105 61.557 -38.046 1.397 1.00 22.34 A C
 ATOM 797 NH1 ARG A 105 61.364 -37.013 0.572 1.00 19.72 A N
 ATOM 798 NH2 ARG A 105 62.788 -38.451 1.669 1.00 21.62 A N
 ATOM 799 C ARG A 105 57.937 -40.152 -2.012 1.00 13.92 A C
 ATOM 800 O ARG A 105 57.207 -39.275 -2.486 1.00 14.65 A O
 ATOM 801 N LEU A 106 59.043 -40.581 -2.615 1.00 13.96 A N
 ATOM 802 CA LEU A 106 59.471 -39.954 -3.871 1.00 16.38 A C
 ATOM 803 CB LEU A 106 60.839 -40.462 -4.268 1.00 16.84 A C
 ATOM 804 CG LEU A 106 61.981 -40.096 -3.297 1.00 16.96 A C
 ATOM 805 CD1 LEU A 106 63.275 -40.704 -3.883 1.00 19.16 A C
 ATOM 806 CD2 LEU A 106 62.114 -38.588 -3.196 1.00 14.34 A C
 ATOM 807 C LEU A 106 58.466 -40.183 -4.994 1.00 14.71 A C
 ATOM 808 O LEU A 106 58.182 -39.290 -5.790 1.00 15.17 A O
 ATOM 809 N LEU A 107 57.956 -41.391 -5.073 1.00 15.41 A N
 ATOM 810 CA LEU A 107 56.965 -41.740 -6.101 1.00 16.47 A C
 ATOM 811 CB LEU A 107 56.653 -43.241 -6.076 1.00 14.69 A C
 ATOM 812 CG LEU A 107 57.725 -44.138 -6.672 1.00 17.19 A C
 ATOM 813 CD1 LEU A 107 57.512 -45.649 -6.276 1.00 18.03 A C
 ATOM 814 CD2 LEU A 107 57.844 -43.928 -8.194 1.00 16.63 A C
 ATOM 815 C LEU A 107 55.711 -40.922 -5.932 1.00 15.60 A C
 ATOM 816 O LEU A 107 55.210 -40.309 -6.903 1.00 16.24 A O
 ATOM 817 N ARG A 108 55.180 -40.886 -4.714 1.00 15.68 A N
 ATOM 818 CA ARG A 108 53.935 -40.108 -4.511 1.00 17.82 A C
 ATOM 819 CB ARG A 108 53.336 -40.378 -3.139 1.00 16.80 A C
 ATOM 820 CG ARG A 108 52.034 -39.599 -2.956 1.00 20.62 A C
 ATOM 821 CD ARG A 108 51.224 -40.093 -1.772 1.00 21.54 A C
 ATOM 822 NE ARG A 108 50.578 -41.371 -2.062 1.00 15.38 A N
 ATOM 823 CZ ARG A 108 49.816 -42.031 -1.185 1.00 17.50 A C
 ATOM 824 NH1 ARG A 108 49.653 -41.589 0.055 1.00 17.78 A N
 ATOM 825 NH2 ARG A 108 49.260 -43.161 -1.528 1.00 16.16 A N
 ATOM 826 C ARG A 108 54.151 -38.613 -4.684 1.00 17.00 A C
 ATOM 827 O ARG A 108 53.341 -37.933 -5.282 1.00 15.18 A O
 ATOM 828 N GLN A 109 55.282 -38.102 -4.198 1.00 15.43 A N
 ATOM 829 CA GLN A 109 55.646 -36.687 -4.480 1.00 15.25 A C
 ATOM 830 CB GLN A 109 57.057 -36.399 -3.970 1.00 18.89 A C
 ATOM 831 CG GLN A 109 57.597 -35.012 -4.344 1.00 21.63 A C
 ATOM 832 CD GLN A 109 59.039 -34.827 -3.929 1.00 26.03 A C
 ATOM 833 OE1 GLN A 109 59.661 -35.719 -3.314 1.00 20.78 A O
 ATOM 834 NE2 GLN A 109 59.581 -33.631 -4.227 1.00 23.99 A N
 ATOM 835 C GLN A 109 55.597 -36.324 -5.991 1.00 18.63 A C
 ATOM 836 O GLN A 109 55.168 -35.217 -6.367 1.00 16.12 A O
 ATOM 837 N HIS A 110 56.041 -37.249 -6.829 1.00 14.77 A N
 ATOM 838 CA HIS A 110 56.118 -37.033 -8.254 1.00 18.76 A C
 ATOM 839 CB HIS A 110 57.440 -37.571 -8.778 1.00 18.80 A C
 ATOM 840 CG HIS A 110 58.607 -36.694 -8.382 1.00 19.46 A C
 ATOM 841 ND1 HIS A 110 58.915 -35.561 -9.062 1.00 16.75 A N
 ATOM 842 CE1 HIS A 110 59.958 -34.950 -8.464 1.00 22.03 A C
 ATOM 843 NE2 HIS A 110 60.273 -35.659 -7.354 1.00 18.94 A N
 ATOM 844 CD2 HIS A 110 59.454 -36.747 -7.293 1.00 14.42 A C
 ATOM 845 C HIS A 110 54.906 -37.567 -8.983 1.00 21.66 A C
 ATOM 846 O HIS A 110 54.937 -37.766 -10.194 1.00 22.45 A O
 ATOM 847 N GLY A 111 53.809 -37.778 -8.244 1.00 19.21 A N
 ATOM 848 CA GLY A 111 52.491 -38.034 -8.880 1.00 18.67 A C
 ATOM 849 C GLY A 111 52.232 -39.478 -9.221 1.00 20.43 A C
 ATOM 850 O GLY A 111 51.223 -39.775 -9.806 1.00 18.90 A O

ATOM 851 N PHE A 112 53.133 -40.398 -8.881 1.00 16.53 A N
 ATOM 852 CA PHE A 112 52.923 -41.809 -9.224 1.00 18.88 A C
 ATOM 853 CB PHE A 112 54.206 -42.618 -9.179 1.00 19.65 A C
 ATOM 854 CG PHE A 112 55.188 -42.250 -10.259 1.00 23.54 A C
 ATOM 855 CD1 PHE A 112 56.062 -41.200 -10.077 1.00 20.65 A C
 ATOM 856 CE1 PHE A 112 56.994 -40.852 -11.057 1.00 25.46 A C
 ATOM 857 CZ PHE A 112 57.021 -41.536 -12.241 1.00 28.69 A C
 ATOM 858 CE2 PHE A 112 56.124 -42.597 -12.452 1.00 31.25 A C
 ATOM 859 CD2 PHE A 112 55.224 -42.953 -11.457 1.00 29.23 A C
 ATOM 860 C PHE A 112 51.987 -42.405 -8.200 1.00 23.31 A C
 ATOM 861 O PHE A 112 51.922 -41.949 -7.065 1.00 20.49 A O
 ATOM 862 N GLU A 113 51.300 -43.461 -8.614 1.00 24.49 A N
 ATOM 863 CA GLU A 113 50.309 -44.144 -7.796 1.00 25.45 A C
 ATOM 864 CB GLU A 113 49.280 -44.839 -8.720 1.00 37.67 A C
 ATOM 865 CG GLU A 113 47.845 -44.840 -8.204 1.00 58.64 A C
 ATOM 866 CD GLU A 113 46.794 -45.024 -9.330 1.00 81.44 A C
 ATOM 867 OE1 GLU A 113 46.982 -45.896 -10.209 1.00 68.75 A O
 ATOM 868 OE2 GLU A 113 45.775 -44.293 -9.335 1.00 86.73 A O
 ATOM 869 C GLU A 113 51.001 -45.194 -6.966 1.00 23.08 A C
 ATOM 870 O GLU A 113 51.580 -46.140 -7.493 1.00 20.88 A O
 ATOM 871 N VAL A 114 50.965 -45.033 -5.651 1.00 19.99 A N
 ATOM 872 CA VAL A 114 51.518 -46.025 -4.740 1.00 16.88 A C
 ATOM 873 CB VAL A 114 52.871 -45.623 -4.092 1.00 21.01 A C
 ATOM 874 CG1 VAL A 114 54.053 -45.879 -5.042 1.00 25.38 A C
 ATOM 875 CG2 VAL A 114 52.874 -44.171 -3.610 1.00 15.30 A C
 ATOM 876 C VAL A 114 50.478 -46.235 -3.655 1.00 19.88 A C
 ATOM 877 O VAL A 114 49.692 -45.345 -3.373 1.00 17.02 A O
 ATOM 878 N SER A 115 50.457 -47.431 -3.086 1.00 18.74 A N
 ATOM 879 CA SER A 115 49.473 -47.822 -2.108 1.00 20.78 A C
 ATOM 880 CB SER A 115 48.783 -49.095 -2.633 1.00 28.67 A C
 ATOM 881 OG SER A 115 48.317 -49.928 -1.594 1.00 27.83 A O
 ATOM 882 C SER A 115 50.108 -48.124 -0.765 1.00 15.47 A C
 ATOM 883 O SER A 115 51.221 -48.652 -0.693 1.00 18.09 A O
 ATOM 884 N GLN A 116 49.376 -47.894 0.318 1.00 17.33 A N
 ATOM 885 CA GLN A 116 49.869 -48.283 1.669 1.00 18.18 A C
 ATOM 886 CB GLN A 116 48.875 -47.859 2.754 1.00 19.83 A C
 ATOM 887 CG GLN A 116 47.500 -48.590 2.766 1.00 19.69 A C
 ATOM 888 CD GLN A 116 46.636 -48.180 3.948 1.00 19.13 A C
 ATOM 889 OE1 GLN A 116 47.048 -47.385 4.805 1.00 17.20 A O
 ATOM 890 NE2 GLN A 116 45.449 -48.739 4.019 1.00 23.50 A N
 ATOM 891 C GLN A 116 50.179 -49.768 1.813 1.00 21.60 A C
 ATOM 892 O GLN A 116 50.854 -50.171 2.766 1.00 18.86 A O
 ATOM 893 N GLU A 117 49.703 -50.605 0.882 1.00 16.60 A N
 ATOM 894 CA GLU A 117 50.018 -52.032 0.917 1.00 18.43 A C
 ATOM 895 CB GLU A 117 49.217 -52.835 -0.141 1.00 23.92 A C
 ATOM 896 CG GLU A 117 47.699 -52.752 0.019 1.00 28.14 A C
 ATOM 897 CD GLU A 117 46.922 -53.442 -1.115 1.00 42.18 A C
 ATOM 898 OE1 GLU A 117 47.415 -54.462 -1.646 1.00 41.50 A O
 ATOM 899 OE2 GLU A 117 45.818 -52.963 -1.482 1.00 41.18 A O
 ATOM 900 C GLU A 117 51.502 -52.288 0.664 1.00 21.27 A C
 ATOM 901 O GLU A 117 51.981 -53.374 0.962 1.00 19.92 A O
 ATOM 902 N ALA A 118 52.227 -51.315 0.111 1.00 19.55 A N
 ATOM 903 CA ALA A 118 53.695 -51.444 -0.034 1.00 22.80 A C
 ATOM 904 CB ALA A 118 54.294 -50.191 -0.610 1.00 18.03 A C
 ATOM 905 C ALA A 118 54.403 -51.768 1.300 1.00 20.01 A C
 ATOM 906 O ALA A 118 55.498 -52.326 1.310 1.00 20.69 A O
 ATOM 907 N PHE A 119 53.786 -51.388 2.412 1.00 19.91 A N
 ATOM 908 CA PHE A 119 54.346 -51.646 3.740 1.00 18.27 A C
 ATOM 909 CB PHE A 119 53.972 -50.475 4.640 1.00 19.18 A C
 ATOM 910 CG PHE A 119 54.607 -49.177 4.191 1.00 22.08 A C
 ATOM 911 CD1 PHE A 119 55.972 -48.965 4.382 1.00 17.84 A C
 ATOM 912 CE1 PHE A 119 56.570 -47.809 3.937 1.00 20.07 A C
 ATOM 913 CZ PHE A 119 55.815 -46.844 3.280 1.00 19.50 A C
 ATOM 914 CE2 PHE A 119 54.461 -47.059 3.050 1.00 22.32 A C
 ATOM 915 CD2 PHE A 119 53.860 -48.217 3.523 1.00 20.27 A C
 ATOM 916 C PHE A 119 53.925 -52.953 4.410 1.00 19.87 A C

ATOM 917 O PHE A 119 54.400 -53.271 5.514 1.00 22.50 A O
 ATOM 918 N SER A 120 53.061 -53.726 3.766 1.00 24.30 A N
 ATOM 919 CA SER A 120 52.478 -54.936 4.418 1.00 25.36 A C
 ATOM 920 CB SER A 120 51.376 -55.544 3.542 1.00 29.84 A C
 ATOM 921 OG SER A 120 51.975 -56.159 2.408 1.00 29.25 A O
 ATOM 922 C SER A 120 53.508 -56.013 4.769 1.00 27.38 A C
 ATOM 923 O SER A 120 53.388 -56.673 5.790 1.00 37.36 A O
 ATOM 924 N GLY A 121 54.529 -56.169 3.940 1.00 28.63 A N
 ATOM 925 CA GLY A 121 55.647 -57.065 4.236 1.00 29.21 A C
 ATOM 926 C GLY A 121 56.476 -56.757 5.498 1.00 34.22 A C
 ATOM 927 O GLY A 121 57.318 -57.556 5.871 1.00 30.84 A O
 ATOM 928 N PHE A 122 56.255 -55.625 6.167 1.00 29.27 A N
 ATOM 929 CA PHE A 122 57.066 -55.273 7.353 1.00 33.84 A C
 ATOM 930 CB PHE A 122 57.660 -53.861 7.177 1.00 32.20 A C
 ATOM 931 CG PHE A 122 58.428 -53.715 5.909 1.00 29.16 A C
 ATOM 932 CD1 PHE A 122 59.689 -54.290 5.789 1.00 25.93 A C
 ATOM 933 CE1 PHE A 122 60.388 -54.214 4.619 1.00 25.17 A C
 ATOM 934 CZ PHE A 122 59.840 -53.563 3.519 1.00 26.81 A C
 ATOM 935 CE2 PHE A 122 58.576 -53.009 3.606 1.00 22.72 A C
 ATOM 936 CD2 PHE A 122 57.865 -53.090 4.803 1.00 23.54 A C
 ATOM 937 C PHE A 122 56.295 -55.360 8.661 1.00 31.14 A C
 ATOM 938 O PHE A 122 56.692 -54.770 9.656 1.00 26.44 A O
 ATOM 939 N LYS A 123 55.192 -56.098 8.667 1.00 39.19 A N
 ATOM 940 CA LYS A 123 54.360 -56.188 9.851 1.00 38.73 A C
 ATOM 941 CB LYS A 123 52.932 -55.746 9.513 1.00 47.70 A C
 ATOM 942 CG LYS A 123 52.836 -54.210 9.399 1.00 45.24 A C
 ATOM 943 CD LYS A 123 51.787 -53.696 8.414 1.00 64.96 A C
 ATOM 944 CE LYS A 123 50.467 -53.329 9.085 1.00 67.08 A C
 ATOM 945 NZ LYS A 123 50.584 -52.199 10.038 1.00 69.25 A N
 ATOM 946 C LYS A 123 54.477 -57.590 10.466 1.00 43.53 A C
 ATOM 947 O LYS A 123 54.903 -58.527 9.796 1.00 37.81 A O
 ATOM 948 N ASP A 124 54.210 -57.698 11.766 1.00 38.56 A N
 ATOM 949 CA ASP A 124 54.230 -58.999 12.466 1.00 39.95 A C
 ATOM 950 CB ASP A 124 54.587 -58.824 13.956 1.00 33.62 A C
 ATOM 951 CG ASP A 124 53.546 -58.010 14.740 1.00 39.27 A C
 ATOM 952 OD1 ASP A 124 52.345 -58.051 14.417 1.00 40.78 A O
 ATOM 953 OD2 ASP A 124 53.934 -57.317 15.698 1.00 44.37 A O
 ATOM 954 C ASP A 124 52.888 -59.715 12.305 1.00 42.17 A C
 ATOM 955 O ASP A 124 51.982 -59.208 11.641 1.00 30.57 A O
 ATOM 956 N GLN A 125 52.767 -60.897 12.910 1.00 50.65 A N
 ATOM 957 CA GLN A 125 51.522 -61.676 12.898 1.00 53.07 A C
 ATOM 958 CB GLN A 125 51.649 -62.870 13.837 1.00 54.97 A C
 ATOM 959 CG GLN A 125 52.666 -63.899 13.383 1.00 73.54 A C
 ATOM 960 CD GLN A 125 52.683 -65.136 14.270 1.00 83.04 A C
 ATOM 961 OE1 GLN A 125 51.999 -65.200 15.297 1.00 76.17 A O
 ATOM 962 NE2 GLN A 125 53.467 -66.130 13.871 1.00 79.73 A N
 ATOM 963 C GLN A 125 50.297 -60.856 13.305 1.00 49.63 A C
 ATOM 964 O GLN A 125 49.229 -60.995 12.715 1.00 52.74 A O
 ATOM 965 N ASN A 126 50.461 -59.997 14.309 1.00 45.11 A N
 ATOM 966 CA ASN A 126 49.374 -59.122 14.775 1.00 43.91 A C
 ATOM 967 CB ASN A 126 49.619 -58.769 16.235 1.00 42.50 A C
 ATOM 968 CG ASN A 126 49.596 -59.982 17.103 1.00 45.99 A C
 ATOM 969 OD1 ASN A 126 48.573 -60.658 17.196 1.00 47.17 A O
 ATOM 970 ND2 ASN A 126 50.732 -60.305 17.709 1.00 43.81 A N
 ATOM 971 C ASN A 126 49.128 -57.835 13.976 1.00 44.06 A C
 ATOM 972 O ASN A 126 48.339 -56.983 14.403 1.00 47.73 A O
 ATOM 973 N GLY A 127 49.792 -57.684 12.831 1.00 43.62 A N
 ATOM 974 CA GLY A 127 49.616 -56.490 11.994 1.00 44.43 A C
 ATOM 975 C GLY A 127 50.232 -55.197 12.530 1.00 47.04 A C
 ATOM 976 O GLY A 127 49.812 -54.100 12.156 1.00 47.00 A O
 ATOM 977 N ASN A 128 51.230 -55.319 13.399 1.00 37.90 A N
 ATOM 978 CA ASN A 128 51.984 -54.167 13.866 1.00 36.92 A C
 ATOM 979 CB ASN A 128 52.093 -54.194 15.390 1.00 39.55 A C
 ATOM 980 CG ASN A 128 50.737 -54.083 16.064 1.00 42.96 A C
 ATOM 981 OD1 ASN A 128 49.899 -53.270 15.669 1.00 46.29 A O
 ATOM 982 ND2 ASN A 128 50.505 -54.914 17.065 1.00 42.44 A N

ATOM 983 C ASN A 128 53.354 -54.202 13.209 1.00 35.45 A C
 ATOM 984 O ASN A 128 53.845 -55.273 12.874 1.00 34.29 A O
 ATOM 985 N PHE A 129 53.963 -53.038 12.987 1.00 32.75 A N
 ATOM 986 CA PHE A 129 55.312 -53.016 12.427 1.00 28.49 A C
 ATOM 987 CB PHE A 129 55.810 -51.580 12.253 1.00 29.22 A C
 ATOM 988 CG PHE A 129 55.204 -50.885 11.092 1.00 29.65 A C
 ATOM 989 CD1 PHE A 129 55.786 -50.992 9.836 1.00 27.09 A C
 ATOM 990 CE1 PHE A 129 55.219 -50.342 8.749 1.00 31.01 A C
 ATOM 991 CZ PHE A 129 54.041 -49.610 8.912 1.00 28.34 A C
 ATOM 992 CE2 PHE A 129 53.452 -49.507 10.162 1.00 30.20 A C
 ATOM 993 CD2 PHE A 129 54.031 -50.146 11.245 1.00 28.89 A C
 ATOM 994 C PHE A 129 56.253 -53.813 13.341 1.00 28.78 A C
 ATOM 995 O PHE A 129 56.181 -53.707 14.560 1.00 29.83 A O
 ATOM 996 N LEU A 130 57.101 -54.628 12.731 1.00 32.19 A N
 ATOM 997 CA LEU A 130 58.044 -55.487 13.451 1.00 35.11 A C
 ATOM 998 CB LEU A 130 58.918 -56.250 12.457 1.00 35.91 A C
 ATOM 999 CG LEU A 130 58.165 -57.323 11.675 1.00 38.40 A C
 ATOM 1000 CD1 LEU A 130 58.839 -57.597 10.323 1.00 34.13 A C
 ATOM 1001 CD2 LEU A 130 58.069 -58.567 12.544 1.00 38.09 A C
 ATOM 1002 C LEU A 130 58.934 -54.660 14.360 1.00 37.04 A C
 ATOM 1003 O LEU A 130 59.544 -53.674 13.929 1.00 31.94 A O
 ATOM 1004 N GLU A 131 59.007 -55.079 15.615 1.00 34.55 A N
 ATOM 1005 CA GLU A 131 59.765 -54.383 16.651 1.00 39.68 A C
 ATOM 1006 CB GLU A 131 59.755 -55.210 17.955 1.00 38.76 A C
 ATOM 1007 CG GLU A 131 60.141 -54.423 19.214 1.00 49.60 A C
 ATOM 1008 CD GLU A 131 59.132 -53.343 19.593 1.00 56.31 A C
 ATOM 1009 OE1 GLU A 131 58.053 -53.260 18.966 1.00 67.91 A O
 ATOM 1010 OE2 GLU A 131 59.417 -52.571 20.528 1.00 59.92 A O
 ATOM 1011 C GLU A 131 61.206 -54.119 16.260 1.00 30.94 A C
 ATOM 1012 O GLU A 131 61.700 -53.017 16.467 1.00 34.37 A O
 ATOM 1013 N ASN A 132 61.858 -55.131 15.686 1.00 31.21 A N
 ATOM 1014 CA AASN A 132 63.297 -55.058 15.372 0.50 30.95 A C
 ATOM 1015 CA BASN A 132 63.289 -55.084 15.356 0.50 34.00 A C
 ATOM 1016 CB AASN A 132 63.837 -56.433 15.001 0.50 31.32 A C
 ATOM 1017 CB BASN A 132 63.799 -56.491 14.994 0.50 39.09 A C
 ATOM 1018 CG AASN A 132 63.341 -56.903 13.653 0.50 33.96 A C
 ATOM 1019 CG BASN A 132 62.692 -57.417 14.481 0.50 47.90 A C
 ATOM 1020 OD1AASN A 132 62.496 -56.254 13.027 0.50 27.33 A O
 ATOM 1021 OD1BASN A 132 61.662 -57.614 15.141 0.50 44.58 A O
 ATOM 1022 ND2AASN A 132 63.853 -58.047 13.199 0.50 32.74 A N
 ATOM 1023 ND2BASN A 132 62.911 -57.999 13.307 0.50 52.36 A N
 ATOM 1024 C ASN A 132 63.664 -54.083 14.250 1.00 40.19 A C
 ATOM 1025 O ASN A 132 64.858 -53.821 14.013 1.00 32.34 A O
 ATOM 1026 N LEU A 133 62.659 -53.549 13.546 1.00 31.58 A N
 ATOM 1027 CA LEU A 133 62.917 -52.495 12.573 1.00 31.84 A C
 ATOM 1028 CB LEU A 133 61.659 -52.164 11.744 1.00 29.65 A C
 ATOM 1029 CG LEU A 133 61.133 -53.293 10.858 1.00 32.70 A C
 ATOM 1030 CD1 LEU A 133 59.694 -52.974 10.379 1.00 32.29 A C
 ATOM 1031 CD2 LEU A 133 62.069 -53.575 9.682 1.00 33.92 A C
 ATOM 1032 C LEU A 133 63.403 -51.237 13.314 1.00 31.94 A C
 ATOM 1033 O LEU A 133 64.048 -50.367 12.708 1.00 31.35 A O
 ATOM 1034 N LYS A 134 63.109 -51.143 14.617 1.00 30.73 A N
 ATOM 1035 CA LYS A 134 63.553 -49.996 15.427 1.00 32.93 A C
 ATOM 1036 CB LYS A 134 63.018 -50.085 16.850 1.00 38.53 A C
 ATOM 1037 CG LYS A 134 63.773 -51.080 17.716 1.00 42.00 A C
 ATOM 1038 CD LYS A 134 63.062 -51.357 19.013 1.00 41.05 A C
 ATOM 1039 CE LYS A 134 63.823 -52.399 19.828 1.00 41.23 A C
 ATOM 1040 NZ LYS A 134 63.541 -52.187 21.252 1.00 33.39 A N
 ATOM 1041 C LYS A 134 65.084 -49.841 15.462 1.00 31.46 A C
 ATOM 1042 O LYS A 134 65.575 -48.762 15.719 1.00 33.74 A O
 ATOM 1043 N GLU A 135 65.819 -50.909 15.171 1.00 31.04 A N
 ATOM 1044 CA GLU A 135 67.285 -50.863 15.147 1.00 40.52 A C
 ATOM 1045 CB GLU A 135 67.896 -52.285 15.148 1.00 46.31 A C
 ATOM 1046 CG GLU A 135 67.394 -53.259 16.234 1.00 52.23 A C
 ATOM 1047 CD GLU A 135 67.544 -52.748 17.666 1.00 65.02 A C
 ATOM 1048 OE1 GLU A 135 68.300 -51.773 17.907 1.00 55.43 A O

ATOM 1049 OE2 GLU A 135 66.894 -53.344 18.559 1.00 73.29 A O
 ATOM 1050 C GLU A 135 67.836 -50.121 13.928 1.00 40.04 A C
 ATOM 1051 O GLU A 135 68.993 -49.709 13.920 1.00 37.69 A O
 ATOM 1052 N ASP A 136 67.023 -49.974 12.890 1.00 37.22 A N
 ATOM 1053 CA ASP A 136 67.463 -49.352 11.647 1.00 30.48 A C
 ATOM 1054 CB ASP A 136 66.916 -50.172 10.481 1.00 32.94 A C
 ATOM 1055 CG ASP A 136 67.367 -49.665 9.131 1.00 36.65 A C
 ATOM 1056 OD1 ASP A 136 67.881 -48.517 9.013 1.00 35.76 A O
 ATOM 1057 OD2 ASP A 136 67.167 -50.431 8.174 1.00 34.74 A O
 ATOM 1058 C ASP A 136 66.961 -47.907 11.616 1.00 33.39 A C
 ATOM 1059 O ASP A 136 65.886 -47.611 11.068 1.00 24.86 A O
 ATOM 1060 N ILE A 137 67.749 -47.001 12.191 1.00 24.88 A N
 ATOM 1061 CA ILE A 137 67.290 -45.633 12.403 1.00 24.01 A C
 ATOM 1062 CB ILE A 137 68.288 -44.799 13.186 1.00 26.01 A C
 ATOM 1063 CG1 ILE A 137 68.536 -45.436 14.570 1.00 36.15 A C
 ATOM 1064 CD1 ILE A 137 67.278 -45.976 15.270 1.00 28.86 A C
 ATOM 1065 CG2 ILE A 137 67.802 -43.339 13.300 1.00 23.28 A C
 ATOM 1066 C ILE A 137 66.954 -44.931 11.089 1.00 27.36 A C
 ATOM 1067 O ILE A 137 65.990 -44.175 11.016 1.00 22.50 A O
 ATOM 1068 N LYS A 138 67.742 -45.203 10.068 1.00 25.84 A N
 ATOM 1069 CA LYS A 138 67.586 -44.599 8.758 1.00 30.98 A C
 ATOM 1070 CB LYS A 138 68.696 -45.145 7.867 1.00 35.77 A C
 ATOM 1071 CG LYS A 138 69.312 -44.193 6.894 1.00 51.75 A C
 ATOM 1072 CD LYS A 138 70.032 -44.990 5.790 1.00 68.67 A C
 ATOM 1073 CE LYS A 138 71.089 -44.167 5.070 1.00 82.46 A C
 ATOM 1074 NZ LYS A 138 72.392 -44.194 5.792 1.00 86.22 A N
 ATOM 1075 C LYS A 138 66.216 -44.970 8.165 1.00 24.80 A C
 ATOM 1076 O LYS A 138 65.544 -44.145 7.542 1.00 23.16 A O
 ATOM 1077 N ALA A 139 65.859 -46.241 8.317 1.00 22.69 A N
 ATOM 1078 CA ALA A 139 64.604 -46.794 7.816 1.00 19.20 A C
 ATOM 1079 CB ALA A 139 64.639 -48.355 7.913 1.00 20.06 A C
 ATOM 1080 C ALA A 139 63.437 -46.208 8.611 1.00 22.32 A C
 ATOM 1081 O ALA A 139 62.407 -45.830 8.055 1.00 22.17 A O
 ATOM 1082 N ILE A 140 63.600 -46.083 9.917 1.00 19.58 A N
 ATOM 1083 CA ILE A 140 62.562 -45.451 10.730 1.00 23.10 A C
 ATOM 1084 CB ILE A 140 62.613 -45.616 12.252 1.00 25.60 A C
 ATOM 1085 CG1 ILE A 140 62.907 -47.096 12.627 1.00 31.81 A C
 ATOM 1086 CD1 ILE A 140 61.752 -47.904 12.154 1.00 32.36 A C
 ATOM 1087 CG2 ILE A 140 61.679 -44.993 13.027 1.00 29.25 A C
 ATOM 1088 C ILE A 140 62.357 -43.966 10.391 1.00 19.14 A C
 ATOM 1089 O ILE A 140 61.212 -43.517 10.314 1.00 19.83 A O
 ATOM 1090 N LEU A 141 63.438 -43.206 10.198 1.00 16.95 A N
 ATOM 1091 CA LEU A 141 63.317 -41.813 9.748 1.00 21.76 A C
 ATOM 1092 CB LEU A 141 64.682 -41.174 9.505 1.00 23.37 A C
 ATOM 1093 CG LEU A 141 65.294 -40.491 10.709 1.00 29.38 A C
 ATOM 1094 CD1 LEU A 141 66.716 -40.101 10.366 1.00 26.91 A C
 ATOM 1095 CD2 LEU A 141 64.434 -39.292 11.112 1.00 25.25 A C
 ATOM 1096 C LEU A 141 62.534 -41.718 8.444 1.00 19.26 A C
 ATOM 1097 O LEU A 141 61.665 -40.862 8.277 1.00 17.44 A O
 ATOM 1098 N SER A 142 62.909 -42.587 7.511 1.00 18.27 A N
 ATOM 1099 CA SER A 142 62.341 -42.594 6.206 1.00 20.46 A C
 ATOM 1100 CB SER A 142 63.124 -43.548 5.321 1.00 26.53 A C
 ATOM 1101 OG SER A 142 62.814 -43.271 3.988 1.00 46.16 A O
 ATOM 1102 C SER A 142 60.847 -42.966 6.271 1.00 18.21 A C
 ATOM 1103 O SER A 142 60.037 -42.395 5.534 1.00 14.69 A O
 ATOM 1104 N LEU A 143 60.488 -43.888 7.172 1.00 16.13 A N
 ATOM 1105 CA LEU A 143 59.100 -44.268 7.381 1.00 17.04 A C
 ATOM 1106 CB LEU A 143 59.006 -45.525 8.279 1.00 15.69 A C
 ATOM 1107 CG LEU A 143 57.615 -46.033 8.546 1.00 14.71 A C
 ATOM 1108 CD1 LEU A 143 57.003 -46.535 7.244 1.00 16.08 A C
 ATOM 1109 CD2 LEU A 143 57.657 -47.149 9.631 1.00 15.44 A C
 ATOM 1110 C LEU A 143 58.311 -43.097 7.984 1.00 17.25 A C
 ATOM 1111 O LEU A 143 57.207 -42.802 7.561 1.00 15.03 A O
 ATOM 1112 N TYR A 144 58.912 -42.395 8.934 1.00 15.40 A N
 ATOM 1113 CA TYR A 144 58.325 -41.187 9.491 1.00 16.10 A C
 ATOM 1114 CB TYR A 144 59.225 -40.646 10.613 1.00 15.60 A C

ATOM 1115 CG TYR A 144 58.902 -39.282 11.170 1.00 16.31 A C
 ATOM 1116 CD1 TYR A 144 57.977 -39.090 12.193 1.00 16.83 A C
 ATOM 1117 CE1 TYR A 144 57.700 -37.787 12.674 1.00 19.48 A C
 ATOM 1118 CZ TYR A 144 58.351 -36.728 12.126 1.00 19.49 A C
 ATOM 1119 OH TYR A 144 58.165 -35.414 12.516 1.00 33.50 A O
 ATOM 1120 CE2 TYR A 144 59.229 -36.910 11.105 1.00 23.79 A C
 ATOM 1121 CD2 TYR A 144 59.496 -38.164 10.630 1.00 22.71 A C
 ATOM 1122 C TYR A 144 58.059 -40.146 8.400 1.00 16.74 A C
 ATOM 1123 O TYR A 144 56.955 -39.586 8.314 1.00 14.47 A O
 ATOM 1124 N GLU A 145 59.041 -39.909 7.530 1.00 15.21 A N
 ATOM 1125 CA GLU A 145 58.873 -38.862 6.509 1.00 15.72 A C
 ATOM 1126 CB GLU A 145 60.154 -38.637 5.722 1.00 18.15 A C
 ATOM 1127 CG GLU A 145 61.344 -38.139 6.595 1.00 19.87 A C
 ATOM 1128 CD GLU A 145 61.188 -36.679 7.108 1.00 24.51 A C
 ATOM 1129 OE1 GLU A 145 60.171 -36.021 6.801 1.00 29.03 A O
 ATOM 1130 OE2 GLU A 145 62.097 -36.173 7.820 1.00 28.27 A O
 ATOM 1131 C GLU A 145 57.738 -39.213 5.541 1.00 16.62 A C
 ATOM 1132 O GLU A 145 56.952 -38.359 5.182 1.00 15.05 A O
 ATOM 1133 N ALA A 146 57.690 -40.475 5.134 1.00 13.68 A N
 ATOM 1134 CA ALA A 146 56.692 -40.980 4.200 1.00 15.91 A C
 ATOM 1135 CB ALA A 146 56.968 -42.430 3.894 1.00 12.43 A C
 ATOM 1136 C ALA A 146 55.265 -40.849 4.755 1.00 15.88 A C
 ATOM 1137 O ALA A 146 54.344 -40.597 4.002 1.00 16.60 A O
 ATOM 1138 N SER A 147 55.099 -41.014 6.068 1.00 14.09 A N
 ATOM 1139 CA SER A 147 53.764 -41.019 6.688 1.00 14.89 A C
 ATOM 1140 CB SER A 147 53.879 -41.395 8.172 1.00 15.06 A C
 ATOM 1141 OG SER A 147 54.428 -40.319 8.928 1.00 18.70 A O
 ATOM 1142 C SER A 147 53.002 -39.717 6.510 1.00 17.14 A C
 ATOM 1143 O SER A 147 51.777 -39.709 6.490 1.00 17.46 A O
 ATOM 1144 N PHE A 148 53.726 -38.612 6.309 1.00 15.93 A N
 ATOM 1145 CA PHE A 148 53.088 -37.334 6.131 1.00 15.22 A C
 ATOM 1146 CB PHE A 148 54.047 -36.189 6.491 1.00 16.39 A C
 ATOM 1147 CG PHE A 148 54.337 -36.123 7.963 1.00 15.45 A C
 ATOM 1148 CD1 PHE A 148 53.478 -35.439 8.819 1.00 17.42 A C
 ATOM 1149 CE1 PHE A 148 53.725 -35.385 10.197 1.00 19.59 A C
 ATOM 1150 CZ PHE A 148 54.841 -36.077 9.727 1.00 19.38 A C
 ATOM 1151 CE2 PHE A 148 55.653 -36.791 9.881 1.00 18.32 A C
 ATOM 1152 CD2 PHE A 148 55.405 -36.793 8.492 1.00 17.53 A C
 ATOM 1153 C PHE A 148 52.471 -37.155 4.762 1.00 15.54 A C
 ATOM 1154 O PHE A 148 51.778 -36.169 4.563 1.00 15.38 A O
 ATOM 1155 N LEU A 149 52.730 -38.080 3.830 1.00 15.31 A N
 ATOM 1156 CA LEU A 149 52.150 -37.987 2.482 1.00 18.47 A C
 ATOM 1157 CB LEU A 149 53.157 -38.474 1.415 1.00 18.22 A C
 ATOM 1158 CG LEU A 149 54.234 -37.445 1.047 1.00 21.82 A C
 ATOM 1159 CD1 LEU A 149 55.387 -37.390 2.130 1.00 19.29 A C
 ATOM 1160 CD2 LEU A 149 54.819 -37.691 -0.339 1.00 22.36 A C
 ATOM 1161 C LEU A 149 50.836 -38.752 2.370 1.00 16.60 A C
 ATOM 1162 O LEU A 149 50.307 -38.944 1.252 1.00 15.30 A O
 ATOM 1163 N ALA A 150 50.317 -39.173 3.517 1.00 15.81 A N
 ATOM 1164 CA ALA A 150 49.107 -39.941 3.618 1.00 17.34 A C
 ATOM 1165 CB ALA A 150 48.823 -40.301 5.087 1.00 15.45 A C
 ATOM 1166 C ALA A 150 47.881 -39.234 3.050 1.00 18.40 A C
 ATOM 1167 O ALA A 150 47.712 -38.025 3.186 1.00 16.98 A O
 ATOM 1168 N LEU A 151 46.981 -40.043 2.535 1.00 14.75 A N
 ATOM 1169 CA LEU A 151 45.632 -39.599 2.206 1.00 16.19 A C
 ATOM 1170 CB LEU A 151 45.243 -40.145 0.854 1.00 16.19 A C
 ATOM 1171 CG LEU A 151 46.247 -40.004 -0.282 1.00 19.06 A C
 ATOM 1172 CD1 LEU A 151 45.756 -40.681 -1.566 1.00 22.57 A C
 ATOM 1173 CD2 LEU A 151 46.541 -38.559 -0.537 1.00 16.77 A C
 ATOM 1174 C LEU A 151 44.652 -40.073 3.254 1.00 13.22 A C
 ATOM 1175 O LEU A 151 44.974 -40.943 4.082 1.00 14.48 A O
 ATOM 1176 N GLU A 152 43.417 -39.593 3.181 1.00 14.18 A N
 ATOM 1177 CA GLU A 152 42.394 -40.062 4.089 1.00 14.14 A C
 ATOM 1178 CB GLU A 152 41.085 -39.287 3.961 1.00 18.51 A C
 ATOM 1179 CG GLU A 152 41.129 -37.846 4.564 1.00 23.96 A C
 ATOM 1180 CD GLU A 152 39.734 -37.206 4.652 1.00 32.90 A C

ATOM 1181 OE1 GLU A 152 39.168 -36.845 3.585 1.00 28.65 A O
 ATOM 1182 OE2 GLU A 152 39.196 -37.096 5.785 1.00 31.52 A O
 ATOM 1183 C GLU A 152 42.172 -41.546 3.898 1.00 17.44 A C
 ATOM 1184 O GLU A 152 42.205 -42.036 2.782 1.00 14.59 A O
 ATOM 1185 N GLY A 153 41.970 -42.249 5.014 1.00 15.78 A N
 ATOM 1186 CA GLY A 153 41.818 -43.699 5.015 1.00 16.99 A C
 ATOM 1187 C GLY A 153 43.081 -44.544 4.948 1.00 14.91 A C
 ATOM 1188 O GLY A 153 42.992 -45.752 5.026 1.00 13.14 A O
 ATOM 1189 N GLU A 154 44.258 -43.937 4.852 1.00 13.94 A N
 ATOM 1190 CA GLU A 154 45.497 -44.703 4.823 1.00 16.14 A C
 ATOM 1191 CB GLU A 154 46.542 -44.018 3.943 1.00 16.91 A C
 ATOM 1192 CG GLU A 154 46.197 -44.125 2.469 1.00 18.41 A C
 ATOM 1193 CD GLU A 154 47.257 -43.609 1.503 1.00 23.40 A C
 ATOM 1194 OE1 GLU A 154 47.955 -42.590 1.798 1.00 17.72 A O
 ATOM 1195 OE2 GLU A 154 47.356 -44.194 0.395 1.00 19.66 A O
 ATOM 1196 C GLU A 154 45.975 -44.935 6.269 1.00 17.71 A C
 ATOM 1197 O GLU A 154 46.989 -44.389 6.726 1.00 14.88 A O
 ATOM 1198 N ASN A 155 45.247 -45.807 6.950 1.00 16.60 A N
 ATOM 1199 CA ASN A 155 45.489 -46.075 8.350 1.00 18.90 A C
 ATOM 1200 CB ASN A 155 44.434 -47.017 8.918 1.00 20.93 A C
 ATOM 1201 CG ASN A 155 44.443 -48.381 8.234 1.00 18.14 A C
 ATOM 1202 OD1 ASN A 155 44.241 -48.483 7.024 1.00 16.09 A O
 ATOM 1203 ND2 ASN A 155 44.679 -49.435 9.014 1.00 18.65 A N
 ATOM 1204 C ASN A 155 46.871 -46.650 8.630 1.00 20.12 A C
 ATOM 1205 O ASN A 155 47.401 -46.426 9.701 1.00 18.62 A O
 ATOM 1206 N ILE A 156 47.436 -47.399 7.682 1.00 16.20 A N
 ATOM 1207 CA ILE A 156 48.771 -47.949 7.861 1.00 16.77 A C
 ATOM 1208 CB ILE A 156 49.116 -48.931 6.754 1.00 18.33 A C
 ATOM 1209 CG1 ILE A 156 48.132 -50.099 6.778 1.00 24.37 A C
 ATOM 1210 CD1 ILE A 156 48.422 -51.119 5.712 1.00 29.91 A C
 ATOM 1211 CG2 ILE A 156 50.550 -49.458 6.900 1.00 21.14 A C
 ATOM 1212 C ILE A 156 49.817 -46.837 7.948 1.00 19.06 A C
 ATOM 1213 O ILE A 156 50.766 -46.951 8.708 1.00 16.97 A O
 ATOM 1214 N LEU A 157 49.662 -45.765 7.172 1.00 17.32 A N
 ATOM 1215 CA ALEU A 157 50.602 -44.648 7.251 0.50 17.81 A C
 ATOM 1216 CA BLEU A 157 50.604 -44.657 7.252 0.50 18.60 A C
 ATOM 1217 CB ALEU A 157 50.464 -43.694 6.062 0.50 16.56 A C
 ATOM 1218 CB BLEU A 157 50.473 -43.735 6.042 0.50 18.39 A C
 ATOM 1219 CG ALEU A 157 51.257 -44.012 4.793 0.50 16.00 A C
 ATOM 1220 CG BLEU A 157 50.771 -44.416 4.705 0.50 18.36 A C
 ATOM 1221 CD1ALEU A 157 50.915 -45.378 4.215 0.50 14.54 A C
 ATOM 1222 CD1BLEU A 157 50.536 -43.465 3.509 0.50 19.37 A C
 ATOM 1223 CD2ALEU A 157 51.039 -42.915 3.747 0.50 14.62 A C
 ATOM 1224 CD2BLEU A 157 52.212 -44.943 4.712 0.50 22.52 A C
 ATOM 1225 C LEU A 157 50.439 -43.913 8.583 1.00 20.05 A C
 ATOM 1226 O LEU A 157 51.428 -43.499 9.195 1.00 17.15 A O
 ATOM 1227 N ASP A 158 49.207 -43.763 9.055 1.00 16.45 A N
 ATOM 1228 CA ASP A 158 48.995 -43.157 10.381 1.00 18.02 A C
 ATOM 1229 CB ASP A 158 47.495 -42.962 10.675 1.00 23.70 A C
 ATOM 1230 CG ASP A 158 46.899 -41.736 9.945 1.00 36.75 A C
 ATOM 1231 OD1 ASP A 158 47.640 -41.003 9.246 1.00 46.65 A O
 ATOM 1232 OD2 ASP A 158 45.680 -41.496 10.074 1.00 30.74 A O
 ATOM 1233 C ASP A 158 49.647 -43.996 11.493 1.00 21.85 A C
 ATOM 1234 O ASP A 158 50.281 -43.456 12.407 1.00 17.84 A O
 ATOM 1235 N GLU A 159 49.481 -45.306 11.415 1.00 17.82 A N
 ATOM 1236 CA GLU A 159 50.149 -46.251 12.356 1.00 22.88 A C
 ATOM 1237 CB GLU A 159 49.644 -47.683 12.101 1.00 21.78 A C
 ATOM 1238 CG GLU A 159 48.159 -47.853 12.486 1.00 27.20 A C
 ATOM 1239 CD GLU A 159 47.455 -49.026 11.768 1.00 33.26 A C
 ATOM 1240 OE1 GLU A 159 48.161 -49.941 11.281 1.00 33.28 A O
 ATOM 1241 OE2 GLU A 159 46.196 -49.014 11.697 1.00 41.36 A O
 ATOM 1242 C GLU A 159 51.682 -46.221 12.217 1.00 21.29 A C
 ATOM 1243 O GLU A 159 52.395 -46.328 13.204 1.00 18.19 A O
 ATOM 1244 N ALA A 160 52.170 -46.067 10.982 1.00 18.94 A N
 ATOM 1245 CA ALA A 160 53.604 -45.903 10.733 1.00 20.13 A C
 ATOM 1246 CB ALA A 160 53.902 -45.809 9.257 1.00 18.72 A C

ATOM 1247 C ALA A 160 54.142 -44.682 11.465 1.00 18.25 A C
 ATOM 1248 O ALA A 160 55.204 -44.741 12.055 1.00 20.17 A O
 ATOM 1249 N LYS A 161 53.422 -43.569 11.413 1.00 19.03 A N
 ATOM 1250 CA LYS A 161 53.870 -42.372 12.079 1.00 16.85 A C
 ATOM 1251 CB LYS A 161 52.987 -41.176 11.756 1.00 17.64 A C
 ATOM 1252 CG LYS A 161 53.497 -39.838 12.266 1.00 19.23 A C
 ATOM 1253 CD LYS A 161 52.393 -38.752 12.235 1.00 21.55 A C
 ATOM 1254 CE LYS A 161 51.991 -38.399 10.792 1.00 22.08 A C
 ATOM 1255 NZ LYS A 161 50.873 -37.403 10.754 1.00 28.22 A N
 ATOM 1256 C LYS A 161 53.971 -42.615 13.600 1.00 19.00 A C
 ATOM 1257 O LYS A 161 54.974 -42.238 14.208 1.00 21.46 A O
 ATOM 1258 N VAL A 162 52.955 -43.233 14.196 1.00 21.78 A N
 ATOM 1259 CA VAL A 162 52.939 -43.495 15.637 1.00 21.10 A C
 ATOM 1260 CB VAL A 162 51.618 -44.152 16.075 1.00 25.19 A C
 ATOM 1261 CG1 VAL A 162 51.737 -44.735 17.525 1.00 21.82 A C
 ATOM 1262 CG2 VAL A 162 50.480 -43.145 15.953 1.00 20.91 A C
 ATOM 1263 C VAL A 162 54.128 -44.369 16.042 1.00 22.12 A C
 ATOM 1264 O VAL A 162 54.817 -44.096 17.018 1.00 20.45 A O
 ATOM 1265 N PHE A 163 54.366 -45.415 15.278 1.00 21.27 A N
 ATOM 1266 CA PHE A 163 55.483 -46.320 15.521 1.00 23.48 A C
 ATOM 1267 CB PHE A 163 55.327 -47.472 14.531 1.00 20.49 A C
 ATOM 1268 CG PHE A 163 56.455 -48.422 14.504 1.00 21.07 A C
 ATOM 1269 CD1 PHE A 163 56.538 -49.457 15.445 1.00 23.36 A C
 ATOM 1270 CE1 PHE A 163 57.573 -50.363 15.398 1.00 22.92 A C
 ATOM 1271 CZ PHE A 163 58.538 -50.251 14.390 1.00 23.85 A C
 ATOM 1272 CE2 PHE A 163 58.440 -49.248 13.430 1.00 24.53 A C
 ATOM 1273 CD2 PHE A 163 57.401 -48.344 13.492 1.00 21.66 A C
 ATOM 1274 C PHE A 163 56.857 -45.607 15.401 1.00 23.17 A C
 ATOM 1275 O PHE A 163 57.719 -45.684 16.281 1.00 20.56 A O
 ATOM 1276 N ALA A 164 57.037 -44.867 14.322 1.00 19.68 A N
 ATOM 1277 CA ALA A 164 58.311 -44.248 14.037 1.00 18.42 A C
 ATOM 1278 CB ALA A 164 58.285 -43.579 12.677 1.00 13.78 A C
 ATOM 1279 C ALA A 164 58.636 -43.240 15.139 1.00 21.21 A C
 ATOM 1280 O ALA A 164 59.723 -43.286 15.723 1.00 22.03 A O
 ATOM 1281 N ILE A 165 57.682 -42.371 15.446 1.00 21.64 A N
 ATOM 1282 CA AILE A 165 57.833 -41.339 16.473 0.50 20.95 A C
 ATOM 1283 CA BILE A 165 57.909 -41.334 16.442 0.50 23.71 A C
 ATOM 1284 CB AILE A 165 56.517 -40.537 16.650 0.50 20.64 A C
 ATOM 1285 CB BILE A 165 56.732 -40.324 16.516 0.50 27.11 A C
 ATOM 1286 CG1AILE A 165 56.443 -39.411 15.618 0.50 21.15 A C
 ATOM 1287 CG1BILE A 165 57.136 -39.071 17.301 0.50 31.60 A C
 ATOM 1288 CD1AILE A 165 55.073 -38.748 15.482 0.50 18.04 A C
 ATOM 1289 CD1BILE A 165 55.959 -38.281 17.848 0.50 32.38 A C
 ATOM 1290 CG2AILE A 165 56.392 -40.001 18.089 0.50 21.87 A C
 ATOM 1291 CG2BILE A 165 55.525 -40.956 17.150 0.50 36.27 A C
 ATOM 1292 C ILE A 165 58.224 -41.952 17.815 1.00 24.18 A C
 ATOM 1293 O ILE A 165 59.101 -41.458 18.516 1.00 23.80 A O
 ATOM 1294 N SER A 166 57.560 -43.046 18.165 1.00 24.66 A N
 ATOM 1295 CA SER A 166 57.784 -43.709 19.445 1.00 25.26 A C
 ATOM 1296 CB SER A 166 56.838 -44.917 19.587 1.00 25.78 A C
 ATOM 1297 OG SER A 166 57.370 -46.095 18.941 1.00 29.45 A O
 ATOM 1298 C SER A 166 59.237 -44.173 19.578 1.00 26.55 A C
 ATOM 1299 O SER A 166 59.821 -44.112 20.648 1.00 30.51 A O
 ATOM 1300 N HIS A 167 59.807 -44.638 18.477 1.00 25.51 A N
 ATOM 1301 CA HIS A 167 61.160 -45.136 18.451 1.00 23.28 A C
 ATOM 1302 CB HIS A 167 61.278 -46.258 17.447 1.00 23.58 A C
 ATOM 1303 CG HIS A 167 60.569 -47.536 17.869 1.00 34.21 A C
 ATOM 1304 ND1 HIS A 167 60.813 -48.150 19.048 1.00 31.37 A N
 ATOM 1305 CE1 HIS A 167 60.052 -49.257 19.151 1.00 36.74 A C
 ATOM 1306 NE2 HIS A 167 59.321 -49.364 18.032 1.00 40.73 A N
 ATOM 1307 CD2 HIS A 167 59.604 -48.309 17.222 1.00 34.62 A C
 ATOM 1308 C HIS A 167 62.171 -44.054 18.194 1.00 29.12 A C
 ATOM 1309 O HIS A 167 63.315 -44.185 18.609 1.00 36.79 A O
 ATOM 1310 N LEU A 168 61.772 -42.951 17.561 1.00 22.31 A N
 ATOM 1311 CA LEU A 168 62.700 -41.854 17.326 1.00 21.97 A C
 ATOM 1312 CB LEU A 168 62.289 -41.008 16.130 1.00 24.55 A C

ATOM 1313 CG LEU A 168 62.324 -41.692 14.762 1.00 23.28 A C
 ATOM 1314 CD1 LEU A 168 61.510 -40.848 13.755 1.00 22.93 A C
 ATOM 1315 CD2 LEU A 168 63.755 -41.916 14.281 1.00 20.77 A C
 ATOM 1316 C LEU A 168 62.839 -40.917 18.528 1.00 25.89 A C
 ATOM 1317 O LEU A 168 63.890 -40.328 18.689 1.00 23.33 A O
 ATOM 1318 N LYS A 169 61.770 -40.764 19.323 1.00 22.50 A N
 ATOM 1319 CA LYS A 169 61.679 -39.744 20.370 1.00 27.82 A C
 ATOM 1320 CB LYS A 169 60.250 -39.667 20.937 1.00 34.22 A C
 ATOM 1321 CG LYS A 169 59.734 -38.249 21.087 1.00 50.55 A C
 ATOM 1322 CD LYS A 169 58.226 -38.198 21.357 1.00 58.76 A C
 ATOM 1323 CE LYS A 169 57.572 -37.025 20.621 1.00 62.12 A C
 ATOM 1324 NZ LYS A 169 56.090 -37.061 20.706 1.00 59.64 A N
 ATOM 1325 C LYS A 169 62.623 -40.088 21.520 1.00 37.79 A C
 ATOM 1326 O LYS A 169 63.068 -39.208 22.255 1.00 38.87 A O
 ATOM 1327 N GLU A 170 62.915 -41.374 21.668 1.00 33.46 A N
 ATOM 1328 CA GLU A 170 63.722 -41.860 22.772 1.00 50.73 A C
 ATOM 1329 CB GLU A 170 63.038 -43.071 23.433 1.00 58.58 A C
 ATOM 1330 CG GLU A 170 62.410 -42.749 24.796 1.00 74.37 A C
 ATOM 1331 CD GLU A 170 60.954 -42.354 24.711 1.00 82.28 A C
 ATOM 1332 OE1 GLU A 170 60.228 -42.912 23.857 1.00101.69 A O
 ATOM 1333 OE2 GLU A 170 60.532 -41.496 25.516 1.00 83.80 A O
 ATOM 1334 C GLU A 170 65.145 -42.221 22.362 1.00 53.62 A C
 ATOM 1335 O GLU A 170 65.836 -42.921 23.099 1.00 49.28 A O
 ATOM 1336 N LEU A 171 65.596 -41.737 21.208 1.00 46.07 A N
 ATOM 1337 CA LEU A 171 66.975 -41.966 20.799 1.00 47.42 A C
 ATOM 1338 CB LEU A 171 67.136 -41.777 19.294 1.00 39.33 A C
 ATOM 1339 CG LEU A 171 66.477 -42.875 18.462 1.00 38.86 A C
 ATOM 1340 CD1 LEU A 171 66.646 -42.622 16.958 1.00 29.01 A C
 ATOM 1341 CD2 LEU A 171 67.026 -44.265 18.848 1.00 41.31 A C
 ATOM 1342 C LEU A 171 67.929 -41.047 21.581 1.00 49.73 A C
 ATOM 1343 O LEU A 171 67.566 -39.919 21.935 1.00 42.22 A O
 ATOM 1344 N SER A 172 69.132 -41.559 21.852 1.00 55.46 A N
 ATOM 1345 CA SER A 172 70.192 -40.818 22.558 1.00 59.52 A C
 ATOM 1346 CB SER A 172 70.665 -41.614 23.788 1.00 67.88 A C
 ATOM 1347 OG SER A 172 71.656 -40.922 24.534 1.00 70.11 A O
 ATOM 1348 C SER A 172 71.370 -40.566 21.607 1.00 47.16 A C
 ATOM 1349 O SER A 172 71.831 -41.484 20.918 1.00 38.06 A O
 ATOM 1350 N GLU A 173 71.846 -39.324 21.572 1.00 44.33 A N
 ATOM 1351 CA GLU A 173 72.989 -38.930 20.733 1.00 48.18 A C
 ATOM 1352 CB GLU A 173 73.371 -37.480 21.048 1.00 51.55 A C
 ATOM 1353 CG GLU A 173 74.686 -37.024 20.417 1.00 54.88 A C
 ATOM 1354 CD GLU A 173 74.730 -35.532 20.179 1.00 65.93 A C
 ATOM 1355 OE1 GLU A 173 73.946 -34.790 20.812 1.00 65.86 A O
 ATOM 1356 OE2 GLU A 173 75.552 -35.103 19.344 1.00 83.90 A O
 ATOM 1357 C GLU A 173 74.236 -39.827 20.868 1.00 49.00 A C
 ATOM 1358 O GLU A 173 74.931 -40.082 19.870 1.00 37.80 A O
 ATOM 1359 N GLU A 174 74.515 -40.280 22.096 1.00 48.12 A N
 ATOM 1360 CA GLU A 174 75.612 -41.220 22.363 1.00 55.68 A C
 ATOM 1361 CB GLU A 174 75.771 -41.484 23.865 1.00 58.22 A C
 ATOM 1362 CG GLU A 174 76.324 -40.317 24.665 1.00 69.42 A C
 ATOM 1363 CD GLU A 174 75.241 -39.438 25.253 1.00 76.47 A C
 ATOM 1364 OE1 GLU A 174 74.227 -39.181 24.565 1.00 73.99 A O
 ATOM 1365 OE2 GLU A 174 75.408 -39.001 26.410 1.00 85.80 A O
 ATOM 1366 C GLU A 174 75.392 -42.552 21.660 1.00 57.03 A C
 ATOM 1367 O GLU A 174 76.314 -43.095 21.047 1.00 61.24 A O
 ATOM 1368 N LYS A 175 74.175 -43.079 21.763 1.00 57.03 A N
 ATOM 1369 CA LYS A 175 73.825 -44.340 21.102 1.00 64.40 A C
 ATOM 1370 CB LYS A 175 72.351 -44.714 21.353 1.00 84.22 A C
 ATOM 1371 CG LYS A 175 71.929 -44.855 22.825 1.00 94.98 A C
 ATOM 1372 CD LYS A 175 71.932 -46.299 23.316 1.00 97.31 A C
 ATOM 1373 CE LYS A 175 71.585 -46.374 24.798 1.00 88.82 A C
 ATOM 1374 NZ LYS A 175 71.600 -47.764 25.317 1.00 78.69 A N
 ATOM 1375 C LYS A 175 74.066 -44.248 19.591 1.00 61.10 A C
 ATOM 1376 O LYS A 175 74.760 -45.094 19.018 1.00 53.35 A O
 ATOM 1377 N ILE A 176 73.517 -43.208 18.954 1.00 42.18 A N
 ATOM 1378 CA ILE A 176 73.412 -43.188 17.487 1.00 41.76 A C
 ATOM 1379 CB ILE A 176 71.963 -42.835 17.019 1.00 39.25 A C
 ATOM 1380 CG1 ILE A 176 71.533 -41.438 17.477 1.00 35.80 A C
 ATOM 1381 CD1 ILE A 176 70.242 -40.971 16.809 1.00 37.64 A C
 ATOM 1382 CG2 ILE A 176 70.983 -43.882 17.535 1.00 45.13 A C
 ATOM 1383 C ILE A 176 74.423 -42.324 16.734 1.00 37.07 A C
 ATOM 1384 O ILE A 176 74.591 -42.498 15.520 1.00 35.40 A O
 ATOM 1385 N GLY A 177 75.067 -41.391 17.429 1.00 35.06 A N
 ATOM 1386 CA GLY A 177 76.065 -40.512 16.812 1.00 33.17 A C
 ATOM 1387 C GLY A 177 75.500 -39.146 16.501 1.00 38.96 A C
 ATOM 1388 O GLY A 177 74.287 -38.986 16.355 1.00 31.32 A O
 ATOM 1389 N LYS A 178 76.389 -38.163 16.383 1.00 35.12 A N
 ATOM 1390 CA LYS A 178 75.995 -36.761 16.293 1.00 35.31 A C
 ATOM 1391 CB LYS A 178 77.215 -35.842 16.372 1.00 39.53 A C
 ATOM 1392 CG LYS A 178 76.882 -34.354 16.392 1.00 46.00 A C
 ATOM 1393 CD LYS A 178 78.060 -33.521 16.888 1.00 58.26 A C
 ATOM 1394 CE LYS A 178 77.714 -32.034 16.993 1.00 68.89 A C
 ATOM 1395 NZ LYS A 178 78.519 -31.320 18.047 1.00 71.94 A N
 ATOM 1396 C LYS A 178 75.207 -36.428 15.030 1.00 36.95 A C
 ATOM 1397 O LYS A 178 74.277 -35.624 15.086 1.00 31.16 A O
 ATOM 1398 N GLU A 179 75.578 -37.024 13.901 1.00 31.99 A N
 ATOM 1399 CA GLU A 179 74.988 -36.622 12.636 1.00 42.03 A C
 ATOM 1400 CB GLU A 179 75.912 -36.968 11.452 1.00 43.93 A C
 ATOM 1401 CG GLU A 179 75.578 -38.196 10.631 1.00 49.30 A C
 ATOM 1402 CD GLU A 179 76.495 -38.340 9.410 1.00 62.45 A C
 ATOM 1403 OE1 GLU A 179 77.641 -37.830 9.436 1.00 60.91 A O
 ATOM 1404 OE2 GLU A 179 76.069 -38.961 8.416 1.00 60.25 A O
 ATOM 1405 C GLU A 179 73.573 -37.211 12.520 1.00 44.22 A C
 ATOM 1406 O GLU A 179 72.636 -36.510 12.145 1.00 38.74 A O
 ATOM 1407 N LEU A 180 73.427 -38.485 12.883 1.00 32.17 A N
 ATOM 1408 CA LEU A 180 72.130 -39.120 12.907 1.00 37.01 A C
 ATOM 1409 CB LEU A 180 72.291 -40.623 13.123 1.00 36.21 A C
 ATOM 1410 CG LEU A 180 71.215 -41.550 12.596 1.00 39.58 A C
 ATOM 1411 CD1 LEU A 180 70.761 -41.185 11.164 1.00 39.66 A C
 ATOM 1412 CD2 LEU A 180 71.758 -42.977 12.663 1.00 43.88 A C
 ATOM 1413 C LEU A 180 71.218 -38.457 13.958 1.00 33.76 A C
 ATOM 1414 O LEU A 180 70.047 -38.205 13.694 1.00 27.31 A O
 ATOM 1415 N ALA A 181 71.749 -38.114 15.121 1.00 29.65 A N
 ATOM 1416 CA ALA A 181 70.945 -37.388 16.116 1.00 28.86 A C
 ATOM 1417 CB ALA A 181 71.716 -37.212 17.394 1.00 25.84 A C
 ATOM 1418 C ALA A 181 70.455 -36.028 15.597 1.00 31.37 A C
 ATOM 1419 O ALA A 181 69.320 -35.584 15.893 1.00 25.03 A O
 ATOM 1420 N GLU A 182 71.304 -35.359 14.825 1.00 25.42 A N
 ATOM 1421 CA GLU A 182 70.911 -34.077 14.240 1.00 27.62 A C
 ATOM 1422 CB GLU A 182 72.106 -33.365 13.594 1.00 33.59 A C
 ATOM 1423 CG GLU A 182 72.999 -32.617 14.607 1.00 53.21 A C
 ATOM 1424 CD GLU A 182 74.282 -32.037 13.996 1.00 74.57 A C
 ATOM 1425 OE1 GLU A 182 74.532 -32.231 12.783 1.00106.13 A O
 ATOM 1426 OE2 GLU A 182 75.042 -31.380 14.739 1.00 82.10 A O
 ATOM 1427 C GLU A 182 69.785 -34.274 13.209 1.00 19.86 A C
 ATOM 1428 O GLU A 182 68.862 -33.494 13.151 1.00 18.27 A O
 ATOM 1429 N GLN A 183 69.925 -35.293 12.377 1.00 20.24 A N
 ATOM 1430 CA AGLN A 183 68.906 -35.650 11.404 0.50 24.85 A C
 ATOM 1431 CA BGLN A 183 68.898 -35.606 11.398 0.50 21.35 A C
 ATOM 1432 CB AGLN A 183 69.366 -36.880 10.614 0.50 29.98 A C
 ATOM 1433 CB BGLN A 183 69.355 -36.749 10.483 0.50 20.81 A C
 ATOM 1434 CG AGLN A 183 68.795 -36.970 9.221 0.50 37.32 A C
 ATOM 1435 CG BGLN A 183 70.472 -36.372 9.497 0.50 19.34 A C
 ATOM 1436 CD AGLN A 183 69.349 -35.886 8.313 0.50 46.36 A C
 ATOM 1437 CDBGLN A 183 69.946 -35.727 8.205 0.50 24.20 A C
 ATOM 1438 OE1AGLN A 183 68.603 -35.049 7.809 0.50 48.56 A O
 ATOM 1439 OE1BGLN A 183 68.756 -35.827 7.885 0.50 23.40 A O
 ATOM 1440 NE2AGLN A 183 70.666 -35.889 8.115 0.50 45.01 A N
 ATOM 1441 NE2BGLN A 183 70.836 -35.076 7.456 0.50 23.18 A N
 ATOM 1442 C GLN A 183 67.589 -35.942 12.138 1.00 22.31 A C
 ATOM 1443 O GLN A 183 66.529 -35.497 11.740 1.00 20.24 A O
 ATOM 1444 N VAL A 184 67.668 -36.693 13.242 1.00 18.60 A N

ATOM 1445 CA VAL A 184 66.447 -37.108 13.963 1.00 21.87 A C
 ATOM 1446 CB VAL A 184 66.738 -38.177 15.046 1.00 21.28 A C
 ATOM 1447 CG1 VAL A 184 65.593 -38.311 16.034 1.00 22.68 A C
 ATOM 1448 CG2 VAL A 184 67.040 -39.504 14.410 1.00 25.19 A C
 ATOM 1449 C VAL A 184 65.769 -35.888 14.567 1.00 20.78 A C
 ATOM 1450 O VAL A 184 64.541 -35.696 14.458 1.00 16.58 A O
 ATOM 1451 N ASN A 185 66.563 -35.018 15.159 1.00 20.29 A N
 ATOM 1452 CA ASN A 185 65.995 -33.828 15.770 1.00 22.74 A C
 ATOM 1453 CB ASN A 185 67.032 -33.166 16.676 1.00 25.83 A C
 ATOM 1454 CG ASN A 185 67.369 -34.038 17.885 1.00 32.89 A C
 ATOM 1455 OD1 ASN A 185 66.486 -34.683 18.462 1.00 35.58 A O
 ATOM 1456 ND2 ASN A 185 68.638 -34.061 18.273 1.00 30.79 A N
 ATOM 1457 C ASN A 185 65.385 -32.857 14.764 1.00 19.89 A C
 ATOM 1458 O ASN A 185 64.363 -32.215 15.022 1.00 18.89 A O
 ATOM 1459 N HIS A 186 65.986 -32.748 13.604 1.00 16.79 A N
 ATOM 1460 CA HIS A 186 65.440 -31.895 12.565 1.00 18.43 A C
 ATOM 1461 CB HIS A 186 66.481 -31.869 11.432 1.00 19.47 A C
 ATOM 1462 CG HIS A 186 66.096 -31.083 10.223 1.00 17.10 A C
 ATOM 1463 ND1 HIS A 186 66.082 -29.746 10.200 1.00 18.23 A N
 ATOM 1464 CE1 HIS A 186 65.754 -29.318 8.970 1.00 19.21 A C
 ATOM 1465 NE2 HIS A 186 65.519 -30.394 8.197 1.00 21.37 A N
 ATOM 1466 CD2 HIS A 186 65.735 -31.506 8.930 1.00 18.75 A C
 ATOM 1467 C HIS A 186 64.074 -32.454 12.118 1.00 17.24 A C
 ATOM 1468 O HIS A 186 63.100 -31.701 11.979 1.00 18.68 A O
 ATOM 1469 N ALA A 187 64.009 -33.752 11.860 1.00 22.68 A N
 ATOM 1470 CA ALA A 187 62.779 -34.390 11.372 1.00 24.59 A C
 ATOM 1471 CB ALA A 187 63.058 -35.842 11.031 1.00 21.99 A C
 ATOM 1472 C ALA A 187 61.667 -34.277 12.434 1.00 22.96 A C
 ATOM 1473 O ALA A 187 60.504 -34.046 12.109 1.00 18.69 A O
 ATOM 1474 N LEU A 188 62.012 -34.390 13.709 1.00 21.42 A N
 ATOM 1475 CA LEU A 188 60.982 -34.344 14.756 1.00 22.89 A C
 ATOM 1476 CB LEU A 188 61.480 -34.957 16.080 1.00 23.79 A C
 ATOM 1477 CG LEU A 188 61.646 -36.475 16.124 1.00 22.25 A C
 ATOM 1478 CD1 LEU A 188 62.268 -36.936 17.462 1.00 22.43 A C
 ATOM 1479 CD2 LEU A 188 60.344 -37.182 15.918 1.00 20.82 A C
 ATOM 1480 C LEU A 188 60.512 -32.920 14.962 1.00 24.71 A C
 ATOM 1481 O LEU A 188 59.382 -32.685 15.358 1.00 24.58 A O
 ATOM 1482 N GLU A 189 61.360 -31.948 14.648 1.00 23.21 A N
 ATOM 1483 CA GLU A 189 60.919 -30.562 14.682 1.00 21.78 A C
 ATOM 1484 CB GLU A 189 62.129 -29.639 14.410 1.00 22.25 A C
 ATOM 1485 CG GLU A 189 61.841 -28.180 14.309 1.00 27.16 A C
 ATOM 1486 CD GLU A 189 63.068 -27.386 13.845 1.00 38.35 A C
 ATOM 1487 OE1 GLU A 189 63.522 -27.587 12.707 1.00 28.82 A O
 ATOM 1488 OE2 GLU A 189 63.586 -26.565 14.625 1.00 35.95 A O
 ATOM 1489 C GLU A 189 59.823 -30.339 13.653 1.00 22.39 A C
 ATOM 1490 O GLU A 189 58.838 -29.674 13.905 1.00 22.62 A O
 ATOM 1491 N LEU A 190 60.042 -30.830 12.448 1.00 20.61 A N
 ATOM 1492 CA LEU A 190 59.068 -30.652 11.378 1.00 21.06 A C
 ATOM 1493 CB LEU A 190 59.029 -29.194 10.897 1.00 22.31 A C
 ATOM 1494 CG LEU A 190 57.874 -28.842 9.980 1.00 24.65 A C
 ATOM 1495 CD1 LEU A 190 56.530 -28.855 10.791 1.00 21.42 A C
 ATOM 1496 CD2 LEU A 190 58.138 -27.521 9.235 1.00 22.03 A C
 ATOM 1497 C LEU A 190 59.506 -31.576 10.246 1.00 22.03 A C
 ATOM 1498 O LEU A 190 60.673 -31.522 9.828 1.00 18.81 A O
 ATOM 1499 N PRO A 191 58.591 -32.426 9.756 1.00 18.19 A N
 ATOM 1500 CA PRO A 191 58.901 -33.331 8.653 1.00 19.53 A C
 ATOM 1501 CB PRO A 191 57.674 -34.218 8.597 1.00 17.31 A C
 ATOM 1502 CG PRO A 191 56.584 -33.313 8.960 1.00 19.81 A C
 ATOM 1503 CD PRO A 191 57.155 -32.489 10.095 1.00 18.14 A C
 ATOM 1504 C PRO A 191 59.152 -32.627 7.314 1.00 20.66 A C
 ATOM 1505 O PRO A 191 58.700 -31.510 7.102 1.00 18.92 A O
 ATOM 1506 N LEU A 192 59.912 -33.291 6.446 1.00 17.57 A N
 ATOM 1507 CA LEU A 192 60.286 -32.789 5.145 1.00 20.14 A C
 ATOM 1508 CB LEU A 192 60.978 -33.891 4.319 1.00 22.36 A C
 ATOM 1509 CG LEU A 192 62.413 -34.264 4.632 1.00 31.34 A C
 ATOM 1510 CD1 LEU A 192 62.772 -35.494 3.770 1.00 26.77 A C
 ATOM 1511 CD2 LEU A 192 63.359 -33.091 4.320 1.00 29.88 A C
 ATOM 1512 C LEU A 192 59.094 -32.340 4.341 1.00 20.79 A C
 ATOM 1513 O LEU A 192 59.148 -31.339 3.689 1.00 19.46 A O
 ATOM 1514 N HIS A 193 57.999 -33.086 4.401 1.00 17.50 A N
 ATOM 1515 CA HIS A 193 56.821 -32.732 3.624 1.00 17.24 A C
 ATOM 1516 CB HIS A 193 55.788 -33.837 3.780 1.00 14.61 A C
 ATOM 1517 CG HIS A 193 54.676 -33.751 2.802 1.00 18.22 A C
 ATOM 1518 ND1 HIS A 193 54.894 -33.665 1.458 1.00 18.97 A N
 ATOM 1519 CE1 HIS A 193 53.700 -33.623 0.829 1.00 18.36 A C
 ATOM 1520 NE2 HIS A 193 52.728 -33.669 1.771 1.00 19.62 A N
 ATOM 1521 CD2 HIS A 193 53.299 -33.743 2.987 1.00 18.95 A C
 ATOM 1522 C HIS A 193 56.185 -31.400 3.964 1.00 17.41 A C
 ATOM 1523 O HIS A 193 55.452 -30.829 3.174 1.00 19.14 A O
 ATOM 1524 N ARG A 194 56.414 -30.930 5.178 1.00 16.56 A N
 ATOM 1525 CA ARG A 194 55.803 -29.723 5.675 1.00 17.28 A C
 ATOM 1526 CB ARG A 194 55.233 -29.988 7.064 1.00 16.73 A C
 ATOM 1527 CG ARG A 194 54.028 -30.930 7.015 1.00 19.35 A C
 ATOM 1528 CD ARG A 194 53.331 -31.021 8.393 1.00 18.87 A C
 ATOM 1529 NE ARG A 194 52.218 -31.951 8.267 1.00 20.89 A N
 ATOM 1530 CZ ARG A 194 51.433 -32.324 9.259 1.00 21.04 A C
 ATOM 1531 NH1 ARG A 194 51.656 -31.884 10.459 1.00 20.69 A N
 ATOM 1532 NH2 ARG A 194 50.448 -33.169 9.039 1.00 20.03 A N
 ATOM 1533 C ARG A 194 56.764 -28.511 5.759 1.00 19.33 A C
 ATOM 1534 O ARG A 194 56.309 -27.377 5.976 1.00 20.35 A O
 ATOM 1535 N ARG A 195 58.055 -28.752 5.574 1.00 16.40 A N
 ATOM 1536 CA ARG A 195 59.078 -27.720 5.665 1.00 18.30 A C
 ATOM 1537 CB ARG A 195 60.421 -28.339 6.048 1.00 19.38 A C
 ATOM 1538 CG ARG A 195 61.441 -27.274 6.475 1.00 23.23 A C
 ATOM 1539 CD ARG A 195 62.767 -27.849 7.050 1.00 24.25 A C
 ATOM 1540 NE ARG A 195 62.606 -28.724 8.219 1.00 20.99 A N
 ATOM 1541 CZ ARG A 195 62.751 -28.349 9.495 1.00 26.86 A C
 ATOM 1542 NH1 ARG A 195 63.093 -27.113 9.823 1.00 26.57 A N
 ATOM 1543 NH2 ARG A 195 62.590 -29.220 10.467 1.00 27.07 A N
 ATOM 1544 C ARG A 195 59.217 -26.991 4.328 1.00 19.93 A C
 ATOM 1545 O ARG A 195 59.170 -27.617 3.293 1.00 19.84 A O
 ATOM 1546 N THR A 196 59.429 -25.672 4.355 1.00 16.30 A N
 ATOM 1547 CA THR A 196 59.627 -24.921 3.106 1.00 19.56 A C
 ATOM 1548 CB THR A 196 59.574 -23.413 3.350 1.00 19.32 A C
 ATOM 1549 OG1 THR A 196 60.572 -23.099 4.291 1.00 20.58 A O
 ATOM 1550 CG2 THR A 196 58.206 -23.002 3.903 1.00 18.83 A C
 ATOM 1551 C THR A 196 60.978 -25.304 2.491 1.00 16.84 A C
 ATOM 1552 O THR A 196 61.868 -25.814 3.159 1.00 19.53 A O
 ATOM 1553 N GLN A 197 61.086 -25.091 1.198 1.00 18.95 A N
 ATOM 1554 CA GLN A 197 62.152 -25.667 0.394 1.00 17.43 A C
 ATOM 1555 CB GLN A 197 61.792 -25.510 -1.087 1.00 19.72 A C
 ATOM 1556 CG GLN A 197 62.470 -26.467 -2.029 1.00 21.47 A C
 ATOM 1557 CD GLN A 197 63.765 -25.922 -2.604 1.00 24.85 A C
 ATOM 1558 OE1 GLN A 197 64.341 -24.948 -2.093 1.00 22.95 A O
 ATOM 1559 NE2 GLN A 197 64.246 -26.559 -3.654 1.00 24.44 A N
 ATOM 1560 C GLN A 197 63.482 -24.977 0.751 1.00 18.31 A C
 ATOM 1561 O GLN A 197 64.481 -25.656 0.934 1.00 16.91 A O
 ATOM 1562 N ARG A 198 63.510 -23.641 0.845 1.00 17.97 A N
 ATOM 1563 CA ARG A 198 64.771 -22.925 1.163 1.00 17.51 A C
 ATOM 1564 CB ARG A 198 64.627 -21.404 1.010 1.00 18.00 A C
 ATOM 1565 CG ARG A 198 64.331 -20.959 -0.395 1.00 19.52 A C
 ATOM 1566 CD ARG A 198 65.652 -21.070 -1.293 1.00 19.02 A C
 ATOM 1567 NE ARG A 198 65.713 -22.398 -1.940 1.00 17.34 A N
 ATOM 1568 CZ ARG A 198 66.673 -22.781 -2.784 1.00 20.87 A C
 ATOM 1569 NH1 ARG A 198 67.691 -21.975 -3.039 1.00 19.28 A N
 ATOM 1570 NH2 ARG A 198 66.655 -23.989 -3.324 1.00 18.08 A N
 ATOM 1571 C ARG A 198 65.277 -23.251 2.552 1.00 18.33 A C
 ATOM 1572 O ARG A 198 66.478 -23.429 2.741 1.00 18.01 A O
 ATOM 1573 N LEU A 199 64.374 -23.387 3.531 1.00 18.80 A N
 ATOM 1574 CA LEU A 199 64.797 -23.716 4.898 1.00 19.16 A C
 ATOM 1575 CB LEU A 199 63.654 -23.615 5.918 1.00 26.01 A C
 ATOM 1576 CG LEU A 199 63.350 -22.263 6.543 1.00 25.56 A C

ATOM 1577 CD1 LEU A 199 62.169 -22.345 7.534 1.00 29.19 A C
 ATOM 1578 CD2 LEU A 199 64.632 -21.665 7.204 1.00 23.04 A C
 ATOM 1579 C LEU A 199 65.357 -25.113 4.947 1.00 18.37 A C
 ATOM 1580 O LEU A 199 66.313 -25.361 5.650 1.00 18.68 A O
 ATOM 1581 N GLU A 200 64.751 -26.050 4.218 1.00 17.37 A N
 ATOM 1582 CA GLU A 200 65.332 -27.377 4.183 1.00 16.57 A C
 ATOM 1583 CB GLU A 200 64.423 -28.365 3.480 1.00 17.92 A C
 ATOM 1584 CG GLU A 200 64.969 -29.777 3.325 1.00 21.36 A C
 ATOM 1585 CD GLU A 200 65.393 -30.426 4.662 1.00 29.23 A C
 ATOM 1586 OE1 GLU A 200 64.777 -30.107 5.682 1.00 29.79 A O
 ATOM 1587 OE2 GLU A 200 66.339 -31.263 4.698 1.00 29.20 A O
 ATOM 1588 C GLU A 200 66.712 -27.328 3.492 1.00 16.68 A C
 ATOM 1589 O GLU A 200 67.635 -28.029 3.914 1.00 19.27 A O
 ATOM 1590 N ALA A 201 66.835 -26.553 2.419 1.00 16.26 A N
 ATOM 1591 CA ALA A 201 68.099 -26.503 1.657 1.00 18.75 A C
 ATOM 1592 CB ALA A 201 67.938 -25.651 0.362 1.00 16.55 A C
 ATOM 1593 C ALA A 201 69.238 -25.975 2.506 1.00 20.06 A C
 ATOM 1594 O ALA A 201 70.328 -26.580 2.562 1.00 20.06 A O
 ATOM 1595 N VAL A 202 68.997 -24.855 3.183 1.00 20.04 A N
 ATOM 1596 CA VAL A 202 70.048 -24.237 3.979 1.00 22.09 A C
 ATOM 1597 CB VAL A 202 69.667 -22.787 4.489 1.00 18.59 A C
 ATOM 1598 CG1 VAL A 202 68.692 -22.850 5.643 1.00 20.29 A C
 ATOM 1599 CG2 VAL A 202 70.962 -21.960 4.888 1.00 24.36 A C
 ATOM 1600 C VAL A 202 70.486 -25.181 5.089 1.00 20.38 A C
 ATOM 1601 O VAL A 202 71.669 -25.348 5.318 1.00 17.33 A O
 ATOM 1602 N TRP A 203 69.556 -25.864 5.729 1.00 20.48 A N
 ATOM 1603 CA TRP A 203 69.916 -26.851 6.740 1.00 19.93 A C
 ATOM 1604 CB TRP A 203 68.652 -27.360 7.456 1.00 21.30 A C
 ATOM 1605 CG TRP A 203 68.975 -28.249 8.620 1.00 19.15 A C
 ATOM 1606 CD1 TRP A 203 69.089 -27.877 9.965 1.00 23.17 A C
 ATOM 1607 NE1 TRP A 203 69.420 -28.947 10.731 1.00 26.66 A N
 ATOM 1608 CE2 TRP A 203 69.529 -30.047 9.981 1.00 23.99 A C
 ATOM 1609 CD2 TRP A 203 69.253 -29.660 8.596 1.00 19.28 A C
 ATOM 1610 CE3 TRP A 203 69.265 -30.637 7.605 1.00 20.86 A C
 ATOM 1611 CZ3 TRP A 203 69.597 -31.925 7.967 1.00 23.16 A C
 ATOM 1612 CH2 TRP A 203 69.885 -32.271 9.304 1.00 23.58 A C
 ATOM 1613 CZ2 TRP A 203 69.845 -31.341 10.331 1.00 26.26 A C
 ATOM 1614 C TRP A 203 70.677 -28.026 6.162 1.00 24.21 A C
 ATOM 1615 O TRP A 203 71.669 -28.502 6.737 1.00 19.37 A O
 ATOM 1616 N SER A 204 70.205 -28.545 5.034 1.00 19.86 A N
 ATOM 1617 CA SER A 204 70.781 -29.787 4.465 1.00 15.86 A C
 ATOM 1618 CB SER A 204 69.853 -30.348 3.371 1.00 17.81 A C
 ATOM 1619 OG SER A 204 68.780 -31.055 3.959 1.00 24.34 A O
 ATOM 1620 C SER A 204 72.162 -29.573 3.882 1.00 15.58 A C
 ATOM 1621 O SER A 204 72.984 -30.467 3.932 1.00 15.50 A O
 ATOM 1622 N ILE A 205 72.424 -28.384 3.360 1.00 15.58 A N
 ATOM 1623 CA ILE A 205 73.743 -28.077 2.769 1.00 15.73 A C
 ATOM 1624 CB ILE A 205 73.725 -26.745 2.001 1.00 14.57 A C
 ATOM 1625 CG1 ILE A 205 72.923 -26.884 0.700 1.00 14.65 A C
 ATOM 1626 CD1 ILE A 205 72.469 -25.560 0.102 1.00 16.39 A C
 ATOM 1627 CG2 ILE A 205 75.213 -26.207 1.740 1.00 16.26 A C
 ATOM 1628 C ILE A 205 74.790 -28.051 3.900 1.00 21.28 A C
 ATOM 1629 O ILE A 205 75.853 -28.632 3.780 1.00 21.22 A O
 ATOM 1630 N GLU A 206 74.450 -27.413 5.011 1.00 23.84 A N
 ATOM 1631 CA GLU A 206 75.317 -27.397 6.189 1.00 24.36 A C
 ATOM 1632 CB GLU A 206 74.727 -26.476 7.265 1.00 27.57 A C
 ATOM 1633 CG GLU A 206 75.503 -26.404 8.572 1.00 34.12 A C
 ATOM 1634 CD GLU A 206 76.948 -25.902 8.395 1.00 40.13 A C
 ATOM 1635 OE1 GLU A 206 77.201 -25.053 7.510 1.00 41.90 A O
 ATOM 1636 OE2 GLU A 206 77.825 -26.372 9.146 1.00 36.22 A O
 ATOM 1637 C GLU A 206 75.548 -28.811 6.739 1.00 26.16 A C
 ATOM 1638 O GLU A 206 76.663 -29.138 7.087 1.00 25.64 A O
 ATOM 1639 N ALA A 207 74.525 -29.660 6.800 1.00 23.96 A N
 ATOM 1640 CA ALA A 207 74.720 -31.038 7.278 1.00 25.61 A C
 ATOM 1641 CB ALA A 207 73.383 -31.727 7.520 1.00 25.10 A C
 ATOM 1642 C ALA A 207 75.526 -31.852 6.277 1.00 27.54 A C

ATOM 1643 O ALA A 207 76.380 -32.651 6.650 1.00 22.60 A O
 ATOM 1644 N TYR A 208 75.245 -31.649 4.992 1.00 21.54 A N
 ATOM 1645 CA TYR A 208 75.901 -32.439 3.977 1.00 22.48 A C
 ATOM 1646 CB TYR A 208 75.252 -32.220 2.611 1.00 21.04 A C
 ATOM 1647 CG TYR A 208 75.584 -33.267 1.584 1.00 20.80 A C
 ATOM 1648 CD1 TYR A 208 75.197 -34.578 1.753 1.00 23.40 A C
 ATOM 1649 CE1 TYR A 208 75.505 -35.553 0.790 1.00 24.71 A C
 ATOM 1650 CZ TYR A 208 76.171 -35.188 -0.356 1.00 21.51 A C
 ATOM 1651 OH TYR A 208 76.466 -36.123 -1.337 1.00 23.71 A O
 ATOM 1652 CE2 TYR A 208 76.540 -33.885 -0.544 1.00 19.95 A C
 ATOM 1653 CD2 TYR A 208 76.241 -32.933 0.415 1.00 23.60 A C
 ATOM 1654 C TYR A 208 77.399 -32.120 3.924 1.00 18.26 A C
 ATOM 1655 O TYR A 208 78.193 -33.017 3.780 1.00 20.93 A O
 ATOM 1656 N ARG A 209 77.765 -30.847 4.048 1.00 18.60 A N
 ATOM 1657 CA ARG A 209 79.175 -30.438 3.930 1.00 22.43 A C
 ATOM 1658 CB ARG A 209 79.303 -28.908 3.801 1.00 25.30 A C
 ATOM 1659 CG ARG A 209 79.204 -28.103 5.093 1.00 25.28 A C
 ATOM 1660 CD ARG A 209 79.052 -26.620 4.805 1.00 25.54 A C
 ATOM 1661 NE ARG A 209 80.121 -26.093 3.948 1.00 20.42 A N
 ATOM 1662 CZ ARG A 209 80.063 -24.937 3.292 1.00 19.21 A C
 ATOM 1663 NH1 ARG A 209 79.010 -24.153 3.373 1.00 17.64 A N
 ATOM 1664 NH2 ARG A 209 81.080 -24.549 2.541 1.00 22.99 A N
 ATOM 1665 C ARG A 209 80.054 -30.985 5.062 1.00 21.25 A C
 ATOM 1666 O ARG A 209 81.276 -31.024 4.918 1.00 24.92 A O
 ATOM 1667 N LYS A 210 79.429 -31.434 6.153 1.00 25.30 A N
 ATOM 1668 CA LYS A 210 80.128 -32.031 7.309 1.00 31.88 A C
 ATOM 1669 CB LYS A 210 79.386 -31.701 8.603 1.00 30.97 A C
 ATOM 1670 CG LYS A 210 79.381 -30.211 8.900 1.00 34.55 A C
 ATOM 1671 CD LYS A 210 78.957 -29.897 10.320 1.00 39.50 A C
 ATOM 1672 CE LYS A 210 77.473 -29.640 10.455 1.00 40.90 A C
 ATOM 1673 NZ LYS A 210 77.293 -28.453 11.347 1.00 46.57 A N
 ATOM 1674 C LYS A 210 80.314 -33.540 7.196 1.00 36.30 A C
 ATOM 1675 O LYS A 210 81.035 -34.138 7.998 1.00 33.45 A O
 ATOM 1676 N LYS A 211 79.695 -34.155 6.199 1.00 29.38 A N
 ATOM 1677 CA LYS A 211 79.869 -35.591 5.976 1.00 34.50 A C
 ATOM 1678 CB LYS A 211 78.766 -36.148 5.098 1.00 38.26 A C
 ATOM 1679 CG LYS A 211 77.422 -36.240 5.729 1.00 42.79 A C
 ATOM 1680 CD LYS A 211 76.481 -36.952 4.765 1.00 46.28 A C
 ATOM 1681 CE LYS A 211 75.039 -36.901 5.231 1.00 63.15 A C
 ATOM 1682 NZ LYS A 211 74.856 -37.288 6.655 1.00 77.84 A N
 ATOM 1683 C LYS A 211 81.171 -35.854 5.257 1.00 43.74 A C
 ATOM 1684 O LYS A 211 81.468 -35.222 4.241 1.00 40.90 A O
 ATOM 1685 N GLU A 212 81.930 -36.824 5.749 1.00 48.80 A N
 ATOM 1686 CA GLU A 212 83.211 -37.148 5.155 1.00 47.55 A C
 ATOM 1687 CB GLU A 212 83.947 -38.165 6.026 1.00 57.33 A C
 ATOM 1688 CG GLU A 212 85.324 -38.528 5.502 1.00 64.50 A C
 ATOM 1689 CD GLU A 212 86.295 -38.925 6.598 1.00 68.42 A C
 ATOM 1690 OE1 GLU A 212 86.427 -38.173 7.585 1.00 64.80 A O
 ATOM 1691 OE2 GLU A 212 86.943 -39.983 6.461 1.00 73.66 A O
 ATOM 1692 C GLU A 212 83.052 -37.682 3.734 1.00 38.45 A C
 ATOM 1693 O GLU A 212 83.865 -37.394 2.868 1.00 40.13 A O
 ATOM 1694 N ASP A 213 82.002 -38.447 3.493 1.00 30.53 A N
 ATOM 1695 CA ASP A 213 81.793 -39.045 2.173 1.00 34.13 A C
 ATOM 1696 CB ASP A 213 81.274 -40.477 2.347 1.00 37.83 A C
 ATOM 1697 CG ASP A 213 79.945 -40.536 3.105 1.00 46.70 A C
 ATOM 1698 OD1 ASP A 213 79.565 -39.534 3.762 1.00 46.50 A O
 ATOM 1699 OD2 ASP A 213 79.282 -41.591 3.047 1.00 59.21 A O
 ATOM 1700 C ASP A 213 80.808 -38.241 1.282 1.00 27.38 A C
 ATOM 1701 O ASP A 213 80.218 -38.789 0.379 1.00 27.59 A O
 ATOM 1702 N ALA A 214 80.633 -36.954 1.542 1.00 24.53 A N
 ATOM 1703 CA ALA A 214 79.766 -36.093 0.706 1.00 26.48 A C
 ATOM 1704 CB ALA A 214 79.820 -34.662 1.216 1.00 23.28 A C
 ATOM 1705 C ALA A 214 80.212 -36.107 -0.745 1.00 23.11 A C
 ATOM 1706 O ALA A 214 81.385 -35.966 -1.014 1.00 17.41 A O
 ATOM 1707 N ASN A 215 79.290 -36.226 -1.689 1.00 20.40 A N
 ATOM 1708 CA ASN A 215 79.662 -36.045 -3.091 1.00 19.94 A C

ATOM 1709 CB ASN A 215 78.481 -36.438 -3.979 1.00 25.05 A C
 ATOM 1710 CG ASN A 215 78.811 -36.376 -5.455 1.00 29.07 A C
 ATOM 1711 OD1 ASN A 215 79.116 -35.319 -5.995 1.00 23.21 A O
 ATOM 1712 ND2 ASN A 215 78.759 -37.526 -6.116 1.00 39.39 A N
 ATOM 1713 C ASN A 215 80.049 -34.567 -3.313 1.00 16.76 A C
 ATOM 1714 O ASN A 215 79.233 -33.686 -3.091 1.00 19.63 A O
 ATOM 1715 N GLN A 216 81.279 -34.296 -3.726 1.00 18.59 A N
 ATOM 1716 CA GLN A 216 81.769 -32.918 -3.808 1.00 19.77 A C
 ATOM 1717 CB GLN A 216 83.296 -32.876 -3.881 1.00 21.22 A C
 ATOM 1718 CG GLN A 216 84.004 -33.430 -2.618 1.00 25.97 A C
 ATOM 1719 CD GLN A 216 83.625 -32.675 -1.350 1.00 27.20 A C
 ATOM 1720 OE1 GLN A 216 84.041 -31.531 -1.137 1.00 34.44 A O
 ATOM 1721 NE2 GLN A 216 82.828 -33.313 -0.506 1.00 31.17 A N
 ATOM 1722 C GLN A 216 81.171 -32.104 -4.970 1.00 16.13 A C
 ATOM 1723 O GLN A 216 81.006 -30.891 -4.863 1.00 15.04 A O
 ATOM 1724 N VAL A 217 80.888 -32.768 -6.076 1.00 16.85 A N
 ATOM 1725 CA VAL A 217 80.253 -32.131 -7.235 1.00 16.12 A C
 ATOM 1726 CB VAL A 217 80.180 -33.125 -8.471 1.00 16.39 A C
 ATOM 1727 CG1 VAL A 217 79.233 -32.609 -9.539 1.00 14.97 A C
 ATOM 1728 CG2 VAL A 217 81.618 -33.384 -9.101 1.00 16.56 A C
 ATOM 1729 C VAL A 217 78.852 -31.674 -6.795 1.00 14.34 A C
 ATOM 1730 O VAL A 217 78.471 -30.506 -6.964 1.00 15.07 A O
 ATOM 1731 N LEU A 218 78.118 -32.552 -6.121 1.00 16.11 A N
 ATOM 1732 CA LEU A 218 76.761 -32.202 -5.681 1.00 15.34 A C
 ATOM 1733 CB LEU A 218 76.050 -33.463 -5.170 1.00 17.72 A C
 ATOM 1734 CG LEU A 218 74.639 -33.315 -4.635 1.00 19.99 A C
 ATOM 1735 CD1 LEU A 218 73.748 -32.679 -5.719 1.00 17.34 A C
 ATOM 1736 CD2 LEU A 218 74.146 -34.715 -4.192 1.00 20.61 A C
 ATOM 1737 C LEU A 218 76.761 -31.050 -4.633 1.00 16.80 A C
 ATOM 1738 O LEU A 218 75.990 -30.073 -4.754 1.00 16.08 A O
 ATOM 1739 N LEU A 219 77.667 -31.137 -3.659 1.00 16.22 A N
 ATOM 1740 CA LEU A 219 77.808 -30.114 -2.624 1.00 15.98 A C
 ATOM 1741 CB LEU A 219 78.878 -30.531 -1.585 1.00 19.49 A C
 ATOM 1742 CG LEU A 219 79.274 -29.480 -0.524 1.00 20.60 A C
 ATOM 1743 CD1 LEU A 219 78.007 -28.966 0.234 1.00 17.64 A C
 ATOM 1744 CD2 LEU A 219 80.343 -30.018 0.454 1.00 22.47 A C
 ATOM 1745 C LEU A 219 78.154 -28.773 -3.243 1.00 14.57 A C
 ATOM 1746 O LEU A 219 77.528 -27.773 -2.958 1.00 15.80 A O
 ATOM 1747 N GLU A 220 79.152 -28.745 -4.119 1.00 16.34 A N
 ATOM 1748 CA GLU A 220 79.521 -27.477 -4.740 1.00 17.54 A C
 ATOM 1749 CB GLU A 220 80.762 -27.610 -5.633 1.00 21.32 A C
 ATOM 1750 CG GLU A 220 81.228 -26.244 -6.097 1.00 18.06 A C
 ATOM 1751 CD GLU A 220 82.556 -26.245 -6.841 1.00 19.47 A C
 ATOM 1752 OE1 GLU A 220 83.087 -27.308 -7.177 1.00 22.10 A O
 ATOM 1753 OE2 GLU A 220 83.063 -25.137 -7.085 1.00 22.89 A O
 ATOM 1754 C GLU A 220 78.361 -26.863 -5.517 1.00 17.83 A C
 ATOM 1755 O GLU A 220 78.059 -25.668 -5.385 1.00 14.53 A O
 ATOM 1756 N LEU A 221 77.673 -27.671 -6.298 1.00 17.91 A N
 ATOM 1757 CA LEU A 221 76.504 -27.169 -7.040 1.00 14.02 A C
 ATOM 1758 CB LEU A 221 75.938 -28.265 -7.935 1.00 14.70 A C
 ATOM 1759 CG LEU A 221 74.714 -27.934 -8.808 1.00 13.25 A C
 ATOM 1760 CD1 LEU A 221 75.094 -26.855 -9.814 1.00 12.26 A C
 ATOM 1761 CD2 LEU A 221 74.222 -29.193 -9.524 1.00 13.16 A C
 ATOM 1762 C LEU A 221 75.421 -26.646 -6.110 1.00 15.19 A C
 ATOM 1763 O LEU A 221 74.817 -25.598 -6.358 1.00 13.89 A O
 ATOM 1764 N ALA A 222 75.169 -27.359 -5.026 1.00 15.41 A N
 ATOM 1765 CA ALA A 222 74.139 -26.940 -4.103 1.00 14.27 A C
 ATOM 1766 CB ALA A 222 73.951 -28.006 -2.985 1.00 14.45 A C
 ATOM 1767 C ALA A 222 74.440 -25.560 -3.522 1.00 14.90 A C
 ATOM 1768 O ALA A 222 73.558 -24.691 -3.439 1.00 16.28 A O
 ATOM 1769 N ILE A 223 75.697 -25.329 -3.142 1.00 15.61 A N
 ATOM 1770 CA ILE A 223 76.075 -24.058 -2.519 1.00 14.09 A C
 ATOM 1771 CB ILE A 223 77.530 -24.124 -2.011 1.00 14.49 A C
 ATOM 1772 CG1 ILE A 223 77.614 -25.106 -0.823 1.00 13.12 A C
 ATOM 1773 CD1 ILE A 223 79.093 -25.623 -0.535 1.00 14.91 A C
 ATOM 1774 CG2 ILE A 223 78.062 -22.702 -1.641 1.00 13.93 A C

ATOM 1775 C ILE A 223 75.926 -22.963 -3.559 1.00 14.88 A C
 ATOM 1776 O ILE A 223 75.318 -21.929 -3.333 1.00 14.14 A O
 ATOM 1777 N LEU A 224 76.490 -23.216 -4.733 1.00 16.07 A N
 ATOM 1778 CA LEU A 224 76.463 -22.240 -5.833 1.00 16.94 A C
 ATOM 1779 CB LEU A 224 77.185 -22.875 -6.990 1.00 21.43 A C
 ATOM 1780 CG LEU A 224 77.473 -22.190 -8.287 1.00 33.26 A C
 ATOM 1781 CD1 LEU A 224 78.682 -22.921 -8.853 1.00 29.28 A C
 ATOM 1782 CD2 LEU A 224 76.226 -22.298 -9.181 1.00 43.08 A C
 ATOM 1783 C LEU A 224 75.017 -21.863 -6.210 1.00 14.97 A C
 ATOM 1784 O LEU A 224 74.681 -20.676 -6.349 1.00 15.99 A O
 ATOM 1785 N ASP A 225 74.167 -22.872 -6.389 1.00 13.69 A N
 ATOM 1786 CA ASP A 225 72.779 -22.639 -6.794 1.00 14.56 A C
 ATOM 1787 CB ASP A 225 72.044 -23.971 -7.095 1.00 18.03 A C
 ATOM 1788 CG ASP A 225 70.792 -23.759 -7.974 1.00 18.76 A C
 ATOM 1789 OD1 ASP A 225 70.935 -23.627 -9.221 1.00 22.17 A O
 ATOM 1790 OD2 ASP A 225 69.674 -23.721 -7.410 1.00 18.19 A O
 ATOM 1791 C ASP A 225 72.010 -21.858 -5.717 1.00 15.07 A C
 ATOM 1792 O ASP A 225 71.264 -20.926 -6.025 1.00 13.40 A O
 ATOM 1793 N TYR A 226 72.198 -22.244 -4.462 1.00 14.97 A N
 ATOM 1794 CA TYR A 226 71.539 -21.565 -3.347 1.00 15.99 A C
 ATOM 1795 CB TYR A 226 71.895 -22.238 -2.014 1.00 18.96 A C
 ATOM 1796 CG TYR A 226 71.124 -21.654 -0.849 1.00 20.01 A C
 ATOM 1797 CD1 TYR A 226 71.531 -20.468 -0.232 1.00 22.17 A C
 ATOM 1798 CE1 TYR A 226 70.811 -19.919 0.830 1.00 19.62 A C
 ATOM 1799 CZ TYR A 226 69.685 -20.564 1.285 1.00 21.40 A C
 ATOM 1800 OH TYR A 226 68.962 -20.057 2.317 1.00 22.99 A O
 ATOM 1801 CE2 TYR A 226 69.274 -21.758 0.711 1.00 17.96 A C
 ATOM 1802 CD2 TYR A 226 69.990 -22.288 -0.364 1.00 17.80 A C
 ATOM 1803 C TYR A 226 71.934 -20.074 -3.287 1.00 16.06 A C
 ATOM 1804 O TYR A 226 71.069 -19.202 -3.090 1.00 16.88 A O
 ATOM 1805 N ASN A 227 73.218 -19.782 -3.461 1.00 14.97 A N
 ATOM 1806 CA ASN A 227 73.689 -18.390 -3.418 1.00 18.29 A C
 ATOM 1807 CB ASN A 227 75.208 -18.332 -3.217 1.00 17.52 A C
 ATOM 1808 CG ASN A 227 75.601 -18.718 -1.803 1.00 19.83 A C
 ATOM 1809 OD1 ASN A 227 74.751 -18.764 -0.907 1.00 19.76 A O
 ATOM 1810 ND2 ASN A 227 76.878 -18.990 -1.584 1.00 17.61 A N
 ATOM 1811 C ASN A 227 73.218 -17.584 -4.611 1.00 19.68 A C
 ATOM 1812 O ASN A 227 72.905 -16.409 -4.480 1.00 20.30 A O
 ATOM 1813 N MET A 228 73.103 -18.230 -5.763 1.00 17.59 A N
 ATOM 1814 CA MET A 228 72.499 -17.585 -6.919 1.00 19.81 A C
 ATOM 1815 CB MET A 228 72.586 -18.489 -8.115 1.00 21.31 A C
 ATOM 1816 CG MET A 228 71.922 -17.937 -9.338 1.00 24.26 A C
 ATOM 1817 SD MET A 228 71.839 -19.226 -10.569 1.00 31.75 A S
 ATOM 1818 CE MET A 228 70.334 -20.104 -10.032 1.00 32.05 A C
 ATOM 1819 C MET A 228 71.029 -17.237 -6.679 1.00 21.09 A C
 ATOM 1820 O MET A 228 70.575 -16.114 -6.923 1.00 22.56 A O
 ATOM 1821 N ILE A 229 70.248 -18.207 -6.248 1.00 20.81 A N
 ATOM 1822 CA ILE A 229 68.850 -17.912 -5.976 1.00 18.17 A C
 ATOM 1823 CB ILE A 229 68.039 -19.161 -5.543 1.00 19.71 A C
 ATOM 1824 CG1 ILE A 229 67.902 -20.131 -6.713 1.00 17.07 A C
 ATOM 1825 CD1 ILE A 229 67.115 -21.438 -6.387 1.00 18.64 A C
 ATOM 1826 CG2 ILE A 229 66.597 -18.738 -5.059 1.00 16.81 A C
 ATOM 1827 C ILE A 229 68.766 -16.773 -4.941 1.00 18.94 A C
 ATOM 1828 O ILE A 229 67.982 -15.852 -5.126 1.00 20.45 A O
 ATOM 1829 N GLN A 230 69.565 -16.828 -3.874 1.00 19.83 A N
 ATOM 1830 CA GLN A 230 69.529 -15.780 -2.851 1.00 26.24 A C
 ATOM 1831 CB GLN A 230 70.548 -16.041 -1.742 1.00 23.79 A C
 ATOM 1832 CG GLN A 230 70.402 -15.118 -0.572 1.00 24.95 A C
 ATOM 1833 CD GLN A 230 71.409 -15.419 0.507 1.00 25.13 A C
 ATOM 1834 OE1 GLN A 230 72.601 -15.204 0.324 1.00 27.12 A O
 ATOM 1835 NE2 GLN A 230 70.944 -15.958 1.626 1.00 21.51 A N
 ATOM 1836 C GLN A 230 69.785 -14.383 -3.452 1.00 25.05 A C
 ATOM 1837 O GLN A 230 69.148 -13.425 -3.038 1.00 24.32 A O
 ATOM 1838 N SER A 231 70.692 -14.271 -4.425 1.00 20.12 A N
 ATOM 1839 CA SER A 231 70.944 -12.970 -5.061 1.00 23.39 A C
 ATOM 1840 CB SER A 231 72.235 -12.977 -5.917 1.00 24.86 A C

ATOM 1841 OG SER A 231 72.010 -13.749 -7.098 1.00 38.15 A O
 ATOM 1842 C SER A 231 69.741 -12.524 -5.896 1.00 22.11 A C
 ATOM 1843 O SER A 231 69.523 -11.336 -6.058 1.00 19.49 A O
 ATOM 1844 N VAL A 232 68.953 -13.453 -6.425 1.00 20.92 A N
 ATOM 1845 CA VAL A 232 67.641 -13.085 -7.019 1.00 22.15 A C
 ATOM 1846 CB VAL A 232 67.005 -14.238 -7.790 1.00 21.81 A C
 ATOM 1847 CG1 VAL A 232 65.573 -13.889 -8.300 1.00 21.93 A C
 ATOM 1848 CG2 VAL A 232 67.928 -14.622 -8.989 1.00 20.61 A C
 ATOM 1849 C VAL A 232 66.712 -12.494 -5.946 1.00 24.91 A C
 ATOM 1850 O VAL A 232 66.149 -11.407 -6.113 1.00 23.40 A O
 ATOM 1851 N TYR A 233 66.617 -13.149 -4.808 1.00 24.97 A N
 ATOM 1852 CA TYR A 233 65.789 -12.616 -3.724 1.00 23.17 A C
 ATOM 1853 CB TYR A 233 65.824 -13.529 -2.505 1.00 20.84 A C
 ATOM 1854 CG TYR A 233 65.292 -14.943 -2.719 1.00 17.60 A C
 ATOM 1855 CD1 TYR A 233 64.476 -15.277 -3.807 1.00 16.71 A C
 ATOM 1856 CE1 TYR A 233 64.019 -16.589 -3.967 1.00 18.85 A C
 ATOM 1857 CZ TYR A 233 64.370 -17.529 -3.020 1.00 16.53 A C
 ATOM 1858 OH TYR A 233 63.953 -18.838 -3.124 1.00 19.31 A O
 ATOM 1859 CE2 TYR A 233 65.151 -17.207 -1.969 1.00 17.10 A C
 ATOM 1860 CD2 TYR A 233 65.582 -15.937 -1.792 1.00 17.40 A C
 ATOM 1861 C TYR A 233 66.262 -11.215 -3.280 1.00 26.79 A C
 ATOM 1862 O TYR A 233 65.442 -10.334 -3.009 1.00 25.17 A O
 ATOM 1863 N GLN A 234 67.575 -11.021 -3.153 1.00 26.50 A N
 ATOM 1864 CA GLN A 234 68.093 -9.703 -2.738 1.00 26.52 A C
 ATOM 1865 CB GLN A 234 69.603 -9.768 -2.474 1.00 25.75 A C
 ATOM 1866 CG GLN A 234 69.927 -10.604 -1.214 1.00 27.64 A C
 ATOM 1867 CD GLN A 234 71.356 -11.093 -1.178 1.00 30.47 A C
 ATOM 1868 OE1 GLN A 234 72.087 -10.905 -2.136 1.00 34.88 A O
 ATOM 1869 NE2 GLN A 234 71.761 -11.729 -0.077 1.00 30.17 A N
 ATOM 1870 C GLN A 234 67.689 -8.590 -3.739 1.00 29.34 A C
 ATOM 1871 O GLN A 234 67.342 -7.459 -3.326 1.00 30.77 A O
 ATOM 1872 N ARG A 235 67.721 -8.905 -5.031 1.00 24.11 A N
 ATOM 1873 CA ARG A 235 67.249 -7.974 -6.056 1.00 29.32 A C
 ATOM 1874 CB ARG A 235 67.585 -8.460 -7.467 1.00 30.12 A C
 ATOM 1875 CG ARG A 235 67.211 -7.417 -8.543 1.00 42.25 A C
 ATOM 1876 CD ARG A 235 67.848 -7.655 -9.904 1.00 50.89 A C
 ATOM 1877 NE ARG A 235 67.654 -9.034 -10.339 1.00 80.51 A N
 ATOM 1878 CZ ARG A 235 68.596 -9.984 -10.361 1.00 95.81 A C
 ATOM 1879 NH1 ARG A 235 69.853 -9.730 -9.995 1.00 85.77 A N
 ATOM 1880 NH2 ARG A 235 68.275 -11.211 -10.768 1.00 87.26 A N
 ATOM 1881 C ARG A 235 65.740 -7.693 -5.936 1.00 31.87 A C
 ATOM 1882 O ARG A 235 65.299 -6.546 -5.996 1.00 26.48 A O
 ATOM 1883 N ASP A 236 64.950 -8.739 -5.774 1.00 26.15 A N
 ATOM 1884 CA ASP A 236 63.512 -8.589 -5.551 1.00 25.59 A C
 ATOM 1885 CB ASP A 236 62.856 -9.930 -5.212 1.00 27.19 A C
 ATOM 1886 CG ASP A 236 62.892 -10.974 -6.355 1.00 38.21 A C
 ATOM 1887 OD1 ASP A 236 63.016 -10.622 -7.529 1.00 32.32 A O
 ATOM 1888 OD2 ASP A 236 62.734 -12.184 -6.030 1.00 30.52 A O
 ATOM 1889 C ASP A 236 63.217 -7.666 -4.368 1.00 22.39 A C
 ATOM 1890 O ASP A 236 62.342 -6.826 -4.438 1.00 25.74 A O
 ATOM 1891 N LEU A 237 63.910 -7.896 -3.263 1.00 18.81 A N
 ATOM 1892 CA LEU A 237 63.675 -7.218 -2.040 1.00 21.93 A C
 ATOM 1893 CB LEU A 237 64.401 -7.923 -0.907 1.00 25.78 A C
 ATOM 1894 CG LEU A 237 64.373 -7.206 0.428 1.00 32.12 A C
 ATOM 1895 CD1 LEU A 237 62.938 -7.158 0.902 1.00 33.09 A C
 ATOM 1896 CD2 LEU A 237 65.279 -7.873 1.452 1.00 33.88 A C
 ATOM 1897 C LEU A 237 64.130 -5.761 -2.147 1.00 29.65 A C
 ATOM 1898 O LEU A 237 63.507 -4.869 -1.577 1.00 30.17 A O
 ATOM 1899 N ARG A 238 65.196 -5.506 -2.898 1.00 25.49 A N
 ATOM 1900 CA ARG A 238 65.656 -4.127 -3.044 1.00 34.24 A C
 ATOM 1901 CB ARG A 238 67.022 -4.032 -3.752 1.00 31.76 A C
 ATOM 1902 CG ARG A 238 68.209 -3.896 -2.789 1.00 37.91 A C
 ATOM 1903 CD ARG A 238 69.513 -3.536 -3.537 1.00 38.29 A C
 ATOM 1904 NE ARG A 238 69.709 -4.359 -4.738 1.00 35.82 A N
 ATOM 1905 CZ ARG A 238 70.261 -5.583 -4.763 1.00 41.70 A C
 ATOM 1906 NH1 ARG A 238 70.718 -6.162 -3.649 1.00 35.80 A N
 ATOM 1907 NH2 ARG A 238 70.363 -6.243 -5.923 1.00 32.91 A N
 ATOM 1908 C ARG A 238 64.583 -3.336 -3.786 1.00 34.60 A C
 ATOM 1909 O ARG A 238 64.244 -2.223 -3.375 1.00 28.36 A O
 ATOM 1910 N GLU A 239 64.026 -3.931 -4.840 1.00 30.53 A N
 ATOM 1911 CA GLU A 239 62.927 -3.310 -5.587 1.00 38.02 A C
 ATOM 1912 CB GLU A 239 62.596 -4.159 -6.798 1.00 45.08 A C
 ATOM 1913 CG GLU A 239 61.458 -3.618 -7.638 1.00 66.28 A C
 ATOM 1914 CD GLU A 239 61.478 -4.172 -9.051 1.00 88.80 A C
 ATOM 1915 OE1 GLU A 239 61.348 -5.403 -9.209 1.00 95.01 A O
 ATOM 1916 OE2 GLU A 239 61.631 -3.376 -10.002 1.00 102.21 A O
 ATOM 1917 C GLU A 239 61.651 -3.123 -4.740 1.00 37.69 A C
 ATOM 1918 O GLU A 239 60.985 -2.089 -4.779 1.00 41.09 A O
 ATOM 1919 N THR A 240 61.308 -4.132 -3.973 1.00 29.30 A N
 ATOM 1920 CA THR A 240 60.119 -4.032 -3.133 1.00 30.80 A C
 ATOM 1921 CB THR A 240 59.735 -5.409 -2.610 1.00 35.45 A C
 ATOM 1922 OG1 THR A 240 59.434 -6.224 -3.753 1.00 34.87 A O
 ATOM 1923 CG2 THR A 240 58.528 -5.342 -1.677 1.00 31.60 A C
 ATOM 1924 C THR A 240 60.340 -3.000 -2.021 1.00 29.08 A C
 ATOM 1925 O THR A 240 59.404 -2.285 -1.637 1.00 25.40 A O
 ATOM 1926 N SER A 241 61.574 -2.927 -1.523 1.00 31.82 A N
 ATOM 1927 CA SER A 241 61.967 -1.904 -0.546 1.00 35.69 A C
 ATOM 1928 CB SER A 241 63.390 -2.135 -0.049 1.00 38.03 A C
 ATOM 1929 OG SER A 241 63.376 -3.275 0.796 1.00 38.86 A O
 ATOM 1930 C SER A 241 61.811 -0.492 -1.092 1.00 32.52 A C
 ATOM 1931 O SER A 241 61.262 0.355 -0.407 1.00 32.27 A O
 ATOM 1932 N ARG A 242 62.267 -0.251 -2.316 1.00 38.08 A N
 ATOM 1933 CA ARG A 242 62.095 1.061 -2.939 1.00 45.47 A C
 ATOM 1934 CB ARG A 242 62.647 1.107 -4.362 1.00 55.62 A C
 ATOM 1935 CG ARG A 242 64.105 1.575 -4.465 1.00 60.65 A C
 ATOM 1936 CD ARG A 242 64.540 1.737 -5.922 1.00 58.46 A C
 ATOM 1937 NE ARG A 242 64.176 0.562 -6.715 1.00 63.57 A N
 ATOM 1938 CZ ARG A 242 64.562 0.327 -7.965 1.00 71.15 A C
 ATOM 1939 NH1 ARG A 242 65.362 1.172 -8.605 1.00 77.17 A N
 ATOM 1940 NH2 ARG A 242 64.157 -0.786 -8.573 1.00 69.07 A N
 ATOM 1941 C ARG A 242 60.633 1.407 -2.984 1.00 36.39 A C
 ATOM 1942 O ARG A 242 60.243 2.473 -2.544 1.00 28.12 A O
 ATOM 1943 N TRP A 243 59.829 0.492 -3.503 1.00 28.35 A N
 ATOM 1944 CA TRP A 243 58.361 0.657 -3.551 1.00 26.03 A C
 ATOM 1945 CB TRP A 243 57.695 -0.617 -4.077 1.00 29.56 A C
 ATOM 1946 CG TRP A 243 56.200 -0.649 -3.818 1.00 23.64 A C
 ATOM 1947 CD1 TRP A 243 55.221 0.012 -4.539 1.00 22.96 A C
 ATOM 1948 NE1 TRP A 243 53.992 -0.215 -4.013 1.00 23.68 A N
 ATOM 1949 CE2 TRP A 243 54.067 -1.021 -2.931 1.00 19.35 A C
 ATOM 1950 CD2 TRP A 243 55.475 -1.341 -2.736 1.00 21.40 A C
 ATOM 1951 CE3 TRP A 243 55.839 -2.117 -1.658 1.00 21.11 A C
 ATOM 1952 CZ3 TRP A 243 54.839 -2.611 -0.816 1.00 21.65 A C
 ATOM 1953 CH2 TRP A 243 53.499 -2.292 -1.025 1.00 24.12 A C
 ATOM 1954 CZ2 TRP A 243 53.098 -1.470 -2.085 1.00 20.86 A C
 ATOM 1955 C TRP A 243 57.748 1.020 -2.212 1.00 28.47 A C
 ATOM 1956 O TRP A 243 56.898 1.931 -2.117 1.00 26.65 A O
 ATOM 1957 N TRP A 244 58.131 0.285 -1.170 1.00 21.36 A N
 ATOM 1958 CA TRP A 244 57.522 0.468 0.135 1.00 22.92 A C
 ATOM 1959 CB TRP A 244 57.903 -0.689 1.044 1.00 19.70 A C
 ATOM 1960 CG TRP A 244 57.271 -0.719 2.405 1.00 23.19 A C
 ATOM 1961 CD1 TRP A 244 57.923 -0.793 3.634 1.00 32.70 A C
 ATOM 1962 NE1 TRP A 244 57.011 -0.851 4.665 1.00 32.87 A N
 ATOM 1963 CE2 TRP A 244 55.764 -0.834 4.204 1.00 24.73 A C
 ATOM 1964 CD2 TRP A 244 55.837 -0.768 2.746 1.00 23.81 A C
 ATOM 1965 CE3 TRP A 244 54.669 -0.697 2.027 1.00 25.86 A C
 ATOM 1966 CZ3 TRP A 244 53.466 -0.723 2.708 1.00 30.63 A C
 ATOM 1967 CH2 TRP A 244 53.418 -0.815 4.093 1.00 29.59 A C
 ATOM 1968 CZ2 TRP A 244 54.568 -0.864 4.867 1.00 30.60 A C
 ATOM 1969 C TRP A 244 57.894 1.796 0.747 1.00 21.08 A C
 ATOM 1970 O TRP A 244 57.066 2.428 1.393 1.00 20.60 A O
 ATOM 1971 N ARG A 245 59.131 2.228 0.536 1.00 27.20 A N
 ATOM 1972 CA ARG A 245 59.600 3.537 1.011 1.00 31.73 A C

ATOM 1973 CB ARG A 245 61.114 3.701 0.828 1.00 32.00 A C
 ATOM 1974 CG ARG A 245 61.957 3.111 1.957 1.00 47.72 A C
 ATOM 1975 CD ARG A 245 63.414 3.658 1.909 1.00 65.57 A C
 ATOM 1976 NE ARG A 245 63.978 3.622 0.550 1.00 70.19 A N
 ATOM 1977 CZ ARG A 245 64.550 2.557 -0.028 1.00 68.85 A C
 ATOM 1978 NH1 ARG A 245 64.675 1.394 0.614 1.00 60.07 A N
 ATOM 1979 NH2 ARG A 245 65.007 2.655 -1.273 1.00 76.75 A N
 ATOM 1980 C ARG A 245 58.884 4.688 0.316 1.00 32.25 A C
 ATOM 1981 O ARG A 245 58.541 5.682 0.955 1.00 25.27 A O
 ATOM 1982 N ARG A 246 58.657 4.557 -0.981 1.00 30.10 A N
 ATOM 1983 CA ARG A 246 57.876 5.545 -1.716 1.00 35.79 A C
 ATOM 1984 CB ARG A 246 57.869 5.189 -3.197 1.00 46.51 A C
 ATOM 1985 CG ARG A 246 56.789 5.862 -4.038 1.00 57.62 A C
 ATOM 1986 CD ARG A 246 57.095 5.711 -5.519 1.00 77.36 A C
 ATOM 1987 NE ARG A 246 58.470 6.129 -5.827 1.00 99.02 A N
 ATOM 1988 CZ ARG A 246 59.493 5.319 -6.132 1.00 100.61 A C
 ATOM 1989 NH1 ARG A 246 59.344 3.996 -6.197 1.00 99.90 A N
 ATOM 1990 NH2 ARG A 246 60.690 5.849 -6.382 1.00 97.80 A N
 ATOM 1991 C ARG A 246 56.451 5.614 -1.172 1.00 28.96 A C
 ATOM 1992 O ARG A 246 55.917 6.676 -0.969 1.00 27.23 A O
 ATOM 1993 N VAL A 247 55.842 4.472 -0.908 1.00 21.35 A N
 ATOM 1994 CA VAL A 247 54.492 4.449 -0.332 1.00 21.70 A C
 ATOM 1995 CB VAL A 247 53.980 3.019 -0.174 1.00 21.06 A C
 ATOM 1996 CG1 VAL A 247 52.639 2.991 0.545 1.00 24.68 A C
 ATOM 1997 CG2 VAL A 247 53.840 2.363 -1.563 1.00 29.20 A C
 ATOM 1998 C VAL A 247 54.523 5.162 1.024 1.00 21.79 A C
 ATOM 1999 O VAL A 247 53.668 6.032 1.306 1.00 17.47 A O
 ATOM 2000 N GLY A 248 55.514 4.807 1.853 1.00 21.84 A N
 ATOM 2001 CA GLY A 248 55.852 5.583 3.069 1.00 24.01 A C
 ATOM 2002 C GLY A 248 54.844 5.545 4.220 1.00 25.34 A C
 ATOM 2003 O GLY A 248 54.778 6.451 5.052 1.00 31.72 A O
 ATOM 2004 N LEU A 249 54.056 4.504 4.269 1.00 26.67 A N
 ATOM 2005 CA LEU A 249 52.901 4.445 5.142 1.00 31.07 A C
 ATOM 2006 CB LEU A 249 51.968 3.379 4.590 1.00 32.92 A C
 ATOM 2007 CG LEU A 249 50.445 3.425 4.652 1.00 34.04 A C
 ATOM 2008 CD1 LEU A 249 49.811 4.784 4.331 1.00 27.52 A C
 ATOM 2009 CD2 LEU A 249 49.936 2.336 3.719 1.00 33.60 A C
 ATOM 2010 C LEU A 249 53.327 4.192 6.615 1.00 46.12 A C
 ATOM 2011 O LEU A 249 52.834 4.864 7.544 1.00 39.23 A O
 ATOM 2012 N ALA A 250 54.280 3.276 6.815 1.00 51.58 A N
 ATOM 2013 CA ALA A 250 54.779 2.935 8.157 1.00 62.76 A C
 ATOM 2014 CB ALA A 250 55.754 1.749 8.093 1.00 57.13 A C
 ATOM 2015 C ALA A 250 55.430 4.152 8.828 1.00 61.60 A C
 ATOM 2016 O ALA A 250 55.355 4.301 10.041 1.00 69.56 A O
 ATOM 2017 N THR A 251 56.045 5.017 8.021 1.00 47.72 A N
 ATOM 2018 CA THR A 251 56.545 6.327 8.461 1.00 43.94 A C
 ATOM 2019 CB THR A 251 57.291 7.050 7.298 1.00 38.98 A C
 ATOM 2020 OG1 THR A 251 58.145 6.124 6.625 1.00 60.41 A O
 ATOM 2021 CG2 THR A 251 58.107 8.197 7.788 1.00 38.02 A C
 ATOM 2022 C THR A 251 55.432 7.280 8.926 1.00 44.65 A C
 ATOM 2023 O THR A 251 55.573 7.945 9.942 1.00 49.78 A O
 ATOM 2024 N LYS A 252 54.342 7.358 8.159 1.00 33.75 A N
 ATOM 2025 CA LYS A 252 53.312 8.411 8.329 1.00 29.58 A C
 ATOM 2026 CB LYS A 252 52.721 8.780 6.938 1.00 38.55 A C
 ATOM 2027 CG LYS A 252 53.751 9.375 5.910 1.00 44.61 A C
 ATOM 2028 CD LYS A 252 54.042 10.870 6.119 1.00 38.46 A C
 ATOM 2029 CE LYS A 252 55.237 11.331 5.273 1.00 43.27 A C
 ATOM 2030 NZ LYS A 252 55.325 12.808 5.140 1.00 40.15 A N
 ATOM 2031 C LYS A 252 52.174 8.036 9.302 1.00 25.43 A C
 ATOM 2032 O LYS A 252 51.554 8.892 9.885 1.00 36.35 A O
 ATOM 2033 N LEU A 253 51.894 6.743 9.435 1.00 28.29 A N
 ATOM 2034 CA LEU A 253 50.964 6.233 10.425 1.00 28.58 A C
 ATOM 2035 CB LEU A 253 50.221 5.011 9.864 1.00 31.96 A C
 ATOM 2036 CG LEU A 253 48.977 5.172 8.971 1.00 37.47 A C
 ATOM 2037 CD1 LEU A 253 49.006 6.440 8.122 1.00 31.09 A C
 ATOM 2038 CD2 LEU A 253 48.798 3.903 8.130 1.00 35.88 A C

ATOM 2039 C LEU A 253 51.809 5.811 11.646 1.00 31.04 A C
 ATOM 2040 O LEU A 253 52.552 4.821 11.581 1.00 33.71 A O
 ATOM 2041 N HIS A 254 51.636 6.515 12.758 1.00 27.06 A N
 ATOM 2042 CA AHIS A 254 52.536 6.332 13.904 0.50 29.33 A C
 ATOM 2043 CB AHIS A 254 52.460 6.372 13.983 0.50 31.17 A C
 ATOM 2044 CB AHIS A 254 52.490 7.564 14.820 0.50 28.81 A C
 ATOM 2045 CB BHIS A 254 52.159 7.517 14.992 0.50 32.28 A C
 ATOM 2046 CG AHIS A 254 52.561 8.884 14.067 0.50 32.89 A C
 ATOM 2047 CG BHIS A 254 50.831 7.378 15.741 0.50 39.44 A C
 ATOM 2048 ND1AHIS A 254 53.193 9.013 12.872 0.50 30.44 A N
 ATOM 2049 ND1BHIS A 254 49.750 8.139 15.460 0.50 44.49 A N
 ATOM 2050 CE1AHIS A 254 53.081 10.287 12.450 0.50 30.02 A C
 ATOM 2051 CE1BHIS A 254 48.736 7.798 16.285 0.50 39.97 A C
 ATOM 2052 NE2AHIS A 254 52.387 10.977 13.377 0.50 30.22 A N
 ATOM 2053 NE2BHIS A 254 49.170 6.817 17.100 0.50 33.73 A N
 ATOM 2054 CD2AHIS A 254 52.052 10.145 14.382 0.50 29.37 A C
 ATOM 2055 CD2BHIS A 254 50.455 6.542 16.802 0.50 37.01 A C
 ATOM 2056 C HIS A 254 52.296 5.040 14.669 1.00 29.00 A C
 ATOM 2057 O HIS A 254 53.161 4.596 15.424 1.00 26.96 A O
 ATOM 2058 N PHE A 255 51.156 4.403 14.447 1.00 23.47 A N
 ATOM 2059 CA PHE A 255 50.822 3.146 15.121 1.00 27.33 A C
 ATOM 2060 CB PHE A 255 49.305 3.062 15.358 1.00 25.32 A C
 ATOM 2061 CG PHE A 255 48.517 2.984 14.077 1.00 24.28 A C
 ATOM 2062 CD1 PHE A 255 48.347 1.777 13.432 1.00 26.59 A C
 ATOM 2063 CE1 PHE A 255 47.663 1.707 12.211 1.00 29.93 A C
 ATOM 2064 CZ PHE A 255 47.171 2.861 11.637 1.00 26.82 A C
 ATOM 2065 CE2 PHE A 255 47.332 4.065 12.270 1.00 34.44 A C
 ATOM 2066 CD2 PHE A 255 48.027 4.133 13.480 1.00 30.12 A C
 ATOM 2067 C PHE A 255 51.275 1.915 14.318 1.00 30.30 A C
 ATOM 2068 O PHE A 255 51.227 0.809 14.832 1.00 29.18 A O
 ATOM 2069 N ALA A 256 51.680 2.091 13.063 1.00 32.80 A N
 ATOM 2070 CA ALA A 256 51.890 0.933 12.166 1.00 39.26 A C
 ATOM 2071 CB ALA A 256 51.835 1.360 10.708 1.00 38.98 A C
 ATOM 2072 C ALA A 256 53.201 0.205 12.438 1.00 32.90 A C
 ATOM 2073 O ALA A 256 54.219 0.833 12.705 1.00 35.46 A O
 ATOM 2074 N ARG A 257 53.128 -1.125 12.418 1.00 39.28 A N
 ATOM 2075 CA ARG A 257 54.285 -2.021 12.366 1.00 43.61 A C
 ATOM 2076 CB ARG A 257 53.852 -3.479 12.677 1.00 45.99 A C
 ATOM 2077 CG ARG A 257 53.326 -3.819 14.113 1.00 50.74 A C
 ATOM 2078 CD ARG A 257 52.807 -5.303 14.183 1.00 48.09 A C
 ATOM 2079 NE ARG A 257 51.532 -5.483 13.477 1.00 37.96 A N
 ATOM 2080 CZ ARG A 257 51.080 -6.614 12.921 1.00 48.88 A C
 ATOM 2081 NH1 ARG A 257 51.799 -7.737 12.951 1.00 53.81 A N
 ATOM 2082 NH2 ARG A 257 49.889 -6.623 12.284 1.00 39.93 A N
 ATOM 2083 C ARG A 257 54.875 -2.001 10.931 1.00 46.39 A C
 ATOM 2084 O ARG A 257 54.136 -2.233 9.960 1.00 44.76 A O
 ATOM 2085 N ASP A 258 56.182 -1.751 10.804 1.00 44.98 A N
 ATOM 2086 CA ASP A 258 56.916 -2.010 9.540 1.00 51.71 A C
 ATOM 2087 CB ASP A 258 58.123 -1.065 9.388 1.00 55.16 A C
 ATOM 2088 CG ASP A 258 58.906 -1.298 8.082 1.00 63.44 A C
 ATOM 2089 OD1 ASP A 258 58.551 -2.204 7.297 1.00 55.55 A O
 ATOM 2090 OD2 ASP A 258 59.895 -0.576 7.838 1.00 65.16 A O
 ATOM 2091 C ASP A 258 57.383 -3.491 9.481 1.00 46.48 A C
 ATOM 2092 O ASP A 258 58.236 -3.923 10.268 1.00 47.25 A O
 ATOM 2093 N ARG A 259 56.824 -4.265 8.553 1.00 39.72 A N
 ATOM 2094 CA ARG A 259 57.104 -5.695 8.508 1.00 36.16 A C
 ATOM 2095 CB ARG A 259 55.842 -6.489 8.901 1.00 45.84 A C
 ATOM 2096 CG ARG A 259 55.467 -6.478 10.387 1.00 48.37 A C
 ATOM 2097 CD ARG A 259 56.185 -7.566 11.182 1.00 58.13 A C
 ATOM 2098 NE ARG A 259 55.862 -7.511 12.615 1.00 64.71 A N
 ATOM 2099 CZ ARG A 259 56.333 -6.609 13.492 1.00 62.43 A C
 ATOM 2100 NH1 ARG A 259 57.172 -5.644 13.119 1.00 60.33 A N
 ATOM 2101 NH2 ARG A 259 55.952 -6.663 14.765 1.00 51.48 A N
 ATOM 2102 C ARG A 259 57.591 -6.115 7.122 1.00 36.67 A C
 ATOM 2103 O ARG A 259 57.303 -7.244 6.673 1.00 27.57 A O
 ATOM 2104 N LEU A 260 58.341 -5.256 6.436 1.00 31.46 A N

ATOM 2105 CA LEU A 260 58.687 -5.577 5.030 1.00 31.03 A C
 ATOM 2106 CB LEU A 260 59.352 -4.410 4.273 1.00 37.61 A C
 ATOM 2107 CG LEU A 260 59.622 -4.758 2.789 1.00 35.78 A C
 ATOM 2108 CD1 LEU A 260 58.346 -4.883 2.016 1.00 43.44 A C
 ATOM 2109 CD2 LEU A 260 60.514 -3.785 2.123 1.00 49.39 A C
 ATOM 2110 C LEU A 260 59.554 -6.825 4.887 1.00 26.61 A C
 ATOM 2111 O LEU A 260 59.309 -7.654 3.992 1.00 25.45 A O
 ATOM 2112 N ILE A 261 60.579 -6.957 5.728 1.00 25.93 A N
 ATOM 2113 CA ILE A 261 61.526 -8.051 5.533 1.00 28.16 A C
 ATOM 2114 CB ILE A 261 62.790 -7.905 6.400 1.00 33.56 A C
 ATOM 2115 CG1 ILE A 261 63.502 -6.572 6.083 1.00 40.92 A C
 ATOM 2116 CD1 ILE A 261 64.784 -6.261 6.922 1.00 42.44 A C
 ATOM 2117 CG2 ILE A 261 63.742 -9.071 6.120 1.00 29.08 A C
 ATOM 2118 C ILE A 261 60.823 -9.381 5.821 1.00 23.39 A C
 ATOM 2119 O ILE A 261 60.986 -10.336 5.094 1.00 21.56 A O
 ATOM 2120 N GLU A 262 60.037 -9.405 6.891 1.00 24.38 A N
 ATOM 2121 CA GLU A 262 59.268 -10.553 7.244 1.00 26.84 A C
 ATOM 2122 CB GLU A 262 58.520 -10.319 8.555 1.00 31.21 A C
 ATOM 2123 CG GLU A 262 59.428 -10.144 9.758 1.00 43.65 A C
 ATOM 2124 CD GLU A 262 59.708 -8.674 10.172 1.00 56.28 A C
 ATOM 2125 OE1 GLU A 262 59.880 -7.742 9.317 1.00 45.34 A O
 ATOM 2126 OE2 GLU A 262 59.791 -8.473 11.403 1.00 60.11 A O
 ATOM 2127 C GLU A 262 58.294 -10.922 6.133 1.00 21.33 A C
 ATOM 2128 O GLU A 262 58.098 -12.110 5.869 1.00 21.38 A O
 ATOM 2129 N SER A 263 57.663 -9.929 5.486 1.00 24.13 A N
 ATOM 2130 CA ASER A 263 56.702 -10.147 4.379 0.50 21.74 A C
 ATOM 2131 CA BSER A 263 56.676 -10.253 4.462 0.50 22.97 A C
 ATOM 2132 CB ASER A 263 56.159 -8.799 3.850 0.50 19.44 A C
 ATOM 2133 CB BSER A 263 55.781 -9.035 4.163 0.50 23.11 A C
 ATOM 2134 OG ASER A 263 57.138 -8.090 3.067 0.50 18.88 A O
 ATOM 2135 OG BSER A 263 54.803 -8.878 5.208 0.50 26.26 A O
 ATOM 2136 C SER A 263 57.380 -10.850 3.218 1.00 20.26 A C
 ATOM 2137 O SER A 263 56.815 -11.700 2.517 1.00 20.01 A O
 ATOM 2138 N PHE A 264 58.615 -10.469 2.992 1.00 21.57 A N
 ATOM 2139 CA PHE A 264 59.363 -11.043 1.893 1.00 20.69 A C
 ATOM 2140 CB PHE A 264 60.509 -10.144 1.460 1.00 27.57 A C
 ATOM 2141 CG PHE A 264 61.002 -10.505 0.131 1.00 25.73 A C
 ATOM 2142 CD1 PHE A 264 60.345 -10.045 -0.985 1.00 30.05 A C
 ATOM 2143 CE1 PHE A 264 60.746 -10.412 -2.222 1.00 33.90 A C
 ATOM 2144 CZ PHE A 264 61.807 -11.301 -2.357 1.00 30.18 A C
 ATOM 2145 CE2 PHE A 264 62.447 -11.790 -1.254 1.00 31.62 A C
 ATOM 2146 CD2 PHE A 264 62.033 -11.396 -0.004 1.00 33.82 A C
 ATOM 2147 C PHE A 264 59.893 -12.452 2.214 1.00 19.81 A C
 ATOM 2148 O PHE A 264 59.892 -13.336 1.362 1.00 23.69 A O
 ATOM 2149 N TYR A 265 60.344 -12.657 3.440 1.00 23.30 A N
 ATOM 2150 CA TYR A 265 60.692 -13.991 3.917 1.00 21.15 A C
 ATOM 2151 CB TYR A 265 61.113 -13.875 5.379 1.00 24.47 A C
 ATOM 2152 CG TYR A 265 61.316 -15.199 6.068 1.00 26.97 A C
 ATOM 2153 CD1 TYR A 265 62.466 -15.948 5.852 1.00 38.07 A C
 ATOM 2154 CE1 TYR A 265 62.644 -17.174 6.483 1.00 40.87 A C
 ATOM 2155 CZ TYR A 265 61.671 -17.636 7.336 1.00 35.57 A C
 ATOM 2156 OH TYR A 265 61.837 -18.829 7.985 1.00 38.87 A O
 ATOM 2157 CE2 TYR A 265 60.544 -16.894 7.575 1.00 29.52 A C
 ATOM 2158 CD2 TYR A 265 60.371 -15.691 6.953 1.00 27.61 A C
 ATOM 2159 C TYR A 265 59.506 -14.945 3.768 1.00 22.73 A C
 ATOM 2160 O TYR A 265 59.646 -16.089 3.312 1.00 19.72 A O
 ATOM 2161 N TRP A 266 58.326 -14.464 4.132 1.00 19.94 A N
 ATOM 2162 CA TRP A 266 57.101 -15.244 3.958 1.00 18.79 A C
 ATOM 2163 CB TRP A 266 55.954 -14.403 4.500 1.00 17.85 A C
 ATOM 2164 CG TRP A 266 54.610 -15.023 4.318 1.00 17.80 A C
 ATOM 2165 CD1 TRP A 266 53.758 -14.885 3.230 1.00 22.77 A C
 ATOM 2166 NE1 TRP A 266 52.624 -15.582 3.427 1.00 22.25 A N
 ATOM 2167 CE2 TRP A 266 52.650 -16.228 4.610 1.00 20.79 A C
 ATOM 2168 CD2 TRP A 266 53.906 -15.892 5.247 1.00 19.11 A C
 ATOM 2169 CE3 TRP A 266 54.170 -16.384 6.507 1.00 22.12 A C
 ATOM 2170 CZ3 TRP A 266 53.229 -17.194 7.111 1.00 22.16 A C

ATOM 2171 CH2 TRP A 266 52.026 -17.501 6.489 1.00 20.81 A C
 ATOM 2172 CZ2 TRP A 266 51.703 -17.005 5.233 1.00 22.45 A C
 ATOM 2173 C TRP A 266 56.886 -15.615 2.506 1.00 20.46 A C
 ATOM 2174 O TRP A 266 56.628 -16.777 2.161 1.00 19.38 A O
 ATOM 2175 N ALA A 267 56.986 -14.624 1.619 1.00 18.01 A N
 ATOM 2176 CA ALA A 267 56.777 -14.838 0.180 1.00 19.40 A C
 ATOM 2177 CB ALA A 267 56.944 -13.538 -0.599 1.00 18.97 A C
 ATOM 2178 C ALA A 267 57.724 -15.896 -0.418 1.00 18.10 A C
 ATOM 2179 O ALA A 267 57.323 -16.629 -1.322 1.00 17.66 A O
 ATOM 2180 N VAL A 268 58.968 -15.919 0.052 1.00 20.08 A N
 ATOM 2181 CA VAL A 268 59.952 -16.916 -0.395 1.00 20.64 A C
 ATOM 2182 CB VAL A 268 61.320 -16.651 0.233 1.00 19.24 A C
 ATOM 2183 CG1 VAL A 268 62.249 -17.869 0.121 1.00 18.95 A C
 ATOM 2184 CG2 VAL A 268 61.966 -15.357 -0.408 1.00 18.33 A C
 ATOM 2185 C VAL A 268 59.485 -18.357 -0.107 1.00 22.76 A C
 ATOM 2186 O VAL A 268 59.676 -19.255 -0.930 1.00 19.44 A O
 ATOM 2187 N GLY A 269 58.846 -18.559 1.040 1.00 18.03 A N
 ATOM 2188 CA GLY A 269 58.269 -19.859 1.372 1.00 18.75 A C
 ATOM 2189 C GLY A 269 57.169 -20.244 0.425 1.00 21.80 A C
 ATOM 2190 O GLY A 269 57.007 -21.425 0.116 1.00 19.54 A O
 ATOM 2191 N VAL A 270 56.394 -19.253 -0.028 1.00 18.94 A N
 ATOM 2192 CA VAL A 270 55.251 -19.515 -0.892 1.00 18.32 A C
 ATOM 2193 CB VAL A 270 54.263 -18.320 -0.863 1.00 18.18 A C
 ATOM 2194 CG1 VAL A 270 53.186 -18.527 -1.904 1.00 21.04 A C
 ATOM 2195 CG2 VAL A 270 53.681 -18.132 0.574 1.00 17.70 A C
 ATOM 2196 C VAL A 270 55.721 -19.838 -2.329 1.00 21.10 A C
 ATOM 2197 O VAL A 270 55.186 -20.733 -2.986 1.00 21.08 A O
 ATOM 2198 N ALA A 271 56.735 -19.122 -2.813 1.00 20.64 A N
 ATOM 2199 CA ALA A 271 57.201 -19.324 -4.187 1.00 21.72 A C
 ATOM 2200 CB ALA A 271 56.412 -18.390 -5.159 1.00 26.52 A C
 ATOM 2201 C ALA A 271 58.681 -19.052 -4.273 1.00 21.93 A C
 ATOM 2202 O ALA A 271 59.111 -17.880 -4.411 1.00 18.81 A O
 ATOM 2203 N PHE A 272 59.494 -20.110 -4.217 1.00 16.10 A N
 ATOM 2204 CA PHE A 272 60.938 -19.943 -4.004 1.00 19.48 A C
 ATOM 2205 CB PHE A 272 61.488 -21.031 -3.094 1.00 22.36 A C
 ATOM 2206 CG PHE A 272 61.585 -22.349 -3.777 1.00 25.44 A C
 ATOM 2207 CD1 PHE A 272 60.505 -23.180 -3.805 1.00 27.84 A C
 ATOM 2208 CE1 PHE A 272 60.566 -24.387 -4.467 1.00 35.48 A C
 ATOM 2209 CZ PHE A 272 61.720 -24.743 -5.130 1.00 27.50 A C
 ATOM 2210 CE2 PHE A 272 62.786 -23.919 -5.148 1.00 36.02 A C
 ATOM 2211 CD2 PHE A 272 62.725 -22.699 -4.473 1.00 37.34 A C
 ATOM 2212 C PHE A 272 61.736 -19.935 -5.293 1.00 19.74 A C
 ATOM 2213 O PHE A 272 62.899 -19.444 -5.304 1.00 21.41 A O
 ATOM 2214 N GLU A 273 61.160 -20.529 -6.354 1.00 22.36 A N
 ATOM 2215 CA GLU A 273 61.903 -20.746 -7.597 1.00 23.02 A C
 ATOM 2216 CB GLU A 273 61.141 -21.571 -8.632 1.00 24.76 A C
 ATOM 2217 CG GLU A 273 60.815 -23.024 -8.243 1.00 29.20 A C
 ATOM 2218 CD GLU A 273 59.438 -23.174 -7.538 1.00 37.88 A C
 ATOM 2219 OE1 GLU A 273 58.927 -22.222 -6.837 1.00 30.65 A O
 ATOM 2220 OE2 GLU A 273 58.863 -24.270 -7.715 1.00 35.51 A O
 ATOM 2221 C GLU A 273 62.257 -19.387 -8.215 1.00 27.39 A C
 ATOM 2222 O GLU A 273 61.493 -18.426 -8.098 1.00 21.35 A O
 ATOM 2223 N PRO A 274 63.424 -19.301 -8.882 1.00 25.26 A N
 ATOM 2224 CA PRO A 274 63.913 -17.956 -9.207 1.00 20.90 A C
 ATOM 2225 CB PRO A 274 65.328 -18.201 -9.821 1.00 29.66 A C
 ATOM 2226 CG PRO A 274 65.441 -19.705 -10.051 1.00 24.11 A C
 ATOM 2227 CD PRO A 274 64.454 -20.343 -9.068 1.00 23.74 A C
 ATOM 2228 C PRO A 274 63.011 -17.206 -10.167 1.00 23.99 A C
 ATOM 2229 O PRO A 274 62.883 -15.991 -10.057 1.00 29.15 A O
 ATOM 2230 N GLN A 275 62.330 -17.922 -11.044 1.00 20.49 A N
 ATOM 2231 CA GLN A 275 61.447 -17.297 -12.028 1.00 23.59 A C
 ATOM 2232 CB GLN A 275 61.043 -18.339 -13.086 1.00 24.38 A C
 ATOM 2233 CG GLN A 275 60.258 -19.538 -12.540 1.00 28.37 A C
 ATOM 2234 CD GLN A 275 61.124 -20.740 -12.111 1.00 30.42 A C
 ATOM 2235 OE1 GLN A 275 62.284 -20.608 -11.701 1.00 30.37 A O
 ATOM 2236 NE2 GLN A 275 60.550 -21.918 -12.210 1.00 32.67 A N

ATOM 2237 C GLN A 275 60.154 -16.683 -11.472 1.00 27.96 A C
 ATOM 2238 O GLN A 275 59.421 -16.047 -12.220 1.00 29.78 A O
 ATOM 2239 N TYR A 276 59.843 -16.922 -10.196 1.00 25.94 A N
 ATOM 2240 CA TYR A 276 58.638 -16.385 -9.573 1.00 23.53 A C
 ATOM 2241 CB TYR A 276 58.012 -17.459 -8.649 1.00 25.20 A C
 ATOM 2242 CG TYR A 276 57.475 -18.666 -9.375 1.00 29.20 A C
 ATOM 2243 CD1 TYR A 276 56.704 -18.530 -10.528 1.00 33.14 A C
 ATOM 2244 CE1 TYR A 276 56.204 -19.650 -11.186 1.00 38.24 A C
 ATOM 2245 CZ TYR A 276 56.448 -20.919 -10.668 1.00 36.54 A C
 ATOM 2246 OH TYR A 276 55.940 -21.987 -11.312 1.00 42.13 A O
 ATOM 2247 CE2 TYR A 276 57.195 -21.088 -9.526 1.00 34.95 A C
 ATOM 2248 CD2 TYR A 276 57.708 -19.957 -8.882 1.00 31.58 A C
 ATOM 2249 C TYR A 276 58.834 -15.077 -8.782 1.00 23.42 A C
 ATOM 2250 O TYR A 276 58.213 -14.873 -7.730 1.00 21.75 A O
 ATOM 2251 N SER A 277 59.631 -14.170 -9.318 1.00 23.32 A N
 ATOM 2252 CA SER A 277 59.805 -12.845 -8.747 1.00 23.74 A C
 ATOM 2253 CB SER A 277 60.778 -11.992 -9.604 1.00 27.94 A C
 ATOM 2254 OG SER A 277 62.123 -12.238 -9.199 1.00 32.61 A O
 ATOM 2255 C SER A 277 58.475 -12.122 -8.580 1.00 22.51 A C
 ATOM 2256 O SER A 277 58.199 -11.517 -7.528 1.00 19.90 A O
 ATOM 2257 N ASP A 278 57.643 -12.180 -9.608 1.00 20.00 A N
 ATOM 2258 CA ASP A 278 56.383 -11.459 -9.599 1.00 24.90 A C
 ATOM 2259 CB ASP A 278 55.651 -11.604 -10.926 1.00 27.70 A C
 ATOM 2260 CG ASP A 278 56.296 -10.798 -12.041 1.00 31.73 A C
 ATOM 2261 OD1 ASP A 278 57.159 -9.936 -11.765 1.00 42.97 A O
 ATOM 2262 OD2 ASP A 278 55.939 -11.050 -13.205 1.00 36.86 A O
 ATOM 2263 C ASP A 278 55.471 -11.953 -8.504 1.00 25.59 A C
 ATOM 2264 O ASP A 278 54.816 -11.148 -7.825 1.00 22.68 A O
 ATOM 2265 N CYS A 279 55.405 -13.272 -8.344 1.00 22.18 A N
 ATOM 2266 CA CYS A 279 54.622 -13.844 -7.273 1.00 21.60 A C
 ATOM 2267 CB CYS A 279 54.597 -15.388 -7.344 1.00 19.92 A C
 ATOM 2268 SG CYS A 279 53.431 -16.131 -6.153 1.00 23.77 A S
 ATOM 2269 C CYS A 279 55.135 -13.390 -5.924 1.00 20.82 A C
 ATOM 2270 O CYS A 279 54.342 -12.991 -5.083 1.00 21.23 A O
 ATOM 2271 N ARG A 280 56.447 -13.452 -5.698 1.00 18.39 A N
 ATOM 2272 CA ARG A 280 57.012 -13.025 -4.415 1.00 20.79 A C
 ATOM 2273 CB ARG A 280 58.523 -13.245 -4.374 1.00 20.57 A C
 ATOM 2274 CG ARG A 280 58.951 -14.720 -4.243 1.00 19.51 A C
 ATOM 2275 CD ARG A 280 60.433 -14.790 -4.036 1.00 18.20 A C
 ATOM 2276 NE ARG A 280 61.198 -14.498 -5.229 1.00 18.16 A N
 ATOM 2277 CZ ARG A 280 61.384 -15.345 -6.235 1.00 19.97 A C
 ATOM 2278 NH1 ARG A 280 60.834 -16.552 -6.227 1.00 22.51 A N
 ATOM 2279 NH2 ARG A 280 62.147 -14.994 -7.256 1.00 24.20 A N
 ATOM 2280 C ARG A 280 56.745 -11.537 -4.141 1.00 21.71 A C
 ATOM 2281 O ARG A 280 56.348 -11.178 -3.055 1.00 19.91 A O
 ATOM 2282 N ASN A 281 56.950 -10.700 -5.144 1.00 21.08 A N
 ATOM 2283 CA ASN A 281 56.628 -9.282 -5.027 1.00 21.89 A C
 ATOM 2284 CB ASN A 281 57.088 -8.530 -6.269 1.00 26.68 A C
 ATOM 2285 CG ASN A 281 58.615 -8.479 -6.380 1.00 36.64 A C
 ATOM 2286 OD1 ASN A 281 59.339 -8.753 -5.410 1.00 35.43 A O
 ATOM 2287 ND2 ASN A 281 59.107 -8.145 -7.567 1.00 33.86 A N
 ATOM 2288 C ASN A 281 55.156 -9.001 -4.704 1.00 21.55 A C
 ATOM 2289 O ASN A 281 54.874 -8.236 -3.782 1.00 21.28 A O
 ATOM 2290 N SER A 282 54.220 -9.669 -5.387 1.00 20.26 A N
 ATOM 2291 CA SER A 282 52.802 -9.522 -5.085 1.00 23.60 A C
 ATOM 2292 CB SER A 282 51.946 -10.354 -6.043 1.00 26.14 A C
 ATOM 2293 OG SER A 282 51.551 -9.582 -7.129 1.00 31.01 A O
 ATOM 2294 C SER A 282 52.448 -9.961 -3.678 1.00 21.74 A C
 ATOM 2295 O SER A 282 51.746 -9.270 -2.964 1.00 20.53 A O
 ATOM 2296 N VAL A 283 52.895 -11.146 -3.302 1.00 20.71 A N
 ATOM 2297 CA VAL A 283 52.621 -11.663 -1.974 1.00 17.85 A C
 ATOM 2298 CB VAL A 283 53.055 -13.132 -1.855 1.00 20.08 A C
 ATOM 2299 CG1 VAL A 283 52.977 -13.611 -0.395 1.00 19.46 A C
 ATOM 2300 CG2 VAL A 283 52.150 -13.967 -2.709 1.00 19.85 A C
 ATOM 2301 C VAL A 283 53.198 -10.775 -0.891 1.00 17.07 A C
 ATOM 2302 O VAL A 283 52.506 -10.479 0.094 1.00 16.85 A O

ATOM 2303 N ALA A 284 54.434 -10.306 -1.059 1.00 15.81 A N
 ATOM 2304 CA ALA A 284 55.050 -9.476 -0.028 1.00 17.39 A C
 ATOM 2305 CB ALA A 284 56.522 -9.255 -0.317 1.00 17.17 A C
 ATOM 2306 C ALA A 284 54.301 -8.119 0.088 1.00 17.57 A C
 ATOM 2307 O ALA A 284 54.009 -7.625 1.216 1.00 17.20 A O
 ATOM 2308 N LYS A 285 53.977 -7.511 -1.058 1.00 17.42 A N
 ATOM 2309 CA LYS A 285 53.155 -6.272 -1.062 1.00 18.85 A C
 ATOM 2310 CB LYS A 285 52.884 -5.789 -2.487 1.00 18.52 A C
 ATOM 2311 CG LYS A 285 54.103 -5.210 -3.181 1.00 19.50 A C
 ATOM 2312 CD LYS A 285 53.771 -4.777 -4.622 1.00 24.80 A C
 ATOM 2313 CE LYS A 285 54.911 -3.939 -5.170 1.00 29.57 A C
 ATOM 2314 NZ LYS A 285 54.911 -3.908 -6.624 1.00 45.89 A N
 ATOM 2315 C LYS A 285 51.805 -6.474 -0.329 1.00 19.27 A C
 ATOM 2316 O LYS A 285 51.427 -5.669 0.529 1.00 19.71 A O
 ATOM 2317 N MET A 286 51.080 -7.538 -0.673 1.00 17.23 A N
 ATOM 2318 CA MET A 286 49.811 -7.824 -0.014 1.00 18.12 A C
 ATOM 2319 CB MET A 286 49.107 -9.038 -0.597 1.00 21.82 A C
 ATOM 2320 CG MET A 286 48.651 -8.866 -2.034 1.00 22.74 A C
 ATOM 2321 SD MET A 286 47.766 -7.321 -2.298 1.00 26.21 A S
 ATOM 2322 CE MET A 286 48.995 -6.119 -2.880 1.00 18.48 A C
 ATOM 2323 C MET A 286 50.008 -8.024 1.486 1.00 18.96 A C
 ATOM 2324 O MET A 286 49.244 -7.494 2.316 1.00 22.71 A O
 ATOM 2325 N PHE A 287 51.039 -8.764 1.849 1.00 19.84 A N
 ATOM 2326 CA PHE A 287 51.292 -8.955 3.279 1.00 23.52 A C
 ATOM 2327 CB PHE A 287 52.377 -9.994 3.603 1.00 29.12 A C
 ATOM 2328 CG PHE A 287 51.983 -10.939 4.745 1.00 42.44 A C
 ATOM 2329 CD1 PHE A 287 50.761 -10.768 5.464 1.00 62.09 A C
 ATOM 2330 CE1 PHE A 287 50.368 -11.651 6.509 1.00 52.92 A C
 ATOM 2331 CZ PHE A 287 51.186 -12.705 6.838 1.00 49.40 A C
 ATOM 2332 CE2 PHE A 287 52.409 -12.884 6.145 1.00 59.69 A C
 ATOM 2333 CD2 PHE A 287 52.804 -11.993 5.110 1.00 42.43 A C
 ATOM 2334 C PHE A 287 51.590 -7.700 4.029 1.00 21.35 A C
 ATOM 2335 O PHE A 287 51.140 -7.560 5.167 1.00 20.18 A O
 ATOM 2336 N CYS A 288 52.300 -6.760 3.395 1.00 19.81 A N
 ATOM 2337 CA CYS A 288 52.546 -5.464 4.016 1.00 20.01 A C
 ATOM 2338 CB CYS A 288 53.430 -5.468 3.152 1.00 24.96 A C
 ATOM 2339 SG CYS A 288 55.186 -5.053 3.151 1.00 27.36 A S
 ATOM 2340 C CYS A 288 51.265 -4.720 4.304 1.00 21.13 A C
 ATOM 2341 O CYS A 288 51.118 -4.110 5.367 1.00 19.04 A O
 ATOM 2342 N PHE A 289 50.353 -4.719 3.340 1.00 16.53 A N
 ATOM 2343 CA PHE A 289 49.049 -4.074 3.552 1.00 16.27 A C
 ATOM 2344 CB PHE A 289 48.312 -3.898 2.239 1.00 15.49 A C
 ATOM 2345 CG PHE A 289 48.736 -2.675 1.491 1.00 16.61 A C
 ATOM 2346 CD1 PHE A 289 48.413 -1.421 1.957 1.00 18.72 A C
 ATOM 2347 CE1 PHE A 289 48.818 -0.296 1.269 1.00 18.70 A C
 ATOM 2348 CZ PHE A 289 49.543 -0.424 0.109 1.00 18.93 A C
 ATOM 2349 CE2 PHE A 289 49.861 -1.661 -0.361 1.00 22.78 A C
 ATOM 2350 CD2 PHE A 289 49.458 -2.783 0.317 1.00 20.57 A C
 ATOM 2351 C PHE A 289 48.167 -4.804 4.531 1.00 18.64 A C
 ATOM 2352 O PHE A 289 47.498 -4.168 5.341 1.00 17.14 A O
 ATOM 2353 N VAL A 290 48.157 -6.133 4.461 1.00 16.76 A N
 ATOM 2354 CA VAL A 290 47.377 -6.898 5.413 1.00 15.75 A C
 ATOM 2355 CB VAL A 290 47.483 -8.397 5.163 1.00 17.92 A C
 ATOM 2356 CG1 VAL A 290 46.941 -9.205 6.399 1.00 15.26 A C
 ATOM 2357 CG2 VAL A 290 46.756 -8.747 3.848 1.00 19.35 A C
 ATOM 2358 C VAL A 290 47.759 -6.560 6.816 1.00 16.77 A C
 ATOM 2359 O VAL A 290 46.883 -6.354 7.672 1.00 21.45 A O
 ATOM 2360 N THR A 291 49.042 -6.426 7.082 1.00 14.60 A N
 ATOM 2361 CA THR A 291 49.501 -6.200 8.430 1.00 20.39 A C
 ATOM 2362 CB THR A 291 51.056 -6.359 8.577 1.00 24.92 A C
 ATOM 2363 OG1 THR A 291 51.729 -5.346 7.866 1.00 45.02 A O
 ATOM 2364 CG2 THR A 291 51.546 -7.637 8.044 1.00 18.95 A C
 ATOM 2365 C THR A 291 49.077 -4.829 8.960 1.00 22.48 A C
 ATOM 2366 O THR A 291 48.729 -4.684 10.135 1.00 17.78 A O
 ATOM 2367 N ILE A 292 49.100 -3.814 8.107 1.00 18.02 A N
 ATOM 2368 CA ILE A 292 48.662 -2.472 8.535 1.00 17.26 A C

ATOM 2369 CB ILE A 292 48.982 -1.399 7.446 1.00 21.97 A C
 ATOM 2370 CG1 ILE A 292 50.482 -1.356 7.216 1.00 27.00 A C
 ATOM 2371 CD1 ILE A 292 51.010 -0.031 6.662 1.00 35.23 A C
 ATOM 2372 CG2 ILE A 292 48.428 0.021 7.897 1.00 23.97 A C
 ATOM 2373 C ILE A 292 47.170 -2.438 8.733 1.00 14.37 A C
 ATOM 2374 O ILE A 292 46.688 -1.892 9.712 1.00 16.19 A O
 ATOM 2375 N ILE A 293 46.436 -3.001 7.786 1.00 15.54 A N
 ATOM 2376 CA AILE A 293 44.978 -2.931 7.849 0.50 14.84 A C
 ATOM 2377 CA BILE A 293 44.961 -2.979 7.817 0.50 17.62 A C
 ATOM 2378 CB AILE A 293 44.361 -3.253 6.482 0.50 13.43 A C
 ATOM 2379 CB BILE A 293 44.341 -3.527 6.504 0.50 21.13 A C
 ATOM 2380 CG1AILE A 293 44.777 -2.161 5.474 0.50 11.81 A C
 ATOM 2381 CG1BILE A 293 44.739 -2.656 5.296 0.50 24.33 A C
 ATOM 2382 CD1AILE A 293 44.536 -2.541 4.039 0.50 9.74 A C
 ATOM 2383 CD1BILE A 293 44.136 -1.309 5.289 0.50 27.97 A C
 ATOM 2384 CG2AILE A 293 42.847 -3.385 6.563 0.50 14.99 A C
 ATOM 2385 CG2BILE A 293 42.825 -3.643 6.615 0.50 21.88 A C
 ATOM 2386 C ILE A 293 44.480 -3.807 8.999 1.00 17.95 A C
 ATOM 2387 O ILE A 293 43.571 -3.420 9.744 1.00 16.85 A O
 ATOM 2388 N ASP A 294 45.124 -4.938 9.222 1.00 18.10 A N
 ATOM 2389 CA ASP A 294 44.791 -5.743 10.402 1.00 18.98 A C
 ATOM 2390 CB ASP A 294 45.643 -7.013 10.444 1.00 26.30 A C
 ATOM 2391 CG ASP A 294 45.233 -7.945 11.560 1.00 36.30 A C
 ATOM 2392 OD1 ASP A 294 44.143 -8.522 11.462 1.00 44.85 A O
 ATOM 2393 OD2 ASP A 294 45.988 -8.078 12.527 1.00 48.87 A O
 ATOM 2394 C ASP A 294 44.943 -4.954 11.700 1.00 19.57 A C
 ATOM 2395 O ASP A 294 44.028 -4.981 12.555 1.00 19.28 A O
 ATOM 2396 N ASP A 295 46.064 -4.245 11.866 1.00 19.62 A N
 ATOM 2397 CA ASP A 295 46.265 -3.337 13.022 1.00 22.05 A C
 ATOM 2398 CB ASP A 295 47.580 -2.531 12.941 1.00 25.14 A C
 ATOM 2399 CG ASP A 295 48.837 -3.379 13.146 1.00 39.98 A C
 ATOM 2400 OD1 ASP A 295 48.695 -4.519 13.644 1.00 36.28 A O
 ATOM 2401 OD2 ASP A 295 49.961 -2.896 12.777 1.00 41.84 A O
 ATOM 2402 C ASP A 295 45.151 -2.295 13.177 1.00 19.77 A C
 ATOM 2403 O ASP A 295 44.783 -1.964 14.298 1.00 15.14 A O
 ATOM 2404 N ILE A 296 44.693 -1.735 12.060 1.00 16.40 A N
 ATOM 2405 CA ILE A 296 43.622 -0.729 12.090 1.00 16.04 A C
 ATOM 2406 CB ILE A 296 43.393 -0.122 10.688 1.00 16.51 A C
 ATOM 2407 CG1 ILE A 296 44.532 0.838 10.336 1.00 17.57 A C
 ATOM 2408 CD1 ILE A 296 44.476 1.290 8.870 1.00 17.91 A C
 ATOM 2409 CG2 ILE A 296 42.092 0.596 10.598 1.00 16.15 A C
 ATOM 2410 C ILE A 296 42.341 -1.374 12.656 1.00 15.12 A C
 ATOM 2411 O ILE A 296 41.711 -0.817 13.544 1.00 15.05 A O
 ATOM 2412 N TYR A 297 41.982 -2.564 12.169 1.00 13.47 A N
 ATOM 2413 CA TYR A 297 40.768 -3.244 12.623 1.00 15.89 A C
 ATOM 2414 CB TYR A 297 40.332 -4.357 11.653 1.00 17.82 A C
 ATOM 2415 CG TYR A 297 39.614 -3.883 10.395 1.00 18.18 A C
 ATOM 2416 CD1 TYR A 297 40.319 -3.372 9.321 1.00 18.38 A C
 ATOM 2417 CE1 TYR A 297 39.672 -2.937 8.160 1.00 20.04 A C
 ATOM 2418 CZ TYR A 297 38.289 -3.010 8.066 1.00 18.73 A C
 ATOM 2419 OH TYR A 297 37.663 -2.602 6.896 1.00 17.37 A O
 ATOM 2420 CE2 TYR A 297 37.567 -3.520 9.121 1.00 17.60 A C
 ATOM 2421 CD2 TYR A 297 38.239 -3.960 10.287 1.00 15.78 A C
 ATOM 2422 C TYR A 297 40.942 -3.796 14.021 1.00 18.63 A C
 ATOM 2423 O TYR A 297 40.000 -3.770 14.832 1.00 18.08 A O
 ATOM 2424 N ASP A 298 42.150 -4.255 14.334 1.00 20.82 A N
 ATOM 2425 CA ASP A 298 42.427 -4.901 15.631 1.00 22.57 A C
 ATOM 2426 CB ASP A 298 43.778 -5.645 15.619 1.00 27.88 A C
 ATOM 2427 CG ASP A 298 43.949 -6.582 16.837 1.00 34.86 A C
 ATOM 2428 OD1 ASP A 298 42.960 -7.215 17.261 1.00 49.64 A O
 ATOM 2429 OD2 ASP A 298 45.064 -6.693 17.366 1.00 37.10 A O
 ATOM 2430 C ASP A 298 42.436 -3.941 16.792 1.00 20.87 A C
 ATOM 2431 O ASP A 298 41.840 -4.225 17.831 1.00 18.13 A O
 ATOM 2432 N VAL A 299 43.140 -2.810 16.659 1.00 17.00 A N
 ATOM 2433 CA VAL A 299 43.315 -1.943 17.829 1.00 17.21 A C
 ATOM 2434 CB VAL A 299 44.739 -2.083 18.490 1.00 18.26 A C

ATOM 2435 CG1 VAL A 299 44.862 -3.438 19.183 1.00 27.49 A C
 ATOM 2436 CG2 VAL A 299 45.826 -1.892 17.467 1.00 19.05 A C
 ATOM 2437 C VAL A 299 43.086 -0.474 17.614 1.00 16.17 A C
 ATOM 2438 O VAL A 299 42.678 0.200 18.563 1.00 17.59 A O
 ATOM 2439 N TYR A 300 43.349 0.063 16.418 1.00 13.76 A N
 ATOM 2440 CA TYR A 300 43.365 1.537 16.284 1.00 15.25 A C
 ATOM 2441 CB TYR A 300 44.435 1.979 15.265 1.00 16.21 A C
 ATOM 2442 CG TYR A 300 44.699 3.468 15.213 1.00 16.42 A C
 ATOM 2443 CD1 TYR A 300 45.627 4.086 16.057 1.00 17.25 A C
 ATOM 2444 CE1 TYR A 300 45.847 5.502 15.998 1.00 16.94 A C
 ATOM 2445 CZ TYR A 300 45.153 6.249 15.048 1.00 15.69 A C
 ATOM 2446 OH TYR A 300 45.331 7.591 14.933 1.00 21.39 A O
 ATOM 2447 CE2 TYR A 300 44.240 5.648 14.214 1.00 18.15 A C
 ATOM 2448 CD2 TYR A 300 44.025 4.272 14.287 1.00 18.46 A C
 ATOM 2449 C TYR A 300 42.014 2.150 15.930 1.00 14.91 A C
 ATOM 2450 O TYR A 300 41.640 3.158 16.502 1.00 13.77 A O
 ATOM 2451 N GLY A 301 41.301 1.585 14.971 1.00 16.46 A N
 ATOM 2452 CA GLY A 301 40.074 2.242 14.473 1.00 17.31 A C
 ATOM 2453 C GLY A 301 38.822 2.001 15.317 1.00 17.61 A C
 ATOM 2454 O GLY A 301 38.633 0.917 15.847 1.00 15.77 A O
 ATOM 2455 N THR A 302 37.952 2.997 15.413 1.00 16.18 A N
 ATOM 2456 CA THR A 302 36.662 2.830 16.074 1.00 15.53 A C
 ATOM 2457 CB THR A 302 35.971 4.148 16.357 1.00 14.80 A C
 ATOM 2458 OG1 THR A 302 35.678 4.788 15.110 1.00 13.10 A O
 ATOM 2459 CG2 THR A 302 36.839 5.103 17.282 1.00 13.50 A C
 ATOM 2460 C THR A 302 35.793 2.055 15.112 1.00 17.64 A C
 ATOM 2461 O THR A 302 36.038 2.037 13.920 1.00 17.08 A O
 ATOM 2462 N LEU A 303 34.753 1.423 15.624 1.00 18.38 A N
 ATOM 2463 CA LEU A 303 33.883 0.599 14.801 1.00 17.12 A C
 ATOM 2464 CB LEU A 303 32.836 -0.060 15.696 1.00 22.31 A C
 ATOM 2465 CG LEU A 303 32.204 -1.364 15.271 1.00 26.56 A C
 ATOM 2466 CD1 LEU A 303 33.237 -2.378 14.798 1.00 25.69 A C
 ATOM 2467 CD2 LEU A 303 31.379 -1.895 16.476 1.00 24.74 A C
 ATOM 2468 C LEU A 303 33.231 1.401 13.676 1.00 15.97 A C
 ATOM 2469 O LEU A 303 33.125 0.917 12.544 1.00 20.15 A O
 ATOM 2470 N ASP A 304 32.833 2.637 13.990 1.00 17.13 A N
 ATOM 2471 CA ASP A 304 32.329 3.579 12.984 1.00 18.68 A C
 ATOM 2472 CB ASP A 304 31.948 4.935 13.613 1.00 24.01 A C
 ATOM 2473 CG ASP A 304 30.689 4.873 14.493 1.00 35.20 A C
 ATOM 2474 OD1 ASP A 304 29.830 3.981 14.300 1.00 31.47 A O
 ATOM 2475 OD2 ASP A 304 30.547 5.751 15.375 1.00 38.27 A O
 ATOM 2476 C ASP A 304 33.353 3.814 11.863 1.00 20.30 A C
 ATOM 2477 O ASP A 304 32.998 3.846 10.683 1.00 17.82 A O
 ATOM 2478 N GLU A 305 34.626 3.993 12.212 1.00 15.41 A N
 ATOM 2479 CA GLU A 305 35.650 4.171 11.182 1.00 14.29 A C
 ATOM 2480 CB GLU A 305 37.008 4.559 11.816 1.00 15.22 A C
 ATOM 2481 CG GLU A 305 37.032 5.928 12.462 1.00 17.43 A C
 ATOM 2482 CD GLU A 305 38.312 6.178 13.263 1.00 19.71 A C
 ATOM 2483 OE1 GLU A 305 38.970 5.222 13.736 1.00 17.09 A O
 ATOM 2484 OE2 GLU A 305 38.691 7.339 13.399 1.00 20.00 A O
 ATOM 2485 C GLU A 305 35.819 2.918 10.345 1.00 14.09 A C
 ATOM 2486 O GLU A 305 35.994 2.971 9.109 1.00 14.06 A O
 ATOM 2487 N LEU A 306 35.788 1.764 11.006 1.00 13.12 A N
 ATOM 2488 CA LEU A 306 36.012 0.521 10.306 1.00 12.82 A C
 ATOM 2489 CB LEU A 306 36.129 -0.638 11.315 1.00 12.26 A C
 ATOM 2490 CG LEU A 306 37.275 -0.474 12.341 1.00 13.73 A C
 ATOM 2491 CD1 LEU A 306 37.292 -1.686 13.329 1.00 14.11 A C
 ATOM 2492 CD2 LEU A 306 38.622 -0.339 11.638 1.00 11.07 A C
 ATOM 2493 C LEU A 306 34.864 0.281 9.314 1.00 15.39 A C
 ATOM 2494 O LEU A 306 35.069 -0.300 8.262 1.00 16.92 A O
 ATOM 2495 N GLU A 307 33.649 0.700 9.678 1.00 16.87 A N
 ATOM 2496 CA GLU A 307 32.506 0.557 8.770 1.00 17.68 A C
 ATOM 2497 CB GLU A 307 31.207 0.986 9.444 1.00 20.36 A C
 ATOM 2498 CG GLU A 307 30.719 0.021 10.484 1.00 28.93 A C
 ATOM 2499 CD GLU A 307 29.932 -1.139 9.887 1.00 37.37 A C
 ATOM 2500 OE1 GLU A 307 29.757 -1.178 8.640 1.00 38.07 A O

ATOM 2501 OE2 GLU A 307 29.481 -2.002 10.674 1.00 38.86 A O
 ATOM 2502 C GLU A 307 32.759 1.393 7.529 1.00 17.79 A C
 ATOM 2503 O GLU A 307 32.521 0.925 6.416 1.00 18.41 A O
 ATOM 2504 N LEU A 308 33.305 2.599 7.709 1.00 16.45 A N
 ATOM 2505 CA LEU A 308 33.621 3.481 6.560 1.00 18.98 A C
 ATOM 2506 CB LEU A 308 34.068 4.869 7.014 1.00 18.90 A C
 ATOM 2507 CG LEU A 308 33.028 5.811 7.618 1.00 28.08 A C
 ATOM 2508 CD1 LEU A 308 33.737 7.021 8.304 1.00 26.55 A C
 ATOM 2509 CD2 LEU A 308 32.061 6.267 6.534 1.00 26.63 A C
 ATOM 2510 C LEU A 308 34.702 2.892 5.668 1.00 18.24 A C
 ATOM 2511 O LEU A 308 34.626 2.940 4.436 1.00 17.72 A O
 ATOM 2512 N PHE A 309 35.730 2.329 6.290 1.00 18.59 A N
 ATOM 2513 CA PHE A 309 36.816 1.768 5.506 1.00 16.74 A C
 ATOM 2514 CB PHE A 309 37.991 1.339 6.397 1.00 14.25 A C
 ATOM 2515 CG PHE A 309 39.246 1.079 5.632 1.00 13.41 A C
 ATOM 2516 CD1 PHE A 309 40.125 2.098 5.370 1.00 15.08 A C
 ATOM 2517 CE1 PHE A 309 41.275 1.879 4.720 1.00 15.28 A C
 ATOM 2518 CZ PHE A 309 41.573 0.638 4.260 1.00 16.06 A C
 ATOM 2519 CE2 PHE A 309 40.706 -0.399 4.491 1.00 16.55 A C
 ATOM 2520 CD2 PHE A 309 39.564 -0.185 5.206 1.00 14.73 A C
 ATOM 2521 C PHE A 309 36.339 0.612 4.679 1.00 17.02 A C
 ATOM 2522 O PHE A 309 36.698 0.499 3.508 1.00 16.41 A O
 ATOM 2523 N THR A 310 35.567 -0.273 5.312 1.00 17.03 A N
 ATOM 2524 CA THR A 310 35.042 -1.481 4.644 1.00 15.57 A C
 ATOM 2525 CB THR A 310 34.254 -2.379 5.611 1.00 16.94 A C
 ATOM 2526 OG1 THR A 310 35.064 -2.617 6.764 1.00 17.27 A O
 ATOM 2527 CG2 THR A 310 33.868 -3.727 4.976 1.00 14.06 A C
 ATOM 2528 C THR A 310 34.165 -1.121 3.464 1.00 14.32 A C
 ATOM 2529 O THR A 310 34.320 -1.695 2.395 1.00 14.04 A O
 ATOM 2530 N ASP A 311 33.312 -0.119 3.647 1.00 16.34 A N
 ATOM 2531 CA ASP A 311 32.457 0.399 2.571 1.00 19.21 A C
 ATOM 2532 CB ASP A 311 31.456 1.401 3.158 1.00 21.06 A C
 ATOM 2533 CG ASP A 311 30.602 2.056 2.106 1.00 25.80 A C
 ATOM 2534 OD1 ASP A 311 29.749 1.365 1.516 1.00 27.76 A O
 ATOM 2535 OD2 ASP A 311 30.805 3.261 1.851 1.00 29.96 A O
 ATOM 2536 C ASP A 311 33.277 1.007 1.420 1.00 19.30 A C
 ATOM 2537 O ASP A 311 32.964 0.797 0.251 1.00 17.59 A O
 ATOM 2538 N ALA A 312 34.345 1.724 1.755 1.00 16.06 A N
 ATOM 2539 CA ALA A 312 35.227 2.322 0.751 1.00 16.73 A C
 ATOM 2540 CB ALA A 312 36.273 3.210 1.412 1.00 14.46 A C
 ATOM 2541 C ALA A 312 35.897 1.270 -0.109 1.00 16.20 A C
 ATOM 2542 O ALA A 312 35.982 1.436 -1.330 1.00 16.25 A O
 ATOM 2543 N VAL A 313 36.369 0.187 0.518 1.00 15.49 A N
 ATOM 2544 CA VAL A 313 36.957 -0.925 -0.200 1.00 15.70 A C
 ATOM 2545 CB VAL A 313 37.658 -1.919 0.749 1.00 15.23 A C
 ATOM 2546 CG1 VAL A 313 38.040 -3.196 0.026 1.00 13.55 A C
 ATOM 2547 CG2 VAL A 313 38.910 -1.242 1.389 1.00 15.29 A C
 ATOM 2548 C VAL A 313 35.928 -1.637 -1.069 1.00 16.66 A C
 ATOM 2549 O VAL A 313 36.216 -1.976 -2.236 1.00 14.48 A O
 ATOM 2550 N GLU A 314 34.744 -1.861 -0.528 1.00 17.83 A N
 ATOM 2551 CA GLU A 314 33.635 -2.427 -1.327 1.00 18.81 A C
 ATOM 2552 CB GLU A 314 32.376 -2.598 -0.478 1.00 21.15 A C
 ATOM 2553 CG GLU A 314 32.502 -3.730 0.572 1.00 26.43 A C
 ATOM 2554 CD GLU A 314 31.275 -3.846 1.486 1.00 29.94 A C
 ATOM 2555 OE1 GLU A 314 30.460 -2.909 1.524 1.00 31.98 A O
 ATOM 2556 OE2 GLU A 314 31.135 -4.858 2.187 1.00 28.42 A O
 ATOM 2557 C GLU A 314 33.297 -1.593 -2.539 1.00 18.03 A C
 ATOM 2558 O GLU A 314 33.116 -2.129 -3.610 1.00 20.81 A O
 ATOM 2559 N ARG A 315 33.226 -0.289 -2.389 1.00 15.47 A N
 ATOM 2560 CA AARG A 315 32.841 0.611 -3.487 0.50 18.54 A C
 ATOM 2561 CB AARG A 315 32.839 0.563 -3.515 0.50 19.14 A C
 ATOM 2562 CB AARG A 315 32.383 1.976 -2.940 0.50 18.77 A C
 ATOM 2563 CB BARG A 315 32.243 1.871 -3.013 0.50 20.09 A C
 ATOM 2564 CG AARG A 315 31.037 1.960 -2.161 0.50 21.10 A C
 ATOM 2565 CG BARG A 315 30.830 1.674 -2.471 0.50 23.70 A C
 ATOM 2566 CD AARG A 315 30.504 3.375 -1.817 0.50 21.65 A C

ATOM 2567 CD BARG A 315 30.324 2.865 -1.681 0.50 24.91 A C
 ATOM 2568 NE AARG A 315 31.132 3.980 -0.634 0.50 23.68 A N
 ATOM 2569 NE BARG A 315 29.008 2.591 -1.126 0.50 29.79 A N
 ATOM 2570 CZ AARG A 315 32.199 4.775 -0.664 0.50 20.63 A C
 ATOM 2571 CZ BARG A 315 27.887 2.612 -1.837 0.50 36.61 A C
 ATOM 2572 NH1AARG A 315 32.691 5.268 0.460 0.50 23.51 A N
 ATOM 2573 NH1BARG A 315 27.927 2.897 -3.129 0.50 38.35 A N
 ATOM 2574 NH2BARG A 315 26.727 2.345 -1.259 0.50 38.64 A N
 ATOM 2575 NH2AARG A 315 32.780 5.075 -1.811 0.50 19.97 A N
 ATOM 2576 C ARG A 315 33.991 0.809 -4.497 1.00 21.60 A C
 ATOM 2577 O ARG A 315 33.767 1.030 -5.674 1.00 16.65 A O
 ATOM 2578 N TRP A 316 35.229 0.771 -4.018 1.00 17.56 A N
 ATOM 2579 CA TRP A 316 36.390 0.927 -4.889 1.00 14.98 A C
 ATOM 2580 CB TRP A 316 36.592 -0.288 -5.758 1.00 16.79 A C
 ATOM 2581 CG TRP A 316 38.049 -0.433 -6.158 1.00 17.07 A C
 ATOM 2582 CD1 TRP A 316 38.638 -0.174 -7.390 1.00 14.99 A C
 ATOM 2583 NE1 TRP A 316 39.991 -0.401 -7.336 1.00 14.25 A N
 ATOM 2584 CE2 TRP A 316 40.345 -0.805 -6.118 1.00 12.86 A C
 ATOM 2585 CD2 TRP A 316 39.135 -0.831 -5.299 1.00 13.85 A C
 ATOM 2586 CE3 TRP A 316 39.226 -1.236 -3.987 1.00 15.44 A C
 ATOM 2587 CZ3 TRP A 316 40.479 -1.594 -3.486 1.00 15.61 A C
 ATOM 2588 CH2 TRP A 316 41.628 -1.540 -4.285 1.00 15.25 A C
 ATOM 2589 CZ2 TRP A 316 41.575 -1.143 -5.609 1.00 14.44 A C
 ATOM 2590 C TRP A 316 36.276 2.163 -5.712 1.00 14.89 A C
 ATOM 2591 O TRP A 316 36.419 2.143 -6.917 1.00 15.76 A O
 ATOM 2592 N ASP A 317 36.032 3.262 -5.035 1.00 16.96 A N
 ATOM 2593 CA ASP A 317 35.800 4.537 -5.687 1.00 18.34 A C
 ATOM 2594 CB ASP A 317 34.358 4.911 -5.441 1.00 18.08 A C
 ATOM 2595 CG ASP A 317 33.984 6.287 -6.000 1.00 24.63 A C
 ATOM 2596 OD1 ASP A 317 34.793 6.935 -6.711 1.00 27.57 A O
 ATOM 2597 OD2 ASP A 317 32.833 6.690 -5.740 1.00 28.48 A O
 ATOM 2598 C ASP A 317 36.731 5.605 -5.133 1.00 20.19 A C
 ATOM 2599 O ASP A 317 36.512 6.114 -4.018 1.00 20.93 A O
 ATOM 2600 N VAL A 318 37.711 6.006 -5.939 1.00 18.34 A N
 ATOM 2601 CA VAL A 318 38.710 6.991 -5.503 1.00 19.63 A C
 ATOM 2602 CB VAL A 318 39.861 7.145 -6.538 1.00 19.36 A C
 ATOM 2603 CG1 VAL A 318 39.498 8.102 -7.663 1.00 21.41 A C
 ATOM 2604 CG2 VAL A 318 41.139 7.632 -5.874 1.00 19.12 A C
 ATOM 2605 C VAL A 318 38.088 8.369 -5.277 1.00 29.46 A C
 ATOM 2606 O VAL A 318 38.605 9.168 -4.488 1.00 29.09 A O
 ATOM 2607 N ASN A 319 37.018 8.664 -6.018 1.00 26.29 A N
 ATOM 2608 CA ASN A 319 36.374 9.983 -5.980 1.00 31.77 A C
 ATOM 2609 CB ASN A 319 35.483 10.228 -7.232 1.00 28.73 A C
 ATOM 2610 CG ASN A 319 36.280 10.184 -8.574 1.00 31.03 A C
 ATOM 2611 OD1 ASN A 319 37.240 10.959 -8.786 1.00 25.79 A O
 ATOM 2612 ND2 ASN A 319 35.836 9.314 -9.500 1.00 16.89 A N
 ATOM 2613 C ASN A 319 35.540 10.153 -4.724 1.00 27.47 A C
 ATOM 2614 O ASN A 319 34.901 11.182 -4.589 1.00 31.81 A O
 ATOM 2615 N ALA A 320 35.537 9.156 -3.832 1.00 25.56 A N
 ATOM 2616 CA ALA A 320 34.920 9.253 -2.474 1.00 35.70 A C
 ATOM 2617 CB ALA A 320 33.740 8.259 -2.370 1.00 30.73 A C
 ATOM 2618 C ALA A 320 35.890 9.032 -1.269 1.00 35.09 A C
 ATOM 2619 O ALA A 320 35.446 8.708 -0.177 1.00 42.99 A O
 ATOM 2620 N ILE A 321 37.204 9.178 -1.449 1.00 35.73 A N
 ATOM 2621 CA ILE A 321 38.153 9.042 -0.313 1.00 25.46 A C
 ATOM 2622 CB ILE A 321 39.658 8.885 -0.768 1.00 31.72 A C
 ATOM 2623 CG1 ILE A 321 40.230 10.186 -1.351 1.00 35.99 A C
 ATOM 2624 CD1 ILE A 321 41.644 10.023 -1.980 1.00 41.27 A C
 ATOM 2625 CG2 ILE A 321 39.813 7.709 -1.779 1.00 34.61 A C
 ATOM 2626 C ILE A 321 38.039 10.199 0.704 1.00 39.12 A C
 ATOM 2627 O ILE A 321 38.426 10.049 1.867 1.00 36.11 A O
 ATOM 2628 N ASN A 322 37.509 11.351 0.273 1.00 32.92 A N
 ATOM 2629 CA ASN A 322 37.210 12.447 1.197 1.00 31.27 A C
 ATOM 2630 CB ASN A 322 36.903 13.743 0.404 1.00 30.22 A C
 ATOM 2631 CG ASN A 322 38.191 14.408 -0.185 1.00 33.53 A C
 ATOM 2632 OD1 ASN A 322 39.337 14.000 0.108 1.00 29.13 A O

ATOM 2633 ND2 ASN A 322 38.000 15.458 -0.974 1.00 32.82 A N
 ATOM 2634 C ASN A 322 36.143 12.121 2.303 1.00 29.49 A C
 ATOM 2635 O ASN A 322 36.017 12.864 3.259 1.00 28.36 A O
 ATOM 2636 N ASP A 323 35.446 10.986 2.228 1.00 31.55 A N
 ATOM 2637 CA ASP A 323 34.609 10.518 3.378 1.00 36.24 A C
 ATOM 2638 CB ASP A 323 33.601 9.414 2.946 1.00 51.90 A C
 ATOM 2639 CG ASP A 323 32.960 9.644 1.559 1.00 53.60 A C
 ATOM 2640 OD1 ASP A 323 32.937 10.788 1.060 1.00 51.28 A O
 ATOM 2641 OD2 ASP A 323 32.468 8.645 0.970 1.00 51.14 A O
 ATOM 2642 C ASP A 323 35.422 9.913 4.589 1.00 30.18 A C
 ATOM 2643 O ASP A 323 34.897 9.759 5.680 1.00 31.04 A O
 ATOM 2644 N LEU A 324 36.674 9.520 4.377 1.00 24.50 A N
 ATOM 2645 CA LEU A 324 37.419 8.730 5.377 1.00 19.57 A C
 ATOM 2646 CB LEU A 324 38.435 7.858 4.653 1.00 18.49 A C
 ATOM 2647 CG LEU A 324 37.837 6.719 3.832 1.00 21.24 A C
 ATOM 2648 CD1 LEU A 324 38.864 6.103 2.908 1.00 16.54 A C
 ATOM 2649 CD2 LEU A 324 37.287 5.677 4.774 1.00 22.23 A C
 ATOM 2650 C LEU A 324 38.162 9.642 6.333 1.00 17.96 A C
 ATOM 2651 O LEU A 324 38.552 10.704 5.926 1.00 16.89 A O
 ATOM 2652 N PRO A 325 38.414 9.216 7.588 1.00 17.81 A N
 ATOM 2653 CA PRO A 325 39.338 10.029 8.402 1.00 20.53 A C
 ATOM 2654 CB PRO A 325 39.333 9.323 9.772 1.00 22.81 A C
 ATOM 2655 CG PRO A 325 38.873 7.979 9.501 1.00 21.72 A C
 ATOM 2656 CD PRO A 325 37.934 8.046 8.322 1.00 20.29 A C
 ATOM 2657 C PRO A 325 40.740 10.065 7.808 1.00 15.43 A C
 ATOM 2658 O PRO A 325 41.092 9.176 7.053 1.00 14.99 A O
 ATOM 2659 N ASP A 326 41.538 11.069 8.166 1.00 13.83 A N
 ATOM 2660 CA ASP A 326 42.831 11.314 7.484 1.00 16.63 A C
 ATOM 2661 CB ASP A 326 43.571 12.457 8.150 1.00 20.34 A C
 ATOM 2662 CG ASP A 326 42.919 13.819 7.867 1.00 22.99 A C
 ATOM 2663 OD1 ASP A 326 42.066 13.906 6.956 1.00 27.29 A O
 ATOM 2664 OD2 ASP A 326 43.277 14.778 8.567 1.00 25.92 A O
 ATOM 2665 C ASP A 326 43.750 10.090 7.405 1.00 18.36 A C
 ATOM 2666 O ASP A 326 44.271 9.757 6.326 1.00 14.64 A O
 ATOM 2667 N TYR A 327 43.925 9.374 8.516 1.00 16.45 A N
 ATOM 2668 CA TYR A 327 44.789 8.191 8.458 1.00 17.44 A C
 ATOM 2669 CB TYR A 327 45.028 7.627 9.845 1.00 18.71 A C
 ATOM 2670 CG TYR A 327 43.903 6.798 10.411 1.00 19.90 A C
 ATOM 2671 CD1 TYR A 327 42.801 7.382 11.069 1.00 17.57 A C
 ATOM 2672 CE1 TYR A 327 41.781 6.566 11.617 1.00 18.13 A C
 ATOM 2673 CZ TYR A 327 41.902 5.186 11.552 1.00 21.33 A C
 ATOM 2674 OH TYR A 327 40.931 4.323 12.067 1.00 20.25 A O
 ATOM 2675 CE2 TYR A 327 42.985 4.623 10.923 1.00 20.79 A C
 ATOM 2676 CD2 TYR A 327 43.977 5.418 10.362 1.00 20.19 A C
 ATOM 2677 C TYR A 327 44.273 7.116 7.496 1.00 16.83 A C
 ATOM 2678 O TYR A 327 45.056 6.419 6.831 1.00 18.49 A O
 ATOM 2679 N MET A 328 42.957 6.943 7.414 1.00 13.77 A N
 ATOM 2680 CA MET A 328 42.407 5.982 6.460 1.00 13.61 A C
 ATOM 2681 CB MET A 328 40.978 5.630 6.807 1.00 14.88 A C
 ATOM 2682 CG MET A 328 40.877 4.751 8.063 1.00 14.77 A C
 ATOM 2683 SD MET A 328 39.182 4.362 8.436 1.00 16.72 A S
 ATOM 2684 CE MET A 328 39.456 2.802 9.383 1.00 11.78 A C
 ATOM 2685 C MET A 328 42.437 6.430 4.985 1.00 16.66 A C
 ATOM 2686 O MET A 328 42.492 5.587 4.112 1.00 17.33 A O
 ATOM 2687 N LYS A 329 42.369 7.737 4.712 1.00 18.49 A N
 ATOM 2688 CA LYS A 329 42.474 8.244 3.329 1.00 19.66 A C
 ATOM 2689 CB LYS A 329 42.521 9.780 3.268 1.00 25.10 A C
 ATOM 2690 CG LYS A 329 41.299 10.557 3.662 1.00 39.00 A C
 ATOM 2691 CD LYS A 329 41.464 12.012 3.167 1.00 38.07 A C
 ATOM 2692 CE LYS A 329 40.322 12.928 3.565 1.00 44.10 A C
 ATOM 2693 NZ LYS A 329 40.381 14.163 2.715 1.00 35.97 A N
 ATOM 2694 C LYS A 329 43.777 7.807 2.743 1.00 15.39 A C
 ATOM 2695 O LYS A 329 43.840 7.348 1.612 1.00 15.48 A O
 ATOM 2696 N LEU A 330 44.844 7.976 3.521 1.00 13.32 A N
 ATOM 2697 CA LEU A 330 46.174 7.646 3.063 1.00 15.58 A C
 ATOM 2698 CB LEU A 330 47.214 8.193 4.060 1.00 19.08 A C

ATOM 2699 CG LEU A 330 48.663 8.198 3.585 1.00 20.74 A C
 ATOM 2700 CD1 LEU A 330 48.827 9.359 2.531 1.00 16.60 A C
 ATOM 2701 CD2 LEU A 330 49.680 8.377 4.787 1.00 19.71 A C
 ATOM 2702 C LEU A 330 46.332 6.172 2.871 1.00 16.37 A C
 ATOM 2703 O LEU A 330 46.825 5.723 1.825 1.00 15.79 A O
 ATOM 2704 N CYS A 331 45.901 5.387 3.870 1.00 15.05 A N
 ATOM 2705 CA ACYS A 331 45.980 3.935 3.762 0.70 14.81 A C
 ATOM 2706 CA BCYS A 331 45.934 3.917 3.778 0.30 14.73 A C
 ATOM 2707 CB ACYS A 331 45.506 3.277 5.069 0.70 17.32 A C
 ATOM 2708 CB BCYS A 331 45.314 3.292 5.035 0.30 15.28 A C
 ATOM 2709 SG ACYS A 331 45.829 1.513 5.086 0.70 25.66 A S
 ATOM 2710 SG BCYS A 331 46.397 3.282 6.443 0.30 17.26 A S
 ATOM 2711 C CYS A 331 45.169 3.397 2.564 1.00 14.98 A C
 ATOM 2712 O CYS A 331 45.667 2.584 1.765 1.00 14.34 A O
 ATOM 2713 N PHE A 332 43.934 3.835 2.448 1.00 15.08 A N
 ATOM 2714 CA PHE A 332 43.086 3.462 1.324 1.00 15.82 A C
 ATOM 2715 CB PHE A 332 41.716 4.117 1.443 1.00 19.85 A C
 ATOM 2716 CG PHE A 332 40.816 3.771 0.300 1.00 22.23 A C
 ATOM 2717 CD1 PHE A 332 40.144 2.592 0.302 1.00 19.24 A C
 ATOM 2718 CE1 PHE A 332 39.323 2.244 -0.761 1.00 23.63 A C
 ATOM 2719 CZ PHE A 332 39.188 3.073 -1.830 1.00 17.47 A C
 ATOM 2720 CE2 PHE A 332 39.879 4.249 -1.880 1.00 18.18 A C
 ATOM 2721 CD2 PHE A 332 40.706 4.605 -0.811 1.00 19.50 A C
 ATOM 2722 C PHE A 332 43.678 3.823 -0.051 1.00 13.90 A C
 ATOM 2723 O PHE A 332 43.704 2.981 -0.938 1.00 13.13 A O
 ATOM 2724 N LEU A 333 44.182 5.038 -0.223 1.00 13.85 A N
 ATOM 2725 CA LEU A 333 44.677 5.452 -1.561 1.00 14.29 A C
 ATOM 2726 CB LEU A 333 44.865 6.948 -1.655 1.00 12.13 A C
 ATOM 2727 CG LEU A 333 45.367 7.557 -2.976 1.00 13.38 A C
 ATOM 2728 CD1 LEU A 333 44.438 7.120 -4.114 1.00 12.36 A C
 ATOM 2729 CD2 LEU A 333 45.483 9.094 -2.883 1.00 10.36 A C
 ATOM 2730 C LEU A 333 45.959 4.665 -1.899 1.00 14.16 A C
 ATOM 2731 O LEU A 333 46.157 4.224 -3.055 1.00 11.14 A O
 ATOM 2732 N ALA A 334 46.789 4.409 -0.883 1.00 12.87 A N
 ATOM 2733 CA ALA A 334 47.977 3.554 -1.090 1.00 16.15 A C
 ATOM 2734 CB ALA A 334 48.840 3.454 0.173 1.00 15.82 A C
 ATOM 2735 C ALA A 334 47.576 2.165 -1.562 1.00 13.62 A C
 ATOM 2736 O ALA A 334 48.135 1.663 -2.498 1.00 14.28 A O
 ATOM 2737 N LEU A 335 46.593 1.564 -0.924 1.00 14.24 A N
 ATOM 2738 CA LEU A 335 46.123 0.216 -1.302 1.00 16.91 A C
 ATOM 2739 CB LEU A 335 45.090 -0.277 -0.299 1.00 14.05 A C
 ATOM 2740 CG LEU A 335 44.334 -1.570 -0.507 1.00 19.27 A C
 ATOM 2741 CD1 LEU A 335 45.331 -2.720 -0.481 1.00 18.50 A C
 ATOM 2742 CD2 LEU A 335 43.181 -1.768 0.501 1.00 19.37 A C
 ATOM 2743 C LEU A 335 45.486 0.251 -2.686 1.00 14.42 A C
 ATOM 2744 O LEU A 335 45.750 -0.604 -3.523 1.00 16.54 A O
 ATOM 2745 N TYR A 336 44.624 1.238 -2.889 1.00 14.24 A N
 ATOM 2746 CA TYR A 336 43.909 1.458 -4.153 1.00 13.22 A C
 ATOM 2747 CB TYR A 336 43.129 2.755 -4.043 1.00 12.76 A C
 ATOM 2748 CG TYR A 336 42.168 3.066 -5.171 1.00 14.14 A C
 ATOM 2749 CD1 TYR A 336 40.915 2.497 -5.220 1.00 15.26 A C
 ATOM 2750 CE1 TYR A 336 40.032 2.790 -6.264 1.00 16.12 A C
 ATOM 2751 CZ TYR A 336 40.389 3.682 -7.208 1.00 17.61 A C
 ATOM 2752 OH TYR A 336 39.521 4.011 -8.230 1.00 19.27 A O
 ATOM 2753 CE2 TYR A 336 41.620 4.279 -7.162 1.00 15.70 A C
 ATOM 2754 CD2 TYR A 336 42.497 3.974 -6.154 1.00 14.82 A C
 ATOM 2755 C TYR A 336 44.860 1.497 -5.345 1.00 12.46 A C
 ATOM 2756 O TYR A 336 44.689 0.722 -6.318 1.00 11.23 A O
 ATOM 2757 N ASN A 337 45.867 2.376 -5.267 1.00 11.05 A N
 ATOM 2758 CA ASN A 337 46.913 2.477 -6.325 1.00 10.92 A C
 ATOM 2759 CB ASN A 337 47.864 3.662 -6.045 1.00 13.08 A C
 ATOM 2760 CG ASN A 337 47.178 5.011 -6.226 1.00 16.67 A C
 ATOM 2761 OD1 ASN A 337 46.117 5.089 -6.859 1.00 14.21 A O
 ATOM 2762 ND2 ASN A 337 47.749 6.078 -5.629 1.00 12.56 A N
 ATOM 2763 C ASN A 337 47.718 1.200 -6.538 1.00 13.12 A C
 ATOM 2764 O ASN A 337 47.994 0.825 -7.671 1.00 11.66 A O

ATOM 2765 N THR A 338 48.097 0.524 -5.446 1.00 10.90 A N
 ATOM 2766 CA THR A 338 48.859 -0.714 -5.539 1.00 11.86 A C
 ATOM 2767 CB THR A 338 49.291 -1.196 -4.096 1.00 13.78 A C
 ATOM 2768 OG1 THR A 338 50.031 -0.117 -3.493 1.00 13.95 A O
 ATOM 2769 CG2 THR A 338 50.138 -2.535 -4.140 1.00 16.03 A C
 ATOM 2770 C THR A 338 48.053 -1.802 -6.268 1.00 12.45 A C
 ATOM 2771 O THR A 338 48.577 -2.461 -7.149 1.00 13.56 A O
 ATOM 2772 N ILE A 339 46.785 -1.961 -5.929 1.00 13.24 A N
 ATOM 2773 CA ILE A 339 45.953 -2.999 -6.549 1.00 14.77 A C
 ATOM 2774 CB ILE A 339 44.613 -3.228 -5.817 1.00 15.84 A C
 ATOM 2775 CG1 ILE A 339 44.805 -3.733 -4.366 1.00 22.56 A C
 ATOM 2776 CD1 ILE A 339 46.091 -4.409 -4.060 1.00 25.24 A C
 ATOM 2777 CG2 ILE A 339 43.713 -4.206 -6.587 1.00 16.00 A C
 ATOM 2778 C ILE A 339 45.683 -2.616 -8.021 1.00 16.22 A C
 ATOM 2779 O ILE A 339 45.803 -3.467 -8.907 1.00 15.73 A O
 ATOM 2780 N ASN A 340 45.338 -1.354 -8.272 1.00 13.61 A N
 ATOM 2781 CA ASN A 340 45.132 -0.858 -9.633 1.00 13.64 A C
 ATOM 2782 CB ASN A 340 44.643 0.610 -9.648 1.00 14.73 A C
 ATOM 2783 CG ASN A 340 43.212 0.767 -9.124 1.00 14.26 A C
 ATOM 2784 OD1 ASN A 340 42.491 -0.210 -8.962 1.00 14.11 A O
 ATOM 2785 ND2 ASN A 340 42.814 1.994 -8.837 1.00 12.66 A N
 ATOM 2786 C ASN A 340 46.366 -1.081 -10.536 1.00 15.34 A C
 ATOM 2787 O ASN A 340 46.246 -1.359 -11.737 1.00 15.44 A O
 ATOM 2788 N GLU A 341 47.554 -0.973 -9.961 1.00 14.07 A N
 ATOM 2789 CA AGLU A 341 48.806 -1.157 -10.703 0.50 13.47 A C
 ATOM 2790 CA BGLU A 341 48.772 -1.131 -10.741 0.50 13.96 A C
 ATOM 2791 CB AGLU A 341 49.993 -0.618 -9.887 0.50 16.02 A C
 ATOM 2792 CB BGLU A 341 49.949 -0.382 -10.060 0.50 17.37 A C
 ATOM 2793 CG AGLU A 341 51.368 -0.951 -10.447 0.50 17.69 A C
 ATOM 2794 CG BGLU A 341 49.804 1.161 -10.206 0.50 22.08 A C
 ATOM 2795 CD AGLU A 341 52.459 -0.118 -9.803 0.50 20.91 A C
 ATOM 2796 CD BGLU A 341 50.629 2.019 -9.226 0.50 27.60 A C
 ATOM 2797 OE1BGLU A 341 51.572 1.483 -8.603 0.50 23.51 A O
 ATOM 2798 OE1AGLU A 341 53.226 0.497 -10.561 0.50 25.96 A O
 ATOM 2799 OE2AGLU A 341 52.521 -0.056 -8.544 0.50 24.48 A O
 ATOM 2800 OE2BGLU A 341 50.328 3.245 -9.094 0.50 24.19 A O
 ATOM 2801 C GLU A 341 49.026 -2.631 -11.054 1.00 12.91 A C
 ATOM 2802 O GLU A 341 49.462 -2.961 -12.159 1.00 12.81 A O
 ATOM 2803 N ILE A 342 48.697 -3.516 -10.127 1.00 13.30 A N
 ATOM 2804 CA ILE A 342 48.748 -4.965 -10.378 1.00 15.54 A C
 ATOM 2805 CB ILE A 342 48.523 -5.766 -9.104 1.00 13.99 A C
 ATOM 2806 CG1 ILE A 342 49.746 -5.616 -8.187 1.00 14.53 A C
 ATOM 2807 CD1 ILE A 342 49.481 -6.036 -6.734 1.00 14.11 A C
 ATOM 2808 CG2 ILE A 342 48.296 -7.246 -9.408 1.00 16.66 A C
 ATOM 2809 C ILE A 342 47.733 -5.337 -11.469 1.00 18.15 A C
 ATOM 2810 O ILE A 342 48.076 -6.076 -12.401 1.00 17.80 A O
 ATOM 2811 N ALA A 343 46.533 -4.762 -11.400 1.00 16.13 A N
 ATOM 2812 CA ALA A 343 45.528 -4.937 -12.481 1.00 14.03 A C
 ATOM 2813 CB ALA A 343 44.234 -4.211 -12.169 1.00 11.91 A C
 ATOM 2814 C ALA A 343 46.092 -4.480 -13.786 1.00 14.80 A C
 ATOM 2815 O ALA A 343 45.925 -5.172 -14.784 1.00 14.81 A O
 ATOM 2816 N TYR A 344 46.755 -3.312 -13.810 1.00 12.84 A N
 ATOM 2817 CA TYR A 344 47.363 -2.802 -15.039 1.00 13.86 A C
 ATOM 2818 CB TYR A 344 48.045 -1.423 -14.850 1.00 11.49 A C
 ATOM 2819 CG TYR A 344 48.692 -0.929 -16.100 1.00 9.85 A C
 ATOM 2820 CD1 TYR A 344 47.939 -0.286 -17.074 1.00 9.93 A C
 ATOM 2821 CE1 TYR A 344 48.493 0.161 -18.240 1.00 8.79 A C
 ATOM 2822 CZ TYR A 344 49.824 -0.027 -18.469 1.00 9.72 A C
 ATOM 2823 OH TYR A 344 50.296 0.416 -19.655 1.00 11.12 A O
 ATOM 2824 CE2 TYR A 344 50.618 -0.658 -17.532 1.00 10.17 A C
 ATOM 2825 CD2 TYR A 344 50.042 -1.071 -16.324 1.00 9.90 A C
 ATOM 2826 C TYR A 344 48.377 -3.790 -15.620 1.00 14.30 A C
 ATOM 2827 O TYR A 344 48.350 -4.081 -16.799 1.00 11.84 A O
 ATOM 2828 N ASP A 345 49.286 -4.277 -14.791 1.00 15.91 A N
 ATOM 2829 CA ASP A 345 50.307 -5.205 -15.280 1.00 17.61 A C
 ATOM 2830 CB ASP A 345 51.222 -5.703 -14.157 1.00 22.91 A C
 ATOM 2831 CG ASP A 345 52.054 -4.585 -13.478 1.00 24.91 A C
 ATOM 2832 OD1 ASP A 345 52.328 -3.540 -14.082 1.00 29.76 A O
 ATOM 2833 OD2 ASP A 345 52.410 -4.789 -12.296 1.00 40.11 A O
 ATOM 2834 C ASP A 345 49.638 -6.444 -15.929 1.00 17.32 A C
 ATOM 2835 O ASP A 345 50.124 -6.957 -16.929 1.00 16.55 A O
 ATOM 2836 N ASN A 346 48.552 -6.925 -15.331 1.00 16.63 A N
 ATOM 2837 CA ASN A 346 47.836 -8.075 -15.869 1.00 15.25 A C
 ATOM 2838 CB ASN A 346 46.897 -8.661 -14.839 1.00 18.38 A C
 ATOM 2839 CG ASN A 346 47.595 -9.570 -13.917 1.00 25.49 A C
 ATOM 2840 OD1 ASN A 346 47.711 -10.781 -14.186 1.00 19.59 A O
 ATOM 2841 ND2 ASN A 346 48.093 -9.015 -12.810 1.00 23.37 A N
 ATOM 2842 C ASN A 346 47.078 -7.787 -17.158 1.00 16.76 A C
 ATOM 2843 O ASN A 346 47.093 -8.610 -18.062 1.00 19.88 A O
 ATOM 2844 N LEU A 347 46.490 -6.597 -17.266 1.00 15.52 A N
 ATOM 2845 CA LEU A 347 45.902 -6.120 -18.514 1.00 13.62 A C
 ATOM 2846 CB LEU A 347 45.198 -4.779 -18.323 1.00 11.95 A C
 ATOM 2847 CG LEU A 347 44.492 -4.169 -19.533 1.00 11.99 A C
 ATOM 2848 CD1 LEU A 347 43.413 -5.129 -20.038 1.00 13.90 A C
 ATOM 2849 CD2 LEU A 347 43.932 -2.771 -19.199 1.00 13.13 A C
 ATOM 2850 C LEU A 347 46.940 -6.078 -19.629 1.00 17.97 A C
 ATOM 2851 O LEU A 347 46.736 -6.649 -20.730 1.00 16.03 A O
 ATOM 2852 N LYS A 348 48.081 -5.472 -19.332 1.00 13.81 A N
 ATOM 2853 CA LYS A 348 49.117 -5.318 -20.306 1.00 14.92 A C
 ATOM 2854 CB LYS A 348 50.236 -4.463 -19.738 1.00 18.92 A C
 ATOM 2855 CG LYS A 348 51.303 -4.159 -20.734 1.00 22.39 A C
 ATOM 2856 CD LYS A 348 52.244 -3.064 -20.262 1.00 25.50 A C
 ATOM 2857 CE LYS A 348 53.608 -3.563 -19.902 1.00 30.70 A C
 ATOM 2858 NZ LYS A 348 53.587 -4.143 -18.593 1.00 33.98 A N
 ATOM 2859 C LYS A 348 49.713 -6.659 -20.779 1.00 15.93 A C
 ATOM 2860 O LYS A 348 49.978 -6.835 -21.970 1.00 15.69 A O
 ATOM 2861 N ASP A 349 49.985 -7.533 -19.830 1.00 15.10 A N
 ATOM 2862 CA ASP A 349 50.727 -8.774 -20.103 1.00 22.90 A C
 ATOM 2863 CB ASP A 349 51.600 -9.157 -18.888 1.00 18.72 A C
 ATOM 2864 CG ASP A 349 52.706 -8.090 -18.606 1.00 28.43 A C
 ATOM 2865 OD1 ASP A 349 53.075 -7.326 -19.532 1.00 31.35 A O
 ATOM 2866 OD2 ASP A 349 53.179 -7.993 -17.459 1.00 49.50 A O
 ATOM 2867 C ASP A 349 49.826 -9.928 -20.532 1.00 22.68 A C
 ATOM 2868 O ASP A 349 50.226 -10.709 -21.348 1.00 22.80 A O
 ATOM 2869 N LYS A 350 48.616 -10.020 -19.982 1.00 21.26 A N
 ATOM 2870 CA LYS A 350 47.716 -11.160 -20.247 1.00 21.09 A C
 ATOM 2871 CB LYS A 350 47.238 -11.768 -18.935 1.00 25.36 A C
 ATOM 2872 CG LYS A 350 48.324 -12.371 -18.044 1.00 25.43 A C
 ATOM 2873 CD LYS A 350 47.703 -12.850 -16.709 1.00 44.76 A C
 ATOM 2874 CE LYS A 350 48.773 -13.100 -15.605 1.00 41.38 A C
 ATOM 2875 NZ LYS A 350 49.841 -13.998 -16.126 1.00 67.10 A N
 ATOM 2876 C LYS A 350 46.481 -10.754 -21.045 1.00 25.46 A C
 ATOM 2877 O LYS A 350 45.727 -11.597 -21.473 1.00 22.82 A O
 ATOM 2878 N GLY A 351 46.217 -9.458 -21.184 1.00 17.25 A N
 ATOM 2879 CA GLY A 351 45.118 -9.004 -22.002 1.00 19.61 A C
 ATOM 2880 C GLY A 351 43.774 -9.129 -21.322 1.00 19.39 A C
 ATOM 2881 O GLY A 351 42.753 -8.986 -21.972 1.00 20.33 A O
 ATOM 2882 N GLU A 352 43.764 -9.287 -20.006 1.00 17.50 A N
 ATOM 2883 CA GLU A 352 42.529 -9.442 -19.253 1.00 20.07 A C
 ATOM 2884 CB GLU A 352 42.542 -10.806 -18.546 1.00 23.74 A C
 ATOM 2885 CG GLU A 352 42.695 -12.044 -19.444 1.00 36.13 A C
 ATOM 2886 CD GLU A 352 41.454 -12.383 -20.264 1.00 42.77 A C
 ATOM 2887 OE1 GLU A 352 40.402 -11.710 -20.115 1.00 44.84 A O
 ATOM 2888 OE2 GLU A 352 41.551 -13.335 -21.074 1.00 62.66 A O
 ATOM 2889 C GLU A 352 42.423 -8.383 -18.166 1.00 19.66 A C
 ATOM 2890 O GLU A 352 43.444 -8.034 -17.542 1.00 15.51 A O
 ATOM 2891 N ASN A 353 41.203 -7.934 -17.898 1.00 20.74 A N
 ATOM 2892 CA ASN A 353 40.918 -7.090 -16.739 1.00 22.43 A C
 ATOM 2893 CB ASN A 353 39.822 -6.099 -17.083 1.00 23.62 A C
 ATOM 2894 CG ASN A 353 39.486 -5.180 -15.917 1.00 19.76 A C
 ATOM 2895 OD1 ASN A 353 40.047 -5.295 -14.821 1.00 20.21 A O
 ATOM 2896 ND2 ASN A 353 38.565 -4.287 -16.141 1.00 23.44 A N

ATOM 2897 C ASN A 353 40.535 -7.929 -15.510 1.00 23.59 A C
 ATOM 2898 O ASN A 353 39.426 -8.430 -15.432 1.00 23.24 A O
 ATOM 2899 N ILE A 354 41.448 -8.068 -14.551 1.00 16.39 A N
 ATOM 2900 CA ILE A 354 41.213 -8.909 -13.377 1.00 18.18 A C
 ATOM 2901 CB ILE A 354 42.471 -9.826 -13.071 1.00 20.87 A C
 ATOM 2902 CG1 ILE A 354 43.685 -8.961 -12.679 1.00 23.86 A C
 ATOM 2903 CD1 ILE A 354 44.869 -9.681 -12.114 1.00 22.04 A C
 ATOM 2904 CG2 ILE A 354 42.818 -10.649 -14.246 1.00 26.49 A C
 ATOM 2905 C ILE A 354 40.863 -8.076 -12.134 1.00 17.05 A C
 ATOM 2906 O ILE A 354 40.740 -8.614 -11.023 1.00 16.63 A O
 ATOM 2907 N LEU A 355 40.698 -6.776 -12.313 1.00 15.40 A N
 ATOM 2908 CA LEU A 355 40.503 -5.870 -11.179 1.00 16.59 A C
 ATOM 2909 CB LEU A 355 40.312 -4.422 -11.658 1.00 15.17 A C
 ATOM 2910 CG LEU A 355 40.244 -3.371 -10.554 1.00 16.92 A C
 ATOM 2911 CD1 LEU A 355 41.444 -3.440 -9.684 1.00 12.65 A C
 ATOM 2912 CD2 LEU A 355 40.076 -1.969 -11.169 1.00 15.94 A C
 ATOM 2913 C LEU A 355 39.307 -6.277 -10.343 1.00 19.71 A C
 ATOM 2914 O LEU A 355 39.411 -6.270 -9.125 1.00 20.01 A O
 ATOM 2915 N PRO A 356 38.197 -6.733 -10.994 1.00 19.04 A N
 ATOM 2916 CA PRO A 356 37.082 -7.168 -10.157 1.00 22.46 A C
 ATOM 2917 CB PRO A 356 36.016 -7.617 -11.181 1.00 27.85 A C
 ATOM 2918 CG PRO A 356 36.381 -6.909 -12.466 1.00 26.81 A C
 ATOM 2919 CD PRO A 356 37.871 -6.785 -12.440 1.00 18.70 A C
 ATOM 2920 C PRO A 356 37.425 -8.284 -9.165 1.00 17.63 A C
 ATOM 2921 O PRO A 356 36.912 -8.276 -8.056 1.00 19.64 A O
 ATOM 2922 N TYR A 357 38.292 -9.222 -9.535 1.00 17.75 A N
 ATOM 2923 CA TYR A 357 38.639 -10.313 -8.666 1.00 18.75 A C
 ATOM 2924 CB TYR A 357 39.296 -11.463 -9.439 1.00 23.81 A C
 ATOM 2925 CG TYR A 357 38.510 -11.780 -10.695 1.00 27.29 A C
 ATOM 2926 CD1 TYR A 357 37.253 -12.358 -10.623 1.00 43.84 A C
 ATOM 2927 CE1 TYR A 357 36.495 -12.599 -11.777 1.00 48.29 A C
 ATOM 2928 CZ TYR A 357 36.998 -12.243 -13.007 1.00 43.38 A C
 ATOM 2929 OH TYR A 357 36.278 -12.488 -14.147 1.00 57.79 A O
 ATOM 2930 CE2 TYR A 357 38.240 -11.670 -13.109 1.00 35.02 A C
 ATOM 2931 CD2 TYR A 357 38.992 -11.438 -11.941 1.00 30.70 A C
 ATOM 2932 C TYR A 357 39.569 -9.861 -7.539 1.00 20.46 A C
 ATOM 2933 O TYR A 357 39.448 -10.336 -6.424 1.00 17.34 A O
 ATOM 2934 N LEU A 358 40.505 -8.963 -7.837 1.00 19.62 A N
 ATOM 2935 CA LEU A 358 41.416 -8.435 -6.816 1.00 18.46 A C
 ATOM 2936 CB LEU A 358 42.504 -7.567 -7.462 1.00 17.42 A C
 ATOM 2937 CG LEU A 358 43.342 -8.234 -8.557 1.00 18.52 A C
 ATOM 2938 CD1 LEU A 358 44.447 -7.314 -9.129 1.00 13.44 A C
 ATOM 2939 CD2 LEU A 358 43.965 -9.585 -8.082 1.00 15.36 A C
 ATOM 2940 C LEU A 358 40.643 -7.607 -5.802 1.00 18.16 A C
 ATOM 2941 O LEU A 358 40.897 -7.703 -4.621 1.00 18.07 A O
 ATOM 2942 N THR A 359 39.706 -6.769 -6.258 1.00 17.16 A N
 ATOM 2943 CA THR A 359 38.970 -5.910 -5.340 1.00 19.21 A C
 ATOM 2944 CB THR A 359 38.265 -4.733 -6.053 1.00 19.64 A C
 ATOM 2945 OG1 THR A 359 37.306 -5.211 -7.012 1.00 17.02 A O
 ATOM 2946 CG2 THR A 359 39.292 -3.852 -6.759 1.00 17.09 A C
 ATOM 2947 C THR A 359 37.986 -6.703 -4.461 1.00 20.32 A C
 ATOM 2948 O THR A 359 37.809 -6.396 -3.291 1.00 17.74 A O
 ATOM 2949 N LYS A 360 37.426 -7.774 -5.000 1.00 21.30 A N
 ATOM 2950 CA LYS A 360 36.511 -8.616 -4.227 1.00 20.03 A C
 ATOM 2951 CB LYS A 360 35.804 -9.623 -5.139 1.00 21.21 A C
 ATOM 2952 CG LYS A 360 34.793 -10.541 -4.420 1.00 24.65 A C
 ATOM 2953 CD LYS A 360 33.613 -9.722 -3.911 1.00 35.48 A C
 ATOM 2954 CE LYS A 360 32.377 -10.588 -3.593 1.00 39.73 A C
 ATOM 2955 NZ LYS A 360 32.596 -11.358 -2.350 1.00 34.91 A N
 ATOM 2956 C LYS A 360 37.269 -9.304 -3.108 1.00 18.87 A C
 ATOM 2957 O LYS A 360 36.755 -9.380 -2.000 1.00 16.32 A O
 ATOM 2958 N ALA A 361 38.484 -9.787 -3.390 1.00 17.75 A N
 ATOM 2959 CA ALA A 361 39.342 -10.403 -2.377 1.00 17.01 A C
 ATOM 2960 CB ALA A 361 40.691 -10.895 -2.975 1.00 16.89 A C
 ATOM 2961 C ALA A 361 39.581 -9.431 -1.254 1.00 21.37 A C
 ATOM 2962 O ALA A 361 39.459 -9.793 -0.086 1.00 18.78 A O

ATOM 2963 N TRP A 362 39.869 -8.168 -1.589 1.00 16.02 A N
 ATOM 2964 CA TRP A 362 40.057 -7.156 -0.530 1.00 16.57 A C
 ATOM 2965 CB TRP A 362 40.683 -5.842 -1.117 1.00 15.44 A C
 ATOM 2966 CG TRP A 362 42.175 -6.013 -1.080 1.00 15.77 A C
 ATOM 2967 CD1 TRP A 362 43.022 -6.410 -2.106 1.00 15.92 A C
 ATOM 2968 NE1 TRP A 362 44.291 -6.530 -1.649 1.00 16.94 A N
 ATOM 2969 CE2 TRP A 362 44.346 -6.288 -0.320 1.00 17.44 A C
 ATOM 2970 CD2 TRP A 362 43.006 -5.980 0.113 1.00 14.82 A C
 ATOM 2971 CE3 TRP A 362 42.779 -5.658 1.442 1.00 14.35 A C
 ATOM 2972 CZ3 TRP A 362 43.853 -5.674 2.323 1.00 16.82 A C
 ATOM 2973 CH2 TRP A 362 45.132 -5.996 1.892 1.00 18.89 A C
 ATOM 2974 CZ2 TRP A 362 45.406 -6.316 0.563 1.00 17.80 A C
 ATOM 2975 C TRP A 362 38.778 -6.870 0.258 1.00 16.02 A C
 ATOM 2976 O TRP A 362 38.825 -6.702 1.479 1.00 17.20 A O
 ATOM 2977 N ALA A 363 37.635 -6.790 -0.425 1.00 15.47 A N
 ATOM 2978 CA ALA A 363 36.345 -6.545 0.264 1.00 15.85 A C
 ATOM 2979 CB ALA A 363 35.192 -6.378 -0.737 1.00 13.63 A C
 ATOM 2980 C ALA A 363 36.043 -7.692 1.209 1.00 17.54 A C
 ATOM 2981 O ALA A 363 35.605 -7.482 2.357 1.00 15.67 A O
 ATOM 2982 N ASP A 364 36.266 -8.912 0.730 1.00 17.17 A N
 ATOM 2983 CA ASP A 364 36.021 -10.081 1.558 1.00 19.58 A C
 ATOM 2984 CB ASP A 364 36.261 -11.379 0.777 1.00 18.80 A C
 ATOM 2985 CG ASP A 364 35.186 -11.654 -0.277 1.00 25.03 A C
 ATOM 2986 OD1 ASP A 364 34.163 -10.933 -0.313 1.00 24.08 A O
 ATOM 2987 OD2 ASP A 364 35.411 -12.586 -1.089 1.00 30.13 A O
 ATOM 2988 C ASP A 364 36.923 -10.077 2.775 1.00 21.21 A C
 ATOM 2989 O ASP A 364 36.488 -10.396 3.879 1.00 22.54 A O
 ATOM 2990 N LEU A 365 38.180 -9.700 2.602 1.00 17.93 A N
 ATOM 2991 CA LEU A 365 39.091 -9.657 3.759 1.00 15.56 A C
 ATOM 2992 CB LEU A 365 40.539 -9.491 3.316 1.00 18.51 A C
 ATOM 2993 CG LEU A 365 41.573 -9.334 4.445 1.00 19.97 A C
 ATOM 2994 CD1 LEU A 365 41.577 -10.605 5.310 1.00 18.02 A C
 ATOM 2995 CD2 LEU A 365 42.952 -9.086 3.812 1.00 18.89 A C
 ATOM 2996 C LEU A 365 38.705 -8.584 4.751 1.00 15.45 A C
 ATOM 2997 O LEU A 365 38.648 -8.831 5.949 1.00 16.28 A O
 ATOM 2998 N CYS A 366 38.450 -7.376 4.253 1.00 16.26 A N
 ATOM 2999 CA CYS A 366 37.990 -6.297 5.112 1.00 17.29 A C
 ATOM 3000 CB CYS A 366 37.850 -4.994 4.322 1.00 17.89 A C
 ATOM 3001 SG CYS A 366 39.503 -4.353 3.920 1.00 21.78 A S
 ATOM 3002 C CYS A 366 36.698 -6.658 5.838 1.00 17.80 A C
 ATOM 3003 O CYS A 366 36.572 -6.362 7.025 1.00 16.43 A O
 ATOM 3004 N ASN A 367 35.776 -7.340 5.157 1.00 18.27 A N
 ATOM 3005 CA ASN A 367 34.563 -7.799 5.849 1.00 19.89 A C
 ATOM 3006 CB ASN A 367 33.480 -8.314 4.879 1.00 19.83 A C
 ATOM 3007 CG ASN A 367 32.559 -7.191 4.413 1.00 22.39 A C
 ATOM 3008 OD1 ASN A 367 31.795 -6.645 5.211 1.00 25.95 A O
 ATOM 3009 ND2 ASN A 367 32.654 -6.820 3.141 1.00 21.60 A N
 ATOM 3010 C ASN A 367 34.838 -8.831 6.930 1.00 17.90 A C
 ATOM 3011 O ASN A 367 34.139 -8.845 7.947 1.00 19.27 A O
 ATOM 3012 N ALA A 368 35.835 -9.690 6.724 1.00 17.50 A N
 ATOM 3013 CA ALA A 368 36.199 -10.694 7.735 1.00 16.98 A C
 ATOM 3014 CB ALA A 368 37.171 -11.765 7.159 1.00 15.68 A C
 ATOM 3015 C ALA A 368 36.829 -9.969 8.953 1.00 17.79 A C
 ATOM 3016 O ALA A 368 36.525 -10.318 10.104 1.00 15.50 A O
 ATOM 3017 N PHE A 369 37.692 -8.966 8.714 1.00 17.82 A N
 ATOM 3018 CA PHE A 369 38.229 -8.147 9.824 1.00 16.77 A C
 ATOM 3019 CB PHE A 369 39.221 -7.071 9.339 1.00 18.30 A C
 ATOM 3020 CG PHE A 369 40.568 -7.590 8.837 1.00 19.24 A C
 ATOM 3021 CD1 PHE A 369 41.131 -8.763 9.306 1.00 19.40 A C
 ATOM 3022 CE1 PHE A 369 42.396 -9.193 8.869 1.00 26.18 A C
 ATOM 3023 CZ PHE A 369 43.111 -8.439 7.950 1.00 23.12 A C
 ATOM 3024 CE2 PHE A 369 42.564 -7.263 7.477 1.00 22.91 A C
 ATOM 3025 CD2 PHE A 369 41.304 -6.828 7.940 1.00 22.68 A C
 ATOM 3026 C PHE A 369 37.092 -7.420 10.562 1.00 16.24 A C
 ATOM 3027 O PHE A 369 37.101 -7.327 11.798 1.00 16.27 A O
 ATOM 3028 N LEU A 370 36.156 -6.842 9.815 1.00 16.48 A N

ATOM 3029 CA LEU A 370 35.027 -6.121 10.447 1.00 16.80 A C
 ATOM 3030 CB LEU A 370 34.116 -5.493 9.387 1.00 17.12 A C
 ATOM 3031 CG LEU A 370 32.976 -4.592 9.855 1.00 18.29 A C
 ATOM 3032 CD1 LEU A 370 33.490 -3.370 10.629 1.00 15.76 A C
 ATOM 3033 CD2 LEU A 370 32.150 -4.145 8.629 1.00 18.79 A C
 ATOM 3034 C LEU A 370 34.220 -7.045 11.361 1.00 15.54 A C
 ATOM 3035 O LEU A 370 33.890 -6.677 12.490 1.00 14.64 A O
 ATOM 3036 N GLN A 371 33.947 -8.263 10.896 1.00 16.12 A N
 ATOM 3037 CA GLN A 371 33.151 -9.219 11.699 1.00 14.85 A C
 ATOM 3038 CB GLN A 371 32.855 -10.487 10.893 1.00 17.23 A C
 ATOM 3039 CG GLN A 371 32.175 -11.586 11.707 1.00 20.63 A C
 ATOM 3040 CD GLN A 371 30.784 -11.161 12.089 1.00 22.06 A C
 ATOM 3041 OE1 GLN A 371 30.550 -10.601 13.173 1.00 21.46 A O
 ATOM 3042 NE2 GLN A 371 29.874 -11.320 11.162 1.00 21.27 A N
 ATOM 3043 C GLN A 371 33.886 -9.539 12.994 1.00 14.40 A C
 ATOM 3044 O GLN A 371 33.276 -9.607 14.067 1.00 14.54 A O
 ATOM 3045 N GLU A 372 35.212 -9.653 12.932 1.00 16.62 A N
 ATOM 3046 CA GLU A 372 36.005 -9.834 14.162 1.00 19.01 A C
 ATOM 3047 CB GLU A 372 37.491 -10.119 13.857 1.00 20.98 A C
 ATOM 3048 CG GLU A 372 37.711 -11.554 13.396 1.00 29.08 A C
 ATOM 3049 CD GLU A 372 39.158 -11.908 12.942 1.00 33.39 A C
 ATOM 3050 OE1 GLU A 372 40.011 -10.990 12.711 1.00 34.79 A O
 ATOM 3051 OE2 GLU A 372 39.407 -13.143 12.811 1.00 29.74 A O
 ATOM 3052 C GLU A 372 35.918 -8.648 15.108 1.00 17.90 A C
 ATOM 3053 O GLU A 372 35.813 -8.810 16.310 1.00 15.75 A O
 ATOM 3054 N ALA A 373 36.024 -7.455 14.552 1.00 17.76 A N
 ATOM 3055 CA ALA A 373 35.941 -6.235 15.352 1.00 19.33 A C
 ATOM 3056 CB ALA A 373 36.161 -5.006 14.449 1.00 17.45 A C
 ATOM 3057 C ALA A 373 34.559 -6.177 16.042 1.00 18.40 A C
 ATOM 3058 O ALA A 373 34.439 -5.813 17.217 1.00 18.25 A O
 ATOM 3059 N LYS A 374 33.523 -6.533 15.304 1.00 18.27 A N
 ATOM 3060 CA LYS A 374 32.148 -6.485 15.839 1.00 23.07 A C
 ATOM 3061 CB LYS A 374 31.127 -6.708 14.722 1.00 25.62 A C
 ATOM 3062 CG LYS A 374 30.946 -5.491 13.852 1.00 30.72 A C
 ATOM 3063 CD LYS A 374 29.908 -5.715 12.751 1.00 33.77 A C
 ATOM 3064 CE LYS A 374 29.633 -4.423 11.995 1.00 32.01 A C
 ATOM 3065 NZ LYS A 374 28.908 -4.688 10.703 1.00 28.44 A N
 ATOM 3066 C LYS A 374 31.922 -7.489 16.970 1.00 21.53 A C
 ATOM 3067 O LYS A 374 31.345 -7.148 17.994 1.00 22.96 A O
 ATOM 3068 N TRP A 375 32.343 -8.731 16.773 1.00 21.14 A N
 ATOM 3069 CA TRP A 375 32.234 -9.734 17.824 1.00 20.44 A C
 ATOM 3070 CB TRP A 375 32.831 -11.056 17.375 1.00 17.79 A C
 ATOM 3071 CG TRP A 375 31.969 -11.869 16.458 1.00 17.05 A C
 ATOM 3072 CD1 TRP A 375 30.592 -11.922 16.408 1.00 19.16 A C
 ATOM 3073 NE1 TRP A 375 30.175 -12.815 15.454 1.00 20.51 A N
 ATOM 3074 CE2 TRP A 375 31.207 -13.387 14.862 1.00 19.06 A C
 ATOM 3075 CD2 TRP A 375 32.413 -12.826 15.465 1.00 16.94 A C
 ATOM 3076 CE3 TRP A 375 33.651 -13.251 15.017 1.00 18.68 A C
 ATOM 3077 CZ3 TRP A 375 33.692 -14.221 14.022 1.00 18.14 A C
 ATOM 3078 CH2 TRP A 375 32.516 -14.753 13.457 1.00 20.50 A C
 ATOM 3079 CZ2 TRP A 375 31.256 -14.357 13.863 1.00 18.39 A C
 ATOM 3080 C TRP A 375 32.934 -9.300 19.096 1.00 24.17 A C
 ATOM 3081 O TRP A 375 32.446 -9.538 20.197 1.00 23.79 A O
 ATOM 3082 N LEU A 376 34.094 -8.684 18.954 1.00 21.61 A N
 ATOM 3083 CA LEU A 376 34.879 -8.243 20.111 1.00 25.50 A C
 ATOM 3084 CB LEU A 376 36.252 -7.756 19.649 1.00 29.13 A C
 ATOM 3085 CG LEU A 376 37.352 -7.786 20.704 1.00 40.86 A C
 ATOM 3086 CD1 LEU A 376 37.818 -9.236 20.886 1.00 47.30 A C
 ATOM 3087 CD2 LEU A 376 38.521 -6.872 20.313 1.00 40.17 A C
 ATOM 3088 C LEU A 376 34.173 -7.108 20.853 1.00 24.00 A C
 ATOM 3089 O LEU A 376 34.076 -7.113 22.072 1.00 24.75 A O
 ATOM 3090 N TYR A 377 33.682 -6.135 20.094 1.00 21.41 A N
 ATOM 3091 CA TYR A 377 33.004 -4.999 20.663 1.00 22.87 A C
 ATOM 3092 CB TYR A 377 32.630 -4.002 19.556 1.00 25.18 A C
 ATOM 3093 CG TYR A 377 31.858 -2.792 20.054 1.00 27.72 A C
 ATOM 3094 CD1 TYR A 377 32.491 -1.794 20.806 1.00 34.13 A C

ATOM 3095 CE1 TYR A 377 31.777 -0.673 21.288 1.00 36.47 A C
 ATOM 3096 CZ TYR A 377 30.425 -0.549 21.001 1.00 38.76 A C
 ATOM 3097 OH TYR A 377 29.719 0.539 21.465 1.00 46.84 A O
 ATOM 3098 CE2 TYR A 377 29.773 -1.526 20.248 1.00 38.56 A C
 ATOM 3099 CD2 TYR A 377 30.499 -2.641 19.776 1.00 33.27 A C
 ATOM 3100 C TYR A 377 31.742 -5.446 21.425 1.00 26.24 A C
 ATOM 3101 O TYR A 377 31.482 -4.971 22.514 1.00 26.71 A O
 ATOM 3102 N ASN A 378 30.958 -6.344 20.829 1.00 24.22 A N
 ATOM 3103 CA ASN A 378 29.704 -6.794 21.429 1.00 27.32 A C
 ATOM 3104 CB ASN A 378 28.724 -7.198 20.341 1.00 28.78 A C
 ATOM 3105 CG ASN A 378 28.337 -6.036 19.460 1.00 28.02 A C
 ATOM 3106 OD1 ASN A 378 28.096 -4.938 19.937 1.00 36.83 A O
 ATOM 3107 ND2 ASN A 378 28.263 -6.275 18.176 1.00 34.11 A N
 ATOM 3108 C ASN A 378 29.896 -7.947 22.393 1.00 26.44 A C
 ATOM 3109 O ASN A 378 28.933 -8.441 22.949 1.00 22.29 A O
 ATOM 3110 N LYS A 379 31.144 -8.371 22.584 1.00 27.62 A N
 ATOM 3111 CA LYS A 379 31.454 -9.531 23.411 1.00 28.83 A C
 ATOM 3112 CB LYS A 379 31.256 -9.169 24.895 1.00 31.31 A C
 ATOM 3113 CG LYS A 379 32.247 -8.093 25.353 1.00 38.56 A C
 ATOM 3114 CD LYS A 379 31.787 -7.303 26.564 1.00 45.70 A C
 ATOM 3115 CE LYS A 379 32.906 -6.401 27.055 1.00 47.62 A C
 ATOM 3116 NZ LYS A 379 32.469 -5.534 28.178 1.00 57.66 A N
 ATOM 3117 C LYS A 379 30.638 -10.765 22.980 1.00 25.15 A C
 ATOM 3118 O LYS A 379 30.102 -11.492 23.807 1.00 28.12 A O
 ATOM 3119 N SER A 380 30.545 -10.992 21.675 1.00 24.80 A N
 ATOM 3120 CA SER A 380 29.787 -12.121 21.144 1.00 22.46 A C
 ATOM 3121 CB SER A 380 29.565 -11.957 19.645 1.00 24.96 A C
 ATOM 3122 OG SER A 380 29.059 -10.652 19.336 1.00 20.52 A O
 ATOM 3123 C SER A 380 30.510 -13.425 21.458 1.00 22.51 A C
 ATOM 3124 O SER A 380 31.691 -13.437 21.764 1.00 27.18 A O
 ATOM 3125 N THR A 381 29.773 -14.520 21.429 1.00 22.40 A N
 ATOM 3126 CA THR A 381 30.302 -15.827 21.715 1.00 22.08 A C
 ATOM 3127 CB THR A 381 29.715 -16.422 23.058 1.00 24.95 A C
 ATOM 3128 OG1 THR A 381 28.288 -16.450 22.963 1.00 26.79 A O
 ATOM 3129 CG2 THR A 381 30.081 -15.588 24.317 1.00 21.92 A C
 ATOM 3130 C THR A 381 29.868 -16.700 20.537 1.00 23.52 A C
 ATOM 3131 O THR A 381 29.037 -17.575 20.699 1.00 23.64 A O
 ATOM 3132 N PRO A 382 30.413 -16.462 19.333 1.00 22.31 A N
 ATOM 3133 CA PRO A 382 30.015 -17.325 18.219 1.00 18.54 A C
 ATOM 3134 CB PRO A 382 30.707 -16.680 17.017 1.00 22.53 A C
 ATOM 3135 CG PRO A 382 31.991 -16.111 17.629 1.00 22.28 A C
 ATOM 3136 CD PRO A 382 31.444 -15.491 18.934 1.00 22.64 A C
 ATOM 3137 C PRO A 382 30.536 -18.749 18.416 1.00 21.29 A C
 ATOM 3138 O PRO A 382 31.526 -18.964 19.124 1.00 24.96 A O
 ATOM 3139 N THR A 383 29.893 -19.707 17.763 1.00 20.15 A N
 ATOM 3140 CA THR A 383 30.333 -21.085 17.802 1.00 23.53 A C
 ATOM 3141 CB THR A 383 29.357 -21.983 17.034 1.00 28.25 A C
 ATOM 3142 OG1 THR A 383 29.399 -21.622 15.645 1.00 23.26 A O
 ATOM 3143 CG2 THR A 383 27.905 -21.865 17.595 1.00 24.27 A C
 ATOM 3144 C THR A 383 31.706 -21.213 17.128 1.00 25.20 A C
 ATOM 3145 O THR A 383 32.118 -20.315 16.401 1.00 22.28 A O
 ATOM 3146 N PHE A 384 32.397 -22.329 17.372 1.00 24.54 A N
 ATOM 3147 CA PHE A 384 33.639 -22.623 16.685 1.00 23.44 A C
 ATOM 3148 CB PHE A 384 34.224 -23.977 17.066 1.00 24.59 A C
 ATOM 3149 CG PHE A 384 35.441 -24.332 16.261 1.00 22.84 A C
 ATOM 3150 CD1 PHE A 384 36.661 -23.788 16.571 1.00 22.31 A C
 ATOM 3151 CE1 PHE A 384 37.787 -24.069 15.826 1.00 22.72 A C
 ATOM 3152 CZ PHE A 384 37.705 -24.897 14.743 1.00 23.44 A C
 ATOM 3153 CE2 PHE A 384 36.490 -25.439 14.390 1.00 23.71 A C
 ATOM 3154 CD2 PHE A 384 35.350 -25.152 15.155 1.00 21.29 A C
 ATOM 3155 C PHE A 384 33.479 -22.568 15.188 1.00 21.88 A C
 ATOM 3156 O PHE A 384 34.320 -21.991 14.505 1.00 20.61 A O
 ATOM 3157 N ASP A 385 32.456 -23.210 14.652 1.00 20.33 A N
 ATOM 3158 CA ASP A 385 32.313 -23.230 13.193 1.00 23.64 A C
 ATOM 3159 CB ASP A 385 31.123 -24.069 12.735 1.00 28.59 A C
 ATOM 3160 CG ASP A 385 31.343 -25.578 12.918 1.00 34.42 A C

ATOM 3161 OD1 ASP A 385 32.495 -26.056 12.965 1.00 30.99 A O
 ATOM 3162 OD2 ASP A 385 30.332 -26.289 13.005 1.00 39.78 A O
 ATOM 3163 C ASP A 385 32.186 -21.821 12.612 1.00 24.06 A C
 ATOM 3164 O ASP A 385 32.748 -21.550 11.562 1.00 21.14 A O
 ATOM 3165 N ASP A 386 31.429 -20.951 13.269 1.00 20.63 A N
 ATOM 3166 CA ASP A 386 31.252 -19.587 12.770 1.00 22.72 A C
 ATOM 3167 CB ASP A 386 30.090 -18.890 13.457 1.00 23.71 A C
 ATOM 3168 CG ASP A 386 28.732 -19.369 12.936 1.00 32.71 A C
 ATOM 3169 OD1 ASP A 386 28.706 -20.087 11.917 1.00 33.39 A O
 ATOM 3170 OD2 ASP A 386 27.696 -19.008 13.532 1.00 37.76 A O
 ATOM 3171 C ASP A 386 32.525 -18.757 12.913 1.00 22.35 A C
 ATOM 3172 O ASP A 386 32.924 -18.085 11.951 1.00 21.45 A O
 ATOM 3173 N TYR A 387 33.150 -18.819 14.095 1.00 19.24 A N
 ATOM 3174 CA TYR A 387 34.385 -18.120 14.344 1.00 18.73 A C
 ATOM 3175 CB TYR A 387 34.912 -18.343 15.766 1.00 21.24 A C
 ATOM 3176 CG TYR A 387 36.143 -17.508 16.016 1.00 20.82 A C
 ATOM 3177 CD1 TYR A 387 36.025 -16.151 16.308 1.00 24.25 A C
 ATOM 3178 CE1 TYR A 387 37.148 -15.359 16.491 1.00 27.11 A C
 ATOM 3179 CZ TYR A 387 38.411 -15.922 16.349 1.00 24.94 A C
 ATOM 3180 OH TYR A 387 39.505 -15.131 16.526 1.00 25.59 A O
 ATOM 3181 CE2 TYR A 387 38.555 -17.257 16.033 1.00 24.64 A C
 ATOM 3182 CD2 TYR A 387 37.423 -18.044 15.861 1.00 24.24 A C
 ATOM 3183 C TYR A 387 35.455 -18.539 13.355 1.00 20.98 A C
 ATOM 3184 O TYR A 387 36.068 -17.699 12.693 1.00 15.42 A O
 ATOM 3185 N PHE A 388 35.679 -19.843 13.247 1.00 19.21 A N
 ATOM 3186 CA PHE A 388 36.772 -20.357 12.411 1.00 19.17 A C
 ATOM 3187 CB PHE A 388 36.991 -21.843 12.681 1.00 20.60 A C
 ATOM 3188 CG PHE A 388 38.101 -22.427 11.904 1.00 19.86 A C
 ATOM 3189 CD1 PHE A 388 39.403 -22.056 12.155 1.00 21.76 A C
 ATOM 3190 CE1 PHE A 388 40.433 -22.577 11.410 1.00 22.56 A C
 ATOM 3191 CZ PHE A 388 40.172 -23.493 10.430 1.00 19.58 A C
 ATOM 3192 CE2 PHE A 388 38.899 -23.862 10.156 1.00 20.94 A C
 ATOM 3193 CD2 PHE A 388 37.849 -23.317 10.890 1.00 20.92 A C
 ATOM 3194 C PHE A 388 36.539 -20.100 10.935 1.00 19.06 A C
 ATOM 3195 O PHE A 388 37.497 -19.788 10.188 1.00 17.17 A O
 ATOM 3196 N GLY A 389 35.272 -20.191 10.528 1.00 19.37 A N
 ATOM 3197 CA GLY A 389 34.882 -19.911 9.159 1.00 22.43 A C
 ATOM 3198 C GLY A 389 35.304 -18.514 8.761 1.00 19.92 A C
 ATOM 3199 O GLY A 389 35.929 -18.307 7.713 1.00 20.11 A O
 ATOM 3200 N ASN A 390 35.047 -17.560 9.644 1.00 19.07 A N
 ATOM 3201 CA ASN A 390 35.560 -16.207 9.435 1.00 18.25 A C
 ATOM 3202 CB ASN A 390 34.861 -15.268 10.395 1.00 17.19 A C
 ATOM 3203 CG ASN A 390 35.081 -13.821 10.048 1.00 16.60 A C
 ATOM 3204 OD1 ASN A 390 34.530 -13.343 9.095 1.00 16.51 A O
 ATOM 3205 ND2 ASN A 390 35.892 -13.121 10.836 1.00 13.78 A N
 ATOM 3206 C ASN A 390 37.098 -16.077 9.543 1.00 17.48 A C
 ATOM 3207 O ASN A 390 37.734 -15.345 8.758 1.00 18.21 A O
 ATOM 3208 N ALA A 391 37.684 -16.754 10.531 1.00 18.86 A N
 ATOM 3209 CA ALA A 391 39.105 -16.616 10.877 1.00 17.38 A C
 ATOM 3210 CB ALA A 391 39.410 -17.321 12.235 1.00 17.83 A C
 ATOM 3211 C ALA A 391 40.057 -17.117 9.793 1.00 16.51 A C
 ATOM 3212 O ALA A 391 41.133 -16.558 9.609 1.00 16.69 A O
 ATOM 3213 N TRP A 392 39.708 -18.166 9.070 1.00 17.06 A N
 ATOM 3214 CA TRP A 392 40.571 -18.582 7.987 1.00 17.60 A C
 ATOM 3215 CB TRP A 392 40.433 -20.048 7.559 1.00 16.27 A C
 ATOM 3216 CG TRP A 392 39.154 -20.481 6.953 1.00 16.13 A C
 ATOM 3217 CD1 TRP A 392 38.125 -21.201 7.565 1.00 21.78 A C
 ATOM 3218 NE1 TRP A 392 37.101 -21.404 6.705 1.00 19.34 A N
 ATOM 3219 CE2 TRP A 392 37.397 -20.927 5.496 1.00 20.92 A C
 ATOM 3220 CD2 TRP A 392 38.704 -20.278 5.591 1.00 18.15 A C
 ATOM 3221 CE3 TRP A 392 39.256 -19.693 4.463 1.00 16.56 A C
 ATOM 3222 CZ3 TRP A 392 38.521 -19.736 3.287 1.00 19.13 A C
 ATOM 3223 CH2 TRP A 392 37.256 -20.360 3.222 1.00 21.25 A C
 ATOM 3224 CZ2 TRP A 392 36.681 -20.974 4.320 1.00 21.97 A C
 ATOM 3225 C TRP A 392 40.507 -17.626 6.846 1.00 18.28 A C
 ATOM 3226 O TRP A 392 41.498 -17.497 6.152 1.00 18.17 A O
 ATOM 3227 N LYS A 393 39.399 -16.918 6.649 1.00 18.78 A N
 ATOM 3228 CA ALYS A 393 39.388 -15.804 5.681 0.50 20.43 A C
 ATOM 3229 CA BLYS A 393 39.371 -15.803 5.682 0.50 20.39 A C
 ATOM 3230 CB ALYS A 393 37.957 -15.372 5.372 0.50 20.93 A C
 ATOM 3231 CB BLYS A 393 37.926 -15.367 5.411 0.50 20.85 A C
 ATOM 3232 CG ALYS A 393 37.194 -16.439 4.616 0.50 25.28 A C
 ATOM 3233 CG BLYS A 393 37.100 -16.414 4.649 0.50 25.10 A C
 ATOM 3234 CD ALYS A 393 35.912 -15.946 3.994 0.50 25.25 A C
 ATOM 3235 CD BLYS A 393 35.588 -16.182 4.735 0.50 25.71 A C
 ATOM 3236 CE ALYS A 393 35.147 -17.080 3.303 0.50 28.64 A C
 ATOM 3237 CE BLYS A 393 34.747 -17.391 4.218 0.50 29.85 A C
 ATOM 3238 NZ ALYS A 393 33.835 -16.643 2.731 0.50 30.37 A N
 ATOM 3239 NZ BLYS A 393 34.371 -18.403 5.275 0.50 26.32 A N
 ATOM 3240 C LYS A 393 40.215 -14.594 6.157 1.00 21.19 A C
 ATOM 3241 O LYS A 393 40.978 -13.980 5.370 1.00 19.62 A O
 ATOM 3242 N SER A 394 40.081 -14.258 7.435 1.00 18.93 A N
 ATOM 3243 CA SER A 394 40.788 -13.129 8.020 1.00 18.32 A C
 ATOM 3244 CB SER A 394 40.208 -12.768 9.390 1.00 19.03 A C
 ATOM 3245 OG SER A 394 40.696 -13.614 10.427 1.00 21.24 A O
 ATOM 3246 C SER A 394 42.274 -13.343 8.152 1.00 20.59 A C
 ATOM 3247 O SER A 394 43.010 -12.383 8.365 1.00 18.07 A O
 ATOM 3248 N SER A 395 42.742 -14.588 8.032 1.00 17.06 A N
 ATOM 3249 CA SER A 395 44.179 -14.855 7.974 1.00 17.63 A C
 ATOM 3250 CB SER A 395 44.442 -16.380 7.806 1.00 18.39 A C
 ATOM 3251 OG SER A 395 44.064 -16.824 6.517 1.00 17.46 A O
 ATOM 3252 C SER A 395 44.844 -14.108 6.831 1.00 15.64 A C
 ATOM 3253 O SER A 395 46.028 -13.801 6.885 1.00 16.53 A O
 ATOM 3254 N SER A 396 44.084 -13.900 5.774 1.00 13.99 A N
 ATOM 3255 CA SER A 396 44.517 -13.353 4.485 1.00 16.21 A C
 ATOM 3256 CB SER A 396 45.480 -12.161 4.627 1.00 19.71 A C
 ATOM 3257 OG SER A 396 46.832 -12.545 4.880 1.00 18.63 A O
 ATOM 3258 C SER A 396 45.086 -14.424 3.541 1.00 18.46 A C
 ATOM 3259 O SER A 396 45.476 -14.115 2.407 1.00 18.03 A O
 ATOM 3260 N GLY A 397 45.096 -15.681 3.985 1.00 20.43 A N
 ATOM 3261 CA GLY A 397 45.534 -16.792 3.112 1.00 17.12 A C
 ATOM 3262 C GLY A 397 44.851 -16.817 1.771 1.00 18.07 A C
 ATOM 3263 O GLY A 397 45.497 -16.922 0.700 1.00 20.20 A O
 ATOM 3264 N PRO A 398 43.530 -16.729 1.775 1.00 14.60 A N
 ATOM 3265 CA PRO A 398 42.879 -16.744 0.495 1.00 15.16 A C
 ATOM 3266 CB PRO A 398 41.396 -16.743 0.852 1.00 15.38 A C
 ATOM 3267 CG PRO A 398 41.355 -17.315 2.211 1.00 17.75 A C
 ATOM 3268 CD PRO A 398 42.564 -16.797 2.877 1.00 14.99 A C
 ATOM 3269 C PRO A 398 43.195 -15.562 -0.417 1.00 15.54 A C
 ATOM 3270 O PRO A 398 43.388 -15.756 -1.632 1.00 19.95 A O
 ATOM 3271 N LEU A 399 43.227 -14.368 0.139 1.00 16.00 A N
 ATOM 3272 CA LEU A 399 43.647 -13.182 -0.626 1.00 15.47 A C
 ATOM 3273 CB LEU A 399 43.569 -11.934 0.257 1.00 16.63 A C
 ATOM 3274 CG LEU A 399 43.910 -10.633 -0.493 1.00 16.79 A C
 ATOM 3275 CD1 LEU A 399 42.989 -9.511 -0.045 1.00 18.57 A C
 ATOM 3276 CD2 LEU A 399 45.414 -10.269 -0.216 1.00 15.49 A C
 ATOM 3277 C LEU A 399 45.051 -13.336 -1.210 1.00 14.23 A C
 ATOM 3278 O LEU A 399 45.267 -13.094 -2.399 1.00 15.49 A O
 ATOM 3279 N GLN A 400 45.999 -13.803 -0.397 1.00 15.09 A N
 ATOM 3280 CA GLN A 400 47.363 -13.983 -0.888 1.00 17.64 A C
 ATOM 3281 CB GLN A 400 48.268 -14.492 0.234 1.00 20.37 A C
 ATOM 3282 CG GLN A 400 48.579 -13.424 1.234 1.00 23.95 A C
 ATOM 3283 CD GLN A 400 49.511 -13.940 2.292 1.00 27.25 A C
 ATOM 3284 OE1 GLN A 400 50.419 -14.720 1.985 1.00 26.60 A O
 ATOM 3285 NE2 GLN A 400 49.238 -13.594 3.557 1.00 26.70 A N
 ATOM 3286 C GLN A 400 47.416 -14.931 -2.047 1.00 18.18 A C
 ATOM 3287 O GLN A 400 48.123 -14.697 -3.043 1.00 16.77 A O
 ATOM 3288 N LEU A 401 46.636 -16.000 -1.944 1.00 18.75 A N
 ATOM 3289 CA LEU A 401 46.602 -17.008 -3.001 1.00 18.96 A C
 ATOM 3290 CB LEU A 401 46.059 -18.360 -2.475 1.00 16.12 A C
 ATOM 3291 CG LEU A 401 47.039 -18.982 -1.457 1.00 18.92 A C
 ATOM 3292 CD1 LEU A 401 46.386 -20.203 -0.807 1.00 19.18 A C

ATOM 3293 CD2 LEU A 401 48.402 -19.322 -2.151 1.00 20.53 A C
 ATOM 3294 C LEU A 401 45.870 -16.554 -4.264 1.00 19.96 A C
 ATOM 3295 O LEU A 401 46.218 -17.023 -5.345 1.00 21.04 A O
 ATOM 3296 N VAL A 402 44.849 -15.683 -4.153 1.00 20.26 A N
 ATOM 3297 CA VAL A 402 44.254 -15.057 -5.356 1.00 19.68 A C
 ATOM 3298 CB VAL A 402 43.032 -14.169 -5.008 1.00 24.51 A C
 ATOM 3299 CG1 VAL A 402 42.644 -13.289 -6.187 1.00 24.17 A C
 ATOM 3300 CG2 VAL A 402 41.867 -15.025 -4.516 1.00 21.62 A C
 ATOM 3301 C VAL A 402 45.314 -14.226 -6.095 1.00 18.36 A C
 ATOM 3302 O VAL A 402 45.444 -14.323 -7.336 1.00 21.99 A O
 ATOM 3303 N PHE A 403 46.073 -13.399 -5.351 1.00 19.82 A N
 ATOM 3304 CA PHE A 403 47.158 -12.610 -5.987 1.00 18.45 A C
 ATOM 3305 CB PHE A 403 47.726 -11.592 -5.012 1.00 19.39 A C
 ATOM 3306 CG PHE A 403 46.873 -10.346 -4.913 1.00 16.10 A C
 ATOM 3307 CD1 PHE A 403 45.717 -10.339 -4.154 1.00 14.60 A C
 ATOM 3308 CE1 PHE A 403 44.902 -9.224 -4.075 1.00 17.25 A C
 ATOM 3309 CZ PHE A 403 45.257 -8.087 -4.779 1.00 17.90 A C
 ATOM 3310 CE2 PHE A 403 46.410 -8.092 -5.581 1.00 16.80 A C
 ATOM 3311 CD2 PHE A 403 47.197 -9.219 -5.662 1.00 17.29 A C
 ATOM 3312 C PHE A 403 48.246 -13.532 -6.558 1.00 23.74 A C
 ATOM 3313 O PHE A 403 48.750 -13.312 -7.675 1.00 19.63 A O
 ATOM 3314 N ALA A 404 48.593 -14.580 -5.817 1.00 20.65 A N
 ATOM 3315 CA ALA A 404 49.583 -15.566 -6.308 1.00 21.07 A C
 ATOM 3316 CB ALA A 404 49.949 -16.642 -5.195 1.00 19.70 A C
 ATOM 3317 C ALA A 404 49.143 -16.225 -7.610 1.00 19.16 A C
 ATOM 3318 O ALA A 404 49.966 -16.411 -8.526 1.00 20.37 A O
 ATOM 3319 N TYR A 405 47.860 -16.564 -7.714 1.00 17.02 A N
 ATOM 3320 CA TYR A 405 47.319 -17.163 -8.894 1.00 18.48 A C
 ATOM 3321 CB TYR A 405 45.804 -17.389 -8.788 1.00 18.61 A C
 ATOM 3322 CG TYR A 405 45.193 -17.855 -10.085 1.00 22.58 A C
 ATOM 3323 CD1 TYR A 405 45.158 -19.214 -10.433 1.00 25.30 A C
 ATOM 3324 CE1 TYR A 405 44.627 -19.625 -11.636 1.00 27.03 A C
 ATOM 3325 CZ TYR A 405 44.104 -18.691 -12.493 1.00 25.58 A C
 ATOM 3326 OH TYR A 405 43.547 -19.037 -13.713 1.00 26.03 A O
 ATOM 3327 CE2 TYR A 405 44.114 -17.358 -12.143 1.00 25.76 A C
 ATOM 3328 CD2 TYR A 405 44.640 -16.961 -10.959 1.00 23.26 A C
 ATOM 3329 C TYR A 405 47.652 -16.319 -10.106 1.00 24.78 A C
 ATOM 3330 O TYR A 405 48.141 -16.840 -11.120 1.00 21.81 A O
 ATOM 3331 N PHE A 406 47.401 -15.009 -10.030 1.00 19.07 A N
 ATOM 3332 CA PHE A 406 47.605 -14.172 -11.232 1.00 21.54 A C
 ATOM 3333 CB PHE A 406 46.856 -12.857 -11.077 1.00 20.15 A C
 ATOM 3334 CG PHE A 406 45.371 -13.037 -11.081 1.00 18.61 A C
 ATOM 3335 CD1 PHE A 406 44.724 -13.352 -12.235 1.00 19.65 A C
 ATOM 3336 CE1 PHE A 406 43.366 -13.523 -12.253 1.00 18.37 A C
 ATOM 3337 CZ PHE A 406 42.654 -13.379 -11.125 1.00 20.24 A C
 ATOM 3338 CE2 PHE A 406 43.274 -13.065 -9.969 1.00 17.42 A C
 ATOM 3339 CD2 PHE A 406 44.624 -12.876 -9.937 1.00 18.30 A C
 ATOM 3340 C PHE A 406 49.074 -13.976 -11.547 1.00 22.70 A C
 ATOM 3341 O PHE A 406 49.442 -13.709 -12.676 1.00 23.27 A O
 ATOM 3342 N ALA A 407 49.937 -14.144 -10.550 1.00 22.55 A N
 ATOM 3343 CA ALA A 407 51.363 -14.019 -10.772 1.00 21.36 A C
 ATOM 3344 CB ALA A 407 52.017 -13.537 -9.485 1.00 19.87 A C
 ATOM 3345 C ALA A 407 52.040 -15.321 -11.244 1.00 23.19 A C
 ATOM 3346 O ALA A 407 53.142 -15.272 -11.727 1.00 30.24 A O
 ATOM 3347 N VAL A 408 51.413 -16.481 -11.056 1.00 27.45 A N
 ATOM 3348 CA AVAL A 408 52.071 -17.741 -11.425 0.50 28.57 A C
 ATOM 3349 CB AVAL A 408 52.017 -17.787 -11.354 0.50 29.31 A C
 ATOM 3350 CB AVAL A 408 52.198 -18.715 -10.251 0.50 28.56 A C
 ATOM 3351 CB BVAL A 408 51.854 -18.730 -10.138 0.50 30.65 A C
 ATOM 3352 CG1 AVAL A 408 52.982 -18.047 -9.141 0.50 27.11 A C
 ATOM 3353 CG1 BVAL A 408 51.792 -20.194 -10.544 0.50 29.44 A C
 ATOM 3354 CG2 AVAL A 408 50.843 -19.186 -9.768 0.50 24.84 A C
 ATOM 3355 CG2 BVAL A 408 52.990 -18.493 -9.170 0.50 33.29 A C
 ATOM 3356 C VAL A 408 51.427 -18.421 -12.618 1.00 30.97 A C
 ATOM 3357 O VAL A 408 52.107 -19.095 -13.352 1.00 34.90 A O
 ATOM 3358 N VAL A 409 50.141 -18.201 -12.855 1.00 29.54 A N
 ATOM 3359 CA VAL A 409 49.475 -18.838 -13.987 1.00 38.14 A C
 ATOM 3360 CB VAL A 409 48.014 -19.112 -13.672 1.00 35.38 A C
 ATOM 3361 CG1 VAL A 409 47.287 -19.625 -14.897 1.00 40.56 A C
 ATOM 3362 CG2 VAL A 409 47.918 -20.114 -12.513 1.00 35.95 A C
 ATOM 3363 C VAL A 409 49.578 -17.952 -15.212 1.00 49.01 A C
 ATOM 3364 O VAL A 409 49.168 -16.800 -15.169 1.00 55.44 A O
 ATOM 3365 N GLN A 410 50.094 -18.517 -16.303 1.00 54.11 A N
 ATOM 3366 CA GLN A 410 50.314 -17.775 -17.555 1.00 58.29 A C
 ATOM 3367 CB GLN A 410 51.272 -18.540 -18.455 1.00 74.97 A C
 ATOM 3368 CG GLN A 410 52.676 -18.656 -17.877 1.00 104.40 A C
 ATOM 3369 CD GLN A 410 53.553 -19.633 -18.641 1.00 121.42 A C
 ATOM 3370 OE1 GLN A 410 53.131 -20.746 -18.967 1.00 129.81 A O
 ATOM 3371 NE2 GLN A 410 54.788 -19.224 -18.920 1.00 113.30 A N
 ATOM 3372 C GLN A 410 49.033 -17.489 -18.324 1.00 40.60 A C
 ATOM 3373 O GLN A 410 48.835 -16.385 -18.826 1.00 45.84 A O
 ATOM 3374 N ASN A 411 48.171 -18.486 -18.422 1.00 39.87 A N
 ATOM 3375 CA ASN A 411 46.881 -18.321 -19.069 1.00 39.51 A C
 ATOM 3376 CB ASN A 411 46.755 -19.283 -20.246 1.00 43.94 A C
 ATOM 3377 CG ASN A 411 47.619 -18.860 -21.408 1.00 45.54 A C
 ATOM 3378 OD1 ASN A 411 47.330 -17.879 -22.071 1.00 43.48 A O
 ATOM 3379 ND2 ASN A 411 48.706 -19.566 -21.623 1.00 47.40 A N
 ATOM 3380 C ASN A 411 45.777 -18.566 -18.074 1.00 41.61 A C
 ATOM 3381 O ASN A 411 45.513 -19.704 -17.671 1.00 36.11 A O
 ATOM 3382 N ILE A 412 45.089 -17.495 -17.720 1.00 37.06 A N
 ATOM 3383 CA ILE A 412 44.059 -17.591 -16.717 1.00 40.38 A C
 ATOM 3384 CB ILE A 412 43.803 -16.228 -16.041 1.00 39.90 A C
 ATOM 3385 CG1 ILE A 412 42.967 -15.322 -16.913 1.00 41.14 A C
 ATOM 3386 CD1 ILE A 412 42.480 -14.114 -16.169 1.00 49.82 A C
 ATOM 3387 CG2 ILE A 412 45.146 -15.584 -15.717 1.00 37.62 A C
 ATOM 3388 C ILE A 412 42.832 -18.175 -17.355 1.00 38.84 A C
 ATOM 3389 O ILE A 412 42.647 -18.038 -18.562 1.00 37.29 A O
 ATOM 3390 N LYS A 413 42.037 -18.877 -16.551 1.00 35.54 A N
 ATOM 3391 CA ALYS A 413 40.821 -19.542 -17.017 0.50 37.84 A C
 ATOM 3392 CA BLYS A 413 40.815 -19.515 -17.033 0.50 37.03 A C
 ATOM 3393 CB ALYS A 413 40.980 -21.064 -16.928 0.50 39.81 A C
 ATOM 3394 CB BLYS A 413 40.974 -21.039 -17.055 0.50 37.45 A C
 ATOM 3395 CG ALYS A 413 42.102 -21.647 -17.800 0.50 45.41 A C
 ATOM 3396 CG BLYS A 413 42.303 -21.485 -17.667 0.50 41.11 A C
 ATOM 3397 CD ALYS A 413 42.385 -23.114 -17.437 0.50 54.08 A C
 ATOM 3398 CD BLYS A 413 42.279 -22.919 -18.203 0.50 47.86 A C
 ATOM 3399 CE ALYS A 413 43.184 -23.853 -18.515 0.50 54.67 A C
 ATOM 3400 CE BLYS A 413 41.782 -23.933 -17.173 0.50 48.03 A C
 ATOM 3401 NZ ALYS A 413 44.525 -23.255 -18.745 0.50 52.77 A N
 ATOM 3402 NZ BLYS A 413 40.299 -24.089 -17.187 0.50 44.70 A N
 ATOM 3403 C LYS A 413 39.644 -19.071 -16.167 1.00 37.05 A C
 ATOM 3404 O LYS A 413 39.757 -18.944 -14.934 1.00 28.26 A O
 ATOM 3405 N LYS A 414 38.522 -18.795 -16.818 1.00 32.05 A N
 ATOM 3406 CA LYS A 414 37.363 -18.243 -16.148 1.00 35.17 A C
 ATOM 3407 CB LYS A 414 36.244 -17.952 -17.162 1.00 42.50 A C
 ATOM 3408 CG LYS A 414 34.967 -17.374 -16.532 1.00 58.00 A C
 ATOM 3409 CD LYS A 414 33.942 -16.848 -17.562 1.00 70.13 A C
 ATOM 3410 CE LYS A 414 33.549 -17.894 -18.610 1.00 76.49 A C
 ATOM 3411 NZ LYS A 414 33.122 -19.206 -18.034 1.00 79.30 A N
 ATOM 3412 C LYS A 414 36.869 -19.184 -15.049 1.00 30.94 A C
 ATOM 3413 O LYS A 414 36.458 -18.749 -13.978 1.00 33.29 A O
 ATOM 3414 N GLU A 415 36.936 -20.475 -15.309 1.00 29.17 A N
 ATOM 3415 CA GLU A 415 36.503 -21.464 -14.340 1.00 29.56 A C
 ATOM 3416 CB GLU A 415 36.455 -22.821 -15.005 1.00 36.10 A C
 ATOM 3417 CG GLU A 415 35.755 -23.839 -14.185 1.00 47.28 A C
 ATOM 3418 CD GLU A 415 35.920 -25.229 -14.755 1.00 65.80 A C
 ATOM 3419 OE1 GLU A 415 36.443 -25.354 -15.885 1.00 99.10 A O
 ATOM 3420 OE2 GLU A 415 35.539 -26.194 -14.066 1.00 53.16 A O
 ATOM 3421 C GLU A 415 37.409 -21.520 -13.102 1.00 26.70 A C
 ATOM 3422 O GLU A 415 36.934 -21.688 -11.975 1.00 27.05 A O
 ATOM 3423 N GLU A 416 38.704 -21.379 -13.315 1.00 22.01 A N
 ATOM 3424 CA GLU A 416 39.636 -21.231 -12.204 1.00 28.96 A C

ATOM 3425 CB GLU A 416 41.059 -21.196 -12.729 1.00 29.30 A C
 ATOM 3426 CG GLU A 416 41.445 -22.546 -13.360 1.00 35.82 A C
 ATOM 3427 CD GLU A 416 42.902 -22.633 -13.766 1.00 38.67 A C
 ATOM 3428 OE1 GLU A 416 43.543 -21.587 -14.001 1.00 34.53 A O
 ATOM 3429 OE2 GLU A 416 43.410 -23.762 -13.857 1.00 49.04 A O
 ATOM 3430 C GLU A 416 39.323 -20.006 -11.368 1.00 24.91 A C
 ATOM 3431 O GLU A 416 39.190 -20.087 -10.150 1.00 25.36 A O
 ATOM 3432 N ILE A 417 39.162 -18.864 -12.013 1.00 25.14 A N
 ATOM 3433 CA AILE A 417 38.954 -17.658 -11.222 0.50 25.62 A C
 ATOM 3434 CA BILE A 417 38.864 -17.587 -11.339 0.50 27.40 A C
 ATOM 3435 CB AILE A 417 39.296 -16.353 -11.998 0.50 25.97 A C
 ATOM 3436 CB BILE A 417 38.703 -16.454 -12.392 0.50 28.46 A C
 ATOM 3437 CG1AILE A 417 38.397 -16.153 -13.210 0.50 24.13 A C
 ATOM 3438 CG1BILE A 417 40.059 -16.125 -13.015 0.50 28.41 A C
 ATOM 3439 CD1AILE A 417 38.647 -14.818 -13.903 0.50 31.10 A C
 ATOM 3440 CD1BILE A 417 39.965 -15.233 -14.243 0.50 32.20 A C
 ATOM 3441 CG2AILE A 417 40.755 -16.378 -12.431 0.50 21.28 A C
 ATOM 3442 CG2BILE A 417 38.081 -15.207 -11.771 0.50 26.97 A C
 ATOM 3443 C ILE A 417 37.573 -17.670 -10.532 1.00 26.52 A C
 ATOM 3444 O ILE A 417 37.487 -17.251 -9.379 1.00 29.89 A O
 ATOM 3445 N GLU A 418 36.544 -18.217 -11.169 1.00 26.91 A N
 ATOM 3446 CA GLU A 418 35.234 -18.397 -10.519 1.00 28.93 A C
 ATOM 3447 CB GLU A 418 34.231 -19.058 -11.472 1.00 34.19 A C
 ATOM 3448 CG GLU A 418 33.560 -18.105 -12.449 1.00 53.05 A C
 ATOM 3449 CD GLU A 418 32.603 -18.811 -13.425 1.00 66.68 A C
 ATOM 3450 OE1 GLU A 418 32.687 -20.057 -13.603 1.00 57.67 A O
 ATOM 3451 OE2 GLU A 418 31.765 -18.102 -14.025 1.00 78.77 A O
 ATOM 3452 C GLU A 418 35.342 -19.259 -9.247 1.00 30.46 A C
 ATOM 3453 O GLU A 418 34.675 -18.996 -8.248 1.00 32.98 A O
 ATOM 3454 N ASN A 419 36.185 -20.282 -9.295 1.00 25.76 A N
 ATOM 3455 CA ASN A 419 36.413 -21.134 -8.131 1.00 27.38 A C
 ATOM 3456 CB ASN A 419 37.004 -22.473 -8.579 1.00 28.62 A C
 ATOM 3457 CG ASN A 419 35.920 -23.449 -8.982 1.00 33.85 A C
 ATOM 3458 OD1 ASN A 419 35.304 -24.059 -8.127 1.00 32.06 A O
 ATOM 3459 ND2 ASN A 419 35.621 -23.527 -10.272 1.00 29.04 A N
 ATOM 3460 C ASN A 419 37.241 -20.483 -7.021 1.00 21.01 A C
 ATOM 3461 O ASN A 419 37.001 -20.725 -5.855 1.00 24.32 A O
 ATOM 3462 N LEU A 420 38.171 -19.621 -7.392 1.00 23.30 A N
 ATOM 3463 CA LEU A 420 38.880 -18.803 -6.417 1.00 26.86 A C
 ATOM 3464 CB LEU A 420 39.939 -17.948 -7.094 1.00 30.50 A C
 ATOM 3465 CG LEU A 420 41.192 -18.585 -7.691 1.00 29.17 A C
 ATOM 3466 CD1 LEU A 420 41.932 -17.455 -8.424 1.00 29.98 A C
 ATOM 3467 CD2 LEU A 420 42.052 -19.214 -6.627 1.00 27.85 A C
 ATOM 3468 C LEU A 420 37.894 -17.914 -5.655 1.00 27.14 A C
 ATOM 3469 O LEU A 420 37.968 -17.811 -4.438 1.00 27.87 A O
 ATOM 3470 N GLN A 421 36.925 -17.344 -6.357 1.00 28.53 A N
 ATOM 3471 CA GLN A 421 35.952 -16.477 -5.710 1.00 36.09 A C
 ATOM 3472 CB GLN A 421 35.090 -15.747 -6.726 1.00 38.74 A C
 ATOM 3473 CG GLN A 421 35.881 -14.837 -7.596 1.00 41.97 A C
 ATOM 3474 CD GLN A 421 35.071 -13.634 -8.005 1.00 51.05 A C
 ATOM 3475 OE1 GLN A 421 34.064 -13.769 -8.686 1.00 42.51 A O
 ATOM 3476 NE2 GLN A 421 35.500 -12.455 -7.582 1.00 34.40 A N
 ATOM 3477 C GLN A 421 35.034 -17.200 -4.765 1.00 32.47 A C
 ATOM 3478 O GLN A 421 34.573 -16.616 -3.795 1.00 27.79 A O
 ATOM 3479 N LYS A 422 34.782 -18.476 -5.025 1.00 25.83 A N
 ATOM 3480 CA LYS A 422 34.003 -19.278 -4.115 1.00 22.56 A C
 ATOM 3481 CB LYS A 422 33.154 -20.284 -4.923 1.00 33.44 A C
 ATOM 3482 CG LYS A 422 32.134 -19.596 -5.816 1.00 45.98 A C
 ATOM 3483 CD LYS A 422 31.728 -20.416 -7.049 1.00 63.36 A C
 ATOM 3484 CE LYS A 422 30.833 -19.557 -7.974 1.00 73.27 A C
 ATOM 3485 NZ LYS A 422 30.447 -20.198 -9.275 1.00 66.66 A N
 ATOM 3486 C LYS A 422 34.880 -20.014 -3.107 1.00 23.96 A C
 ATOM 3487 O LYS A 422 34.412 -20.944 -2.457 1.00 25.32 A O
 ATOM 3488 N TYR A 423 36.148 -19.633 -2.965 1.00 24.30 A N
 ATOM 3489 CA TYR A 423 37.034 -20.295 -1.983 1.00 24.51 A C
 ATOM 3490 CB TYR A 423 36.551 -20.040 -0.567 1.00 27.30 A C
 ATOM 3491 CG TYR A 423 36.497 -18.583 -0.259 1.00 30.64 A C
 ATOM 3492 CD1 TYR A 423 37.628 -17.915 0.119 1.00 32.19 A C
 ATOM 3493 CE1 TYR A 423 37.596 -16.571 0.425 1.00 40.57 A C
 ATOM 3494 CZ TYR A 423 36.408 -15.873 0.331 1.00 45.26 A C
 ATOM 3495 OH TYR A 423 36.397 -14.533 0.619 1.00 45.20 A O
 ATOM 3496 CE2 TYR A 423 35.254 -16.513 -0.057 1.00 38.81 A C
 ATOM 3497 CD2 TYR A 423 35.301 -17.874 -0.349 1.00 43.23 A C
 ATOM 3498 C TYR A 423 37.169 -21.796 -2.162 1.00 23.71 A C
 ATOM 3499 O TYR A 423 36.979 -22.565 -1.223 1.00 23.89 A O
 ATOM 3500 N HIS A 424 37.537 -22.204 -3.365 1.00 22.42 A N
 ATOM 3501 CA HIS A 424 37.810 -23.617 -3.654 1.00 25.69 A C
 ATOM 3502 CB HIS A 424 38.434 -23.688 -5.041 1.00 28.03 A C
 ATOM 3503 CG HIS A 424 38.579 -25.068 -5.589 1.00 26.61 A C
 ATOM 3504 ND1 HIS A 424 39.719 -25.801 -5.448 1.00 26.17 A N
 ATOM 3505 CE1 HIS A 424 39.554 -27.000 -6.057 1.00 33.18 A C
 ATOM 3506 NE2 HIS A 424 38.346 -27.003 -6.639 1.00 30.75 A N
 ATOM 3507 CD2 HIS A 424 37.721 -25.819 -6.366 1.00 27.10 A C
 ATOM 3508 C HIS A 424 38.776 -24.183 -2.649 1.00 24.11 A C
 ATOM 3509 O HIS A 424 39.680 -23.484 -2.130 1.00 19.88 A O
 ATOM 3510 N ASP A 425 38.640 -25.478 -2.388 1.00 23.19 A N
 ATOM 3511 CA ASP A 425 39.546 -26.229 -1.525 1.00 24.75 A C
 ATOM 3512 CB ASP A 425 39.349 -27.730 -1.751 1.00 28.91 A C
 ATOM 3513 CG ASP A 425 37.961 -28.223 -1.351 1.00 34.79 A C
 ATOM 3514 OD1 ASP A 425 37.338 -27.632 -0.461 1.00 38.40 A O
 ATOM 3515 OD2 ASP A 425 37.510 -29.218 -1.954 1.00 42.28 A O
 ATOM 3516 C ASP A 425 41.041 -25.973 -1.709 1.00 21.70 A C
 ATOM 3517 O ASP A 425 41.813 -26.049 -0.766 1.00 20.92 A O
 ATOM 3518 N THR A 426 41.462 -25.772 -2.943 1.00 19.82 A N
 ATOM 3519 CA THR A 426 42.836 -25.508 -3.232 1.00 19.64 A C
 ATOM 3520 CB THR A 426 42.974 -25.165 -4.734 1.00 21.99 A C
 ATOM 3521 OG1 THR A 426 42.497 -26.284 -5.475 1.00 31.41 A O
 ATOM 3522 CG2 THR A 426 44.411 -24.887 -5.087 1.00 21.42 A C
 ATOM 3523 C THR A 426 43.366 -24.323 -2.407 1.00 20.34 A C
 ATOM 3524 O THR A 426 44.529 -24.327 -2.031 1.00 20.11 A O
 ATOM 3525 N ILE A 427 42.538 -23.284 -2.203 1.00 18.12 A N
 ATOM 3526 CA ILE A 427 42.955 -22.142 -1.396 1.00 17.33 A C
 ATOM 3527 CB ILE A 427 42.765 -20.794 -2.111 1.00 21.38 A C
 ATOM 3528 CG1 ILE A 427 41.327 -20.360 -2.144 1.00 18.39 A C
 ATOM 3529 CD1 ILE A 427 41.189 -18.919 -2.801 1.00 20.52 A C
 ATOM 3530 CG2 ILE A 427 43.361 -20.870 -3.526 1.00 19.29 A C
 ATOM 3531 C ILE A 427 42.413 -22.102 0.010 1.00 16.88 A C
 ATOM 3532 O ILE A 427 43.095 -21.588 0.917 1.00 20.78 A O
 ATOM 3533 N SER A 428 41.287 -22.761 0.268 1.00 16.24 A N
 ATOM 3534 CA SER A 428 40.728 -22.677 1.587 1.00 18.26 A C
 ATOM 3535 CB SER A 428 39.260 -23.061 1.561 1.00 22.20 A C
 ATOM 3536 OG SER A 428 39.129 -24.406 1.151 1.00 23.46 A O
 ATOM 3537 C SER A 428 41.525 -23.567 2.547 1.00 19.47 A C
 ATOM 3538 O SER A 428 41.822 -23.181 3.671 1.00 18.98 A O
 ATOM 3539 N ARG A 429 41.929 -24.754 2.119 1.00 19.92 A N
 ATOM 3540 CA AARG A 429 42.582 -25.692 3.049 0.50 17.38 A C
 ATOM 3541 CA BARG A 429 42.548 -25.696 3.052 0.50 18.39 A C
 ATOM 3542 CB AARG A 429 42.756 -27.069 2.409 0.50 19.41 A C
 ATOM 3543 CB BARG A 429 42.596 -27.113 2.430 0.50 22.82 A C
 ATOM 3544 CG AARG A 429 41.488 -27.872 2.518 0.50 19.06 A C
 ATOM 3545 CG BARG A 429 41.176 -27.620 1.991 0.50 22.48 A C
 ATOM 3546 CD AARG A 429 41.548 -28.993 1.550 0.50 22.31 A C
 ATOM 3547 CD BARG A 429 40.778 -28.905 2.690 0.50 31.48 A C
 ATOM 3548 NE AARG A 429 40.271 -29.672 1.469 0.50 23.52 A N
 ATOM 3549 NE BARG A 429 39.575 -29.554 2.140 0.50 30.27 A N
 ATOM 3550 CZ AARG A 429 39.930 -30.402 0.439 0.50 15.63 A C
 ATOM 3551 CZ BARG A 429 38.399 -29.587 2.763 0.50 34.86 A C
 ATOM 3552 NH1AARG A 429 40.782 -30.524 -0.568 0.50 19.41 A N
 ATOM 3553 NH1BARG A 429 38.279 -29.014 3.956 0.50 26.08 A N
 ATOM 3554 NH2AARG A 429 38.776 -30.963 0.435 0.50 17.28 A N
 ATOM 3555 NH2BARG A 429 37.361 -30.237 2.218 0.50 27.64 A N
 ATOM 3556 C ARG A 429 43.918 -25.198 3.588 1.00 16.22 A C

ATOM 3557 O ARG A 429 44.183 -25.282 4.780 1.00 16.19 A O
 ATOM 3558 N PRO A 430 44.762 -24.642 2.726 1.00 16.98 A N
 ATOM 3559 CA PRO A 430 46.018 -24.145 3.283 1.00 19.48 A C
 ATOM 3560 CB PRO A 430 46.830 -23.764 2.056 1.00 24.27 A C
 ATOM 3561 CG PRO A 430 45.963 -23.936 0.930 1.00 26.12 A C
 ATOM 3562 CD PRO A 430 44.812 -24.737 1.263 1.00 23.07 A C
 ATOM 3563 C PRO A 430 45.778 -22.938 4.192 1.00 17.44 A C
 ATOM 3564 O PRO A 430 46.536 -22.713 5.146 1.00 16.01 A O
 ATOM 3565 N SER A 431 44.699 -22.214 3.936 1.00 16.23 A N
 ATOM 3566 CA SER A 431 44.291 -21.083 4.806 1.00 16.47 A C
 ATOM 3567 CB SER A 431 43.250 -20.232 4.083 1.00 17.77 A C
 ATOM 3568 OG SER A 431 43.801 -19.694 2.865 1.00 18.39 A O
 ATOM 3569 C SER A 431 43.777 -21.582 6.164 1.00 18.22 A C
 ATOM 3570 O SER A 431 43.993 -20.908 7.174 1.00 18.59 A O
 ATOM 3571 N HIS A 432 43.156 -22.780 6.204 1.00 15.86 A N
 ATOM 3572 CA HIS A 432 42.780 -23.405 7.448 1.00 16.36 A C
 ATOM 3573 CB HIS A 432 42.110 -24.770 7.287 1.00 16.77 A C
 ATOM 3574 CG HIS A 432 40.776 -24.777 6.567 1.00 20.10 A C
 ATOM 3575 ND1 HIS A 432 40.132 -23.664 6.137 1.00 25.10 A N
 ATOM 3576 CE1 HIS A 432 38.961 -24.023 5.537 1.00 20.22 A C
 ATOM 3577 NE2 HIS A 432 38.867 -25.348 5.579 1.00 27.66 A N
 ATOM 3578 CD2 HIS A 432 39.974 -25.846 6.202 1.00 23.79 A C
 ATOM 3579 C HIS A 432 44.030 -23.620 8.282 1.00 14.57 A C
 ATOM 3580 O HIS A 432 44.070 -23.311 9.467 1.00 17.94 A O
 ATOM 3581 N ILE A 433 45.067 -24.158 7.661 1.00 15.54 A N
 ATOM 3582 CA ILE A 433 46.306 -24.452 8.352 1.00 16.10 A C
 ATOM 3583 CB ILE A 433 47.233 -25.278 7.483 1.00 17.95 A C
 ATOM 3584 CG1 ILE A 433 46.632 -26.708 7.366 1.00 20.19 A C
 ATOM 3585 CD1 ILE A 433 47.196 -27.406 6.192 1.00 26.65 A C
 ATOM 3586 CG2 ILE A 433 48.609 -25.425 8.153 1.00 16.48 A C
 ATOM 3587 C ILE A 433 47.017 -23.187 8.812 1.00 17.80 A C
 ATOM 3588 O ILE A 433 47.544 -23.147 9.920 1.00 19.64 A O
 ATOM 3589 N PHE A 434 47.023 -22.176 7.963 1.00 17.18 A N
 ATOM 3590 CA PHE A 434 47.604 -20.870 8.304 1.00 17.38 A C
 ATOM 3591 CB PHE A 434 47.400 -19.972 7.085 1.00 19.35 A C
 ATOM 3592 CG PHE A 434 47.927 -18.537 7.224 1.00 19.98 A C
 ATOM 3593 CD1 PHE A 434 48.715 -18.114 8.279 1.00 22.63 A C
 ATOM 3594 CE1 PHE A 434 49.148 -16.776 8.353 1.00 24.62 A C
 ATOM 3595 CZ PHE A 434 48.870 -15.921 7.348 1.00 20.63 A C
 ATOM 3596 CE2 PHE A 434 48.102 -16.345 6.274 1.00 24.11 A C
 ATOM 3597 CD2 PHE A 434 47.651 -17.633 6.219 1.00 23.72 A C
 ATOM 3598 C PHE A 434 46.959 -20.325 9.604 1.00 18.74 A C
 ATOM 3599 O PHE A 434 47.659 -19.969 10.581 1.00 18.92 A O
 ATOM 3600 N ARG A 435 45.632 -20.304 9.645 1.00 17.74 A N
 ATOM 3601 CA ARG A 435 44.922 -19.799 10.824 1.00 16.89 A C
 ATOM 3602 CB ARG A 435 43.436 -19.607 10.511 1.00 15.62 A C
 ATOM 3603 CG ARG A 435 42.545 -19.325 11.731 1.00 15.59 A C
 ATOM 3604 CD ARG A 435 43.046 -18.111 12.556 1.00 17.62 A C
 ATOM 3605 NE ARG A 435 42.921 -16.870 11.800 1.00 19.60 A N
 ATOM 3606 CZ ARG A 435 43.489 -15.717 12.143 1.00 20.76 A C
 ATOM 3607 NH1 ARG A 435 44.232 -15.628 13.228 1.00 20.32 A N
 ATOM 3608 NH2 ARG A 435 43.277 -14.639 11.409 1.00 20.79 A N
 ATOM 3609 C ARG A 435 45.162 -20.661 12.053 1.00 18.87 A C
 ATOM 3610 O ARG A 435 45.423 -20.145 13.168 1.00 18.81 A O
 ATOM 3611 N LEU A 436 45.152 -21.979 11.871 1.00 17.30 A N
 ATOM 3612 CA LEU A 436 45.320 -22.879 13.015 1.00 18.57 A C
 ATOM 3613 CB LEU A 436 44.898 -24.321 12.637 1.00 18.56 A C
 ATOM 3614 CG LEU A 436 43.378 -24.533 12.413 1.00 20.39 A C
 ATOM 3615 CD1 LEU A 436 43.085 -25.939 11.814 1.00 19.89 A C
 ATOM 3616 CD2 LEU A 436 42.511 -24.299 13.677 1.00 19.00 A C
 ATOM 3617 C LEU A 436 46.734 -22.825 13.616 1.00 18.56 A C
 ATOM 3618 O LEU A 436 46.890 -22.862 14.826 1.00 22.85 A O
 ATOM 3619 N CYS A 437 47.752 -22.733 12.771 1.00 18.27 A N
 ATOM 3620 CA CYS A 437 49.124 -22.609 13.221 1.00 18.06 A C
 ATOM 3621 CB CYS A 437 50.051 -22.581 12.031 1.00 20.66 A C
 ATOM 3622 SG CYS A 437 50.305 -24.213 11.297 1.00 24.31 A S

ATOM 3623 C CYS A 437 49.300 -21.305 14.012 1.00 20.39 A C
 ATOM 3624 O CYS A 437 49.927 -21.286 15.042 1.00 23.46 A O
 ATOM 3625 N ASN A 438 48.738 -20.233 13.487 1.00 18.39 A N
 ATOM 3626 CA ASN A 438 48.801 -18.903 14.099 1.00 19.69 A C
 ATOM 3627 CB ASN A 438 48.116 -17.871 13.172 1.00 19.76 A C
 ATOM 3628 CG ASN A 438 48.286 -16.435 13.678 1.00 27.64 A C
 ATOM 3629 OD1 ASN A 438 48.974 -16.224 14.631 1.00 29.01 A O
 ATOM 3630 ND2 ASN A 438 47.730 -15.473 12.988 1.00 23.97 A N
 ATOM 3631 C ASN A 438 48.120 -18.944 15.451 1.00 21.36 A C
 ATOM 3632 O ASN A 438 48.694 -18.536 16.480 1.00 23.50 A O
 ATOM 3633 N ASP A 439 46.902 -19.473 15.473 1.00 19.55 A N
 ATOM 3634 CA ASP A 439 46.146 -19.487 16.702 1.00 19.28 A C
 ATOM 3635 CB ASP A 439 44.661 -19.756 16.448 1.00 19.28 A C
 ATOM 3636 CG ASP A 439 43.932 -18.546 15.925 1.00 21.53 A C
 ATOM 3637 OD1 ASP A 439 44.580 -17.555 15.494 1.00 19.39 A O
 ATOM 3638 OD2 ASP A 439 42.672 -18.593 15.921 1.00 23.22 A O
 ATOM 3639 C ASP A 439 46.732 -20.438 17.731 1.00 22.35 A C
 ATOM 3640 O ASP A 439 46.658 -20.158 18.952 1.00 24.01 A O
 ATOM 3641 N LEU A 440 47.316 -21.547 17.286 1.00 22.14 A N
 ATOM 3642 CA LEU A 440 48.029 -22.441 18.221 1.00 23.93 A C
 ATOM 3643 CB LEU A 440 48.523 -23.732 17.555 1.00 23.86 A C
 ATOM 3644 CG LEU A 440 47.537 -24.862 17.307 1.00 25.59 A C
 ATOM 3645 CD1 LEU A 440 48.140 -25.874 16.284 1.00 22.82 A C
 ATOM 3646 CD2 LEU A 440 47.097 -25.559 18.609 1.00 21.71 A C
 ATOM 3647 C LEU A 440 49.218 -21.755 18.890 1.00 27.52 A C
 ATOM 3648 O LEU A 440 49.452 -21.962 20.077 1.00 26.63 A O
 ATOM 3649 N ALA A 441 49.969 -20.967 18.123 1.00 26.98 A N
 ATOM 3650 CA ALA A 441 51.138 -20.229 18.651 1.00 28.39 A C
 ATOM 3651 CB ALA A 441 51.774 -19.412 17.571 1.00 25.07 A C
 ATOM 3652 C ALA A 441 50.786 -19.306 19.815 1.00 31.85 A C
 ATOM 3653 O ALA A 441 51.517 -19.248 20.779 1.00 30.87 A O
 ATOM 3654 N SER A 442 49.654 -18.613 19.737 1.00 34.55 A N
 ATOM 3655 CA SER A 442 49.272 -17.614 20.753 1.00 31.17 A C
 ATOM 3656 CB SER A 442 48.827 -16.328 20.058 1.00 32.51 A C
 ATOM 3657 OG SER A 442 47.744 -16.577 19.187 1.00 37.82 A O
 ATOM 3658 C SER A 442 48.178 -18.061 21.716 1.00 32.18 A C
 ATOM 3659 O SER A 442 47.830 -17.330 22.649 1.00 37.74 A O
 ATOM 3660 N ALA A 443 47.658 -19.268 21.535 1.00 26.46 A N
 ATOM 3661 CA ALA A 443 46.509 -19.710 22.326 1.00 25.17 A C
 ATOM 3662 CB ALA A 443 46.080 -21.107 21.915 1.00 26.66 A C
 ATOM 3663 C ALA A 443 46.758 -19.676 23.845 1.00 28.97 A C
 ATOM 3664 O ALA A 443 45.877 -19.257 24.585 1.00 27.44 A O
 ATOM 3665 N SER A 444 47.924 -20.138 24.301 1.00 29.81 A N
 ATOM 3666 CA SER A 444 48.189 -20.243 25.761 1.00 38.24 A C
 ATOM 3667 CB SER A 444 49.524 -20.940 26.042 1.00 44.57 A C
 ATOM 3668 OG SER A 444 49.417 -22.333 25.821 1.00 50.77 A O
 ATOM 3669 C SER A 444 48.176 -18.886 26.459 1.00 31.44 A C
 ATOM 3670 O SER A 444 47.522 -18.717 27.486 1.00 42.99 A O
 ATOM 3671 N ALA A 445 48.910 -17.940 25.893 1.00 31.00 A N
 ATOM 3672 CA ALA A 445 48.970 -16.578 26.389 1.00 37.39 A C
 ATOM 3673 CB ALA A 445 49.981 -15.766 25.579 1.00 31.84 A C
 ATOM 3674 C ALA A 445 47.595 -15.905 26.358 1.00 45.10 A C
 ATOM 3675 O ALA A 445 47.218 -15.249 27.318 1.00 37.87 A O
 ATOM 3676 N GLU A 446 46.842 -16.071 25.272 1.00 31.27 A N
 ATOM 3677 CA GLU A 446 45.536 -15.411 25.147 1.00 33.60 A C
 ATOM 3678 CB GLU A 446 45.028 -15.489 23.704 1.00 38.49 A C
 ATOM 3679 CG GLU A 446 45.802 -14.564 22.754 1.00 40.53 A C
 ATOM 3680 CD GLU A 446 45.507 -14.810 21.278 1.00 47.65 A C
 ATOM 3681 OE1 GLU A 446 44.636 -15.647 20.955 1.00 46.48 A O
 ATOM 3682 OE2 GLU A 446 46.166 -14.164 20.429 1.00 54.74 A O
 ATOM 3683 C GLU A 446 44.496 -15.971 26.108 1.00 33.60 A C
 ATOM 3684 O GLU A 446 43.726 -15.224 26.716 1.00 35.20 A O
 ATOM 3685 N ILE A 447 44.473 -17.290 26.222 1.00 30.36 A N
 ATOM 3686 CA ILE A 447 43.622 -17.986 27.168 1.00 33.01 A C
 ATOM 3687 CB ILE A 447 43.782 -19.509 27.020 1.00 33.51 A C
 ATOM 3688 CG1 ILE A 447 43.047 -19.991 25.764 1.00 36.07 A C

ATOM 3689 CD1 ILE A 447 43.514 -21.342 25.254 1.00 32.96 A C
 ATOM 3690 CG2 ILE A 447 43.290 -20.243 28.265 1.00 28.15 A C
 ATOM 3691 C ILE A 447 43.957 -17.592 28.618 1.00 41.30 A C
 ATOM 3692 O ILE A 447 43.061 -17.514 29.451 1.00 35.18 A O
 ATOM 3693 N ALA A 448 45.241 -17.358 28.900 1.00 35.98 A N
 ATOM 3694 CA ALA A 448 45.701 -16.935 30.232 1.00 39.88 A C
 ATOM 3695 CB ALA A 448 47.227 -17.079 30.326 1.00 38.54 A C
 ATOM 3696 C ALA A 448 45.281 -15.498 30.575 1.00 41.45 A C
 ATOM 3697 O ALA A 448 45.055 -15.183 31.734 1.00 49.52 A O
 ATOM 3698 N ARG A 449 45.180 -14.633 29.568 1.00 43.05 A N
 ATOM 3699 CA ARG A 449 44.694 -13.266 29.752 1.00 37.79 A C
 ATOM 3700 CB ARG A 449 45.231 -12.346 28.651 1.00 45.66 A C
 ATOM 3701 CG ARG A 449 46.748 -12.245 28.560 1.00 48.52 A C
 ATOM 3702 CD ARG A 449 47.155 -11.295 27.435 1.00 52.98 A C
 ATOM 3703 NE ARG A 449 48.158 -11.903 26.560 1.00 65.22 A N
 ATOM 3704 CZ ARG A 449 48.074 -12.008 25.230 1.00 67.12 A C
 ATOM 3705 NH1 ARG A 449 47.034 -11.523 24.553 1.00 54.25 A N
 ATOM 3706 NH2 ARG A 449 49.058 -12.601 24.556 1.00 72.81 A N
 ATOM 3707 C ARG A 449 43.163 -13.183 29.734 1.00 41.63 A C
 ATOM 3708 O ARG A 449 42.606 -12.085 29.794 1.00 38.89 A O
 ATOM 3709 N GLY A 450 42.484 -14.325 29.641 1.00 36.28 A N
 ATOM 3710 CA GLY A 450 41.026 -14.357 29.604 1.00 36.62 A C
 ATOM 3711 C GLY A 450 40.380 -14.056 28.259 1.00 42.78 A C
 ATOM 3712 O GLY A 450 39.166 -13.923 28.186 1.00 43.69 A O
 ATOM 3713 N GLU A 451 41.182 -13.961 27.198 1.00 47.14 A N
 ATOM 3714 CA GLU A 451 40.686 -13.682 25.848 1.00 43.60 A C
 ATOM 3715 CB GLU A 451 41.829 -13.194 24.959 1.00 44.90 A C
 ATOM 3716 CG GLU A 451 42.482 -11.927 25.491 1.00 54.21 A C
 ATOM 3717 CD GLU A 451 43.585 -11.404 24.600 1.00 62.45 A C
 ATOM 3718 OE1 GLU A 451 43.462 -11.514 23.355 1.00 60.04 A O
 ATOM 3719 OE2 GLU A 451 44.574 -10.876 25.154 1.00 64.85 A O
 ATOM 3720 C GLU A 451 40.031 -14.898 25.198 1.00 41.18 A C
 ATOM 3721 O GLU A 451 40.341 -16.034 25.534 1.00 44.70 A O
 ATOM 3722 N THR A 452 39.119 -14.637 24.267 1.00 33.47 A N
 ATOM 3723 CA THR A 452 38.338 -15.687 23.611 1.00 32.68 A C
 ATOM 3724 CB THR A 452 36.834 -15.582 23.983 1.00 33.03 A C
 ATOM 3725 OG1 THR A 452 36.309 -14.334 23.509 1.00 34.61 A O
 ATOM 3726 CG2 THR A 452 36.623 -15.701 25.502 1.00 29.34 A C
 ATOM 3727 C THR A 452 38.442 -15.658 22.077 1.00 27.61 A C
 ATOM 3728 O THR A 452 37.873 -16.518 21.417 1.00 35.74 A O
 ATOM 3729 N ALA A 453 40.153 -14.672 21.533 1.00 27.23 A N
 ATOM 3730 CA ALA A 453 39.261 -14.441 20.103 1.00 28.56 A C
 ATOM 3731 CB ALA A 453 39.508 -12.945 19.807 1.00 24.78 A C
 ATOM 3732 C ALA A 453 40.389 -15.278 19.550 1.00 28.41 A C
 ATOM 3733 O ALA A 453 41.394 -14.745 19.086 1.00 30.61 A O
 ATOM 3734 N ASN A 454 40.210 -16.594 19.599 1.00 26.38 A N
 ATOM 3735 CA ASN A 454 41.236 -17.554 19.193 1.00 25.56 A C
 ATOM 3736 CB ASN A 454 42.239 -17.757 20.338 1.00 22.98 A C
 ATOM 3737 CG ASN A 454 43.376 -18.724 19.989 1.00 24.74 A C
 ATOM 3738 OD1 ASN A 454 43.207 -19.938 20.050 1.00 30.88 A O
 ATOM 3739 ND2 ASN A 454 44.553 -18.187 19.677 1.00 22.05 A N
 ATOM 3740 C ASN A 454 40.533 -18.863 18.842 1.00 23.41 A C
 ATOM 3741 O ASN A 454 39.613 -19.269 19.531 1.00 23.44 A O
 ATOM 3742 N SER A 455 40.980 -19.535 17.795 1.00 20.52 A N
 ATOM 3743 CA SER A 455 40.342 -20.775 17.361 1.00 19.85 A C
 ATOM 3744 CB SER A 455 41.030 -21.305 16.083 1.00 20.87 A C
 ATOM 3745 OG SER A 455 40.892 -20.344 15.030 1.00 24.90 A O
 ATOM 3746 C SER A 455 40.315 -21.867 18.445 1.00 23.31 A C
 ATOM 3747 O SER A 455 39.291 -22.553 18.629 1.00 21.73 A O
 ATOM 3748 N VAL A 456 41.436 -22.042 19.143 1.00 19.77 A N
 ATOM 3749 CA VAL A 456 41.538 -23.023 20.247 1.00 20.62 A C
 ATOM 3750 CB VAL A 456 42.961 -23.046 20.861 1.00 26.15 A C
 ATOM 3751 CG1 VAL A 456 43.031 -24.075 21.993 1.00 24.79 A C
 ATOM 3752 CG2 VAL A 456 44.013 -23.297 19.785 1.00 22.76 A C
 ATOM 3753 C VAL A 456 40.577 -22.721 21.398 1.00 22.08 A C
 ATOM 3754 O VAL A 456 39.960 -23.635 21.969 1.00 22.97 A O

ATOM 3755 N SER A 457 40.440 -21.447 21.756 1.00 21.17 A N
 ATOM 3756 CA SER A 457 39.540 -21.119 22.863 1.00 27.43 A C
 ATOM 3757 CB SER A 457 39.903 -19.775 23.537 1.00 25.66 A C
 ATOM 3758 OG SER A 457 39.705 -18.689 22.677 1.00 36.62 A O
 ATOM 3759 C SER A 457 38.079 -21.195 22.410 1.00 25.99 A C
 ATOM 3760 O SER A 457 37.211 -21.576 23.198 1.00 26.64 A O
 ATOM 3761 N CYS A 458 37.784 -20.907 21.139 1.00 23.94 A N
 ATOM 3762 CA CYS A 458 36.407 -21.151 20.649 1.00 21.80 A C
 ATOM 3763 CB CYS A 458 36.109 -20.521 19.299 1.00 21.16 A C
 ATOM 3764 SG CYS A 458 35.996 -18.776 19.430 1.00 32.42 A S
 ATOM 3765 C CYS A 458 36.070 -22.644 20.613 1.00 23.65 A C
 ATOM 3766 O CYS A 458 34.923 -23.023 20.854 1.00 24.55 A O
 ATOM 3767 N TYR A 459 37.058 -23.483 20.347 1.00 20.39 A N
 ATOM 3768 CA TYR A 459 36.814 -24.922 20.314 1.00 24.45 A C
 ATOM 3769 CB TYR A 459 37.990 -25.655 19.702 1.00 23.46 A C
 ATOM 3770 CG TYR A 459 37.667 -27.042 19.198 1.00 28.55 A C
 ATOM 3771 CD1 TYR A 459 37.784 -28.153 20.037 1.00 27.38 A C
 ATOM 3772 CE1 TYR A 459 37.503 -29.441 19.585 1.00 31.49 A C
 ATOM 3773 CZ TYR A 459 37.096 -29.635 18.266 1.00 31.60 A C
 ATOM 3774 OH TYR A 459 36.813 -30.900 17.824 1.00 37.28 A O
 ATOM 3775 CE2 TYR A 459 36.969 -28.555 17.407 1.00 26.89 A C
 ATOM 3776 CD2 TYR A 459 37.255 -27.251 17.882 1.00 32.62 A C
 ATOM 3777 C TYR A 459 36.541 -25.427 21.738 1.00 23.84 A C
 ATOM 3778 O TYR A 459 35.589 -26.171 21.966 1.00 21.78 A O
 ATOM 3779 N MET A 460 37.359 -24.978 22.691 1.00 24.24 A N
 ATOM 3780 CA MET A 460 37.134 -25.253 24.120 1.00 23.73 A C
 ATOM 3781 CB MET A 460 38.093 -24.432 24.979 1.00 24.01 A C
 ATOM 3782 CG MET A 460 39.520 -24.918 24.935 1.00 28.42 A C
 ATOM 3783 SD MET A 460 40.629 -23.759 25.730 1.00 34.44 A S
 ATOM 3784 CE MET A 460 40.012 -23.901 27.446 1.00 27.52 A C
 ATOM 3785 C MET A 460 35.699 -24.952 24.575 1.00 24.85 A C
 ATOM 3786 O MET A 460 35.056 -25.765 25.259 1.00 26.64 A O
 ATOM 3787 N ARG A 461 35.218 -23.775 24.188 1.00 26.93 A N
 ATOM 3788 CA ARG A 461 33.922 -23.276 24.596 1.00 26.56 A C
 ATOM 3789 CB ARG A 461 33.789 -21.798 24.236 1.00 25.65 A C
 ATOM 3790 CG ARG A 461 32.444 -21.163 24.577 1.00 34.73 A C
 ATOM 3791 CD ARG A 461 32.528 -19.649 24.477 1.00 36.40 A C
 ATOM 3792 NE ARG A 461 32.808 -19.191 23.111 1.00 34.87 A N
 ATOM 3793 CZ ARG A 461 33.253 -17.977 22.788 1.00 36.31 A C
 ATOM 3794 NH1 ARG A 461 33.494 -17.073 23.740 1.00 37.11 A N
 ATOM 3795 NH2 ARG A 461 33.461 -17.654 21.504 1.00 35.17 A N
 ATOM 3796 C ARG A 461 32.809 -24.077 23.943 1.00 29.33 A C
 ATOM 3797 O ARG A 461 31.876 -24.458 24.610 1.00 26.80 A O
 ATOM 3798 N THR A 462 32.908 -24.340 22.645 1.00 25.41 A N
 ATOM 3799 CA THR A 462 31.825 -25.025 21.931 1.00 25.70 A C
 ATOM 3800 CB THR A 462 31.999 -24.938 20.935 1.00 28.39 A C
 ATOM 3801 OG1 THR A 462 31.983 -23.565 19.979 1.00 19.95 A O
 ATOM 3802 CG2 THR A 462 30.869 -25.735 19.679 1.00 28.51 A C
 ATOM 3803 C THR A 462 31.712 -26.501 22.310 1.00 26.92 A C
 ATOM 3804 O THR A 462 30.617 -27.028 22.429 1.00 25.53 A O
 ATOM 3805 N LYS A 463 32.847 -27.168 22.474 1.00 31.10 A N
 ATOM 3806 CA LYS A 463 32.851 -28.580 22.838 1.00 33.80 A C
 ATOM 3807 CB LYS A 463 34.072 -29.287 22.264 1.00 35.18 A C
 ATOM 3808 CG LYS A 463 34.167 -29.257 20.764 1.00 41.17 A C
 ATOM 3809 CD LYS A 463 32.996 -29.915 20.082 1.00 45.55 A C
 ATOM 3810 CE LYS A 463 33.373 -30.271 18.648 1.00 45.12 A C
 ATOM 3811 NZ LYS A 463 32.209 -30.829 17.923 1.00 43.29 A N
 ATOM 3812 C LYS A 463 32.839 -28.775 24.348 1.00 34.33 A C
 ATOM 3813 O LYS A 463 32.583 -29.881 24.811 1.00 34.14 A O
 ATOM 3814 N GLY A 464 33.129 -27.716 25.103 1.00 33.67 A N
 ATOM 3815 CA GLY A 464 33.148 -27.780 26.570 1.00 37.10 A C
 ATOM 3816 C GLY A 464 34.308 -28.622 27.070 1.00 33.81 A C
 ATOM 3817 O GLY A 464 34.111 -29.505 27.883 1.00 28.67 A O
 ATOM 3818 N ILE A 465 35.519 -28.366 26.579 1.00 26.69 A N
 ATOM 3819 CA ILE A 465 36.658 -29.192 26.955 1.00 22.86 A C
 ATOM 3820 CB ILE A 465 37.034 -30.183 25.818 1.00 25.64 A C

ATOM 3821 CG1 ILE A 465 37.358 -29.446 24.511 1.00 24.83 A C
 ATOM 3822 CD1 ILE A 465 37.700 -30.355 23.334 1.00 22.74 A C
 ATOM 3823 CG2 ILE A 465 35.893 -31.178 25.581 1.00 29.07 A C
 ATOM 3824 C ILE A 465 37.860 -28.354 27.338 1.00 24.61 A C
 ATOM 3825 O ILE A 465 37.915 -27.143 27.073 1.00 25.73 A O
 ATOM 3826 N SER A 466 38.845 -29.020 27.923 1.00 24.33 A N
 ATOM 3827 CA SER A 466 40.073 -28.378 28.353 1.00 28.81 A C
 ATOM 3828 CB SER A 466 40.935 -29.366 29.140 1.00 28.18 A C
 ATOM 3829 OG SER A 466 41.359 -30.428 28.295 1.00 25.24 A O
 ATOM 3830 C SER A 466 40.891 -27.888 27.177 1.00 28.41 A C
 ATOM 3831 O SER A 466 40.745 -28.391 26.052 1.00 30.75 A O
 ATOM 3832 N GLU A 467 41.775 -26.933 27.460 1.00 27.64 A N
 ATOM 3833 CA GLU A 467 42.778 -26.491 26.518 1.00 33.68 A C
 ATOM 3834 CB GLU A 467 43.713 -25.437 27.142 1.00 32.28 A C
 ATOM 3835 CG GLU A 467 44.726 -24.910 26.108 1.00 36.53 A C
 ATOM 3836 CD GLU A 467 45.627 -23.809 26.617 1.00 45.60 A C
 ATOM 3837 OE1 GLU A 467 45.418 -23.326 27.751 1.00 44.86 A O
 ATOM 3838 OE2 GLU A 467 46.555 -23.424 25.865 1.00 43.13 A O
 ATOM 3839 C GLU A 467 43.601 -27.655 25.933 1.00 36.62 A C
 ATOM 3840 O GLU A 467 43.874 -27.683 24.732 1.00 28.59 A O
 ATOM 3841 N GLU A 468 43.979 -28.617 26.766 1.00 28.32 A N
 ATOM 3842 CA GLU A 468 44.820 -29.694 26.301 1.00 33.91 A C
 ATOM 3843 CB GLU A 468 45.284 -30.563 27.465 1.00 41.97 A C
 ATOM 3844 CG GLU A 468 46.394 -31.522 27.070 1.00 58.39 A C
 ATOM 3845 CD GLU A 468 47.010 -32.247 28.251 1.00 72.95 A C
 ATOM 3846 OE1 GLU A 468 46.592 -31.996 29.404 1.00 83.55 A C
 ATOM 3847 OE2 GLU A 468 47.920 -33.073 28.016 1.00 76.95 A O
 ATOM 3848 C GLU A 468 44.106 -30.548 25.237 1.00 31.82 A C
 ATOM 3849 O GLU A 468 44.697 -30.877 24.209 1.00 29.90 A O
 ATOM 3850 N LEU A 469 42.850 -30.900 25.496 1.00 31.05 A N
 ATOM 3851 CA LEU A 469 42.065 -31.697 24.551 1.00 30.37 A C
 ATOM 3852 CB LEU A 469 40.771 -32.189 25.190 1.00 34.71 A C
 ATOM 3853 CG LEU A 469 40.867 -33.374 26.156 1.00 46.07 A C
 ATOM 3854 CD1 LEU A 469 39.488 -33.690 26.782 1.00 35.79 A C
 ATOM 3855 CD2 LEU A 469 41.438 -34.600 25.441 1.00 39.75 A C
 ATOM 3856 C LEU A 469 41.722 -30.888 23.289 1.00 29.53 A C
 ATOM 3857 O LEU A 469 41.668 -31.440 22.211 1.00 28.42 A O
 ATOM 3858 N ALA A 470 41.467 -29.592 23.442 1.00 25.77 A N
 ATOM 3859 CA ALA A 470 41.116 -28.735 22.309 1.00 28.38 A C
 ATOM 3860 CB ALA A 470 40.642 -27.366 22.767 1.00 21.67 A C
 ATOM 3861 C ALA A 470 42.328 -28.626 21.406 1.00 28.76 A C
 ATOM 3862 O ALA A 470 42.199 -28.735 20.194 1.00 27.45 A O
 ATOM 3863 N THR A 471 43.506 -28.473 22.010 1.00 23.17 A N
 ATOM 3864 CA THR A 471 44.751 -28.407 21.284 1.00 24.26 A C
 ATOM 3865 CB THR A 471 45.886 -28.155 22.259 1.00 24.13 A C
 ATOM 3866 OG1 THR A 471 45.651 -26.890 22.876 1.00 25.52 A O
 ATOM 3867 CG2 THR A 471 47.229 -28.118 21.572 1.00 24.56 A C
 ATOM 3868 C THR A 471 45.009 -29.668 20.445 1.00 29.77 A C
 ATOM 3869 O THR A 471 45.344 -29.588 19.253 1.00 22.06 A O
 ATOM 3870 N GLU A 472 44.855 -30.824 21.064 1.00 22.52 A N
 ATOM 3871 CA GLU A 472 44.944 -32.083 20.369 1.00 27.11 A C
 ATOM 3872 CB GLU A 472 44.727 -33.204 21.387 1.00 30.22 A C
 ATOM 3873 CG GLU A 472 44.802 -34.608 20.851 1.00 38.12 A C
 ATOM 3874 CD GLU A 472 44.752 -35.666 21.965 1.00 53.74 A C
 ATOM 3875 OE1 GLU A 472 44.133 -35.428 23.039 1.00 54.00 A O
 ATOM 3876 OE2 GLU A 472 45.342 -36.745 21.754 1.00 63.63 A O
 ATOM 3877 C GLU A 472 43.938 -32.192 19.198 1.00 25.58 A C
 ATOM 3878 O GLU A 472 44.285 -32.658 18.105 1.00 24.92 A O
 ATOM 3879 N SER A 473 42.705 -31.767 19.414 1.00 20.39 A N
 ATOM 3880 CA SER A 473 41.719 -31.768 18.333 1.00 25.72 A C
 ATOM 3881 CB SER A 473 40.355 -31.332 18.814 1.00 26.44 A C
 ATOM 3882 OG SER A 473 39.941 -32.144 19.881 1.00 34.79 A O
 ATOM 3883 C SER A 473 42.141 -30.835 17.195 1.00 19.41 A C
 ATOM 3884 O SER A 473 41.921 -31.148 16.044 1.00 17.90 A O
 ATOM 3885 N VAL A 474 42.720 -29.698 17.516 1.00 19.66 A N
 ATOM 3886 CA VAL A 474 43.154 -28.780 16.494 1.00 19.80 A C
 ATOM 3887 CB VAL A 474 43.533 -27.425 17.074 1.00 21.08 A C
 ATOM 3888 CG1 VAL A 474 44.344 -26.594 16.023 1.00 19.39 A C
 ATOM 3889 CG2 VAL A 474 42.271 -26.706 17.477 1.00 22.82 A C
 ATOM 3890 C VAL A 474 44.290 -29.380 15.656 1.00 22.88 A C
 ATOM 3891 O VAL A 474 44.303 -29.227 14.422 1.00 22.10 A O
 ATOM 3892 N MET A 475 45.210 -30.066 16.330 1.00 23.45 A N
 ATOM 3893 CA MET A 475 46.330 -30.754 15.683 1.00 26.71 A C
 ATOM 3894 CB MET A 475 47.260 -31.391 16.730 1.00 30.53 A C
 ATOM 3895 CG MET A 475 47.905 -30.421 17.692 1.00 36.44 A C
 ATOM 3896 SD MET A 475 49.127 -29.516 16.796 1.00 41.54 A S
 ATOM 3897 CE MET A 475 50.421 -30.764 16.673 1.00 51.84 A C
 ATOM 3898 C MET A 475 45.818 -31.839 14.759 1.00 23.38 A C
 ATOM 3899 O MET A 475 46.339 -32.029 13.659 1.00 25.85 A O
 ATOM 3900 N ASN A 476 44.817 -32.571 15.219 1.00 21.43 A N
 ATOM 3901 CA ASN A 476 44.176 -33.555 14.373 1.00 25.46 A C
 ATOM 3902 CB ASN A 476 43.201 -34.431 15.160 1.00 28.65 A C
 ATOM 3903 CG ASN A 476 43.891 -35.297 16.218 1.00 31.36 A C
 ATOM 3904 OD1 ASN A 476 45.102 -35.492 16.204 1.00 38.00 A O
 ATOM 3905 ND2 ASN A 476 43.097 -35.826 17.141 1.00 27.91 A N
 ATOM 3906 C ASN A 476 43.475 -32.919 13.176 1.00 21.71 A C
 ATOM 3907 O ASN A 476 43.482 -33.507 12.094 1.00 19.35 A O
 ATOM 3908 N LEU A 477 42.887 -31.731 13.351 1.00 20.67 A N
 ATOM 3909 CA ALEU A 477 42.311 -30.995 12.215 0.50 19.61 A C
 ATOM 3910 CB ALEU A 477 42.309 -30.983 12.221 0.50 22.54 A C
 ATOM 3911 CD ALEU A 477 41.581 -29.741 12.677 0.50 18.09 A C
 ATOM 3912 OE1 ALEU A 477 41.574 -29.721 12.691 0.50 25.47 A C
 ATOM 3913 CG ALEU A 477 40.866 -28.940 11.586 0.50 18.16 A C
 ATOM 3914 CD ALEU A 477 40.038 -29.768 12.688 0.50 33.95 A C
 ATOM 3915 CD1 ALEU A 477 40.121 -29.860 10.614 0.50 21.10 A C
 ATOM 3916 CD2 ALEU A 477 39.458 -28.519 13.367 0.50 29.79 A C
 ATOM 3917 CD3 ALEU A 477 39.912 -27.901 12.226 0.50 16.24 A C
 ATOM 3918 CD4 ALEU A 477 39.506 -29.905 11.257 0.50 35.02 A C
 ATOM 3919 C LEU A 477 43.396 -30.616 11.194 1.00 21.48 A C
 ATOM 3920 O LEU A 477 43.184 -30.706 9.980 1.00 18.70 A O
 ATOM 3921 N ILE A 478 44.553 -30.224 11.684 1.00 17.10 A N
 ATOM 3922 CA ILE A 478 45.705 -29.917 10.800 1.00 16.49 A C
 ATOM 3923 CB ILE A 478 46.905 -29.359 11.577 1.00 16.79 A C
 ATOM 3924 CG1 ILE A 478 46.568 -27.911 12.029 1.00 18.33 A C
 ATOM 3925 CD1 ILE A 478 47.611 -27.299 13.009 1.00 22.73 A C
 ATOM 3926 CG2 ILE A 478 48.224 -29.287 10.695 1.00 12.76 A C
 ATOM 3927 C ILE A 478 46.117 -31.151 10.005 1.00 19.00 A C
 ATOM 3928 O ILE A 478 46.283 -31.068 8.781 1.00 16.79 A O
 ATOM 3929 N ASP A 479 46.235 -32.294 10.679 1.00 15.78 A N
 ATOM 3930 CA ASP A 479 46.574 -33.527 9.978 1.00 17.49 A C
 ATOM 3931 CB ASP A 479 46.714 -34.691 10.947 1.00 20.17 A C
 ATOM 3932 CG ASP A 479 47.988 -34.598 11.800 1.00 33.33 A C
 ATOM 3933 OD1 ASP A 479 48.979 -33.880 11.465 1.00 37.08 A O
 ATOM 3934 OD2 ASP A 479 47.986 -35.279 12.834 1.00 31.99 A O
 ATOM 3935 C ASP A 479 45.568 -33.909 8.907 1.00 16.09 A C
 ATOM 3936 O ASP A 479 45.956 -34.308 7.800 1.00 16.06 A O
 ATOM 3937 N GLU A 480 44.288 -33.873 9.265 1.00 17.62 A N
 ATOM 3938 CA GLU A 480 43.212 -34.154 8.308 1.00 19.20 A C
 ATOM 3939 CB GLU A 480 41.862 -34.092 9.028 1.00 22.65 A C
 ATOM 3940 CG GLU A 480 40.652 -34.191 8.172 1.00 37.11 A C
 ATOM 3941 CD GLU A 480 39.410 -33.735 8.938 1.00 52.61 A C
 ATOM 3942 OE1 GLU A 480 39.183 -34.254 10.046 1.00 53.08 A O
 ATOM 3943 OE2 GLU A 480 38.689 -32.839 8.451 1.00 51.93 A O
 ATOM 3944 C GLU A 480 43.227 -33.238 7.101 1.00 16.53 A C
 ATOM 3945 O GLU A 480 43.033 -33.694 5.970 1.00 14.41 A O
 ATOM 3946 N THR A 481 43.461 -31.947 7.340 1.00 15.80 A N
 ATOM 3947 CA THR A 481 43.569 -30.981 6.290 1.00 13.89 A C
 ATOM 3948 CB THR A 481 43.657 -29.560 6.890 1.00 17.77 A C
 ATOM 3949 OG1 THR A 481 42.509 -29.362 7.753 1.00 19.40 A O
 ATOM 3950 CG2 THR A 481 43.759 -28.502 5.761 1.00 16.74 A C
 ATOM 3951 C THR A 481 44.753 -31.287 5.358 1.00 16.12 A C
 ATOM 3952 O THR A 481 44.613 -31.231 4.136 1.00 13.98 A O

ATOM 3953 N TRP A 482 45.912 -31.626 5.919 1.00 15.23 A N
 ATOM 3954 CA TRP A 482 47.020 -32.110 5.088 1.00 14.38 A C
 ATOM 3955 CB TRP A 482 48.225 -32.441 5.967 1.00 15.52 A C
 ATOM 3956 CG TRP A 482 49.119 -31.248 6.112 1.00 16.43 A C
 ATOM 3957 CD1 TRP A 482 49.158 -30.313 7.151 1.00 17.00 A C
 ATOM 3958 NE1 TRP A 482 50.107 -29.366 6.895 1.00 18.88 A N
 ATOM 3959 CE2 TRP A 482 50.679 -29.572 5.689 1.00 16.63 A C
 ATOM 3960 CD2 TRP A 482 50.076 -30.767 5.126 1.00 13.73 A C
 ATOM 3961 CE3 TRP A 482 50.490 -31.211 3.881 1.00 18.76 A C
 ATOM 3962 CZ3 TRP A 482 51.471 -30.491 3.201 1.00 20.35 A C
 ATOM 3963 CH2 TRP A 482 52.048 -29.341 3.769 1.00 15.16 A C
 ATOM 3964 C2 TRP A 482 51.645 -28.849 5.004 1.00 17.19 A C
 ATOM 3965 C TRP A 482 46.663 -33.309 4.206 1.00 15.56 A C
 ATOM 3966 O TRP A 482 47.020 -33.322 3.043 1.00 14.64 A O
 ATOM 3967 N LYS A 483 45.952 -34.292 4.738 1.00 12.09 A N
 ATOM 3968 CA LYS A 483 45.562 -35.442 3.931 1.00 14.07 A C
 ATOM 3969 CB LYS A 483 44.834 -36.468 4.751 1.00 12.95 A C
 ATOM 3970 CG LYS A 483 45.695 -37.214 5.710 1.00 15.23 A C
 ATOM 3971 CD LYS A 483 44.778 -38.101 6.628 1.00 16.87 A C
 ATOM 3972 CE LYS A 483 45.546 -38.727 7.744 1.00 20.92 A C
 ATOM 3973 NZ LYS A 483 44.621 -39.452 8.640 1.00 19.13 A N
 ATOM 3974 C LYS A 483 44.679 -35.024 2.743 1.00 13.93 A C
 ATOM 3975 O LYS A 483 44.848 -35.547 1.644 1.00 13.27 A O
 ATOM 3976 N LYS A 484 43.810 -34.043 2.959 1.00 14.49 A N
 ATOM 3977 CA LYS A 484 42.973 -33.514 1.868 1.00 16.83 A C
 ATOM 3978 CB LYS A 484 41.829 -32.688 2.407 1.00 15.87 A C
 ATOM 3979 CG LYS A 484 40.884 -33.521 3.224 1.00 19.52 A C
 ATOM 3980 CD LYS A 484 39.799 -32.667 3.808 1.00 28.94 A C
 ATOM 3981 CE LYS A 484 38.915 -33.469 4.724 1.00 33.21 A C
 ATOM 3982 NZ LYS A 484 37.962 -32.556 5.364 1.00 37.29 A N
 ATOM 3983 C LYS A 484 43.764 -32.752 0.835 1.00 15.35 A C
 ATOM 3984 O LYS A 484 43.563 -32.937 -0.367 1.00 16.38 A O
 ATOM 3985 N MET A 485 44.729 -31.963 1.274 1.00 15.56 A N
 ATOM 3986 CA MET A 485 45.564 -31.230 0.338 1.00 18.45 A C
 ATOM 3987 CB MET A 485 46.475 -30.224 1.047 1.00 17.39 A C
 ATOM 3988 CG MET A 485 45.772 -29.041 1.663 1.00 21.79 A C
 ATOM 3989 SD MET A 485 46.944 -27.785 2.264 1.00 23.85 A S
 ATOM 3990 CE MET A 485 47.995 -28.677 3.419 1.00 21.57 A C
 ATOM 3991 C MET A 485 46.434 -32.213 -0.445 1.00 17.61 A C
 ATOM 3992 O MET A 485 46.626 -32.015 -1.645 1.00 17.08 A O
 ATOM 3993 N ASN A 486 46.885 -33.299 0.199 1.00 18.25 A N
 ATOM 3994 CA ASN A 486 47.701 -34.305 -0.469 1.00 15.51 A C
 ATOM 3995 CB ASN A 486 48.192 -35.399 0.497 1.00 16.05 A C
 ATOM 3996 CG ASN A 486 49.299 -34.941 1.463 1.00 15.97 A C
 ATOM 3997 OD1 ASN A 486 49.975 -33.950 1.250 1.00 17.54 A O
 ATOM 3998 ND2 ASN A 486 49.468 -35.706 2.557 1.00 13.12 A N
 ATOM 3999 C ASN A 486 46.912 -34.966 -1.621 1.00 17.24 A C
 ATOM 4000 O ASN A 486 47.464 -35.234 -2.698 1.00 18.56 A O
 ATOM 4001 N LYS A 487 45.635 -35.236 -1.388 1.00 14.64 A N
 ATOM 4002 CA LYS A 487 44.782 -35.818 -2.419 1.00 15.66 A C
 ATOM 4003 CB LYS A 487 43.422 -36.234 -1.867 1.00 16.91 A C
 ATOM 4004 CG LYS A 487 42.572 -36.969 -2.854 1.00 20.96 A C
 ATOM 4005 CD LYS A 487 41.260 -37.370 -2.247 1.00 25.53 A C
 ATOM 4006 CE LYS A 487 40.344 -37.998 -3.327 1.00 30.21 A C
 ATOM 4007 NZ LYS A 487 39.154 -38.633 -2.706 1.00 25.05 A N
 ATOM 4008 C LYS A 487 44.591 -34.861 -3.579 1.00 17.27 A C
 ATOM 4009 O LYS A 487 44.624 -35.272 -4.753 1.00 17.38 A O
 ATOM 4010 N GLU A 488 44.425 -33.593 -3.264 1.00 18.99 A N
 ATOM 4011 CA GLU A 488 44.215 -32.556 -4.296 1.00 22.07 A C
 ATOM 4012 CB GLU A 488 43.954 -31.191 -3.649 1.00 26.40 A C
 ATOM 4013 CG GLU A 488 43.568 -30.048 -4.605 1.00 37.28 A C
 ATOM 4014 CD GLU A 488 42.097 -30.103 -5.022 1.00 48.74 A C
 ATOM 4015 OE1 GLU A 488 41.260 -30.584 -4.221 1.00 54.85 A O
 ATOM 4016 OE2 GLU A 488 41.783 -29.666 -6.155 1.00 50.63 A O
 ATOM 4017 C GLU A 488 45.434 -32.435 -5.209 1.00 19.80 A C
 ATOM 4018 O GLU A 488 45.281 -32.265 -6.408 1.00 21.01 A O

ATOM 4019 N LYS A 489 46.630 -32.486 -4.640 1.00 17.29 A N
 ATOM 4020 CA LYS A 489 47.851 -32.400 -5.422 1.00 18.72 A C
 ATOM 4021 CB LYS A 489 49.063 -32.222 -4.520 1.00 20.27 A C
 ATOM 4022 CG LYS A 489 50.438 -32.185 -5.212 1.00 20.51 A C
 ATOM 4023 CD LYS A 489 50.631 -30.930 -6.069 1.00 23.34 A C
 ATOM 4024 CE LYS A 489 51.862 -31.036 -6.979 1.00 23.63 A C
 ATOM 4025 NZ LYS A 489 53.084 -31.210 -6.198 1.00 21.67 A N
 ATOM 4026 C LYS A 489 48.039 -33.629 -6.331 1.00 23.93 A C
 ATOM 4027 O LYS A 489 48.576 -33.512 -7.443 1.00 21.37 A O
 ATOM 4028 N LEU A 490 47.647 -34.796 -5.828 1.00 22.66 A N
 ATOM 4029 CA ALEU A 490 47.865 -36.062 -6.550 0.50 27.19 A C
 ATOM 4030 CA BLEU A 490 47.823 -36.076 -6.542 0.50 27.96 A C
 ATOM 4031 CB ALEU A 490 47.834 -37.243 -5.558 0.50 22.47 A C
 ATOM 4032 CB BLEU A 490 47.607 -37.256 -5.594 0.50 24.24 A C
 ATOM 4033 CG ALEU A 490 48.080 -38.692 -6.004 0.50 21.71 A C
 ATOM 4034 CG BLEU A 490 48.829 -37.831 -4.913 0.50 23.81 A C
 ATOM 4035 CD1ALEU A 490 49.436 -38.888 -6.644 0.50 19.67 A C
 ATOM 4036 CD1BLEU A 490 48.403 -38.959 -3.950 0.50 21.79 A C
 ATOM 4037 CD2ALEU A 490 47.951 -39.598 -4.798 0.50 21.41 A C
 ATOM 4038 CD2BLEU A 490 49.805 -38.359 -5.955 0.50 25.26 A C
 ATOM 4039 C LEU A 490 46.848 -36.248 -7.682 1.00 30.53 A C
 ATOM 4040 O LEU A 490 47.218 -36.645 -8.763 1.00 32.66 A O
 ATOM 4041 N GLY A 491 45.590 -35.927 -7.409 1.00 31.34 A N
 ATOM 4042 CA GLY A 491 44.478 -36.293 -8.226 1.00 48.80 A C
 ATOM 4043 C GLY A 491 44.065 -35.322 -9.283 1.00 60.28 A C
 ATOM 4044 O GLY A 491 44.860 -34.939 -10.135 1.00 79.14 A O
 ATOM 4045 N GLY A 492 42.796 -34.962 -9.245 1.00 55.84 A N
 ATOM 4046 CA GLY A 492 42.162 -34.344 -10.379 1.00 72.32 A C
 ATOM 4047 C GLY A 492 41.713 -32.969 -9.983 1.00 72.34 A C
 ATOM 4048 O GLY A 492 40.510 -32.700 -9.894 1.00 67.55 A O
 ATOM 4049 N SER A 493 42.671 -32.096 -9.721 1.00 53.00 A N
 ATOM 4050 CA SER A 493 42.298 -30.727 -9.363 1.00 59.50 A C
 ATOM 4051 CB SER A 493 43.453 -29.918 -8.737 1.00 47.61 A C
 ATOM 4052 OG SER A 493 42.991 -28.645 -8.187 1.00 43.51 A O
 ATOM 4053 C SER A 493 41.800 -30.003 -10.604 1.00 44.76 A C
 ATOM 4054 O SER A 493 42.211 -30.287 -11.727 1.00 34.61 A O
 ATOM 4055 N LEU A 494 40.917 -29.055 -10.362 1.00 41.66 A N
 ATOM 4056 CA LEU A 494 40.589 -28.025 -11.325 1.00 42.41 A C
 ATOM 4057 CB LEU A 494 39.490 -27.156 -10.730 1.00 40.97 A C
 ATOM 4058 CG LEU A 494 39.214 -25.832 -11.437 1.00 60.70 A C
 ATOM 4059 CD1 LEU A 494 38.647 -26.045 -12.862 1.00 62.77 A C
 ATOM 4060 CD2 LEU A 494 38.276 -25.030 -10.568 1.00 49.79 A C
 ATOM 4061 C LEU A 494 41.827 -27.172 -11.689 1.00 37.14 A C
 ATOM 4062 O LEU A 494 41.975 -26.729 -12.810 1.00 41.80 A O
 ATOM 4063 N PHE A 495 42.733 -26.965 -10.743 1.00 26.68 A N
 ATOM 4064 CA PHE A 495 43.867 -26.105 -10.990 1.00 26.09 A C
 ATOM 4065 CB PHE A 495 44.190 -25.371 -9.706 1.00 23.48 A C
 ATOM 4066 CG PHE A 495 43.181 -24.338 -9.344 1.00 25.42 A C
 ATOM 4067 CD1 PHE A 495 43.301 -23.059 -9.816 1.00 26.17 A C
 ATOM 4068 CE1 PHE A 495 42.353 -22.089 -9.484 1.00 25.96 A C
 ATOM 4069 CZ PHE A 495 41.269 -22.428 -8.689 1.00 27.04 A C
 ATOM 4070 CE2 PHE A 495 41.139 -23.719 -8.235 1.00 29.85 A C
 ATOM 4071 CD2 PHE A 495 42.085 -24.664 -8.560 1.00 27.59 A C
 ATOM 4072 C PHE A 495 45.085 -26.910 -11.471 1.00 25.94 A C
 ATOM 4073 O PHE A 495 45.203 -28.077 -11.170 1.00 28.09 A O
 ATOM 4074 N ALA A 496 46.009 -26.477 -12.138 1.00 33.05 A N
 ATOM 4075 CA ALA A 496 47.250 -26.868 -12.577 1.00 39.94 A C
 ATOM 4076 CB ALA A 496 47.945 -25.966 -13.574 1.00 42.98 A C
 ATOM 4077 C ALA A 496 48.150 -27.120 -11.352 1.00 36.62 A C
 ATOM 4078 O ALA A 496 48.121 -26.349 -10.389 1.00 31.86 A O
 ATOM 4079 N LYS A 497 48.963 -28.167 -11.419 1.00 34.08 A N
 ATOM 4080 CA LYS A 497 49.732 -28.637 -10.272 1.00 37.33 A C
 ATOM 4081 CB LYS A 497 50.470 -29.961 -10.588 1.00 41.75 A C
 ATOM 4082 CG LYS A 497 49.512 -31.161 -10.633 1.00 47.85 A C
 ATOM 4083 CD LYS A 497 50.233 -32.512 -10.638 1.00 56.61 A C
 ATOM 4084 CE LYS A 497 49.212 -33.653 -10.765 1.00 64.54 A C

ATOM 4085 NZ LYS A 497 49.773 -35.007 -10.458 1.00 65.22 A N
 ATOM 4086 C LYS A 497 50.672 -27.606 -9.670 1.00 31.87 A C
 ATOM 4087 O LYS A 497 50.822 -27.580 -8.463 1.00 27.56 A O
 ATOM 4088 N PRO A 498 51.264 -26.716 -10.492 1.00 33.97 A N
 ATOM 4089 CA PRO A 498 52.093 -25.671 -9.909 1.00 32.61 A C
 ATOM 4090 CB PRO A 498 52.631 -24.912 -11.132 1.00 34.93 A C
 ATOM 4091 CG PRO A 498 52.536 -25.882 -12.254 1.00 42.21 A C
 ATOM 4092 CD PRO A 498 51.324 -26.709 -11.966 1.00 41.65 A C
 ATOM 4093 C PRO A 498 51.318 -24.707 -9.011 1.00 29.86 A C
 ATOM 4094 O PRO A 498 51.840 -24.290 -7.986 1.00 26.30 A O
 ATOM 4095 N PHE A 499 50.101 -24.322 -9.389 1.00 26.07 A N
 ATOM 4096 CA PHE A 499 49.324 -23.478 -8.486 1.00 25.20 A C
 ATOM 4097 CB PHE A 499 48.116 -22.836 -9.142 1.00 21.86 A C
 ATOM 4098 CG PHE A 499 47.358 -21.964 -8.214 1.00 20.70 A C
 ATOM 4099 CD1 PHE A 499 47.912 -20.795 -7.748 1.00 22.74 A C
 ATOM 4100 CE1 PHE A 499 47.240 -20.000 -6.837 1.00 24.76 A C
 ATOM 4101 CZ PHE A 499 45.980 -20.372 -6.418 1.00 22.15 A C
 ATOM 4102 CE2 PHE A 499 45.434 -21.558 -6.872 1.00 22.89 A C
 ATOM 4103 CD2 PHE A 499 46.121 -22.328 -7.767 1.00 21.48 A C
 ATOM 4104 C PHE A 499 48.901 -24.256 -7.209 1.00 19.68 A C
 ATOM 4105 O PHE A 499 48.967 -23.680 -6.103 1.00 20.69 A O
 ATOM 4106 N VAL A 500 48.510 -25.536 -7.353 1.00 20.38 A N
 ATOM 4107 CA VAL A 500 48.142 -26.363 -6.192 1.00 19.51 A C
 ATOM 4108 CB VAL A 500 47.691 -27.750 -6.568 1.00 22.11 A C
 ATOM 4109 CG1 VAL A 500 47.420 -28.597 -5.314 1.00 20.63 A C
 ATOM 4110 CG2 VAL A 500 46.418 -27.684 -7.500 1.00 19.82 A C
 ATOM 4111 C VAL A 500 49.310 -26.414 -5.237 1.00 17.74 A C
 ATOM 4112 O VAL A 500 49.139 -26.210 -4.051 1.00 19.47 A O
 ATOM 4113 N GLU A 501 50.518 -26.572 -5.769 1.00 21.36 A N
 ATOM 4114 CA GLU A 501 51.722 -26.617 -4.965 1.00 21.86 A C
 ATOM 4115 CB GLU A 501 52.903 -27.076 -5.811 1.00 26.57 A C
 ATOM 4116 CG GLU A 501 54.218 -27.318 -5.036 1.00 24.39 A C
 ATOM 4117 CD GLU A 501 54.178 -28.541 -4.079 1.00 31.48 A C
 ATOM 4118 OE1 GLU A 501 53.186 -29.319 -4.025 1.00 26.98 A O
 ATOM 4119 OE2 GLU A 501 55.198 -28.741 -3.395 1.00 27.65 A O
 ATOM 4120 C GLU A 501 52.062 -25.283 -4.272 1.00 20.56 A C
 ATOM 4121 O GLU A 501 52.447 -25.272 -3.078 1.00 16.73 A O
 ATOM 4122 N THR A 502 51.945 -24.178 -4.998 1.00 20.57 A N
 ATOM 4123 CA THR A 502 52.097 -22.845 -4.413 1.00 19.79 A C
 ATOM 4124 CB THR A 502 51.803 -21.761 -5.462 1.00 24.29 A C
 ATOM 4125 OG1 THR A 502 52.690 -21.934 -6.551 1.00 25.00 A O
 ATOM 4126 CG2 THR A 502 51.981 -20.353 -4.890 1.00 22.68 A C
 ATOM 4127 C THR A 502 51.146 -22.669 -3.198 1.00 18.49 A C
 ATOM 4128 O THR A 502 51.534 -22.190 -2.142 1.00 19.11 A O
 ATOM 4129 N ALA A 503 49.914 -23.098 -3.371 1.00 15.97 A N
 ATOM 4130 CA ALA A 503 48.885 -23.042 -2.315 1.00 17.68 A C
 ATOM 4131 CB ALA A 503 47.546 -23.517 -2.854 1.00 13.94 A C
 ATOM 4132 C ALA A 503 49.316 -23.870 -1.123 1.00 18.81 A C
 ATOM 4133 O ALA A 503 49.323 -23.384 0.011 1.00 17.14 A O
 ATOM 4134 N ILE A 504 49.763 -25.091 -1.373 1.00 20.50 A N
 ATOM 4135 CA ILE A 504 50.294 -25.926 -0.282 1.00 18.42 A C
 ATOM 4136 CB ILE A 504 50.622 -27.364 -0.791 1.00 19.01 A C
 ATOM 4137 CG1 ILE A 504 49.347 -28.068 -1.267 1.00 20.65 A C
 ATOM 4138 CD1 ILE A 504 49.622 -29.508 -1.880 1.00 19.60 A C
 ATOM 4139 CG2 ILE A 504 51.328 -28.229 0.336 1.00 16.48 A C
 ATOM 4140 C ILE A 504 51.523 -25.271 0.360 1.00 20.66 A C
 ATOM 4141 O ILE A 504 51.692 -25.327 1.586 1.00 17.24 A O
 ATOM 4142 N ASN A 505 52.367 -24.592 -0.423 1.00 18.20 A N
 ATOM 4143 CA ASN A 505 53.481 -23.874 0.207 1.00 16.22 A C
 ATOM 4144 CB ASN A 505 54.419 -23.250 -0.825 1.00 19.40 A C
 ATOM 4145 CG ASN A 505 55.224 -24.278 -1.587 1.00 20.36 A C
 ATOM 4146 OD1 ASN A 505 55.464 -25.400 -1.111 1.00 19.80 A O
 ATOM 4147 ND2 ASN A 505 55.697 -23.880 -2.757 1.00 16.17 A N
 ATOM 4148 C ASN A 505 53.077 -22.811 1.245 1.00 18.67 A C
 ATOM 4149 O ASN A 505 53.839 -22.536 2.172 1.00 19.55 A O
 ATOM 4150 N LEU A 506 51.883 -22.250 1.130 1.00 19.40 A N
 ATOM 4151 CA LEU A 506 51.415 -21.299 2.133 1.00 18.37 A C
 ATOM 4152 CB LEU A 506 50.113 -20.649 1.673 1.00 20.58 A C
 ATOM 4153 CG LEU A 506 49.487 -19.672 2.701 1.00 30.53 A C
 ATOM 4154 CD1 LEU A 506 49.656 -18.279 2.175 1.00 29.62 A C
 ATOM 4155 CD2 LEU A 506 47.982 -19.947 2.935 1.00 26.29 A C
 ATOM 4156 C LEU A 506 51.227 -22.024 3.469 1.00 17.76 A C
 ATOM 4157 O LEU A 506 51.540 -21.481 4.551 1.00 16.64 A O
 ATOM 4158 N ALA A 507 50.753 -23.271 3.422 1.00 17.78 A N
 ATOM 4159 CA ALA A 507 50.632 -24.062 4.636 1.00 18.31 A C
 ATOM 4160 CB ALA A 507 49.809 -25.373 4.398 1.00 16.33 A C
 ATOM 4161 C ALA A 507 52.016 -24.374 5.220 1.00 17.60 A C
 ATOM 4162 O ALA A 507 52.224 -24.289 6.430 1.00 18.28 A O
 ATOM 4163 N ARG A 508 52.962 -24.758 4.373 1.00 14.94 A N
 ATOM 4164 CA ARG A 508 54.331 -25.035 4.816 1.00 15.68 A C
 ATOM 4165 CB ARG A 508 55.193 -25.438 3.624 1.00 15.05 A C
 ATOM 4166 CG ARG A 508 54.765 -26.752 2.994 1.00 15.52 A C
 ATOM 4167 CD ARG A 508 55.742 -27.210 1.937 1.00 17.52 A C
 ATOM 4168 NE ARG A 508 55.436 -28.586 1.540 1.00 18.72 A N
 ATOM 4169 CZ ARG A 508 55.023 -28.998 0.347 1.00 20.99 A C
 ATOM 4170 NH1 ARG A 508 54.826 -28.175 -0.666 1.00 20.60 A N
 ATOM 4171 NH2 ARG A 508 54.796 -30.287 0.167 1.00 19.00 A N
 ATOM 4172 C ARG A 508 54.947 -23.817 5.531 1.00 17.54 A C
 ATOM 4173 O ARG A 508 55.547 -23.955 6.610 1.00 19.20 A O
 ATOM 4174 N GLN A 509 54.763 -22.640 4.922 1.00 18.14 A N
 ATOM 4175 CA GLN A 509 55.322 -21.402 5.475 1.00 18.23 A C
 ATOM 4176 CB GLN A 509 55.141 -20.227 4.487 1.00 22.05 A C
 ATOM 4177 CG GLN A 509 55.298 -20.639 7.723 1.00 18.58 A O
 ATOM 4178 CD GLN A 509 57.226 -18.986 5.232 1.00 27.68 A C
 ATOM 4179 OE1 GLN A 509 57.930 -19.557 4.446 1.00 26.27 A O
 ATOM 4180 NE2 GLN A 509 57.699 -18.403 6.302 1.00 34.33 A N
 ATOM 4181 C GLN A 509 54.662 -21.115 6.802 1.00 19.66 A C
 ATOM 4182 O GLN A 509 55.298 -20.639 7.723 1.00 18.58 A O
 ATOM 4183 N SER A 510 53.376 -21.435 6.935 1.00 19.88 A N
 ATOM 4184 CA SER A 510 52.698 -21.304 8.224 1.00 16.74 A C
 ATOM 4185 CB SER A 510 51.214 -21.683 8.074 1.00 20.01 A C
 ATOM 4186 OG SER A 510 50.580 -20.747 7.203 1.00 21.40 A O
 ATOM 4187 C SER A 510 53.356 -22.117 9.312 1.00 18.45 A C
 ATOM 4188 O SER A 510 53.611 -21.625 10.436 1.00 20.32 A O
 ATOM 4189 N HIS A 511 53.617 -23.388 9.021 1.00 16.45 A N
 ATOM 4190 CA HIS A 511 54.270 -24.277 9.988 1.00 16.17 A C
 ATOM 4191 CB HIS A 511 54.446 -25.675 9.395 1.00 18.95 A C
 ATOM 4192 CG HIS A 511 53.170 -26.485 9.362 1.00 16.31 A C
 ATOM 4193 ND1 HIS A 511 52.624 -27.021 10.495 1.00 20.09 A N
 ATOM 4194 CE1 HIS A 511 51.483 -27.682 10.169 1.00 22.64 A C
 ATOM 4195 NE2 HIS A 511 51.314 -27.611 8.847 1.00 18.17 A N
 ATOM 4196 CD2 HIS A 511 52.341 -26.877 8.305 1.00 20.21 A C
 ATOM 4197 C HIS A 511 55.625 -23.734 10.319 1.00 20.90 A C
 ATOM 4198 O HIS A 511 56.060 -23.820 11.444 1.00 19.36 A O
 ATOM 4199 N CYS A 512 56.303 -23.147 9.340 1.00 19.93 A N
 ATOM 4200 CA CYS A 512 57.658 -22.668 9.560 1.00 20.84 A C
 ATOM 4201 CB CYS A 512 58.434 -22.617 8.239 1.00 21.43 A C
 ATOM 4202 SG CYS A 512 58.833 -24.343 7.612 1.00 26.02 A S
 ATOM 4203 C CYS A 512 57.742 -21.291 10.272 1.00 21.58 A C
 ATOM 4204 O CYS A 512 58.748 -20.991 10.842 1.00 26.11 A O
 ATOM 4205 N THR A 513 56.703 -20.481 10.179 1.00 23.47 A N
 ATOM 4206 CA THR A 513 56.676 -19.162 10.788 1.00 27.58 A C
 ATOM 4207 CB THR A 513 55.758 -18.254 10.019 1.00 29.85 A C
 ATOM 4208 OG1 THR A 513 56.247 -18.183 8.682 1.00 27.20 A O
 ATOM 4209 CG2 THR A 513 55.692 -16.840 10.630 1.00 30.28 A C
 ATOM 4210 C THR A 513 56.197 -19.254 12.215 1.00 37.01 A C
 ATOM 4211 O THR A 513 56.735 -18.556 13.068 1.00 27.92 A O
 ATOM 4212 N TYR A 514 55.216 -20.124 12.484 1.00 27.85 A N
 ATOM 4213 CA TYR A 514 54.604 -20.210 13.819 1.00 32.83 A C
 ATOM 4214 CB TYR A 514 53.062 -20.286 13.738 1.00 26.86 A C
 ATOM 4215 CG TYR A 514 52.532 -19.034 13.105 1.00 22.85 A C
 ATOM 4216 CD1 TYR A 514 52.511 -17.835 13.795 1.00 31.96 A C

ATOM 4217 CE1 TYR A 514 52.084 -16.673 13.177 1.00 30.33 A C
 ATOM 4218 CZ TYR A 514 51.698 -16.708 11.868 1.00 31.28 A C
 ATOM 4219 OH TYR A 514 51.286 -15.590 11.216 1.00 31.35 A O
 ATOM 4220 CE2 TYR A 514 51.730 -17.875 11.170 1.00 26.60 A C
 ATOM 4221 CD2 TYR A 514 52.160 -19.017 11.786 1.00 23.31 A C
 ATOM 4222 C TYR A 514 55.242 -21.324 14.605 1.00 37.07 A C
 ATOM 4223 O TYR A 514 54.763 -22.428 14.644 1.00 41.12 A O
 ATOM 4224 N HIS A 515 56.369 -20.998 15.220 1.00 52.59 A N
 ATOM 4225 CA HIS A 515 57.199 -21.961 15.943 1.00 47.40 A C
 ATOM 4226 CB HIS A 515 58.533 -22.132 15.211 1.00 47.12 A C
 ATOM 4227 CG HIS A 515 59.339 -20.849 15.076 1.00 44.49 A C
 ATOM 4228 ND1 HIS A 515 59.938 -20.250 16.125 1.00 48.30 A N
 ATOM 4229 CE1 HIS A 515 60.575 -19.133 15.700 1.00 37.04 A C
 ATOM 4230 NE2 HIS A 515 60.397 -19.027 14.376 1.00 44.22 A N
 ATOM 4231 CD2 HIS A 515 59.641 -20.068 13.957 1.00 42.54 A C
 ATOM 4232 C HIS A 515 57.428 -21.458 17.335 1.00 60.34 A C
 ATOM 4233 O HIS A 515 56.873 -20.424 17.726 1.00 60.05 A O
 ATOM 4234 N ASN A 516 58.253 -22.176 18.098 1.00 73.61 A N
 ATOM 4235 CA ASN A 516 58.653 -21.727 19.429 1.00 78.32 A C
 ATOM 4236 CB ASN A 516 57.754 -22.402 20.469 1.00 76.01 A C
 ATOM 4237 CG ASN A 516 57.642 -21.597 21.738 1.00 80.70 A C
 ATOM 4238 OD1 ASN A 516 57.469 -20.379 21.694 1.00 92.46 A O
 ATOM 4239 ND2 ASN A 516 57.753 -22.266 22.879 1.00 69.09 A N
 ATOM 4240 C ASN A 516 60.146 -21.938 19.790 1.00 71.29 A C
 ATOM 4241 O ASN A 516 60.498 -21.929 20.967 1.00 72.15 A O
 ATOM 4242 N GLY A 517 61.015 -22.113 18.790 1.00 73.55 A N
 ATOM 4243 CA GLY A 517 62.453 -22.324 19.023 1.00 69.30 A C
 ATOM 4244 C GLY A 517 62.882 -23.776 18.899 1.00 67.94 A C
 ATOM 4245 O GLY A 517 63.971 -24.159 19.346 1.00 52.43 A O
 ATOM 4246 N THR A 521 67.697 -22.083 21.593 1.00 48.19 A N
 ATOM 4247 CA THR A 521 67.278 -20.802 21.017 1.00 61.81 A C
 ATOM 4248 CB THR A 521 67.383 -20.783 19.459 1.00 70.39 A C
 ATOM 4249 OG1 THR A 521 66.575 -21.828 18.907 1.00 93.82 A O
 ATOM 4250 CG2 THR A 521 68.823 -20.966 18.990 1.00 66.62 A C
 ATOM 4251 C THR A 521 65.840 -20.448 21.409 1.00 61.14 A C
 ATOM 4252 O THR A 521 65.037 -21.330 21.732 1.00 64.90 A O
 ATOM 4253 N SER A 522 65.535 -19.150 21.372 1.00 54.62 A N
 ATOM 4254 CA SER A 522 64.209 -18.614 21.715 1.00 58.24 A C
 ATOM 4255 CB SER A 522 64.388 -17.390 22.594 1.00 53.59 A C
 ATOM 4256 OG SER A 522 64.988 -16.352 21.835 1.00 46.59 A O
 ATOM 4257 C SER A 522 63.452 -18.213 20.435 1.00 54.40 A C
 ATOM 4258 O SER A 522 64.060 -18.147 19.365 1.00 52.75 A O
 ATOM 4259 N PRO A 523 62.136 -17.931 20.537 1.00 59.75 A N
 ATOM 4260 CA PRO A 523 61.363 -17.599 19.329 1.00 67.72 A C
 ATOM 4261 CB PRO A 523 60.025 -17.100 19.895 1.00 67.43 A C
 ATOM 4262 CG PRO A 523 59.858 -17.915 21.128 1.00 61.02 A C
 ATOM 4263 CD PRO A 523 61.251 -18.079 21.710 1.00 60.09 A C
 ATOM 4264 C PRO A 523 62.000 -16.576 18.375 1.00 63.23 A C
 ATOM 4265 O PRO A 523 62.426 -16.965 17.289 1.00 65.32 A O
 ATOM 4266 N ASP A 524 62.098 -15.301 18.751 1.00 53.76 A N
 ATOM 4267 CA ASP A 524 62.463 -14.292 17.746 1.00 56.64 A C
 ATOM 4268 CB ASP A 524 61.997 -12.888 18.126 1.00 72.74 A C
 ATOM 4269 CG ASP A 524 61.249 -12.221 16.980 1.00 90.60 A C
 ATOM 4270 OD1 ASP A 524 61.879 -11.892 15.952 1.00 92.92 A O
 ATOM 4271 OD2 ASP A 524 60.017 -12.076 17.088 1.00 99.57 A O
 ATOM 4272 C ASP A 524 63.938 -14.318 17.345 1.00 43.11 A C
 ATOM 4273 O ASP A 524 64.314 -13.682 16.370 1.00 45.57 A O
 ATOM 4274 N GLU A 525 64.758 -15.053 18.093 1.00 38.74 A N
 ATOM 4275 CA GLU A 525 66.127 -15.348 17.683 1.00 47.99 A C
 ATOM 4276 CB GLU A 525 66.966 -15.818 18.879 1.00 57.18 A C
 ATOM 4277 CG GLU A 525 68.471 -15.653 18.703 1.00 76.26 A C
 ATOM 4278 CD GLU A 525 68.893 -14.230 18.331 1.00 86.79 A C
 ATOM 4279 OE1 GLU A 525 68.255 -13.251 18.780 1.00 83.59 A O
 ATOM 4280 OE2 GLU A 525 69.877 -14.096 17.577 1.00 87.42 A O
 ATOM 4281 C GLU A 525 66.144 -16.417 16.569 1.00 38.28 A C
 ATOM 4282 O GLU A 525 66.952 -16.332 15.656 1.00 42.11 A O
 ATOM 4283 N LEU A 526 65.269 -17.414 16.656 1.00 42.35 A N
 ATOM 4284 CA LEU A 526 65.125 -18.397 15.570 1.00 41.74 A C
 ATOM 4285 CB LEU A 526 64.186 -19.549 15.974 1.00 41.93 A C
 ATOM 4286 CG LEU A 526 64.128 -20.773 15.034 1.00 47.17 A C
 ATOM 4287 CD1 LEU A 526 65.540 -21.285 14.673 1.00 39.29 A C
 ATOM 4288 CD2 LEU A 526 63.265 -21.912 15.626 1.00 42.53 A C
 ATOM 4289 C LEU A 526 64.658 -17.701 14.282 1.00 37.23 A C
 ATOM 4290 O LEU A 526 65.289 -17.850 13.223 1.00 38.03 A O
 ATOM 4291 N THR A 527 63.588 -16.915 14.376 1.00 34.27 A N
 ATOM 4292 CA THR A 527 63.107 -16.129 13.231 1.00 35.49 A C
 ATOM 4293 CB THR A 527 61.935 -15.222 13.639 1.00 37.44 A C
 ATOM 4294 OG1 THR A 527 60.916 -16.040 14.216 1.00 37.80 A O
 ATOM 4295 CG2 THR A 527 61.357 -14.444 12.439 1.00 30.44 A C
 ATOM 4296 C THR A 527 64.200 -15.275 12.611 1.00 46.48 A C
 ATOM 4297 O THR A 527 64.328 -15.218 11.388 1.00 46.01 A O
 ATOM 4298 N ARG A 528 64.996 -14.617 13.452 1.00 41.37 A N
 ATOM 4299 CA ARG A 528 66.030 -13.727 12.944 1.00 40.07 A C
 ATOM 4300 CB ARG A 528 66.596 -12.873 14.074 1.00 49.72 A C
 ATOM 4301 CG ARG A 528 67.347 -11.637 13.603 1.00 68.35 A C
 ATOM 4302 CD ARG A 528 68.111 -10.980 14.753 1.00 72.05 A C
 ATOM 4303 NE ARG A 528 69.010 -11.933 15.411 1.00 84.73 A N
 ATOM 4304 CZ ARG A 528 70.157 -12.384 14.896 1.00 84.45 A C
 ATOM 4305 NH1 ARG A 528 70.581 -11.975 13.702 1.00 92.83 A N
 ATOM 4306 NH2 ARG A 528 70.890 -13.258 15.579 1.00 68.97 A N
 ATOM 4307 C ARG A 528 67.150 -14.510 12.254 1.00 37.77 A C
 ATOM 4308 O ARG A 528 67.717 -14.045 11.265 1.00 36.26 A O
 ATOM 4309 N LYS A 529 67.502 -15.670 12.800 1.00 32.17 A N
 ATOM 4310 CA LYS A 529 68.492 -16.536 12.148 1.00 43.23 A C
 ATOM 4311 CB LYS A 529 68.929 -17.676 13.068 1.00 44.04 A C
 ATOM 4312 CG LYS A 529 69.925 -17.250 14.143 1.00 61.21 A C
 ATOM 4313 CD LYS A 529 70.050 -18.326 15.206 1.00 65.83 A C
 ATOM 4314 CE LYS A 529 70.831 -17.849 16.414 1.00 83.82 A C
 ATOM 4315 NZ LYS A 529 70.540 -18.727 17.589 1.00 91.28 A N
 ATOM 4316 C LYS A 529 67.955 -17.097 10.808 1.00 31.54 A C
 ATOM 4317 O LYS A 529 68.703 -17.225 9.845 1.00 42.10 A O
 ATOM 4318 N ARG A 530 66.668 -17.399 10.748 1.00 36.46 A N
 ATOM 4319 CA ARG A 530 66.092 -17.952 9.515 1.00 37.01 A C
 ATOM 4320 CB ARG A 530 64.741 -18.562 9.786 1.00 36.05 A C
 ATOM 4321 CG ARG A 530 64.872 -19.834 10.584 1.00 32.99 A C
 ATOM 4322 CD ARG A 530 63.544 -20.448 10.839 1.00 35.75 A C
 ATOM 4323 NE ARG A 530 63.709 -21.788 11.389 1.00 34.23 A N
 ATOM 4324 CZ ARG A 530 62.714 -22.560 11.804 1.00 33.65 A C
 ATOM 4325 NH1 ARG A 530 61.455 -22.164 11.696 1.00 35.22 A N
 ATOM 4326 NH2 ARG A 530 62.987 -23.750 12.325 1.00 40.16 A N
 ATOM 4327 C ARG A 530 66.048 -16.897 8.425 1.00 40.32 A C
 ATOM 4328 O ARG A 530 66.475 -17.148 7.291 1.00 32.17 A O
 ATOM 4329 N VAL A 531 65.612 -15.697 8.796 1.00 33.10 A N
 ATOM 4330 CA VAL A 531 65.576 -14.584 7.866 1.00 35.68 A C
 ATOM 4331 CB VAL A 531 64.874 -13.355 8.497 1.00 42.31 A C
 ATOM 4332 CG1 VAL A 531 64.901 -12.166 7.547 1.00 41.62 A C
 ATOM 4333 CG2 VAL A 531 63.425 -13.716 8.878 1.00 37.84 A C
 ATOM 4334 C VAL A 531 66.979 -14.256 7.357 1.00 41.35 A C
 ATOM 4335 O VAL A 531 67.170 -13.964 6.172 1.00 46.12 A O
 ATOM 4336 N LEU A 532 67.970 -14.325 8.234 1.00 40.42 A N
 ATOM 4337 CA LEU A 532 69.344 -14.093 7.811 1.00 39.71 A C
 ATOM 4338 CB LEU A 532 70.300 -14.000 9.004 1.00 43.42 A C
 ATOM 4339 CG LEU A 532 70.692 -12.579 9.478 1.00 53.48 A C
 ATOM 4340 CD1 LEU A 532 69.496 -11.619 9.718 1.00 47.39 A C
 ATOM 4341 CD2 LEU A 532 71.538 -12.720 10.726 1.00 45.63 A C
 ATOM 4342 C LEU A 532 69.837 -15.180 6.838 1.00 46.33 A C
 ATOM 4343 O LEU A 532 70.445 -14.862 5.825 1.00 44.36 A O
 ATOM 4344 N SER A 533 69.576 -16.454 7.141 1.00 35.58 A N
 ATOM 4345 CA SER A 533 70.105 -17.555 6.316 1.00 34.63 A C
 ATOM 4346 CB SER A 533 70.076 -18.850 7.112 1.00 31.52 A C
 ATOM 4347 OG SER A 533 68.746 -19.297 7.268 1.00 33.57 A O
 ATOM 4348 C SER A 533 69.358 -17.712 4.982 1.00 25.58 A C

ATOM 4349 O SER A 533 69.916 -18.225 4.001 1.00 27.36 A O
 ATOM 4350 N VAL A 534 68.113 -17.254 4.925 1.00 26.19 A N
 ATOM 4351 CA VAL A 534 67.324 -17.302 3.667 1.00 23.87 A C
 ATOM 4352 CB VAL A 534 65.824 -17.504 3.957 1.00 24.85 A C
 ATOM 4353 CG1 VAL A 534 64.962 -17.401 2.688 1.00 19.21 A C
 ATOM 4354 CG2 VAL A 534 65.589 -18.861 4.600 1.00 26.32 A C
 ATOM 4355 C VAL A 534 67.525 -16.070 2.765 1.00 26.84 A C
 ATOM 4356 O VAL A 534 67.650 -16.194 1.550 1.00 28.14 A O
 ATOM 4357 N ILE A 535 67.540 -14.874 3.349 1.00 28.94 A N
 ATOM 4358 CA ILE A 535 67.516 -13.635 2.563 1.00 28.39 A C
 ATOM 4359 CB ILE A 535 66.538 -12.596 3.171 1.00 34.98 A C
 ATOM 4360 CG1 ILE A 535 65.113 -13.130 3.251 1.00 35.70 A C
 ATOM 4361 CD1 ILE A 535 64.479 -13.463 1.911 1.00 44.01 A C
 ATOM 4362 CG2 ILE A 535 66.582 -11.268 2.372 1.00 35.77 A C
 ATOM 4363 C ILE A 535 68.882 -12.956 2.465 1.00 32.00 A C
 ATOM 4364 O ILE A 535 69.306 -12.535 1.385 1.00 38.68 A O
 ATOM 4365 N THR A 536 69.570 -12.825 3.589 1.00 35.57 A N
 ATOM 4366 CA THR A 536 70.650 -11.815 3.680 1.00 35.50 A C
 ATOM 4367 CB THR A 536 70.440 -10.922 4.927 1.00 44.42 A C
 ATOM 4368 OG1 THR A 536 70.630 -11.686 6.120 1.00 46.85 A O
 ATOM 4369 CG2 THR A 536 69.023 -10.376 4.936 1.00 34.58 A C
 ATOM 4370 C THR A 536 72.080 -12.379 3.578 1.00 35.15 A C
 ATOM 4371 O THR A 536 72.899 -11.856 2.819 1.00 32.71 A O
 ATOM 4372 N GLU A 537 72.375 -13.460 4.287 1.00 31.94 A N
 ATOM 4373 CA GLU A 537 73.728 -14.005 4.299 1.00 38.13 A C
 ATOM 4374 CB GLU A 537 74.089 -14.472 5.704 1.00 44.29 A C
 ATOM 4375 CG GLU A 537 73.136 -13.369 6.740 1.00 56.93 A C
 ATOM 4376 CD GLU A 537 74.966 -13.668 7.913 1.00 59.02 A C
 ATOM 4377 OE1 GLU A 537 75.055 -14.854 8.296 1.00 56.89 A O
 ATOM 4378 OE2 GLU A 537 75.588 -12.723 8.447 1.00 59.60 A O
 ATOM 4379 C GLU A 537 73.884 -15.190 3.346 1.00 32.80 A C
 ATOM 4380 O GLU A 537 73.136 -16.127 3.443 1.00 29.57 A O
 ATOM 4381 N PRO A 538 74.877 -15.153 2.447 1.00 29.81 A N
 ATOM 4382 CA PRO A 538 75.135 -16.339 1.643 1.00 27.02 A C
 ATOM 4383 CB PRO A 538 76.189 -15.876 0.625 1.00 28.93 A C
 ATOM 4384 CG PRO A 538 76.740 -14.597 1.160 1.00 34.72 A C
 ATOM 4385 CD PRO A 538 75.672 -13.990 2.011 1.00 34.41 A C
 ATOM 4386 C PRO A 538 75.664 -17.498 2.457 1.00 26.35 A C
 ATOM 4387 O PRO A 538 76.199 -17.301 3.526 1.00 20.63 A O
 ATOM 4388 N ILE A 539 75.474 -18.709 1.942 1.00 24.14 A N
 ATOM 4389 CA ILE A 539 76.119 -19.895 2.469 1.00 22.55 A C
 ATOM 4390 CB ILE A 539 75.580 -21.185 1.795 1.00 23.63 A C
 ATOM 4391 CG1 ILE A 539 74.110 -21.388 2.197 1.00 23.50 A C
 ATOM 4392 CD1 ILE A 539 73.484 -22.693 1.716 1.00 20.21 A C
 ATOM 4393 CG2 ILE A 539 76.433 -22.376 2.151 1.00 20.66 A C
 ATOM 4394 C ILE A 539 77.603 -19.760 2.176 1.00 24.55 A C
 ATOM 4395 O ILE A 539 77.995 -19.240 1.116 1.00 17.55 A O
 ATOM 4396 N LEU A 540 78.415 -20.260 3.099 1.00 20.97 A N
 ATOM 4397 CA LEU A 540 79.866 -20.080 3.033 1.00 23.53 A C
 ATOM 4398 CB LEU A 540 80.554 -20.454 4.361 1.00 25.37 A C
 ATOM 4399 CG LEU A 540 80.573 -19.421 5.505 1.00 37.87 A C
 ATOM 4400 CD1 LEU A 540 81.220 -20.026 6.753 1.00 41.81 A C
 ATOM 4401 CD2 LEU A 540 81.320 -18.094 5.146 1.00 33.15 A C
 ATOM 4402 C LEU A 540 80.381 -20.922 1.888 1.00 24.37 A C
 ATOM 4403 O LEU A 540 79.937 -22.063 1.713 1.00 26.94 A O
 ATOM 4404 N PRO A 541 81.312 -20.366 1.092 1.00 26.27 A N
 ATOM 4405 CA PRO A 541 81.687 -20.986 -0.188 1.00 23.27 A C
 ATOM 4406 CB PRO A 541 82.687 -19.997 -0.800 1.00 28.51 A C
 ATOM 4407 CG PRO A 541 83.029 -19.016 0.303 1.00 29.70 A C
 ATOM 4408 CD PRO A 541 81.901 -19.021 1.266 1.00 29.11 A C
 ATOM 4409 C PRO A 541 82.278 -22.374 -0.058 1.00 24.70 A C
 ATOM 4410 O PRO A 541 82.858 -22.721 0.971 1.00 25.93 A O
 ATOM 4411 N PHE A 542 82.098 -23.185 -1.095 1.00 24.37 A N
 ATOM 4412 CA PHE A 542 82.703 -24.513 -1.151 1.00 21.75 A C
 ATOM 4413 CB PHE A 542 82.437 -25.081 -2.522 1.00 21.15 A C
 ATOM 4414 CG PHE A 542 83.008 -26.416 -2.729 1.00 22.86 A C

ATOM 4415 CD1 PHE A 542 82.505 -27.496 -2.037 1.00 23.96 A C
 ATOM 4416 CE1 PHE A 542 83.011 -28.753 -2.231 1.00 26.40 A C
 ATOM 4417 CZ PHE A 542 84.050 -28.953 -3.127 1.00 29.66 A C
 ATOM 4418 CE2 PHE A 542 84.574 -27.875 -3.826 1.00 28.49 A C
 ATOM 4419 CD2 PHE A 542 84.048 -26.613 -3.629 1.00 26.57 A C
 ATOM 4420 C PHE A 542 84.225 -24.449 -0.980 1.00 25.16 A C
 ATOM 4421 O PHE A 542 84.829 -23.566 -1.544 1.00 21.55 A O
 ATOM 4422 N GLU A 543 84.827 -25.395 -0.253 1.00 34.39 A N
 ATOM 4423 CA GLU A 543 86.302 -25.457 -0.097 1.00 47.54 A C
 ATOM 4424 CB GLU A 543 86.720 -25.276 1.373 1.00 57.01 A C
 ATOM 4425 CG GLU A 543 86.935 -23.819 1.792 1.00 59.28 A C
 ATOM 4426 CD GLU A 543 87.824 -23.691 3.025 1.00 71.22 A C
 ATOM 4427 OE1 GLU A 543 88.980 -24.175 3.003 1.00 69.03 A O
 ATOM 4428 OE2 GLU A 543 87.368 -23.092 4.018 1.00 82.75 A O
 ATOM 4429 C GLU A 543 86.981 -26.698 -0.714 1.00 50.91 A C
 ATOM 4430 O GLU A 543 87.247 -26.713 -1.913 1.00 56.87 A O
 ATOM 4431 N ARG A 544 87.287 -27.720 0.085 1.00 67.82 A N
 ATOM 4432 CA ARG A 544 88.181 -28.797 -0.371 1.00 70.50 A C
 ATOM 4433 CB ARG A 544 89.581 -28.230 -0.696 1.00 76.08 A C
 ATOM 4434 CG ARG A 544 90.546 -29.200 -1.391 1.00 90.28 A C
 ATOM 4435 CD ARG A 544 89.885 -30.008 -2.515 1.00101.63 A C
 ATOM 4436 NE ARG A 544 89.111 -29.177 -3.442 1.00 99.45 A N
 ATOM 4437 CZ ARG A 544 88.374 -29.647 -4.448 1.00 93.65 A C
 ATOM 4438 NH1 ARG A 544 88.292 -30.950 -4.678 1.00 95.79 A N
 ATOM 4439 NH2 ARG A 544 87.710 -28.808 -5.235 1.00 91.46 A N
 ATOM 4440 C ARG A 544 88.309 -29.910 0.662 1.00 65.35 A C
 ATOM 4441 O ARG A 544 89.318 -30.003 1.364 1.00 66.29 A O
 ATOM 4442 N SER B 6 66.028 35.448 11.860 1.00 47.07 B N
 ATOM 4443 CA SER B 6 66.385 36.705 11.127 1.00 58.24 B C
 ATOM 4444 CB SER B 6 66.400 37.899 12.073 1.00 56.45 B C
 ATOM 4445 OG SER B 6 66.861 39.069 11.413 1.00 72.79 B O
 ATOM 4446 C SER B 6 67.715 36.596 10.348 1.00 60.55 B C
 ATOM 4447 O SER B 6 67.735 36.911 9.153 1.00 56.56 B O
 ATOM 4448 N ALA B 7 68.816 36.179 11.000 1.00 42.85 B N
 ATOM 4449 CA ALA B 7 69.983 35.673 10.240 1.00 35.66 B C
 ATOM 4450 CB ALA B 7 71.252 35.554 11.104 1.00 30.55 B C
 ATOM 4451 C ALA B 7 69.550 34.315 9.718 1.00 31.48 B C
 ATOM 4452 O ALA B 7 68.673 33.684 10.306 1.00 28.34 B O
 ATOM 4453 N ASN B 8 70.119 33.860 8.607 1.00 37.62 B N
 ATOM 4454 CA ASN B 8 69.707 32.579 8.041 1.00 36.50 B C
 ATOM 4455 CB ASN B 8 68.925 32.796 6.739 1.00 40.61 B C
 ATOM 4456 CG ASN B 8 68.518 31.498 6.081 1.00 39.92 B C
 ATOM 4457 OD1 ASN B 8 68.472 30.436 6.712 1.00 47.46 B O
 ATOM 4458 ND2 ASN B 8 68.215 31.577 4.798 1.00 59.84 B N
 ATOM 4459 C ASN B 8 70.866 31.612 7.813 1.00 35.29 B C
 ATOM 4460 O ASN B 8 71.528 31.650 6.779 1.00 39.53 B O
 ATOM 4461 N TYR B 9 71.066 30.709 8.767 1.00 32.98 B N
 ATOM 4462 CA TYR B 9 72.154 29.740 8.692 1.00 31.48 B C
 ATOM 4463 CB TYR B 9 72.806 29.570 10.075 1.00 25.69 B C
 ATOM 4464 CG TYR B 9 73.331 30.877 10.652 1.00 21.84 B C
 ATOM 4465 CD1 TYR B 9 74.259 31.663 9.945 1.00 22.23 B C
 ATOM 4466 CE1 TYR B 9 74.748 32.876 10.495 1.00 18.59 B C
 ATOM 4467 CZ TYR B 9 74.268 33.313 11.720 1.00 14.14 B C
 ATOM 4468 OH TYR B 9 74.738 34.483 12.270 1.00 15.10 B O
 ATOM 4469 CE2 TYR B 9 73.328 32.554 12.420 1.00 13.57 B C
 ATOM 4470 CD2 TYR B 9 72.875 31.350 11.887 1.00 17.61 B C
 ATOM 4471 C TYR B 9 71.703 28.390 8.131 1.00 35.04 B C
 ATOM 4472 O TYR B 9 72.488 27.448 8.105 1.00 39.68 B O
 ATOM 4473 N GLU B 10 70.459 28.296 7.660 1.00 42.28 B N
 ATOM 4474 CA GLU B 10 69.933 27.015 7.152 1.00 47.58 B C
 ATOM 4475 CB GLU B 10 68.391 26.999 7.200 1.00 51.50 B C
 ATOM 4476 CG GLU B 10 67.797 27.312 8.605 1.00 60.77 B C
 ATOM 4477 CD GLU B 10 68.474 26.526 9.740 1.00 69.74 B C
 ATOM 4478 OE1 GLU B 10 68.629 25.294 9.600 1.00 71.24 B O
 ATOM 4479 OE2 GLU B 10 68.858 27.137 10.766 1.00 81.34 B O
 ATOM 4480 C GLU B 10 70.481 26.715 5.741 1.00 38.79 B C

ATOM 4481 O GLU B 10 70.707 27.644 4.952 1.00 35.80 B O
 ATOM 4482 N PRO B 11 70.740 25.425 5.435 1.00 48.23 B N
 ATOM 4483 CA PRO B 11 71.364 25.091 4.154 1.00 45.24 B C
 ATOM 4484 CB PRO B 11 71.760 23.621 4.329 1.00 53.83 B C
 ATOM 4485 CG PRO B 11 70.740 23.077 5.276 1.00 58.80 B C
 ATOM 4486 CD PRO B 11 70.432 24.214 6.227 1.00 57.54 B C
 ATOM 4487 C PRO B 11 70.363 25.244 3.011 1.00 38.09 B C
 ATOM 4488 O PRO B 11 69.158 25.173 3.242 1.00 37.80 B O
 ATOM 4489 N ASN B 12 70.862 25.500 1.809 1.00 35.42 B N
 ATOM 4490 CA ASN B 12 70.033 25.475 0.594 1.00 36.63 B C
 ATOM 4491 CB ASN B 12 70.491 26.541 -0.406 1.00 44.07 B C
 ATOM 4492 CG ASN B 12 70.595 27.907 0.215 1.00 48.52 B C
 ATOM 4493 OD1 ASN B 12 69.591 28.482 0.615 1.00 57.64 B O
 ATOM 4494 ND2 ASN B 12 71.816 28.437 0.311 1.00 44.25 B N
 ATOM 4495 C ASN B 12 70.058 24.097 -0.068 1.00 33.77 B C
 ATOM 4496 O ASN B 12 71.034 23.324 0.058 1.00 34.32 B O
 ATOM 4497 N SER B 13 68.967 23.772 -0.758 1.00 43.14 B N
 ATOM 4498 CA SER B 13 68.857 22.493 -1.483 1.00 41.27 B C
 ATOM 4499 CB SER B 13 67.454 22.324 -2.091 1.00 35.20 B C
 ATOM 4500 OG SER B 13 67.033 23.498 -2.759 1.00 39.06 B O
 ATOM 4501 C SER B 13 69.923 22.356 -2.586 1.00 40.57 B C
 ATOM 4502 O SER B 13 70.258 21.243 -2.991 1.00 43.94 B O
 ATOM 4503 N TRP B 14 70.462 23.489 -3.039 1.00 30.52 B N
 ATOM 4504 CA TRP B 14 71.523 23.518 -4.062 1.00 35.59 B C
 ATOM 4505 CB TRP B 14 71.226 24.606 -5.107 1.00 32.98 B C
 ATOM 4506 CG TRP B 14 70.716 25.912 -4.544 1.00 36.10 B C
 ATOM 4507 CD1 TRP B 14 69.387 26.315 -4.410 1.00 45.32 B C
 ATOM 4508 NE1 TRP B 14 69.306 27.561 -3.841 1.00 45.60 B N
 ATOM 4509 CE2 TRP B 14 70.538 28.040 -3.577 1.00 38.78 B C
 ATOM 4510 CD2 TRP B 14 71.503 27.017 -4.006 1.00 34.57 B C
 ATOM 4511 CE3 TRP B 14 72.849 27.256 -3.838 1.00 41.97 B C
 ATOM 4512 CZ3 TRP B 14 73.250 28.469 -3.262 1.00 55.13 B C
 ATOM 4513 CH2 TRP B 14 72.317 29.432 -2.863 1.00 53.40 B C
 ATOM 4514 CZ2 TRP B 14 70.937 29.230 -3.015 1.00 42.74 B C
 ATOM 4515 C TRP B 14 72.950 23.665 -3.521 1.00 36.47 B C
 ATOM 4516 O TRP B 14 73.909 23.621 -4.304 1.00 28.14 B O
 ATOM 4517 N ASP B 15 73.128 23.825 -2.203 1.00 31.81 B N
 ATOM 4518 CA ASP B 15 74.491 23.876 -1.611 1.00 28.30 B C
 ATOM 4519 CB ASP B 15 74.425 23.877 -0.071 1.00 33.88 B C
 ATOM 4520 CG ASP B 15 74.011 25.218 0.518 1.00 40.45 B C
 ATOM 4521 OD1 ASP B 15 73.764 26.174 -0.234 1.00 42.94 B O
 ATOM 4522 OD2 ASP B 15 73.930 25.309 1.763 1.00 54.72 B O
 ATOM 4523 C ASP B 15 75.319 22.637 -2.029 1.00 33.86 B C
 ATOM 4524 O ASP B 15 74.784 21.523 -2.110 1.00 26.74 B O
 ATOM 4525 N TYR B 16 76.625 22.819 -2.228 1.00 28.03 B N
 ATOM 4526 CA TYR B 16 77.536 21.728 -2.628 1.00 27.83 B C
 ATOM 4527 CB TYR B 16 78.917 22.286 -3.056 1.00 25.77 B C
 ATOM 4528 CG TYR B 16 78.893 23.078 -4.351 1.00 24.05 B C
 ATOM 4529 CD1 TYR B 16 78.370 22.517 -5.531 1.00 22.17 B C
 ATOM 4530 CE1 TYR B 16 78.355 23.234 -6.721 1.00 17.53 B C
 ATOM 4531 CZ TYR B 16 78.814 24.517 -6.732 1.00 20.83 B C
 ATOM 4532 OH TYR B 16 78.770 25.206 -7.896 1.00 19.17 B O
 ATOM 4533 CE2 TYR B 16 79.329 25.107 -5.579 1.00 24.55 B C
 ATOM 4534 CD2 TYR B 16 79.364 24.379 -4.399 1.00 24.85 B C
 ATOM 4535 C TYR B 16 77.714 20.649 -1.525 1.00 35.70 B C
 ATOM 4536 O TYR B 16 77.945 19.473 -1.835 1.00 32.15 B O
 ATOM 4537 N ASP B 17 77.618 21.053 -0.255 1.00 30.24 B N
 ATOM 4538 CA ASP B 17 77.597 20.080 0.869 1.00 42.23 B C
 ATOM 4539 CB ASP B 17 77.534 20.812 2.219 1.00 38.98 B C
 ATOM 4540 CG ASP B 17 78.841 21.499 2.587 1.00 44.68 B C
 ATOM 4541 OD1 ASP B 17 79.926 20.995 2.204 1.00 44.13 B O
 ATOM 4542 OD2 ASP B 17 78.770 22.546 3.275 1.00 44.42 B O
 ATOM 4543 C ASP B 17 76.400 19.110 0.748 1.00 45.86 B C
 ATOM 4544 O ASP B 17 76.523 17.919 1.008 1.00 51.23 B O
 ATOM 4545 N TYR B 18 75.259 19.647 0.329 1.00 49.27 B N
 ATOM 4546 CA TYR B 18 74.025 18.877 0.133 1.00 50.51 B C

ATOM 4547 CB TYR B 18 72.840 19.861 0.083 1.00 60.94 B C
 ATOM 4548 CG TYR B 18 71.471 19.297 0.384 1.00 82.34 B C
 ATOM 4549 CD1 TYR B 18 70.797 18.508 -0.555 1.00 91.64 B C
 ATOM 4550 CE1 TYR B 18 69.531 18.007 -0.293 1.00 96.76 B C
 ATOM 4551 CZ TYR B 18 68.916 18.307 0.913 1.00 100.88 B C
 ATOM 4552 OH TYR B 18 67.662 17.809 1.169 1.00 105.08 B O
 ATOM 4553 CE2 TYR B 18 69.553 19.103 1.858 1.00 92.37 B C
 ATOM 4554 CD2 TYR B 18 70.821 19.598 1.586 1.00 87.10 B C
 ATOM 4555 C TYR B 18 74.116 18.045 -1.158 1.00 48.99 B C
 ATOM 4556 O TYR B 18 73.977 16.828 -1.127 1.00 44.28 B O
 ATOM 4557 N LEU B 19 74.383 18.704 -2.287 1.00 43.39 B N
 ATOM 4558 CA LEU B 19 74.349 18.061 -3.610 1.00 39.30 B C
 ATOM 4559 CB LEU B 19 74.222 19.115 -4.734 1.00 40.10 B C
 ATOM 4560 CG LEU B 19 72.909 19.881 -4.924 1.00 36.96 B C
 ATOM 4561 CD1 LEU B 19 73.106 20.911 -6.037 1.00 33.51 B C
 ATOM 4562 CD2 LEU B 19 71.702 18.942 -5.242 1.00 35.19 B C
 ATOM 4563 C LEU B 19 75.530 17.131 -3.931 1.00 38.74 B C
 ATOM 4564 O LEU B 19 75.448 16.358 -4.870 1.00 33.93 B O
 ATOM 4565 N LEU B 20 76.626 17.207 -3.184 1.00 43.02 B N
 ATOM 4566 CA LEU B 20 77.784 16.337 -3.446 1.00 48.34 B C
 ATOM 4567 CB LEU B 20 78.956 17.186 -3.980 1.00 48.91 B C
 ATOM 4568 CG LEU B 20 78.737 17.933 -5.311 1.00 42.22 B C
 ATOM 4569 CD1 LEU B 20 79.941 18.813 -5.681 1.00 32.75 B C
 ATOM 4570 CD2 LEU B 20 78.427 16.957 -6.428 1.00 41.67 B C
 ATOM 4571 C LEU B 20 78.159 15.566 -2.162 1.00 53.90 B C
 ATOM 4572 O LEU B 20 78.522 16.183 -1.166 1.00 50.11 B O
 ATOM 4573 N SER B 21 78.064 14.229 -2.185 1.00 73.10 B N
 ATOM 4574 CA SER B 21 78.141 13.417 -0.947 1.00 87.01 B C
 ATOM 4575 CB SER B 21 76.733 13.253 -0.351 1.00 82.80 B C
 ATOM 4576 OG SER B 21 76.250 14.465 0.191 1.00 87.39 B O
 ATOM 4577 C SER B 21 78.772 12.011 -1.059 1.00 105.74 B C
 ATOM 4578 O SER B 21 79.742 11.697 -0.360 1.00 95.58 B O
 ATOM 4579 N SER B 22 78.198 11.160 -1.905 1.00 118.22 B N
 ATOM 4580 CA SER B 22 78.488 9.719 -1.861 1.00 113.76 B C
 ATOM 4581 CB SER B 22 77.376 8.940 -2.574 1.00 109.60 B C
 ATOM 4582 OG SER B 22 77.051 9.533 -3.823 1.00 113.06 B O
 ATOM 4583 C SER B 22 79.857 9.357 -2.439 1.00 101.67 B C
 ATOM 4584 O SER B 22 80.196 9.751 -3.552 1.00 111.02 B O
 ATOM 4585 N ILE B 28 83.597 12.639 -5.109 1.00 85.65 B N
 ATOM 4586 CA ILE B 28 82.666 13.752 -4.965 1.00 86.60 B C
 ATOM 4587 CB ILE B 28 81.164 13.263 -5.008 1.00 93.39 B C
 ATOM 4588 CG1 ILE B 28 80.923 12.256 -6.149 1.00 83.16 B C
 ATOM 4589 CD1 ILE B 28 79.442 12.122 -6.580 1.00 61.20 B C
 ATOM 4590 CG2 ILE B 28 80.211 14.427 -5.205 1.00 98.61 B C
 ATOM 4591 C ILE B 28 82.985 14.552 -3.680 1.00 83.50 B C
 ATOM 4592 O ILE B 28 82.171 15.365 -3.233 1.00 79.32 B O
 ATOM 4593 N GLU B 29 84.180 14.325 -3.117 1.00 76.18 B N
 ATOM 4594 CA GLU B 29 84.667 15.025 -1.915 1.00 76.21 B C
 ATOM 4595 CB GLU B 29 85.131 14.003 -0.865 1.00 76.32 B C
 ATOM 4596 CG GLU B 29 85.858 14.579 0.372 1.00 72.53 B C
 ATOM 4597 CD GLU B 29 84.923 15.133 1.438 1.00 70.19 B C
 ATOM 4598 OE1 GLU B 29 83.782 15.526 1.121 1.00 71.77 B O
 ATOM 4599 OE2 GLU B 29 85.338 15.175 2.611 1.00 63.15 B O
 ATOM 4600 C GLU B 29 85.815 15.997 -2.242 1.00 83.08 B C
 ATOM 4601 O GLU B 29 85.858 17.125 -1.734 1.00 68.15 B O
 ATOM 4602 N VAL B 30 86.761 15.543 -3.060 1.00 82.68 B N
 ATOM 4603 CA VAL B 30 87.825 16.416 -3.557 1.00 72.16 B C
 ATOM 4604 CB VAL B 30 88.928 15.620 -4.327 1.00 69.91 B C
 ATOM 4605 CG1 VAL B 30 88.342 14.879 -5.566 1.00 57.81 B C
 ATOM 4606 CG2 VAL B 30 90.079 16.544 -4.719 1.00 50.91 B C
 ATOM 4607 C VAL B 30 87.217 17.503 -4.454 1.00 59.36 B C
 ATOM 4608 O VAL B 30 87.598 18.665 -4.356 1.00 50.25 B O
 ATOM 4609 N TYR B 31 86.264 17.096 -5.297 1.00 47.13 B N
 ATOM 4610 CA TYR B 31 85.540 17.957 -6.261 1.00 52.78 B C
 ATOM 4611 CB TYR B 31 84.753 17.013 -7.199 1.00 53.13 B C
 ATOM 4612 CG TYR B 31 83.853 17.527 -8.333 1.00 51.24 B C

ATOM 4613 CD1 TYR B 31 84.321 17.610 -9.653 1.00 53.18 B C
 ATOM 4614 CE1 TYR B 31 83.460 18.012 -10.722 1.00 52.11 B C
 ATOM 4615 CZ TYR B 31 82.099 18.293 -10.468 1.00 63.53 B C
 ATOM 4616 OH TYR B 31 81.214 18.693 -11.496 1.00 34.19 B O
 ATOM 4617 CE2 TYR B 31 81.620 18.175 -9.158 1.00 63.84 B C
 ATOM 4618 CD2 TYR B 31 82.489 17.772 -8.111 1.00 58.51 B C
 ATOM 4619 C TYR B 31 84.628 18.966 -5.526 1.00 45.55 B C
 ATOM 4620 O TYR B 31 84.466 20.108 -5.978 1.00 32.99 B O
 ATOM 4621 N LYS B 32 84.073 18.547 -4.382 1.00 39.91 B N
 ATOM 4622 CA LYS B 32 83.222 19.401 -3.535 1.00 37.60 B C
 ATOM 4623 CB LYS B 32 82.581 18.578 -2.406 1.00 35.13 B C
 ATOM 4624 CG LYS B 32 81.635 19.380 -1.518 1.00 37.69 B C
 ATOM 4625 CD LYS B 32 81.148 18.584 -0.328 1.00 46.73 B C
 ATOM 4626 CE LYS B 32 82.243 18.417 0.707 1.00 54.45 B C
 ATOM 4627 NZ LYS B 32 81.709 18.007 2.029 1.00 58.88 B N
 ATOM 4628 C LYS B 32 84.009 20.563 -2.929 1.00 29.15 B C
 ATOM 4629 O LYS B 32 83.567 21.704 -2.945 1.00 26.62 B O
 ATOM 4630 N ASP B 33 85.171 20.262 -2.380 1.00 26.85 B N
 ATOM 4631 CA ASP B 33 86.043 21.304 -1.850 1.00 31.14 B C
 ATOM 4632 CB ASP B 33 87.244 20.694 -1.112 1.00 40.70 B C
 ATOM 4633 CG ASP B 33 86.860 20.052 0.234 1.00 51.84 B C
 ATOM 4634 OD1 ASP B 33 85.654 20.001 0.587 1.00 46.52 B O
 ATOM 4635 OD2 ASP B 33 87.783 19.596 0.943 1.00 66.19 B O
 ATOM 4636 C ASP B 33 86.522 22.273 -2.944 1.00 27.80 B C
 ATOM 4637 O ASP B 33 86.731 23.460 -2.661 1.00 19.96 B O
 ATOM 4638 N LYS B 34 86.701 21.784 -4.179 1.00 28.92 B N
 ATOM 4639 CA LYS B 34 87.096 22.666 -5.288 1.00 30.71 B C
 ATOM 4640 CB LYS B 34 87.463 21.925 -6.581 1.00 40.79 B C
 ATOM 4641 CG LYS B 34 88.951 21.833 -6.793 1.00 62.22 B C
 ATOM 4642 CD LYS B 34 89.356 20.754 -7.790 1.00 73.27 B C
 ATOM 4643 CE LYS B 34 90.722 20.184 -7.405 1.00 75.22 B C
 ATOM 4644 NZ LYS B 34 91.222 19.199 -8.395 1.00 77.49 B N
 ATOM 4645 C LYS B 34 85.957 23.595 -5.552 1.00 19.79 B C
 ATOM 4646 O LYS B 34 86.165 24.802 -5.613 1.00 21.44 B O
 ATOM 4647 N ALA B 35 84.752 23.041 -5.657 1.00 17.70 B N
 ATOM 4648 CA ALA B 35 83.578 23.838 -5.959 1.00 17.27 B C
 ATOM 4649 CB ALA B 35 82.324 22.968 -6.139 1.00 21.47 B C
 ATOM 4650 C ALA B 35 83.346 24.917 -4.902 1.00 14.58 B C
 ATOM 4651 O ALA B 35 83.132 26.055 -5.249 1.00 13.40 B O
 ATOM 4652 N LYS B 36 83.412 24.566 -3.628 1.00 13.58 B N
 ATOM 4653 CA LYS B 36 83.192 25.542 -2.571 1.00 16.14 B C
 ATOM 4654 CB LYS B 36 83.192 24.844 -1.209 1.00 22.56 B C
 ATOM 4655 CG LYS B 36 81.867 24.120 -0.931 1.00 25.63 B C
 ATOM 4656 CD LYS B 36 82.003 22.927 0.008 1.00 27.13 B C
 ATOM 4657 CE LYS B 36 82.113 23.335 1.455 1.00 27.92 B C
 ATOM 4658 NZ LYS B 36 82.483 22.191 2.365 1.00 34.58 B N
 ATOM 4659 C LYS B 36 84.201 26.716 -2.577 1.00 16.08 B C
 ATOM 4660 O LYS B 36 83.808 27.852 -2.389 1.00 14.45 B O
 ATOM 4661 N LYS B 37 85.490 26.438 -2.789 1.00 16.82 B N
 ATOM 4662 CA LYS B 37 86.513 27.496 -2.841 1.00 15.72 B C
 ATOM 4663 CB LYS B 37 87.887 26.871 -3.009 1.00 18.50 B C
 ATOM 4664 CG LYS B 37 89.029 27.830 -2.842 1.00 24.53 B C
 ATOM 4665 CD LYS B 37 90.353 27.059 -2.666 1.00 28.56 B C
 ATOM 4666 CE LYS B 37 91.523 27.969 -2.240 1.00 36.91 B C
 ATOM 4667 NZ LYS B 37 91.795 29.070 -3.227 1.00 35.36 B N
 ATOM 4668 C LYS B 37 86.258 28.476 -4.000 1.00 14.34 B C
 ATOM 4669 O LYS B 37 86.366 29.696 -3.831 1.00 14.98 B O
 ATOM 4670 N LEU B 38 85.948 27.927 -5.173 1.00 12.95 B N
 ATOM 4671 CA LEU B 38 85.584 28.724 -6.356 1.00 13.59 B C
 ATOM 4672 CB LEU B 38 83.567 27.515 -7.579 1.00 13.70 B C
 ATOM 4673 CG LEU B 38 86.576 26.956 -8.026 1.00 14.80 B C
 ATOM 4674 CD1 LEU B 38 86.156 25.994 -9.138 1.00 15.35 B C
 ATOM 4675 CD2 LEU B 38 87.708 27.807 -8.496 1.00 16.16 B C
 ATOM 4676 C LEU B 38 84.331 29.580 -6.128 1.00 11.73 B C
 ATOM 4677 O LEU B 38 84.312 30.774 -6.434 1.00 10.49 B O
 ATOM 4678 N GLU B 39 83.284 28.957 -5.593 1.00 11.44 B N

ATOM 4679 CA GLU B 39 82.039 29.651 -5.285 1.00 10.93 B C
 ATOM 4680 CB GLU B 39 81.024 28.641 -4.707 1.00 14.27 B C
 ATOM 4681 CG GLU B 39 79.661 29.208 -4.277 1.00 15.52 B C
 ATOM 4682 CD GLU B 39 78.760 28.118 -3.648 1.00 21.97 B C
 ATOM 4683 OE1 GLU B 39 79.308 27.233 -2.932 1.00 20.74 B O
 ATOM 4684 OE2 GLU B 39 77.519 28.145 -3.871 1.00 19.35 B O
 ATOM 4685 C GLU B 39 82.260 30.782 -4.295 1.00 10.22 B C
 ATOM 4686 O GLU B 39 81.707 31.874 -4.441 1.00 11.77 B O
 ATOM 4687 N ALA B 40 83.049 30.514 -3.263 1.00 11.24 B N
 ATOM 4688 CA ALA B 40 83.413 31.549 -2.275 1.00 10.54 B C
 ATOM 4689 CB ALA B 40 84.445 30.961 -1.271 1.00 8.92 B C
 ATOM 4690 C ALA B 40 83.988 32.820 -2.922 1.00 11.00 B C
 ATOM 4691 O ALA B 40 83.643 33.967 -2.573 1.00 10.39 B O
 ATOM 4692 N GLU B 41 84.921 32.593 -3.832 1.00 11.84 B N
 ATOM 4693 CA GLU B 41 85.642 33.679 -4.482 1.00 13.73 B C
 ATOM 4694 CB GLU B 41 86.845 33.130 -5.257 1.00 16.77 B C
 ATOM 4695 CG GLU B 41 87.556 34.171 -6.075 1.00 23.70 B C
 ATOM 4696 CD GLU B 41 88.983 33.774 -6.425 1.00 26.91 B C
 ATOM 4697 OE1 GLU B 41 89.536 32.847 -5.786 1.00 28.61 B O
 ATOM 4698 OE2 GLU B 41 89.524 34.397 -7.361 1.00 28.33 B O
 ATOM 4699 C GLU B 41 84.700 34.465 -5.371 1.00 11.19 B C
 ATOM 4700 O GLU B 41 84.766 35.677 -5.373 1.00 12.00 B O
 ATOM 4701 N VAL B 42 83.789 33.793 -6.078 1.00 11.09 B N
 ATOM 4702 CA VAL B 42 82.786 34.501 -6.891 1.00 10.93 B C
 ATOM 4703 CB VAL B 42 81.997 33.525 -7.747 1.00 9.55 B C
 ATOM 4704 CG VAL B 42 80.857 34.255 -8.496 1.00 9.17 B C
 ATOM 4705 CG2 VAL B 42 82.928 32.811 -8.738 1.00 8.08 B C
 ATOM 4706 C VAL B 42 81.839 35.323 -5.990 1.00 12.84 B C
 ATOM 4707 O VAL B 42 81.520 36.490 -6.260 1.00 8.45 B O
 ATOM 4708 N ARG B 43 81.461 34.738 -4.855 1.00 13.35 B N
 ATOM 4709 CA ARG B 43 80.627 35.466 -3.894 1.00 12.68 B C
 ATOM 4710 CB ARG B 43 80.256 34.564 -2.678 1.00 16.05 B C
 ATOM 4711 CG ARG B 43 79.596 35.299 -1.520 1.00 15.98 B C
 ATOM 4712 CD ARG B 43 80.551 36.025 -0.555 1.00 14.84 B C
 ATOM 4713 NE ARG B 43 79.792 36.738 0.477 1.00 12.83 B N
 ATOM 4714 CZ ARG B 43 80.287 37.581 1.367 1.00 13.48 B C
 ATOM 4715 NH1 ARG B 43 81.604 37.873 1.419 1.00 12.76 B N
 ATOM 4716 NH2 ARG B 43 79.450 38.143 2.236 1.00 13.52 B N
 ATOM 4717 C ARG B 43 81.333 36.719 -3.455 1.00 10.00 B C
 ATOM 4718 O ARG B 43 80.724 37.800 -3.453 1.00 9.91 B O
 ATOM 4719 N ARG B 44 82.622 36.610 -3.095 1.00 10.02 B N
 ATOM 4720 CA ARG B 44 83.403 37.766 -2.649 1.00 11.29 B C
 ATOM 4721 CB ARG B 44 84.859 37.387 -2.317 1.00 11.05 B C
 ATOM 4722 CG ARG B 44 85.738 38.573 -1.939 1.00 12.30 B C
 ATOM 4723 CD ARG B 44 87.177 38.170 -1.662 1.00 13.93 B C
 ATOM 4724 NE ARG B 44 87.816 37.720 -2.879 1.00 13.54 B N
 ATOM 4725 CZ ARG B 44 88.955 37.037 -2.934 1.00 15.26 B C
 ATOM 4726 NH1 ARG B 44 89.639 36.695 -1.820 1.00 15.94 B N
 ATOM 4727 NH2 ARG B 44 89.434 36.723 -4.136 1.00 17.40 B N
 ATOM 4728 C ARG B 44 83.405 38.901 -3.711 1.00 13.01 B C
 ATOM 4729 O ARG B 44 83.240 40.084 -3.381 1.00 12.57 B O
 ATOM 4730 N GLU B 45 83.640 38.530 -4.957 1.00 12.75 B N
 ATOM 4731 CA GLU B 45 83.748 39.520 -6.062 1.00 13.49 B C
 ATOM 4732 CB GLU B 45 84.261 38.852 -7.335 1.00 14.55 B C
 ATOM 4733 CG GLU B 45 85.693 38.391 -7.210 1.00 20.78 B C
 ATOM 4734 CD GLU B 45 86.595 39.480 -6.687 1.00 22.05 B C
 ATOM 4735 OE1 GLU B 45 86.700 40.507 -7.381 1.00 30.70 B O
 ATOM 4736 OE2 GLU B 45 87.156 39.348 -5.565 1.00 23.89 B O
 ATOM 4737 C GLU B 45 82.411 40.195 -6.356 1.00 11.85 B C
 ATOM 4738 O GLU B 45 82.383 41.369 -6.652 1.00 13.11 B O
 ATOM 4739 N ILE B 46 81.303 39.476 -6.257 1.00 13.19 B N
 ATOM 4740 CA ILE B 46 79.982 40.124 -6.405 1.00 13.57 B C
 ATOM 4741 CB ILE B 46 78.837 39.124 -6.541 1.00 13.61 B C
 ATOM 4742 CG1 ILE B 46 78.999 38.312 -7.834 1.00 14.91 B C
 ATOM 4743 CD1 ILE B 46 78.232 36.993 -7.820 1.00 15.21 B C
 ATOM 4744 CG2 ILE B 46 77.406 39.838 -6.519 1.00 13.13 B C

ATOM 4745 C ILE B 46 79.704 41.089 -5.248 1.00 15.53 B C
 ATOM 4746 O ILE B 46 79.070 42.114 -5.447 1.00 16.29 B O
 ATOM 4747 N ASN B 47 80.211 40.779 -4.055 1.00 14.45 B N
 ATOM 4748 CA ASN B 47 79.945 41.573 -2.857 1.00 13.64 B C
 ATOM 4749 CB ASN B 47 79.982 40.663 -1.616 1.00 13.48 B C
 ATOM 4750 CG ASN B 47 78.682 39.912 -1.409 1.00 15.18 B C
 ATOM 4751 OD1 ASN B 47 77.783 40.444 -0.809 1.00 19.56 B O
 ATOM 4752 ND2 ASN B 47 78.562 38.700 -1.935 1.00 14.68 B N
 ATOM 4753 C ASN B 47 80.920 42.729 -2.689 1.00 14.30 B C
 ATOM 4754 O ASN B 47 80.787 43.524 -1.753 1.00 15.59 B O
 ATOM 4755 N ASN B 48 81.935 42.782 -3.553 1.00 12.89 B N
 ATOM 4756 CA ASN B 48 83.002 43.732 -3.436 1.00 14.23 B C
 ATOM 4757 CB ASN B 48 84.104 43.415 -4.452 1.00 15.10 B C
 ATOM 4758 CG ASN B 48 85.190 44.481 -4.524 1.00 14.60 B C
 ATOM 4759 OD1 ASN B 48 85.436 45.247 -3.582 1.00 14.32 B O
 ATOM 4760 ND2 ASN B 48 85.876 44.499 -5.640 1.00 14.84 B N
 ATOM 4761 C ASN B 48 82.461 45.145 -3.657 1.00 18.92 B C
 ATOM 4762 O ASN B 48 82.064 45.520 -4.743 1.00 18.59 B O
 ATOM 4763 N GLU B 49 82.526 45.894 -2.579 1.00 16.96 B N
 ATOM 4764 CA AGLU B 49 81.891 47.222 -2.595 0.50 20.16 B C
 ATOM 4765 CA BGLU B 49 82.012 47.211 -2.332 0.50 20.40 B C
 ATOM 4766 CB AGLU B 49 81.283 47.614 -1.246 0.50 20.23 B C
 ATOM 4767 CB BGLU B 49 82.092 47.349 -0.763 0.50 20.55 B C
 ATOM 4768 CG AGLU B 49 79.871 47.057 -1.095 0.50 18.95 B C
 ATOM 4769 CG BGLU B 49 82.748 46.010 0.056 0.50 17.18 B C
 ATOM 4770 CD AGLU B 49 79.177 47.488 0.179 0.50 20.35 B C
 ATOM 4771 CD BGLU B 49 82.014 45.559 1.354 0.50 20.63 B C
 ATOM 4772 OE1 AGLU B 49 79.264 48.678 0.538 0.50 18.79 B O
 ATOM 4773 OE1 BGLU B 49 81.815 44.321 1.607 0.50 12.18 B O
 ATOM 4774 OE2 AGLU B 49 78.516 46.636 0.804 0.50 20.33 B O
 ATOM 4775 OE2 BGLU B 49 81.659 46.441 2.165 0.50 35.93 B O
 ATOM 4776 C GLU B 49 82.806 48.297 -3.137 1.00 23.82 B C
 ATOM 4777 O GLU B 49 82.351 49.413 -3.361 1.00 23.93 B O
 ATOM 4778 N LYS B 50 84.041 47.946 -3.496 1.00 23.25 B N
 ATOM 4779 CA LYS B 50 84.950 48.858 -4.183 1.00 25.39 B C
 ATOM 4780 CB LYS B 50 86.360 48.773 -3.582 1.00 26.32 B C
 ATOM 4781 CG LYS B 50 86.467 49.109 -2.104 1.00 30.70 B C
 ATOM 4782 CD LYS B 50 87.925 49.077 -1.631 1.00 36.98 B C
 ATOM 4783 CE LYS B 50 88.324 47.760 -0.997 1.00 36.26 B C
 ATOM 4784 NZ LYS B 50 87.920 47.744 0.432 1.00 37.46 B N
 ATOM 4785 C LYS B 50 85.056 48.586 -5.683 1.00 21.74 B C
 ATOM 4786 O LYS B 50 85.849 49.221 -6.341 1.00 19.87 B O
 ATOM 4787 N ALA B 51 84.298 47.641 -6.228 1.00 20.75 B N
 ATOM 4788 CA ALA B 51 84.388 47.339 -7.670 1.00 23.95 B C
 ATOM 4789 CB ALA B 51 83.564 46.099 -8.031 1.00 24.01 B C
 ATOM 4790 C ALA B 51 83.889 48.533 -8.483 1.00 26.40 B C
 ATOM 4791 O ALA B 51 83.035 49.262 -8.019 1.00 19.87 B O
 ATOM 4792 N GLU B 52 84.429 48.726 -9.685 1.00 30.89 B N
 ATOM 4793 CA GLU B 52 83.891 49.712 -10.619 1.00 32.03 B C
 ATOM 4794 CB GLU B 52 84.814 49.918 -11.826 1.00 34.13 B C
 ATOM 4795 CG GLU B 52 86.179 50.492 -11.479 1.00 48.84 B C
 ATOM 4796 CD GLU B 52 86.105 51.808 -10.703 1.00 55.69 B C
 ATOM 4797 OE1 GLU B 52 85.026 52.439 -10.662 1.00 59.80 B O
 ATOM 4798 OE2 GLU B 52 87.135 52.216 -10.129 1.00 73.34 B O
 ATOM 4799 C GLU B 52 82.539 49.221 -11.096 1.00 30.95 B C
 ATOM 4800 O GLU B 52 82.356 48.028 -11.327 1.00 23.44 B O
 ATOM 4801 N PHE B 53 81.596 50.141 -11.252 1.00 30.12 B N
 ATOM 4802 CA PHE B 53 80.218 49.742 -11.473 1.00 32.98 B C
 ATOM 4803 CB PHE B 53 79.251 50.936 -11.338 1.00 43.11 B C
 ATOM 4804 CG PHE B 53 78.867 51.269 -9.878 1.00 55.16 B C
 ATOM 4805 CD1 PHE B 53 78.505 50.251 -8.961 1.00 64.23 B C
 ATOM 4806 CE1 PHE B 53 78.139 50.555 -7.624 1.00 59.12 B C
 ATOM 4807 CZ PHE B 53 78.126 51.883 -7.199 1.00 55.08 B C
 ATOM 4808 CE2 PHE B 53 78.477 52.909 -8.101 1.00 60.25 B C
 ATOM 4809 CD2 PHE B 53 78.843 52.598 -9.429 1.00 60.00 B C
 ATOM 4810 C PHE B 53 80.066 48.968 -12.786 1.00 28.16 B C

ATOM 4811 O PHE B 53 79.474 47.890 -12.797 1.00 21.25 B O
 ATOM 4812 N LEU B 54 80.665 49.435 -13.868 1.00 23.34 B N
 ATOM 4813 CA LEU B 54 80.566 48.668 -15.134 1.00 25.10 B C
 ATOM 4814 CB LEU B 54 81.148 49.457 -16.309 1.00 29.41 B C
 ATOM 4815 CG LEU B 54 80.706 49.050 -17.729 1.00 44.51 B C
 ATOM 4816 CD1 LEU B 54 80.836 50.213 -18.709 1.00 41.57 B C
 ATOM 4817 CD2 LEU B 54 81.510 47.879 -18.233 1.00 45.75 B C
 ATOM 4818 C LEU B 54 81.165 47.235 -15.058 1.00 23.44 B C
 ATOM 4819 O LEU B 54 80.552 46.288 -15.538 1.00 20.26 B O
 ATOM 4820 N ATHR B 55 82.338 47.073 -14.451 0.50 23.03 B N
 ATOM 4821 N BTHR B 55 82.340 47.092 -14.444 0.50 21.21 B N
 ATOM 4822 CA ATHR B 55 82.943 45.737 -14.351 0.50 22.88 B C
 ATOM 4823 CA BTHR B 55 82.990 45.778 -14.298 0.50 19.98 B C
 ATOM 4824 CB ATHR B 55 84.383 45.784 -13.810 0.50 24.47 B C
 ATOM 4825 CB BTHR B 55 84.402 45.909 -13.662 0.50 19.41 B C
 ATOM 4826 OG1ATHR B 55 84.365 46.120 -12.417 0.50 26.50 B O
 ATOM 4827 OG1BTHR B 55 85.192 46.839 -14.419 0.50 20.82 B O
 ATOM 4828 CG2ATHR B 55 85.214 46.808 -14.582 0.50 26.31 B C
 ATOM 4829 CG2BTHR B 55 85.124 44.551 -13.597 0.50 16.45 B C
 ATOM 4830 C ATHR B 55 82.095 44.802 -13.473 0.50 20.01 B C
 ATOM 4831 C BTHR B 55 82.126 44.817 -13.460 0.50 18.73 B C
 ATOM 4832 O ATHR B 55 82.031 43.600 -13.727 0.50 18.26 B O
 ATOM 4833 O BTHR B 55 82.081 43.618 -13.731 0.50 17.39 B O
 ATOM 4834 N LEU B 56 81.436 45.359 -12.458 1.00 17.88 B N
 ATOM 4835 CA LEU B 56 80.542 44.585 -11.603 1.00 17.45 B C
 ATOM 4836 CB LEU B 56 80.154 45.405 -10.388 1.00 20.45 B C
 ATOM 4837 CG LEU B 56 79.231 44.795 -9.353 1.00 23.80 B C
 ATOM 4838 CD1 LEU B 56 79.791 43.459 -8.827 1.00 29.79 B C
 ATOM 4839 CD2 LEU B 56 79.051 45.812 -8.210 1.00 26.50 B C
 ATOM 4840 C LEU B 56 79.283 44.148 -12.341 1.00 16.79 B C
 ATOM 4841 O LEU B 56 78.850 43.012 -12.204 1.00 13.84 B O
 ATOM 4842 N LEU B 57 78.704 45.055 -13.124 1.00 14.24 B N
 ATOM 4843 CA LEU B 57 77.538 44.719 -13.947 1.00 14.52 B C
 ATOM 4844 CB LEU B 57 77.060 45.936 -14.751 1.00 15.36 B C
 ATOM 4845 CG LEU B 57 76.387 47.077 -13.990 1.00 16.40 B C
 ATOM 4846 CD1 LEU B 57 76.057 48.244 -14.958 1.00 17.56 B C
 ATOM 4847 CD2 LEU B 57 75.162 46.595 -13.228 1.00 17.05 B C
 ATOM 4848 C LEU B 57 77.911 43.571 -14.881 1.00 14.74 B C
 ATOM 4849 O LEU B 57 77.140 42.624 -15.036 1.00 15.04 B O
 ATOM 4850 N GLU B 58 79.102 43.640 -15.476 1.00 13.97 B N
 ATOM 4851 CA GLU B 58 79.543 42.614 -16.415 1.00 17.92 B C
 ATOM 4852 CB GLU B 58 80.792 43.088 -17.193 1.00 23.28 B C
 ATOM 4853 CG GLU B 58 80.402 43.969 -18.383 1.00 35.09 B C
 ATOM 4854 CD GLU B 58 81.588 44.709 -19.053 1.00 48.05 B C
 ATOM 4855 OE1 GLU B 58 82.767 44.585 -18.615 1.00 43.16 B O
 ATOM 4856 OE2 GLU B 58 81.306 45.439 -20.028 1.00 53.26 B O
 ATOM 4857 C GLU B 58 79.810 41.265 -15.733 1.00 15.56 B C
 ATOM 4858 O GLU B 58 79.535 40.216 -16.309 1.00 14.28 B O
 ATOM 4859 N LEU B 59 80.376 41.302 -14.529 1.00 15.21 B N
 ATOM 4860 CA LEU B 59 80.525 40.113 -13.709 1.00 14.80 B C
 ATOM 4861 CB LEU B 59 81.201 40.430 -12.359 1.00 14.28 B C
 ATOM 4862 CG LEU B 59 81.338 39.248 -11.371 1.00 15.64 B C
 ATOM 4863 CD1 LEU B 59 82.113 38.051 -11.985 1.00 15.94 B C
 ATOM 4864 CD2 LEU B 59 82.038 39.695 -10.068 1.00 12.84 B C
 ATOM 4865 C LEU B 59 79.169 39.485 -13.477 1.00 12.28 B C
 ATOM 4866 O LEU B 59 79.000 38.318 -13.718 1.00 16.70 B O
 ATOM 4867 N ILE B 60 78.195 40.264 -13.037 1.00 13.86 B N
 ATOM 4868 CA ILE B 60 76.850 39.737 -12.792 1.00 14.00 B C
 ATOM 4869 CB ILE B 60 75.887 40.823 -12.271 1.00 14.84 B C
 ATOM 4870 CG1 ILE B 60 76.307 41.274 -10.857 1.00 18.96 B C
 ATOM 4871 CD1 ILE B 60 75.489 42.427 -10.344 1.00 17.63 B C
 ATOM 4872 CG2 ILE B 60 74.454 40.313 -12.265 1.00 14.38 B C
 ATOM 4873 C ILE B 60 76.299 39.130 -14.068 1.00 13.84 B C
 ATOM 4874 O ILE B 60 75.797 38.018 -14.073 1.00 12.23 B O
 ATOM 4875 N ASP B 61 76.416 39.834 -15.167 1.00 13.78 B N
 ATOM 4876 CA ASP B 61 75.892 39.295 -16.431 1.00 16.74 B C

ATOM 4877 CB ASP B 61 76.118 40.317 -17.541 1.00 18.93 B C
 ATOM 4878 CG ASP B 61 75.411 39.955 -18.827 1.00 25.31 B C
 ATOM 4879 OD1 ASP B 61 74.304 39.329 -18.796 1.00 22.11 B O
 ATOM 4880 OD2 ASP B 61 75.967 40.325 -19.890 1.00 28.39 B O
 ATOM 4881 C ASP B 61 76.562 37.969 -16.806 1.00 14.33 B C
 ATOM 4882 O ASP B 61 75.891 37.038 -17.262 1.00 16.51 B O
 ATOM 4883 N ASN B 62 77.876 37.869 -16.620 1.00 13.41 B N
 ATOM 4884 CA ASN B 62 78.601 36.620 -16.937 1.00 11.85 B C
 ATOM 4885 CB ASN B 62 80.111 36.814 -16.876 1.00 13.90 B C
 ATOM 4886 CG ASN B 62 80.664 37.577 -18.075 1.00 18.63 B C
 ATOM 4887 OD1 ASN B 62 80.209 37.395 -19.169 1.00 19.52 B O
 ATOM 4888 ND2 ASN B 62 81.674 38.399 -17.852 1.00 15.65 B N
 ATOM 4889 C ASN B 62 78.203 35.483 -16.006 1.00 13.00 B C
 ATOM 4890 O ASN B 62 77.999 34.347 -16.453 1.00 11.41 B O
 ATOM 4891 N VAL B 63 78.095 35.783 -14.711 1.00 11.96 B N
 ATOM 4892 CA VAL B 63 77.655 34.790 -13.739 1.00 11.92 B C
 ATOM 4893 CB VAL B 63 77.584 35.386 -12.313 1.00 12.40 B C
 ATOM 4894 CG1 VAL B 63 76.769 34.486 -11.352 1.00 12.19 B C
 ATOM 4895 CG2 VAL B 63 79.056 35.621 -11.770 1.00 12.49 B C
 ATOM 4896 C VAL B 63 76.322 34.191 -14.169 1.00 13.22 B C
 ATOM 4897 O VAL B 63 76.172 32.980 -14.167 1.00 16.56 B O
 ATOM 4898 N GLN B 64 75.383 35.046 -14.583 1.00 14.63 B N
 ATOM 4899 CA GLN B 64 74.054 34.606 -15.033 1.00 14.98 B C
 ATOM 4900 CB GLN B 64 73.090 35.802 -15.166 1.00 14.41 B C
 ATOM 4901 CG GLN B 64 72.771 36.400 -13.788 1.00 15.48 B C
 ATOM 4902 CD GLN B 64 71.677 37.443 -13.761 1.00 19.08 B C
 ATOM 4903 OE1 GLN B 64 71.079 37.652 -12.704 1.00 21.09 B O
 ATOM 4904 NE2 GLN B 64 71.393 38.089 -14.900 1.00 14.44 B N
 ATOM 4905 C GLN B 64 74.058 33.796 -16.325 1.00 13.55 B C
 ATOM 4906 O GLN B 64 73.489 32.713 -16.372 1.00 13.68 B O
 ATOM 4907 N ARG B 65 74.739 34.295 -17.346 1.00 14.94 B N
 ATOM 4908 CA AARG B 65 74.767 33.639 -18.651 0.50 14.67 B C
 ATOM 4909 CB AARG B 65 74.736 33.628 -18.642 0.50 15.55 B C
 ATOM 4910 CB AARG B 65 75.499 34.509 -19.676 0.50 14.34 B C
 ATOM 4911 CB BARG B 65 75.371 34.512 -19.716 0.50 16.50 B C
 ATOM 4912 CG AARG B 65 74.750 35.784 -20.027 0.50 14.56 B C
 ATOM 4913 CG BARG B 65 74.581 35.792 -19.964 0.50 18.15 B C
 ATOM 4914 CD AARG B 65 75.330 36.436 -21.285 0.50 14.40 B C
 ATOM 4915 CD BARG B 65 74.774 36.325 -21.386 0.50 19.88 B C
 ATOM 4916 NE AARG B 65 75.153 35.573 -22.455 0.50 13.78 B N
 ATOM 4917 NE BARG B 65 75.104 37.740 -21.397 0.50 21.26 B N
 ATOM 4918 CZ AARG B 65 75.573 35.871 -23.679 0.50 15.22 B C
 ATOM 4919 CZ BARG B 65 75.107 38.496 -22.496 0.50 20.33 B C
 ATOM 4920 NH1AARG B 65 76.201 37.015 -23.905 0.50 15.86 B N
 ATOM 4921 NH1BARG B 65 74.760 37.965 -23.662 0.50 18.24 B N
 ATOM 4922 NH2AARG B 65 75.356 35.027 -24.676 0.50 13.84 B N
 ATOM 4923 NH2BARG B 65 75.445 39.776 -22.417 0.50 16.33 B N
 ATOM 4924 C ARG B 65 75.410 32.264 -18.579 1.00 14.29 B C
 ATOM 4925 O ARG B 65 74.968 31.342 -19.254 1.00 15.76 B O
 ATOM 4926 N LEU B 66 76.445 32.139 -17.738 1.00 13.64 B N
 ATOM 4927 CA LEU B 66 77.165 30.873 -17.562 1.00 12.80 B C
 ATOM 4928 CB LEU B 66 78.506 31.117 -16.836 1.00 13.34 B C
 ATOM 4929 CG LEU B 66 79.559 31.861 -17.629 1.00 14.00 B C
 ATOM 4930 CD1 LEU B 66 80.711 32.272 -16.735 1.00 13.19 B C
 ATOM 4931 CD2 LEU B 66 80.026 31.017 -18.797 1.00 15.81 B C
 ATOM 4932 C LEU B 66 76.348 29.838 -16.785 1.00 12.95 B C
 ATOM 4933 O LEU B 66 76.792 28.713 -16.596 1.00 15.25 B O
 ATOM 4934 N GLY B 67 75.183 30.236 -16.295 1.00 12.63 B N
 ATOM 4935 CA GLY B 67 74.259 29.321 -15.643 1.00 11.80 B C
 ATOM 4936 C GLY B 67 74.279 29.330 -14.139 1.00 12.81 B C
 ATOM 4937 O GLY B 67 73.648 28.486 -13.528 1.00 16.75 B O
 ATOM 4938 N LEU B 68 74.982 30.292 -13.520 1.00 15.63 B N
 ATOM 4939 CA LEU B 68 75.209 30.261 -12.081 1.00 14.06 B C
 ATOM 4940 CB LEU B 68 76.690 30.497 -11.750 1.00 14.42 B C
 ATOM 4941 CG LEU B 68 77.713 29.432 -12.162 1.00 15.73 B C
 ATOM 4942 CD1 LEU B 68 79.114 30.010 -12.224 1.00 14.70 B C
 ATOM 4943 CD2 LEU B 68 77.694 28.268 -11.190 1.00 12.66 B C
 ATOM 4944 C LEU B 68 74.333 31.259 -11.311 1.00 15.70 B C
 ATOM 4945 O LEU B 68 74.470 31.366 -10.087 1.00 13.51 B O
 ATOM 4946 N GLY B 69 73.418 31.959 -11.996 1.00 15.68 B N
 ATOM 4947 CA GLY B 69 72.570 32.988 -11.342 1.00 17.75 B C
 ATOM 4948 C GLY B 69 71.803 32.506 -10.116 1.00 18.82 B C
 ATOM 4949 O GLY B 69 71.745 33.208 -9.086 1.00 21.69 B O
 ATOM 4950 N TYR B 70 71.282 31.280 -10.210 1.00 15.94 B N
 ATOM 4951 CA TYR B 70 70.471 30.667 -9.161 1.00 19.27 B C
 ATOM 4952 CB TYR B 70 69.927 29.293 -9.621 1.00 17.09 B C
 ATOM 4953 CG TYR B 70 70.942 28.141 -9.574 1.00 15.13 B C
 ATOM 4954 CD1 TYR B 70 71.898 27.965 -10.586 1.00 14.78 B C
 ATOM 4955 CE1 TYR B 70 72.831 26.932 -10.541 1.00 14.99 B C
 ATOM 4956 CZ TYR B 70 72.823 26.068 -9.445 1.00 19.35 B C
 ATOM 4957 OH TYR B 70 73.748 25.067 -9.313 1.00 15.46 B O
 ATOM 4958 CE2 TYR B 70 71.869 26.238 -8.426 1.00 18.36 B C
 ATOM 4959 CD2 TYR B 70 70.959 27.259 -8.500 1.00 17.04 B C
 ATOM 4960 C TYR B 70 71.268 30.533 -7.851 1.00 21.65 B C
 ATOM 4961 O TYR B 70 70.673 30.525 -6.786 1.00 25.79 B O
 ATOM 4962 N ARG B 71 72.603 30.401 -7.943 1.00 18.29 B N
 ATOM 4963 CA AARG B 71 73.446 30.173 -6.776 0.50 19.57 B C
 ATOM 4964 CA BARG B 71 73.457 30.183 -6.759 0.50 18.98 B C
 ATOM 4965 CB AARG B 71 74.713 29.448 -7.251 0.50 20.81 B C
 ATOM 4966 CB BARG B 71 74.799 29.522 -7.129 0.50 19.07 B C
 ATOM 4967 CG AARG B 71 75.669 29.003 -6.186 0.50 19.46 B C
 ATOM 4968 CG BARG B 71 74.723 28.171 -7.779 0.50 17.63 B C
 ATOM 4969 CD AARG B 71 76.649 27.983 -6.782 0.50 18.97 B C
 ATOM 4970 CD BARG B 71 76.055 27.469 -7.708 0.50 15.61 B C
 ATOM 4971 NE AARG B 71 75.968 26.746 -7.137 0.50 15.99 B N
 ATOM 4972 NE BARG B 71 76.367 27.021 -6.358 0.50 15.15 B N
 ATOM 4973 CZAARG B 71 75.615 25.816 -6.259 0.50 17.57 B C
 ATOM 4974 CZ BARG B 71 75.804 25.972 -5.769 0.50 15.78 B C
 ATOM 4975 NH1AARG B 71 74.986 24.717 -6.670 0.50 17.39 B N
 ATOM 4976 NH1BARG B 71 74.896 25.247 -6.419 0.50 16.27 B N
 ATOM 4977 NH2AARG B 71 75.894 25.982 -4.967 0.50 18.25 B N
 ATOM 4978 NH2BARG B 71 76.150 25.645 -4.524 0.50 14.04 B N
 ATOM 4979 C ARG B 71 73.814 31.488 -6.067 1.00 18.17 B C
 ATOM 4980 O ARG B 71 74.263 31.476 -4.940 1.00 17.84 B O
 ATOM 4981 N PHE B 72 73.658 32.606 -6.763 1.00 16.59 B N
 ATOM 4982 CA PHE B 72 74.128 33.897 -6.263 1.00 17.05 B C
 ATOM 4983 CB PHE B 72 75.302 34.386 -7.148 1.00 17.06 B C
 ATOM 4984 CG PHE B 72 76.518 33.505 -7.065 1.00 15.19 B C
 ATOM 4985 CD1 PHE B 72 77.291 33.492 -5.908 1.00 14.85 B C
 ATOM 4986 CE1 PHE B 72 78.382 32.681 -5.810 1.00 13.25 B C
 ATOM 4987 CZ PHE B 72 78.729 31.844 -6.882 1.00 13.18 B C
 ATOM 4988 CE2 PHE B 72 77.945 31.823 -8.018 1.00 13.45 B C
 ATOM 4989 CD2 PHE B 72 76.848 32.659 -8.102 1.00 13.58 B C
 ATOM 4990 C PHE B 72 73.041 34.961 -6.200 1.00 17.89 B C
 ATOM 4991 O PHE B 72 73.344 36.158 -6.201 1.00 15.78 B O
 ATOM 4992 N GLU B 73 71.782 34.542 -6.127 1.00 21.33 B N
 ATOM 4993 CA GLU B 73 70.708 35.501 -6.306 1.00 24.20 B C
 ATOM 4994 CB GLU B 73 69.324 34.862 -6.298 1.00 27.63 B C
 ATOM 4995 CG GLU B 73 68.238 35.887 -6.529 1.00 32.36 B C
 ATOM 4996 CD GLU B 73 66.884 35.260 -6.841 1.00 44.63 B C
 ATOM 4997 OE1 GLU B 73 66.833 34.092 -7.280 1.00 43.71 B O
 ATOM 4998 OE2 GLU B 73 65.872 35.955 -6.653 1.00 43.69 B O
 ATOM 4999 C GLU B 73 70.731 36.591 -5.264 1.00 23.08 B C
 ATOM 5000 O GLU B 73 70.546 37.755 -5.604 1.00 21.72 B O
 ATOM 5001 N SER B 74 70.958 36.262 -4.003 1.00 21.31 B N
 ATOM 5002 CA SER B 74 70.868 37.305 -3.025 1.00 25.45 B C
 ATOM 5003 CB SER B 74 70.662 36.730 -1.637 1.00 30.25 B C
 ATOM 5004 OG SER B 74 71.856 36.148 -1.173 1.00 38.94 B O
 ATOM 5005 C SER B 74 72.120 38.207 -3.126 1.00 25.84 B C
 ATOM 5006 O SER B 74 72.064 39.392 -2.813 1.00 23.71 B O
 ATOM 5007 N ASP B 75 73.255 37.646 -3.554 1.00 20.01 B N
 ATOM 5008 CA ASP B 75 74.460 38.467 -3.744 1.00 18.98 B C

ATOM 5009 CB ASP B 75 75.678 37.580 -4.059 1.00 18.31 B C
 ATOM 5010 CG ASP B 75 75.953 36.557 -2.962 1.00 24.11 B C
 ATOM 5011 OD1 ASP B 75 76.184 36.968 -1.810 1.00 21.46 B O
 ATOM 5012 OD2 ASP B 75 75.916 35.339 -3.246 1.00 31.41 B O
 ATOM 5013 C ASP B 75 74.228 39.482 -4.879 1.00 13.74 B C
 ATOM 5014 O ASP B 75 74.605 40.657 -4.777 1.00 16.30 B O
 ATOM 5015 N ILE B 76 73.635 38.997 -5.969 1.00 15.12 B N
 ATOM 5016 CA ILE B 76 73.334 39.841 -7.134 1.00 15.07 B C
 ATOM 5017 CB ILE B 76 72.804 39.005 -8.296 1.00 15.73 B C
 ATOM 5018 CG1 ILE B 76 73.932 38.106 -8.838 1.00 16.42 B C
 ATOM 5019 CD1 ILE B 76 73.471 36.938 -9.708 1.00 16.94 B C
 ATOM 5020 CG2 ILE B 76 72.198 39.922 -9.393 1.00 12.45 B C
 ATOM 5021 C ILE B 76 72.338 40.932 -6.736 1.00 15.52 B C
 ATOM 5022 O ILE B 76 72.543 42.077 -7.029 1.00 13.57 B O
 ATOM 5023 N ARG B 77 71.294 40.586 -5.998 1.00 17.87 B N
 ATOM 5024 CA AARG B 77 70.303 41.571 -5.548 0.50 19.33 B C
 ATOM 5025 CA BARG B 77 70.327 41.607 -5.606 0.50 21.73 B C
 ATOM 5026 CB AARG B 77 69.183 40.903 -4.730 0.50 18.50 B C
 ATOM 5027 CB BARG B 77 69.065 41.007 -4.978 0.50 24.67 B C
 ATOM 5028 CG AARG B 77 68.257 39.962 -5.492 0.50 18.79 B C
 ATOM 5029 CG BARG B 77 67.932 40.869 -5.962 0.50 31.93 B C
 ATOM 5030 CD AARG B 77 67.061 39.485 -4.594 0.50 18.26 B C
 ATOM 5031 CD BARG B 77 66.571 41.085 -5.291 0.50 41.21 B C
 ATOM 5032 NE AARG B 77 66.301 40.638 -4.130 0.50 22.01 B N
 ATOM 5033 NE BARG B 77 66.552 40.594 -3.914 0.50 43.53 B N
 ATOM 5034 CZ AARG B 77 65.456 41.338 -4.891 0.50 23.05 B C
 ATOM 5035 CZ BARG B 77 66.554 39.311 -3.580 0.50 41.07 B C
 ATOM 5036 NH1AARG B 77 65.227 40.967 -6.143 0.50 18.41 B N
 ATOM 5037 NH1BARG B 77 66.580 38.379 -4.520 0.50 43.20 B N
 ATOM 5038 NH2AARG B 77 64.833 42.401 -4.392 0.50 23.08 B N
 ATOM 5039 NH2BARG B 77 66.534 38.958 -2.304 0.50 51.19 B N
 ATOM 5040 C ARG B 77 70.952 42.656 -4.697 1.00 19.64 B C
 ATOM 5041 O ARG B 77 70.680 43.840 -4.863 1.00 22.88 B O
 ATOM 5042 N GLY B 78 71.819 42.240 -3.775 1.00 20.09 B N
 ATOM 5043 CA GLY B 78 72.515 43.204 -2.929 1.00 20.98 B C
 ATOM 5044 C GLY B 78 73.364 44.174 -3.731 1.00 20.75 B C
 ATOM 5045 O GLY B 78 73.381 45.377 -3.461 1.00 22.15 B O
 ATOM 5046 N ALA B 79 74.089 43.655 -4.720 1.00 18.78 B N
 ATOM 5047 CA ALA B 79 74.924 44.489 -5.572 1.00 18.42 B C
 ATOM 5048 CB ALA B 79 75.778 43.612 -6.495 1.00 17.86 B C
 ATOM 5049 C ALA B 79 74.072 45.457 -6.361 1.00 15.85 B C
 ATOM 5050 O ALA B 79 74.398 46.630 -6.489 1.00 14.18 B O
 ATOM 5051 N LEU B 80 72.953 44.983 -6.896 1.00 17.36 B N
 ATOM 5052 CA LEU B 80 72.102 45.859 -7.714 1.00 18.93 B C
 ATOM 5053 CB LEU B 80 71.048 45.045 -8.449 1.00 17.55 B C
 ATOM 5054 CG LEU B 80 71.587 44.131 -9.546 1.00 17.15 B C
 ATOM 5055 CD1 LEU B 80 70.465 43.255 -10.060 1.00 16.24 B C
 ATOM 5056 CD2 LEU B 80 72.209 44.964 -10.668 1.00 15.59 B C
 ATOM 5057 C LEU B 80 71.429 46.957 -6.878 1.00 22.83 B C
 ATOM 5058 O LEU B 80 71.268 48.090 -7.337 1.00 20.36 B O
 ATOM 5059 N ASP B 81 71.031 46.607 -5.660 1.00 26.31 B N
 ATOM 5060 CA ASP B 81 70.407 47.565 -4.753 1.00 32.97 B C
 ATOM 5061 CB ASP B 81 69.943 46.842 -3.483 1.00 36.50 B C
 ATOM 5062 CG ASP B 81 69.066 47.710 -2.608 1.00 44.23 B C
 ATOM 5063 OD1 ASP B 81 67.937 48.029 -3.026 1.00 48.95 B O
 ATOM 5064 OD2 ASP B 81 69.504 48.068 -1.496 1.00 48.03 B O
 ATOM 5065 C ASP B 81 71.376 48.702 -4.422 1.00 28.91 B C
 ATOM 5066 O ASP B 81 71.000 49.874 -4.421 1.00 31.14 B O
 ATOM 5067 N ARG B 82 72.624 48.346 -4.126 1.00 27.25 B N
 ATOM 5068 CA ARG B 82 73.659 49.337 -3.836 1.00 28.22 B C
 ATOM 5069 CB ARG B 82 74.954 48.676 -3.355 1.00 28.94 B C
 ATOM 5070 CG ARG B 82 74.907 48.182 -1.923 1.00 36.06 B C
 ATOM 5071 CD ARG B 82 76.297 47.764 -1.463 1.00 40.01 B C
 ATOM 5072 NE ARG B 82 76.837 46.648 -2.246 1.00 38.93 B N
 ATOM 5073 CZ ARG B 82 76.499 45.365 -2.078 1.00 39.77 B C
 ATOM 5074 NH1 ARG B 82 75.598 45.013 -1.159 1.00 41.64 B N
 ATOM 5075 NH2 ARG B 82 77.057 44.422 -2.839 1.00 30.99 B N
 ATOM 5076 C ARG B 82 73.961 50.193 -5.051 1.00 24.69 B C
 ATOM 5077 O ARG B 82 74.162 51.379 -4.920 1.00 24.76 B O
 ATOM 5078 N PHE B 83 73.977 49.587 -6.235 1.00 23.39 B N
 ATOM 5079 CA PHE B 83 74.153 50.328 -7.480 1.00 22.29 B C
 ATOM 5080 CB PHE B 83 74.075 49.369 -8.666 1.00 24.15 B C
 ATOM 5081 CG PHE B 83 74.217 50.024 -10.007 1.00 23.55 B C
 ATOM 5082 CD1 PHE B 83 75.406 50.644 -10.367 1.00 30.81 B C
 ATOM 5083 CE1 PHE B 83 75.551 51.249 -11.615 1.00 26.93 B C
 ATOM 5084 CZ PHE B 83 74.501 51.224 -12.512 1.00 29.70 B C
 ATOM 5085 CE2 PHE B 83 73.317 50.621 -12.156 1.00 25.36 B C
 ATOM 5086 CD2 PHE B 83 73.184 50.021 -10.908 1.00 25.59 B C
 ATOM 5087 C PHE B 83 73.080 51.402 -7.617 1.00 28.13 B C
 ATOM 5088 O PHE B 83 73.362 52.530 -8.036 1.00 32.31 B O
 ATOM 5089 N VAL B 84 71.850 51.063 -7.264 1.00 25.80 B N
 ATOM 5090 CA VAL B 84 70.783 52.044 -7.360 1.00 32.46 B C
 ATOM 5091 CB VAL B 84 69.401 51.419 -7.237 1.00 34.87 B C
 ATOM 5092 CG1 VAL B 84 68.364 52.505 -6.892 1.00 35.85 B C
 ATOM 5093 CG2 VAL B 84 69.052 50.687 -8.530 1.00 26.81 B C
 ATOM 5094 C VAL B 84 70.960 53.073 -6.266 1.00 36.84 B C
 ATOM 5095 O VAL B 84 71.291 54.206 -6.550 1.00 30.70 B O
 ATOM 5096 N SER B 85 70.790 52.647 -5.017 1.00 43.24 B N
 ATOM 5097 CA SER B 85 70.754 53.564 -3.876 1.00 42.00 B C
 ATOM 5098 CB SER B 85 70.548 52.782 -2.575 1.00 41.82 B C
 ATOM 5099 OG SER B 85 71.758 52.172 -2.170 1.00 45.68 B O
 ATOM 5100 C SER B 85 71.987 54.478 -3.762 1.00 42.81 B C
 ATOM 5101 O SER B 85 71.910 55.543 -3.151 1.00 47.04 B O
 ATOM 5102 N SER B 86 73.110 54.090 -4.356 1.00 35.93 B N
 ATOM 5103 CA SER B 86 74.283 54.951 -4.359 1.00 33.92 B C
 ATOM 5104 CB SER B 86 75.548 54.112 -4.499 1.00 32.14 B C
 ATOM 5105 OG SER B 86 75.729 53.707 -5.842 1.00 33.64 B O
 ATOM 5106 C SER B 86 74.268 56.013 -5.478 1.00 38.88 B C
 ATOM 5107 O SER B 86 75.231 56.746 -5.622 1.00 39.84 B O
 ATOM 5108 N GLY B 87 73.200 56.086 -6.272 1.00 39.23 B N
 ATOM 5109 CA GLY B 87 73.160 56.987 -7.436 1.00 36.38 B C
 ATOM 5110 C GLY B 87 73.901 56.455 -8.659 1.00 40.92 B C
 ATOM 5111 O GLY B 87 74.032 57.161 -9.663 1.00 31.51 B O
 ATOM 5112 N GLY B 88 74.369 55.203 -8.596 1.00 39.83 B N
 ATOM 5113 CA GLY B 88 75.122 54.595 -9.692 1.00 31.43 B C
 ATOM 5114 C GLY B 88 74.314 54.463 -10.962 1.00 33.31 B C
 ATOM 5115 O GLY B 88 74.849 54.605 -12.066 1.00 37.29 B O
 ATOM 5116 N PHE B 89 73.019 54.205 -10.824 1.00 35.85 B N
 ATOM 5117 CA PHE B 89 72.158 54.073 -12.009 1.00 36.71 B C
 ATOM 5118 CB PHE B 89 70.828 53.383 -11.649 1.00 31.01 B C
 ATOM 5119 CG PHE B 89 69.943 53.122 -12.832 1.00 32.04 B C
 ATOM 5120 CD1 PHE B 89 70.408 52.394 -13.927 1.00 30.41 B C
 ATOM 5121 CE1 PHE B 89 69.592 52.172 -15.029 1.00 29.24 B C
 ATOM 5122 CZ PHE B 89 68.316 52.656 -15.040 1.00 30.11 B C
 ATOM 5123 CE2 PHE B 89 67.844 53.383 -13.961 1.00 33.17 B C
 ATOM 5124 CD2 PHE B 89 68.655 53.612 -12.866 1.00 31.62 B C
 ATOM 5125 C PHE B 89 71.966 55.438 -12.716 1.00 34.35 B C
 ATOM 5126 O PHE B 89 71.972 55.512 -13.944 1.00 35.68 B O
 ATOM 5127 N ASP B 90 71.831 56.515 -11.951 1.00 47.99 B N
 ATOM 5128 CA ASP B 90 71.864 57.873 -12.534 1.00 47.41 B C
 ATOM 5129 CB ASP B 90 71.851 58.947 -11.450 1.00 63.15 B C
 ATOM 5130 CG ASP B 90 70.460 59.379 -11.085 1.00 75.50 B C
 ATOM 5131 OD1 ASP B 90 69.558 58.515 -11.089 1.00 55.04 B O
 ATOM 5132 OD2 ASP B 90 70.273 60.583 -10.798 1.00 83.17 B O
 ATOM 5133 C ASP B 90 73.099 58.096 -13.376 1.00 39.65 B C
 ATOM 5134 O ASP B 90 72.997 58.504 -14.532 1.00 47.01 B O
 ATOM 5135 N ALA B 91 74.256 57.840 -12.770 1.00 38.64 B N
 ATOM 5136 CA ALA B 91 75.557 58.067 -13.402 1.00 37.96 B C
 ATOM 5137 CB ALA B 91 76.689 57.509 -12.536 1.00 36.86 B C
 ATOM 5138 C ALA B 91 75.615 57.459 -14.790 1.00 38.02 B C
 ATOM 5139 O ALA B 91 75.941 58.162 -15.753 1.00 26.33 B O
 ATOM 5140 N VAL B 92 75.271 56.169 -14.912 1.00 32.42 B N

ATOM 5141 CA VAL B 92 75.437 55.495 -16.197 1.00 28.95 B C
 ATOM 5142 CB VAL B 92 75.332 53.942 -16.123 1.00 31.66 B C
 ATOM 5143 CG1 VAL B 92 76.404 53.387 -15.168 1.00 37.05 B C
 ATOM 5144 CG2 VAL B 92 73.933 53.505 -15.726 1.00 26.45 B C
 ATOM 5145 C VAL B 92 74.499 56.067 -17.256 1.00 24.25 B C
 ATOM 5146 O VAL B 92 74.873 56.119 -18.422 1.00 26.79 B O
 ATOM 5147 N THR B 93 73.311 56.522 -16.864 1.00 27.09 B N
 ATOM 5148 CA THR B 93 72.349 57.050 -17.847 1.00 29.51 B C
 ATOM 5149 CB THR B 93 70.917 57.196 -17.276 1.00 31.52 B C
 ATOM 5150 OG1 THR B 93 70.912 58.154 -16.215 1.00 37.00 B O
 ATOM 5151 CG2 THR B 93 70.381 55.842 -16.756 1.00 30.63 B C
 ATOM 5152 C THR B 93 72.813 58.375 -18.497 1.00 28.69 B C
 ATOM 5153 O THR B 93 72.271 58.769 -19.530 1.00 26.16 B O
 ATOM 5154 N LYS B 94 73.830 59.021 -17.923 1.00 34.87 B N
 ATOM 5155 CA LYS B 94 74.462 60.213 -18.540 1.00 39.05 B C
 ATOM 5156 CB LYS B 94 74.944 61.223 -17.488 1.00 40.76 B C
 ATOM 5157 CG LYS B 94 74.018 61.479 -16.315 1.00 48.73 B C
 ATOM 5158 CD LYS B 94 72.655 61.989 -16.739 1.00 55.16 B C
 ATOM 5159 CE LYS B 94 71.900 62.521 -15.529 1.00 59.95 B C
 ATOM 5160 NZ LYS B 94 70.454 62.656 -15.807 1.00 68.55 B N
 ATOM 5161 C LYS B 94 75.673 59.870 -19.400 1.00 37.62 B C
 ATOM 5162 O LYS B 94 76.036 60.639 -20.278 1.00 42.15 B O
 ATOM 5163 N THR B 95 76.315 58.739 -19.123 1.00 35.13 B N
 ATOM 5164 CA THR B 95 77.645 58.453 -19.667 1.00 31.61 B C
 ATOM 5165 CB THR B 95 78.643 58.170 -18.522 1.00 30.78 B C
 ATOM 5166 OG1 THR B 95 78.293 56.950 -17.848 1.00 30.43 B O
 ATOM 5167 CG2 THR B 95 78.647 59.332 -17.500 1.00 30.18 B C
 ATOM 5168 C THR B 95 77.696 57.305 -20.690 1.00 33.47 B C
 ATOM 5169 O THR B 95 78.454 57.390 -21.659 1.00 33.96 B O
 ATOM 5170 N SER B 96 76.884 56.252 -20.487 1.00 30.71 B N
 ATOM 5171 CA SER B 96 77.113 54.954 -21.139 1.00 26.68 B C
 ATOM 5172 CB SER B 96 77.999 54.103 -20.208 1.00 26.33 B C
 ATOM 5173 OG SER B 96 78.094 52.750 -20.606 1.00 28.02 B O
 ATOM 5174 C SER B 96 75.801 54.201 -21.526 1.00 28.35 B C
 ATOM 5175 O SER B 96 74.996 53.790 -20.658 1.00 21.83 B O
 ATOM 5176 N LEU B 97 75.608 54.003 -22.832 1.00 24.62 B N
 ATOM 5177 CA LEU B 97 74.475 53.217 -23.336 1.00 26.38 B C
 ATOM 5178 CB LEU B 97 74.395 53.258 -24.865 1.00 24.22 B C
 ATOM 5179 CG LEU B 97 73.301 52.390 -25.504 1.00 23.98 B C
 ATOM 5180 CD1 LEU B 97 71.912 52.882 -25.098 1.00 23.33 B C
 ATOM 5181 CD2 LEU B 97 73.456 52.362 -27.022 1.00 24.44 B C
 ATOM 5182 C LEU B 97 74.582 51.770 -22.870 1.00 25.26 B C
 ATOM 5183 O LEU B 97 73.606 51.211 -22.399 1.00 23.11 B O
 ATOM 5184 N HIS B 98 75.762 51.174 -23.029 1.00 23.74 B N
 ATOM 5185 CA HIS B 98 76.022 49.808 -22.571 1.00 23.36 B C
 ATOM 5186 CB HIS B 98 77.471 49.427 -22.857 1.00 23.90 B C
 ATOM 5187 CG HIS B 98 77.854 48.056 -22.369 1.00 28.17 B C
 ATOM 5188 ND1 HIS B 98 77.018 46.996 -22.448 1.00 32.87 B N
 ATOM 5189 CE1 HIS B 98 77.624 45.910 -21.935 1.00 31.82 B C
 ATOM 5190 NE2 HIS B 98 78.855 46.271 -21.537 1.00 38.65 B N
 ATOM 5191 CD2 HIS B 98 79.029 47.588 -21.795 1.00 30.71 B C
 ATOM 5192 C HIS B 98 75.711 49.673 -21.103 1.00 22.84 B C
 ATOM 5193 O HIS B 98 74.971 48.773 -20.701 1.00 20.22 B O
 ATOM 5194 N GLY B 99 76.250 50.572 -20.283 1.00 19.58 B N
 ATOM 5195 CA GLY B 99 75.972 50.557 -18.836 1.00 19.66 B C
 ATOM 5196 C GLY B 99 74.482 50.668 -18.520 1.00 20.65 B C
 ATOM 5197 O GLY B 99 73.955 49.949 -17.650 1.00 16.40 B O
 ATOM 5198 N THR B 100 73.803 51.564 -19.236 1.00 16.08 B N
 ATOM 5199 CA THR B 100 72.399 51.804 -19.018 1.00 16.75 B C
 ATOM 5200 CB THR B 100 71.936 53.097 -19.719 1.00 18.78 B C
 ATOM 5201 OG1 THR B 100 72.623 54.221 -19.144 1.00 22.13 B O
 ATOM 5202 CG2 THR B 100 70.458 53.296 -19.554 1.00 18.90 B C
 ATOM 5203 C THR B 100 71.544 50.611 -19.462 1.00 18.44 B C
 ATOM 5204 O THR B 100 70.656 50.192 -18.725 1.00 16.59 B O
 ATOM 5205 N ALA B 101 71.840 50.058 -20.637 1.00 17.28 B N
 ATOM 5206 CA ALA B 101 71.060 48.965 -21.187 1.00 19.07 B C

ATOM 5207 CB ALA B 101 71.445 48.722 -22.648 1.00 18.01 B C
 ATOM 5208 C ALA B 101 71.268 47.705 -20.333 1.00 16.43 B C
 ATOM 5209 O ALA B 101 70.329 46.972 -20.047 1.00 18.06 B O
 ATOM 5210 N LEU B 102 72.500 47.470 -19.915 1.00 15.43 B N
 ATOM 5211 CA LEU B 102 72.785 46.284 -19.108 1.00 16.88 B C
 ATOM 5212 CB LEU B 102 74.307 46.070 -18.984 1.00 18.21 B C
 ATOM 5213 CG LEU B 102 74.770 44.887 -18.124 1.00 16.60 B C
 ATOM 5214 CD1 LEU B 102 74.090 43.606 -18.521 1.00 17.56 B C
 ATOM 5215 CD2 LEU B 102 76.308 44.767 -18.207 1.00 20.27 B C
 ATOM 5216 C LEU B 102 72.126 46.418 -17.725 1.00 16.97 B C
 ATOM 5217 O LEU B 102 71.450 45.499 -17.238 1.00 14.04 B O
 ATOM 5218 N SER B 103 72.304 47.574 -17.096 1.00 18.21 B N
 ATOM 5219 CA SER B 103 71.771 47.752 -15.763 1.00 17.35 B C
 ATOM 5220 CB SER B 103 72.333 49.003 -15.089 1.00 18.75 B C
 ATOM 5221 OG SER B 103 72.042 50.151 -15.843 1.00 18.72 B O
 ATOM 5222 C SER B 103 70.242 47.749 -15.785 1.00 18.14 B C
 ATOM 5223 O SER B 103 69.630 47.214 -14.885 1.00 18.58 B O
 ATOM 5224 N PHE B 104 69.641 48.329 -16.818 1.00 18.14 B N
 ATOM 5225 CA PHE B 104 68.199 48.322 -16.971 1.00 18.85 B C
 ATOM 5226 CB PHE B 104 67.813 49.009 -18.289 1.00 19.22 B C
 ATOM 5227 CG PHE B 104 66.323 49.037 -18.548 1.00 19.65 B C
 ATOM 5228 CD1 PHE B 104 65.693 47.984 -19.200 1.00 20.74 B C
 ATOM 5229 CE1 PHE B 104 64.314 47.998 -19.439 1.00 19.71 B C
 ATOM 5230 CZ PHE B 104 63.567 49.056 -19.033 1.00 18.71 B C
 ATOM 5231 CE2 PHE B 104 64.183 50.127 -18.407 1.00 24.37 B C
 ATOM 5232 CD2 PHE B 104 65.563 50.114 -18.167 1.00 22.21 B C
 ATOM 5233 C PHE B 104 67.689 46.882 -16.973 1.00 17.17 B C
 ATOM 5234 O PHE B 104 66.741 46.526 -16.245 1.00 16.32 B O
 ATOM 5235 N ARG B 105 68.336 46.043 -17.778 1.00 13.42 B N
 ATOM 5236 CA ARG B 105 67.919 44.645 -17.873 1.00 15.63 B C
 ATOM 5237 CB ARG B 105 68.641 43.918 -19.024 1.00 13.02 B C
 ATOM 5238 CG ARG B 105 68.333 42.452 -19.081 1.00 14.74 B C
 ATOM 5239 CD ARG B 105 68.877 41.808 -20.362 1.00 16.05 B C
 ATOM 5240 NE ARG B 105 70.330 41.836 -20.500 1.00 16.37 B N
 ATOM 5241 CZ ARG B 105 71.161 40.984 -19.914 1.00 17.27 B C
 ATOM 5242 NH1 ARG B 105 70.697 40.030 -19.116 1.00 17.40 B N
 ATOM 5243 NH2 ARG B 105 72.454 41.085 -20.139 1.00 20.81 B N
 ATOM 5244 C ARG B 105 68.075 43.891 -16.551 1.00 15.32 B C
 ATOM 5245 O ARG B 105 67.152 43.225 -16.110 1.00 14.27 B O
 ATOM 5246 N LEU B 106 69.229 44.025 -15.901 1.00 12.51 B N
 ATOM 5247 CA LEU B 106 69.477 43.304 -14.683 1.00 13.49 B C
 ATOM 5248 CB LEU B 106 70.965 43.433 -14.243 1.00 12.09 B C
 ATOM 5249 CG LEU B 106 72.010 42.909 -15.238 1.00 12.53 B C
 ATOM 5250 CD1 LEU B 106 73.418 43.201 -14.689 1.00 10.73 B C
 ATOM 5251 CD2 LEU B 106 71.819 41.373 -15.502 1.00 11.52 B C
 ATOM 5252 C LEU B 106 68.525 43.797 -13.602 1.00 12.64 B C
 ATOM 5253 O LEU B 106 67.965 42.992 -12.851 1.00 13.50 B O
 ATOM 5254 N LEU B 107 68.343 45.107 -13.521 1.00 16.05 B N
 ATOM 5255 CA LEU B 107 67.468 45.692 -12.507 1.00 16.98 B C
 ATOM 5256 CB LEU B 107 67.541 47.222 -12.557 1.00 18.29 B C
 ATOM 5257 CG LEU B 107 68.810 47.803 -11.933 1.00 19.58 B C
 ATOM 5258 CD1 LEU B 107 69.009 49.257 -12.356 1.00 18.58 B C
 ATOM 5259 CD2 LEU B 107 68.701 47.653 -10.424 1.00 21.10 B C
 ATOM 5260 C LEU B 107 66.038 45.203 -12.708 1.00 17.38 B C
 ATOM 5261 O LEU B 107 65.402 44.690 -11.777 1.00 16.00 B O
 ATOM 5262 N ARG B 108 65.546 45.305 -13.936 1.00 16.53 B N
 ATOM 5263 CA ARG B 108 64.191 44.837 -14.199 1.00 16.64 B C
 ATOM 5264 CB ARG B 108 63.695 45.245 -15.585 1.00 17.67 B C
 ATOM 5265 CG ARG B 108 62.248 44.770 -15.818 1.00 22.71 B C
 ATOM 5266 CD ARG B 108 61.545 45.480 -16.945 1.00 22.49 B C
 ATOM 5267 NE ARG B 108 61.208 46.877 -16.656 1.00 17.35 B N
 ATOM 5268 CZ ARG B 108 60.598 47.687 -17.524 1.00 19.22 B C
 ATOM 5269 NH1 ARG B 108 60.236 47.262 -18.727 1.00 18.94 B N
 ATOM 5270 NH2 ARG B 108 60.345 48.935 -17.195 1.00 18.38 B N
 ATOM 5271 C ARG B 108 64.068 43.326 -13.992 1.00 15.93 B C
 ATOM 5272 O ARG B 108 63.082 42.852 -13.439 1.00 15.19 B O

ATOM 5273 N GLN B 109 65.066 42.552 -14.403 1.00 16.08 B N
 ATOM 5274 CA GLN B 109 65.036 41.101 -14.168 1.00 16.94 B C
 ATOM 5275 CB GLN B 109 66.363 40.481 -14.657 1.00 18.02 B C
 ATOM 5276 CG GLN B 109 66.470 38.977 -14.403 1.00 20.52 B C
 ATOM 5277 CD GLN B 109 67.881 38.431 -14.647 1.00 21.88 B C
 ATOM 5278 OE1 GLN B 109 68.756 39.140 -15.161 1.00 17.04 B O
 ATOM 5279 NE2 GLN B 109 68.104 37.159 -14.259 1.00 19.73 B N
 ATOM 5280 C GLN B 109 64.829 40.744 -12.667 1.00 17.41 B C
 ATOM 5281 O GLN B 109 64.139 39.781 -12.307 1.00 16.39 B O
 ATOM 5282 N HIS B 110 65.462 41.524 -11.809 1.00 16.32 B N
 ATOM 5283 CA HIS B 110 65.458 41.278 -10.395 1.00 19.70 B C
 ATOM 5284 CB HIS B 110 66.885 41.520 -9.843 1.00 18.76 B C
 ATOM 5285 CG HIS B 110 67.825 40.397 -10.201 1.00 19.50 B C
 ATOM 5286 ND1 HIS B 110 67.819 39.207 -9.534 1.00 20.72 B N
 ATOM 5287 CE1 HIS B 110 68.724 38.374 -10.105 1.00 20.86 B C
 ATOM 5288 NE2 HIS B 110 69.259 39.005 -11.175 1.00 18.25 B N
 ATOM 5289 CD2 HIS B 110 68.732 40.260 -11.251 1.00 15.44 B C
 ATOM 5290 C HIS B 110 64.378 42.100 -9.712 1.00 23.42 B C
 ATOM 5291 O HIS B 110 64.443 42.349 -8.519 1.00 23.26 B O
 ATOM 5292 N GLY B 111 63.376 42.531 -10.475 1.00 21.81 B N
 ATOM 5293 CA GLY B 111 62.171 43.131 -9.890 1.00 20.16 B C
 ATOM 5294 C GLY B 111 62.273 44.581 -9.440 1.00 26.24 B C
 ATOM 5295 O GLY B 111 61.360 45.060 -8.790 1.00 27.12 B O
 ATOM 5296 N PHE B 112 63.376 45.271 -9.753 1.00 18.84 B N
 ATOM 5297 CA PHE B 112 63.499 46.674 -9.445 1.00 21.69 B C
 ATOM 5298 CB PHE B 112 64.953 47.135 -9.492 1.00 22.76 B C
 ATOM 5299 CG PHE B 112 65.794 46.565 -8.408 1.00 24.54 B C
 ATOM 5300 CD1 PHE B 112 66.375 45.310 -8.545 1.00 23.28 B C
 ATOM 5301 CE1 PHE B 112 67.165 44.784 -7.549 1.00 25.68 B C
 ATOM 5302 CZ PHE B 112 67.357 45.492 -6.378 1.00 30.15 B C
 ATOM 5303 CE2 PHE B 112 66.771 46.735 -6.222 1.00 30.82 B C
 ATOM 5304 CD2 PHE B 112 65.999 47.270 -7.233 1.00 29.06 B C
 ATOM 5305 C PHE B 112 62.698 47.477 -10.446 1.00 23.68 B C
 ATOM 5306 O PHE B 112 62.494 47.050 -11.584 1.00 24.90 B O
 ATOM 5307 N GLU B 113 62.249 48.639 -9.991 1.00 28.56 B N
 ATOM 5308 CA GLU B 113 61.517 49.574 -10.801 1.00 29.69 B C
 ATOM 5309 CB GLU B 113 60.602 50.447 -9.933 1.00 37.49 B C
 ATOM 5310 CG GLU B 113 59.510 51.122 -10.751 1.00 47.65 B C
 ATOM 5311 CD GLU B 113 58.598 52.026 -9.935 1.00 69.63 B C
 ATOM 5312 OE1 GLU B 113 59.086 52.679 -8.989 1.00 75.21 B O
 ATOM 5313 OE2 GLU B 113 57.387 52.090 -10.254 1.00 70.93 B O
 ATOM 5314 C GLU B 113 62.480 50.453 -11.600 1.00 23.60 B C
 ATOM 5315 O GLU B 113 63.218 51.264 -11.057 1.00 31.81 B O
 ATOM 5316 N VAL B 114 62.474 50.274 -12.908 1.00 20.86 B N
 ATOM 5317 CA VAL B 114 63.187 51.163 -13.817 1.00 21.32 B C
 ATOM 5318 CB VAL B 114 64.453 50.479 -14.383 1.00 23.76 B C
 ATOM 5319 CG1 VAL B 114 65.526 50.343 -13.282 1.00 20.01 B C
 ATOM 5320 CG2 VAL B 114 64.110 49.127 -14.983 1.00 21.05 B C
 ATOM 5321 C VAL B 114 62.231 51.605 -14.947 1.00 21.51 B C
 ATOM 5322 O VAL B 114 61.294 50.891 -15.332 1.00 20.01 B O
 ATOM 5323 N SER B 115 62.474 52.789 -15.465 1.00 17.24 B N
 ATOM 5324 CA SER B 115 61.633 53.413 -16.476 1.00 21.29 B C
 ATOM 5325 CB SER B 115 61.302 54.859 -16.017 1.00 22.76 B C
 ATOM 5326 OG SER B 115 60.931 55.680 -17.115 1.00 27.64 B O
 ATOM 5327 C SER B 115 62.354 53.459 -17.824 1.00 21.00 B C
 ATOM 5328 O SER B 115 63.582 53.591 -17.885 1.00 17.43 B O
 ATOM 5329 N GLN B 116 61.586 53.412 -18.906 1.00 20.95 B N
 ATOM 5330 CA GLN B 116 62.156 53.577 -20.255 1.00 25.47 B C
 ATOM 5331 CB GLN B 116 61.095 53.316 -21.348 1.00 28.24 B C
 ATOM 5332 CG GLN B 116 59.871 54.267 -21.348 1.00 28.04 B C
 ATOM 5333 CD GLN B 116 59.077 54.234 -22.640 1.00 27.34 B C
 ATOM 5334 OE1 GLN B 116 59.359 53.446 -23.535 1.00 29.10 B O
 ATOM 5335 NE2 GLN B 116 58.079 55.102 -22.741 1.00 22.35 B N
 ATOM 5336 C GLN B 116 62.812 54.942 -20.479 1.00 28.20 B C
 ATOM 5337 O GLN B 116 63.601 55.104 -21.414 1.00 23.76 B O
 ATOM 5338 N GLU B 117 62.497 55.917 -19.622 1.00 31.18 B N
 ATOM 5339 CA GLU B 117 63.149 57.240 -19.678 1.00 36.90 B C
 ATOM 5340 CB GLU B 117 62.524 58.228 -18.676 1.00 41.23 B C
 ATOM 5341 CG GLU B 117 61.061 58.577 -18.936 1.00 43.94 B C
 ATOM 5342 CD GLU B 117 60.827 59.150 -20.321 1.00 50.10 B C
 ATOM 5343 OE1 GLU B 117 61.675 59.929 -20.808 1.00 62.87 B O
 ATOM 5344 OE2 GLU B 117 59.789 58.817 -20.931 1.00 60.89 B O
 ATOM 5345 C GLU B 117 64.659 57.150 -19.434 1.00 30.52 B C
 ATOM 5346 O GLU B 117 65.385 58.038 -19.801 1.00 21.21 B O
 ATOM 5347 N ALA B 118 65.126 56.052 -18.854 1.00 26.64 B N
 ATOM 5348 CA ALA B 118 66.555 55.806 -18.676 1.00 24.31 B C
 ATOM 5349 CB ALA B 118 66.763 54.394 -18.052 1.00 23.93 B C
 ATOM 5350 C ALA B 118 67.339 55.936 -19.987 1.00 21.81 B C
 ATOM 5351 O ALA B 118 68.532 56.230 -19.976 1.00 20.44 B O
 ATOM 5352 N PHE B 119 66.680 55.712 -21.116 1.00 23.54 B N
 ATOM 5353 CA PHE B 119 67.342 55.831 -22.412 1.00 29.59 B C
 ATOM 5354 CB PHE B 119 66.847 54.728 -23.335 1.00 29.29 B C
 ATOM 5355 CG PHE B 119 67.164 53.348 -22.833 1.00 27.07 B C
 ATOM 5356 CD1 PHE B 119 68.415 52.781 -23.076 1.00 26.61 B C
 ATOM 5357 CE1 PHE B 119 68.721 51.515 -22.614 1.00 24.31 B C
 ATOM 5358 CZ PHE B 119 67.785 50.801 -21.891 1.00 23.77 B C
 ATOM 5359 CE2 PHE B 119 66.539 51.350 -21.624 1.00 28.37 B C
 ATOM 5360 CD2 PHE B 119 66.233 52.634 -22.099 1.00 26.90 B C
 ATOM 5361 C PHE B 119 67.144 57.186 -23.112 1.00 34.14 B C
 ATOM 5362 O PHE B 119 67.561 57.340 -24.267 1.00 31.83 B O
 ATOM 5363 N SER B 120 66.536 58.164 -22.443 1.00 34.61 B N
 ATOM 5364 CA ASER B 120 66.218 59.461 -23.082 0.50 37.13 B C
 ATOM 5365 CA BSER B 120 66.216 59.426 -23.131 0.50 40.94 B C
 ATOM 5366 CB ASER B 120 65.327 60.320 -22.177 0.50 33.88 B C
 ATOM 5367 CB BSER B 120 65.169 60.234 -22.357 0.50 42.91 B C
 ATOM 5368 OG ASER B 120 66.010 60.728 -21.007 0.50 24.33 B O
 ATOM 5369 OG BSER B 120 63.881 59.640 -22.507 0.50 38.32 B C
 ATOM 5370 C SER B 120 67.470 60.252 -23.446 1.00 38.63 B C
 ATOM 5371 O SER B 120 67.493 60.979 -24.434 1.00 45.53 B O
 ATOM 5372 N GLY B 121 68.515 60.106 -22.637 1.00 38.31 B N
 ATOM 5373 CA GLY B 121 69.784 60.780 -22.881 1.00 41.06 B C
 ATOM 5374 C GLY B 121 70.494 60.384 -24.169 1.00 41.78 B C
 ATOM 5375 O GLY B 121 71.424 61.066 -24.585 1.00 43.25 B O
 ATOM 5376 N PHE B 122 70.061 59.297 -24.807 1.00 38.87 B N
 ATOM 5377 CA PHE B 122 70.718 58.783 -26.021 1.00 39.39 B C
 ATOM 5378 CB PHE B 122 71.017 57.285 -25.843 1.00 38.14 B C
 ATOM 5379 CG PHE B 122 71.710 56.979 -24.551 1.00 37.60 B C
 ATOM 5380 CD1 PHE B 122 73.091 57.030 -24.466 1.00 35.88 B C
 ATOM 5381 CE1 PHE B 122 73.736 56.783 -23.262 1.00 38.04 B C
 ATOM 5382 CZ PHE B 122 72.997 56.494 -22.132 1.00 36.17 B C
 ATOM 5383 CE2 PHE B 122 71.618 56.448 -22.202 1.00 44.59 B C
 ATOM 5384 CD2 PHE B 122 70.978 56.692 -23.405 1.00 39.21 B C
 ATOM 5385 C PHE B 122 69.937 59.036 -27.320 1.00 36.51 B C
 ATOM 5386 O PHE B 122 70.289 58.491 -28.367 1.00 37.34 B O
 ATOM 5387 N LYS B 123 68.890 59.857 -27.251 1.00 38.74 B N
 ATOM 5388 CA LYS B 123 68.112 60.229 -28.438 1.00 46.15 B C
 ATOM 5389 CB LYS B 123 66.612 60.183 -28.125 1.00 51.47 B C
 ATOM 5390 CG LYS B 123 66.067 58.761 -27.913 1.00 54.05 B C
 ATOM 5391 CD LYS B 123 64.842 58.698 -26.965 1.00 59.06 B C
 ATOM 5392 CE LYS B 123 63.518 59.033 -27.656 1.00 55.33 B C
 ATOM 5393 NZ LYS B 123 62.999 57.931 -28.521 1.00 52.50 B N
 ATOM 5394 C LYS B 123 68.523 61.625 -28.928 1.00 53.18 B C
 ATOM 5395 O LYS B 123 68.897 62.486 -28.129 1.00 46.65 B O
 ATOM 5396 N ASP B 124 68.469 61.837 -30.243 1.00 54.74 B N
 ATOM 5397 CA ASP B 124 68.799 63.145 -30.844 1.00 48.78 B C
 ATOM 5398 CB ASP B 124 69.229 62.982 -32.323 1.00 41.62 B C
 ATOM 5399 CG ASP B 124 68.121 62.412 -33.219 1.00 39.32 B C
 ATOM 5400 OD1 ASP B 124 66.927 62.460 -32.844 1.00 36.69 B O
 ATOM 5401 OD2 ASP B 124 68.448 61.901 -34.309 1.00 43.22 B O
 ATOM 5402 C ASP B 124 67.624 64.125 -30.707 1.00 52.38 B C
 ATOM 5403 O ASP B 124 66.642 63.834 -30.017 1.00 48.79 B O
 ATOM 5404 N GLN B 125 67.736 65.281 -31.364 1.00 54.13 B N

ATOM 5405 CA GLN B 125 66.648 66.268 -31.441 1.00 58.11 B C
 ATOM 5406 CB GLN B 125 67.048 67.430 -32.342 1.00 57.23 B C
 ATOM 5407 CG GLN B 125 68.219 68.223 -31.829 1.00 66.12 B C
 ATOM 5408 CD GLN B 125 68.351 69.568 -32.513 1.00 75.22 B C
 ATOM 5409 OE1 GLN B 125 69.145 70.404 -32.095 1.00 91.78 B O
 ATOM 5410 NE2 GLN B 125 67.568 69.786 -33.569 1.00 72.21 B N
 ATOM 5411 C GLN B 125 65.342 65.694 -31.983 1.00 58.06 B C
 ATOM 5412 O GLN B 125 64.274 65.920 -31.412 1.00 50.39 B O
 ATOM 5413 N ASN B 126 65.432 64.959 -33.091 1.00 53.50 B N
 ATOM 5414 CA ASN B 126 64.255 64.335 -33.701 1.00 54.83 B C
 ATOM 5415 CB ASN B 126 64.621 63.686 -35.039 1.00 48.62 B C
 ATOM 5416 CG ASN B 126 64.985 64.701 -36.090 1.00 48.04 B C
 ATOM 5417 OD1 ASN B 126 65.360 65.831 -35.776 1.00 37.87 B O
 ATOM 5418 ND2 ASN B 126 64.885 64.305 -37.352 1.00 53.77 B N
 ATOM 5419 C ASN B 126 63.556 63.302 -32.806 1.00 55.85 B C
 ATOM 5420 O ASN B 126 62.418 62.921 -33.082 1.00 51.34 B O
 ATOM 5421 N GLY B 127 64.230 62.867 -31.740 1.00 50.88 B N
 ATOM 5422 CA GLY B 127 63.692 61.855 -30.828 1.00 53.73 B C
 ATOM 5423 C GLY B 127 64.049 60.439 -31.243 1.00 47.40 B C
 ATOM 5424 O GLY B 127 63.411 59.484 -30.809 1.00 50.16 B O
 ATOM 5425 N ASN B 128 65.065 60.319 -32.093 1.00 40.27 B N
 ATOM 5426 CA ASN B 128 65.569 59.042 -32.568 1.00 45.14 B C
 ATOM 5427 CB ASN B 128 65.719 59.037 -34.094 1.00 44.88 B C
 ATOM 5428 CG ASN B 128 64.480 59.550 -34.806 1.00 48.63 B C
 ATOM 5429 OD1 ASN B 128 64.569 60.360 -35.733 1.00 49.05 B O
 ATOM 5430 ND2 ASN B 128 63.317 59.094 -34.366 1.00 49.33 B N
 ATOM 5431 C ASN B 128 66.922 58.801 -31.926 1.00 46.12 B C
 ATOM 5432 O ASN B 128 67.652 59.744 -31.626 1.00 49.12 B O
 ATOM 5433 N PHE B 129 67.250 57.536 -31.707 1.00 42.63 B N
 ATOM 5434 CA PHE B 129 68.544 57.172 -31.137 1.00 42.17 B C
 ATOM 5435 CB PHE B 129 68.658 55.648 -31.006 1.00 38.64 B C
 ATOM 5436 CG PHE B 129 67.878 55.080 -29.837 1.00 36.83 B C
 ATOM 5437 CD1 PHE B 129 68.415 55.106 -28.557 1.00 33.99 B C
 ATOM 5438 CE1 PHE B 129 67.709 54.596 -27.477 1.00 36.82 B C
 ATOM 5439 CZ PHE B 129 66.453 54.061 -27.670 1.00 33.55 B C
 ATOM 5440 CE2 PHE B 129 65.895 54.033 -28.942 1.00 34.20 B C
 ATOM 5441 CD2 PHE B 129 66.608 54.536 -30.018 1.00 33.13 B C
 ATOM 5442 C PHE B 129 69.688 57.729 -31.985 1.00 37.32 B C
 ATOM 5443 O PHE B 129 69.673 57.598 -33.209 1.00 36.11 B O
 ATOM 5444 N LEU B 130 70.662 58.353 -31.329 1.00 35.07 B N
 ATOM 5445 CA LEU B 130 71.816 58.939 -32.024 1.00 40.07 B C
 ATOM 5446 CB LEU B 130 72.803 59.533 -31.008 1.00 40.58 B C
 ATOM 5447 CG LEU B 130 72.306 60.765 -30.227 1.00 39.82 B C
 ATOM 5448 CD1 LEU B 130 72.966 60.870 -28.861 1.00 36.33 B C
 ATOM 5449 CD2 LEU B 130 72.531 62.060 -31.028 1.00 35.72 B C
 ATOM 5450 C LEU B 130 72.494 57.876 -32.902 1.00 39.82 B C
 ATOM 5451 O LEU B 130 72.670 56.735 -32.480 1.00 32.74 B O
 ATOM 5452 N GLU B 131 72.856 58.251 -34.124 1.00 37.28 B N
 ATOM 5453 CA GLU B 131 73.355 57.301 -35.125 1.00 40.60 B C
 ATOM 5454 CB GLU B 131 73.428 57.974 -36.507 1.00 47.10 B C
 ATOM 5455 CG GLU B 131 73.804 57.043 -37.674 1.00 52.91 B C
 ATOM 5456 CD GLU B 131 72.682 56.082 -38.070 1.00 56.45 B C
 ATOM 5457 OE1 GLU B 131 71.773 55.832 -37.250 1.00 74.91 B O
 ATOM 5458 OE2 GLU B 131 72.703 55.569 -39.210 1.00 54.24 B O
 ATOM 5459 C GLU B 131 74.725 56.728 -34.782 1.00 39.38 B C
 ATOM 5460 O GLU B 131 74.966 55.545 -35.003 1.00 40.85 B O
 ATOM 5461 N ASN B 132 75.614 57.569 -34.259 1.00 36.12 B N
 ATOM 5462 CA ASN B 132 76.977 57.148 -33.891 1.00 42.27 B C
 ATOM 5463 CB ASN B 132 77.784 58.352 -33.406 1.00 46.73 B C
 ATOM 5464 CG ASN B 132 77.858 59.117 -32.292 1.00 48.09 B C
 ATOM 5465 OD1 ASN B 132 76.466 58.533 -31.405 1.00 50.95 B O
 ATOM 5466 ND2 ASN B 132 77.176 60.432 -32.341 1.00 50.02 B N
 ATOM 5467 C ASN B 132 77.067 56.024 -32.834 1.00 41.78 B C
 ATOM 5468 O ASN B 132 78.110 55.389 -32.682 1.00 37.33 B O
 ATOM 5469 N LEU B 133 75.983 55.797 -32.096 1.00 38.52 B N
 ATOM 5470 CA LEU B 133 75.903 54.664 -31.154 1.00 38.43 B C
 ATOM 5471 CB LEU B 133 74.553 54.670 -30.433 1.00 34.51 B C
 ATOM 5472 CG LEU B 133 74.363 55.868 -29.482 1.00 38.72 B C
 ATOM 5473 CD1 LEU B 133 72.888 56.026 -29.067 1.00 34.84 B C
 ATOM 5474 CD2 LEU B 133 75.264 55.742 -28.268 1.00 29.27 B C
 ATOM 5475 C LEU B 133 76.134 53.317 -31.857 1.00 34.69 B C
 ATOM 5476 O LEU B 133 76.678 52.395 -31.257 1.00 36.37 B O
 ATOM 5477 N LYS B 134 75.779 53.234 -33.141 1.00 33.33 B N
 ATOM 5478 CA LYS B 134 75.993 52.018 -33.945 1.00 35.81 B C
 ATOM 5479 CB LYS B 134 75.509 52.237 -35.386 1.00 37.14 B C
 ATOM 5480 CG LYS B 134 76.432 53.141 -36.211 1.00 46.43 B C
 ATOM 5481 CD LYS B 134 75.885 53.431 -37.607 1.00 44.56 B C
 ATOM 5482 CE LYS B 134 77.004 53.816 -38.580 1.00 41.71 B C
 ATOM 5483 NZ LYS B 134 76.650 53.405 -39.957 1.00 41.67 B N
 ATOM 5484 C LYS B 134 77.452 51.512 -33.952 1.00 35.23 B C
 ATOM 5485 O LYS B 134 77.698 50.337 -34.223 1.00 40.09 B O
 ATOM 5486 N GLU B 135 78.404 52.390 -33.650 1.00 32.63 B N
 ATOM 5487 CA AGLU B 135 79.821 52.022 -33.698 0.50 36.56 B C
 ATOM 5488 CB AGLU B 135 79.829 52.050 -33.676 0.50 36.80 B C
 ATOM 5489 CG AGLU B 135 80.703 53.267 -33.858 0.50 37.02 B C
 ATOM 5490 CD AGLU B 135 80.674 53.331 -33.756 0.50 37.58 B C
 ATOM 5491 CE AGLU B 135 80.304 54.221 -35.015 0.50 37.03 B C
 ATOM 5492 CF AGLU B 135 80.422 54.168 -35.027 0.50 38.50 B C
 ATOM 5493 CG AGLU B 135 80.492 53.627 -36.407 0.50 38.03 B C
 ATOM 5494 CD BGLU B 135 81.151 55.509 -35.032 0.50 39.75 B C
 ATOM 5495 OE1 AGLU B 135 80.976 52.481 -36.518 0.50 36.37 B O
 ATOM 5496 OE1 BGLU B 135 81.194 56.191 -33.984 0.50 40.21 B O
 ATOM 5497 OE2 BGLU B 135 81.672 55.892 -36.099 0.50 41.10 B O
 ATOM 5498 OE2 AGLU B 135 80.156 54.318 -37.397 0.50 38.97 B O
 ATOM 5499 C GLU B 135 80.227 51.222 -32.448 1.00 39.96 B C
 ATOM 5500 O GLU B 135 81.279 50.566 -32.431 1.00 34.56 B O
 ATOM 5501 N ASP B 136 79.386 51.262 -31.415 1.00 33.09 B N
 ATOM 5502 CA ASP B 136 79.635 50.527 -30.173 1.00 31.38 B C
 ATOM 5503 CB ASP B 136 79.316 51.423 -28.980 1.00 31.58 B C
 ATOM 5504 CG ASP B 136 79.714 50.799 -27.655 1.00 35.43 B C
 ATOM 5505 OD1 ASP B 136 80.066 49.594 -27.612 1.00 44.94 B O
 ATOM 5506 OD2 ASP B 136 79.675 51.530 -26.646 1.00 39.28 B O
 ATOM 5507 C ASP B 136 78.772 49.262 -30.127 1.00 28.89 B C
 ATOM 5508 O ASP B 136 77.660 49.289 -29.610 1.00 26.68 B O
 ATOM 5509 N ILE B 137 79.302 48.161 -30.653 1.00 30.70 B N
 ATOM 5510 CA ILE B 137 78.533 46.934 -30.846 1.00 26.61 B C
 ATOM 5511 CB ILE B 137 79.298 45.911 -31.720 1.00 33.94 B C
 ATOM 5512 CG1 ILE B 137 79.657 46.515 -33.085 1.00 35.20 B C
 ATOM 5513 CD1 ILE B 137 78.435 46.944 -33.870 1.00 34.22 B C
 ATOM 5514 CG2 ILE B 137 78.445 44.688 -31.994 1.00 32.75 B C
 ATOM 5515 C ILE B 137 78.104 46.291 -29.514 1.00 28.02 B C
 ATOM 5516 O ILE B 137 77.012 45.741 -29.427 1.00 26.31 B O
 ATOM 5517 N LYS B 138 78.952 46.374 -28.494 1.00 27.68 B N
 ATOM 5518 CA LYS B 138 78.595 45.940 -27.147 1.00 29.84 B C
 ATOM 5519 CB LYS B 138 79.701 46.263 -26.146 1.00 34.20 B C
 ATOM 5520 CG LYS B 138 80.582 45.100 -25.778 1.00 44.02 B C
 ATOM 5521 CD LYS B 138 81.442 45.464 -24.571 1.00 51.03 B C
 ATOM 5522 CE LYS B 138 81.980 44.226 -23.880 1.00 58.48 B C
 ATOM 5523 NZ LYS B 138 81.557 44.189 -22.456 1.00 57.19 B N
 ATOM 5524 C LYS B 138 77.319 46.610 -26.672 1.00 26.53 B C
 ATOM 5525 O LYS B 138 76.383 45.942 -26.230 1.00 24.26 B O
 ATOM 5526 N ALA B 139 77.294 47.934 -26.775 1.00 26.02 B N
 ATOM 5527 CA ALA B 139 76.172 48.719 -26.304 1.00 22.77 B C
 ATOM 5528 CB ALA B 139 76.506 50.229 -26.326 1.00 17.44 B C
 ATOM 5529 C ALA B 139 74.921 48.429 -27.112 1.00 24.29 B C
 ATOM 5530 O ALA B 139 73.821 48.392 -26.547 1.00 22.75 B O
 ATOM 5531 N ILE B 140 75.076 48.208 -28.420 1.00 23.37 B N
 ATOM 5532 CA ILE B 140 73.914 47.921 -29.284 1.00 22.15 B C
 ATOM 5533 CB ILE B 140 74.262 47.983 -30.794 1.00 21.48 B C
 ATOM 5534 CG1 ILE B 140 74.636 49.407 -31.183 1.00 27.65 B C
 ATOM 5535 CD1 ILE B 140 73.572 50.458 -30.836 1.00 25.53 B C
 ATOM 5536 CG2 ILE B 140 73.077 47.542 -31.634 1.00 22.55 B C

ATOM 5537 C ILE B 140 73.305 46.561 -28.957 1.00 20.16 B C
 ATOM 5538 O ILE B 140 72.093 46.440 -28.858 1.00 22.67 B O
 ATOM 5539 N LEU B 141 74.151 45.549 -28.820 1.00 19.51 B N
 ATOM 5540 CA LEU B 141 73.729 44.264 -28.291 1.00 24.91 B C
 ATOM 5541 CB LEU B 141 74.928 43.352 -28.058 1.00 27.39 B C
 ATOM 5542 CG LEU B 141 75.220 42.377 -29.184 1.00 34.95 B C
 ATOM 5543 CD1 LEU B 141 76.646 41.835 -29.109 1.00 31.07 B C
 ATOM 5544 CD2 LEU B 141 74.202 41.262 -29.108 1.00 33.04 B C
 ATOM 5545 C LEU B 141 72.975 44.416 -26.977 1.00 20.67 B C
 ATOM 5546 O LEU B 141 71.924 43.802 -26.798 1.00 20.92 B O
 ATOM 5547 N SER B 142 73.539 45.170 -26.034 1.00 20.17 B N
 ATOM 5548 CA SER B 142 72.915 45.332 -24.718 1.00 20.30 B C
 ATOM 5549 CB SER B 142 73.777 46.155 -23.768 1.00 23.23 B C
 ATOM 5550 OG SER B 142 74.802 45.361 -23.230 1.00 30.11 B O
 ATOM 5551 C SER B 142 71.563 45.988 -24.829 1.00 18.07 B C
 ATOM 5552 O SER B 142 70.623 45.598 -24.143 1.00 15.63 B O
 ATOM 5553 N LEU B 143 71.466 46.976 -25.707 1.00 16.54 B N
 ATOM 5554 CA LEU B 143 70.191 47.630 -25.962 1.00 17.71 B C
 ATOM 5555 CB LEU B 143 70.407 48.821 -26.885 1.00 18.73 B C
 ATOM 5556 CG LEU B 143 69.179 49.672 -27.189 1.00 21.91 B C
 ATOM 5557 CD1 LEU B 143 68.586 50.367 -25.946 1.00 20.22 B C
 ATOM 5558 CD2 LEU B 143 69.575 50.688 -28.256 1.00 18.60 B C
 ATOM 5559 C LEU B 143 69.147 46.678 -26.558 1.00 17.90 B C
 ATOM 5560 O LEU B 143 67.997 46.671 -26.113 1.00 19.28 B O
 ATOM 5561 N TYR B 144 69.539 45.899 -27.568 1.00 17.16 B N
 ATOM 5562 CA TYR B 144 68.674 44.855 -28.118 1.00 19.80 B C
 ATOM 5563 CB TYR B 144 69.422 44.127 -29.224 1.00 19.05 B C
 ATOM 5564 CG TYR B 144 68.797 42.874 -29.747 1.00 22.04 B C
 ATOM 5565 CD1 TYR B 144 67.817 42.912 -30.727 1.00 23.03 B C
 ATOM 5566 CE1 TYR B 144 67.264 41.752 -31.222 1.00 25.33 B C
 ATOM 5567 CZ TYR B 144 67.707 40.533 -30.727 1.00 27.46 B C
 ATOM 5568 OH TYR B 144 67.193 39.332 -31.164 1.00 37.98 B O
 ATOM 5569 CE2 TYR B 144 68.664 40.489 -29.746 1.00 27.56 B C
 ATOM 5570 CD2 TYR B 144 69.197 41.648 -29.266 1.00 25.78 B C
 ATOM 5571 C TYR B 144 68.220 43.876 -27.016 1.00 19.27 B C
 ATOM 5572 O TYR B 144 67.031 43.595 -26.893 1.00 16.16 B O
 ATOM 5573 N GLU B 145 69.146 43.409 -26.172 1.00 16.42 B N
 ATOM 5574 CA GLU B 145 68.756 42.458 -25.120 1.00 16.71 B C
 ATOM 5575 CB GLU B 145 69.958 41.934 -24.342 1.00 17.86 B C
 ATOM 5576 CG GLU B 145 70.968 41.099 -25.175 1.00 23.74 B C
 ATOM 5577 CD GLU B 145 70.433 39.735 -25.637 1.00 27.87 B C
 ATOM 5578 OE1 GLU B 145 69.241 39.407 -25.369 1.00 29.72 B O
 ATOM 5579 OE2 GLU B 145 71.222 38.977 -26.262 1.00 22.17 B O
 ATOM 5580 C GLU B 145 67.733 43.076 -24.149 1.00 15.36 B C
 ATOM 5581 O GLU B 145 66.758 42.433 -23.782 1.00 17.00 B O
 ATOM 5582 N ALA B 146 67.953 44.331 -23.772 1.00 15.19 B N
 ATOM 5583 CA ALA B 146 67.097 45.031 -22.816 1.00 16.77 B C
 ATOM 5584 CB ALA B 146 67.754 46.372 -22.403 1.00 15.90 B C
 ATOM 5585 C ALA B 146 65.670 45.259 -23.376 1.00 18.70 B C
 ATOM 5586 O ALA B 146 64.674 45.219 -22.630 1.00 16.44 B O
 ATOM 5587 N SER B 147 65.575 45.472 -24.684 1.00 17.99 B N
 ATOM 5588 CA SER B 147 64.289 45.771 -25.309 1.00 19.54 B C
 ATOM 5589 CB SER B 147 64.482 46.091 -26.810 1.00 21.52 B C
 ATOM 5590 OG SER B 147 64.753 44.911 -27.566 1.00 22.75 B O
 ATOM 5591 C SER B 147 63.224 44.657 -25.108 1.00 18.90 B C
 ATOM 5592 O SER B 147 62.018 44.936 -25.070 1.00 20.51 B O
 ATOM 5593 N PHE B 148 63.662 43.415 -24.930 1.00 17.55 B N
 ATOM 5594 CA PHE B 148 62.754 42.301 -24.758 1.00 18.08 B C
 ATOM 5595 CB PHE B 148 63.436 40.969 -25.122 1.00 19.55 B C
 ATOM 5596 CG PHE B 148 63.713 40.846 -26.593 1.00 17.56 B C
 ATOM 5597 CD1 PHE B 148 62.733 40.350 -27.460 1.00 17.90 B C
 ATOM 5598 CE1 PHE B 148 62.947 40.282 -28.835 1.00 19.84 B C
 ATOM 5599 CZ PHE B 148 64.142 40.672 -29.355 1.00 22.18 B C
 ATOM 5600 CE2 PHE B 148 65.147 41.165 -28.489 1.00 21.23 B C
 ATOM 5601 CD2 PHE B 148 64.908 41.241 -27.113 1.00 18.18 B C
 ATOM 5602 C PHE B 148 62.131 42.286 -23.373 1.00 20.15 B C

ATOM 5603 O PHE B 148 61.179 41.550 -23.139 1.00 16.91 B O
 ATOM 5604 N LEU B 149 62.610 43.146 -22.466 1.00 19.45 B N
 ATOM 5605 CA LEU B 149 61.991 43.233 -21.136 1.00 17.46 B C
 ATOM 5606 CB LEU B 149 63.058 43.450 -20.074 1.00 17.26 B C
 ATOM 5607 CG LEU B 149 63.793 42.153 -19.705 1.00 17.95 B C
 ATOM 5608 CD1 LEU B 149 64.991 41.884 -20.643 1.00 18.08 B C
 ATOM 5609 CD2 LEU B 149 64.241 42.230 -18.227 1.00 16.84 B C
 ATOM 5610 C LEU B 149 60.885 44.267 -21.062 1.00 18.68 B C
 ATOM 5611 O LEU B 149 60.398 44.581 -19.969 1.00 16.29 B O
 ATOM 5612 N ALA B 150 60.452 44.760 -22.232 1.00 18.92 B N
 ATOM 5613 CA ALA B 150 59.486 45.834 -22.293 1.00 21.18 B C
 ATOM 5614 CB ALA B 150 59.368 46.350 -23.730 1.00 20.05 B C
 ATOM 5615 C ALA B 150 58.108 45.418 -21.764 1.00 21.68 B C
 ATOM 5616 O ALA B 150 57.698 44.242 -21.839 1.00 21.33 B O
 ATOM 5617 N LEU B 151 57.405 46.408 -21.241 1.00 19.58 B N
 ATOM 5618 CA LEU B 151 56.006 46.317 -20.869 1.00 21.35 B C
 ATOM 5619 CB LEU B 151 55.788 46.978 -19.504 1.00 23.78 B C
 ATOM 5620 CG LEU B 151 56.706 46.538 -18.361 1.00 27.90 B C
 ATOM 5621 CD1 LEU B 151 56.345 47.224 -17.046 1.00 23.70 B C
 ATOM 5622 CD2 LEU B 151 56.694 45.043 -18.178 1.00 22.80 B C
 ATOM 5623 C LEU B 151 55.156 47.052 -21.920 1.00 20.12 B C
 ATOM 5624 O LEU B 151 55.680 47.794 -22.746 1.00 24.87 B O
 ATOM 5625 N GLU B 152 53.846 46.847 -21.889 1.00 19.20 B N
 ATOM 5626 CA GLU B 152 52.956 47.556 -22.823 1.00 23.41 B C
 ATOM 5627 CB GLU B 152 51.509 47.169 -22.577 1.00 29.93 B C
 ATOM 5628 CG GLU B 152 51.081 45.890 -23.215 1.00 42.29 B C
 ATOM 5629 CD GLU B 152 49.564 45.763 -23.216 1.00 51.02 B C
 ATOM 5630 OE1 GLU B 152 48.910 46.406 -24.063 1.00 46.01 B O
 ATOM 5631 OE2 GLU B 152 49.036 45.042 -22.350 1.00 48.21 B O
 ATOM 5632 C GLU B 152 53.082 49.065 -22.609 1.00 22.58 B C
 ATOM 5633 O GLU B 152 53.146 49.515 -21.465 1.00 21.70 B O
 ATOM 5634 N GLY B 153 53.146 49.822 -23.695 1.00 24.58 B N
 ATOM 5635 CA GLY B 153 53.226 51.285 -23.635 1.00 24.61 B C
 ATOM 5636 C GLY B 153 54.660 51.812 -23.622 1.00 27.73 B C
 ATOM 5637 O GLY B 153 54.876 53.011 -23.701 1.00 26.02 B O
 ATOM 5638 N GLU B 154 55.657 50.929 -23.517 1.00 23.81 B N
 ATOM 5639 CA GLU B 154 57.041 51.368 -23.509 1.00 22.75 B C
 ATOM 5640 CB GLU B 154 57.900 50.488 -22.600 1.00 27.37 B C
 ATOM 5641 CG GLU B 154 57.580 50.713 -21.102 1.00 27.77 B C
 ATOM 5642 CD GLU B 154 58.439 49.874 -20.166 1.00 28.06 B C
 ATOM 5643 OE1 GLU B 154 58.954 48.821 -20.597 1.00 28.68 B O
 ATOM 5644 OE2 GLU B 154 58.601 50.253 -18.984 1.00 27.35 B O
 ATOM 5645 C GLU B 154 57.555 51.450 -24.949 1.00 26.56 B C
 ATOM 5646 O GLU B 154 58.352 50.647 -25.410 1.00 19.20 B O
 ATOM 5647 N ASN B 155 57.086 52.480 -25.648 1.00 30.84 B N
 ATOM 5648 CA ASN B 155 57.417 52.689 -27.050 1.00 25.67 B C
 ATOM 5649 CB ASN B 155 56.641 53.907 -27.574 1.00 28.27 B C
 ATOM 5650 CG ASN B 155 56.924 55.162 -26.758 1.00 32.90 B C
 ATOM 5651 OD1 ASN B 155 56.439 55.307 -25.636 1.00 31.26 B O
 ATOM 5652 ND2 ASN B 155 57.741 56.055 -27.303 1.00 36.59 B N
 ATOM 5653 C ASN B 155 58.913 52.902 -27.304 1.00 23.66 B C
 ATOM 5654 O ASN B 155 59.417 52.539 -28.365 1.00 27.16 B O
 ATOM 5655 N ILE B 156 59.626 53.500 -26.351 1.00 22.77 B N
 ATOM 5656 CA ILE B 156 61.063 53.706 -26.506 1.00 21.62 B C
 ATOM 5657 CB ILE B 156 61.690 54.544 -25.351 1.00 27.45 B C
 ATOM 5658 CG1 ILE B 156 61.075 55.949 -25.305 1.00 27.27 B C
 ATOM 5659 CD1 ILE B 156 61.899 56.951 -24.487 1.00 26.26 B C
 ATOM 5660 CG2 ILE B 156 63.182 54.702 -25.563 1.00 22.98 B C
 ATOM 5661 C ILE B 156 61.805 52.384 -26.634 1.00 22.91 B C
 ATOM 5662 O ILE B 156 62.715 52.268 -27.456 1.00 24.66 B O
 ATOM 5663 N LEU B 157 61.409 51.382 -25.843 1.00 24.03 B N
 ATOM 5664 CA LEU B 157 62.023 50.062 -25.927 1.00 24.42 B C
 ATOM 5665 CB LEU B 157 61.569 49.153 -24.770 1.00 21.56 B C
 ATOM 5666 CG LEU B 157 61.977 49.634 -23.378 1.00 26.08 B C
 ATOM 5667 CD1 LEU B 157 61.751 48.552 -22.330 1.00 27.55 B C
 ATOM 5668 CD2 LEU B 157 63.413 50.040 -23.385 1.00 26.42 B C

ATOM 5669 C LEU B 157 61.722 49.397 -27.254 1.00 23.32 B C
 ATOM 5670 O LEU B 157 62.597 48.762 -27.832 1.00 23.85 B O
 ATOM 5671 N ASP B 158 60.492 49.545 -27.740 1.00 22.27 B N
 ATOM 5672 CA ASP B 158 60.148 49.059 -29.075 1.00 25.95 B C
 ATOM 5673 CB ASP B 158 58.651 49.287 -29.352 1.00 27.41 B C
 ATOM 5674 CG ASP B 158 57.754 48.257 -28.632 1.00 41.98 B C
 ATOM 5675 OD1 ASP B 158 58.256 47.220 -28.150 1.00 46.41 B O
 ATOM 5676 OD2 ASP B 158 56.535 48.476 -28.544 1.00 45.63 B O
 ATOM 5677 C ASP B 158 61.017 49.710 -30.155 1.00 22.57 B C
 ATOM 5678 O ASP B 158 61.518 49.045 -31.062 1.00 22.80 B O
 ATOM 5679 N GLU B 159 61.216 51.007 -30.022 1.00 25.58 B N
 ATOM 5680 CA GLU B 159 62.062 51.764 -30.941 1.00 29.22 B C
 ATOM 5681 CB GLU B 159 61.980 53.261 -30.619 1.00 33.36 B C
 ATOM 5682 CG GLU B 159 60.610 53.898 -30.909 1.00 42.11 B C
 ATOM 5683 CD GLU B 159 60.382 55.249 -30.206 1.00 43.81 B C
 ATOM 5684 OE1 GLU B 159 61.347 56.017 -29.991 1.00 48.43 B O
 ATOM 5685 OE2 GLU B 159 59.213 55.547 -29.882 1.00 51.64 B O
 ATOM 5686 C GLU B 159 63.513 51.275 -30.836 1.00 26.50 B C
 ATOM 5687 O GLU B 159 64.193 51.124 -31.843 1.00 22.26 B O
 ATOM 5688 N ALA B 160 63.971 51.011 -29.614 1.00 22.74 B N
 ATOM 5689 CA ALA B 160 65.339 50.514 -29.408 1.00 25.08 B C
 ATOM 5690 CB ALA B 160 65.658 50.332 -27.919 1.00 26.19 B C
 ATOM 5691 C ALA B 160 65.571 49.214 -30.143 1.00 25.21 B C
 ATOM 5692 O ALA B 160 66.610 49.051 -30.778 1.00 24.90 B O
 ATOM 5693 N LYS B 161 64.607 48.295 -30.060 1.00 22.51 B N
 ATOM 5694 CA LYS B 161 64.740 47.011 -30.734 1.00 24.00 B C
 ATOM 5695 CB LYS B 161 63.550 46.091 -30.422 1.00 24.85 B C
 ATOM 5696 CG LYS B 161 63.715 44.676 -30.956 1.00 25.57 B C
 ATOM 5697 CD LYS B 161 62.422 43.873 -30.927 1.00 30.04 B C
 ATOM 5698 CE LYS B 161 61.946 43.588 -29.482 1.00 30.85 B C
 ATOM 5699 NZ LYS B 161 60.562 42.972 -29.451 1.00 32.20 B N
 ATOM 5700 C LYS B 161 64.884 47.200 -32.245 1.00 21.81 B C
 ATOM 5701 O LYS B 161 65.754 46.590 -32.866 1.00 21.50 B O
 ATOM 5702 N VAL B 162 64.036 48.052 -32.813 1.00 23.96 B N
 ATOM 5703 CA VAL B 162 64.039 48.303 -34.258 1.00 24.15 B C
 ATOM 5704 CB VAL B 162 62.855 49.245 -34.678 1.00 22.34 B C
 ATOM 5705 CG1 VAL B 162 63.017 49.744 -36.132 1.00 21.25 B C
 ATOM 5706 CG2 VAL B 162 61.506 48.522 -34.475 1.00 21.74 B C
 ATOM 5707 C VAL B 162 65.395 48.884 -34.642 1.00 25.05 B C
 ATOM 5708 O VAL B 162 66.068 48.377 -35.545 1.00 26.49 B O
 ATOM 5709 N PHE B 163 65.804 49.924 -33.923 1.00 24.34 B N
 ATOM 5710 CA PHE B 163 67.139 50.515 -34.082 1.00 24.16 B C
 ATOM 5711 CB PHE B 163 67.339 51.619 -33.040 1.00 24.78 B C
 ATOM 5712 CG PHE B 163 68.696 52.250 -33.061 1.00 24.62 B C
 ATOM 5713 CD1 PHE B 163 69.011 53.217 -34.004 1.00 31.24 B C
 ATOM 5714 CE1 PHE B 163 70.252 53.814 -34.016 1.00 29.93 B C
 ATOM 5715 CZ PHE B 163 71.214 53.454 -33.065 1.00 32.86 B C
 ATOM 5716 CE2 PHE B 163 70.919 52.494 -32.121 1.00 31.64 B C
 ATOM 5717 CD2 PHE B 163 69.655 51.901 -32.115 1.00 29.49 B C
 ATOM 5718 C PHE B 163 68.271 49.495 -33.981 1.00 26.28 B C
 ATOM 5719 O PHE B 163 69.100 49.391 -34.889 1.00 24.95 B O
 ATOM 5720 N ALA B 164 68.320 48.751 -32.876 1.00 25.01 B N
 ATOM 5721 CA ALA B 164 69.425 47.832 -32.638 1.00 21.33 B C
 ATOM 5722 CB ALA B 164 69.322 47.173 -31.206 1.00 21.86 B C
 ATOM 5723 C ALA B 164 69.504 46.751 -33.704 1.00 19.03 B C
 ATOM 5724 O ALA B 164 70.586 46.467 -34.213 1.00 21.68 B O
 ATOM 5725 N ILE B 165 68.373 46.131 -34.026 1.00 21.18 B N
 ATOM 5726 CA ILE B 165 68.323 45.060 -35.045 1.00 25.74 B C
 ATOM 5727 CB ILE B 165 66.890 44.534 -35.246 1.00 32.13 B C
 ATOM 5728 CG1 ILE B 165 66.488 43.594 -34.114 1.00 37.00 B C
 ATOM 5729 CD1 ILE B 165 64.986 43.262 -34.103 1.00 31.74 B C
 ATOM 5730 CG2 ILE B 165 66.749 43.785 -36.570 1.00 36.42 B C
 ATOM 5731 C ILE B 165 68.871 45.550 -36.405 1.00 28.32 B C
 ATOM 5732 O ILE B 165 69.575 44.812 -37.100 1.00 25.65 B O
 ATOM 5733 N SER B 166 68.572 46.800 -36.757 1.00 31.22 B N
 ATOM 5734 CA ASER B 166 69.023 47.393 -38.027 0.50 31.91 B C

ATOM 5735 CA BSER B 166 69.022 47.367 -38.033 0.50 33.95 B C
 ATOM 5736 CB ASER B 166 68.533 48.843 -38.167 0.50 27.64 B C
 ATOM 5737 CB BSER B 166 68.491 48.787 -38.213 0.50 31.99 B C
 ATOM 5738 OG ASER B 166 69.361 49.750 -37.451 0.50 23.79 B O
 ATOM 5739 OG BSER B 166 67.081 48.793 -38.137 0.50 32.33 B O
 ATOM 5740 C SER B 166 70.539 47.374 -38.154 1.00 33.66 B C
 ATOM 5741 O SER B 166 71.077 47.051 -39.205 1.00 34.05 B O
 ATOM 5742 N HIS B 167 71.223 47.729 -37.074 1.00 33.02 B N
 ATOM 5743 CA HIS B 167 72.675 47.835 -37.121 1.00 34.21 B C
 ATOM 5744 CB HIS B 167 73.151 48.973 -36.214 1.00 33.91 B C
 ATOM 5745 CG HIS B 167 72.612 50.339 -36.628 1.00 45.20 B C
 ATOM 5746 ND1 HIS B 167 72.967 50.938 -37.785 1.00 48.79 B N
 ATOM 5747 CE1 HIS B 167 72.322 52.119 -37.898 1.00 47.04 B C
 ATOM 5748 NE2 HIS B 167 71.547 52.277 -36.812 1.00 50.51 B N
 ATOM 5749 CD2 HIS B 167 71.697 51.197 -36.009 1.00 48.48 B C
 ATOM 5750 C HIS B 167 73.355 46.525 -36.836 1.00 34.42 B C
 ATOM 5751 O HIS B 167 74.508 46.339 -37.218 1.00 37.01 B O
 ATOM 5752 N LEU B 168 72.646 45.588 -36.204 1.00 32.96 B N
 ATOM 5753 CA LEU B 168 73.216 44.270 -35.896 1.00 28.12 B C
 ATOM 5754 CB LEU B 168 72.470 43.593 -34.725 1.00 25.45 B C
 ATOM 5755 CG LEU B 168 72.682 44.212 -33.331 1.00 26.35 B C
 ATOM 5756 CD1 LEU B 168 71.704 43.639 -32.309 1.00 26.86 B C
 ATOM 5757 CD2 LEU B 168 74.113 44.036 -32.855 1.00 21.75 B C
 ATOM 5758 C LEU B 168 73.262 43.328 -37.108 1.00 32.22 B C
 ATOM 5759 O LEU B 168 74.273 42.653 -37.329 1.00 36.39 B O
 ATOM 5760 N LYS B 169 72.191 43.259 -37.889 1.00 34.18 B N
 ATOM 5761 CA LYS B 169 72.147 42.236 -38.950 1.00 48.30 B C
 ATOM 5762 CB LYS B 169 70.714 41.853 -39.357 1.00 53.20 B C
 ATOM 5763 CG LYS B 169 69.813 42.939 -39.906 1.00 58.88 B C
 ATOM 5764 CD LYS B 169 68.360 42.442 -39.832 1.00 68.90 B C
 ATOM 5765 CE LYS B 169 67.344 43.516 -40.162 1.00 70.33 B C
 ATOM 5766 NZ LYS B 169 67.345 43.859 -41.605 1.00 68.49 B N
 ATOM 5767 C LYS B 169 73.025 42.535 -40.167 1.00 45.13 B C
 ATOM 5768 O LYS B 169 73.391 41.630 -40.912 1.00 43.68 B O
 ATOM 5769 N GLU B 170 73.417 43.783 -40.342 1.00 42.63 B N
 ATOM 5770 CA GLU B 170 74.257 44.114 -41.484 1.00 56.02 B C
 ATOM 5771 CB GLU B 170 73.871 45.483 -42.039 1.00 60.46 B C
 ATOM 5772 CG GLU B 170 74.152 46.645 -41.096 1.00 69.20 B C
 ATOM 5773 CD GLU B 170 73.483 47.941 -41.527 1.00 77.95 B C
 ATOM 5774 OE1 GLU B 170 72.775 47.954 -42.559 1.00 83.41 B O
 ATOM 5775 OE2 GLU B 170 73.667 48.955 -40.823 1.00 76.71 B O
 ATOM 5776 C GLU B 170 75.745 44.062 -41.126 1.00 54.62 B C
 ATOM 5777 O GLU B 170 76.570 44.610 -41.852 1.00 59.09 B O
 ATOM 5778 N LEU B 171 76.089 43.398 -40.023 1.00 52.49 B N
 ATOM 5779 CA LEU B 171 77.473 43.384 -39.535 1.00 48.96 B C
 ATOM 5780 CB LEU B 171 77.527 43.246 -38.012 1.00 47.66 B C
 ATOM 5781 CG LEU B 171 77.149 44.474 -37.190 1.00 50.18 B C
 ATOM 5782 CD1 LEU B 171 77.310 44.165 -35.705 1.00 52.90 B C
 ATOM 5783 CD2 LEU B 171 77.975 45.689 -37.577 1.00 40.88 B C
 ATOM 5784 C LEU B 171 78.299 42.265 -40.151 1.00 50.12 B C
 ATOM 5785 O LEU B 171 77.885 41.107 -40.152 1.00 47.31 B O
 ATOM 5786 N SER B 172 79.484 42.632 -40.640 1.00 50.94 B N
 ATOM 5787 CA SER B 172 80.434 41.693 -41.222 1.00 51.81 B C
 ATOM 5788 CB SER B 172 81.237 42.397 -42.327 1.00 55.69 B C
 ATOM 5789 OG SER B 172 82.034 41.484 -43.058 1.00 57.01 B O
 ATOM 5790 C SER B 172 81.387 41.182 -40.146 1.00 52.54 B C
 ATOM 5791 O SER B 172 81.985 41.983 -39.419 1.00 44.20 B O
 ATOM 5792 N GLU B 173 81.533 39.858 -40.048 1.00 42.14 B N
 ATOM 5793 CA GLU B 173 82.523 39.245 -39.148 1.00 49.56 B C
 ATOM 5794 CB GLU B 173 82.579 37.724 -39.349 1.00 58.65 B C
 ATOM 5795 CG GLU B 173 83.863 37.069 -38.808 1.00 69.97 B C
 ATOM 5796 CD GLU B 173 83.738 35.574 -38.576 1.00 74.14 B C
 ATOM 5797 OE1 GLU B 173 82.704 34.977 -38.947 1.00 77.61 B O
 ATOM 5798 OE2 GLU B 173 84.688 34.994 -38.011 1.00 83.80 B O
 ATOM 5799 C GLU B 173 83.909 39.851 -39.367 1.00 51.07 B C
 ATOM 5800 O GLU B 173 84.649 40.113 -38.410 1.00 40.49 B O

ATOM 5801 N GLU B 174 84.241 40.048 -40.642 1.00 59.07 B N
 ATOM 5802 CA GLU B 174 85.445 40.753 -41.054 1.00 57.26 B C
 ATOM 5803 CB GLU B 174 85.308 41.184 -42.514 1.00 70.84 B C
 ATOM 5804 CG GLU B 174 85.534 40.070 -43.512 1.00 75.42 B C
 ATOM 5805 CD GLU B 174 87.006 39.780 -43.695 1.00 76.79 B C
 ATOM 5806 OE1 GLU B 174 87.636 40.410 -44.571 1.00 71.71 B O
 ATOM 5807 OE2 GLU B 174 87.536 38.931 -42.949 1.00 74.53 B O
 ATOM 5808 C GLU B 174 85.696 41.986 -40.202 1.00 55.82 B C
 ATOM 5809 O GLU B 174 86.756 42.128 -39.589 1.00 53.13 B O
 ATOM 5810 N LYS B 175 84.703 42.865 -40.155 1.00 59.43 B N
 ATOM 5811 CA LYS B 175 84.865 44.163 -39.511 1.00 59.17 B C
 ATOM 5812 CB LYS B 175 83.782 45.132 -39.989 1.00 67.78 B C
 ATOM 5813 CG LYS B 175 83.866 45.355 -41.489 1.00 79.99 B C
 ATOM 5814 CD LYS B 175 82.941 46.430 -42.009 1.00 87.78 B C
 ATOM 5815 CE LYS B 175 83.024 46.483 -43.530 1.00 79.47 B C
 ATOM 5816 NZ LYS B 175 82.498 47.758 -44.087 1.00 82.96 B N
 ATOM 5817 C LYS B 175 84.898 44.074 -37.990 1.00 52.80 B C
 ATOM 5818 O LYS B 175 85.698 44.756 -37.354 1.00 46.32 B O
 ATOM 5819 N ILE B 176 84.065 43.216 -37.403 1.00 47.03 B N
 ATOM 5820 CA ILE B 176 83.947 43.172 -35.934 1.00 41.39 B C
 ATOM 5821 CB ILE B 176 82.467 43.162 -35.483 1.00 37.31 B C
 ATOM 5822 CG1 ILE B 176 81.765 41.858 -35.896 1.00 40.17 B C
 ATOM 5823 CD1 ILE B 176 80.314 41.783 -35.465 1.00 36.72 B C
 ATOM 5824 CG2 ILE B 176 81.740 44.395 -36.034 1.00 32.47 B C
 ATOM 5825 C ILE B 176 84.721 42.042 -35.233 1.00 38.72 B C
 ATOM 5826 O ILE B 176 84.978 42.124 -34.029 1.00 36.23 B O
 ATOM 5827 N GLY B 177 85.083 40.996 -35.974 1.00 37.16 B N
 ATOM 5828 CA GLY B 177 85.806 39.860 -35.401 1.00 38.29 B C
 ATOM 5829 C GLY B 177 84.880 38.695 -35.094 1.00 44.77 B C
 ATOM 5830 O GLY B 177 83.673 38.878 -34.937 1.00 41.96 B O
 ATOM 5831 N LYS B 178 85.468 37.504 -34.985 1.00 43.62 B N
 ATOM 5832 CA LYS B 178 84.735 36.235 -34.868 1.00 41.16 B C
 ATOM 5833 CB LYS B 178 85.733 35.073 -34.955 1.00 45.58 B C
 ATOM 5834 CG LYS B 178 85.133 33.675 -34.886 1.00 52.04 B C
 ATOM 5835 CD LYS B 178 86.235 32.622 -34.939 1.00 60.26 B C
 ATOM 5836 CE LYS B 178 85.712 31.238 -34.594 1.00 65.99 B C
 ATOM 5837 NZ LYS B 178 84.777 30.719 -35.620 1.00 68.96 B N
 ATOM 5838 C LYS B 178 83.910 36.127 -33.578 1.00 33.31 B C
 ATOM 5839 O LYS B 178 82.724 35.832 -33.619 1.00 33.33 B O
 ATOM 5840 N GLU B 179 84.563 36.366 -32.447 1.00 35.34 B N
 ATOM 5841 CA GLU B 179 83.946 36.349 -31.121 1.00 42.45 B C
 ATOM 5842 CB GLU B 179 85.001 36.767 -30.100 1.00 45.16 B C
 ATOM 5843 CG GLU B 179 84.500 37.192 -28.740 1.00 57.61 B C
 ATOM 5844 CD GLU B 179 85.651 37.498 -27.792 1.00 71.05 B C
 ATOM 5845 OE1 GLU B 179 86.814 37.166 -28.129 1.00 62.84 B O
 ATOM 5846 OE2 GLU B 179 85.398 38.077 -26.713 1.00 92.44 B O
 ATOM 5847 C GLU B 179 82.705 37.247 -31.028 1.00 43.58 B C
 ATOM 5848 O GLU B 179 81.631 36.815 -30.558 1.00 34.19 B O
 ATOM 5849 N LEU B 180 82.846 38.483 -31.497 1.00 36.50 B N
 ATOM 5850 CA LEU B 180 81.737 39.417 -31.473 1.00 35.40 B C
 ATOM 5851 CB LEU B 180 82.231 40.848 -31.626 1.00 38.16 B C
 ATOM 5852 CG LEU B 180 81.318 41.863 -30.940 1.00 40.07 B C
 ATOM 5853 CD1 LEU B 180 81.242 41.604 -29.421 1.00 37.91 B C
 ATOM 5854 CD2 LEU B 180 81.786 43.286 -31.253 1.00 37.86 B C
 ATOM 5855 C LEU B 180 80.645 39.067 -32.508 1.00 37.86 B C
 ATOM 5856 O LEU B 180 79.455 39.223 -32.224 1.00 34.14 B O
 ATOM 5857 N ALA B 181 81.027 38.554 -33.677 1.00 38.02 B N
 ATOM 5858 CA ALA B 181 80.029 38.064 -34.650 1.00 30.09 B C
 ATOM 5859 CB ALA B 181 80.692 37.689 -35.963 1.00 29.54 B C
 ATOM 5860 C ALA B 181 79.244 36.869 -34.099 1.00 28.27 B C
 ATOM 5861 O ALA B 181 78.053 36.704 -34.385 1.00 23.95 B O
 ATOM 5862 N GLU B 182 79.908 36.013 -33.331 1.00 27.80 B N
 ATOM 5863 CA GLU B 182 79.213 34.871 -32.740 1.00 31.93 B C
 ATOM 5864 CB GLU B 182 80.199 33.842 -32.161 1.00 37.75 B C
 ATOM 5865 CG GLU B 182 80.576 32.728 -33.159 1.00 46.68 B C
 ATOM 5866 CD GLU B 182 82.013 32.202 -32.999 1.00 56.06 B C

ATOM 5867 OE1 GLU B 182 82.650 32.451 -31.950 1.00 57.60 B O
 ATOM 5868 OE2 GLU B 182 82.510 31.538 -33.937 1.00 62.66 B O
 ATOM 5869 C GLU B 182 78.214 35.371 -31.687 1.00 25.88 B C
 ATOM 5870 O GLU B 182 77.116 34.850 -31.595 1.00 26.72 B O
 ATOM 5871 N GLN B 183 78.590 36.398 -30.925 1.00 24.20 B N
 ATOM 5872 CA GLN B 183 77.686 36.984 -29.935 1.00 22.87 B C
 ATOM 5873 CB GLN B 183 78.387 38.040 -29.052 1.00 23.49 B C
 ATOM 5874 CG GLN B 183 79.385 37.484 -27.988 1.00 25.76 B C
 ATOM 5875 CD GLN B 183 78.718 36.735 -26.796 1.00 36.22 B C
 ATOM 5876 OE1 GLN B 183 77.488 36.781 -26.581 1.00 39.28 B O
 ATOM 5877 NE2 GLN B 183 79.547 36.040 -26.010 1.00 27.88 B N
 ATOM 5878 C GLN B 183 76.462 37.581 -30.641 1.00 20.79 B C
 ATOM 5879 O GLN B 183 75.328 37.342 -30.231 1.00 18.96 B O
 ATOM 5880 N VAL B 184 76.699 38.317 -31.723 1.00 18.41 B N
 ATOM 5881 CA VAL B 184 75.615 38.956 -32.459 1.00 22.44 B C
 ATOM 5882 CB VAL B 184 76.134 39.908 -33.560 1.00 21.83 B C
 ATOM 5883 CG1 VAL B 184 74.959 40.418 -34.416 1.00 25.83 B C
 ATOM 5884 CG2 VAL B 184 76.922 41.070 -32.924 1.00 21.84 B C
 ATOM 5885 C VAL B 184 74.690 37.916 -33.059 1.00 22.10 B C
 ATOM 5886 O VAL B 184 73.473 38.058 -32.971 1.00 27.26 B O
 ATOM 5887 N ASN B 185 75.256 36.858 -33.646 1.00 24.42 B N
 ATOM 5888 CA ASN B 185 74.431 35.789 -34.243 1.00 22.70 B C
 ATOM 5889 CB ASN B 185 75.286 34.822 -35.055 1.00 25.47 B C
 ATOM 5890 CG ASN B 185 75.910 35.487 -36.292 1.00 33.07 B C
 ATOM 5891 OD1 ASN B 185 75.334 36.406 -36.882 1.00 34.50 B O
 ATOM 5892 ND2 ASN B 185 77.112 35.044 -36.655 1.00 27.32 B N
 ATOM 5893 C ASN B 185 73.624 35.022 -33.207 1.00 22.45 B C
 ATOM 5894 O ASN B 185 72.478 34.684 -33.438 1.00 21.71 B O
 ATOM 5895 N HIS B 186 74.215 34.770 -32.050 1.00 19.36 B N
 ATOM 5896 CA HIS B 186 73.499 34.086 -30.992 1.00 21.89 B C
 ATOM 5897 CB HIS B 186 74.465 33.852 -29.845 1.00 20.44 B C
 ATOM 5898 CG HIS B 186 73.887 33.118 -28.679 1.00 20.44 B C
 ATOM 5899 ND1 HIS B 186 73.618 31.798 -28.715 1.00 18.19 B N
 ATOM 5900 CE1 HIS B 186 73.153 31.411 -27.516 1.00 22.14 B C
 ATOM 5901 NE2 HIS B 186 73.154 32.481 -26.694 1.00 19.30 B N
 ATOM 5902 CD2 HIS B 186 73.606 33.548 -27.379 1.00 23.03 B C
 ATOM 5903 C HIS B 186 72.304 34.932 -30.579 1.00 22.29 B C
 ATOM 5904 O HIS B 186 71.182 34.436 -30.457 1.00 22.93 B O
 ATOM 5905 N ALA B 187 72.534 36.235 -30.422 1.00 21.36 B N
 ATOM 5906 CA ALA B 187 71.490 37.178 -30.007 1.00 20.58 B C
 ATOM 5907 CB ALA B 187 72.124 38.559 -29.786 1.00 18.30 B C
 ATOM 5908 C ALA B 187 70.331 37.265 -31.017 1.00 22.35 B C
 ATOM 5909 O ALA B 187 69.153 37.323 -30.633 1.00 20.93 B O
 ATOM 5910 N LEU B 188 70.681 37.291 -32.302 1.00 22.80 B N
 ATOM 5911 CA LEU B 188 69.690 37.432 -33.372 1.00 24.02 B C
 ATOM 5912 CB LEU B 188 70.352 37.870 -34.690 1.00 25.03 B C
 ATOM 5913 CG LEU B 188 70.966 39.274 -34.681 1.00 25.80 B C
 ATOM 5914 CD1 LEU B 188 71.784 39.523 -35.920 1.00 25.59 B C
 ATOM 5915 CD2 LEU B 188 69.896 40.343 -34.546 1.00 26.13 B C
 ATOM 5916 C LEU B 188 68.918 36.139 -33.529 1.00 25.43 B C
 ATOM 5917 O LEU B 188 67.736 36.173 -33.805 1.00 28.67 B O
 ATOM 5918 N GLU B 189 69.556 35.000 -33.279 1.00 25.97 B N
 ATOM 5919 CA GLU B 189 68.823 33.739 -33.192 1.00 24.23 B C
 ATOM 5920 CB GLU B 189 69.789 32.591 -32.848 1.00 22.91 B C
 ATOM 5921 CG GLU B 189 69.154 31.206 -32.838 1.00 27.18 B C
 ATOM 5922 CD GLU B 189 70.073 30.113 -32.302 1.00 37.99 B C
 ATOM 5923 OE1 GLU B 189 70.636 30.254 -31.179 1.00 34.64 B O
 ATOM 5924 OE2 GLU B 189 70.220 29.090 -33.003 1.00 38.22 B O
 ATOM 5925 C GLU B 189 67.659 33.839 -32.160 1.00 26.47 B C
 ATOM 5926 O GLU B 189 66.497 33.540 -32.467 1.00 21.27 B O
 ATOM 5927 N LEU B 190 67.968 34.235 -30.932 1.00 22.17 B N
 ATOM 5928 CA LEU B 190 66.943 34.387 -29.896 1.00 20.33 B C
 ATOM 5929 CB LEU B 190 66.553 33.018 -29.345 1.00 17.23 B C
 ATOM 5930 CG LEU B 190 65.348 32.872 -28.434 1.00 18.56 B C
 ATOM 5931 CD1 LEU B 190 64.025 33.102 -29.244 1.00 19.80 B C
 ATOM 5932 CD2 LEU B 190 65.366 31.442 -27.832 1.00 18.21 B C

ATOM 5933 C LEU B 190 67.575 35.203 -28.765 1.00 20.27 B C
 ATOM 5934 O LEU B 190 68.699 34.959 -28.379 1.00 17.38 B O
 ATOM 5935 N PRO B 191 66.858 36.149 -28.221 1.00 17.86 B N
 ATOM 5936 CA PRO B 191 67.456 36.948 -27.164 1.00 16.52 B C
 ATOM 5937 CB PRO B 191 66.496 38.137 -27.063 1.00 19.92 B C
 ATOM 5938 CG PRO B 191 65.224 37.601 -27.464 1.00 19.34 B C
 ATOM 5939 CD PRO B 191 65.550 36.666 -28.621 1.00 19.66 B C
 ATOM 5940 C PRO B 191 67.511 36.262 -25.844 1.00 18.58 B C
 ATOM 5941 O PRO B 191 66.763 35.292 -25.605 1.00 21.63 B O
 ATOM 5942 N LEU B 192 68.375 36.772 -24.967 1.00 19.06 B N
 ATOM 5943 CA LEU B 192 68.601 36.175 -23.667 1.00 19.22 B C
 ATOM 5944 CB LEU B 192 69.528 37.033 -22.797 1.00 24.31 B C
 ATOM 5945 CG LEU B 192 71.015 36.962 -23.073 1.00 33.33 B C
 ATOM 5946 CD1 LEU B 192 71.710 38.156 -22.370 1.00 30.34 B C
 ATOM 5947 CD2 LEU B 192 71.565 35.596 -22.603 1.00 26.99 B C
 ATOM 5948 C LEU B 192 67.322 35.980 -22.898 1.00 19.34 B C
 ATOM 5949 O LEU B 192 67.139 34.963 -22.257 1.00 16.96 B O
 ATOM 5950 N HIS B 193 66.459 36.983 -22.949 1.00 15.46 B N
 ATOM 5951 CA HIS B 193 65.235 36.966 -22.174 1.00 18.69 B C
 ATOM 5952 CB HIS B 193 64.544 38.336 -22.282 1.00 15.11 B C
 ATOM 5953 CG HIS B 193 63.405 38.528 -21.297 1.00 15.94 B C
 ATOM 5954 ND1 HIS B 193 63.574 38.450 -19.952 1.00 18.12 B N
 ATOM 5955 CE1 HIS B 193 62.387 38.650 -19.339 1.00 17.94 B C
 ATOM 5956 NE2 HIS B 193 61.468 38.902 -20.292 1.00 18.67 B N
 ATOM 5957 CD2 HIS B 193 62.071 38.835 -21.506 1.00 16.13 B C
 ATOM 5958 C HIS B 193 64.294 35.838 -22.558 1.00 13.46 B C
 ATOM 5959 O HIS B 193 63.440 35.441 -21.772 1.00 15.85 B O
 ATOM 5960 N ARG B 194 64.435 35.332 -23.771 1.00 13.24 B N
 ATOM 5961 CA ARG B 194 63.605 34.246 -24.281 1.00 14.54 B C
 ATOM 5962 CB ARG B 194 63.098 34.605 -25.686 1.00 15.59 B C
 ATOM 5963 CG ARG B 194 62.187 35.795 -25.690 1.00 15.21 B C
 ATOM 5964 CD ARG B 194 61.533 36.037 -27.017 1.00 17.56 B C
 ATOM 5965 NE ARG B 194 60.702 37.247 -26.963 1.00 19.45 B N
 ATOM 5966 CZ ARG B 194 60.048 37.772 -27.995 1.00 22.26 B C
 ATOM 5967 NH1 ARG B 194 60.111 37.194 -29.191 1.00 20.50 B N
 ATOM 5968 NH2 ARG B 194 59.276 38.847 -27.803 1.00 19.22 B N
 ATOM 5969 C ARG B 194 64.269 32.862 -24.328 1.00 15.56 B C
 ATOM 5970 O ARG B 194 63.579 31.874 -24.549 1.00 18.90 B O
 ATOM 5971 N ARG B 195 65.573 32.781 -24.102 1.00 17.67 B N
 ATOM 5972 CA ARG B 195 66.306 31.507 -24.154 1.00 17.08 B C
 ATOM 5973 CB ARG B 195 67.754 31.754 -24.595 1.00 19.12 B C
 ATOM 5974 CG ARG B 195 68.465 30.472 -25.018 1.00 20.16 B C
 ATOM 5975 CD ARG B 195 69.877 30.743 -25.510 1.00 18.78 B C
 ATOM 5976 NE ARG B 195 69.946 31.704 -26.624 1.00 21.88 B N
 ATOM 5977 CZ ARG B 195 69.991 31.384 -27.920 1.00 27.25 B C
 ATOM 5978 NH1 ARG B 195 69.990 30.116 -28.303 1.00 25.88 B N
 ATOM 5979 NH2 ARG B 195 70.068 32.335 -28.847 1.00 28.28 B N
 ATOM 5980 C ARG B 195 66.257 30.789 -22.798 1.00 16.57 B C
 ATOM 5981 O ARG B 195 66.281 31.432 -21.726 1.00 15.80 B O
 ATOM 5982 N THR B 196 66.158 29.470 -22.830 1.00 15.49 B N
 ATOM 5983 CA THR B 196 66.133 28.692 -21.605 1.00 15.97 B C
 ATOM 5984 CB THR B 196 65.787 27.202 -21.860 1.00 20.73 B C
 ATOM 5985 OG1 THR B 196 66.683 26.672 -22.813 1.00 23.79 B O
 ATOM 5986 CG2 THR B 196 64.342 27.043 -22.414 1.00 18.21 B C
 ATOM 5987 C THR B 196 67.509 28.817 -20.947 1.00 14.24 B C
 ATOM 5988 O THR B 196 68.506 29.050 -21.614 1.00 14.38 B O
 ATOM 5989 N GLN B 197 67.552 28.610 -19.650 1.00 15.82 B N
 ATOM 5990 CA GLN B 197 68.779 28.794 -18.872 1.00 15.13 B C
 ATOM 5991 CB GLN B 197 68.398 28.731 -17.388 1.00 16.40 B C
 ATOM 5992 CG GLN B 197 69.313 29.536 -16.402 1.00 23.34 B C
 ATOM 5993 CD GLN B 197 70.400 28.668 -15.827 1.00 19.25 B C
 ATOM 5994 OE1 GLN B 197 70.750 27.639 -16.413 1.00 17.54 B O
 ATOM 5995 NE2 GLN B 197 70.933 29.055 -14.672 1.00 19.64 B N
 ATOM 5996 C GLN B 197 69.912 27.794 -19.253 1.00 15.38 B C
 ATOM 5997 O GLN B 197 71.040 28.214 -19.543 1.00 15.99 B O
 ATOM 5998 N ARG B 198 69.631 26.487 -19.261 1.00 15.88 B N

ATOM 5999 CA ARG B 198 70.650 25.503 -19.628 1.00 15.76 B C
 ATOM 6000 CB ARG B 198 70.151 24.068 -19.495 1.00 17.18 B C
 ATOM 6001 CG ARG B 198 69.747 23.686 -18.071 1.00 17.17 B C
 ATOM 6002 CD ARG B 198 70.987 23.505 -17.154 1.00 18.00 B C
 ATOM 6003 NE ARG B 198 71.390 24.755 -16.491 1.00 17.03 B N
 ATOM 6004 CZ ARG B 198 72.436 24.877 -15.679 1.00 18.12 B C
 ATOM 6005 NH1 ARG B 198 73.201 23.837 -15.422 1.00 18.07 B N
 ATOM 6006 NH2 ARG B 198 72.714 26.047 -15.111 1.00 18.32 B N
 ATOM 6007 C ARG B 198 71.191 25.712 -21.020 1.00 14.67 B C
 ATOM 6008 O ARG B 198 72.393 25.618 -21.196 1.00 16.24 B O
 ATOM 6009 N LEU B 199 70.345 26.007 -22.008 1.00 15.86 B N
 ATOM 6010 CA LEU B 199 70.846 26.282 -23.373 1.00 17.59 B C
 ATOM 6011 CB LEU B 199 69.741 26.411 -24.414 1.00 23.09 B C
 ATOM 6012 CG LEU B 199 69.172 25.097 -24.927 1.00 25.48 B C
 ATOM 6013 CD1 LEU B 199 68.001 25.403 -25.846 1.00 29.15 B C
 ATOM 6014 CD2 LEU B 199 70.249 24.258 -25.668 1.00 23.01 B C
 ATOM 6015 C LEU B 199 71.728 27.501 -23.423 1.00 14.99 B C
 ATOM 6016 O LEU B 199 72.779 27.465 -24.043 1.00 17.26 B O
 ATOM 6017 N GLU B 200 71.365 28.574 -22.717 1.00 17.19 B N
 ATOM 6018 CA GLU B 200 72.262 29.716 -22.634 1.00 16.80 B C
 ATOM 6019 CB GLU B 200 71.603 30.885 -21.903 1.00 18.56 B C
 ATOM 6020 CG GLU B 200 72.470 32.138 -21.838 1.00 19.52 B C
 ATOM 6021 CD GLU B 200 73.011 32.611 -23.208 1.00 23.00 B C
 ATOM 6022 OE1 GLU B 200 72.365 32.402 -24.243 1.00 28.08 B O
 ATOM 6023 OE2 GLU B 200 74.115 33.177 -23.238 1.00 26.36 B O
 ATOM 6024 C GLU B 200 73.598 29.332 -21.962 1.00 15.03 B C
 ATOM 6025 O GLU B 200 74.654 29.744 -22.419 1.00 16.93 B O
 ATOM 6026 N ALA B 201 73.537 28.572 -20.869 1.00 16.50 B N
 ATOM 6027 CA ALA B 201 74.741 28.162 -20.131 1.00 14.91 B C
 ATOM 6028 CB ALA B 201 74.376 27.366 -18.864 1.00 15.26 B C
 ATOM 6029 C ALA B 201 75.712 27.386 -21.014 1.00 14.98 B C
 ATOM 6030 O ALA B 201 76.902 27.711 -21.065 1.00 16.94 B O
 ATOM 6031 N VAL B 202 75.223 26.385 -21.734 1.00 16.65 B N
 ATOM 6032 CA VAL B 202 76.110 25.533 -22.524 1.00 18.24 B C
 ATOM 6033 CB VAL B 202 75.413 24.228 -23.033 1.00 20.43 B C
 ATOM 6034 CG1 VAL B 202 74.512 24.514 -24.187 1.00 19.20 B C
 ATOM 6035 CG2 VAL B 202 76.542 23.142 -23.429 1.00 18.68 B C
 ATOM 6036 C VAL B 202 76.767 26.327 -23.641 1.00 18.74 B C
 ATOM 6037 O VAL B 202 77.952 26.163 -23.923 1.00 19.25 B O
 ATOM 6038 N TRP B 203 76.046 27.280 -24.200 1.00 20.00 B N
 ATOM 6039 CA TRP B 203 76.616 28.127 -25.231 1.00 19.92 B C
 ATOM 6040 CB TRP B 203 75.497 28.878 -25.969 1.00 23.20 B C
 ATOM 6041 CG TRP B 203 76.048 29.658 -27.134 1.00 22.71 B C
 ATOM 6042 CD1 TRP B 203 76.157 29.240 -28.460 1.00 23.74 B C
 ATOM 6043 NE1 TRP B 203 76.707 30.213 -29.236 1.00 21.14 B N
 ATOM 6044 CE2 TRP B 203 77.022 31.290 -28.488 1.00 22.74 B C
 ATOM 6045 CD2 TRP B 203 76.600 31.001 -27.115 1.00 21.85 B C
 ATOM 6046 CE3 TRP B 203 76.800 31.961 -26.132 1.00 26.65 B C
 ATOM 6047 CZ3 TRP B 203 77.379 33.179 -26.499 1.00 22.71 B C
 ATOM 6048 CH2 TRP B 203 77.788 33.427 -27.820 1.00 24.24 B C
 ATOM 6049 CZ2 TRP B 203 77.604 32.487 -28.838 1.00 23.57 B C
 ATOM 6050 C TRP B 203 77.601 29.110 -24.635 1.00 20.87 B C
 ATOM 6051 O TRP B 203 78.734 29.297 -25.144 1.00 17.52 B O
 ATOM 6052 N SER B 204 77.199 29.771 -23.546 1.00 15.45 B N
 ATOM 6053 CA SER B 204 78.083 30.775 -22.940 1.00 16.11 B C
 ATOM 6054 CB SER B 204 77.362 31.546 -21.819 1.00 17.27 B C
 ATOM 6055 OG SER B 204 76.568 32.572 -22.375 1.00 19.39 B O
 ATOM 6056 C SER B 204 79.370 30.173 -22.395 1.00 15.39 B C
 ATOM 6057 O SER B 204 80.394 30.835 -22.391 1.00 16.11 B O
 ATOM 6058 N ILE B 205 79.319 28.938 -21.899 1.00 16.43 B N
 ATOM 6059 CA ILE B 205 80.503 28.343 -21.295 1.00 16.59 B C
 ATOM 6060 CB ILE B 205 80.192 27.060 -20.494 1.00 14.72 B C
 ATOM 6061 CG1 ILE B 205 79.467 27.430 -19.188 1.00 15.63 B C
 ATOM 6062 CD1 ILE B 205 78.694 26.305 -18.505 1.00 15.15 B C
 ATOM 6063 CG2 ILE B 205 81.507 26.330 -20.134 1.00 16.76 B C
 ATOM 6064 C ILE B 205 81.523 28.084 -22.404 1.00 20.64 B C

ATOM 6065 O ILE B 205 82.699 28.395 -22.254 1.00 15.38 B O
 ATOM 6066 N GLU B 206 81.056 27.531 -23.517 1.00 21.81 B N
 ATOM 6067 CA GLU B 206 81.889 27.373 -24.707 1.00 22.45 B C
 ATOM 6068 CB GLU B 206 81.087 26.726 -25.840 1.00 24.56 B C
 ATOM 6069 CG GLU B 206 81.899 26.453 -27.146 1.00 31.17 B C
 ATOM 6070 CD GLU B 206 83.163 25.580 -26.937 1.00 42.25 B C
 ATOM 6071 OE1 GLU B 206 83.240 24.815 -25.947 1.00 39.81 B O
 ATOM 6072 OE2 GLU B 206 84.087 25.656 -27.780 1.00 51.64 B O
 ATOM 6073 C GLU B 206 82.446 28.714 -25.167 1.00 20.41 B C
 ATOM 6074 O GLU B 206 83.636 28.830 -25.447 1.00 23.72 B O
 ATOM 6075 N ALA B 207 81.617 29.746 -25.249 1.00 17.21 B N
 ATOM 6076 CA ALA B 207 82.128 31.050 -25.707 1.00 17.73 B C
 ATOM 6077 CB ALA B 207 81.011 32.050 -25.881 1.00 16.31 B C
 ATOM 6078 C ALA B 207 83.152 31.592 -24.731 1.00 21.22 B C
 ATOM 6079 O ALA B 207 84.192 32.115 -25.126 1.00 21.97 B O
 ATOM 6080 N TYR B 208 82.868 31.451 -23.433 1.00 17.91 B N
 ATOM 6081 CA TYR B 208 83.709 32.070 -22.430 1.00 19.00 B C
 ATOM 6082 CB TYR B 208 83.017 32.016 -21.068 1.00 17.47 B C
 ATOM 6083 CG TYR B 208 83.563 32.956 -20.061 1.00 17.44 B C
 ATOM 6084 CD1 TYR B 208 83.470 34.325 -20.231 1.00 22.19 B C
 ATOM 6085 CE1 TYR B 208 84.002 35.205 -19.275 1.00 22.79 B C
 ATOM 6086 CZ TYR B 208 84.618 34.696 -18.160 1.00 20.52 B C
 ATOM 6087 OH TYR B 208 85.160 35.517 -17.199 1.00 22.16 B O
 ATOM 6088 CE2 TYR B 208 84.712 33.343 -17.982 1.00 22.62 B C
 ATOM 6089 CD2 TYR B 208 84.191 32.482 -18.924 1.00 20.39 B C
 ATOM 6090 C TYR B 208 85.121 31.455 -22.382 1.00 21.14 B C
 ATOM 6091 O TYR B 208 86.094 32.163 -22.176 1.00 23.19 B O
 ATOM 6092 N ARG B 209 85.230 30.141 -22.570 1.00 23.40 B N
 ATOM 6093 CA ARG B 209 86.503 29.467 -22.415 1.00 23.18 B C
 ATOM 6094 CB ARG B 209 86.333 27.956 -22.281 1.00 22.22 B C
 ATOM 6095 CG ARG B 209 85.955 27.249 -23.546 1.00 22.39 B C
 ATOM 6096 CD ARG B 209 85.367 25.888 -23.242 1.00 21.92 B C
 ATOM 6097 NE ARG B 209 86.318 25.065 -22.510 1.00 19.65 B N
 ATOM 6098 CZ ARG B 209 86.010 23.941 -21.872 1.00 19.54 B C
 ATOM 6099 NH1 ARG B 209 84.767 23.478 -21.825 1.00 18.84 B N
 ATOM 6100 NH2 ARG B 209 86.945 23.290 -21.230 1.00 19.02 B N
 ATOM 6101 C ARG B 209 87.437 29.794 -23.570 1.00 23.18 B C
 ATOM 6102 O ARG B 209 88.616 29.604 -23.442 1.00 26.17 B O
 ATOM 6103 N LYS B 210 86.903 30.300 -24.674 1.00 25.22 B N
 ATOM 6104 CA LYS B 210 87.726 30.739 -25.797 1.00 29.87 B C
 ATOM 6105 CB LYS B 210 86.933 30.694 -27.098 1.00 26.62 B C
 ATOM 6106 CG LYS B 210 86.471 29.315 -27.446 1.00 28.26 B C
 ATOM 6107 CD LYS B 210 86.122 29.195 -28.922 1.00 27.77 B C
 ATOM 6108 CE LYS B 210 84.884 28.370 -29.132 1.00 28.89 B C
 ATOM 6109 NZ LYS B 210 83.709 29.236 -29.267 1.00 28.19 B N
 ATOM 6110 C LYS B 210 88.299 32.128 -25.637 1.00 30.55 B C
 ATOM 6111 O LYS B 210 89.179 32.493 -26.386 1.00 34.12 B O
 ATOM 6112 N LYS B 211 87.806 32.915 -24.690 1.00 31.31 B N
 ATOM 6113 CA LYS B 211 88.390 34.236 -24.440 1.00 37.33 B C
 ATOM 6114 CB LYS B 211 87.432 35.096 -23.629 1.00 38.53 B C
 ATOM 6115 CG LYS B 211 86.127 35.407 -24.298 1.00 38.75 B C
 ATOM 6116 CD LYS B 211 85.194 36.134 -23.326 1.00 48.24 B C
 ATOM 6117 CE LYS B 211 85.650 37.563 -23.032 1.00 61.03 B C
 ATOM 6118 NZ LYS B 211 85.287 37.988 -21.653 1.00 72.73 B N
 ATOM 6119 C LYS B 211 89.701 34.097 -23.667 1.00 34.45 B C
 ATOM 6120 O LYS B 211 89.743 33.398 -22.650 1.00 33.64 B O
 ATOM 6121 N GLU B 212 90.759 34.771 -24.126 1.00 35.44 B N
 ATOM 6122 CA GLU B 212 92.064 34.717 -23.441 1.00 40.21 B C
 ATOM 6123 CB GLU B 212 93.157 35.413 -24.264 1.00 44.48 B C
 ATOM 6124 CG GLU B 212 94.488 35.596 -23.507 1.00 49.74 B C
 ATOM 6125 CD GLU B 212 95.705 35.662 -24.412 1.00 50.52 B C
 ATOM 6126 OE1 GLU B 212 95.560 36.001 -25.603 1.00 48.70 B O
 ATOM 6127 OE2 GLU B 212 96.814 35.368 -23.923 1.00 55.77 B O
 ATOM 6128 C GLU B 212 92.022 35.318 -22.029 1.00 36.75 B C
 ATOM 6129 O GLU B 212 92.768 34.897 -21.139 1.00 34.64 B O
 ATOM 6130 N ASP B 213 91.138 36.287 -21.834 1.00 33.09 B N

ATOM 6131 CA ASP B 213 91.023 37.008 -20.568 1.00 30.97 B C
 ATOM 6132 CB ASP B 213 90.829 38.488 -20.878 1.00 33.35 B C
 ATOM 6133 CG ASP B 213 89.668 38.718 -21.827 1.00 43.49 B C
 ATOM 6134 OD1 ASP B 213 89.547 37.944 -22.806 1.00 50.90 B O
 ATOM 6135 OD2 ASP B 213 88.868 39.639 -21.587 1.00 52.59 B O
 ATOM 6136 C ASP B 213 89.842 36.515 -19.703 1.00 29.08 B C
 ATOM 6137 O ASP B 213 89.426 37.227 -18.793 1.00 29.45 B O
 ATOM 6138 N ALA B 214 89.304 35.324 -19.983 1.00 21.49 B N
 ATOM 6139 CA ALA B 214 88.231 34.735 -19.170 1.00 23.04 B C
 ATOM 6140 CB ALA B 214 87.829 33.366 -19.727 1.00 24.25 B C
 ATOM 6141 C ALA B 214 88.686 34.574 -17.737 1.00 21.97 B C
 ATOM 6142 O ALA B 214 89.812 34.165 -17.490 1.00 18.38 B O
 ATOM 6143 N ASN B 215 87.822 34.865 -16.772 1.00 21.39 B N
 ATOM 6144 CA ASN B 215 88.184 34.596 -15.380 1.00 20.57 B C
 ATOM 6145 CB ASN B 215 87.172 35.209 -14.413 1.00 21.21 B C
 ATOM 6146 CG ASN B 215 87.631 35.118 -12.990 1.00 23.78 B C
 ATOM 6147 OD1 ASN B 215 87.544 34.067 -12.352 1.00 21.84 B O
 ATOM 6148 ND2 ASN B 215 88.160 36.213 -12.483 1.00 30.68 B N
 ATOM 6149 C ASN B 215 88.245 33.083 -15.185 1.00 19.49 B C
 ATOM 6150 O ASN B 215 87.251 32.411 -15.394 1.00 17.69 B O
 ATOM 6151 N GLN B 216 89.388 32.554 -14.771 1.00 15.50 B N
 ATOM 6152 CA GLN B 216 89.567 31.099 -14.674 1.00 17.45 B C
 ATOM 6153 CB GLN B 216 91.057 30.710 -14.607 1.00 19.58 B C
 ATOM 6154 CG GLN B 216 91.873 31.067 -15.868 1.00 23.01 B C
 ATOM 6155 CD GLN B 216 91.223 30.547 -17.164 1.00 27.82 B C
 ATOM 6156 OE1 GLN B 216 91.277 29.346 -17.475 1.00 28.73 B O
 ATOM 6157 NE2 GLN B 216 90.588 31.453 -17.914 1.00 26.91 B N
 ATOM 6158 C GLN B 216 88.800 30.499 -13.490 1.00 16.75 B C
 ATOM 6159 O GLN B 216 88.333 29.345 -13.555 1.00 14.88 B O
 ATOM 6160 N VAL B 217 88.654 31.273 -12.416 1.00 13.21 B N
 ATOM 6161 CA VAL B 217 87.857 30.809 -11.286 1.00 13.06 B C
 ATOM 6162 CB VAL B 217 87.984 31.751 -10.040 1.00 14.93 B C
 ATOM 6163 CG1 VAL B 217 86.939 31.390 -8.994 1.00 12.99 B C
 ATOM 6164 CG2 VAL B 217 89.391 31.674 -9.443 1.00 12.34 B C
 ATOM 6165 C VAL B 217 86.403 30.651 -11.709 1.00 13.42 B C
 ATOM 6166 O VAL B 217 85.782 29.594 -11.470 1.00 13.08 B O
 ATOM 6167 N LEU B 218 85.867 31.665 -12.384 1.00 12.11 B N
 ATOM 6168 CA LEU B 218 84.466 31.647 -12.768 1.00 13.87 B C
 ATOM 6169 CB LEU B 218 84.045 33.022 -13.323 1.00 14.78 B C
 ATOM 6170 CG LEU B 218 82.600 33.252 -13.772 1.00 16.06 B C
 ATOM 6171 CD1 LEU B 218 81.654 33.022 -12.598 1.00 14.64 B C
 ATOM 6172 CD2 LEU B 218 82.436 34.651 -14.330 1.00 13.89 B C
 ATOM 6173 C LEU B 218 84.238 30.559 -13.810 1.00 15.09 B C
 ATOM 6174 O LEU B 218 83.244 29.833 -13.757 1.00 15.71 B O
 ATOM 6175 N LEU B 219 85.139 30.459 -14.781 1.00 14.94 B N
 ATOM 6176 CA LEU B 219 85.027 29.452 -15.827 1.00 15.31 B C
 ATOM 6177 CB LEU B 219 86.161 29.580 -16.840 1.00 16.77 B C
 ATOM 6178 CG LEU B 219 86.283 28.499 -17.925 1.00 17.35 B C
 ATOM 6179 CD1 LEU B 219 84.975 28.362 -18.681 1.00 16.73 B C
 ATOM 6180 CD2 LEU B 219 87.489 28.794 -18.869 1.00 19.01 B C
 ATOM 6181 C LEU B 219 85.030 28.057 -15.230 1.00 13.44 B C
 ATOM 6182 O LEU B 219 84.175 27.236 -15.559 1.00 16.42 B O
 ATOM 6183 N GLU B 220 85.986 27.779 -14.362 1.00 12.24 B N
 ATOM 6184 CA GLU B 220 86.071 26.453 -13.760 1.00 14.83 B C
 ATOM 6185 CB GLU B 220 87.308 26.297 -12.882 1.00 16.56 B C
 ATOM 6186 CG GLU B 220 87.391 24.892 -12.308 1.00 18.99 B C
 ATOM 6187 CD GLU B 220 88.677 24.606 -11.570 1.00 23.45 B C
 ATOM 6188 OE1 GLU B 220 89.457 25.554 -11.301 1.00 23.25 B O
 ATOM 6189 OE2 GLU B 220 88.882 23.412 -11.258 1.00 23.06 B O
 ATOM 6190 C GLU B 220 84.803 26.118 -12.958 1.00 15.88 B C
 ATOM 6191 O GLU B 220 84.271 25.018 -13.082 1.00 14.54 B O
 ATOM 6192 N LEU B 221 84.285 27.079 -12.190 1.00 14.47 B N
 ATOM 6193 CA LEU B 221 83.028 26.866 -11.436 1.00 12.29 B C
 ATOM 6194 CB LEU B 221 82.737 28.081 -10.553 1.00 11.47 B C
 ATOM 6195 CG LEU B 221 81.493 27.994 -9.676 1.00 10.80 B C
 ATOM 6196 CD1 LEU B 221 81.598 26.866 -8.638 1.00 10.25 B C

ATOM 6197 CD2 LEU B 221 81.160 29.353 -8.998 1.00 11.71 B C
 ATOM 6198 C LEU B 221 81.842 26.603 -12.364 1.00 12.09 B C
 ATOM 6199 O LEU B 221 81.046 25.681 -12.123 1.00 15.58 B O
 ATOM 6200 N ALA B 222 81.728 27.383 -13.432 1.00 11.03 B N
 ATOM 6201 CA ALA B 222 80.635 27.213 -14.378 1.00 14.42 B C
 ATOM 6202 CB ALA B 222 80.686 28.281 -15.467 1.00 11.29 B C
 ATOM 6203 C ALA B 222 80.626 25.796 -14.981 1.00 15.15 B C
 ATOM 6204 O ALA B 222 79.575 25.199 -15.130 1.00 14.67 B O
 ATOM 6205 N ILE B 223 81.795 25.250 -15.289 1.00 16.15 B N
 ATOM 6206 CA ILE B 223 81.880 23.889 -15.831 1.00 15.33 B C
 ATOM 6207 CB ILE B 223 83.302 23.575 -16.340 1.00 15.08 B C
 ATOM 6208 CG1 ILE B 223 83.590 24.391 -17.596 1.00 13.36 B C
 ATOM 6209 CD1 ILE B 223 85.065 24.343 -18.024 1.00 15.70 B C
 ATOM 6210 CG2 ILE B 223 83.453 22.071 -16.630 1.00 13.45 B C
 ATOM 6211 C ILE B 223 81.491 22.862 -14.774 1.00 14.47 B C
 ATOM 6212 O ILE B 223 80.665 21.992 -15.007 1.00 14.34 B O
 ATOM 6213 N LEU B 224 82.062 23.009 -13.587 1.00 15.34 B N
 ATOM 6214 CA ALEU B 224 81.784 22.109 -12.486 0.50 16.13 B C
 ATOM 6215 CA BLEU B 224 81.779 22.060 -12.526 0.50 16.37 B C
 ATOM 6216 CB ALEU B 224 82.552 22.593 -11.262 0.50 16.37 B C
 ATOM 6217 CB BLEU B 224 82.640 22.335 -11.290 0.50 16.95 B C
 ATOM 6218 CG ALEU B 224 82.640 21.657 -10.072 0.50 16.80 B C
 ATOM 6219 CG BLEU B 224 84.152 22.112 -11.454 0.50 17.31 B C
 ATOM 6220 CD1 ALEU B 224 83.895 22.006 -9.297 0.50 15.21 B C
 ATOM 6221 CD1 BLEU B 224 84.830 22.348 -10.119 0.50 16.93 B C
 ATOM 6222 CD2 ALEU B 224 81.395 21.740 -9.189 0.50 14.02 B C
 ATOM 6223 CD2 BLEU B 224 84.502 20.713 -12.008 0.50 17.10 B C
 ATOM 6224 C LEU B 224 80.276 22.060 -12.196 1.00 17.10 B C
 ATOM 6225 O LEU B 224 79.666 20.988 -12.081 1.00 14.62 B O
 ATOM 6226 N ASP B 225 79.678 23.237 -12.062 1.00 14.86 B N
 ATOM 6227 CA ASP B 225 78.271 23.337 -11.693 1.00 14.10 B C
 ATOM 6228 CB ASP B 225 77.864 24.805 -11.425 1.00 14.24 B C
 ATOM 6229 CG ASP B 225 76.624 24.906 -10.544 1.00 15.89 B C
 ATOM 6230 OD1 ASP B 225 76.787 24.757 -9.307 1.00 16.14 B O
 ATOM 6231 OD2 ASP B 225 75.494 25.104 -11.079 1.00 16.81 B O
 ATOM 6232 C ASP B 225 77.365 22.750 -12.777 1.00 13.39 B C
 ATOM 6233 O ASP B 225 76.487 21.982 -12.464 1.00 15.58 B O
 ATOM 6234 N TYR B 226 77.603 23.096 -14.044 1.00 11.94 B N
 ATOM 6235 CA TYR B 226 76.825 22.573 -15.154 1.00 15.44 B C
 ATOM 6236 CB TYR B 226 77.342 23.140 -16.461 1.00 14.71 B C
 ATOM 6237 CG TYR B 226 76.434 22.785 -17.603 1.00 15.95 B C
 ATOM 6238 CD1 TYR B 226 76.558 21.559 -18.265 1.00 16.89 B C
 ATOM 6239 CE1 TYR B 226 75.730 21.218 -19.309 1.00 19.42 B C
 ATOM 6240 CZ TYR B 226 74.746 22.102 -19.716 1.00 21.14 B C
 ATOM 6241 OH TYR B 226 73.902 21.754 -20.731 1.00 22.75 B O
 ATOM 6242 CE2 TYR B 226 74.592 23.324 -19.066 1.00 21.14 B C
 ATOM 6243 CD2 TYR B 226 75.450 23.658 -18.023 1.00 18.76 B C
 ATOM 6244 C TYR B 226 76.814 21.032 -15.199 1.00 18.55 B C
 ATOM 6245 O TYR B 226 75.751 20.403 -15.340 1.00 14.96 B O
 ATOM 6246 N ASN B 227 77.993 20.438 -15.054 1.00 17.61 B N
 ATOM 6247 CA ASN B 227 78.132 18.972 -15.059 1.00 18.83 B C
 ATOM 6248 CB ASN B 227 79.592 18.545 -15.274 1.00 19.64 B C
 ATOM 6249 CG ASN B 227 80.065 18.832 -16.685 1.00 18.15 B C
 ATOM 6250 OD1 ASN B 227 79.248 19.019 -17.608 1.00 20.61 B O
 ATOM 6251 ND2 ASN B 227 81.370 18.933 -16.861 1.00 16.37 B N
 ATOM 6252 C ASN B 227 77.496 18.337 -13.828 1.00 20.83 B C
 ATOM 6253 O ASN B 227 76.846 17.296 -13.957 1.00 19.81 B O
 ATOM 6254 N MET B 228 77.571 19.001 -12.673 1.00 17.33 B N
 ATOM 6255 CA AMET B 228 76.866 18.537 -11.479 0.50 16.75 B C
 ATOM 6256 CA BMET B 228 76.865 18.495 -11.491 0.50 22.51 B C
 ATOM 6257 CB AMET B 228 77.225 19.420 -10.287 0.50 14.37 B C
 ATOM 6258 CB BMET B 228 77.300 19.200 -10.188 0.50 29.14 B C
 ATOM 6259 CG AMET B 228 76.537 19.072 -8.975 0.50 12.77 B C
 ATOM 6260 CG BMET B 228 76.514 20.447 -9.749 0.50 44.80 B C
 ATOM 6261 SD AMET B 228 76.760 20.399 -7.762 0.50 12.66 B S
 ATOM 6262 SD BMET B 228 75.395 20.226 -8.333 0.50 54.35 B S

ATOM 6263 CE AMET B 228 75.682 21.683 -8.474 0.50 15.49 B C
 ATOM 6264 CE BMET B 228 74.091 19.223 -9.003 0.50 42.65 B C
 ATOM 6265 C MET B 228 75.342 18.530 -11.708 1.00 20.48 B C
 ATOM 6266 O MET B 228 74.653 17.559 -11.394 1.00 18.56 B O
 ATOM 6267 N ILE B 229 74.799 19.611 -12.268 1.00 17.89 B N
 ATOM 6268 CA ILE B 229 73.350 19.661 -12.469 1.00 15.86 B C
 ATOM 6269 CB ILE B 229 72.858 21.076 -12.870 1.00 16.15 B C
 ATOM 6270 CG1 ILE B 229 73.043 22.035 -11.687 1.00 15.99 B C
 ATOM 6271 CD1 ILE B 229 72.699 23.482 -11.988 1.00 18.39 B C
 ATOM 6272 CG2 ILE B 229 71.358 21.045 -13.274 1.00 15.61 B C
 ATOM 6273 C ILE B 229 72.943 18.596 -13.495 1.00 17.35 B C
 ATOM 6274 O ILE B 229 71.971 17.909 -13.306 1.00 23.75 B O
 ATOM 6275 N GLN B 230 73.701 18.459 -14.570 1.00 17.03 B N
 ATOM 6276 CA GLN B 230 73.427 17.433 -15.545 1.00 22.65 B C
 ATOM 6277 CB GLN B 230 74.469 17.433 -16.630 1.00 23.17 B C
 ATOM 6278 CG GLN B 230 74.036 16.671 -17.840 1.00 24.09 B C
 ATOM 6279 CD GLN B 230 75.124 16.660 -18.876 1.00 25.69 B C
 ATOM 6280 OE1 GLN B 230 76.207 16.159 -18.617 1.00 24.23 B O
 ATOM 6281 NE2 GLN B 230 74.854 17.238 -20.050 1.00 23.11 B N
 ATOM 6282 C GLN B 230 73.368 16.037 -14.929 1.00 23.04 B C
 ATOM 6283 O GLN B 230 72.565 15.234 -15.356 1.00 23.54 B O
 ATOM 6284 N SER B 231 74.200 15.745 -13.941 1.00 21.41 B N
 ATOM 6285 CA SER B 231 74.193 14.412 -13.319 1.00 23.65 B C
 ATOM 6286 CB SER B 231 75.471 14.168 -12.468 1.00 23.19 B C
 ATOM 6287 OG SER B 231 75.384 14.886 -11.237 1.00 32.62 B O
 ATOM 6288 C SER B 231 72.896 14.223 -12.512 1.00 24.26 B C
 ATOM 6289 O SER B 231 72.344 13.112 -12.459 1.00 20.75 B O
 ATOM 6290 N VAL B 232 72.381 15.302 -11.929 1.00 21.48 B N
 ATOM 6291 CA VAL B 232 71.037 15.279 -11.328 1.00 21.24 B C
 ATOM 6292 CB VAL B 232 70.692 16.603 -10.628 1.00 23.83 B C
 ATOM 6293 CG1 VAL B 232 69.270 16.592 -10.059 1.00 24.12 B C
 ATOM 6294 CG2 VAL B 232 71.681 16.880 -9.532 1.00 20.84 B C
 ATOM 6295 C VAL B 232 69.986 14.952 -12.413 1.00 24.74 B C
 ATOM 6296 O VAL B 232 69.136 14.097 -12.209 1.00 24.73 B O
 ATOM 6297 N TYR B 233 70.071 15.579 -13.583 1.00 23.53 B N
 ATOM 6298 CA TYR B 233 69.100 15.288 -14.644 1.00 23.90 B C
 ATOM 6299 CB TYR B 233 69.310 16.184 -15.861 1.00 19.78 B C
 ATOM 6300 CG TYR B 233 69.165 17.700 -15.638 1.00 15.82 B C
 ATOM 6301 CD1 TYR B 233 68.412 18.220 -14.594 1.00 14.87 B C
 ATOM 6302 CE1 TYR B 233 68.281 19.609 -14.438 1.00 16.04 B C
 ATOM 6303 CZ TYR B 233 68.900 20.445 -15.437 1.00 15.46 B C
 ATOM 6304 OH TYR B 233 68.778 21.816 -15.227 1.00 19.31 B O
 ATOM 6305 CE2 TYR B 233 69.633 19.934 -16.393 1.00 16.43 B C
 ATOM 6306 CD2 TYR B 233 69.760 18.597 -16.540 1.00 15.50 B C
 ATOM 6307 C TYR B 233 69.201 13.806 -15.097 1.00 29.65 B C
 ATOM 6308 O TYR B 233 68.182 13.176 -15.436 1.00 24.75 B O
 ATOM 6309 N GLN B 234 70.415 13.260 -15.122 1.00 23.59 B N
 ATOM 6310 CA GLN B 234 70.614 11.879 -15.605 1.00 27.67 B C
 ATOM 6311 CB GLN B 234 72.083 11.615 -15.914 1.00 26.53 B C
 ATOM 6312 CG GLN B 234 72.547 12.384 -17.157 1.00 26.79 B C
 ATOM 6313 CD GLN B 234 74.045 12.416 -17.285 1.00 29.18 B C
 ATOM 6314 OE1 GLN B 234 74.758 12.085 -16.338 1.00 32.91 B O
 ATOM 6315 NE2 GLN B 234 74.541 12.814 -18.458 1.00 29.56 B N
 ATOM 6316 C GLN B 234 70.021 10.888 -14.609 1.00 23.60 B C
 ATOM 6317 O GLN B 234 69.391 9.907 -15.012 1.00 30.92 B O
 ATOM 6318 N ARG B 235 70.150 11.174 -13.319 1.00 25.13 B N
 ATOM 6319 CA ARG B 235 69.448 10.394 -12.303 1.00 29.36 B C
 ATOM 6320 CB ARG B 235 69.922 10.758 -10.898 1.00 30.29 B C
 ATOM 6321 CG ARG B 235 69.373 9.840 -9.811 1.00 39.19 B C
 ATOM 6322 CD ARG B 235 70.021 10.065 -8.460 1.00 56.79 B C
 ATOM 6323 NE ARG B 235 69.818 11.434 -7.971 1.00 77.67 B N
 ATOM 6324 CZ ARG B 235 70.759 12.383 -7.879 1.00 76.44 B C
 ATOM 6325 NH1 ARG B 235 72.024 12.147 -8.232 1.00 76.63 B N
 ATOM 6326 NH2 ARG B 235 70.430 13.592 -7.421 1.00 56.91 B N
 ATOM 6327 C ARG B 235 67.908 10.518 -12.423 1.00 30.66 B C
 ATOM 6328 O ARG B 235 67.200 9.523 -12.395 1.00 26.67 B O

ATOM 6329 N ASP B 236 67.391 11.726 -12.567 1.00 29.85 B N
 ATOM 6330 CA ASP B 236 65.944 11.945 -12.764 1.00 25.23 B C
 ATOM 6331 CB ASP B 236 65.644 13.409 -13.134 1.00 30.33 B C
 ATOM 6332 CG ASP B 236 65.904 14.414 -12.004 1.00 36.62 B C
 ATOM 6333 OD1 ASP B 236 65.910 14.039 -10.810 1.00 31.93 B O
 ATOM 6334 OD2 ASP B 236 66.050 15.627 -12.336 1.00 28.75 B O
 ATOM 6335 C ASP B 236 65.437 11.096 -13.924 1.00 24.79 B C
 ATOM 6336 O ASP B 236 64.449 10.412 -13.797 1.00 27.76 B O
 ATOM 6337 N LEU B 237 66.126 11.191 -15.058 1.00 21.17 B N
 ATOM 6338 CA LEU B 237 65.758 10.541 -16.298 1.00 24.76 B C
 ATOM 6339 CB LEU B 237 66.664 11.028 -17.431 1.00 24.56 B C
 ATOM 6340 CG LEU B 237 66.562 10.373 -18.805 1.00 29.01 B C
 ATOM 6341 CD1 LEU B 237 65.215 10.683 -19.447 1.00 30.62 B C
 ATOM 6342 CD2 LEU B 237 67.720 10.818 -19.706 1.00 31.68 B C
 ATOM 6343 C LEU B 237 65.849 9.017 -16.213 1.00 31.40 B C
 ATOM 6344 O LEU B 237 65.066 8.326 -16.851 1.00 24.72 B O
 ATOM 6345 N ARG B 238 66.832 8.503 -15.484 1.00 28.78 B N
 ATOM 6346 CA AARG B 238 66.936 7.058 -15.276 0.50 33.73 B C
 ATOM 6347 CA BARG B 238 66.945 7.057 -15.247 0.50 35.56 B C
 ATOM 6348 CB AARG B 238 68.255 6.681 -14.581 0.50 31.17 B C
 ATOM 6349 CB BARG B 238 68.215 6.706 -14.454 0.50 35.57 B C
 ATOM 6350 CG AARG B 238 69.474 6.716 -15.506 0.50 30.21 B C
 ATOM 6351 CG BARG B 238 69.457 6.476 -15.299 0.50 37.44 B C
 ATOM 6352 CD AARG B 238 70.728 6.119 -14.842 0.50 33.56 B C
 ATOM 6353 CD BARG B 238 70.558 5.769 -14.481 0.50 41.07 B C
 ATOM 6354 NE AARG B 238 71.117 6.845 -13.633 0.50 32.43 B N
 ATOM 6355 NE BARG B 238 71.197 6.676 -13.525 0.50 42.64 B N
 ATOM 6356 CZ AARG B 238 72.064 7.776 -13.591 0.50 25.66 B C
 ATOM 6357 CZ BARG B 238 70.981 6.679 -12.210 0.50 36.62 B C
 ATOM 6358 NH1AARG B 238 72.731 8.098 -14.692 0.50 21.79 B N
 ATOM 6359 NH1BARG B 238 70.145 5.812 -11.649 0.50 30.78 B N
 ATOM 6360 NH2AARG B 238 72.339 8.381 -12.446 0.50 23.30 B N
 ATOM 6361 NH2BARG B 238 71.616 7.557 -11.450 0.50 35.02 B N
 ATOM 6362 C ARG B 238 65.723 6.562 -14.485 1.00 36.07 B C
 ATOM 6363 O ARG B 238 65.155 5.526 -14.817 1.00 32.64 B O
 ATOM 6364 N GLU B 239 65.307 7.314 -13.468 1.00 33.02 B N
 ATOM 6365 CA GLU B 239 64.140 6.922 -12.679 1.00 39.52 B C
 ATOM 6366 CB GLU B 239 64.051 7.764 -11.416 1.00 50.36 B C
 ATOM 6367 CG GLU B 239 62.899 7.375 -10.495 1.00 67.79 B C
 ATOM 6368 CD GLU B 239 62.986 8.033 -9.123 1.00 87.78 B C
 ATOM 6369 OE1 GLU B 239 64.032 8.639 -8.798 1.00 81.07 B O
 ATOM 6370 OE2 GLU B 239 61.998 7.943 -8.363 1.00 105.74 B O
 ATOM 6371 C GLU B 239 62.825 7.017 -13.483 1.00 44.14 B C
 ATOM 6372 O GLU B 239 61.941 6.160 -13.360 1.00 37.48 B O
 ATOM 6373 N THR B 240 62.709 8.058 -14.299 1.00 35.32 B N
 ATOM 6374 CA THR B 240 61.537 8.246 -15.162 1.00 32.81 B C
 ATOM 6375 CB THR B 240 61.473 9.688 -15.647 1.00 33.62 B C
 ATOM 6376 OG1 THR B 240 61.233 10.512 -14.498 1.00 32.31 B O
 ATOM 6377 CG2 THR B 240 60.347 9.909 -16.683 1.00 28.21 B C
 ATOM 6378 C THR B 240 61.555 7.265 -16.334 1.00 32.29 B C
 ATOM 6379 O THR B 240 60.508 6.883 -16.842 1.00 30.87 B O
 ATOM 6380 N SER B 241 62.742 6.866 -16.775 1.00 35.89 B N
 ATOM 6381 CA SER B 241 62.876 5.813 -17.801 1.00 36.95 B C
 ATOM 6382 CB SER B 241 64.332 5.642 -18.239 1.00 41.95 B C
 ATOM 6383 OG SER B 241 64.659 6.570 -19.256 1.00 43.35 B O
 ATOM 6384 C SER B 241 62.369 4.479 -17.284 1.00 30.92 B C
 ATOM 6385 O SER B 241 61.673 3.751 -17.983 1.00 31.23 B O
 ATOM 6386 N ARG B 242 62.720 4.158 -16.056 1.00 31.06 B N
 ATOM 6387 CA ARG B 242 62.264 2.918 -15.487 1.00 43.04 B C
 ATOM 6388 CB ARG B 242 62.894 2.633 -14.122 1.00 49.17 B C
 ATOM 6389 CG ARG B 242 64.246 1.896 -14.196 1.00 63.90 B C
 ATOM 6390 CD ARG B 242 64.647 1.303 -12.835 1.00 65.15 B C
 ATOM 6391 NE ARG B 242 64.177 2.139 -11.721 1.00 71.29 B N
 ATOM 6392 CZ ARG B 242 64.864 3.126 -11.141 1.00 77.59 B C
 ATOM 6393 NH1 ARG B 242 66.099 3.431 -11.532 1.00 83.44 B N
 ATOM 6394 NH2 ARG B 242 64.309 3.814 -10.147 1.00 76.69 B N
 ATOM 6395 C ARG B 242 60.762 2.955 -15.381 1.00 31.28 B C
 ATOM 6396 O ARG B 242 60.123 1.965 -15.642 1.00 36.75 B O
 ATOM 6397 N TRP B 243 60.202 4.081 -14.965 1.00 30.04 B N
 ATOM 6398 CA TRP B 243 58.751 4.277 -14.948 1.00 24.61 B C
 ATOM 6399 CB TRP B 243 58.397 5.692 -14.474 1.00 29.93 B C
 ATOM 6400 CG TRP B 243 56.955 6.076 -14.721 1.00 20.51 B C
 ATOM 6401 CD1 TRP B 243 55.854 5.661 -13.998 1.00 24.00 B C
 ATOM 6402 NE1 TRP B 243 54.712 6.162 -14.525 1.00 27.60 B N
 ATOM 6403 CE2 TRP B 243 54.967 6.875 -15.624 1.00 19.22 B C
 ATOM 6404 CD2 TRP B 243 56.412 6.868 -15.811 1.00 19.39 B C
 ATOM 6405 CE3 TRP B 243 56.949 7.527 -16.889 1.00 19.69 B C
 ATOM 6406 CZ3 TRP B 243 56.099 8.225 -17.740 1.00 22.15 B C
 ATOM 6407 CH2 TRP B 243 54.712 6.236 -17.526 1.00 25.82 B C
 ATOM 6408 CZ2 TRP B 243 54.132 7.543 -16.456 1.00 20.93 B C
 ATOM 6409 C TRP B 243 58.132 4.039 -16.310 1.00 24.26 B C
 ATOM 6410 O TRP B 243 57.138 3.322 -16.441 1.00 24.17 B O
 ATOM 6411 N TRP B 244 58.691 4.659 -17.342 1.00 20.84 B N
 ATOM 6412 CA TRP B 244 58.099 4.583 -18.675 1.00 19.39 B C
 ATOM 6413 CB TRP B 244 58.793 5.572 -19.606 1.00 22.08 B C
 ATOM 6414 CG TRP B 244 58.136 5.798 -20.943 1.00 24.58 B C
 ATOM 6415 CD1 TRP B 244 58.744 5.714 -22.189 1.00 33.52 B C
 ATOM 6416 NE1 TRP B 244 57.842 5.994 -23.184 1.00 32.99 B N
 ATOM 6417 CE2 TRP B 244 56.626 6.277 -22.674 1.00 25.24 B C
 ATOM 6418 CD2 TRP B 244 56.729 6.170 -21.233 1.00 24.61 B C
 ATOM 6419 CE3 TRP B 244 55.597 6.387 -20.467 1.00 22.17 B C
 ATOM 6420 CZ3 TRP B 244 54.404 6.694 -21.102 1.00 28.89 B C
 ATOM 6421 CH2 TRP B 244 54.327 6.798 -22.486 1.00 30.43 B C
 ATOM 6422 CZ2 TRP B 244 55.438 6.596 -23.299 1.00 29.37 B C
 ATOM 6423 C TRP B 244 58.160 3.178 -19.209 1.00 19.52 B C
 ATOM 6424 O TRP B 244 57.231 2.709 -19.844 1.00 15.68 B O
 ATOM 6425 N ARG B 245 59.256 2.487 -18.948 1.00 21.43 B N
 ATOM 6426 CA ARG B 245 59.400 1.083 -19.391 1.00 26.75 B C
 ATOM 6427 CB ARG B 245 60.834 0.594 -19.143 1.00 29.07 B C
 ATOM 6428 CG ARG B 245 61.766 0.748 -20.349 1.00 46.10 B C
 ATOM 6429 CD ARG B 245 63.055 -0.075 -20.152 1.00 52.27 B C
 ATOM 6430 NE ARG B 245 63.735 0.329 -18.919 1.00 64.17 B N
 ATOM 6431 CZ ARG B 245 64.460 1.444 -18.777 1.00 60.45 B C
 ATOM 6432 NH1 ARG B 245 64.629 2.282 -19.802 1.00 61.89 B N
 ATOM 6433 NH2 ARG B 245 65.017 1.732 -17.602 1.00 47.28 B N
 ATOM 6434 C ARG B 245 58.397 0.139 -18.696 1.00 28.71 B C
 ATOM 6435 O ARG B 245 57.820 -0.740 -19.320 1.00 25.38 B O
 ATOM 6436 N ARG B 246 58.216 0.320 -17.396 1.00 32.47 B N
 ATOM 6437 CA ARG B 246 57.112 -0.300 -16.645 1.00 37.98 B C
 ATOM 6438 CB ARG B 246 57.043 0.306 -15.234 1.00 56.60 B C
 ATOM 6439 CG ARG B 246 56.231 -0.484 -14.220 1.00 67.23 B C
 ATOM 6440 CD ARG B 246 57.128 -1.273 -13.267 1.00 74.38 B C
 ATOM 6441 NE ARG B 246 56.697 -2.665 -13.121 1.00 94.33 B N
 ATOM 6442 CZ ARG B 246 57.313 -3.572 -12.368 1.00 96.83 B C
 ATOM 6443 NH1 ARG B 246 58.394 -3.246 -11.664 1.00 103.34 B N
 ATOM 6444 NH2 ARG B 246 56.844 -4.810 -12.311 1.00 93.77 B N
 ATOM 6445 C ARG B 246 55.753 -0.116 -17.318 1.00 26.40 B C
 ATOM 6446 O ARG B 246 55.060 -1.073 -17.549 1.00 29.09 B O
 ATOM 6447 N VAL B 247 55.385 1.123 -17.622 1.00 20.94 B N
 ATOM 6448 CA VAL B 247 54.100 1.447 -18.239 1.00 19.96 B C
 ATOM 6449 CB VAL B 247 53.895 2.953 -18.359 1.00 22.94 B C
 ATOM 6450 CG1 VAL B 247 52.618 3.271 -19.077 1.00 23.70 B C
 ATOM 6451 CG2 VAL B 247 53.861 3.621 -16.969 1.00 28.91 B C
 ATOM 6452 C VAL B 247 53.969 0.743 -19.597 1.00 22.21 B C
 ATOM 6453 O VAL B 247 52.930 0.127 -19.893 1.00 19.85 B O
 ATOM 6454 N GLY B 248 55.038 0.804 -20.399 1.00 26.35 B N
 ATOM 6455 CA GLY B 248 55.212 -0.050 -21.602 1.00 25.85 B C
 ATOM 6456 C GLY B 248 54.266 0.239 -22.739 1.00 22.97 B C
 ATOM 6457 O GLY B 248 53.999 -0.599 -23.598 1.00 27.66 B O
 ATOM 6458 N LEU B 249 53.749 1.430 -22.753 1.00 24.10 B N
 ATOM 6459 CA LEU B 249 52.654 1.793 -23.645 1.00 30.34 B C
 ATOM 6460 CB LEU B 249 52.002 3.042 -23.086 1.00 31.09 B C

ATOM 6461	CG LEU B 249	50.500	3.297	-23.109	1.00	36.14	B	C
ATOM 6462	CD1 LEU B 249	49.670	2.120	-22.704	1.00	34.85	B	C
ATOM 6463	CD2 LEU B 249	50.227	4.513	-22.209	1.00	35.23	B	C
ATOM 6464	C LEU B 249	53.133	1.991	-25.101	1.00	46.24	B	C
ATOM 6465	O LEU B 249	52.454	1.568	-26.054	1.00	38.44	B	O
ATOM 6466	N ALA B 250	54.305	2.602	-25.276	1.00	52.20	B	N
ATOM 6467	CA ALA B 250	54.887	2.779	-26.614	1.00	63.15	B	C
ATOM 6468	CB ALA B 250	56.153	3.635	-26.545	1.00	60.43	B	C
ATOM 6469	C ALA B 250	55.179	1.429	-27.298	1.00	64.10	B	C
ATOM 6470	O ALA B 250	55.044	1.311	-28.512	1.00	64.56	B	O
ATOM 6471	N THR B 251	55.566	0.427	-26.507	1.00	50.70	B	N
ATOM 6472	CA THR B 251	55.744	-0.947	-26.971	1.00	41.78	B	C
ATOM 6473	CB THR B 251	56.377	-1.808	-25.860	1.00	42.75	B	C
ATOM 6474	OG1 THR B 251	57.705	-1.349	-25.620	1.00	59.83	B	O
ATOM 6475	CG2 THR B 251	56.414	-3.278	-26.243	1.00	44.05	B	C
ATOM 6476	C THR B 251	54.458	-1.679	-27.377	1.00	42.26	B	C
ATOM 6477	O THR B 251	54.463	-2.481	-28.304	1.00	53.14	B	O
ATOM 6478	N LYS B 252	53.377	-1.430	-26.648	1.00	33.76	B	N
ATOM 6479	CA LYS B 252	52.133	-2.199	-26.779	1.00	35.99	B	C
ATOM 6480	CB LYS B 252	51.520	-2.436	-25.385	1.00	33.65	B	C
ATOM 6481	CG LYS B 252	52.400	-3.297	-24.446	1.00	32.18	B	C
ATOM 6482	CD LYS B 252	52.228	-4.791	-24.691	1.00	34.71	B	C
ATOM 6483	CE LYS B 252	53.099	-5.652	-23.754	1.00	36.30	B	C
ATOM 6484	NZ LYS B 252	52.740	-7.131	-23.821	1.00	35.73	B	N
ATOM 6485	C LYS B 252	51.117	-1.533	-27.710	1.00	31.67	B	C
ATOM 6486	O LYS B 252	50.178	-2.167	-28.160	1.00	43.55	B	O
ATOM 6487	N LEU B 253	51.315	-0.252	-27.983	1.00	27.89	B	N
ATOM 6488	CA LEU B 253	50.466	0.507	-28.899	1.00	31.51	B	C
ATOM 6489	CB LEU B 253	50.054	1.851	-28.287	1.00	29.45	B	C
ATOM 6490	CG LEU B 253	48.676	2.020	-27.621	1.00	36.86	B	C
ATOM 6491	CD1 LEU B 253	48.212	0.812	-26.830	1.00	38.75	B	C
ATOM 6492	CD2 LEU B 253	48.707	3.825	-26.767	1.00	33.51	B	C
ATOM 6493	C LEU B 253	51.313	0.720	-30.160	1.00	35.74	B	C
ATOM 6494	O LEU B 253	52.301	1.454	-30.135	1.00	37.08	B	O
ATOM 6495	N HIS B 254	50.903	0.076	-31.249	1.00	33.84	B	N
ATOM 6496	CA AHIS B 254	51.728	-0.000	-32.446	0.50	33.25	B	C
ATOM 6497	CB AHIS B 254	51.678	-0.001	-32.501	0.50	34.84	B	C
ATOM 6498	CB AHIS B 254	51.245	-1.162	-33.334	0.50	34.73	B	C
ATOM 6499	CB BHIS B 254	51.067	-1.032	-33.482	0.50	37.53	B	C
ATOM 6500	CG AHIS B 254	51.052	-2.474	-32.569	0.50	36.94	B	C
ATOM 6501	CG BHIS B 254	49.813	-0.555	-34.199	0.50	43.00	B	C
ATOM 6502	ND1AHIS B 254	50.299	-3.497	-33.039	0.50	37.35	B	N
ATOM 6503	ND1BHIS B 254	48.588	-1.038	-33.918	0.50	48.80	B	N
ATOM 6504	CE1AHIS B 254	50.307	-4.506	-32.148	0.50	33.86	B	C
ATOM 6505	CE1BHIS B 254	47.677	-0.434	-34.704	0.50	47.74	B	C
ATOM 6506	NE2AHIS B 254	51.054	-4.127	-31.097	0.50	38.53	B	N
ATOM 6507	NE2BHIS B 254	48.321	0.439	-35.497	0.50	39.38	B	N
ATOM 6508	CD2AHIS B 254	51.528	-2.881	-31.323	0.50	33.37	B	C
ATOM 6509	CD2BHIS B 254	49.638	0.385	-35.217	0.50	46.45	B	C
ATOM 6510	C HIS B 254	51.807	1.330	-33.183	1.00	33.53	B	C
ATOM 6511	O HIS B 254	52.796	1.603	-33.858	1.00	25.82	B	O
ATOM 6512	N PHE B 255	50.793	2.184	-33.031	1.00	27.23	B	N
ATOM 6513	CA PHE B 255	50.822	3.525	-33.632	1.00	29.21	B	C
ATOM 6514	CB PHE B 255	49.380	4.066	-33.854	1.00	29.73	B	C
ATOM 6515	CG PHE B 255	48.607	4.271	-32.575	1.00	27.91	B	C
ATOM 6516	CD1 PHE B 255	48.736	5.449	-31.865	1.00	29.74	B	C
ATOM 6517	CE1 PHE B 255	48.058	5.637	-30.661	1.00	35.80	B	C
ATOM 6518	CZ PHE B 255	47.262	4.611	-30.142	1.00	36.41	B	C
ATOM 6519	CE2 PHE B 255	47.144	3.411	-30.838	1.00	37.91	B	C
ATOM 6520	CD2 PHE B 255	47.187	3.245	-32.046	1.00	31.88	B	C
ATOM 6521	C PHE B 255	51.653	4.574	-32.841	1.00	35.02	B	C
ATOM 6522	O PHE B 255	51.930	5.653	-33.380	1.00	32.16	B	O
ATOM 6523	N ALA B 256	52.024	4.287	-31.583	1.00	36.94	B	N
ATOM 6524	CA ALA B 256	52.473	5.361	-30.660	1.00	44.62	B	C
ATOM 6525	CB ALA B 256	52.189	5.002	-29.178	1.00	38.64	B	C
ATOM 6526	C ALA B 256	53.939	5.730	-30.831	1.00	41.50	B	C
ATOM 6527	O ALA B 256	54.791	4.866	-31.042	1.00	32.37	B	O
ATOM 6528	N ARG B 257	54.206	7.030	-30.748	1.00	42.55	B	N
ATOM 6529	CA ARG B 257	55.560	7.566	-30.699	1.00	55.66	B	C
ATOM 6530	CB ARG B 257	55.563	9.058	-31.074	1.00	61.07	B	C
ATOM 6531	CG ARG B 257	55.225	9.398	-32.526	1.00	63.21	B	C
ATOM 6532	CD ARG B 257	55.159	10.932	-32.719	1.00	66.34	B	C
ATOM 6533	NE ARG B 257	53.937	11.526	-32.146	1.00	55.10	B	N
ATOM 6534	CZ ARG B 257	53.814	12.782	-31.707	1.00	68.91	B	C
ATOM 6535	NH1 ARG B 257	54.841	13.630	-31.738	1.00	80.51	B	N
ATOM 6536	NH2 ARG B 257	52.652	13.200	-31.206	1.00	69.46	B	N
ATOM 6537	C ARG B 257	56.107	7.437	-29.275	1.00	58.53	B	C
ATOM 6538	O ARG B 257	55.422	7.816	-28.316	1.00	50.74	B	O
ATOM 6539	N ASP B 258	57.329	6.911	-29.145	1.00	56.60	B	N
ATOM 6540	CA ASP B 258	58.114	7.044	-27.906	1.00	54.48	B	C
ATOM 6541	CB ASP B 258	59.108	5.883	-27.776	1.00	45.90	B	C
ATOM 6542	CG ASP B 258	59.879	5.897	-26.438	1.00	60.08	B	C
ATOM 6543	OD1 ASP B 258	60.038	6.974	-25.810	1.00	55.44	B	O
ATOM 6544	OD2 ASP B 258	60.340	4.813	-26.012	1.00	61.30	B	O
ATOM 6545	C ASP B 258	58.855	8.420	-27.908	1.00	53.21	B	C
ATOM 6546	O ASP B 258	59.700	8.681	-28.777	1.00	54.31	B	O
ATOM 6547	N ARG B 259	58.529	9.285	-26.943	1.00	39.90	B	N
ATOM 6548	CA AARG B 259	59.112	10.631	-26.889	0.50	40.52	B	C
ATOM 6549	CB AARG B 259	59.083	10.634	-26.879	0.50	40.15	B	C
ATOM 6550	CB AARG B 259	58.062	11.680	-27.306	0.50	43.68	B	C
ATOM 6551	CB BARG B 259	57.973	11.635	-27.224	0.50	42.16	B	C
ATOM 6552	CG AARG B 259	57.732	11.710	-28.815	0.50	51.56	B	C
ATOM 6553	CG BARG B 259	57.503	11.561	-28.680	0.50	50.00	B	C
ATOM 6554	CD AARG B 259	58.823	12.403	-29.649	0.50	50.35	B	C
ATOM 6555	CD BARG B 259	58.131	12.661	-29.517	0.50	47.88	B	C
ATOM 6556	NE AARG B 259	58.527	12.394	-31.084	0.50	46.77	B	N
ATOM 6557	NE BARG B 259	57.393	13.904	-29.360	0.50	46.89	B	N
ATOM 6558	CZ AARG B 259	58.843	11.397	-31.910	0.50	41.60	B	C
ATOM 6559	CZ BARG B 259	57.948	15.108	-29.313	0.50	43.09	B	C
ATOM 6560	NH1AARG B 259	59.478	10.330	-31.449	0.50	40.52	B	N
ATOM 6561	NH1BARG B 259	59.259	15.257	-29.410	0.50	39.41	B	N
ATOM 6562	NH2AARG B 259	58.525	11.464	-33.195	0.50	37.19	B	N
ATOM 6563	NH2BARG B 259	57.177	16.165	-29.165	0.50	35.24	B	N
ATOM 6564	C ARG B 259	59.665	10.943	-25.492	1.00	36.58	B	C
ATOM 6565	O ARG B 259	59.645	12.110	-25.032	1.00	28.62	B	O
ATOM 6566	N LEU B 260	60.177	9.928	-24.805	1.00	31.08	B	N
ATOM 6567	CA LEU B 260	60.619	10.149	-23.406	1.00	34.96	B	C
ATOM 6568	CB LEU B 260	61.009	8.858	-22.674	1.00	37.76	B	C
ATOM 6569	CG LEU B 260	61.451	9.053	-21.202	1.00	35.28	B	C
ATOM 6570	CD1 LEU B 260	60.369	9.711	-20.327	1.00	43.36	B	C
ATOM 6571	CD2 LEU B 260	61.853	7.776	-20.575	1.00	46.40	B	C
ATOM 6572	C LEU B 260	61.767	11.133	-23.264	1.00	36.19	B	C
ATOM 6573	O LEU B 260	61.702	12.034	-22.412	1.00	32.69	B	O
ATOM 6574	N ILE B 261	62.821	10.955	-24.064	1.00	31.53	B	N
ATOM 6575	CA ILE B 261	64.025	11.787	-23.909	1.00	30.92	B	C
ATOM 6576	CB ILE B 261	65.243	11.293	-24.781	1.00	30.88	B	C
ATOM 6577	CG1 ILE B 261	65.698	9.894	-24.338	1.00	39.52	B	C
ATOM 6578	CD1 ILE B 261	66.531	9.099	-25.417	1.00	39.51	B	C
ATOM 6579	CG2 ILE B 261	66.433	12.250	-24.639	1.00	33.59	B	C
ATOM 6580	C ILE B 261	63.633	13.247	-24.202	1.00	21.15	B	C
ATOM 6581	O ILE B 261	63.937	14.128	-23.402	1.00	24.35	B	O
ATOM 6582	N GLU B 262	62.893	13.466	-25.294	1.00	23.43	B	N
ATOM 6583	CA GLU B 262	62.398	14.791	-25.667	1.00	29.00	B	C
ATOM 6584	CB GLU B 262	61.608	14.772	-26.987	1.00	37.83	B	C
ATOM 6585	CG GLU B 262	62.406	14.298	-28.231	1.00	50.13	B	C
ATOM 6586	CD GLU B 262	62.232	12.788	-28.595	1.00	58.78	B	C
ATOM 6587	OE1 GLU B 262	62.453	11.867	-27.752	1.00	43.65	B	O
ATOM 6588	OE2 GLU B 262	61.903	12.525	-29.767	1.00	64.04	B	O
ATOM 6589	C GLU B 262	61.533	15.402	-24.562	1.00	25.19	B	C
ATOM 6590	O GLU B 262	61.622	16.598	-24.319	1.00	24.01	B	O
ATOM 6591	N SER B 263	60.719	14.584	-23.884	1.00	24.94	B	N
ATOM 6592	CA ASER B 263	59.826	15.026	-22.799	0.50	20.12	B	C

ATOM 6593 CA BSER B 263 59.830 15.116 -22.868 0.50 21.08 B C
 ATOM 6594 CB ASER B 263 58.970 13.859 -22.267 0.50 19.81 B C
 ATOM 6595 CB BSER B 263 58.731 14.108 -22.525 0.50 21.88 B C
 ATOM 6596 OG ASER B 263 59.731 12.961 -21.442 0.50 18.14 B O
 ATOM 6597 OG BSER B 263 57.782 14.044 -23.590 0.50 25.34 B O
 ATOM 6598 C SER B 263 60.664 15.570 -21.651 1.00 22.12 B C
 ATOM 6599 O SER B 263 60.340 16.582 -21.015 1.00 18.32 B O
 ATOM 6600 N PHE B 264 61.750 14.885 -21.379 1.00 21.21 B N
 ATOM 6601 CA PHE B 264 62.627 15.295 -20.301 1.00 21.14 B C
 ATOM 6602 CB PHE B 264 63.533 14.152 -19.848 1.00 25.11 B C
 ATOM 6603 CG PHE B 264 64.021 14.362 -18.483 1.00 21.53 B C
 ATOM 6604 CD1 PHE B 264 63.229 14.001 -17.411 1.00 26.88 B C
 ATOM 6605 CE1 PHE B 264 63.615 14.266 -16.116 1.00 32.05 B C
 ATOM 6606 CZ PHE B 264 64.803 14.957 -15.886 1.00 30.00 B C
 ATOM 6607 CE2 PHE B 264 65.579 15.347 -16.948 1.00 26.11 B C
 ATOM 6608 CD2 PHE B 264 65.161 15.075 -18.256 1.00 29.07 B C
 ATOM 6609 C PHE B 264 63.428 16.566 -20.598 1.00 20.61 B C
 ATOM 6610 O PHE B 264 63.547 17.464 -19.744 1.00 20.73 B O
 ATOM 6611 N TYR B 265 63.946 16.665 -21.815 1.00 20.09 B N
 ATOM 6612 CA TYR B 265 64.607 17.881 -22.298 1.00 17.15 B C
 ATOM 6613 CB TYR B 265 65.040 17.662 -23.748 1.00 19.86 B C
 ATOM 6614 CG TYR B 265 65.504 18.895 -24.472 1.00 23.47 B C
 ATOM 6615 CD1 TYR B 265 66.800 19.361 -24.310 1.00 31.92 B C
 ATOM 6616 CE1 TYR B 265 67.244 20.493 -24.966 1.00 30.60 B C
 ATOM 6617 CZ TYR B 265 66.400 21.181 -25.794 1.00 34.74 B C
 ATOM 6618 OH TYR B 265 66.885 22.293 -26.426 1.00 38.69 B O
 ATOM 6619 CE2 TYR B 265 65.092 20.737 -25.993 1.00 32.63 B C
 ATOM 6620 CD2 TYR B 265 64.659 19.590 -25.330 1.00 24.71 B C
 ATOM 6621 C TYR B 265 63.665 19.074 -22.169 1.00 18.92 B C
 ATOM 6622 O TYR B 265 64.051 20.158 -21.734 1.00 18.09 B O
 ATOM 6623 N TRP B 266 62.409 18.853 -22.526 1.00 16.41 B N
 ATOM 6624 CA TRP B 266 61.377 19.870 -22.400 1.00 18.68 B C
 ATOM 6625 CB TRP B 266 60.081 19.335 -23.011 1.00 19.17 B C
 ATOM 6626 CG TRP B 266 58.915 20.266 -22.847 1.00 19.86 B C
 ATOM 6627 CD1 TRP B 266 58.060 20.383 -21.776 1.00 20.93 B C
 ATOM 6628 NE1 TRP B 266 57.139 21.348 -22.002 1.00 20.77 B N
 ATOM 6629 CE2 TRP B 266 57.358 21.940 -23.183 1.00 20.01 B C
 ATOM 6630 CD2 TRP B 266 58.475 21.268 -23.797 1.00 16.68 B C
 ATOM 6631 CE3 TRP B 266 58.902 21.664 -25.057 1.00 19.39 B C
 ATOM 6632 CZ3 TRP B 266 58.218 22.692 -25.686 1.00 20.94 B C
 ATOM 6633 CH2 TRP B 266 57.136 23.310 -25.085 1.00 20.17 B C
 ATOM 6634 CZ2 TRP B 266 56.677 22.941 -23.824 1.00 25.72 B C
 ATOM 6635 C TRP B 266 61.225 20.265 -20.965 1.00 17.64 B C
 ATOM 6636 O TRP B 266 61.259 21.454 -20.624 1.00 15.67 B O
 ATOM 6637 N ALA B 267 61.101 19.272 -20.079 1.00 18.06 B N
 ATOM 6638 CA ALA B 267 60.975 19.552 -18.649 1.00 20.03 B C
 ATOM 6639 CB ALA B 267 60.791 18.268 -17.842 1.00 22.95 B C
 ATOM 6640 C ALA B 267 62.131 20.366 -18.054 1.00 17.74 B C
 ATOM 6641 O ALA B 267 61.905 21.206 -17.172 1.00 16.57 B O
 ATOM 6642 N VAL B 268 63.347 20.114 -18.522 1.00 17.36 B N
 ATOM 6643 CA VAL B 268 64.519 20.826 -18.021 1.00 15.22 B C
 ATOM 6644 CB VAL B 268 65.836 20.263 -18.636 1.00 16.11 B C
 ATOM 6645 CG1 VAL B 268 67.029 21.251 -18.463 1.00 14.19 B C
 ATOM 6646 CG2 VAL B 268 66.188 18.882 -18.025 1.00 18.11 B C
 ATOM 6647 C VAL B 268 64.381 22.342 -18.282 1.00 20.16 B C
 ATOM 6648 O VAL B 268 64.812 23.166 -17.472 1.00 17.44 B O
 ATOM 6649 N GLY B 269 63.760 22.699 -19.406 1.00 18.75 B N
 ATOM 6650 CA GLY B 269 63.566 24.128 -19.765 1.00 18.20 B C
 ATOM 6651 C GLY B 269 62.541 24.803 -18.882 1.00 18.02 B C
 ATOM 6652 O GLY B 269 62.657 25.990 -18.590 1.00 18.41 B O
 ATOM 6653 N VAL B 270 61.532 24.038 -18.447 1.00 18.51 B N
 ATOM 6654 CA VAL B 270 60.502 24.543 -17.550 1.00 17.42 B C
 ATOM 6655 CB VAL B 270 59.273 23.618 -17.547 1.00 17.32 B C
 ATOM 6656 CG1 VAL B 270 58.273 24.056 -16.526 1.00 15.84 B C
 ATOM 6657 CG2 VAL B 270 58.650 23.582 -19.014 1.00 17.61 B C
 ATOM 6658 C VAL B 270 61.038 24.725 -16.121 1.00 19.45 B C
 ATOM 6659 O VAL B 270 60.746 25.732 -15.473 1.00 17.68 B O
 ATOM 6660 N ALA B 271 61.799 23.751 -15.618 1.00 15.53 B N
 ATOM 6661 CA ALA B 271 62.329 23.853 -14.252 1.00 18.34 B C
 ATOM 6662 CB ALA B 271 61.370 23.161 -13.275 1.00 20.38 B C
 ATOM 6663 C ALA B 271 63.734 23.255 -14.171 1.00 21.27 B C
 ATOM 6664 O ALA B 271 63.903 22.013 -14.018 1.00 19.31 B O
 ATOM 6665 N PHE B 272 64.753 24.102 -14.304 1.00 15.12 B N
 ATOM 6666 CA PHE B 272 66.125 23.605 -14.456 1.00 17.09 B C
 ATOM 6667 CB PHE B 272 66.958 24.540 -15.326 1.00 19.46 B C
 ATOM 6668 CG PHE B 272 67.462 25.746 -14.582 1.00 25.15 B C
 ATOM 6669 CD1 PHE B 272 68.674 25.709 -13.922 1.00 31.93 B C
 ATOM 6670 CE1 PHE B 272 69.121 26.832 -13.211 1.00 34.44 B C
 ATOM 6671 CZ PHE B 272 68.344 27.985 -13.178 1.00 27.74 B C
 ATOM 6672 CE2 PHE B 272 67.148 28.022 -13.836 1.00 36.19 B C
 ATOM 6673 CD2 PHE B 272 66.701 26.896 -14.523 1.00 31.96 B C
 ATOM 6674 C PHE B 272 66.872 23.409 -13.128 1.00 19.83 B C
 ATOM 6675 O PHE B 272 67.880 22.670 -13.108 1.00 19.24 B O
 ATOM 6676 N GLU B 273 66.433 24.104 -12.070 1.00 19.54 B N
 ATOM 6677 CA GLU B 273 67.218 24.156 -10.822 1.00 25.70 B C
 ATOM 6678 CB GLU B 273 66.643 25.121 -9.795 1.00 23.52 B C
 ATOM 6679 CG GLU B 273 66.692 26.586 -10.212 1.00 29.09 B C
 ATOM 6680 CD GLU B 273 65.428 27.067 -10.970 1.00 37.43 B C
 ATOM 6681 OE1 GLU B 273 64.703 26.283 -11.672 1.00 32.92 B O
 ATOM 6682 OE2 GLU B 273 65.168 28.280 -10.865 1.00 42.12 B O
 ATOM 6683 C GLU B 273 67.269 22.747 -10.233 1.00 26.94 B C
 ATOM 6684 O GLU B 273 66.280 22.009 -10.309 1.00 22.77 B O
 ATOM 6685 N PRO B 274 68.412 22.370 -9.645 1.00 24.26 B N
 ATOM 6686 CA PRO B 274 68.579 20.985 -9.233 1.00 25.14 B C
 ATOM 6687 CB PRO B 274 69.980 20.957 -8.589 1.00 27.41 B C
 ATOM 6688 CG PRO B 274 70.373 22.350 -8.413 1.00 27.95 B C
 ATOM 6689 CD PRO B 274 69.630 23.165 -9.418 1.00 25.84 B C
 ATOM 6690 C PRO B 274 67.504 20.495 -8.265 1.00 24.47 B C
 ATOM 6691 O PRO B 274 67.119 19.342 -8.326 1.00 27.78 B O
 ATOM 6692 N GLN B 275 66.958 21.376 -7.448 1.00 23.27 B N
 ATOM 6693 CA GLN B 275 65.948 20.961 -6.466 1.00 26.52 B C
 ATOM 6694 CB GLN B 275 65.773 22.025 -5.373 1.00 25.42 B C
 ATOM 6695 CG GLN B 275 65.269 23.415 -5.793 1.00 28.04 B C
 ATOM 6696 CD GLN B 275 66.375 24.384 -6.239 1.00 33.28 B C
 ATOM 6697 OE1 GLN B 275 67.456 23.974 -6.698 1.00 29.99 B O
 ATOM 6698 NE2 GLN B 275 66.101 25.689 -6.110 1.00 33.44 B N
 ATOM 6699 C GLN B 275 64.566 20.626 -7.038 1.00 25.38 B C
 ATOM 6700 O GLN B 275 63.718 20.145 -6.298 1.00 28.33 B O
 ATOM 6701 N TYR B 276 64.327 20.886 -8.330 1.00 24.88 B N
 ATOM 6702 CA TYR B 276 62.980 20.695 -8.935 1.00 22.85 B C
 ATOM 6703 CB TYR B 276 62.654 21.874 -9.882 1.00 21.39 B C
 ATOM 6704 CG TYR B 276 62.398 23.193 -9.161 1.00 27.30 B C
 ATOM 6705 CD1 TYR B 276 61.533 23.261 -8.066 1.00 29.89 B C
 ATOM 6706 CE1 TYR B 276 61.304 24.472 -7.396 1.00 31.01 B C
 ATOM 6707 CZ TYR B 276 61.929 25.618 -7.831 1.00 36.98 B C
 ATOM 6708 OH TYR B 276 61.697 26.789 -7.167 1.00 41.65 B O
 ATOM 6709 CE2 TYR B 276 62.773 25.586 -8.919 1.00 36.74 B C
 ATOM 6710 CD2 TYR B 276 63.007 24.366 -9.580 1.00 31.75 B C
 ATOM 6711 C TYR B 276 62.810 19.374 -9.682 1.00 25.69 B C
 ATOM 6712 O TYR B 276 62.140 19.320 -10.698 1.00 18.56 B O
 ATOM 6713 N SER B 277 63.400 18.315 -9.156 1.00 20.78 B N
 ATOM 6714 CA SER B 277 63.267 16.995 -9.690 1.00 20.77 B C
 ATOM 6715 CB SER B 277 64.023 16.001 -8.789 1.00 28.26 B C
 ATOM 6716 OG SER B 277 65.369 15.907 -9.232 1.00 32.73 B O
 ATOM 6717 C SER B 277 61.837 16.574 -9.856 1.00 20.62 B C
 ATOM 6718 O SER B 277 61.491 16.016 -10.904 1.00 20.18 B O
 ATOM 6719 N ASP B 278 61.001 16.838 -8.855 1.00 19.70 B N
 ATOM 6720 CA ASP B 278 59.601 16.441 -8.904 1.00 21.39 B C
 ATOM 6721 CB ASP B 278 58.881 16.772 -7.615 1.00 27.49 B C
 ATOM 6722 CG ASP B 278 59.286 15.867 -6.481 1.00 35.28 B C
 ATOM 6723 OD1 ASP B 278 60.058 14.915 -6.727 1.00 45.25 B O
 ATOM 6724 OD2 ASP B 278 58.838 16.116 -5.344 1.00 49.36 B O

ATOM 6725 C ASP B 278 58.885 17.184 -10.012 1.00 24.04 B C
 ATOM 6726 O ASP B 278 58.095 16.584 -10.728 1.00 23.33 B O
 ATOM 6727 N CYS B 279 59.148 18.491 -10.129 1.00 19.17 B N
 ATOM 6728 CA CYS B 279 58.561 19.249 -11.208 1.00 21.15 B C
 ATOM 6729 CB CYS B 279 58.962 20.740 -11.171 1.00 20.42 B C
 ATOM 6730 SG CYS B 279 57.972 21.692 -12.360 1.00 23.47 B S
 ATOM 6731 C CYS B 279 58.942 18.625 -12.531 1.00 19.45 B C
 ATOM 6732 O CYS B 279 58.079 18.409 -13.379 1.00 20.55 B O
 ATOM 6733 N ARG B 280 60.229 18.352 -12.740 1.00 15.98 B N
 ATOM 6734 CA ARG B 280 60.655 17.808 -14.028 1.00 18.83 B C
 ATOM 6735 CB ARG B 280 62.175 17.634 -14.116 1.00 17.83 B C
 ATOM 6736 CG ARG B 280 62.977 18.950 -14.224 1.00 19.13 B C
 ATOM 6737 CD ARG B 280 64.438 18.697 -14.456 1.00 19.75 B C
 ATOM 6738 NE ARG B 280 65.103 18.174 -13.272 1.00 16.55 B N
 ATOM 6739 CZ ARG B 280 65.525 18.928 -12.252 1.00 18.61 B C
 ATOM 6740 NH1 ARG B 280 65.329 20.238 -12.274 1.00 17.30 B N
 ATOM 6741 NH2 ARG B 280 66.148 18.371 -11.211 1.00 19.56 B N
 ATOM 6742 C ARG B 280 60.040 16.454 -14.320 1.00 21.11 B C
 ATOM 6743 O ARG B 280 59.685 16.164 -15.467 1.00 18.91 B O
 ATOM 6744 N ASN B 281 59.990 15.610 -13.300 1.00 19.83 B N
 ATOM 6745 CA ASN B 281 59.389 14.284 -13.429 1.00 20.75 B C
 ATOM 6746 CB ASN B 281 59.656 13.442 -12.196 1.00 24.86 B C
 ATOM 6747 CG ASN B 281 61.119 13.072 -12.056 1.00 35.79 B C
 ATOM 6748 OD1 ASN B 281 61.902 13.110 -13.030 1.00 38.79 B O
 ATOM 6749 ND2 ASN B 281 61.500 12.696 -10.843 1.00 31.24 B N
 ATOM 6750 C ASN B 281 57.899 14.329 -13.758 1.00 17.43 B C
 ATOM 6751 O ASN B 281 57.465 13.643 -14.687 1.00 20.51 B O
 ATOM 6752 N SER B 282 57.136 15.163 -13.061 1.00 20.69 B N
 ATOM 6753 CA SER B 282 55.736 15.391 -13.391 1.00 22.52 B C
 ATOM 6754 CB SER B 282 55.156 16.453 -12.473 1.00 29.52 B C
 ATOM 6755 OG SER B 282 54.323 15.891 -11.515 1.00 36.99 B O
 ATOM 6756 C SER B 282 55.522 15.905 -14.818 1.00 21.80 B C
 ATOM 6757 O SER B 282 54.669 15.420 -15.565 1.00 19.88 B O
 ATOM 6758 N VAL B 283 56.272 16.932 -15.170 1.00 18.27 B N
 ATOM 6759 CA VAL B 283 56.138 17.518 -16.473 1.00 16.31 B C
 ATOM 6760 CB VAL B 283 56.903 18.849 -16.607 1.00 18.31 B C
 ATOM 6761 CG1 VAL B 283 56.910 19.316 -18.088 1.00 15.14 B C
 ATOM 6762 CG2 VAL B 283 56.253 19.885 -15.718 1.00 18.23 B C
 ATOM 6763 C VAL B 283 56.497 16.537 -17.557 1.00 19.38 B C
 ATOM 6764 O VAL B 283 55.760 16.445 -18.546 1.00 15.39 B O
 ATOM 6765 N ALA B 284 57.586 15.773 -17.380 1.00 17.29 B N
 ATOM 6766 CA ALA B 284 57.987 14.781 -18.383 1.00 17.24 B C
 ATOM 6767 CB ALA B 284 59.375 14.198 -18.029 1.00 18.23 B C
 ATOM 6768 C ALA B 284 56.940 13.662 -18.528 1.00 17.47 B C
 ATOM 6769 O ALA B 284 56.590 13.217 -19.657 1.00 16.74 B O
 ATOM 6770 N LYS B 285 56.436 13.175 -17.399 1.00 16.38 B N
 ATOM 6771 CA LYS B 285 55.369 12.155 -17.427 1.00 15.42 B C
 ATOM 6772 CB LYS B 285 54.982 11.727 -16.010 1.00 15.54 B C
 ATOM 6773 CG LYS B 285 56.019 10.886 -15.343 1.00 20.92 B C
 ATOM 6774 CD LYS B 285 55.558 10.490 -13.930 1.00 26.64 B C
 ATOM 6775 CE LYS B 285 56.471 9.484 -13.263 1.00 30.58 B C
 ATOM 6776 NZ LYS B 285 56.066 9.445 -11.827 1.00 42.27 B N
 ATOM 6777 C LYS B 285 54.139 12.664 -18.182 1.00 15.13 B C
 ATOM 6778 O LYS B 285 53.560 11.958 -19.018 1.00 16.43 B O
 ATOM 6779 N MET B 286 53.739 13.889 -17.904 1.00 18.03 B N
 ATOM 6780 CA MET B 286 52.537 14.415 -18.534 1.00 19.05 B C
 ATOM 6781 CB MET B 286 52.053 15.724 -17.936 1.00 19.10 B C
 ATOM 6782 CG MET B 286 51.543 15.612 -16.503 1.00 19.96 B C
 ATOM 6783 SD MET B 286 50.293 14.375 -16.265 1.00 25.05 B S
 ATOM 6784 CE MET B 286 51.185 12.968 -15.611 1.00 23.35 B C
 ATOM 6785 C MET B 286 52.794 14.590 -20.012 1.00 20.13 B C
 ATOM 6786 O MET B 286 51.932 14.265 -20.823 1.00 20.15 B O
 ATOM 6787 N PHE B 287 53.981 15.051 -20.374 1.00 17.26 B N
 ATOM 6788 CA PHE B 287 54.260 15.220 -21.806 1.00 17.95 B C
 ATOM 6789 CB PHE B 287 55.548 15.984 -22.074 1.00 28.34 B C
 ATOM 6790 CG PHE B 287 55.446 16.967 -23.231 1.00 44.47 B C

ATOM 6791 CD1 PHE B 287 54.194 17.252 -23.856 1.00 56.86 B C
 ATOM 6792 CE1 PHE B 287 54.081 18.161 -24.926 1.00 41.77 B C
 ATOM 6793 CZ PHE B 287 55.210 18.832 -25.367 1.00 45.38 B C
 ATOM 6794 CE2 PHE B 287 56.470 18.563 -24.755 1.00 57.85 B C
 ATOM 6795 CD2 PHE B 287 56.576 17.637 -23.688 1.00 41.58 B C
 ATOM 6796 C PHE B 287 54.249 13.922 -22.558 1.00 16.03 B C
 ATOM 6797 O PHE B 287 53.789 13.874 -23.715 1.00 15.83 B O
 ATOM 6798 N CYS B 288 54.685 12.847 -21.909 1.00 14.89 B N
 ATOM 6799 CA CYS B 288 54.586 11.519 -22.509 1.00 14.98 B C
 ATOM 6800 CB CYS B 288 55.247 10.449 -21.636 1.00 21.40 B C
 ATOM 6801 SG CYS B 288 57.050 10.528 -21.550 1.00 25.90 B S
 ATOM 6802 C CYS B 288 53.150 11.096 -22.809 1.00 18.56 B C
 ATOM 6803 O CYS B 288 52.843 10.623 -23.899 1.00 17.61 B O
 ATOM 6804 N PHE B 289 52.272 11.229 -21.827 1.00 15.35 B N
 ATOM 6805 CA PHE B 289 50.857 10.959 -22.052 1.00 16.35 B C
 ATOM 6806 CB PHE B 289 50.088 10.988 -20.705 1.00 15.27 B C
 ATOM 6807 CG PHE B 289 50.203 9.706 -19.972 1.00 17.14 B C
 ATOM 6808 CD1 PHE B 289 49.626 8.573 -20.486 1.00 20.13 B C
 ATOM 6809 CE1 PHE B 289 49.783 7.349 -19.837 1.00 21.56 B C
 ATOM 6810 CZ PHE B 289 50.523 7.270 -18.699 1.00 18.36 B C
 ATOM 6811 CE2 PHE B 289 51.122 8.381 -18.197 1.00 20.87 B C
 ATOM 6812 CD2 PHE B 289 50.984 9.594 -18.830 1.00 23.02 B C
 ATOM 6813 C PHE B 289 50.211 11.900 -23.043 1.00 15.41 B C
 ATOM 6814 O PHE B 289 49.451 11.459 -23.898 1.00 17.63 B O
 ATOM 6815 N VAL B 290 50.525 13.195 -22.955 1.00 15.98 B N
 ATOM 6816 CA VAL B 290 49.986 14.129 -23.933 1.00 15.11 B C
 ATOM 6817 CB VAL B 290 50.467 15.588 -23.701 1.00 16.79 B C
 ATOM 6818 CG1 VAL B 290 50.133 16.477 -24.909 1.00 15.60 B C
 ATOM 6819 CG2 VAL B 290 49.837 16.138 -22.433 1.00 13.84 B C
 ATOM 6820 C VAL B 290 50.294 13.682 -25.341 1.00 16.81 B C
 ATOM 6821 O VAL B 290 49.416 13.687 -26.193 1.00 17.52 B O
 ATOM 6822 N THR B 291 51.529 13.294 -25.601 1.00 19.53 B N
 ATOM 6823 CA THR B 291 51.912 12.949 -26.980 1.00 22.80 B C
 ATOM 6824 CB THR B 291 53.428 12.631 -27.106 1.00 25.06 B C
 ATOM 6825 OG1 THR B 291 53.723 11.394 -26.472 1.00 44.14 B O
 ATOM 6826 CG2 THR B 291 54.302 13.691 -26.473 1.00 19.46 B C
 ATOM 6827 C THR B 291 51.128 11.733 -27.510 1.00 23.54 B C
 ATOM 6828 O THR B 291 50.706 11.710 -28.669 1.00 20.69 B O
 ATOM 6829 N ILE B 292 50.976 10.707 -26.674 1.00 18.62 B N
 ATOM 6830 CA ILE B 292 50.199 9.511 -27.040 1.00 17.16 B C
 ATOM 6831 CB ILE B 292 50.337 8.423 -25.941 1.00 20.53 B C
 ATOM 6832 CG1 ILE B 292 51.780 7.968 -25.861 1.00 27.07 B C
 ATOM 6833 CD1 ILE B 292 52.015 6.951 -24.785 1.00 33.53 B C
 ATOM 6834 CG2 ILE B 292 49.424 7.239 -26.257 1.00 23.47 B C
 ATOM 6835 C ILE B 292 48.708 9.796 -27.207 1.00 13.31 B C
 ATOM 6836 O ILE B 292 48.090 9.376 -28.172 1.00 15.77 B O
 ATOM 6837 N ILE B 293 48.126 10.512 -26.269 1.00 13.87 B N
 ATOM 6838 CA ILE B 293 46.708 10.848 -26.334 1.00 14.79 B C
 ATOM 6839 CB ILE B 293 46.218 11.378 -24.992 1.00 14.65 B C
 ATOM 6840 CG1 ILE B 293 46.253 10.221 -23.968 1.00 19.35 B C
 ATOM 6841 CD1 ILE B 293 46.061 10.663 -22.555 1.00 20.43 B C
 ATOM 6842 CG2 ILE B 293 44.751 11.910 -25.141 1.00 14.75 B C
 ATOM 6843 C ILE B 293 46.379 11.819 -27.489 1.00 18.92 B C
 ATOM 6844 O ILE B 293 45.380 11.641 -28.221 1.00 16.07 B O
 ATOM 6845 N ASP B 294 47.265 12.767 -27.720 1.00 17.62 B N
 ATOM 6846 CA ASP B 294 47.146 13.669 -28.911 1.00 20.00 B C
 ATOM 6847 CB ASP B 294 48.345 14.612 -28.967 1.00 25.16 B C
 ATOM 6848 CG ASP B 294 48.176 15.781 -29.984 1.00 36.99 B C
 ATOM 6849 OD1 ASP B 294 47.380 15.706 -30.906 1.00 37.88 B O
 ATOM 6850 OD2 ASP B 294 48.880 16.800 -29.836 1.00 58.01 B O
 ATOM 6851 C ASP B 294 47.098 12.826 -30.188 1.00 18.94 B C
 ATOM 6852 O ASP B 294 46.244 13.039 -31.021 1.00 16.12 B O
 ATOM 6853 N ASP B 295 47.997 11.861 -30.327 1.00 18.01 B N
 ATOM 6854 CA ASP B 295 47.973 10.931 -31.468 1.00 20.14 B C
 ATOM 6855 CB ASP B 295 49.096 9.911 -31.363 1.00 27.52 B C
 ATOM 6856 CG ASP B 295 50.486 10.484 -31.700 1.00 44.28 B C

ATOM 6857 OD1 ASP B 295 50.547 11.583 -32.293 1.00 40.05 B O
 ATOM 6858 OD2 ASP B 295 51.515 9.815 -31.359 1.00 41.64 B O
 ATOM 6859 C ASP B 295 46.634 10.158 -31.640 1.00 21.15 B C
 ATOM 6860 O ASP B 295 46.148 9.966 -32.777 1.00 19.75 B O
 ATOM 6861 N ILE B 296 46.075 9.679 -30.532 1.00 16.24 B N
 ATOM 6862 CA ILE B 296 44.775 8.990 -30.554 1.00 15.66 B C
 ATOM 6863 CB ILE B 296 44.413 8.461 -29.122 1.00 16.02 B C
 ATOM 6864 CG1 ILE B 296 45.371 7.284 -28.781 1.00 18.95 B C
 ATOM 6865 CD1 ILE B 296 45.180 6.693 -27.375 1.00 17.17 B C
 ATOM 6866 CG2 ILE B 296 42.958 7.993 -29.072 1.00 14.97 B C
 ATOM 6867 C ILE B 296 43.703 9.890 -31.152 1.00 13.43 B C
 ATOM 6868 O ILE B 296 43.037 9.517 -32.125 1.00 14.63 B O
 ATOM 6869 N TYR B 297 43.568 11.117 -30.624 1.00 15.09 B N
 ATOM 6870 CA TYR B 297 42.578 12.057 -31.121 1.00 15.87 B C
 ATOM 6871 CB TYR B 297 42.421 13.260 -30.200 1.00 16.95 B C
 ATOM 6872 CG TYR B 297 41.637 12.975 -28.960 1.00 16.22 B C
 ATOM 6873 CD1 TYR B 297 42.233 12.369 -27.876 1.00 18.96 B C
 ATOM 6874 CE1 TYR B 297 41.533 12.122 -26.734 1.00 19.27 B C
 ATOM 6875 CZ TYR B 297 40.226 12.519 -26.653 1.00 16.55 B C
 ATOM 6876 OH TYR B 297 39.540 12.273 -25.481 1.00 17.47 B O
 ATOM 6877 CE2 TYR B 297 39.631 13.175 -27.708 1.00 15.00 B C
 ATOM 6878 CD2 TYR B 297 40.340 13.379 -28.847 1.00 14.40 B C
 ATOM 6879 C TYR B 297 42.881 12.578 -32.516 1.00 17.77 B C
 ATOM 6880 O TYR B 297 41.953 12.807 -33.292 1.00 16.97 B O
 ATOM 6881 N ASP B 298 44.160 12.742 -32.815 1.00 19.99 B N
 ATOM 6882 CA ASP B 298 44.596 13.278 -34.118 1.00 23.26 B C
 ATOM 6883 CB ASP B 298 46.045 13.731 -34.047 1.00 28.34 B C
 ATOM 6884 CG ASP B 298 46.509 14.437 -35.321 1.00 38.75 B C
 ATOM 6885 OD1 ASP B 298 45.730 15.246 -35.868 1.00 36.91 B O
 ATOM 6886 OD2 ASP B 298 47.654 14.182 -35.766 1.00 42.81 B O
 ATOM 6887 C ASP B 298 44.408 12.330 -35.296 1.00 23.75 B C
 ATOM 6888 O ASP B 298 43.861 12.730 -36.342 1.00 22.43 B O
 ATOM 6889 N VAL B 299 44.861 11.077 -35.168 1.00 18.23 B N
 ATOM 6890 CA VAL B 299 44.821 10.178 -36.314 1.00 19.25 B C
 ATOM 6891 CB VAL B 299 46.219 9.979 -36.949 1.00 24.81 B C
 ATOM 6892 CG1 VAL B 299 46.692 11.299 -37.581 1.00 29.19 B C
 ATOM 6893 CG2 VAL B 299 47.221 9.421 -35.934 1.00 22.46 B C
 ATOM 6894 C VAL B 299 44.202 8.826 -36.081 1.00 17.35 B C
 ATOM 6895 O VAL B 299 43.577 8.296 -36.985 1.00 17.18 B O
 ATOM 6896 N TYR B 300 44.364 8.243 -34.899 1.00 16.33 B N
 ATOM 6897 CA TYR B 300 43.998 6.828 -34.736 1.00 18.61 B C
 ATOM 6898 CB TYR B 300 44.908 6.202 -33.677 1.00 19.79 B C
 ATOM 6899 CG TYR B 300 44.840 4.699 -33.651 1.00 19.73 B C
 ATOM 6900 CD1 TYR B 300 45.633 3.917 -34.507 1.00 18.54 B C
 ATOM 6901 CE1 TYR B 300 45.557 2.496 -34.474 1.00 19.58 B C
 ATOM 6902 CZ TYR B 300 44.654 1.890 -33.597 1.00 17.68 B C
 ATOM 6903 OH TYR B 300 44.559 0.552 -33.522 1.00 21.00 B O
 ATOM 6904 CE2 TYR B 300 43.861 2.640 -32.763 1.00 21.49 B C
 ATOM 6905 CD2 TYR B 300 43.942 4.049 -32.804 1.00 22.94 B C
 ATOM 6906 C TYR B 300 42.500 6.598 -34.396 1.00 15.66 B C
 ATOM 6907 O TYR B 300 41.855 5.745 -34.978 1.00 16.10 B O
 ATOM 6908 N GLY B 301 41.961 7.349 -33.464 1.00 14.35 B N
 ATOM 6909 CA GLY B 301 40.617 7.084 -32.929 1.00 13.88 B C
 ATOM 6910 C GLY B 301 39.486 7.560 -33.795 1.00 19.41 B C
 ATOM 6911 O GLY B 301 39.578 8.639 -34.396 1.00 17.02 B O
 ATOM 6912 N THR B 302 38.415 6.761 -33.889 1.00 17.51 B N
 ATOM 6913 CA THR B 302 37.184 7.246 -34.519 1.00 16.58 B C
 ATOM 6914 CB THR B 302 36.168 6.117 -34.850 1.00 16.55 B C
 ATOM 6915 OG1 THR B 302 35.689 5.542 -33.635 1.00 17.13 B O
 ATOM 6916 CG2 THR B 302 36.770 5.007 -35.748 1.00 12.41 B C
 ATOM 6917 C THR B 302 36.489 8.211 -33.581 1.00 16.89 B C
 ATOM 6918 O THR B 302 36.696 8.191 -32.392 1.00 17.51 B O
 ATOM 6919 N LEU B 303 35.595 9.039 -34.112 1.00 18.82 B N
 ATOM 6920 CA LEU B 303 34.924 10.002 -33.280 1.00 18.70 B C
 ATOM 6921 CB LEU B 303 34.040 10.902 -34.140 1.00 25.89 B C
 ATOM 6922 CG LEU B 303 33.922 12.395 -33.907 1.00 33.97 B C
 ATOM 6923 CD1 LEU B 303 35.238 13.063 -33.530 1.00 26.30 B C
 ATOM 6924 CD2 LEU B 303 33.287 13.024 -35.186 1.00 29.85 B C
 ATOM 6925 C LEU B 303 34.112 9.354 -32.156 1.00 18.45 B C
 ATOM 6926 O LEU B 303 34.101 9.852 -31.031 1.00 18.10 B O
 ATOM 6927 N ASP B 304 33.454 8.233 -32.441 1.00 18.11 B N
 ATOM 6928 CA ASP B 304 32.737 7.445 -31.405 1.00 19.14 B C
 ATOM 6929 CB ASP B 304 32.027 6.217 -32.020 1.00 24.92 B C
 ATOM 6930 CG ASP B 304 30.770 6.589 -32.888 1.00 37.62 B C
 ATOM 6931 OD1 ASP B 304 30.233 7.725 -32.793 1.00 36.17 B O
 ATOM 6932 OD2 ASP B 304 30.316 5.728 -33.674 1.00 42.17 B O
 ATOM 6933 C ASP B 304 33.674 6.976 -30.264 1.00 17.27 B C
 ATOM 6934 O ASP B 304 33.298 7.015 -29.098 1.00 15.49 B O
 ATOM 6935 N GLU B 305 34.883 6.536 -30.610 1.00 17.49 B N
 ATOM 6936 CA GLU B 305 35.858 6.090 -29.613 1.00 15.60 B C
 ATOM 6937 CB GLU B 305 37.055 5.401 -30.301 1.00 16.67 B C
 ATOM 6938 CG GLU B 305 36.732 4.136 -31.078 1.00 17.92 B C
 ATOM 6939 CD GLU B 305 37.954 3.572 -31.821 1.00 18.92 B C
 ATOM 6940 OE1 GLU B 305 38.882 4.342 -32.205 1.00 17.92 B O
 ATOM 6941 OE2 GLU B 305 38.046 2.336 -31.953 1.00 19.32 B O
 ATOM 6942 C GLU B 305 36.352 7.284 -28.803 1.00 14.90 B C
 ATOM 6943 O GLU B 305 36.552 7.186 -27.608 1.00 14.85 B O
 ATOM 6944 N LEU B 306 36.560 8.417 -29.476 1.00 14.91 B N
 ATOM 6945 CA LEU B 306 37.066 9.604 -28.826 1.00 13.56 B C
 ATOM 6946 CB LEU B 306 37.460 10.651 -29.876 1.00 13.42 B C
 ATOM 6947 CG LEU B 306 38.586 10.284 -30.878 1.00 14.82 B C
 ATOM 6948 CD1 LEU B 306 38.847 11.573 -31.746 1.00 14.84 B C
 ATOM 6949 CD2 LEU B 306 39.834 9.840 -30.171 1.00 15.93 B C
 ATOM 6950 C LEU B 306 36.048 10.161 -27.816 1.00 13.30 B C
 ATOM 6951 O LEU B 306 36.411 10.666 -26.751 1.00 14.09 B O
 ATOM 6952 N GLU B 307 34.762 10.034 -28.125 1.00 14.71 B N
 ATOM 6953 CA GLU B 307 33.729 10.442 -27.179 1.00 16.27 B C
 ATOM 6954 CB GLU B 307 32.331 10.356 -27.807 1.00 23.38 B C
 ATOM 6955 CG GLU B 307 32.111 11.353 -28.928 1.00 26.61 B C
 ATOM 6956 CD GLU B 307 31.648 12.688 -28.409 1.00 37.36 B C
 ATOM 6957 OE1 GLU B 307 31.531 12.827 -27.163 1.00 34.44 B O
 ATOM 6958 OE2 GLU B 307 31.397 13.588 -29.240 1.00 39.03 B O
 ATOM 6959 C GLU B 307 33.763 9.556 -25.955 1.00 17.30 B C
 ATOM 6960 O GLU B 307 33.624 10.048 -24.860 1.00 16.25 B O
 ATOM 6961 N LEU B 308 33.958 8.246 -26.136 1.00 17.52 B N
 ATOM 6962 CA LEU B 308 34.075 7.326 -24.986 1.00 20.67 B C
 ATOM 6963 CB LEU B 308 34.267 5.863 -25.451 1.00 23.47 B C
 ATOM 6964 CG LEU B 308 33.023 5.193 -26.041 1.00 25.34 B C
 ATOM 6965 CD1 LEU B 308 33.350 3.738 -26.465 1.00 23.64 B C
 ATOM 6966 CD2 LEU B 308 31.862 5.193 -25.028 1.00 27.52 B C
 ATOM 6967 C LEU B 308 35.240 7.674 -24.111 1.00 17.44 B C
 ATOM 6968 O LEU B 308 35.124 7.703 -22.887 1.00 15.08 B O
 ATOM 6969 N PHE B 309 36.386 7.934 -24.736 1.00 15.50 B N
 ATOM 6970 CA PHE B 309 37.597 8.288 -23.969 1.00 14.42 B C
 ATOM 6971 CB PHE B 309 38.816 8.407 -24.893 1.00 13.51 B C
 ATOM 6972 CG PHE B 309 40.141 8.375 -24.170 1.00 13.46 B C
 ATOM 6973 CD1 PHE B 309 40.722 9.533 -23.699 1.00 14.51 B C
 ATOM 6974 CE1 PHE B 309 41.940 9.504 -23.011 1.00 16.19 B C
 ATOM 6975 CZ PHE B 309 42.567 8.281 -22.809 1.00 16.97 B C
 ATOM 6976 CE2 PHE B 309 41.999 7.155 -23.238 1.00 15.71 B C
 ATOM 6977 CD2 PHE B 309 40.772 7.180 -23.927 1.00 16.06 B C
 ATOM 6978 C PHE B 309 37.409 9.563 -23.164 1.00 14.01 B C
 ATOM 6979 O PHE B 309 37.782 9.622 -21.979 1.00 14.02 B O
 ATOM 6980 N THR B 310 36.886 10.610 -23.812 1.00 17.04 B N
 ATOM 6981 CA THR B 310 36.645 11.889 -23.157 1.00 15.23 B C
 ATOM 6982 CB THR B 310 36.062 12.936 -24.140 1.00 17.00 B C
 ATOM 6983 OG1 THR B 310 36.923 13.003 -25.280 1.00 18.07 B O
 ATOM 6984 CG2 THR B 310 35.942 14.349 -23.506 1.00 14.76 B C
 ATOM 6985 C THR B 310 35.729 11.735 -21.948 1.00 17.85 B C
 ATOM 6986 O THR B 310 36.039 12.243 -20.871 1.00 14.66 B O
 ATOM 6987 N ASP B 311 34.649 10.979 -22.130 1.00 19.67 B N
 ATOM 6988 CA ASP B 311 33.699 10.657 -21.075 1.00 19.68 B C

ATOM 6989 CB ASP B 311 32.534 9.817 -21.647 1.00 22.14 B C
 ATOM 6990 CG ASP B 311 31.516 9.414 -20.579 1.00 28.93 B C
 ATOM 6991 OD1 ASP B 311 30.837 10.310 -19.997 1.00 31.55 B O
 ATOM 6992 OD2 ASP B 311 31.429 8.209 -20.261 1.00 32.04 B O
 ATOM 6993 C ASP B 311 34.372 9.886 -19.944 1.00 19.06 B C
 ATOM 6994 O ASP B 311 34.114 10.168 -18.785 1.00 16.44 B O
 ATOM 6995 N ALA B 312 35.229 8.914 -20.281 1.00 18.62 B N
 ATOM 6996 CA ALA B 312 35.926 8.147 -19.275 1.00 17.19 B C
 ATOM 6997 CB ALA B 312 36.664 6.912 -19.892 1.00 13.49 B C
 ATOM 6998 C ALA B 312 36.859 9.028 -18.440 1.00 13.94 B C
 ATOM 6999 O ALA B 312 36.894 8.886 -17.229 1.00 15.40 B O
 ATOM 7000 N VAL B 313 37.541 9.998 -19.063 1.00 13.78 B N
 ATOM 7001 CA VAL B 313 38.380 10.912 -18.337 1.00 14.72 B C
 ATOM 7002 CB VAL B 313 39.314 11.724 -19.271 1.00 12.81 B C
 ATOM 7003 CG1 VAL B 313 40.012 12.823 -18.484 1.00 16.22 B C
 ATOM 7004 CG2 VAL B 313 40.344 10.765 -19.930 1.00 12.97 B C
 ATOM 7005 C VAL B 313 37.556 11.845 -17.413 1.00 17.12 B C
 ATOM 7006 O VAL B 313 37.895 11.995 -16.248 1.00 13.85 B O
 ATOM 7007 N GLU B 314 36.446 12.384 -17.914 1.00 19.70 B N
 ATOM 7008 CA GLU B 314 35.519 13.203 -17.116 1.00 17.71 B C
 ATOM 7009 CB GLU B 314 34.314 13.642 -17.987 1.00 18.63 B C
 ATOM 7010 CG GLU B 314 34.732 14.588 -19.117 1.00 22.12 B C
 ATOM 7011 CD GLU B 314 33.579 15.065 -20.023 1.00 28.37 B C
 ATOM 7012 OE1 GLU B 314 32.565 14.380 -20.150 1.00 33.47 B O
 ATOM 7013 OE2 GLU B 314 33.738 16.100 -20.679 1.00 28.18 B O
 ATOM 7014 C GLU B 314 34.992 12.469 -15.881 1.00 20.83 B C
 ATOM 7015 O GLU B 314 34.964 13.042 -14.820 1.00 18.78 B O
 ATOM 7016 N ARG B 315 34.624 11.195 -16.017 1.00 17.42 B N
 ATOM 7017 CA ARG B 315 34.045 10.428 -14.888 1.00 21.50 B C
 ATOM 7018 CB ARG B 315 33.193 9.299 -15.421 1.00 24.86 B C
 ATOM 7019 CG ARG B 315 31.882 9.782 -16.058 1.00 31.82 B C
 ATOM 7020 CD ARG B 315 31.120 8.651 -16.749 1.00 38.64 B C
 ATOM 7021 NE ARG B 315 30.075 9.168 -17.641 1.00 56.06 B N
 ATOM 7022 CZ ARG B 315 28.896 9.671 -17.251 1.00 63.18 B C
 ATOM 7023 NH1 ARG B 315 28.557 9.724 -15.966 1.00 58.00 B N
 ATOM 7024 NH2 ARG B 315 28.034 10.116 -18.164 1.00 62.54 B N
 ATOM 7025 C ARG B 315 35.107 9.879 -13.924 1.00 20.36 B C
 ATOM 7026 O ARG B 315 34.860 9.690 -12.725 1.00 16.97 B O
 ATOM 7027 N TRP B 316 36.295 9.608 -14.445 1.00 15.84 B N
 ATOM 7028 CA TRP B 316 37.393 9.138 -13.622 1.00 14.10 B C
 ATOM 7029 CB TRP B 316 37.925 10.258 -12.740 1.00 15.69 B C
 ATOM 7030 CG TRP B 316 39.359 10.072 -12.373 1.00 12.64 B C
 ATOM 7031 CD1 TRP B 316 39.871 9.691 -11.155 1.00 13.71 B C
 ATOM 7032 NE1 TRP B 316 41.226 9.613 -11.213 1.00 11.47 B N
 ATOM 7033 CE2 TRP B 316 41.677 9.923 -12.429 1.00 10.57 B C
 ATOM 7034 CD2 TRP B 316 40.532 10.242 -13.240 1.00 11.76 B C
 ATOM 7035 CE3 TRP B 316 40.720 10.599 -14.556 1.00 12.19 B C
 ATOM 7036 CZ3 TRP B 316 41.996 10.637 -15.048 1.00 14.49 B C
 ATOM 7037 CH2 TRP B 316 43.103 10.344 -14.234 1.00 14.28 B C
 ATOM 7038 CZ2 TRP B 316 42.958 9.993 -12.914 1.00 12.17 B C
 ATOM 7039 C TRP B 316 36.997 7.951 -12.817 1.00 13.75 B C
 ATOM 7040 O TRP B 316 37.127 7.945 -11.613 1.00 15.54 B O
 ATOM 7041 N ASP B 317 36.470 6.939 -13.485 1.00 14.60 B N
 ATOM 7042 CA ASP B 317 35.944 5.750 -12.810 1.00 18.60 B C
 ATOM 7043 CB ASP B 317 34.439 5.688 -13.112 1.00 18.39 B C
 ATOM 7044 CG ASP B 317 33.744 4.490 -12.526 1.00 23.79 B C
 ATOM 7045 OD1 ASP B 317 34.291 3.728 -11.691 1.00 28.29 B O
 ATOM 7046 OD2 ASP B 317 32.578 4.326 -12.918 1.00 29.79 B O
 ATOM 7047 C ASP B 317 36.655 4.521 -13.365 1.00 17.48 B C
 ATOM 7048 O ASP B 317 36.458 4.195 -14.532 1.00 21.17 B O
 ATOM 7049 N VAL B 318 37.449 3.844 -12.535 1.00 20.98 B N
 ATOM 7050 CA VAL B 318 38.216 2.676 -12.970 1.00 18.72 B C
 ATOM 7051 CB VAL B 318 39.303 2.293 -11.952 1.00 22.93 B C
 ATOM 7052 CG1 VAL B 318 38.693 1.638 -10.707 1.00 22.40 B C
 ATOM 7053 CG2 VAL B 318 40.351 1.365 -12.578 1.00 21.60 B C
 ATOM 7054 C VAL B 318 37.276 1.489 -13.145 1.00 26.77 B C

ATOM 7055 O VAL B 318 37.547 0.597 -13.934 1.00 24.06 B O
 ATOM 7056 N ASN B 319 36.167 1.476 -12.407 1.00 24.55 B N
 ATOM 7057 CA ASN B 319 35.197 0.365 -12.484 1.00 25.94 B C
 ATOM 7058 CB ASN B 319 34.261 0.385 -11.275 1.00 26.17 B C
 ATOM 7059 CG ASN B 319 35.018 0.199 -9.952 1.00 28.06 B C
 ATOM 7060 OD1 ASN B 319 35.796 -0.761 -9.803 1.00 27.13 B O
 ATOM 7061 ND2 ASN B 319 34.789 1.100 -8.988 1.00 20.00 B N
 ATOM 7062 C ASN B 319 34.393 0.345 -13.769 1.00 23.58 B C
 ATOM 7063 O ASN B 319 33.598 -0.555 -13.949 1.00 23.76 B O
 ATOM 7064 N ALA B 320 34.636 1.308 -14.663 1.00 23.98 B N
 ATOM 7065 CA ALA B 320 33.974 1.397 -15.984 1.00 29.16 B C
 ATOM 7066 CB ALA B 320 33.189 2.730 -16.067 1.00 26.97 B C
 ATOM 7067 C ALA B 320 34.936 1.331 -17.199 1.00 33.61 B C
 ATOM 7068 O ALA B 320 34.527 1.638 -18.303 1.00 29.23 B O
 ATOM 7069 N ILE B 321 36.209 0.965 -17.021 1.00 33.27 B N
 ATOM 7070 CA ILE B 321 37.157 0.884 -18.166 1.00 22.33 B C
 ATOM 7071 CB ILE B 321 38.641 0.637 -17.725 1.00 25.50 B C
 ATOM 7072 CG1 ILE B 321 38.835 -0.765 -17.202 1.00 23.16 B C
 ATOM 7073 CD1 ILE B 321 40.201 -0.992 -16.573 1.00 33.57 B C
 ATOM 7074 CG2 ILE B 321 39.096 1.664 -16.636 1.00 22.17 B C
 ATOM 7075 C ILE B 321 36.784 -0.196 -19.191 1.00 29.18 B C
 ATOM 7076 O ILE B 321 37.217 -0.143 -20.339 1.00 33.50 B O
 ATOM 7077 N ASN B 322 35.992 -1.186 -18.789 1.00 26.39 B N
 ATOM 7078 CA ASN B 322 35.492 -2.174 -19.744 1.00 28.36 B C
 ATOM 7079 CB ASN B 322 34.846 -3.373 -19.019 1.00 29.64 B C
 ATOM 7080 CG ASN B 322 35.896 -4.329 -18.370 1.00 28.34 B C
 ATOM 7081 OD1 ASN B 322 37.100 -4.289 -18.666 1.00 22.33 B O
 ATOM 7082 ND2 ASN B 322 35.421 -5.182 -17.500 1.00 23.59 B N
 ATOM 7083 C ASN B 322 34.547 -1.591 -20.842 1.00 24.07 B C
 ATOM 7084 O ASN B 322 34.299 -2.245 -21.813 1.00 22.82 B O
 ATOM 7085 N ASP B 323 34.086 -0.358 -20.713 1.00 26.94 B N
 ATOM 7086 CA ASP B 323 33.367 0.317 -21.834 1.00 34.72 B C
 ATOM 7087 CB ASP B 323 32.720 1.634 -21.343 1.00 42.84 B C
 ATOM 7088 CG ASP B 323 31.791 1.459 -20.127 1.00 42.61 B C
 ATOM 7089 OD1 ASP B 323 31.199 0.384 -19.955 1.00 44.74 B O
 ATOM 7090 OD2 ASP B 323 31.641 2.433 -19.353 1.00 43.15 B O
 ATOM 7091 C ASP B 323 34.292 0.705 -23.032 1.00 27.41 B C
 ATOM 7092 O ASP B 323 33.835 1.019 -24.125 1.00 27.02 B O
 ATOM 7093 N LEU B 324 35.594 0.723 -22.806 1.00 21.91 B N
 ATOM 7094 CA LEU B 324 36.520 1.263 -23.795 1.00 21.35 B C
 ATOM 7095 CB LEU B 324 37.699 1.057 -23.075 1.00 18.13 B C
 ATOM 7096 CG LEU B 324 37.394 3.110 -22.196 1.00 19.17 B C
 ATOM 7097 CD1 LEU B 324 38.555 3.482 -21.265 1.00 17.09 B C
 ATOM 7098 CD2 LEU B 324 37.033 4.301 -23.103 1.00 15.35 B C
 ATOM 7099 C LEU B 324 37.058 0.190 -24.738 1.00 20.92 B C
 ATOM 7100 O LEU B 324 37.287 -0.944 -24.307 1.00 19.02 B O
 ATOM 7101 N PRO B 325 37.350 0.556 -26.009 1.00 18.20 B N
 ATOM 7102 CA PRO B 325 38.042 -0.408 -26.878 1.00 21.89 B C
 ATOM 7103 CB PRO B 325 38.135 0.326 -28.230 1.00 21.00 B C
 ATOM 7104 CG PRO B 325 38.016 1.718 -27.914 1.00 20.12 B C
 ATOM 7105 CD PRO B 325 37.143 1.842 -26.684 1.00 18.81 B C
 ATOM 7106 C PRO B 325 39.426 -0.741 -26.304 1.00 19.63 B C
 ATOM 7107 O PRO B 325 39.976 0.057 -25.533 1.00 15.57 B O
 ATOM 7108 N ASP B 326 39.964 -1.908 -26.656 1.00 16.21 B N
 ATOM 7109 CA ASP B 326 41.121 -2.488 -25.940 1.00 17.77 B C
 ATOM 7110 CB ASP B 326 41.543 -3.815 -26.570 1.00 22.34 B C
 ATOM 7111 CG ASP B 326 40.567 -4.979 -26.255 1.00 24.51 B C
 ATOM 7112 OD1 ASP B 326 39.698 -4.857 -25.367 1.00 28.55 B O
 ATOM 7113 OD2 ASP B 326 40.673 -6.028 -26.910 1.00 29.72 B O
 ATOM 7114 C ASP B 326 42.322 -1.526 -25.867 1.00 16.53 B C
 ATOM 7115 O ASP B 326 42.909 -1.335 -24.792 1.00 13.99 B O
 ATOM 7116 N TYR B 327 42.654 -0.857 -26.972 1.00 15.60 B N
 ATOM 7117 CA TYR B 327 43.804 0.098 -26.924 1.00 17.04 B C
 ATOM 7118 CB TYR B 327 44.214 0.584 -28.316 1.00 17.03 B C
 ATOM 7119 CG TYR B 327 43.315 1.659 -28.914 1.00 17.73 B C
 ATOM 7120 CD1 TYR B 327 42.132 1.343 -29.557 1.00 18.37 B C

ATOM 7121 CE1 TYR B 327 41.316 2.363 -30.095 1.00 19.68 B C
 ATOM 7122 CZ TYR B 327 41.741 3.685 -30.012 1.00 19.30 B C
 ATOM 7123 OH TYR B 327 41.008 4.703 -30.533 1.00 17.39 B O
 ATOM 7124 CE2 TYR B 327 42.902 3.998 -29.399 1.00 21.08 B C
 ATOM 7125 CD2 TYR B 327 43.684 2.991 -28.842 1.00 19.32 B C
 ATOM 7126 C TYR B 327 43.563 1.274 -25.978 1.00 15.40 B C
 ATOM 7127 O TYR B 327 44.494 1.753 -25.289 1.00 17.13 B O
 ATOM 7128 N MET B 328 42.326 1.737 -25.879 1.00 15.12 B N
 ATOM 7129 CA MET B 328 42.043 2.839 -24.944 1.00 13.87 B C
 ATOM 7130 CB MET B 328 40.746 3.533 -25.291 1.00 16.27 B C
 ATOM 7131 CG MET B 328 40.878 4.478 -26.468 1.00 17.30 B C
 ATOM 7132 SD MET B 328 39.258 5.116 -26.958 1.00 16.70 B S
 ATOM 7133 CE MET B 328 39.865 6.551 -27.939 1.00 15.53 B C
 ATOM 7134 C MET B 328 41.994 2.405 -23.485 1.00 13.82 B C
 ATOM 7135 O MET B 328 42.280 3.190 -22.595 1.00 15.80 B O
 ATOM 7136 N LYS B 329 41.647 1.157 -23.258 1.00 15.99 B N
 ATOM 7137 CA LYS B 329 41.602 0.607 -21.905 1.00 18.78 B C
 ATOM 7138 CB LYS B 329 41.141 -0.836 -21.963 1.00 18.76 B C
 ATOM 7139 CG LYS B 329 40.485 -1.341 -20.692 1.00 29.84 B C
 ATOM 7140 CD LYS B 329 39.870 -2.750 -20.875 1.00 29.88 B C
 ATOM 7141 CE LYS B 329 39.085 -2.869 -22.175 1.00 34.22 B C
 ATOM 7142 NZ LYS B 329 38.141 -4.004 -22.166 1.00 33.90 B N
 ATOM 7143 C LYS B 329 42.982 0.688 -21.275 1.00 15.84 B C
 ATOM 7144 O LYS B 329 43.124 1.102 -20.145 1.00 13.96 B O
 ATOM 7145 N LEU B 330 43.988 0.286 -22.040 1.00 13.82 B N
 ATOM 7146 CA LEU B 330 45.348 0.326 -21.593 1.00 14.18 B C
 ATOM 7147 CB LEU B 330 46.220 -0.428 -22.591 1.00 14.87 B C
 ATOM 7148 CG LEU B 330 47.602 -0.861 -22.123 1.00 17.60 B C
 ATOM 7149 CD1 LEU B 330 47.498 -1.976 -21.081 1.00 17.42 B C
 ATOM 7150 CD2 LEU B 330 48.411 -1.377 -23.338 1.00 19.62 B C
 ATOM 7151 C LEU B 330 45.839 1.739 -21.374 1.00 15.98 B C
 ATOM 7152 O LEU B 330 46.381 2.064 -20.296 1.00 14.92 B O
 ATOM 7153 N CYS B 331 45.638 2.607 -22.372 1.00 15.80 B N
 ATOM 7154 CA ACYS B 331 46.049 4.000 -22.251 0.50 14.90 B C
 ATOM 7155 CA BCYS B 331 46.018 4.013 -22.258 0.50 16.77 B C
 ATOM 7156 CB ACYS B 331 45.751 4.763 -23.555 0.50 16.03 B C
 ATOM 7157 CB BCYS B 331 45.609 4.772 -23.525 0.50 21.14 B C
 ATOM 7158 SG ACYS B 331 46.485 6.421 -23.637 0.50 17.14 B S
 ATOM 7159 SG BCYS B 331 46.673 4.456 -24.908 0.50 30.01 B S
 ATOM 7160 C CYS B 331 45.360 4.680 -21.061 1.00 14.16 B C
 ATOM 7161 O CYS B 331 46.017 5.344 -20.269 1.00 14.78 B O
 ATOM 7162 N PHE B 332 44.040 4.517 -20.956 1.00 12.94 B N
 ATOM 7163 CA PHE B 332 43.289 5.070 -19.843 1.00 12.85 B C
 ATOM 7164 CB PHE B 332 41.792 4.785 -19.934 1.00 14.46 B C
 ATOM 7165 CG PHE B 332 40.993 5.396 -18.801 1.00 17.76 B C
 ATOM 7166 CD1 PHE B 332 40.638 6.716 -18.836 1.00 17.42 B C
 ATOM 7167 CE1 PHE B 332 39.921 7.282 -17.798 1.00 21.26 B C
 ATOM 7168 CZ PHE B 332 39.554 6.517 -16.719 1.00 17.35 B C
 ATOM 7169 CE2 PHE B 332 39.930 5.236 -16.639 1.00 20.18 B C
 ATOM 7170 CD2 PHE B 332 40.641 4.650 -17.689 1.00 21.54 B C
 ATOM 7171 C PHE B 332 43.816 4.591 -18.496 1.00 10.49 B C
 ATOM 7172 O PHE B 332 44.073 5.398 -17.613 1.00 11.44 B O
 ATOM 7173 N LEU B 333 44.002 3.293 -18.351 1.00 11.57 B N
 ATOM 7174 CA LEU B 333 44.347 2.762 -17.044 1.00 10.73 B C
 ATOM 7175 CB LEU B 333 44.170 1.256 -16.957 1.00 11.15 B C
 ATOM 7176 CG LEU B 333 44.494 0.599 -15.595 1.00 11.32 B C
 ATOM 7177 CD1 LEU B 333 43.650 1.232 -14.483 1.00 9.46 B C
 ATOM 7178 CD2 LEU B 333 44.261 -0.957 -15.619 1.00 9.98 B C
 ATOM 7179 C LEU B 333 45.771 3.231 -16.673 1.00 13.03 B C
 ATOM 7180 O LEU B 333 46.024 3.606 -15.507 1.00 10.42 B O
 ATOM 7181 N ALA B 334 46.664 3.338 -17.663 1.00 11.93 B N
 ATOM 7182 CA ALA B 334 48.011 3.853 -17.368 1.00 13.38 B C
 ATOM 7183 CB ALA B 334 48.913 3.685 -18.575 1.00 15.36 B C
 ATOM 7184 C ALA B 334 47.984 5.312 -16.906 1.00 12.41 B C
 ATOM 7185 O ALA B 334 48.691 5.696 -15.978 1.00 12.48 B O
 ATOM 7186 N LEU B 335 47.156 6.123 -17.548 1.00 14.27 B N

ATOM 7187 CA LEU B 335 47.000 7.544 -17.184 1.00 14.27 B C
 ATOM 7188 CB LEU B 335 46.099 8.266 -18.217 1.00 13.34 B C
 ATOM 7189 CG LEU B 335 45.755 9.740 -17.994 1.00 19.00 B C
 ATOM 7190 CD1 LEU B 335 47.010 10.582 -18.057 1.00 16.63 B C
 ATOM 7191 CD2 LEU B 335 44.695 10.245 -18.956 1.00 21.42 B C
 ATOM 7192 C LEU B 335 46.396 7.663 -15.779 1.00 13.65 B C
 ATOM 7193 O LEU B 335 46.898 8.412 -14.942 1.00 15.12 B O
 ATOM 7194 N TYR B 336 45.309 6.926 -15.574 1.00 14.28 B N
 ATOM 7195 CA TYR B 336 44.563 6.865 -14.329 1.00 13.79 B C
 ATOM 7196 CB TYR B 336 43.503 5.777 -14.448 1.00 13.43 B C
 ATOM 7197 CG TYR B 336 42.499 5.696 -13.337 1.00 12.12 B C
 ATOM 7198 CD1 TYR B 336 41.410 6.570 -13.286 1.00 14.48 B C
 ATOM 7199 CE1 TYR B 336 40.461 6.486 -12.232 1.00 15.49 B C
 ATOM 7200 CZ TYR B 336 40.618 5.543 -11.262 1.00 17.58 B C
 ATOM 7201 OH TYR B 336 39.706 5.404 -10.223 1.00 20.26 B O
 ATOM 7202 CE2 TYR B 336 41.705 4.678 -11.313 1.00 16.06 B C
 ATOM 7203 CD2 TYR B 336 42.636 4.775 -12.328 1.00 12.06 B C
 ATOM 7204 C TYR B 336 45.474 6.574 -13.173 1.00 13.04 B C
 ATOM 7205 O TYR B 336 45.535 7.368 -12.217 1.00 10.25 B O
 ATOM 7206 N ASN B 337 46.268 5.507 -13.279 1.00 11.68 B N
 ATOM 7207 CA ASN B 337 47.194 5.162 -12.199 1.00 11.43 B C
 ATOM 7208 CB ASN B 337 47.852 3.796 -12.409 1.00 10.75 B C
 ATOM 7209 CG ASN B 337 46.888 2.659 -12.265 1.00 13.68 B C
 ATOM 7210 OD1 ASN B 337 45.820 2.821 -11.681 1.00 15.73 B O
 ATOM 7211 ND2 ASN B 337 47.246 1.475 -12.815 1.00 12.01 B N
 ATOM 7212 C ASN B 337 48.268 6.230 -12.014 1.00 12.56 B C
 ATOM 7213 O ASN B 337 48.669 6.532 -10.907 1.00 9.49 B O
 ATOM 7214 N THR B 338 48.762 6.796 -13.114 1.00 11.89 B N
 ATOM 7215 CA THR B 338 49.845 7.794 -13.007 1.00 13.27 B C
 ATOM 7216 CB THR B 338 50.380 8.190 -14.415 1.00 13.32 B C
 ATOM 7217 OG1 THR B 338 50.891 7.025 -15.072 1.00 11.43 B O
 ATOM 7218 CG2 THR B 338 51.537 9.254 -14.292 1.00 11.47 B C
 ATOM 7219 C THR B 338 49.354 9.039 -12.245 1.00 11.70 B C
 ATOM 7220 O THR B 338 50.025 9.546 -11.331 1.00 10.36 B O
 ATOM 7221 N ILE B 339 48.151 9.488 -12.577 1.00 13.01 B N
 ATOM 7222 CA ILE B 339 47.617 10.696 -11.960 1.00 14.00 B C
 ATOM 7223 CB ILE B 339 46.396 11.246 -12.721 1.00 14.99 B C
 ATOM 7224 CG1 ILE B 339 46.747 11.682 -14.146 1.00 18.07 B C
 ATOM 7225 CD1 ILE B 339 48.106 12.170 -14.359 1.00 20.10 B C
 ATOM 7226 CG2 ILE B 339 45.768 12.404 -11.959 1.00 14.32 B C
 ATOM 7227 C ILE B 339 47.242 10.398 -10.485 1.00 13.46 B C
 ATOM 7228 O ILE B 339 47.538 11.205 -9.621 1.00 11.31 B O
 ATOM 7229 N ASN B 340 46.644 9.230 -10.215 1.00 13.92 B N
 ATOM 7230 CA ASN B 340 46.307 8.829 -8.836 1.00 13.55 B C
 ATOM 7231 CB ASN B 340 45.468 7.553 -8.764 1.00 12.74 B C
 ATOM 7232 CG ASN B 340 44.074 7.755 -9.301 1.00 15.12 B C
 ATOM 7233 OD1 ASN B 340 43.648 8.889 -9.555 1.00 13.91 B O
 ATOM 7234 ND2 ASN B 340 43.364 6.666 -9.520 1.00 12.09 B N
 ATOM 7235 C ASN B 340 47.539 8.718 -7.965 1.00 14.94 B C
 ATOM 7236 O ASN B 340 47.471 9.006 -6.759 1.00 12.07 B O
 ATOM 7237 N GLU B 341 48.656 8.300 -8.559 1.00 13.96 B N
 ATOM 7238 CA GLU B 341 49.949 8.274 -7.847 1.00 12.04 B C
 ATOM 7239 CB GLU B 341 50.982 7.440 -8.654 1.00 16.76 B C
 ATOM 7240 CG GLU B 341 52.351 7.360 -8.012 1.00 27.37 B C
 ATOM 7241 CD GLU B 341 53.300 6.365 -8.704 1.00 40.42 B C
 ATOM 7242 OE1 GLU B 341 53.521 6.477 -9.939 1.00 50.64 B O
 ATOM 7243 OE2 GLU B 341 53.825 5.477 -8.000 1.00 41.15 B O
 ATOM 7244 C GLU B 341 50.483 9.651 -7.494 1.00 11.88 B C
 ATOM 7245 O GLU B 341 50.999 9.868 -6.379 1.00 11.32 B O
 ATOM 7246 N ILE B 342 50.377 10.589 -8.421 1.00 11.62 B N
 ATOM 7247 CA ILE B 342 50.815 11.964 -8.141 1.00 13.66 B C
 ATOM 7248 CB ILE B 342 50.798 12.812 -9.390 1.00 14.05 B C
 ATOM 7249 CG1 ILE B 342 51.936 12.339 -10.318 1.00 14.25 B C
 ATOM 7250 CD1 ILE B 342 51.739 12.813 -11.820 1.00 13.16 B C
 ATOM 7251 CG2 ILE B 342 50.943 14.326 -9.035 1.00 13.52 B C
 ATOM 7252 C ILE B 342 49.927 12.546 -7.060 1.00 12.69 B C

ATOM 7253 O ILE B 342 50.446 13.164 -6.143 1.00 12.41 B O
 ATOM 7254 N ALA B 343 48.612 12.272 -7.119 1.00 13.09 B N
 ATOM 7255 CA ALA B 343 47.690 12.675 -6.016 1.00 13.78 B C
 ATOM 7256 CB ALA B 343 46.251 12.353 -6.322 1.00 10.48 B C
 ATOM 7257 C ALA B 343 48.088 12.082 -4.680 1.00 14.93 B C
 ATOM 7258 O ALA B 343 48.080 12.776 -3.639 1.00 12.57 B O
 ATOM 7259 N TYR B 344 48.450 10.802 -4.685 1.00 13.63 B N
 ATOM 7260 CA TYR B 344 48.910 10.153 -3.477 1.00 10.64 B C
 ATOM 7261 CB TYR B 344 49.202 8.632 -3.662 1.00 9.56 B C
 ATOM 7262 CG TYR B 344 49.722 8.019 -2.401 1.00 8.14 B C
 ATOM 7263 CD1 TYR B 344 48.845 7.584 -1.425 1.00 8.38 B C
 ATOM 7264 CE1 TYR B 344 49.276 7.038 -0.280 1.00 7.58 B C
 ATOM 7265 CZ TYR B 344 50.627 6.927 -0.020 1.00 8.20 B C
 ATOM 7266 OH TYR B 344 50.992 6.367 1.189 1.00 8.47 B O
 ATOM 7267 CE2 TYR B 344 51.540 7.361 -0.959 1.00 8.57 B C
 ATOM 7268 CD2 TYR B 344 51.078 7.891 -2.157 1.00 7.92 B C
 ATOM 7269 C TYR B 344 50.148 10.855 -2.903 1.00 11.53 B C
 ATOM 7270 O TYR B 344 50.207 11.110 -1.717 1.00 8.74 B O
 ATOM 7271 N ASP B 345 51.118 11.169 -3.744 1.00 12.70 B N
 ATOM 7272 CA ASP B 345 52.347 11.824 -3.292 1.00 14.02 B C
 ATOM 7273 CB ASP B 345 53.313 12.105 -4.464 1.00 18.53 B C
 ATOM 7274 CG ASP B 345 53.945 10.831 -5.042 1.00 27.30 B C
 ATOM 7275 OD1 ASP B 345 53.971 9.815 -4.337 1.00 28.65 B O
 ATOM 7276 OD2 ASP B 345 54.395 10.863 -6.211 1.00 40.96 B O
 ATOM 7277 C ASP B 345 52.011 13.157 -2.607 1.00 15.72 B C
 ATOM 7278 O ASP B 345 52.598 13.497 -1.579 1.00 13.12 B O
 ATOM 7279 N ASN B 346 51.055 13.878 -3.173 1.00 16.72 B N
 ATOM 7280 CA ASN B 346 50.683 15.159 -2.628 1.00 16.11 B C
 ATOM 7281 CB ASN B 346 49.923 15.942 -3.654 1.00 17.94 B C
 ATOM 7282 CG ASN B 346 50.806 16.715 -4.511 1.00 31.41 B C
 ATOM 7283 OD1 ASN B 346 51.179 17.863 -4.162 1.00 25.07 B O
 ATOM 7284 ND2 ASN B 346 51.187 16.121 -5.669 1.00 29.47 B N
 ATOM 7285 C ASN B 346 49.870 15.054 -1.342 1.00 16.09 B C
 ATOM 7286 O ASN B 346 50.053 15.856 -0.437 1.00 16.82 B O
 ATOM 7287 N LEU B 347 49.016 14.043 -1.237 1.00 14.19 B N
 ATOM 7288 CA LEU B 347 48.279 13.810 -0.010 1.00 15.35 B C
 ATOM 7289 CB LEU B 347 47.269 12.671 -0.191 1.00 13.99 B C
 ATOM 7290 CG LEU B 347 46.433 12.274 1.017 1.00 14.99 B C
 ATOM 7291 CD1 LEU B 347 45.598 13.471 1.531 1.00 15.83 B C
 ATOM 7292 CD2 LEU B 347 45.561 11.037 0.756 1.00 14.36 B C
 ATOM 7293 C LEU B 347 49.271 13.518 1.099 1.00 17.90 B C
 ATOM 7294 O LEU B 347 49.217 14.116 2.208 1.00 14.50 B O
 ATOM 7295 N LYS B 348 50.214 12.636 0.795 1.00 15.21 B N
 ATOM 7296 CA LYS B 348 51.180 12.206 1.787 1.00 19.60 B C
 ATOM 7297 CB LYS B 348 52.069 11.083 1.225 1.00 20.15 B C
 ATOM 7298 CG LYS B 348 53.053 10.521 2.188 1.00 23.64 B C
 ATOM 7299 CD LYS B 348 53.725 9.259 1.636 1.00 28.85 B C
 ATOM 7300 CE LYS B 348 55.190 9.441 1.319 1.00 36.11 B C
 ATOM 7301 NZ LYS B 348 55.383 10.058 0.015 1.00 38.70 B N
 ATOM 7302 C LYS B 348 52.051 13.350 2.244 1.00 16.80 B C
 ATOM 7303 O LYS B 348 52.398 13.439 3.429 1.00 16.67 B O
 ATOM 7304 N ASP B 349 52.484 14.170 1.291 1.00 18.71 B N
 ATOM 7305 CA ASP B 349 53.558 15.121 1.555 1.00 20.44 B C
 ATOM 7306 CB ASP B 349 54.430 15.332 0.304 1.00 23.50 B C
 ATOM 7307 CG ASP B 349 55.315 14.111 -0.042 1.00 32.24 B C
 ATOM 7308 OD1 ASP B 349 55.586 13.246 0.842 1.00 32.69 B O
 ATOM 7309 OD2 ASP B 349 55.722 14.020 -1.223 1.00 43.22 B O
 ATOM 7310 C ASP B 349 53.005 16.479 2.011 1.00 23.89 B C
 ATOM 7311 O ASP B 349 53.632 17.161 2.793 1.00 22.40 B O
 ATOM 7312 N LYS B 350 51.842 16.861 1.511 1.00 21.29 B N
 ATOM 7313 CA LYS B 350 51.274 18.175 1.791 1.00 22.34 B C
 ATOM 7314 CB LYS B 350 51.010 18.888 0.479 1.00 27.25 B C
 ATOM 7315 CG LYS B 350 52.261 19.230 -0.327 1.00 29.83 B C
 ATOM 7316 CD LYS B 350 51.788 19.978 -1.562 1.00 45.65 B C
 ATOM 7317 CE LYS B 350 52.786 20.029 -2.703 1.00 44.16 B C
 ATOM 7318 NZ LYS B 350 52.019 20.581 -3.865 1.00 42.33 B N
 ATOM 7319 C LYS B 350 49.964 18.091 2.567 1.00 26.95 B C
 ATOM 7320 O LYS B 350 49.430 19.108 2.998 1.00 20.13 B O
 ATOM 7321 N GLY B 351 49.427 16.890 2.735 1.00 18.56 B N
 ATOM 7322 CA GLY B 351 48.193 16.717 3.487 1.00 19.14 B C
 ATOM 7323 C GLY B 351 46.946 17.172 2.759 1.00 18.66 B C
 ATOM 7324 O GLY B 351 45.922 17.388 3.386 1.00 21.25 B O
 ATOM 7325 N GLU B 352 47.017 17.307 1.438 1.00 17.28 B N
 ATOM 7326 CA GLU B 352 45.875 17.795 0.649 1.00 20.07 B C
 ATOM 7327 CB GLU B 352 46.277 19.103 -0.050 1.00 25.44 B C
 ATOM 7328 CG GLU B 352 46.764 20.227 0.882 1.00 34.41 B C
 ATOM 7329 CD GLU B 352 45.648 21.027 1.532 1.00 40.95 B C
 ATOM 7330 OE1 GLU B 352 44.479 20.596 1.468 1.00 43.14 B O
 ATOM 7331 OE2 GLU B 352 45.957 22.097 2.119 1.00 53.99 B O
 ATOM 7332 C GLU B 352 45.491 16.839 -0.452 1.00 17.35 B C
 ATOM 7333 O GLU B 352 46.371 16.306 -1.119 1.00 15.99 B O
 ATOM 7334 N ASN B 353 44.198 16.692 -0.693 1.00 20.08 B N
 ATOM 7335 CA ASN B 353 43.687 15.949 -1.826 1.00 24.17 B C
 ATOM 7336 CB ASN B 353 42.344 15.291 -1.505 1.00 24.41 B C
 ATOM 7337 CG ASN B 353 41.823 14.425 -2.660 1.00 28.25 B C
 ATOM 7338 OD1 ASN B 353 42.443 14.351 -3.726 1.00 19.89 B O
 ATOM 7339 ND2 ASN B 353 40.711 13.719 -2.426 1.00 28.61 B N
 ATOM 7340 C ASN B 353 43.523 16.860 -3.035 1.00 24.82 B C
 ATOM 7341 O ASN B 353 42.539 17.565 -3.142 1.00 20.76 B O
 ATOM 7342 N ILE B 354 44.464 16.788 -3.962 1.00 17.07 B N
 ATOM 7343 CA ILE B 354 44.447 17.612 -5.161 1.00 16.52 B C
 ATOM 7344 CB ILE B 354 45.875 18.138 -5.458 1.00 19.20 B C
 ATOM 7345 CG1 ILE B 354 46.813 16.975 -5.801 1.00 20.65 B C
 ATOM 7346 CD1 ILE B 354 48.124 17.359 -6.405 1.00 19.75 B C
 ATOM 7347 CG2 ILE B 354 46.394 18.954 -4.308 1.00 20.17 B C
 ATOM 7348 C ILE B 354 43.878 16.873 -6.406 1.00 14.87 B C
 ATOM 7349 O ILE B 354 43.858 17.419 -7.510 1.00 14.28 B O
 ATOM 7350 N LEU B 355 43.395 15.655 -6.233 1.00 14.49 B N
 ATOM 7351 CA LEU B 355 42.992 14.814 -7.380 1.00 16.72 B C
 ATOM 7352 CB LEU B 355 42.503 13.437 -6.905 1.00 16.17 B C
 ATOM 7353 CG LEU B 355 42.124 12.443 -8.018 1.00 20.13 B C
 ATOM 7354 CD1 LEU B 355 43.327 12.200 -8.933 1.00 16.30 B C
 ATOM 7355 CD2 LEU B 355 41.576 11.152 -7.429 1.00 19.09 B C
 ATOM 7356 C LEU B 355 41.932 15.525 -8.255 1.00 17.42 B C
 ATOM 7357 O LEU B 355 42.073 15.554 -9.498 1.00 17.72 B O
 ATOM 7358 N PRO B 356 40.919 16.176 -7.616 1.00 19.20 B N
 ATOM 7359 CA PRO B 356 39.907 16.857 -8.447 1.00 20.49 B C
 ATOM 7360 CB PRO B 356 39.011 17.570 -7.427 1.00 25.18 B C
 ATOM 7361 CG PRO B 356 39.195 16.766 -6.140 1.00 22.46 B C
 ATOM 7362 CD PRO B 356 40.646 16.349 -6.176 1.00 16.95 B C
 ATOM 7363 C PRO B 356 40.531 17.846 -9.417 1.00 16.26 B C
 ATOM 7364 O PRO B 356 40.087 17.924 -10.549 1.00 15.34 B O
 ATOM 7365 N TYR B 357 41.588 18.532 -9.021 1.00 15.15 B N
 ATOM 7366 CA TYR B 357 42.214 19.540 -9.920 1.00 18.77 B C
 ATOM 7367 CB TYR B 357 43.092 20.465 -9.121 1.00 24.64 B C
 ATOM 7368 CG TYR B 357 42.401 20.969 -7.856 1.00 25.80 B C
 ATOM 7369 CD1 TYR B 357 41.238 21.715 -7.918 1.00 35.57 B C
 ATOM 7370 CE1 TYR B 357 40.594 22.159 -6.749 1.00 34.51 B C
 ATOM 7371 CZ TYR B 357 41.141 21.848 -5.528 1.00 34.02 B C
 ATOM 7372 OH TYR B 357 40.570 22.254 -4.355 1.00 40.33 B O
 ATOM 7373 CE2 TYR B 357 42.290 21.112 -5.458 1.00 30.39 B C
 ATOM 7374 CD2 TYR B 357 42.914 20.684 -6.621 1.00 25.62 B C
 ATOM 7375 C TYR B 357 43.028 18.907 -11.061 1.00 19.51 B C
 ATOM 7376 O TYR B 357 43.054 19.415 -12.191 1.00 14.78 B O
 ATOM 7377 N LEU B 358 43.688 17.793 -10.758 1.00 16.40 B N
 ATOM 7378 CA LEU B 358 44.472 17.065 -11.759 1.00 14.91 B C
 ATOM 7379 CB LEU B 358 45.363 16.019 -11.095 1.00 16.54 B C
 ATOM 7380 CG LEU B 358 46.329 16.457 -9.988 1.00 18.96 B C
 ATOM 7381 CD1 LEU B 358 47.129 15.226 -9.464 1.00 15.05 B C
 ATOM 7382 CD2 LEU B 358 47.237 17.613 -10.471 1.00 17.94 B C
 ATOM 7383 C LEU B 358 43.563 16.413 -12.781 1.00 12.49 B C
 ATOM 7384 O LEU B 358 43.850 16.409 -13.985 1.00 14.97 B O

ATOM 7385 N THR B 359 42.470 15.823 -12.327 1.00 14.36 B N
 ATOM 7386 CA THR B 359 41.552 15.178 -13.273 1.00 15.09 B C
 ATOM 7387 CB THR B 359 40.646 14.193 -12.575 1.00 17.38 B C
 ATOM 7388 OG1 THR B 359 39.798 14.921 -11.679 1.00 20.37 B O
 ATOM 7389 CG2 THR B 359 41.516 13.140 -11.799 1.00 13.68 B C
 ATOM 7390 C THR B 359 40.754 16.185 -14.129 1.00 16.20 B C
 ATOM 7391 O THR B 359 40.454 15.917 -15.302 1.00 17.64 B O
 ATOM 7392 N LYS B 360 40.458 17.360 -13.583 1.00 16.58 B N
 ATOM 7393 CA LYS B 360 39.785 18.406 -14.375 1.00 15.55 B C
 ATOM 7394 CB LYS B 360 39.361 19.567 -13.475 1.00 20.66 B C
 ATOM 7395 CG LYS B 360 38.529 20.692 -14.207 1.00 25.93 B C
 ATOM 7396 CD LYS B 360 37.361 20.084 -14.960 1.00 33.77 B C
 ATOM 7397 CE LYS B 360 36.242 21.101 -15.274 1.00 45.52 B C
 ATOM 7398 NZ LYS B 360 36.763 22.220 -16.100 1.00 38.16 B N
 ATOM 7399 C LYS B 360 40.699 18.905 -15.461 1.00 14.49 B C
 ATOM 7400 O LYS B 360 40.254 19.149 -16.573 1.00 17.23 B O
 ATOM 7401 N ALA B 361 41.979 19.061 -15.161 1.00 13.46 B N
 ATOM 7402 CA ALA B 361 42.921 19.464 -16.193 1.00 13.85 B C
 ATOM 7403 CB ALA B 361 44.341 19.705 -15.653 1.00 12.78 B C
 ATOM 7404 C ALA B 361 42.949 18.475 -17.308 1.00 13.54 B C
 ATOM 7405 O ALA B 361 42.932 18.866 -18.470 1.00 16.50 B O
 ATOM 7406 N TRP B 362 42.995 17.190 -16.991 1.00 13.97 B N
 ATOM 7407 CA TRP B 362 42.897 16.167 -18.043 1.00 12.24 B C
 ATOM 7408 CB TRP B 362 43.208 14.737 -17.493 1.00 13.20 B C
 ATOM 7409 CG TRP B 362 44.683 14.537 -17.560 1.00 13.43 B C
 ATOM 7410 CD1 TRP B 362 45.605 14.660 -16.550 1.00 13.75 B C
 ATOM 7411 NE1 TRP B 362 46.870 14.488 -17.041 1.00 14.85 B N
 ATOM 7412 CE2 TRP B 362 46.844 14.249 -18.354 1.00 14.41 B C
 ATOM 7413 CD2 TRP B 362 45.463 14.256 -18.762 1.00 13.93 B C
 ATOM 7414 CE3 TRP B 362 45.151 14.037 -20.090 1.00 16.46 B C
 ATOM 7415 CZ3 TRP B 362 46.186 13.803 -20.982 1.00 16.27 B C
 ATOM 7416 CH2 TRP B 362 47.523 13.789 -20.551 1.00 15.56 B C
 ATOM 7417 CZ2 TRP B 362 47.861 14.032 -19.238 1.00 17.59 B C
 ATOM 7418 C TRP B 362 41.599 16.203 -18.798 1.00 13.44 B C
 ATOM 7419 O TRP B 362 41.609 16.075 -20.027 1.00 14.23 B O
 ATOM 7420 N ALA B 363 40.478 16.402 -18.102 1.00 13.92 B N
 ATOM 7421 CA ALA B 363 39.158 16.453 -18.789 1.00 14.98 B C
 ATOM 7422 CB ALA B 363 37.987 16.519 -17.760 1.00 14.86 B C
 ATOM 7423 C ALA B 363 39.102 17.644 -19.755 1.00 14.71 B C
 ATOM 7424 O ALA B 363 38.680 17.507 -20.896 1.00 16.67 B O
 ATOM 7425 N ASP B 364 39.616 18.781 -19.317 1.00 15.71 B N
 ATOM 7426 CA ASP B 364 39.727 19.985 -20.160 1.00 18.73 B C
 ATOM 7427 CB ASP B 364 40.258 21.179 -19.337 1.00 19.66 B C
 ATOM 7428 CG ASP B 364 39.270 21.699 -18.300 1.00 23.82 B C
 ATOM 7429 OD1 ASP B 364 38.093 21.286 -18.300 1.00 26.70 B O
 ATOM 7430 OD2 ASP B 364 39.678 22.544 -17.462 1.00 26.89 B O
 ATOM 7431 C ASP B 364 40.622 19.783 -21.371 1.00 17.83 B C
 ATOM 7432 O ASP B 364 40.269 20.171 -22.474 1.00 15.74 B O
 ATOM 7433 N LEU B 365 41.771 19.117 -21.197 1.00 16.80 B N
 ATOM 7434 CA LEU B 365 42.614 18.812 -22.342 1.00 15.51 B C
 ATOM 7435 CB LEU B 365 43.949 18.247 -21.909 1.00 16.12 B C
 ATOM 7436 CG LEU B 365 44.923 17.884 -23.016 1.00 16.24 B C
 ATOM 7437 CD1 LEU B 365 45.225 19.093 -23.874 1.00 17.38 B C
 ATOM 7438 CD2 LEU B 365 46.195 17.331 -22.400 1.00 16.63 B C
 ATOM 7439 C LEU B 365 41.939 17.856 -23.329 1.00 16.21 B C
 ATOM 7440 O LEU B 365 41.941 18.110 -24.529 1.00 14.92 B O
 ATOM 7441 N CYS B 366 41.383 16.738 -22.842 1.00 15.29 B N
 ATOM 7442 CA CYS B 366 40.700 15.796 -23.756 1.00 15.91 B C
 ATOM 7443 CB CYS B 366 40.216 14.541 -23.025 1.00 17.87 B C
 ATOM 7444 SG CYS B 366 41.641 13.556 -22.499 1.00 21.04 B S
 ATOM 7445 C CYS B 366 39.542 16.464 -24.490 1.00 16.85 B C
 ATOM 7446 O CYS B 366 39.350 16.198 -25.671 1.00 14.79 B O
 ATOM 7447 N ASN B 367 38.817 17.362 -23.800 1.00 16.38 B N
 ATOM 7448 CA ASN B 367 37.761 18.157 -24.457 1.00 16.79 B C
 ATOM 7449 CB ASN B 367 36.849 18.878 -23.445 1.00 16.17 B C
 ATOM 7450 CG ASN B 367 35.713 17.976 -22.965 1.00 23.08 B C

ATOM 7451 OD1 ASN B 367 34.854 17.609 -23.760 1.00 21.90 B O
 ATOM 7452 ND2 ASN B 367 35.738 17.563 -21.705 1.00 21.53 B N
 ATOM 7453 C ASN B 367 38.281 19.095 -25.545 1.00 17.97 B C
 ATOM 7454 O ASN B 367 37.636 19.231 -26.580 1.00 16.45 B O
 ATOM 7455 N ALA B 368 39.457 19.688 -25.352 1.00 18.77 B N
 ATOM 7456 CA ALA B 368 40.067 20.493 -26.405 1.00 16.37 B C
 ATOM 7457 CB ALA B 368 41.212 21.352 -25.878 1.00 13.38 B C
 ATOM 7458 C ALA B 368 40.513 19.603 -27.576 1.00 16.09 B C
 ATOM 7459 O ALA B 368 40.299 19.951 -28.736 1.00 13.68 B O
 ATOM 7460 N PHE B 369 41.105 18.445 -27.303 1.00 14.01 B N
 ATOM 7461 CA PHE B 369 41.413 17.512 -28.384 1.00 14.80 B C
 ATOM 7462 CB PHE B 369 42.087 16.242 -27.875 1.00 15.59 B C
 ATOM 7463 CG PHE B 369 43.516 16.425 -27.358 1.00 17.49 B C
 ATOM 7464 CD1 PHE B 369 44.361 17.399 -27.860 1.00 18.60 B C
 ATOM 7465 CE1 PHE B 369 45.671 17.512 -27.402 1.00 23.68 B C
 ATOM 7466 CZ PHE B 369 46.167 16.617 -26.442 1.00 19.70 B C
 ATOM 7467 CE2 PHE B 369 45.347 15.633 -25.954 1.00 18.87 B C
 ATOM 7468 CD2 PHE B 369 44.012 15.536 -26.419 1.00 20.51 B C
 ATOM 7469 C PHE B 369 40.162 17.065 -29.148 1.00 14.30 B C
 ATOM 7470 O PHE B 369 40.203 16.956 -30.379 1.00 12.66 B O
 ATOM 7471 N LEU B 370 39.085 16.757 -28.414 1.00 12.34 B N
 ATOM 7472 CA LEU B 370 37.833 16.326 -29.048 1.00 14.00 B C
 ATOM 7473 CB LEU B 370 36.811 15.941 -27.991 1.00 14.86 B C
 ATOM 7474 CG LEU B 370 35.478 15.350 -28.436 1.00 16.58 B C
 ATOM 7475 CD1 LEU B 370 35.694 14.023 -29.171 1.00 15.46 B C
 ATOM 7476 CD2 LEU B 370 34.467 15.214 -27.237 1.00 14.12 B C
 ATOM 7477 C LEU B 370 37.265 17.409 -29.973 1.00 14.60 B C
 ATOM 7478 O LEU B 370 36.800 17.127 -31.074 1.00 13.28 B O
 ATOM 7479 N GLN B 371 37.296 18.664 -29.515 1.00 14.38 B N
 ATOM 7480 CA GLN B 371 36.862 19.765 -30.364 1.00 12.58 B C
 ATOM 7481 CB GLN B 371 36.935 21.136 -29.624 1.00 13.91 B C
 ATOM 7482 CG GLN B 371 36.525 22.344 -30.491 1.00 15.05 B C
 ATOM 7483 CD GLN B 371 35.083 22.250 -30.923 1.00 21.08 B C
 ATOM 7484 OE1 GLN B 371 34.747 21.704 -31.985 1.00 23.31 B O
 ATOM 7485 NE2 GLN B 371 34.228 22.663 -30.062 1.00 15.07 B N
 ATOM 7486 C GLN B 371 37.659 19.793 -31.661 1.00 12.40 B C
 ATOM 7487 O GLN B 371 37.072 19.961 -32.712 1.00 16.60 B O
 ATOM 7488 N GLU B 372 38.977 19.620 -31.619 1.00 12.63 B N
 ATOM 7489 CA GLU B 372 39.777 19.560 -32.852 1.00 14.19 B C
 ATOM 7490 CB GLU B 372 41.297 19.436 -32.553 1.00 15.96 B C
 ATOM 7491 CG GLU B 372 41.827 20.751 -31.939 1.00 24.27 B C
 ATOM 7492 CD GLU B 372 43.324 20.791 -31.593 1.00 29.35 B C
 ATOM 7493 OE1 GLU B 372 44.002 19.716 -31.433 1.00 38.38 B O
 ATOM 7494 OE2 GLU B 372 43.808 21.931 -31.418 1.00 32.54 B O
 ATOM 7495 C GLU B 372 39.373 18.416 -33.787 1.00 14.37 B C
 ATOM 7496 O GLU B 372 39.254 18.619 -35.001 1.00 12.45 B O
 ATOM 7497 N ALA B 373 39.171 17.235 -33.203 1.00 15.48 B N
 ATOM 7498 CA ALA B 373 38.776 16.051 -33.966 1.00 16.23 B C
 ATOM 7499 CB ALA B 373 38.745 14.825 -33.070 1.00 15.65 B C
 ATOM 7500 C ALA B 373 37.422 16.287 -34.616 1.00 16.98 B C
 ATOM 7501 O ALA B 373 37.219 15.908 -35.767 1.00 13.16 B O
 ATOM 7502 N LYS B 374 36.502 16.946 -33.906 1.00 14.90 B N
 ATOM 7503 CA LYS B 374 35.180 17.201 -34.476 1.00 15.49 B C
 ATOM 7504 CB LYS B 374 34.195 17.686 -33.435 1.00 18.32 B C
 ATOM 7505 CG LYS B 374 33.717 16.658 -32.506 1.00 21.64 B C
 ATOM 7506 CD LYS B 374 32.830 17.267 -31.416 1.00 32.78 B C
 ATOM 7507 CE LYS B 374 32.172 16.151 -30.614 1.00 30.52 B C
 ATOM 7508 NZ LYS B 374 31.629 16.620 -29.322 1.00 27.14 B N
 ATOM 7509 C LYS B 374 35.254 18.204 -35.604 1.00 16.34 B C
 ATOM 7510 O LYS B 374 34.628 18.042 -36.663 1.00 13.85 B O
 ATOM 7511 N TRP B 375 36.001 19.278 -35.401 1.00 14.40 B N
 ATOM 7512 CA TRP B 375 36.148 20.242 -36.484 1.00 14.42 B C
 ATOM 7513 CB TRP B 375 37.068 21.370 -36.043 1.00 12.63 B C
 ATOM 7514 CG TRP B 375 36.412 22.448 -35.167 1.00 11.41 B C
 ATOM 7515 CD1 TRP B 375 35.092 22.888 -35.154 1.00 13.11 B C
 ATOM 7516 NE1 TRP B 375 34.950 23.935 -34.256 1.00 12.24 B N

ATOM 7517	CE2 TRP B 375	36.132	24.227	-33.685	1.00	12.65	B	C
ATOM 7518	CD2 TRP B 375	37.116	23.330	-34.238	1.00	11.48	B	C
ATOM 7519	CE3 TRP B 375	38.432	23.413	-33.799	1.00	13.19	B	C
ATOM 7520	CZ3 TRP B 375	38.751	24.416	-32.864	1.00	14.17	B	C
ATOM 7521	CH2 TRP B 375	37.772	25.253	-32.354	1.00	14.32	B	C
ATOM 7522	CZ2 TRP B 375	36.463	25.181	-32.739	1.00	14.31	B	C
ATOM 7523	C TRP B 375	36.705	19.597	-37.727	1.00	18.06	B	C
ATOM 7524	O TRP B 375	36.269	19.888	-38.837	1.00	14.97	B	O
ATOM 7525	N LEU B 376	37.714	18.756	-37.541	1.00	20.64	B	N
ATOM 7526	CA LEU B 376	38.375	18.079	-38.660	1.00	21.54	B	C
ATOM 7527	CB LEU B 376	39.560	17.240	-38.181	1.00	23.28	B	C
ATOM 7528	CG LEU B 376	40.494	16.750	-39.299	1.00	34.36	B	C
ATOM 7529	CD1 LEU B 376	41.152	17.935	-40.050	1.00	35.82	B	C
ATOM 7530	CD2 LEU B 376	41.565	15.804	-38.729	1.00	33.84	B	C
ATOM 7531	C LEU B 376	37.379	17.181	-39.386	1.00	19.90	B	C
ATOM 7532	O LEU B 376	37.250	17.255	-40.603	1.00	20.49	B	O
ATOM 7533	N TYR B 377	36.639	16.402	-38.623	1.00	20.22	B	N
ATOM 7534	CA TYR B 377	35.662	15.486	-39.189	1.00	23.40	B	C
ATOM 7535	CB TYR B 377	35.028	14.624	-38.095	1.00	22.36	B	C
ATOM 7536	CG TYR B 377	33.973	13.666	-38.628	1.00	23.93	B	C
ATOM 7537	CD1 TYR B 377	34.339	12.418	-39.158	1.00	30.84	B	C
ATOM 7538	CE1 TYR B 377	33.379	11.541	-39.666	1.00	35.98	B	C
ATOM 7539	CZ TYR B 377	32.038	11.900	-39.640	1.00	38.89	B	C
ATOM 7540	OH TYR B 377	31.092	11.026	-40.129	1.00	48.41	B	O
ATOM 7541	CE2 TYR B 377	31.643	13.121	-39.118	1.00	31.81	B	C
ATOM 7542	CD2 TYR B 377	32.615	13.999	-38.611	1.00	31.71	B	C
ATOM 7543	C TYR B 377	34.551	16.219	-39.943	1.00	28.67	B	C
ATOM 7544	O TYR B 377	34.164	15.812	-41.028	1.00	20.24	B	O
ATOM 7545	N ASN B 378	34.026	17.290	-39.358	1.00	21.29	B	N
ATOM 7546	CA ASN B 378	32.915	18.021	-39.969	1.00	20.45	B	C
ATOM 7547	CB ASN B 378	32.084	18.701	-38.907	1.00	25.71	B	C
ATOM 7548	CG ASN B 378	31.390	17.736	-38.033	1.00	27.08	B	C
ATOM 7549	OD1 ASN B 378	30.769	16.819	-38.512	1.00	29.20	B	O
ATOM 7550	ND2 ASN B 378	31.467	17.941	-36.740	1.00	26.32	B	N
ATOM 7551	C ASN B 378	33.373	19.026	-41.002	1.00	18.69	B	C
ATOM 7552	O ASN B 378	32.564	19.718	-41.587	1.00	22.16	B	O
ATOM 7553	N LYS B 379	34.669	19.103	-41.244	1.00	17.02	B	N
ATOM 7554	CA LYS B 379	35.215	20.060	-42.185	1.00	24.24	B	C
ATOM 7555	CB LYS B 379	34.732	19.735	-43.601	1.00	27.41	B	C
ATOM 7556	CG LYS B 379	35.424	18.460	-44.172	1.00	39.50	B	C
ATOM 7557	CD LYS B 379	34.587	17.811	-45.284	1.00	48.10	B	C
ATOM 7558	CE LYS B 379	35.455	17.117	-46.317	1.00	62.70	B	C
ATOM 7559	NZ LYS B 379	36.439	16.191	-45.693	1.00	70.83	B	N
ATOM 7560	C LYS B 379	34.897	21.515	-41.780	1.00	21.35	B	C
ATOM 7561	O LYS B 379	34.567	22.351	-42.612	1.00	21.06	B	O
ATOM 7562	N SER B 380	34.986	21.795	-40.489	1.00	18.96	B	N
ATOM 7563	CA SER B 380	34.621	23.098	-39.988	1.00	20.28	B	C
ATOM 7564	CB SER B 380	34.452	23.048	-38.487	1.00	22.63	B	C
ATOM 7565	OG SER B 380	33.428	22.172	-38.167	1.00	17.13	B	O
ATOM 7566	C SER B 380	35.694	24.078	-40.322	1.00	19.57	B	C
ATOM 7567	O SER B 380	36.837	23.715	-40.449	1.00	17.94	B	O
ATOM 7568	N THR B 381	35.344	25.357	-40.390	1.00	19.95	B	N
ATOM 7569	CA THR B 381	36.314	26.389	-40.691	1.00	14.29	B	C
ATOM 7570	CB THR B 381	35.996	26.981	-42.067	1.00	14.00	B	C
ATOM 7571	OG1 THR B 381	34.621	27.374	-42.061	1.00	17.82	B	O
ATOM 7572	CG2 THR B 381	36.214	25.883	-43.219	1.00	20.33	B	C
ATOM 7573	C THR B 381	36.179	27.510	-39.624	1.00	17.48	B	C
ATOM 7574	O THR B 381	35.743	28.602	-39.943	1.00	14.56	B	O
ATOM 7575	N PRO B 382	36.518	27.225	-38.365	1.00	14.21	B	N
ATOM 7576	CA PRO B 382	36.366	28.257	-37.335	1.00	16.47	B	C
ATOM 7577	CB PRO B 382	36.777	27.532	-36.051	1.00	15.71	B	C
ATOM 7578	CG PRO B 382	37.580	26.381	-36.501	1.00	16.62	B	C
ATOM 7579	CD PRO B 382	37.117	25.993	-37.834	1.00	15.97	B	C
ATOM 7580	C PRO B 382	37.233	29.492	-37.524	1.00	14.79	B	C
ATOM 7581	O PRO B 382	38.319	29.419	-38.086	1.00	14.02	B	O
ATOM 7582	N THR B 383	36.786	30.616	-36.968	1.00	12.94	B	N
ATOM 7583	CA THR B 383	37.565	31.826	-36.989	1.00	11.18	B	C
ATOM 7584	CB THR B 383	36.805	33.013	-36.303	1.00	10.38	B	C
ATOM 7585	OG1 THR B 383	36.684	32.722	-34.903	1.00	10.91	B	O
ATOM 7586	CG2 THR B 383	35.411	33.234	-36.931	1.00	8.96	B	C
ATOM 7587	C THR B 383	38.852	31.604	-36.256	1.00	12.11	B	C
ATOM 7588	O THR B 383	38.966	30.692	-35.402	1.00	10.33	B	O
ATOM 7589	N PHE B 384	39.817	32.490	-36.500	1.00	10.85	B	N
ATOM 7590	CA PHE B 384	41.054	32.439	-35.731	1.00	11.66	B	C
ATOM 7591	CB PHE B 384	42.020	33.553	-36.132	1.00	12.97	B	C
ATOM 7592	CG PHE B 384	43.236	33.622	-35.252	1.00	11.75	B	C
ATOM 7593	CD1 PHE B 384	44.344	32.803	-35.508	1.00	12.41	B	C
ATOM 7594	CE1 PHE B 384	45.424	32.806	-34.679	1.00	13.91	B	C
ATOM 7595	CZ PHE B 384	45.456	33.656	-33.552	1.00	13.96	B	C
ATOM 7596	CE2 PHE B 384	44.372	34.464	-33.291	1.00	13.02	B	C
ATOM 7597	CD2 PHE B 384	43.264	34.449	-34.159	1.00	12.10	B	C
ATOM 7598	C PHE B 384	40.811	32.476	-34.213	1.00	13.50	B	C
ATOM 7599	O PHE B 384	41.417	31.689	-33.464	1.00	11.60	B	O
ATOM 7600	N ASP B 385	39.985	33.410	-33.735	1.00	11.08	B	N
ATOM 7601	CA ASP B 385	39.685	33.468	-32.292	1.00	11.99	B	C
ATOM 7602	CB ASP B 385	38.682	34.576	-31.961	1.00	13.98	B	C
ATOM 7603	CG ASP B 385	39.316	35.984	-32.088	1.00	16.22	B	C
ATOM 7604	OD1 ASP B 385	40.548	36.066	-32.040	1.00	17.51	B	O
ATOM 7605	OD2 ASP B 385	38.610	36.967	-32.290	1.00	16.80	B	O
ATOM 7606	C ASP B 385	39.151	32.169	-31.722	1.00	10.77	B	C
ATOM 7607	O ASP B 385	39.547	31.776	-30.631	1.00	11.38	B	O
ATOM 7608	N ASP B 386	38.210	31.545	-32.396	1.00	11.91	B	N
ATOM 7609	CA ASP B 386	37.682	30.240	-31.921	1.00	12.63	B	C
ATOM 7610	CB ASP B 386	36.481	29.824	-32.750	1.00	14.45	B	C
ATOM 7611	CG ASP B 386	35.210	30.550	-32.337	1.00	25.95	B	C
ATOM 7612	OD1 ASP B 386	35.272	31.290	-31.342	1.00	26.16	B	O
ATOM 7613	OD2 ASP B 386	34.173	30.382	-33.014	1.00	26.70	B	O
ATOM 7614	C ASP B 386	38.722	29.134	-31.997	1.00	13.21	B	C
ATOM 7615	O ASP B 386	38.902	28.343	-31.042	1.00	14.69	B	O
ATOM 7616	N TYR B 387	39.412	29.058	-33.132	1.00	12.07	B	N
ATOM 7617	CA TYR B 387	40.425	27.998	-33.316	1.00	12.49	B	C
ATOM 7618	CB TYR B 387	41.030	28.016	-34.718	1.00	16.80	B	C
ATOM 7619	CG TYR B 387	42.023	26.899	-34.880	1.00	20.99	B	C
ATOM 7620	CD1 TYR B 387	41.564	25.606	-35.143	1.00	23.33	B	C
ATOM 7621	CE1 TYR B 387	42.427	24.550	-35.298	1.00	28.23	B	C
ATOM 7622	CZ TYR B 387	43.781	24.757	-35.146	1.00	27.53	B	C
ATOM 7623	OH TYR B 387	44.588	23.648	-35.278	1.00	30.12	B	O
ATOM 7624	CE2 TYR B 387	44.288	26.017	-34.851	1.00	22.49	B	C
ATOM 7625	CD2 TYR B 387	43.382	27.103	-34.720	1.00	22.96	B	C
ATOM 7626	C TYR B 387	41.540	28.122	-32.305	1.00	14.93	B	C
ATOM 7627	O TYR B 387	41.889	27.138	-31.572	1.00	12.65	B	O
ATOM 7628	N PHE B 388	42.079	29.332	-32.216	1.00	14.05	B	N
ATOM 7629	CA PHE B 388	43.221	29.590	-31.324	1.00	12.82	B	C
ATOM 7630	CB PHE B 388	43.815	31.007	-31.576	1.00	14.30	B	C
ATOM 7631	CG PHE B 388	45.008	31.331	-30.729	1.00	12.87	B	C
ATOM 7632	CD1 PHE B 388	46.168	30.597	-30.846	1.00	15.58	B	C
ATOM 7633	CE1 PHE B 388	47.275	30.848	-30.003	1.00	18.48	B	C
ATOM 7634	CZ PHE B 388	47.233	31.905	-29.073	1.00	15.76	B	C
ATOM 7635	CE2 PHE B 388	46.056	32.630	-28.933	1.00	19.27	B	C
ATOM 7636	CD2 PHE B 388	44.954	32.352	-29.774	1.00	17.96	B	C
ATOM 7637	C PHE B 388	42.787	29.430	-29.870	1.00	12.87	B	C
ATOM 7638	O PHE B 388	43.571	28.959	-29.055	1.00	14.74	B	O
ATOM 7639	N GLY B 389	41.589	29.903	-29.525	1.00	15.26	B	N
ATOM 7640	CA GLY B 389	41.008	29.764	-28.133	1.00	14.49	B	C
ATOM 7641	C GLY B 389	41.056	28.311	-27.654	1.00	14.82	B	C
ATOM 7642	O GLY B 389	41.467	28.020	-26.530	1.00	18.64	B	O
ATOM 7643	N ASN B 390	40.697	27.379	-28.541	1.00	17.04	B	N
ATOM 7644	CA ASN B 390	40.862	25.959	-28.269	1.00	13.61	B	C
ATOM 7645	CB ASN B 390	39.942	25.148	-29.207	1.00	15.14	B	C
ATOM 7646	CG ASN B 390	39.832	23.706	-28.801	1.00	14.66	B	C
ATOM 7647	OD1 ASN B 390	39.156	23.393	-27.874	1.00	14.99	B	O
ATOM 7648	ND2 ASN B 390	40.470	22.825	-29.523	1.00	11.39	B	N

ATOM 7649 C ASN B 390 42.333 25.450 -28.372 1.00 15.73 B C
 ATOM 7650 O ASN B 390 42.754 24.625 -27.566 1.00 13.70 B O
 ATOM 7651 N ALA B 391 43.093 25.932 -29.361 1.00 14.07 B N
 ATOM 7652 CA ALA B 391 44.421 25.428 -29.637 1.00 14.55 B C
 ATOM 7653 CB ALA B 391 44.909 25.965 -31.011 1.00 12.31 B C
 ATOM 7654 C ALA B 391 45.432 25.719 -28.528 1.00 17.05 B C
 ATOM 7655 O ALA B 391 46.364 24.922 -28.297 1.00 14.56 B O
 ATOM 7656 N TRP B 392 45.317 26.860 -27.841 1.00 14.34 B N
 ATOM 7657 CA TRP B 392 46.234 27.067 -26.731 1.00 16.32 B C
 ATOM 7658 CB TRP B 392 46.401 28.542 -26.313 1.00 16.63 B C
 ATOM 7659 CG TRP B 392 45.226 29.273 -25.710 1.00 14.95 B C
 ATOM 7660 CD1 TRP B 392 44.435 30.228 -26.314 1.00 14.59 B C
 ATOM 7661 NE1 TRP B 392 43.499 30.687 -25.468 1.00 16.87 B N
 ATOM 7662 CE2 TRP B 392 43.655 30.167 -24.259 1.00 19.26 B C
 ATOM 7663 CD2 TRP B 392 44.745 29.204 -24.349 1.00 13.74 B C
 ATOM 7664 CE3 TRP B 392 45.123 28.505 -23.221 1.00 16.86 B C
 ATOM 7665 CZ3 TRP B 392 44.399 28.704 -22.048 1.00 19.49 B C
 ATOM 7666 CH2 TRP B 392 43.324 29.607 -21.992 1.00 21.16 B C
 ATOM 7667 CZ2 TRP B 392 42.933 30.360 -23.096 1.00 20.28 B C
 ATOM 7668 C TRP B 392 45.969 26.147 -25.577 1.00 16.74 B C
 ATOM 7669 O TRP B 392 46.896 25.820 -24.849 1.00 16.66 B O
 ATOM 7670 N LYS B 393 44.732 25.697 -25.403 1.00 13.97 B N
 ATOM 7671 CA ALYS B 393 44.432 24.701 -24.391 0.50 16.29 B C
 ATOM 7672 CA BLYS B 393 44.409 24.679 -24.402 0.50 16.84 B C
 ATOM 7673 CB ALYS B 393 42.925 24.689 -24.066 0.50 17.23 B C
 ATOM 7674 CB BLYS B 393 42.892 24.547 -24.178 0.50 18.43 B C
 ATOM 7675 CG ALYS B 393 42.407 26.061 -23.590 0.50 19.87 B C
 ATOM 7676 CG BLYS B 393 42.227 25.745 -23.524 0.50 22.26 B C
 ATOM 7677 CD ALYS B 393 40.926 26.081 -23.145 0.50 19.59 B C
 ATOM 7678 CD BLYS B 393 40.698 25.675 -23.664 0.50 22.54 B C
 ATOM 7679 CE ALYS B 393 40.439 27.520 -22.818 0.50 24.24 B C
 ATOM 7680 CE BLYS B 393 40.020 26.968 -23.255 0.50 30.19 B C
 ATOM 7681 NZ ALYS B 393 40.026 28.379 -24.047 0.50 26.04 B N
 ATOM 7682 NZ BLYS B 393 39.565 27.013 -21.834 0.50 26.38 B N
 ATOM 7683 C LYS B 393 44.927 23.309 -24.837 1.00 16.19 B C
 ATOM 7684 O LYS B 393 45.524 22.588 -24.050 1.00 17.75 B O
 ATOM 7685 N SER B 394 44.690 22.967 -26.097 1.00 14.65 B N
 ATOM 7686 CA SER B 394 45.108 21.697 -26.664 1.00 16.05 B C
 ATOM 7687 CB SER B 394 44.487 21.443 -28.053 1.00 15.63 B C
 ATOM 7688 OG SER B 394 45.175 22.134 -29.095 1.00 16.43 B O
 ATOM 7689 C SER B 394 46.603 21.561 -26.781 1.00 16.75 B C
 ATOM 7690 O SER B 394 47.069 20.463 -26.981 1.00 14.84 B O
 ATOM 7691 N SER B 395 47.351 22.660 -26.683 1.00 17.02 B N
 ATOM 7692 CA SER B 395 48.819 22.574 -26.593 1.00 17.94 B C
 ATOM 7693 CB SER B 395 49.437 23.941 -26.370 1.00 17.30 B C
 ATOM 7694 OG SER B 395 49.134 24.510 -25.088 1.00 13.55 B O
 ATOM 7695 C SER B 395 49.291 21.677 -25.431 1.00 15.76 B C
 ATOM 7696 O SER B 395 50.376 21.123 -25.489 1.00 16.76 B O
 ATOM 7697 N SER B 396 48.489 21.642 -24.373 1.00 13.76 B N
 ATOM 7698 CA SER B 396 48.762 21.022 -23.076 1.00 17.04 B C
 ATOM 7699 CB SER B 396 49.445 19.653 -23.161 1.00 17.48 B C
 ATOM 7700 OG SER B 396 50.853 19.741 -23.382 1.00 15.38 B O
 ATOM 7701 C SER B 396 49.534 21.961 -22.140 1.00 17.50 B C
 ATOM 7702 O SER B 396 49.784 21.614 -21.002 1.00 16.88 B O
 ATOM 7703 N GLY B 397 49.874 23.171 -22.606 1.00 16.26 B N
 ATOM 7704 CA GLY B 397 50.504 24.184 -21.738 1.00 14.34 B C
 ATOM 7705 C GLY B 397 49.824 24.358 -20.397 1.00 15.51 B C
 ATOM 7706 O GLY B 397 50.472 24.259 -19.348 1.00 16.30 B O
 ATOM 7707 N PRO B 398 48.508 24.565 -20.401 1.00 14.57 B N
 ATOM 7708 CA PRO B 398 47.852 24.807 -19.120 1.00 17.72 B C
 ATOM 7709 CB PRO B 398 46.417 25.177 -19.517 1.00 18.32 B C
 ATOM 7710 CG PRO B 398 46.618 25.755 -20.932 1.00 17.69 B C
 ATOM 7711 CD PRO B 398 47.646 24.918 -21.540 1.00 18.38 B C
 ATOM 7712 C PRO B 398 47.893 23.595 -18.210 1.00 16.14 B C
 ATOM 7713 O PRO B 398 48.128 23.739 -17.006 1.00 19.03 B O
 ATOM 7714 N LEU B 399 47.734 22.406 -18.786 1.00 17.00 B N

ATOM 7715 CA LEU B 399 47.787 21.185 -17.997 1.00 16.02 B C
 ATOM 7716 CB LEU B 399 47.384 19.950 -18.846 1.00 14.75 B C
 ATOM 7717 CG LEU B 399 47.440 18.620 -18.074 1.00 15.21 B C
 ATOM 7718 CD1 LEU B 399 46.325 17.703 -18.504 1.00 15.91 B C
 ATOM 7719 CD2 LEU B 399 48.798 17.906 -18.311 1.00 14.96 B C
 ATOM 7720 C LEU B 399 49.187 21.015 -17.402 1.00 17.23 B C
 ATOM 7721 O LEU B 399 49.334 20.686 -16.233 1.00 15.66 B O
 ATOM 7722 N GLN B 400 50.222 21.227 -18.204 1.00 14.25 B N
 ATOM 7723 CA GLN B 400 51.571 21.062 -17.692 1.00 16.46 B C
 ATOM 7724 CB GLN B 400 52.571 21.338 -18.804 1.00 17.14 B C
 ATOM 7725 CG GLN B 400 52.574 20.251 -19.891 1.00 22.36 B C
 ATOM 7726 CD GLN B 400 53.679 20.470 -20.915 1.00 23.80 B C
 ATOM 7727 OE1 GLN B 400 54.753 20.953 -20.570 1.00 26.17 B O
 ATOM 7728 NE2 GLN B 400 53.403 20.144 -22.200 1.00 21.26 B N
 ATOM 7729 C GLN B 400 51.831 21.996 -16.505 1.00 16.03 B C
 ATOM 7730 O GLN B 400 52.461 21.638 -15.492 1.00 17.98 B O
 ATOM 7731 N LEU B 401 51.323 23.202 -16.612 1.00 16.36 B N
 ATOM 7732 CA LEU B 401 51.580 24.189 -15.573 1.00 16.93 B C
 ATOM 7733 CB LEU B 401 51.406 25.621 -16.137 1.00 16.62 B C
 ATOM 7734 CG LEU B 401 52.510 26.026 -17.139 1.00 16.58 B C
 ATOM 7735 CD1 LEU B 401 52.218 27.399 -17.812 1.00 16.43 B C
 ATOM 7736 CD2 LEU B 401 53.956 25.978 -16.555 1.00 17.12 B C
 ATOM 7737 C LEU B 401 50.738 23.940 -14.323 1.00 16.36 B C
 ATOM 7738 O LEU B 401 51.161 24.321 -13.223 1.00 17.21 B O
 ATOM 7739 N VAL B 402 49.560 23.291 -14.455 1.00 15.44 B N
 ATOM 7740 CA VAL B 402 48.783 22.891 -13.271 1.00 16.82 B C
 ATOM 7741 CB VAL B 402 47.409 22.358 -13.638 1.00 19.24 B C
 ATOM 7742 CG1 VAL B 402 46.785 21.555 -12.475 1.00 21.42 B C
 ATOM 7743 CG2 VAL B 402 46.523 23.505 -14.109 1.00 18.39 B C
 ATOM 7744 C VAL B 402 49.611 21.831 -12.539 1.00 17.32 B C
 ATOM 7745 O VAL B 402 49.825 21.939 -11.352 1.00 19.90 B O
 ATOM 7746 N PHE B 403 50.152 20.853 -13.265 1.00 16.42 B N
 ATOM 7747 CA PHE B 403 51.010 19.849 -12.627 1.00 15.92 B C
 ATOM 7748 CB PHE B 403 51.306 18.711 -13.596 1.00 16.25 B C
 ATOM 7749 CG PHE B 403 50.205 17.685 -13.654 1.00 18.43 B C
 ATOM 7750 CD1 PHE B 403 49.101 17.874 -14.470 1.00 16.84 B C
 ATOM 7751 CE1 PHE B 403 48.073 16.956 -14.498 1.00 17.95 B C
 ATOM 7752 CZ PHE B 403 48.150 15.813 -13.720 1.00 17.55 B C
 ATOM 7753 CE2 PHE B 403 49.274 15.600 -12.930 1.00 17.75 B C
 ATOM 7754 CD2 PHE B 403 50.281 16.534 -12.888 1.00 16.36 B C
 ATOM 7755 C PHE B 403 52.296 20.451 -12.034 1.00 20.51 B C
 ATOM 7756 O PHE B 403 52.710 20.097 -10.921 1.00 18.15 B O
 ATOM 7757 N ALA B 404 52.869 21.427 -12.731 1.00 18.27 B N
 ATOM 7758 CA ALA B 404 54.068 22.116 -12.256 1.00 21.22 B C
 ATOM 7759 CB ALA B 404 54.650 23.019 -13.338 1.00 19.30 B C
 ATOM 7760 C ALA B 404 53.763 22.906 -10.986 1.00 19.19 B C
 ATOM 7761 O ALA B 404 54.575 22.905 -10.069 1.00 18.68 B O
 ATOM 7762 N TYR B 405 52.598 23.544 -10.913 1.00 17.24 B N
 ATOM 7763 CA TYR B 405 52.178 24.284 -9.704 1.00 19.01 B C
 ATOM 7764 CB TYR B 405 50.737 24.823 -9.830 1.00 17.43 B C
 ATOM 7765 CG TYR B 405 50.197 25.462 -8.549 1.00 18.45 B C
 ATOM 7766 CD1 TYR B 405 50.452 26.809 -8.228 1.00 18.58 B C
 ATOM 7767 CE1 TYR B 405 49.964 27.364 -7.046 1.00 21.18 B C
 ATOM 7768 CZ TYR B 405 49.243 26.585 -6.174 1.00 27.35 B C
 ATOM 7769 OH TYR B 405 48.769 27.080 -4.969 1.00 24.53 B O
 ATOM 7770 CE2 TYR B 405 48.984 25.269 -6.489 1.00 26.69 B C
 ATOM 7771 CD2 TYR B 405 49.456 24.725 -7.653 1.00 19.95 B C
 ATOM 7772 C TYR B 405 52.293 23.391 -8.462 1.00 22.99 B C
 ATOM 7773 O TYR B 405 52.935 23.745 -7.461 1.00 19.04 B O
 ATOM 7774 N PHE B 406 51.698 22.206 -8.526 1.00 21.16 B N
 ATOM 7775 CA PHE B 406 51.714 21.337 -7.356 1.00 19.33 B C
 ATOM 7776 CB PHE B 406 50.673 20.225 -7.474 1.00 20.00 B C
 ATOM 7777 CG PHE B 406 49.263 20.733 -7.528 1.00 18.99 B C
 ATOM 7778 CD1 PHE B 406 48.657 21.211 -6.385 1.00 16.83 B C
 ATOM 7779 CE1 PHE B 406 47.361 21.704 -6.425 1.00 17.64 B C
 ATOM 7780 CZ PHE B 406 46.658 21.696 -7.624 1.00 21.27 B C

ATOM 7781 CE2 PHE B 406 47.266 21.186 -8.771 1.00 18.93 B C
ATOM 7782 CD2 PHE B 406 48.548 20.734 -8.718 1.00 18.22 B C
ATOM 7783 C PHE B 406 53.081 20.762 -7.044 1.00 24.99 B C
ATOM 7784 O PHE B 406 53.328 20.393 -5.905 1.00 22.61 B O
ATOM 7785 N ALA B 407 53.970 20.673 -8.029 1.00 21.48 B N
ATOM 7786 CA ALA B 407 55.318 20.191 -7.778 1.00 21.13 B C
ATOM 7787 CB ALA B 407 55.844 19.442 -8.997 1.00 17.54 B C
ATOM 7788 C ALA B 407 56.313 21.275 -7.358 1.00 26.36 B C
ATOM 7789 O ALA B 407 57.410 20.940 -6.889 1.00 31.08 B O
ATOM 7790 N VAL B 408 55.977 22.552 -7.546 1.00 29.15 B N
ATOM 7791 CA VAL B 408 56.893 23.616 -7.148 1.00 25.79 B C
ATOM 7792 CB VAL B 408 57.283 24.618 -8.287 1.00 29.33 B C
ATOM 7793 CG1 VAL B 408 57.817 23.898 -9.520 1.00 26.70 B C
ATOM 7794 CG2 VAL B 408 56.148 25.509 -8.613 1.00 29.67 B C
ATOM 7795 C VAL B 408 56.425 24.448 -5.969 1.00 28.18 B C
ATOM 7796 O VAL B 408 57.251 25.061 -5.355 1.00 30.90 B O
ATOM 7797 N VAL B 409 55.134 24.495 -5.658 1.00 28.79 B N
ATOM 7798 CA VAL B 409 54.639 25.344 -4.572 1.00 35.25 B C
ATOM 7799 CB VAL B 409 53.292 26.011 -4.958 1.00 34.13 B C
ATOM 7800 CG1 VAL B 409 52.508 26.477 -3.738 1.00 38.15 B C
ATOM 7801 CG2 VAL B 409 53.545 27.173 -5.914 1.00 33.80 B C
ATOM 7802 C VAL B 409 54.470 24.512 -3.293 1.00 43.84 B C
ATOM 7803 O VAL B 409 53.712 23.547 -3.285 1.00 49.99 B O
ATOM 7804 N GLN B 410 55.147 24.914 -2.218 1.00 46.58 B N
ATOM 7805 CA GLN B 410 55.111 24.168 -0.939 1.00 51.15 B C
ATOM 7806 CB GLN B 410 56.196 24.665 0.017 1.00 62.44 B C
ATOM 7807 CG GLN B 410 57.608 24.223 -0.368 1.00 85.53 B C
ATOM 7808 CD GLN B 410 58.693 24.878 0.483 1.00 98.51 B C
ATOM 7809 OE1 GLN B 410 58.437 25.837 1.212 1.00 115.04 B O
ATOM 7810 NE2 GLN B 410 59.913 24.361 0.387 1.00 96.93 B N
ATOM 7811 C GLN B 410 53.746 24.235 -0.259 1.00 34.26 B C
ATOM 7812 O GLN B 410 53.184 23.204 0.136 1.00 41.14 B O
ATOM 7813 N ASN B 411 53.193 25.440 -0.170 1.00 36.04 B N
ATOM 7814 CA ASN B 411 51.879 25.655 0.431 1.00 36.24 B C
ATOM 7815 CB ASN B 411 51.993 26.656 1.586 1.00 39.41 B C
ATOM 7816 CG ASN B 411 52.858 26.121 2.700 1.00 44.31 B C
ATOM 7817 OD1 ASN B 411 54.002 26.539 2.868 1.00 52.88 B O
ATOM 7818 ND2 ASN B 411 52.345 25.135 3.414 1.00 37.57 B N
ATOM 7819 C ASN B 411 50.851 26.127 -0.577 1.00 34.78 B C
ATOM 7820 O ASN B 411 50.806 27.315 -0.947 1.00 33.95 B O
ATOM 7821 N ILE B 412 49.989 25.202 -0.974 1.00 32.83 B N
ATOM 7822 CA ILE B 412 49.002 25.486 -1.986 1.00 30.16 B C
ATOM 7823 CB ILE B 412 48.372 24.173 -2.580 1.00 39.38 B C
ATOM 7824 CG1 ILE B 412 47.327 23.547 -1.664 1.00 36.76 B C
ATOM 7825 CD1 ILE B 412 46.506 22.420 -2.347 1.00 30.79 B C
ATOM 7826 CG2 ILE B 412 49.455 23.141 -2.892 1.00 39.51 B C
ATOM 7827 C ILE B 412 47.961 26.397 -1.377 1.00 33.47 B C
ATOM 7828 O ILE B 412 47.693 26.325 -0.182 1.00 30.49 B O
ATOM 7829 N LYS B 413 47.367 27.250 -2.190 1.00 28.56 B N
ATOM 7830 CA LYS B 413 46.293 28.111 -1.728 1.00 31.18 B C
ATOM 7831 CB LYS B 413 46.742 29.567 -1.724 1.00 33.98 B C
ATOM 7832 CG LYS B 413 47.863 29.824 -0.747 1.00 39.78 B C
ATOM 7833 CD LYS B 413 48.596 31.111 -1.062 1.00 50.58 B C
ATOM 7834 CE LYS B 413 49.785 31.288 -0.148 1.00 49.79 B C
ATOM 7835 NZ LYS B 413 50.396 32.600 -0.413 1.00 53.85 B N
ATOM 7836 C LYS B 413 45.077 27.957 -2.597 1.00 31.66 B C
ATOM 7837 O LYS B 413 45.172 27.893 -3.818 1.00 29.12 B O
ATOM 7838 N LYS B 414 43.929 27.915 -1.936 1.00 28.79 B N
ATOM 7839 CA LYS B 414 42.638 27.829 -2.568 1.00 40.86 B C
ATOM 7840 CB LYS B 414 41.532 28.075 -1.524 1.00 51.07 B C
ATOM 7841 CG LYS B 414 40.102 28.244 -2.085 1.00 66.21 B C
ATOM 7842 CD LYS B 414 39.612 27.042 -2.909 1.00 79.46 B C
ATOM 7843 CE LYS B 414 39.427 25.788 -2.073 1.00 89.72 B C
ATOM 7844 NZ LYS B 414 38.431 25.988 -0.988 1.00 98.92 B N
ATOM 7845 C LYS B 414 42.469 28.799 -3.733 1.00 32.82 B C
ATOM 7846 O LYS B 414 42.016 28.394 -4.798 1.00 24.44 B O

ATOM 7847 N GLU B 415 42.780 30.076 -3.537 1.00 27.69 B N
ATOM 7848 CA GLU B 415 42.501 31.041 -4.589 1.00 32.63 B C
ATOM 7849 CB GLU B 415 42.482 32.489 -4.055 1.00 36.78 B C
ATOM 7850 CG GLU B 415 43.682 33.333 -4.394 1.00 59.26 B C
ATOM 7851 CD GLU B 415 43.532 34.800 -3.967 1.00 65.67 B C
ATOM 7852 OE1 GLU B 415 42.448 35.405 -4.161 1.00 47.51 B O
ATOM 7853 OE2 GLU B 415 44.530 35.348 -3.460 1.00 66.03 B O
ATOM 7854 C GLU B 415 43.453 30.855 -5.800 1.00 22.84 B C
ATOM 7855 O GLU B 415 43.078 31.143 -6.917 1.00 28.14 B O
ATOM 7856 N GLU B 416 44.675 30.412 -5.557 1.00 23.46 B N
ATOM 7857 CA GLU B 416 45.592 30.094 -6.634 1.00 26.32 B C
ATOM 7858 CB GLU B 416 46.983 29.771 -6.092 1.00 27.26 B C
ATOM 7859 CG GLU B 416 47.672 30.981 -5.449 1.00 33.55 B C
ATOM 7860 CD GLU B 416 49.106 30.692 -5.016 1.00 35.88 B C
ATOM 7861 OE1 GLU B 416 49.435 29.528 -4.697 1.00 33.22 B O
ATOM 7862 OE2 GLU B 416 49.912 31.637 -4.995 1.00 44.51 B O
ATOM 7863 C GLU B 416 45.052 28.936 -7.454 1.00 27.30 B C
ATOM 7864 O GLU B 416 44.998 29.040 -8.661 1.00 26.85 B O
ATOM 7865 N ILE B 417 44.611 27.870 -6.784 1.00 31.08 B N
ATOM 7866 CA AILE B 417 44.073 26.700 -7.488 0.50 30.71 B C
ATOM 7867 CA BILE B 417 44.016 26.696 -7.432 0.50 31.36 B C
ATOM 7868 CB AILE B 417 43.699 25.514 -6.566 0.50 31.05 B C
ATOM 7869 CB BILE B 417 43.501 25.688 -6.388 0.50 32.70 B C
ATOM 7870 CG1AILE B 417 44.820 25.146 -5.612 0.50 28.12 B C
ATOM 7871 CG1BILE B 417 44.676 25.067 -5.670 0.50 27.91 B C
ATOM 7872 CD1AILE B 417 44.335 24.332 -4.406 0.50 26.96 B C
ATOM 7873 CD1BILE B 417 45.850 24.919 -6.546 0.50 24.89 B C
ATOM 7874 CG2AILE B 417 43.401 24.278 -7.415 0.50 33.62 B C
ATOM 7875 CG2BILE B 417 42.665 24.601 -7.051 0.50 42.31 B C
ATOM 7876 C ILE B 417 42.841 27.083 -8.286 1.00 27.12 B C
ATOM 7877 O ILE B 417 42.709 26.665 -9.426 1.00 30.48 B O
ATOM 7878 N GLU B 418 41.962 27.891 -7.705 1.00 31.07 B N
ATOM 7879 CA GLU B 418 40.757 28.339 -8.415 1.00 34.04 B C
ATOM 7880 CB GLU B 418 39.864 29.176 -7.499 1.00 40.60 B C
ATOM 7881 CG GLU B 418 39.146 28.377 -6.415 1.00 52.16 B C
ATOM 7882 CD GLU B 418 38.224 29.253 -5.553 1.00 61.73 B C
ATOM 7883 OE1 GLU B 418 38.642 30.362 -5.126 1.00 53.45 B O
ATOM 7884 OE2 GLU B 418 37.080 28.821 -5.297 1.00 78.65 B O
ATOM 7885 C GLU B 418 41.102 29.165 -9.644 1.00 31.84 B C
ATOM 7886 O GLU B 418 40.425 29.087 -10.676 1.00 27.15 B O
ATOM 7887 N ASN B 419 42.141 29.984 -9.540 1.00 23.18 B N
ATOM 7888 CA ASN B 419 42.545 30.753 -10.703 1.00 28.59 B C
ATOM 7889 CB ASN B 419 43.419 31.902 -10.275 1.00 26.05 B C
ATOM 7890 CG ASN B 419 42.584 33.055 -9.825 1.00 32.56 B C
ATOM 7891 OD1 ASN B 419 42.071 33.785 -10.651 1.00 32.13 B O
ATOM 7892 ND2 ASN B 419 42.360 33.167 -8.515 1.00 26.49 B N
ATOM 7893 C ASN B 419 43.183 29.953 -11.842 1.00 21.02 B C
ATOM 7894 O ASN B 419 42.954 30.273 -13.021 1.00 23.89 B O
ATOM 7895 N LEU B 420 43.965 28.933 -11.482 1.00 21.54 B N
ATOM 7896 CA LEU B 420 44.461 27.967 -12.448 1.00 26.65 B C
ATOM 7897 CB LEU B 420 45.247 26.839 -11.769 1.00 25.17 B C
ATOM 7898 CG LEU B 420 46.577 27.175 -11.077 1.00 32.36 B C
ATOM 7899 CD1 LEU B 420 47.067 25.963 -10.301 1.00 30.40 B C
ATOM 7900 CD2 LEU B 420 47.619 27.666 -12.058 1.00 28.07 B C
ATOM 7901 C LEU B 420 43.300 27.353 -13.238 1.00 28.82 B C
ATOM 7902 O LEU B 420 43.356 27.280 -14.461 1.00 26.51 B O
ATOM 7903 N GLN B 421 42.243 26.937 -12.539 1.00 28.46 B N
ATOM 7904 CA GLN B 421 41.100 26.291 -13.193 1.00 28.02 B C
ATOM 7905 CB GLN B 421 40.088 25.791 -12.166 1.00 35.06 B C
ATOM 7906 CG GLN B 421 40.638 24.713 -11.299 1.00 37.28 B C
ATOM 7907 CD GLN B 421 39.609 23.675 -10.893 1.00 39.96 B C
ATOM 7908 OE1 GLN B 421 39.746 22.499 -11.216 1.00 36.36 B O
ATOM 7909 NE2 GLN B 421 38.604 24.092 -10.162 1.00 28.86 B N
ATOM 7910 C GLN B 421 40.398 27.211 -14.140 1.00 25.93 B C
ATOM 7911 O GLN B 421 39.787 27.661 -15.107 1.00 28.33 B O
ATOM 7912 N LYS B 422 40.458 28.511 -13.866 1.00 24.57 B N

ATOM 7913 CA LYS B 422 39.885 29.512 -14.765 1.00 25.71 B C
 ATOM 7914 CB LYS B 422 39.296 30.684 -13.943 1.00 31.56 B C
 ATOM 7915 CG LYS B 422 38.012 30.279 -13.227 1.00 51.62 B C
 ATOM 7916 CD LYS B 422 37.660 31.126 -11.988 1.00 60.90 B C
 ATOM 7917 CE LYS B 422 36.364 30.571 -11.331 1.00 65.83 B C
 ATOM 7918 NZ LYS B 422 36.046 31.096 -9.972 1.00 54.30 B N
 ATOM 7919 C LYS B 422 40.920 30.032 -15.765 1.00 23.39 B C
 ATOM 7920 O LYS B 422 40.695 31.032 -16.443 1.00 28.46 B O
 ATOM 7921 N TYR B 423 42.063 29.372 -15.872 1.00 22.71 B N
 ATOM 7922 CA TYR B 423 43.074 29.773 -16.864 1.00 20.56 B C
 ATOM 7923 CB TYR B 423 42.574 29.603 -18.283 1.00 21.24 B C
 ATOM 7924 CG TYR B 423 42.196 28.181 -18.626 1.00 25.60 B C
 ATOM 7925 CD1 TYR B 423 43.149 27.273 -19.024 1.00 23.47 B C
 ATOM 7926 CE1 TYR B 423 42.792 25.962 -19.367 1.00 28.05 B C
 ATOM 7927 CZ TYR B 423 41.454 25.577 -19.260 1.00 32.51 B C
 ATOM 7928 OH TYR B 423 41.037 24.313 -19.566 1.00 34.46 B O
 ATOM 7929 CE2 TYR B 423 40.495 26.487 -18.859 1.00 34.11 B C
 ATOM 7930 CD2 TYR B 423 40.864 27.770 -18.566 1.00 27.96 B C
 ATOM 7931 C TYR B 423 43.532 31.214 -16.705 1.00 21.71 B C
 ATOM 7932 O TYR B 423 43.536 31.989 -17.650 1.00 20.05 B O
 ATOM 7933 N HIS B 424 43.991 31.518 -15.506 1.00 22.59 B N
 ATOM 7934 CA HIS B 424 44.562 32.815 -15.181 1.00 21.09 B C
 ATOM 7935 CB HIS B 424 45.067 32.740 -13.750 1.00 23.23 B C
 ATOM 7936 CG HIS B 424 45.673 34.023 -13.239 1.00 26.81 B C
 ATOM 7937 ND1 HIS B 424 44.935 34.992 -12.625 1.00 31.97 B N
 ATOM 7938 CE1 HIS B 424 45.748 36.011 -12.278 1.00 22.71 B C
 ATOM 7939 NE2 HIS B 424 46.988 35.715 -12.678 1.00 31.93 B N
 ATOM 7940 CD2 HIS B 424 46.970 34.489 -13.281 1.00 25.44 B C
 ATOM 7941 C HIS B 424 45.707 33.105 -16.133 1.00 21.91 B C
 ATOM 7942 O HIS B 424 46.430 32.196 -16.599 1.00 17.91 B O
 ATOM 7943 N ASP B 425 45.883 34.374 -16.429 1.00 17.02 B N
 ATOM 7944 CA ASP B 425 46.957 34.854 -17.305 1.00 22.29 B C
 ATOM 7945 CB ASP B 425 47.130 36.361 -17.128 1.00 31.01 B C
 ATOM 7946 CG ASP B 425 45.940 37.145 -17.611 1.00 35.91 B C
 ATOM 7947 OD1 ASP B 425 45.264 36.690 -18.559 1.00 43.87 B O
 ATOM 7948 OD2 ASP B 425 45.688 38.218 -17.020 1.00 43.05 B O
 ATOM 7949 C ASP B 425 48.338 34.264 -17.087 1.00 21.04 B C
 ATOM 7950 O ASP B 425 49.110 34.165 -18.025 1.00 17.11 B O
 ATOM 7951 N THR B 426 48.667 33.940 -15.844 1.00 20.31 B N
 ATOM 7952 CA THR B 426 49.951 33.336 -15.488 1.00 19.84 B C
 ATOM 7953 CB THR B 426 50.004 33.029 -13.970 1.00 23.34 B C
 ATOM 7954 OG1 THR B 426 49.890 34.283 -13.256 1.00 27.25 B O
 ATOM 7955 CG2 THR B 426 51.301 32.410 -13.590 1.00 24.23 B C
 ATOM 7956 C THR B 426 50.242 32.088 -16.290 1.00 20.14 B C
 ATOM 7957 O THR B 426 51.399 31.857 -16.665 1.00 18.00 B O
 ATOM 7958 N ILE B 427 49.194 31.295 -16.554 1.00 17.26 B N
 ATOM 7959 CA ILE B 427 49.339 30.057 -17.301 1.00 16.26 B C
 ATOM 7960 CB ILE B 427 48.749 28.814 -16.594 1.00 17.08 B C
 ATOM 7961 CG1 ILE B 427 47.227 28.781 -16.579 1.00 19.40 B C
 ATOM 7962 CD1 ILE B 427 46.679 27.474 -15.907 1.00 20.08 B C
 ATOM 7963 CG2 ILE B 427 49.293 28.697 -15.175 1.00 18.97 B C
 ATOM 7964 C ILE B 427 48.829 30.182 -18.710 1.00 17.22 B C
 ATOM 7965 O ILE B 427 49.347 29.520 -19.604 1.00 20.85 B O
 ATOM 7966 N SER B 428 47.842 31.045 -18.962 1.00 20.43 B N
 ATOM 7967 CA SER B 428 47.909 31.113 -20.321 1.00 15.80 B C
 ATOM 7968 CB SER B 428 45.945 31.785 -20.348 1.00 21.10 B C
 ATOM 7969 OG SER B 428 46.037 33.132 -20.023 1.00 20.25 B O
 ATOM 7970 C SER B 428 48.290 31.806 -21.264 1.00 17.17 B C
 ATOM 7971 O SER B 428 48.473 31.356 -22.380 1.00 18.80 B O
 ATOM 7972 N ARG B 429 48.995 32.852 -20.835 1.00 16.72 B N
 ATOM 7973 CA AARG B 429 49.828 33.594 -21.788 0.50 15.43 B C
 ATOM 7974 CA BARG B 429 49.833 33.608 -21.780 0.50 16.11 B C
 ATOM 7975 CB AARG B 429 50.238 34.952 -21.233 0.50 18.21 B C
 ATOM 7976 CB BARG B 429 50.291 34.946 -21.195 0.50 20.44 B C
 ATOM 7977 CG AARG B 429 49.080 35.944 -21.200 0.50 18.18 B C
 ATOM 7978 CG BARG B 429 49.166 35.882 -20.723 0.50 22.04 B C
 ATOM 7979 CD AARG B 429 49.539 37.351 -20.892 0.50 21.00 B C
 ATOM 7980 CD BARG B 429 48.398 36.559 -21.847 0.50 26.45 B C
 ATOM 7981 NE AARG B 429 48.441 38.247 -20.522 0.50 22.76 B N
 ATOM 7982 NE BARG B 429 47.476 37.580 -21.324 0.50 28.17 B N
 ATOM 7983 CZ AARG B 429 48.322 38.845 -19.342 0.50 20.32 B C
 ATOM 7984 CZ BARG B 429 46.530 38.181 -22.036 0.50 25.21 B C
 ATOM 7985 NH1AARG B 429 49.219 38.662 -18.389 0.50 27.90 B N
 ATOM 7986 NH1BARG B 429 46.361 37.881 -23.304 0.50 22.10 B N
 ATOM 7987 NH2AARG B 429 47.315 39.640 -19.133 0.50 22.88 B N
 ATOM 7988 NH2BARG B 429 45.768 39.099 -21.472 0.50 32.07 B N
 ATOM 7989 C ARG B 429 51.015 32.767 -22.274 1.00 17.61 B C
 ATOM 7990 O ARG B 429 51.282 32.725 -23.457 1.00 14.57 B O
 ATOM 7991 N PRO B 430 51.712 32.054 -21.363 1.00 14.73 B N
 ATOM 7992 CA PRO B 430 52.757 31.188 -21.898 1.00 15.75 B C
 ATOM 7993 CB PRO B 430 53.397 30.550 -20.652 1.00 17.07 B C
 ATOM 7994 CG PRO B 430 52.846 31.249 -19.511 1.00 20.36 B C
 ATOM 7995 CD PRO B 430 51.730 32.117 -19.892 1.00 16.63 B C
 ATOM 7996 C PRO B 430 52.243 30.083 -22.815 1.00 14.70 B C
 ATOM 7997 O PRO B 430 52.975 29.648 -23.726 1.00 15.79 B O
 ATOM 7998 N SER B 431 51.012 29.633 -22.582 1.00 14.43 B N
 ATOM 7999 CA SER B 431 50.356 28.622 -23.449 1.00 14.37 B C
 ATOM 8000 CB SER B 431 49.083 28.084 -22.762 1.00 13.13 B C
 ATOM 8001 OG SER B 431 49.502 27.415 -21.527 1.00 18.20 B O
 ATOM 8002 C SER B 431 50.054 29.198 -24.822 1.00 17.17 B C
 ATOM 8003 O SER B 431 50.140 28.494 -25.833 1.00 16.81 B O
 ATOM 8004 N HIS B 432 49.737 30.499 -24.859 1.00 14.64 B N
 ATOM 8005 CA HIS B 432 49.577 31.190 -26.130 1.00 15.68 B C
 ATOM 8006 CB HIS B 432 49.223 32.656 -25.968 1.00 14.64 B C
 ATOM 8007 CG HIS B 432 47.877 32.917 -25.321 1.00 18.93 B C
 ATOM 8008 ND1 HIS B 432 47.439 34.166 -25.059 1.00 22.86 B N
 ATOM 8009 CE1 HIS B 432 46.212 34.100 -24.472 1.00 25.01 B C
 ATOM 8010 NE2 HIS B 432 45.881 32.819 -24.357 1.00 19.96 B N
 ATOM 8011 CD2 HIS B 432 46.910 32.063 -24.846 1.00 17.39 B C
 ATOM 8012 C HIS B 432 50.825 31.072 -26.925 1.00 14.11 B C
 ATOM 8013 O HIS B 432 50.805 30.707 -28.110 1.00 13.66 B O
 ATOM 8014 N ILE B 433 51.940 31.399 -26.286 1.00 15.75 B N
 ATOM 8015 CA ILE B 433 53.232 31.332 -26.955 1.00 14.75 B C
 ATOM 8016 CB ILE B 433 54.329 32.001 -26.067 1.00 15.98 B C
 ATOM 8017 CG1 ILE B 433 54.013 33.539 -26.056 1.00 18.75 B C
 ATOM 8018 CD1 ILE B 433 54.706 34.306 -25.048 1.00 24.29 B C
 ATOM 8019 CG2 ILE B 433 55.727 31.742 -26.691 1.00 15.81 B C
 ATOM 8020 C ILE B 433 53.609 29.929 -27.451 1.00 14.07 B C
 ATOM 8021 O ILE B 433 54.129 29.767 -28.587 1.00 15.08 B O
 ATOM 8022 N PHE B 434 53.366 28.931 -26.611 1.00 14.80 B N
 ATOM 8023 CA PHE B 434 53.631 27.514 -26.921 1.00 14.96 B C
 ATOM 8024 CB PHE B 434 53.164 26.715 -25.697 1.00 15.79 B C
 ATOM 8025 CG PHE B 434 53.298 25.222 -25.792 1.00 16.92 B C
 ATOM 8026 CD1 PHE B 434 54.039 24.579 -26.793 1.00 19.94 B C
 ATOM 8027 CE1 PHE B 434 54.158 23.160 -26.796 1.00 19.87 B C
 ATOM 8028 CZ PHE B 434 53.576 22.407 -25.787 1.00 22.06 B C
 ATOM 8029 CE2 PHE B 434 52.850 23.042 -24.785 1.00 19.60 B C
 ATOM 8030 CD2 PHE B 434 52.730 24.453 -24.791 1.00 17.79 B C
 ATOM 8031 C PHE B 434 52.907 27.120 -28.228 1.00 14.03 B C
 ATOM 8032 O PHE B 434 53.528 26.604 -29.165 1.00 16.19 B O
 ATOM 8033 N ARG B 435 51.622 27.445 -28.307 1.00 14.78 B N
 ATOM 8034 CA ARG B 435 50.819 27.116 -29.488 1.00 12.98 B C
 ATOM 8035 CB ARG B 435 49.327 27.369 -29.195 1.00 14.24 B C
 ATOM 8036 CG ARG B 435 48.375 27.168 -30.367 1.00 13.52 B C
 ATOM 8037 CD ARG B 435 48.591 25.871 -31.145 1.00 14.92 B C
 ATOM 8038 NE ARG B 435 48.185 24.704 -30.372 1.00 16.56 B N
 ATOM 8039 CZ ARG B 435 48.453 23.449 -30.711 1.00 19.64 B C
 ATOM 8040 NH1 ARG B 435 49.195 23.185 -31.782 1.00 19.87 B N
 ATOM 8041 NH2 ARG B 435 47.963 22.460 -29.973 1.00 18.55 B N
 ATOM 8042 C ARG B 435 51.291 27.886 -30.683 1.00 14.00 B C
 ATOM 8043 O ARG B 435 51.409 27.317 -31.759 1.00 14.38 B O
 ATOM 8044 N LEU B 436 51.581 29.188 -30.529 1.00 14.56 B N

ATOM 8045 CA LEU B 436 51.968 29.977 -31.682 1.00 13.42 B C
 ATOM 8046 CB LEU B 436 51.924 31.485 -31.419 1.00 14.94 B C
 ATOM 8047 CG LEU B 436 50.544 32.075 -31.099 1.00 14.41 B C
 ATOM 8048 CD1 LEU B 436 50.640 33.516 -30.626 1.00 14.92 B C
 ATOM 8049 CD2 LEU B 436 49.602 31.922 -32.295 1.00 13.74 B C
 ATOM 8050 C LEU B 436 53.344 29.555 -32.203 1.00 15.66 B C
 ATOM 8051 O LEU B 436 53.532 29.483 -33.418 1.00 19.19 B O
 ATOM 8052 N CYS B 437 54.293 29.272 -31.301 1.00 16.96 B N
 ATOM 8053 CA CYS B 437 55.603 28.766 -31.734 1.00 16.93 B C
 ATOM 8054 CB CYS B 437 56.536 28.577 -30.559 1.00 17.77 B C
 ATOM 8055 SG CYS B 437 57.150 30.113 -29.871 1.00 22.06 B S
 ATOM 8056 C CYS B 437 55.503 27.451 -32.498 1.00 14.77 B C
 ATOM 8057 O CYS B 437 56.099 27.296 -33.550 1.00 18.12 B O
 ATOM 8058 N ASN B 438 54.727 26.520 -31.966 1.00 17.15 B N
 ATOM 8059 CA ASN B 438 54.519 25.218 -32.568 1.00 16.89 B C
 ATOM 8060 CB ASN B 438 53.649 24.381 -31.646 1.00 16.59 B C
 ATOM 8061 CG ASN B 438 53.345 22.972 -32.214 1.00 24.82 B C
 ATOM 8062 OD1 ASN B 438 53.826 22.576 -33.265 1.00 33.49 B O
 ATOM 8063 ND2 ASN B 438 52.657 22.205 -31.447 1.00 22.35 B N
 ATOM 8064 C ASN B 438 53.900 25.390 -33.951 1.00 20.33 B C
 ATOM 8065 O ASN B 438 54.399 24.838 -34.952 1.00 19.00 B O
 ATOM 8066 N ASP B 439 52.857 26.214 -34.033 1.00 15.44 B N
 ATOM 8067 CA ASP B 439 52.159 26.398 -35.307 1.00 15.06 B C
 ATOM 8068 CB ASP B 439 50.765 27.022 -35.120 1.00 16.90 B C
 ATOM 8069 CG ASP B 439 49.744 26.019 -34.541 1.00 19.98 B C
 ATOM 8070 OD1 ASP B 439 50.174 24.934 -34.065 1.00 17.50 B O
 ATOM 8071 OD2 ASP B 439 48.513 26.315 -34.523 1.00 18.13 B O
 ATOM 8072 C ASP B 439 52.989 27.155 -36.326 1.00 16.19 B C
 ATOM 8073 O ASP B 439 52.888 26.870 -37.516 1.00 17.47 B O
 ATOM 8074 N LEU B 440 53.820 28.094 -35.882 1.00 15.61 B N
 ATOM 8075 CA LEU B 440 54.676 28.794 -36.811 1.00 18.75 B C
 ATOM 8076 CB LEU B 440 55.471 29.906 -36.122 1.00 21.99 B C
 ATOM 8077 CG LEU B 440 54.750 31.220 -35.858 1.00 20.97 B C
 ATOM 8078 CD1 LEU B 440 55.562 31.999 -34.845 1.00 19.22 B C
 ATOM 8079 CD2 LEU B 440 54.559 32.027 -37.128 1.00 17.97 B C
 ATOM 8080 C LEU B 440 55.688 27.811 -37.451 1.00 19.73 B C
 ATOM 8081 O LEU B 440 56.004 27.961 -38.621 1.00 18.40 B O
 ATOM 8082 N ALA B 441 56.182 26.845 -36.674 1.00 20.07 B N
 ATOM 8083 CA ALA B 441 57.214 25.894 -37.157 1.00 23.25 B C
 ATOM 8084 CB ALA B 441 57.813 25.077 -35.983 1.00 19.15 B C
 ATOM 8085 C ALA B 441 56.640 24.971 -38.228 1.00 25.11 B C
 ATOM 8086 O ALA B 441 57.327 24.606 -39.161 1.00 23.98 B O
 ATOM 8087 N SER B 442 55.359 24.639 -38.137 1.00 23.43 B N
 ATOM 8088 CA SER B 442 54.767 23.738 -39.119 1.00 27.50 B C
 ATOM 8089 CB SER B 442 53.991 22.640 -38.385 1.00 26.04 B C
 ATOM 8090 OG SER B 442 52.935 23.180 -37.640 1.00 34.78 B O
 ATOM 8091 C SER B 442 53.889 24.429 -40.180 1.00 24.60 B C
 ATOM 8092 O SER B 442 53.387 23.763 -41.103 1.00 23.82 B O
 ATOM 8093 N ALA B 443 53.741 25.755 -40.088 1.00 26.78 B N
 ATOM 8094 CA ALA B 443 52.788 26.481 -40.938 1.00 25.34 B C
 ATOM 8095 CB ALA B 443 52.813 27.978 -40.637 1.00 22.95 B C
 ATOM 8096 C ALA B 443 53.062 26.247 -42.431 1.00 28.89 B C
 ATOM 8097 O ALA B 443 52.157 25.916 -43.185 1.00 22.42 B O
 ATOM 8098 N SER B 444 54.300 26.458 -42.868 1.00 27.66 B N
 ATOM 8099 CA SER B 444 54.589 26.373 -44.312 1.00 33.85 B C
 ATOM 8100 CB SER B 444 56.058 26.640 -44.598 1.00 36.92 B C
 ATOM 8101 OG SER B 444 56.346 28.011 -44.385 1.00 47.06 B O
 ATOM 8102 C SER B 444 54.180 25.031 -44.901 1.00 30.05 B C
 ATOM 8103 O SER B 444 53.466 24.980 -45.900 1.00 30.05 B O
 ATOM 8104 N ALA B 445 54.602 23.945 -44.263 1.00 29.24 B N
 ATOM 8105 CA ALA B 445 54.315 22.616 -44.793 1.00 35.03 B C
 ATOM 8106 CB ALA B 445 55.129 21.522 -44.045 1.00 32.05 B C
 ATOM 8107 C ALA B 445 52.807 22.332 -44.755 1.00 37.09 B C
 ATOM 8108 O ALA B 445 52.257 21.787 -45.704 1.00 33.84 B O
 ATOM 8109 N GLU B 446 52.124 22.734 -43.685 1.00 30.46 B N
 ATOM 8110 CA GLU B 446 50.697 22.475 -43.579 1.00 28.45 B C
 ATOM 8111 CB GLU B 446 50.218 22.656 -42.139 1.00 37.91 B C
 ATOM 8112 CG GLU B 446 50.638 21.476 -41.256 1.00 42.02 B C
 ATOM 8113 CD GLU B 446 50.457 21.692 -39.740 1.00 42.41 B C
 ATOM 8114 OE1 GLU B 446 49.785 22.643 -39.310 1.00 45.73 B O
 ATOM 8115 OE2 GLU B 446 51.005 20.887 -38.958 1.00 43.12 B O
 ATOM 8116 C GLU B 446 49.890 23.315 -44.573 1.00 33.90 B C
 ATOM 8117 O GLU B 446 48.937 22.819 -45.169 1.00 31.66 B O
 ATOM 8118 N ILE B 447 50.293 24.568 -44.794 1.00 27.20 B N
 ATOM 8119 CA ILE B 447 49.579 25.424 -45.737 1.00 27.83 B C
 ATOM 8120 CB ILE B 447 50.055 26.895 -45.659 1.00 28.75 B C
 ATOM 8121 CG1 ILE B 447 49.600 27.490 -44.320 1.00 27.61 B C
 ATOM 8122 CD1 ILE B 447 50.393 28.640 -43.844 1.00 26.97 B C
 ATOM 8123 CG2 ILE B 447 49.500 27.723 -46.845 1.00 28.72 B C
 ATOM 8124 C ILE B 447 49.705 24.847 -47.155 1.00 36.77 B C
 ATOM 8125 O ILE B 447 48.703 24.713 -47.863 1.00 38.04 B O
 ATOM 8126 N ALA B 448 50.919 24.442 -47.526 1.00 31.66 B N
 ATOM 8127 CA ALA B 448 51.194 23.890 -48.854 1.00 36.12 B C
 ATOM 8128 CB ALA B 448 52.707 23.879 -49.127 1.00 26.57 B C
 ATOM 8129 C ALA B 448 50.592 22.493 -49.052 1.00 39.86 B C
 ATOM 8130 O ALA B 448 50.465 22.039 -50.180 1.00 48.95 B O
 ATOM 8131 N ARG B 449 50.238 21.817 -47.960 1.00 40.90 B N
 ATOM 8132 CA ARG B 449 49.462 20.574 -48.014 1.00 43.27 B C
 ATOM 8133 CB ARG B 449 49.719 19.719 -46.767 1.00 45.19 B C
 ATOM 8134 CG ARG B 449 50.845 18.718 -46.901 1.00 46.47 B C
 ATOM 8135 CD ARG B 449 51.014 17.908 -45.619 1.00 54.26 B C
 ATOM 8136 NE ARG B 449 52.120 18.386 -44.785 1.00 65.38 B N
 ATOM 8137 CZ ARG B 449 52.152 18.377 -43.446 1.00 64.14 B C
 ATOM 8138 NH1 ARG B 449 51.126 17.936 -42.726 1.00 67.70 B N
 ATOM 8139 NH2 ARG B 449 53.228 18.834 -42.814 1.00 67.87 B N
 ATOM 8140 C ARG B 449 47.954 20.814 -48.115 1.00 44.23 B C
 ATOM 8141 O ARG B 449 47.186 19.862 -48.221 1.00 47.36 B O
 ATOM 8142 N GLY B 450 47.519 22.065 -48.044 1.00 42.67 B N
 ATOM 8143 CA GLY B 450 46.083 22.375 -48.002 1.00 40.45 B C
 ATOM 8144 C GLY B 450 45.411 22.196 -46.641 1.00 45.63 B C
 ATOM 8145 O GLY B 450 44.193 22.253 -46.544 1.00 39.65 B O
 ATOM 8146 N GLU B 451 46.191 21.995 -45.578 1.00 46.83 B N
 ATOM 8147 CA GLU B 451 45.620 21.874 -44.236 1.00 43.73 B C
 ATOM 8148 CB GLU B 451 46.578 21.142 -43.299 1.00 57.06 B C
 ATOM 8149 CG GLU B 451 46.765 19.683 -43.695 1.00 61.57 B C
 ATOM 8150 CD GLU B 451 47.876 19.009 -42.931 1.00 64.10 B C
 ATOM 8151 OE1 GLU B 451 47.993 19.254 -41.714 1.00 65.34 B O
 ATOM 8152 OE2 GLU B 451 48.627 18.227 -43.550 1.00 61.42 B O
 ATOM 8153 C GLU B 451 45.258 23.234 -43.663 1.00 38.50 B C
 ATOM 8154 O GLU B 451 45.840 24.259 -44.026 1.00 45.27 B O
 ATOM 8155 N THR B 452 44.258 23.246 -42.793 1.00 31.58 B N
 ATOM 8156 CA THR B 452 43.761 24.488 -42.242 1.00 31.96 B C
 ATOM 8157 CB THR B 452 42.312 24.772 -42.689 1.00 34.79 B C
 ATOM 8158 OG1 THR B 452 41.462 23.731 -42.199 1.00 34.40 B O
 ATOM 8159 CG2 THR B 452 42.202 24.905 -44.225 1.00 30.65 B C
 ATOM 8160 C THR B 452 43.828 24.477 -40.717 1.00 28.29 B C
 ATOM 8161 O THR B 452 43.566 25.508 -40.090 1.00 28.98 B O
 ATOM 8162 N ALA B 453 44.223 23.337 -40.135 1.00 29.72 B N
 ATOM 8163 CA ALA B 453 44.308 23.177 -38.684 1.00 27.93 B C
 ATOM 8164 CB ALA B 453 44.159 21.712 -38.293 1.00 26.92 B C
 ATOM 8165 C ALA B 453 45.650 23.716 -38.179 1.00 31.25 B C
 ATOM 8166 O ALA B 453 46.482 22.957 -37.723 1.00 25.19 B O
 ATOM 8167 N ASN B 454 45.828 25.023 -38.276 1.00 23.93 B N
 ATOM 8168 CA ASN B 454 47.045 25.699 -37.889 1.00 21.21 B C
 ATOM 8169 CB ASN B 454 48.083 25.582 -39.014 1.00 21.74 B C
 ATOM 8170 CG ASN B 454 49.394 26.258 -38.685 1.00 21.29 B C
 ATOM 8171 OD1 ASN B 454 49.513 27.465 -38.794 1.00 22.92 B O
 ATOM 8172 ND2 ASN B 454 50.413 25.473 -38.365 1.00 18.97 B N
 ATOM 8173 C ASN B 454 46.705 27.151 -37.638 1.00 18.41 B C
 ATOM 8174 O ASN B 454 46.035 27.771 -38.450 1.00 16.21 B O
 ATOM 8175 N SER B 455 47.221 27.711 -36.543 1.00 19.01 B N
 ATOM 8176 CA SER B 455 47.002 29.113 -36.202 1.00 16.68 B C

ATOM 8177 CB SER B 455 47.781 29.488 -34.921 1.00 20.45 B C
 ATOM 8178 OG SER B 455 47.301 28.678 -33.853 1.00 19.49 B O
 ATOM 8179 C SER B 455 47.319 30.099 -37.316 1.00 19.30 B C
 ATOM 8180 O SER B 455 46.540 31.034 -37.548 1.00 15.67 B O
 ATOM 8181 N VAL B 456 48.432 29.915 -38.024 1.00 15.11 B N
 ATOM 8182 CA VAL B 456 48.828 30.843 -39.062 1.00 15.74 B C
 ATOM 8183 CB VAL B 456 50.299 30.596 -39.541 1.00 19.50 B C
 ATOM 8184 CG1 VAL B 456 50.688 31.606 -40.590 1.00 20.50 B C
 ATOM 8185 CG2 VAL B 456 51.251 30.648 -38.368 1.00 15.54 B C
 ATOM 8186 C VAL B 456 47.852 30.763 -40.237 1.00 16.05 B C
 ATOM 8187 O VAL B 456 47.410 31.785 -40.806 1.00 14.34 B O
 ATOM 8188 N SER B 457 47.490 29.544 -40.583 1.00 15.10 B N
 ATOM 8189 CA SER B 457 46.511 29.323 -41.616 1.00 18.41 B C
 ATOM 8190 CB SER B 457 46.293 27.846 -41.869 1.00 20.92 B C
 ATOM 8191 OG SER B 457 45.167 27.772 -42.724 1.00 26.24 B O
 ATOM 8192 C SER B 457 45.158 29.949 -41.284 1.00 17.65 B C
 ATOM 8193 O SER B 457 44.531 30.564 -42.146 1.00 14.43 B O
 ATOM 8194 N CYS B 458 44.704 29.804 -40.043 1.00 15.66 B N
 ATOM 8195 CA CYS B 458 43.444 30.453 -39.640 1.00 18.01 B C
 ATOM 8196 CB CYS B 458 43.054 30.160 -38.192 1.00 25.62 B C
 ATOM 8197 SG CYS B 458 42.256 28.699 -38.041 1.00 35.73 B S
 ATOM 8198 C CYS B 458 43.517 31.929 -39.741 1.00 12.07 B C
 ATOM 8199 O CYS B 458 42.566 32.557 -40.176 1.00 16.64 B O
 ATOM 8200 N TYR B 459 44.629 32.503 -39.306 1.00 14.40 B N
 ATOM 8201 CA TYR B 459 44.794 33.931 -39.350 1.00 14.44 B C
 ATOM 8202 CB TYR B 459 46.096 34.315 -38.667 1.00 17.94 B C
 ATOM 8203 CG TYR B 459 45.977 37.300 -36.272 1.00 24.97 B C
 ATOM 8204 CD1 TYR B 459 46.388 36.781 -38.958 1.00 23.82 B C
 ATOM 8205 CE1 TYR B 459 46.419 38.077 -38.479 1.00 25.57 B C
 ATOM 8206 CZ TYR B 459 46.213 38.329 -37.149 1.00 25.18 B C
 ATOM 8207 OH TYR B 459 46.262 39.634 -36.748 1.00 37.10 B O
 ATOM 8208 CE2 TYR B 459 45.977 37.300 -36.272 1.00 24.97 B C
 ATOM 8209 CD2 TYR B 459 45.932 35.967 -36.772 1.00 25.54 B C
 ATOM 8210 C TYR B 459 44.740 34.421 -40.797 1.00 16.51 B C
 ATOM 8211 O TYR B 459 44.078 35.445 -41.132 1.00 14.82 B O
 ATOM 8212 N MET B 460 45.433 33.718 -41.686 1.00 13.76 B N
 ATOM 8213 CA MET B 460 45.348 34.057 -43.117 1.00 14.07 B C
 ATOM 8214 CB MET B 460 46.056 33.032 -44.002 1.00 15.60 B C
 ATOM 8215 CG MET B 460 47.540 33.067 -43.937 1.00 21.56 B C
 ATOM 8216 SD MET B 460 48.225 31.608 -44.774 1.00 24.76 B S
 ATOM 8217 CE MET B 460 47.831 31.926 -46.477 1.00 15.99 B C
 ATOM 8218 C MET B 460 43.917 34.084 -43.642 1.00 14.98 B C
 ATOM 8219 O MET B 460 43.527 34.991 -44.393 1.00 15.96 B O
 ATOM 8220 N ARG B 461 43.162 33.048 -43.329 1.00 13.68 B N
 ATOM 8221 CA ARG B 461 41.796 32.938 -43.848 1.00 16.87 B C
 ATOM 8222 CB ARG B 461 41.283 31.518 -43.727 1.00 23.77 B C
 ATOM 8223 CG ARG B 461 41.747 30.676 -44.914 1.00 32.85 B C
 ATOM 8224 CD ARG B 461 41.446 29.197 -44.770 1.00 34.57 B C
 ATOM 8225 NE ARG B 461 41.992 28.629 -43.532 1.00 34.16 B N
 ATOM 8226 CZ ARG B 461 41.289 28.392 -42.420 1.00 44.41 B C
 ATOM 8227 NH1 ARG B 461 39.972 28.674 -42.354 1.00 33.15 B N
 ATOM 8228 NH2 ARG B 461 41.917 27.875 -41.352 1.00 33.81 B N
 ATOM 8229 C ARG B 461 40.840 33.891 -43.167 1.00 13.78 B C
 ATOM 8230 O ARG B 461 39.967 34.412 -43.785 1.00 14.11 B O
 ATOM 8231 N THR B 462 41.018 34.106 -41.875 1.00 13.65 B N
 ATOM 8232 CA THR B 462 40.207 33.071 -41.150 1.00 12.52 B C
 ATOM 8233 CB THR B 462 40.442 34.981 -39.640 1.00 11.17 B C
 ATOM 8234 OG1 THR B 462 39.831 33.778 -39.180 1.00 10.66 B O
 ATOM 8235 CG2 THR B 462 39.844 36.207 -38.911 1.00 10.76 B C
 ATOM 8236 C THR B 462 40.396 36.491 -41.666 1.00 14.81 B C
 ATOM 8237 O THR B 462 39.421 37.173 -41.877 1.00 13.55 B O
 ATOM 8238 N LYS B 463 41.631 36.921 -41.872 1.00 16.92 B N
 ATOM 8239 CA ALYS B 463 41.919 38.298 -42.288 0.50 16.81 B C
 ATOM 8240 CA BLYS B 463 41.908 38.302 -42.277 0.50 16.46 B C
 ATOM 8241 CB ALYS B 463 43.207 38.775 -41.647 0.50 17.82 B C
 ATOM 8242 CB BLYS B 463 43.179 38.803 -41.607 0.50 16.89 B C

ATOM 8243 CG ALYS B 463 43.039 39.156 -40.201 0.50 20.60 B C
 ATOM 8244 CG BLYS B 463 43.217 38.634 -40.073 0.50 18.51 B C
 ATOM 8245 CD ALYS B 463 42.486 40.556 -40.116 0.50 20.99 B C
 ATOM 8246 CD BLYS B 463 42.193 39.525 -39.394 0.50 19.15 B C
 ATOM 8247 CE ALYS B 463 42.523 41.081 -38.718 0.50 19.52 B C
 ATOM 8248 CE BLYS B 463 42.692 40.035 -38.046 0.50 21.93 B C
 ATOM 8249 NZ ALYS B 463 41.763 42.322 -38.646 0.50 18.07 B N
 ATOM 8250 NZ BLYS B 463 42.390 39.101 -36.923 0.50 22.18 B N
 ATOM 8251 C LYS B 463 42.015 38.480 -43.794 1.00 15.05 B C
 ATOM 8252 O LYS B 463 42.054 39.591 -44.284 1.00 18.45 B O
 ATOM 8253 N GLY B 464 42.040 37.393 -44.535 1.00 15.19 B N
 ATOM 8254 CA GLY B 464 42.135 37.464 -45.988 1.00 14.92 B C
 ATOM 8255 C GLY B 464 43.506 37.936 -46.454 1.00 15.23 B C
 ATOM 8256 O GLY B 464 43.601 38.672 -47.409 1.00 16.94 B O
 ATOM 8257 N ILE B 465 44.568 37.493 -45.787 1.00 16.53 B N
 ATOM 8258 CA ILE B 465 45.947 37.941 -46.099 1.00 15.71 B C
 ATOM 8259 CB ILE B 465 46.571 38.763 -44.951 1.00 14.86 B C
 ATOM 8260 CG1 ILE B 465 46.690 37.925 -43.667 1.00 15.16 B C
 ATOM 8261 CD1 ILE B 465 47.295 38.642 -42.526 1.00 17.97 B C
 ATOM 8262 CG2 ILE B 465 45.772 40.069 -44.760 1.00 15.44 B C
 ATOM 8263 C ILE B 465 46.884 36.782 -46.442 1.00 16.44 B C
 ATOM 8264 O ILE B 465 46.605 35.603 -46.158 1.00 17.69 B O
 ATOM 8265 N SER B 466 48.032 37.143 -46.998 1.00 20.92 B N
 ATOM 8266 CA SER B 466 49.070 36.187 -47.379 1.00 20.24 B C
 ATOM 8267 CB SER B 466 50.179 36.913 -48.133 1.00 22.24 B C
 ATOM 8268 OG SER B 466 50.843 37.794 -47.243 1.00 20.55 B O
 ATOM 8269 C SER B 466 49.711 35.550 -46.160 1.00 19.68 B C
 ATOM 8270 O SER B 466 49.690 36.113 -45.036 1.00 17.72 B O
 ATOM 8271 N GLU B 467 50.332 34.400 -46.404 1.00 19.75 B N
 ATOM 8272 CA GLU B 467 51.117 33.716 -45.403 1.00 24.19 B C
 ATOM 8273 CB GLU B 467 51.714 32.423 -45.969 1.00 26.22 B C
 ATOM 8274 CG GLU B 467 52.518 31.664 -44.911 1.00 29.10 B C
 ATOM 8275 CD GLU B 467 53.050 30.306 -45.365 1.00 36.05 B C
 ATOM 8276 OE1 GLU B 467 52.638 29.809 -46.434 1.00 35.86 B O
 ATOM 8277 OE2 GLU B 467 53.887 29.733 -44.622 1.00 33.33 B O
 ATOM 8278 C GLU B 467 52.203 34.601 -44.777 1.00 22.33 B C
 ATOM 8279 O GLU B 467 52.410 34.537 -43.575 1.00 23.79 B O
 ATOM 8280 N GLU B 468 52.845 35.464 -45.564 1.00 22.39 B N
 ATOM 8281 CA GLU B 468 53.918 36.330 -45.038 1.00 27.65 B C
 ATOM 8282 CB GLU B 468 54.631 37.123 -46.147 1.00 33.61 B C
 ATOM 8283 CG GLU B 468 55.397 36.289 -47.150 1.00 50.09 B C
 ATOM 8284 CD GLU B 468 54.509 35.368 -48.016 1.00 66.40 B C
 ATOM 8285 OE1 GLU B 468 53.401 35.772 -48.447 1.00 49.17 B O
 ATOM 8286 OE2 GLU B 468 54.925 34.216 -48.262 1.00 85.08 B O
 ATOM 8287 C GLU B 468 53.358 37.328 -44.049 1.00 21.77 B C
 ATOM 8288 O GLU B 468 53.929 37.539 -42.995 1.00 20.88 B O
 ATOM 8289 N LEU B 469 52.230 37.947 -44.398 1.00 19.47 B N
 ATOM 8290 CA LEU B 469 51.601 38.915 -43.508 1.00 19.05 B C
 ATOM 8291 CB LEU B 469 50.547 39.747 -44.229 1.00 23.07 B C
 ATOM 8292 CG LEU B 469 51.089 40.827 -45.164 1.00 29.43 B C
 ATOM 8293 CD1 LEU B 469 50.033 41.218 -46.221 1.00 24.90 B C
 ATOM 8294 CD2 LEU B 469 51.578 42.023 -44.341 1.00 33.35 B C
 ATOM 8295 C LEU B 469 50.998 38.235 -42.269 1.00 16.57 B C
 ATOM 8296 O LEU B 469 51.095 38.760 -41.196 1.00 16.59 B O
 ATOM 8297 N ALA B 470 50.414 37.059 -42.417 1.00 16.46 B N
 ATOM 8298 CA ALA B 470 49.867 36.352 -41.268 1.00 17.72 B C
 ATOM 8299 CB ALA B 470 49.099 35.112 -41.714 1.00 14.43 B C
 ATOM 8300 C ALA B 470 51.005 35.984 -40.307 1.00 19.08 B C
 ATOM 8301 O ALA B 470 50.889 36.125 -39.090 1.00 16.48 B O
 ATOM 8302 N THR B 471 52.123 35.534 -40.868 1.00 17.61 B N
 ATOM 8303 CA THR B 471 53.299 35.178 -40.068 1.00 16.26 B C
 ATOM 8304 CB THR B 471 54.441 34.621 -40.963 1.00 17.28 B C
 ATOM 8305 OG1 THR B 471 53.916 33.497 -41.675 1.00 18.87 B O
 ATOM 8306 CG2 THR B 471 55.661 34.220 -40.120 1.00 17.17 B C
 ATOM 8307 C THR B 471 53.800 36.342 -39.244 1.00 17.20 B C
 ATOM 8308 O THR B 471 54.001 36.218 -38.024 1.00 14.80 B O

ATOM 8309 N GLU B 472 53.991 37.473 -39.904 1.00 18.72 B N
 ATOM 8310 CA GLU B 472 54.323 38.729 -39.230 1.00 23.12 B C
 ATOM 8311 CB GLU B 472 54.502 39.824 -40.305 1.00 26.44 B C
 ATOM 8312 CG GLU B 472 54.573 41.278 -39.863 1.00 37.27 B C
 ATOM 8313 CD GLU B 472 54.716 42.236 -41.077 1.00 41.81 B C
 ATOM 8314 OE1 GLU B 472 55.849 42.428 -41.548 1.00 46.89 B O
 ATOM 8315 OE2 GLU B 472 53.699 42.774 -41.573 1.00 42.94 B O
 ATOM 8316 C GLU B 472 53.313 39.124 -38.101 1.00 22.60 B C
 ATOM 8317 O GLU B 472 53.735 39.469 -36.977 1.00 19.81 B O
 ATOM 8318 N SER B 473 52.007 39.018 -38.360 1.00 19.86 B N
 ATOM 8319 CA SER B 473 51.014 39.293 -37.299 1.00 20.06 B C
 ATOM 8320 CB SER B 473 49.572 39.208 -37.815 1.00 22.53 B C
 ATOM 8321 OG SER B 473 49.304 40.264 -38.673 1.00 29.40 B O
 ATOM 8322 C SER B 473 51.152 38.316 -36.143 1.00 15.27 B C
 ATOM 8323 O SER B 473 51.038 38.697 -35.001 1.00 17.14 B O
 ATOM 8324 N VAL B 474 51.398 37.055 -36.438 1.00 15.88 B N
 ATOM 8325 CA VAL B 474 51.594 36.093 -35.377 1.00 15.12 B C
 ATOM 8326 CB VAL B 474 51.608 34.665 -35.926 1.00 15.21 B C
 ATOM 8327 CG1 VAL B 474 52.067 33.652 -34.800 1.00 13.14 B C
 ATOM 8328 CG2 VAL B 474 50.228 34.299 -36.427 1.00 15.92 B C
 ATOM 8329 C VAL B 474 52.846 36.414 -34.522 1.00 15.98 B C
 ATOM 8330 O VAL B 474 52.795 36.410 -33.272 1.00 16.50 B O
 ATOM 8331 N MET B 475 53.934 36.796 -35.165 1.00 19.87 B N
 ATOM 8332 CA MET B 475 55.127 37.241 -34.424 1.00 18.38 B C
 ATOM 8333 CB MET B 475 56.282 37.591 -35.376 1.00 21.15 B C
 ATOM 8334 CG MET B 475 56.744 36.508 -36.344 1.00 31.58 B C
 ATOM 8335 SD MET B 475 57.511 35.151 -35.483 1.00 49.68 B S
 ATOM 8336 CE MET B 475 58.323 34.357 -36.907 1.00 50.34 B C
 ATOM 8337 C MET B 475 54.842 38.479 -33.552 1.00 22.82 B C
 ATOM 8338 O MET B 475 55.349 38.556 -32.430 1.00 19.84 B O
 ATOM 8339 N ASN B 476 54.046 39.440 -34.052 1.00 17.77 B N
 ATOM 8340 CA ASN B 476 53.659 40.582 -33.228 1.00 18.07 B C
 ATOM 8341 CB ASN B 476 52.880 41.650 -34.014 1.00 23.11 B C
 ATOM 8342 CG ASN B 476 53.723 42.332 -35.068 1.00 29.55 B C
 ATOM 8343 OD1 ASN B 476 54.943 42.257 -35.033 1.00 28.97 B O
 ATOM 8344 ND2 ASN B 476 53.068 43.011 -36.025 1.00 29.79 B N
 ATOM 8345 C ASN B 476 52.819 40.151 -32.047 1.00 18.90 B C
 ATOM 8346 O ASN B 476 52.973 40.698 -30.950 1.00 18.05 B O
 ATOM 8347 N LEU B 477 51.924 39.177 -32.261 1.00 17.13 B N
 ATOM 8348 CA LEU B 477 51.104 38.673 -31.160 1.00 18.26 B C
 ATOM 8349 CB LEU B 477 50.109 37.654 -31.688 1.00 20.23 B C
 ATOM 8350 CG LEU B 477 49.119 37.025 -30.729 1.00 28.85 B C
 ATOM 8351 CD1 LEU B 477 48.451 38.109 -29.830 1.00 27.90 B C
 ATOM 8352 CD2 LEU B 477 48.055 36.211 -31.571 1.00 22.42 B C
 ATOM 8353 C LEU B 477 51.985 38.048 -30.058 1.00 14.52 B C
 ATOM 8354 O LEU B 477 51.742 38.219 -28.855 1.00 15.43 B O
 ATOM 8355 N ILE B 478 53.007 37.305 -30.478 1.00 16.26 B N
 ATOM 8356 CA ILE B 478 53.996 36.766 -29.538 1.00 14.82 B C
 ATOM 8357 CB ILE B 478 55.024 35.865 -30.248 1.00 15.10 B C
 ATOM 8358 CG1 ILE B 478 54.300 34.569 -30.691 1.00 15.74 B C
 ATOM 8359 CD1 ILE B 478 55.145 33.621 -31.585 1.00 18.13 B C
 ATOM 8360 CG2 ILE B 478 56.258 35.554 -29.342 1.00 13.94 B C
 ATOM 8361 C ILE B 478 54.660 37.904 -28.752 1.00 14.69 B C
 ATOM 8362 O ILE B 478 54.752 37.795 -27.524 1.00 15.56 B O
 ATOM 8363 N ASP B 479 55.094 38.980 -29.430 1.00 14.82 B N
 ATOM 8364 CA ASP B 479 55.705 40.149 -28.738 1.00 15.47 B C
 ATOM 8365 CB ASP B 479 56.139 41.213 -29.742 1.00 22.03 B C
 ATOM 8366 CG ASP B 479 57.356 40.787 -30.542 1.00 30.54 B C
 ATOM 8367 OD1 ASP B 479 58.065 39.847 -30.114 1.00 31.87 B O
 ATOM 8368 OD2 ASP B 479 57.612 41.393 -31.600 1.00 30.28 B O
 ATOM 8369 C ASP B 479 54.781 40.779 -27.692 1.00 16.99 B C
 ATOM 8370 O ASP B 479 55.185 41.056 -26.563 1.00 16.06 B O
 ATOM 8371 N GLU B 480 53.531 41.003 -28.073 1.00 16.84 B N
 ATOM 8372 CA GLU B 480 52.565 41.593 -27.173 1.00 17.96 B C
 ATOM 8373 CB GLU B 480 51.256 41.896 -27.927 1.00 19.41 B C
 ATOM 8374 CG GLU B 480 51.372 43.053 -28.936 1.00 30.52 B C

ATOM 8375 CD GLU B 480 51.945 44.350 -28.305 1.00 34.11 B C
 ATOM 8376 OE1 GLU B 480 51.388 44.805 -27.282 1.00 36.99 B O
 ATOM 8377 OE2 GLU B 480 52.974 44.879 -28.796 1.00 41.37 B O
 ATOM 8378 C GLU B 480 52.305 40.686 -25.974 1.00 17.57 B C
 ATOM 8379 O GLU B 480 52.169 41.164 -24.855 1.00 15.62 B O
 ATOM 8380 N THR B 481 52.256 39.375 -26.206 1.00 14.91 B N
 ATOM 8381 CA THR B 481 52.072 38.432 -25.121 1.00 16.01 B C
 ATOM 8382 CB THR B 481 51.847 37.006 -25.655 1.00 16.05 B C
 ATOM 8383 OG1 THR B 481 50.733 37.017 -26.574 1.00 19.54 B O
 ATOM 8384 CG2 THR B 481 51.550 36.061 -24.491 1.00 18.71 B C
 ATOM 8385 C THR B 481 53.248 38.456 -24.151 1.00 16.16 B C
 ATOM 8386 O THR B 481 53.053 38.430 -22.954 1.00 16.06 B O
 ATOM 8387 N TRP B 482 54.467 38.540 -24.655 1.00 13.23 B N
 ATOM 8388 CA TRP B 482 55.602 38.694 -23.776 1.00 13.54 B C
 ATOM 8389 CB TRP B 482 56.897 38.722 -24.586 1.00 14.51 B C
 ATOM 8390 CG TRP B 482 57.515 37.346 -24.682 1.00 17.52 B C
 ATOM 8391 CD1 TRP B 482 57.458 36.446 -25.752 1.00 16.21 B C
 ATOM 8392 NE1 TRP B 482 58.141 35.294 -25.441 1.00 16.16 B N
 ATOM 8393 CE2 TRP B 482 58.681 35.367 -24.216 1.00 17.21 B C
 ATOM 8394 CD2 TRP B 482 58.306 36.670 -23.656 1.00 14.61 B C
 ATOM 8395 CE3 TRP B 482 58.749 37.006 -22.375 1.00 18.50 B C
 ATOM 8396 CZ3 TRP B 482 59.537 36.077 -21.674 1.00 18.54 B C
 ATOM 8397 CH2 TRP B 482 59.853 34.823 -22.214 1.00 17.57 B C
 ATOM 8398 CZ2 TRP B 482 59.437 34.443 -23.492 1.00 16.54 B C
 ATOM 8399 C TRP B 482 55.518 39.936 -22.906 1.00 14.61 B C
 ATOM 8400 O TRP B 482 55.886 39.903 -21.742 1.00 15.95 B O
 ATOM 8401 N LYS B 483 55.022 41.024 -23.453 1.00 14.90 B N
 ATOM 8402 CA LYS B 483 54.925 42.281 -22.674 1.00 16.98 B C
 ATOM 8403 CB LYS B 483 54.442 43.426 -23.532 1.00 17.74 B C
 ATOM 8404 CG LYS B 483 55.379 43.817 -24.655 1.00 20.23 B C
 ATOM 8405 CD LYS B 483 54.759 44.930 -25.530 1.00 21.43 B C
 ATOM 8406 CE LYS B 483 55.736 45.408 -26.595 1.00 21.93 B C
 ATOM 8407 NZ LYS B 483 55.119 46.410 -27.482 1.00 28.30 B N
 ATOM 8408 C LYS B 483 54.016 42.105 -21.489 1.00 17.58 B C
 ATOM 8409 O LYS B 483 54.306 42.584 -20.391 1.00 16.44 B O
 ATOM 8410 N LYS B 484 52.959 41.332 -21.697 1.00 18.31 B N
 ATOM 8411 CA LYS B 484 52.006 41.058 -20.654 1.00 17.54 B C
 ATOM 8412 CB LYS B 484 50.691 40.578 -21.275 1.00 21.90 B C
 ATOM 8413 CG LYS B 484 50.042 41.658 -22.116 1.00 26.76 B C
 ATOM 8414 CD LYS B 484 48.735 41.239 -22.728 1.00 34.55 B C
 ATOM 8415 CE LYS B 484 48.116 42.432 -23.459 1.00 38.13 B C
 ATOM 8416 NZ LYS B 484 47.234 41.967 -24.542 1.00 66.26 B N
 ATOM 8417 C LYS B 484 52.550 40.099 -19.605 1.00 19.69 B C
 ATOM 8418 O LYS B 484 52.321 40.274 -18.425 1.00 17.32 B O
 ATOM 8419 N MET B 485 53.344 39.130 -20.033 1.00 17.84 B N
 ATOM 8420 CA MET B 485 53.991 38.211 -19.107 1.00 16.90 B C
 ATOM 8421 CB MET B 485 54.695 37.076 -19.873 1.00 16.46 B C
 ATOM 8422 CG MET B 485 53.741 36.144 -20.549 1.00 19.65 B C
 ATOM 8423 SD MET B 485 54.501 34.543 -20.977 1.00 23.37 B S
 ATOM 8424 CE MET B 485 55.900 35.004 -22.009 1.00 19.59 B C
 ATOM 8425 C MET B 485 55.001 38.974 -18.294 1.00 16.66 B C
 ATOM 8426 O MET B 485 55.185 38.669 -17.118 1.00 18.87 B O
 ATOM 8427 N ASN B 486 55.686 39.927 -18.931 1.00 18.20 B N
 ATOM 8428 CA ASN B 486 56.694 40.724 -18.231 1.00 19.00 B C
 ATOM 8429 CB ASN B 486 57.437 41.646 -19.175 1.00 17.48 B C
 ATOM 8430 CG ASN B 486 58.421 40.912 -20.103 1.00 16.17 B C
 ATOM 8431 OD1 ASN B 486 58.786 39.783 -19.864 1.00 15.97 B O
 ATOM 8432 ND2 ASN B 486 58.821 41.580 -21.198 1.00 14.17 B N
 ATOM 8433 C ASN B 486 56.051 41.538 -17.090 1.00 19.96 B C
 ATOM 8434 O ASN B 486 56.617 41.623 -15.996 1.00 20.11 B O
 ATOM 8435 N LYS B 487 54.873 42.112 -17.348 1.00 19.54 B N
 ATOM 8436 CA LYS B 487 54.162 42.870 -16.322 1.00 22.85 B C
 ATOM 8437 CB LYS B 487 52.925 43.572 -16.867 1.00 26.20 B C
 ATOM 8438 CG LYS B 487 52.250 44.443 -15.810 1.00 33.19 B C
 ATOM 8439 CD LYS B 487 51.323 45.475 -16.438 1.00 44.95 B C
 ATOM 8440 CE LYS B 487 50.482 46.180 -15.378 1.00 51.82 B C

ATOM 8441 NZ LYS B 487 49.214 46.702 -15.950 1.00 58.53 B N
 ATOM 8442 C LYS B 487 53.731 41.979 -15.176 1.00 23.67 B C
 ATOM 8443 O LYS B 487 53.802 42.377 -14.020 1.00 25.23 B O
 ATOM 8444 N GLU B 488 53.284 40.779 -15.496 1.00 23.22 B N
 ATOM 8445 CA GLU B 488 52.847 39.837 -14.480 1.00 26.06 B C
 ATOM 8446 CB GLU B 488 52.305 38.562 -15.152 1.00 29.47 B C
 ATOM 8447 CG GLU B 488 51.579 37.591 -14.230 1.00 34.00 B C
 ATOM 8448 CD GLU B 488 50.172 38.088 -13.807 1.00 43.28 B C
 ATOM 8449 OE1 GLU B 488 49.541 38.871 -14.550 1.00 42.03 B O
 ATOM 8450 OE2 GLU B 488 49.697 37.699 -12.724 1.00 49.73 B O
 ATOM 8451 C GLU B 488 54.001 39.482 -13.525 1.00 24.22 B C
 ATOM 8452 O GLU B 488 53.818 39.397 -12.309 1.00 23.72 B O
 ATOM 8453 N LYS B 489 55.186 39.255 -14.078 1.00 20.78 B N
 ATOM 8454 CA LYS B 489 56.346 38.886 -13.283 1.00 19.45 B C
 ATOM 8455 CB LYS B 489 57.493 38.501 -14.207 1.00 19.09 B C
 ATOM 8456 CG LYS B 489 58.778 38.061 -13.510 1.00 22.98 B C
 ATOM 8457 CD LYS B 489 58.559 36.815 -12.685 1.00 25.02 B C
 ATOM 8458 CE LYS B 489 59.697 36.599 -11.687 1.00 24.62 B C
 ATOM 8459 NZ LYS B 489 60.996 36.422 -12.344 1.00 20.33 B N
 ATOM 8460 C LYS B 489 56.829 40.035 -12.368 1.00 22.49 B C
 ATOM 8461 O LYS B 489 57.313 39.801 -11.257 1.00 24.69 B O
 ATOM 8462 N LEU B 490 56.739 41.259 -12.876 1.00 28.37 B N
 ATOM 8463 CA LEU B 490 57.153 42.446 -12.137 1.00 31.85 B C
 ATOM 8464 CB LEU B 490 57.239 43.646 -13.072 1.00 28.43 B C
 ATOM 8465 CG LEU B 490 58.610 43.878 -13.638 1.00 37.28 B C
 ATOM 8466 CD1 LEU B 490 58.501 44.897 -14.750 1.00 36.27 B C
 ATOM 8467 CD2 LEU B 490 59.540 44.358 -12.493 1.00 31.43 B C
 ATOM 8468 C LEU B 490 56.135 42.821 -11.107 1.00 38.82 B C
 ATOM 8469 O LEU B 490 56.482 43.239 -10.009 1.00 48.72 B O
 ATOM 8470 N GLY B 491 54.877 42.694 -11.516 1.00 44.34 B N
 ATOM 8471 CA GLY B 491 53.764 43.360 -10.897 1.00 53.36 B C
 ATOM 8472 C GLY B 491 53.198 42.581 -9.749 1.00 65.53 B C
 ATOM 8473 O GLY B 491 53.934 42.042 -8.924 1.00 88.54 B O
 ATOM 8474 N GLY B 492 51.880 42.525 -9.691 1.00 68.71 B N
 ATOM 8475 CA GLY B 492 51.217 42.067 -8.490 1.00 75.80 B C
 ATOM 8476 C GLY B 492 50.470 40.803 -8.777 1.00 67.99 B C
 ATOM 8477 O GLY B 492 49.253 40.743 -8.594 1.00 62.39 B O
 ATOM 8478 N SER B 493 51.179 39.784 -9.244 1.00 58.58 B N
 ATOM 8479 CA SER B 493 50.486 38.539 -9.522 1.00 58.70 B C
 ATOM 8480 CB SER B 493 51.395 37.458 -10.150 1.00 58.29 B C
 ATOM 8481 OG SER B 493 50.630 36.373 -10.739 1.00 37.84 B O
 ATOM 8482 C SER B 493 49.858 38.034 -8.219 1.00 52.46 B C
 ATOM 8483 O SER B 493 50.355 38.275 -7.110 1.00 44.13 B O
 ATOM 8484 N LEU B 494 48.728 37.372 -8.397 1.00 43.71 B N
 ATOM 8485 CA LEU B 494 48.161 36.479 -7.423 1.00 40.14 B C
 ATOM 8486 CB LEU B 494 46.941 35.833 -8.075 1.00 46.56 B C
 ATOM 8487 CG LEU B 494 46.008 34.991 -7.227 1.00 49.26 B C
 ATOM 8488 CD1 LEU B 494 45.033 35.910 -6.522 1.00 65.09 B C
 ATOM 8489 CD2 LEU B 494 45.281 34.031 -8.111 1.00 48.58 B C
 ATOM 8490 C LEU B 494 49.196 35.414 -7.023 1.00 39.04 B C
 ATOM 8491 O LEU B 494 49.296 35.040 -5.855 1.00 41.27 B O
 ATOM 8492 N PHE B 495 50.001 34.956 -7.985 1.00 28.85 B N
 ATOM 8493 CA PHE B 495 50.954 33.855 -7.746 1.00 26.55 B C
 ATOM 8494 CB PHE B 495 51.106 33.021 -9.026 1.00 22.08 B C
 ATOM 8495 CG PHE B 495 49.857 32.286 -9.410 1.00 20.12 B C
 ATOM 8496 CD1 PHE B 495 48.909 32.889 -10.218 1.00 22.68 B C
 ATOM 8497 CE1 PHE B 495 47.742 32.225 -10.575 1.00 27.54 B C
 ATOM 8498 CZ PHE B 495 47.519 30.929 -10.131 1.00 31.42 B C
 ATOM 8499 CE2 PHE B 495 48.466 30.309 -9.333 1.00 24.27 B C
 ATOM 8500 CD2 PHE B 495 49.637 30.998 -8.973 1.00 23.92 B C
 ATOM 8501 C PHE B 495 52.333 34.332 -7.286 1.00 25.17 B C
 ATOM 8502 O PHE B 495 52.749 35.423 -7.626 1.00 26.71 B O
 ATOM 8503 N ALA B 496 53.042 33.486 -6.552 1.00 30.68 B N
 ATOM 8504 CA ALA B 496 54.394 33.797 -6.122 1.00 39.90 B C
 ATOM 8505 CB ALA B 496 54.884 32.751 -5.097 1.00 34.91 B C
 ATOM 8506 C ALA B 496 55.318 33.849 -7.351 1.00 44.23 B C
 ATOM 8507 O ALA B 496 55.126 33.089 -8.305 1.00 32.16 B O
 ATOM 8508 N LYS B 497 56.314 34.737 -7.307 1.00 39.12 B N
 ATOM 8509 CA LYS B 497 57.260 34.937 -8.406 1.00 40.13 B C
 ATOM 8510 CB LYS B 497 58.315 36.017 -8.053 1.00 40.35 B C
 ATOM 8511 CG LYS B 497 57.805 37.487 -8.172 1.00 46.61 B C
 ATOM 8512 CD LYS B 497 58.913 38.495 -7.741 1.00 50.16 B C
 ATOM 8513 CE LYS B 497 58.560 39.989 -7.960 1.00 58.07 B C
 ATOM 8514 NZ LYS B 497 59.154 40.584 -9.230 1.00 51.75 B N
 ATOM 8515 C LYS B 497 57.928 33.648 -8.951 1.00 33.09 B C
 ATOM 8516 O LYS B 497 58.100 33.541 -10.154 1.00 32.79 B O
 ATOM 8517 N PRO B 498 58.272 32.666 -8.097 1.00 34.88 B N
 ATOM 8518 CA PRO B 498 58.857 31.424 -8.626 1.00 34.68 B C
 ATOM 8519 CB PRO B 498 59.171 30.602 -7.371 1.00 31.62 B C
 ATOM 8520 CG PRO B 498 59.308 31.635 -6.278 1.00 33.00 B C
 ATOM 8521 CD PRO B 498 58.349 32.723 -6.621 1.00 37.97 B C
 ATOM 8522 C PRO B 498 57.935 30.611 -9.535 1.00 33.03 B C
 ATOM 8523 O PRO B 498 58.401 30.016 -10.490 1.00 29.69 B O
 ATOM 8524 N PHE B 499 56.641 30.575 -9.242 1.00 26.45 B N
 ATOM 8525 CA PHE B 499 55.722 29.917 -10.144 1.00 23.83 B C
 ATOM 8526 CB PHE B 499 54.387 29.588 -9.476 1.00 23.35 B C
 ATOM 8527 CG PHE B 499 53.423 28.939 -10.407 1.00 22.11 B C
 ATOM 8528 CD1 PHE B 499 53.633 27.653 -10.857 1.00 23.76 B C
 ATOM 8529 CE1 PHE B 499 52.736 27.068 -11.742 1.00 23.42 B C
 ATOM 8530 CZ PHE B 499 51.648 27.756 -12.177 1.00 20.10 B C
 ATOM 8531 CE2 PHE B 499 51.450 29.024 -11.762 1.00 22.67 B C
 ATOM 8532 CD2 PHE B 499 52.338 29.624 -10.882 1.00 22.37 B C
 ATOM 8533 C PHE B 499 55.487 30.763 -11.390 1.00 18.06 B C
 ATOM 8534 O PHE B 499 55.382 30.219 -12.471 1.00 21.21 B O
 ATOM 8535 N VAL B 500 55.413 32.083 -11.247 1.00 17.55 B N
 ATOM 8536 CA VAL B 500 55.247 32.942 -12.418 1.00 19.54 B C
 ATOM 8537 CB VAL B 500 55.106 34.462 -12.096 1.00 23.69 B C
 ATOM 8538 CG1 VAL B 500 54.996 35.282 -13.401 1.00 18.81 B C
 ATOM 8539 CG2 VAL B 500 53.876 34.723 -11.201 1.00 24.37 B C
 ATOM 8540 C VAL B 500 56.397 32.687 -13.374 1.00 19.76 B C
 ATOM 8541 O VAL B 500 56.198 32.551 -14.579 1.00 18.23 B O
 ATOM 8542 N GLU B 501 57.602 32.548 -12.832 1.00 19.34 B N
 ATOM 8543 CA GLU B 501 58.788 32.338 -13.640 1.00 18.85 B C
 ATOM 8544 CB GLU B 501 60.056 32.535 -12.787 1.00 23.38 B C
 ATOM 8545 CG GLU B 501 61.376 32.483 -13.558 1.00 26.47 B C
 ATOM 8546 CD GLU B 501 61.598 33.666 -14.504 1.00 29.42 B C
 ATOM 8547 OE1 GLU B 501 60.802 34.625 -14.546 1.00 28.81 B O
 ATOM 8548 OE2 GLU B 501 62.598 33.632 -15.223 1.00 30.94 B O
 ATOM 8549 C GLU B 501 58.796 30.942 -14.291 1.00 19.55 B C
 ATOM 8550 O GLU B 501 59.231 30.792 -15.437 1.00 19.89 B O
 ATOM 8551 N THR B 502 58.349 29.919 -13.556 1.00 18.37 B N
 ATOM 8552 CA THR B 502 58.256 28.569 -14.109 1.00 16.92 B C
 ATOM 8553 CB THR B 502 57.718 27.587 -13.057 1.00 21.51 B C
 ATOM 8554 OG1 THR B 502 58.621 27.588 -11.958 1.00 24.18 B O
 ATOM 8555 CG2 THR B 502 57.562 26.158 -13.617 1.00 20.21 B C
 ATOM 8556 C THR B 502 57.319 28.595 -15.326 1.00 16.37 B C
 ATOM 8557 O THR B 502 57.600 27.981 -16.357 1.00 18.24 B O
 ATOM 8558 N ALA B 503 56.225 29.319 -15.195 1.00 15.53 B N
 ATOM 8559 CA ALA B 503 55.261 29.465 -16.303 1.00 17.36 B C
 ATOM 8560 CB ALA B 503 53.998 30.172 -15.822 1.00 15.56 B C
 ATOM 8561 C ALA B 503 55.853 30.181 -17.522 1.00 14.65 B C
 ATOM 8562 O ALA B 503 55.721 29.727 -18.661 1.00 14.63 B O
 ATOM 8563 N ILE B 504 56.554 31.267 -17.285 1.00 15.97 B N
 ATOM 8564 CA ILE B 504 57.295 31.919 -18.352 1.00 14.89 B C
 ATOM 8565 CB ILE B 504 57.949 33.259 -17.883 1.00 16.17 B C
 ATOM 8566 CG1 ILE B 504 56.853 34.250 -17.464 1.00 18.62 B C
 ATOM 8567 CD1 ILE B 504 57.334 35.541 -16.733 1.00 20.52 B C
 ATOM 8568 CG2 ILE B 504 58.846 33.848 -19.042 1.00 18.16 B C
 ATOM 8569 C ILE B 504 58.321 31.018 -18.995 1.00 15.33 B C
 ATOM 8570 O ILE B 504 58.513 31.077 -20.217 1.00 15.15 B O
 ATOM 8571 N ASN B 505 58.972 30.158 -18.206 1.00 17.39 B N
 ATOM 8572 CA ASN B 505 59.914 29.185 -18.775 1.00 15.96 B C

ATOM 8573 CB ASN B 505 60.586 28.382 -17.665 1.00 18.93 B C
 ATOM 8574 CG ASN B 505 61.632 29.183 -16.921 1.00 21.82 B C
 ATOM 8575 OD1 ASN B 505 62.105 30.224 -17.411 1.00 18.32 B O
 ATOM 8576 ND2 ASN B 505 62.015 28.691 -15.728 1.00 15.07 B N
 ATOM 8577 C ASN B 505 59.292 28.226 -19.830 1.00 17.21 B C
 ATOM 8578 O ASN B 505 59.933 27.843 -20.826 1.00 16.83 B O
 ATOM 8579 N LEU B 506 58.025 27.917 -19.664 1.00 16.82 B N
 ATOM 8580 CA LEU B 506 57.351 27.116 -20.676 1.00 17.93 B C
 ATOM 8581 CB LEU B 506 55.939 26.753 -20.219 1.00 17.53 B C
 ATOM 8582 CG LEU B 506 55.205 25.851 -21.226 1.00 24.77 B C
 ATOM 8583 CD1 LEU B 506 54.696 24.591 -20.494 1.00 25.28 B C
 ATOM 8584 CD2 LEU B 506 54.067 26.637 -21.819 1.00 23.39 B C
 ATOM 8585 C LEU B 506 57.326 27.853 -22.028 1.00 19.12 B C
 ATOM 8586 O LEU B 506 57.513 27.231 -23.076 1.00 15.80 B O
 ATOM 8587 N ALA B 507 57.108 29.171 -22.012 1.00 18.26 B N
 ATOM 8588 CA ALA B 507 57.230 29.954 -23.223 1.00 16.87 B C
 ATOM 8589 CB ALA B 507 56.810 31.430 -22.970 1.00 18.33 B C
 ATOM 8590 C ALA B 507 58.645 29.923 -23.732 1.00 15.87 B C
 ATOM 8591 O ALA B 507 58.868 29.815 -24.924 1.00 13.91 B O
 ATOM 8592 N ARG B 508 59.630 30.045 -22.837 1.00 16.77 B N
 ATOM 8593 CA ARG B 508 61.035 29.991 -23.310 1.00 14.86 B C
 ATOM 8594 CB ARG B 508 62.050 30.236 -22.196 1.00 14.69 B C
 ATOM 8595 CG ARG B 508 61.932 31.621 -21.599 1.00 16.39 B C
 ATOM 8596 CD ARG B 508 62.920 31.867 -20.511 1.00 17.09 B C
 ATOM 8597 NE ARG B 508 62.956 33.301 -20.135 1.00 18.33 B N
 ATOM 8598 CZ ARG B 508 62.597 33.803 -18.962 1.00 18.87 B C
 ATOM 8599 NH1 ARG B 508 62.152 33.027 -17.977 1.00 19.08 B N
 ATOM 8600 NH2 ARG B 508 62.699 35.117 -18.755 1.00 22.71 B N
 ATOM 8601 C ARG B 508 61.330 28.671 -23.972 1.00 13.08 B C
 ATOM 8602 O ARG B 508 61.946 28.637 -25.019 1.00 14.84 B O
 ATOM 8603 N GLN B 509 60.919 27.574 -23.334 1.00 12.57 B N
 ATOM 8604 CA GLN B 509 61.156 26.274 -23.918 1.00 14.65 B C
 ATOM 8605 CB GLN B 509 60.720 25.147 -22.959 1.00 15.26 B C
 ATOM 8606 CG GLN B 509 61.024 23.770 -23.521 1.00 17.12 B C
 ATOM 8607 CD GLN B 509 62.537 23.515 -23.650 1.00 21.81 B C
 ATOM 8608 OE1 GLN B 509 63.275 23.824 -22.759 1.00 28.15 B O
 ATOM 8609 NE2 GLN B 509 62.966 22.966 -24.755 1.00 32.54 B N
 ATOM 8610 C GLN B 509 60.492 26.108 -25.299 1.00 16.44 B C
 ATOM 8611 O GLN B 509 61.043 25.458 -26.195 1.00 17.20 B O
 ATOM 8612 N SER B 510 59.331 26.731 -25.478 1.00 17.03 B N
 ATOM 8613 CA SER B 510 58.645 26.721 -26.761 1.00 16.45 B C
 ATOM 8614 CB SER B 510 57.277 27.454 -26.650 1.00 17.44 B C
 ATOM 8615 OG SER B 510 56.458 26.798 -25.692 1.00 20.37 B O
 ATOM 8616 C SER B 510 59.494 27.358 -27.830 1.00 17.70 B C
 ATOM 8617 O SER B 510 59.638 26.815 -28.941 1.00 15.61 B O
 ATOM 8618 N HIS B 511 60.059 28.522 -27.499 1.00 18.37 B N
 ATOM 8619 CA HIS B 511 60.914 29.239 -28.419 1.00 15.76 B C
 ATOM 8620 CB HIS B 511 61.379 30.593 -27.842 1.00 19.17 B C
 ATOM 8621 CG HIS B 511 60.337 31.704 -27.906 1.00 18.73 B C
 ATOM 8622 ND1 HIS B 511 59.990 32.312 -29.061 1.00 18.45 B N
 ATOM 8623 CE1 HIS B 511 59.071 33.270 -28.810 1.00 20.71 B C
 ATOM 8624 NE2 HIS B 511 58.839 33.296 -27.491 1.00 17.90 B N
 ATOM 8625 CD2 HIS B 511 59.622 32.357 -26.893 1.00 20.37 B C
 ATOM 8626 C HIS B 511 62.115 28.418 -28.800 1.00 21.48 B C
 ATOM 8627 O HIS B 511 62.519 28.441 -29.945 1.00 17.20 B O
 ATOM 8628 N CYS B 512 62.697 27.694 -27.853 1.00 16.84 B N
 ATOM 8629 CA CYS B 512 63.918 26.933 -28.125 1.00 19.38 B C
 ATOM 8630 CB CYS B 512 64.687 26.692 -26.805 1.00 19.41 B C
 ATOM 8631 SG CYS B 512 65.249 28.250 -26.057 1.00 25.23 B S
 ATOM 8632 C CYS B 512 63.617 25.580 -28.842 1.00 21.62 B C
 ATOM 8633 O CYS B 512 64.416 25.108 -29.623 1.00 27.01 B O
 ATOM 8634 N THR B 513 62.454 24.995 -28.580 1.00 22.77 B N
 ATOM 8635 CA THR B 513 62.062 23.732 -29.192 1.00 24.80 B C
 ATOM 8636 CB THR B 513 60.948 23.125 -28.403 1.00 27.16 B C
 ATOM 8637 OG1 THR B 513 61.455 22.833 -27.122 1.00 26.52 B O
 ATOM 8638 CG2 THR B 513 60.451 21.824 -29.037 1.00 30.46 B C

ATOM 8639 C THR B 513 61.615 23.859 -30.652 1.00 27.78 B C
 ATOM 8640 O THR B 513 61.930 23.007 -31.472 1.00 24.42 B O
 ATOM 8641 N TYR B 514 60.903 24.931 -30.982 1.00 22.91 B N
 ATOM 8642 CA TYR B 514 60.314 25.070 -32.308 1.00 28.13 B C
 ATOM 8643 CB TYR B 514 58.837 25.457 -32.209 1.00 22.64 B C
 ATOM 8644 CG TYR B 514 58.040 24.384 -31.524 1.00 24.67 B C
 ATOM 8645 CD1 TYR B 514 57.749 23.174 -32.166 1.00 27.20 B C
 ATOM 8646 CE1 TYR B 514 57.040 22.177 -31.516 1.00 25.06 B C
 ATOM 8647 CZ TYR B 514 56.620 22.390 -30.252 1.00 25.30 B C
 ATOM 8648 OH TYR B 514 55.932 21.420 -29.578 1.00 25.40 B O
 ATOM 8649 CE2 TYR B 514 56.924 23.584 -29.593 1.00 22.38 B C
 ATOM 8650 CD2 TYR B 514 57.605 24.544 -30.230 1.00 24.03 B C
 ATOM 8651 C TYR B 514 61.116 26.060 -33.107 1.00 34.01 B C
 ATOM 8652 O TYR B 514 60.846 27.240 -33.093 1.00 41.72 B O
 ATOM 8653 N HIS B 515 62.112 25.527 -33.808 1.00 49.16 B N
 ATOM 8654 CA HIS B 515 63.076 26.288 -34.597 1.00 47.01 B C
 ATOM 8655 CB HIS B 515 64.427 26.142 -33.925 1.00 42.91 B C
 ATOM 8656 CG HIS B 515 64.872 24.700 -33.790 1.00 44.52 B C
 ATOM 8657 ND1 HIS B 515 64.972 24.077 -32.597 1.00 42.52 B N
 ATOM 8658 CE1 HIS B 515 65.346 22.800 -32.789 1.00 37.27 B C
 ATOM 8659 NE2 HIS B 515 65.496 22.605 -34.112 1.00 49.63 B N
 ATOM 8660 CD2 HIS B 515 65.194 23.748 -34.758 1.00 38.43 B C
 ATOM 8661 C HIS B 515 63.108 25.718 -36.014 1.00 55.54 B C
 ATOM 8662 O HIS B 515 62.259 24.870 -36.346 1.00 42.46 B O
 ATOM 8663 N ASN B 516 64.073 26.174 -36.841 1.00 69.26 B N
 ATOM 8664 CA ASN B 516 64.386 25.594 -38.181 1.00 70.09 B C
 ATOM 8665 CB ASN B 516 63.740 26.423 -39.291 1.00 77.49 B C
 ATOM 8666 CG ASN B 516 62.232 26.459 -39.195 1.00 88.07 B C
 ATOM 8667 OD1 ASN B 516 61.560 25.453 -39.418 1.00 92.86 B O
 ATOM 8668 ND2 ASN B 516 61.689 27.627 -38.876 1.00 90.10 B N
 ATOM 8669 C ASN B 516 65.886 25.510 -38.508 1.00 51.85 B C
 ATOM 8670 O ASN B 516 66.686 24.937 -37.766 1.00 53.73 B O
 ATOM 8671 N THR B 521 73.370 24.373 -39.725 1.00 72.27 B N
 ATOM 8672 CA THR B 521 72.845 23.006 -39.683 1.00 70.10 B C
 ATOM 8673 CB THR B 521 73.400 22.213 -38.468 1.00 69.26 B C
 ATOM 8674 OG1 THR B 521 72.791 22.682 -37.254 1.00 53.07 B O
 ATOM 8675 CG2 THR B 521 74.955 22.328 -38.403 1.00 50.45 B C
 ATOM 8676 C THR B 521 71.304 23.002 -39.715 1.00 67.88 B C
 ATOM 8677 O THR B 521 70.686 24.063 -39.849 1.00 74.48 B O
 ATOM 8678 N SER B 522 70.698 21.815 -39.611 1.00 56.47 B N
 ATOM 8679 CA SER B 522 69.273 21.617 -39.923 1.00 54.25 B C
 ATOM 8680 CB SER B 522 69.116 20.434 -40.877 1.00 54.80 B C
 ATOM 8681 OG SER B 522 68.903 19.225 -40.162 1.00 48.21 B O
 ATOM 8682 C SER B 522 68.420 21.353 -38.671 1.00 70.09 B C
 ATOM 8683 O SER B 522 68.974 21.157 -37.590 1.00 65.77 B O
 ATOM 8684 N PRO B 523 67.071 21.325 -38.823 1.00 69.30 B N
 ATOM 8685 CA PRO B 523 66.136 21.170 -37.693 1.00 69.67 B C
 ATOM 8686 CB PRO B 523 64.762 21.160 -38.374 1.00 63.00 B C
 ATOM 8687 CG PRO B 523 64.958 21.930 -39.609 1.00 63.11 B C
 ATOM 8688 CD PRO B 523 66.338 21.591 -40.077 1.00 69.18 B C
 ATOM 8689 C PRO B 523 66.316 19.907 -36.834 1.00 68.39 B C
 ATOM 8690 O PRO B 523 66.474 20.009 -35.604 1.00 45.02 B O
 ATOM 8691 N ASP B 524 66.286 18.735 -37.461 1.00 58.00 B N
 ATOM 8692 CA ASP B 524 66.439 17.479 -36.717 1.00 59.59 B C
 ATOM 8693 CB ASP B 524 66.231 16.258 -37.625 1.00 65.22 B C
 ATOM 8694 CG ASP B 524 64.765 15.999 -37.929 1.00 72.73 B C
 ATOM 8695 OD1 ASP B 524 63.895 16.413 -37.126 1.00 73.64 B O
 ATOM 8696 OD2 ASP B 524 64.483 15.376 -38.973 1.00 63.61 B O
 ATOM 8697 C ASP B 524 67.796 17.380 -36.047 1.00 47.88 B C
 ATOM 8698 O ASP B 524 67.895 16.867 -34.935 1.00 40.13 B O
 ATOM 8699 N GLU B 525 68.832 17.867 -36.728 1.00 42.68 B N
 ATOM 8700 CA GLU B 525 70.191 17.832 -36.191 1.00 43.58 B C
 ATOM 8701 CB GLU B 525 71.236 18.059 -37.299 1.00 50.60 B C
 ATOM 8702 CG GLU B 525 72.085 16.818 -37.598 1.00 65.78 B C
 ATOM 8703 CD GLU B 525 72.920 16.384 -36.395 1.00 73.95 B C
 ATOM 8704 OE1 GLU B 525 73.972 17.004 -36.150 1.00 81.89 B O

ATOM 8705 OE2 GLU B 525 72.521 15.434 -35.688 1.00 69.88 B O
 ATOM 8706 C GLU B 525 70.397 18.822 -35.033 1.00 37.64 B C
 ATOM 8707 O GLU B 525 71.010 18.477 -34.026 1.00 40.61 B O
 ATOM 8708 N LEU B 526 69.894 20.041 -35.182 1.00 42.79 B N
 ATOM 8709 CA LEU B 526 69.943 21.033 -34.098 1.00 42.76 B C
 ATOM 8710 CB LEU B 526 69.300 22.355 -34.541 1.00 39.65 B C
 ATOM 8711 CG LEU B 526 69.491 23.607 -33.677 1.00 35.52 B C
 ATOM 8712 CD1 LEU B 526 70.952 23.927 -33.408 1.00 35.56 B C
 ATOM 8713 CD2 LEU B 526 68.793 24.781 -34.375 1.00 36.01 B C
 ATOM 8714 C LEU B 526 69.250 20.487 -32.838 1.00 40.04 B C
 ATOM 8715 O LEU B 526 69.803 20.593 -31.741 1.00 30.06 B O
 ATOM 8716 N THR B 527 68.066 19.880 -32.994 1.00 33.52 B N
 ATOM 8717 CA THR B 527 67.353 19.288 -31.841 1.00 36.91 B C
 ATOM 8718 CB THR B 527 65.984 18.666 -32.211 1.00 35.04 B C
 ATOM 8719 OG1 THR B 527 65.115 19.689 -32.691 1.00 38.19 B O
 ATOM 8720 CG2 THR B 527 65.325 18.003 -30.998 1.00 30.65 B C
 ATOM 8721 C THR B 527 68.188 18.226 -31.157 1.00 39.79 B C
 ATOM 8722 O THR B 527 68.293 18.197 -29.931 1.00 34.09 B O
 ATOM 8723 N ARG B 528 68.804 17.349 -31.936 1.00 37.41 B N
 ATOM 8724 CA ARG B 528 69.547 16.269 -31.307 1.00 36.55 B C
 ATOM 8725 CB ARG B 528 69.831 15.137 -32.294 1.00 52.60 B C
 ATOM 8726 CG ARG B 528 69.701 13.738 -31.660 1.00 69.87 B C
 ATOM 8727 CD ARG B 528 70.156 12.662 -32.631 1.00 87.21 B C
 ATOM 8728 NE ARG B 528 71.397 13.075 -33.283 1.00 95.91 B N
 ATOM 8729 CZ ARG B 528 72.604 13.062 -32.715 1.00 88.77 B C
 ATOM 8730 NH1 ARG B 528 72.775 12.631 -31.465 1.00 82.15 B N
 ATOM 8731 NH2 ARG B 528 73.655 13.481 -33.413 1.00 77.77 B N
 ATOM 8732 C ARG B 528 70.841 16.771 -30.634 1.00 32.41 B C
 ATOM 8733 O ARG B 528 71.224 16.238 -29.600 1.00 32.77 B O
 ATOM 8734 N LYS B 529 71.496 17.776 -31.220 1.00 28.56 B N
 ATOM 8735 CA LYS B 529 72.665 18.432 -30.595 1.00 38.61 B C
 ATOM 8736 CB LYS B 529 73.287 19.491 -31.528 1.00 41.18 B C
 ATOM 8737 CG LYS B 529 74.196 18.949 -32.605 1.00 50.54 B C
 ATOM 8738 CD LYS B 529 74.880 20.083 -33.355 1.00 54.89 B C
 ATOM 8739 CE LYS B 529 75.945 19.563 -34.303 1.00 56.41 B C
 ATOM 8740 NZ LYS B 529 76.220 20.534 -35.406 1.00 61.61 B N
 ATOM 8741 C LYS B 529 72.292 19.099 -29.261 1.00 31.73 B C
 ATOM 8742 O LYS B 529 72.981 18.930 -28.259 1.00 43.25 B O
 ATOM 8743 N ARG B 530 71.213 19.867 -29.262 1.00 37.56 B N
 ATOM 8744 CA ARG B 530 70.752 20.526 -28.043 1.00 37.61 B C
 ATOM 8745 CB ARG B 530 69.570 21.442 -28.328 1.00 38.98 B C
 ATOM 8746 CG ARG B 530 69.957 22.687 -29.108 1.00 32.36 B C
 ATOM 8747 CD ARG B 530 68.774 23.588 -29.298 1.00 32.92 B C
 ATOM 8748 NE ARG B 530 69.178 24.845 -29.909 1.00 33.71 B N
 ATOM 8749 CZ ARG B 530 68.344 25.793 -30.318 1.00 38.82 B C
 ATOM 8750 NH1 ARG B 530 67.033 25.649 -30.179 1.00 45.15 B N
 ATOM 8751 NH2 ARG B 530 68.825 26.897 -30.887 1.00 42.27 B N
 ATOM 8752 C ARG B 530 70.398 19.489 -26.987 1.00 41.72 B C
 ATOM 8753 O ARG B 530 70.853 19.595 -25.852 1.00 39.24 B O
 ATOM 8754 N VAL B 531 69.624 18.469 -27.360 1.00 36.28 B N
 ATOM 8755 CA VAL B 531 69.275 17.393 -26.406 1.00 42.76 B C
 ATOM 8756 CB VAL B 531 68.363 16.297 -27.037 1.00 42.52 B C
 ATOM 8757 CG1 VAL B 531 68.414 15.007 -26.226 1.00 43.01 B C
 ATOM 8758 CG2 VAL B 531 66.938 16.807 -27.152 1.00 36.09 B C
 ATOM 8759 C VAL B 531 70.512 16.756 -25.791 1.00 38.29 B C
 ATOM 8760 O VAL B 531 70.561 16.501 -24.590 1.00 47.98 B O
 ATOM 8761 N LEU B 532 71.520 16.505 -26.617 1.00 45.39 B N
 ATOM 8762 CA LEU B 532 72.771 15.923 -26.146 1.00 42.10 B C
 ATOM 8763 CB LEU B 532 73.647 15.501 -27.333 1.00 52.99 B C
 ATOM 8764 CG LEU B 532 73.599 14.022 -27.730 1.00 55.07 B C
 ATOM 8765 CD1 LEU B 532 72.167 13.491 -27.918 1.00 53.47 B C
 ATOM 8766 CD2 LEU B 532 74.409 13.851 -28.987 1.00 50.51 B C
 ATOM 8767 C LEU B 532 73.592 16.835 -25.214 1.00 43.28 B C
 ATOM 8768 O LEU B 532 74.228 16.348 -24.268 1.00 37.39 B O
 ATOM 8769 N SER B 533 73.608 18.140 -25.498 1.00 35.64 B N
 ATOM 8770 CA SER B 533 74.416 19.084 -24.725 1.00 30.10 B C

ATOM 8771 CB SER B 533 74.637 20.371 -25.517 1.00 31.45 B C
 ATOM 8772 OG SER B 533 73.422 21.073 -25.710 1.00 35.60 B O
 ATOM 8773 C SER B 533 73.734 19.408 -23.410 1.00 25.74 B C
 ATOM 8774 O SER B 533 74.375 19.842 -22.464 1.00 27.81 B O
 ATOM 8775 N VAL B 534 72.416 19.227 -23.351 1.00 26.13 B N
 ATOM 8776 CA VAL B 534 71.686 19.472 -22.117 1.00 22.57 B C
 ATOM 8777 CB VAL B 534 70.295 20.062 -22.402 1.00 20.39 B C
 ATOM 8778 CG1 VAL B 534 69.458 20.157 -21.128 1.00 20.01 B C
 ATOM 8779 CG2 VAL B 534 70.435 21.421 -23.049 1.00 21.72 B C
 ATOM 8780 C VAL B 534 71.590 18.219 -21.242 1.00 27.30 B C
 ATOM 8781 O VAL B 534 71.820 18.299 -20.041 1.00 25.45 B O
 ATOM 8782 N ILE B 535 71.276 17.062 -21.835 1.00 27.49 B N
 ATOM 8783 CA ILE B 535 71.005 15.850 -21.048 1.00 28.80 B C
 ATOM 8784 CB ILE B 535 69.805 15.028 -21.613 1.00 35.69 B C
 ATOM 8785 CG1 ILE B 535 68.533 15.879 -21.713 1.00 35.37 B C
 ATOM 8786 CD1 ILE B 535 68.029 16.446 -20.395 1.00 35.74 B C
 ATOM 8787 CG2 ILE B 535 69.548 13.793 -20.741 1.00 36.67 B C
 ATOM 8788 C ILE B 535 72.178 14.879 -20.940 1.00 27.66 B C
 ATOM 8789 O ILE B 535 72.493 14.392 -19.857 1.00 31.72 B O
 ATOM 8790 N THR B 536 72.826 14.571 -22.053 1.00 32.60 B N
 ATOM 8791 CA THR B 536 73.616 13.337 -22.083 1.00 32.47 B C
 ATOM 8792 CB THR B 536 73.151 12.420 -23.235 1.00 46.51 B C
 ATOM 8793 OG1 THR B 536 72.860 13.200 -24.393 1.00 38.77 B O
 ATOM 8794 CG2 THR B 536 71.850 11.698 -22.839 1.00 42.92 B C
 ATOM 8795 C THR B 536 75.138 13.530 -21.989 1.00 33.92 B C
 ATOM 8796 O THR B 536 75.786 12.819 -21.227 1.00 31.82 B O
 ATOM 8797 N GLU B 537 75.708 14.503 -22.691 1.00 34.30 B N
 ATOM 8798 CA GLU B 537 77.162 14.695 -22.683 1.00 38.05 B C
 ATOM 8799 CB GLU B 537 77.630 15.026 -24.093 1.00 47.74 B C
 ATOM 8800 CG GLU B 537 77.392 13.899 -25.087 1.00 61.00 B C
 ATOM 8801 CD GLU B 537 77.678 14.319 -26.508 1.00 66.39 B C
 ATOM 8802 OE1 GLU B 537 78.858 14.554 -26.826 1.00 64.96 B O
 ATOM 8803 OE2 GLU B 537 76.721 14.421 -27.303 1.00 86.24 B O
 ATOM 8804 C GLU B 537 77.596 15.814 -21.727 1.00 36.26 B C
 ATOM 8805 O GLU B 537 77.059 16.903 -21.796 1.00 34.09 B O
 ATOM 8806 N PRO B 538 78.570 15.554 -20.837 1.00 32.46 B N
 ATOM 8807 CA PRO B 538 79.053 16.656 -20.014 1.00 30.79 B C
 ATOM 8808 CB PRO B 538 79.882 15.959 -18.940 1.00 29.64 B C
 ATOM 8809 CG PRO B 538 80.360 14.729 -19.591 1.00 33.98 B C
 ATOM 8810 CD PRO B 538 79.264 14.298 -20.523 1.00 39.03 B C
 ATOM 8811 C PRO B 538 79.883 17.654 -20.818 1.00 28.97 B C
 ATOM 8812 O PRO B 538 80.301 17.358 -21.933 1.00 31.95 B O
 ATOM 8813 N ILE B 539 80.041 18.857 -20.277 1.00 24.60 B N
 ATOM 8814 CA ILE B 539 80.912 19.871 -20.859 1.00 25.40 B C
 ATOM 8815 CB ILE B 539 80.671 21.276 -20.198 1.00 24.58 B C
 ATOM 8816 CG1 ILE B 539 79.328 21.825 -20.687 1.00 20.47 B C
 ATOM 8817 CD1 ILE B 539 78.935 23.187 -20.171 1.00 18.78 B C
 ATOM 8818 CG2 ILE B 539 81.789 22.265 -20.533 1.00 21.75 B C
 ATOM 8819 C ILE B 539 82.333 19.422 -20.609 1.00 23.93 B C
 ATOM 8820 O ILE B 539 82.615 18.892 -19.530 1.00 22.47 B O
 ATOM 8821 N LEU B 540 83.219 19.647 -21.578 1.00 23.76 B N
 ATOM 8822 CA LEU B 540 84.613 19.165 -21.483 1.00 29.28 B C
 ATOM 8823 CB LEU B 540 85.426 19.455 -22.770 1.00 31.78 B C
 ATOM 8824 CG LEU B 540 85.142 18.637 -24.047 1.00 37.56 B C
 ATOM 8825 CD1 LEU B 540 86.028 19.094 -25.222 1.00 35.30 B C
 ATOM 8826 CD2 LEU B 540 85.330 17.126 -23.810 1.00 35.88 B C
 ATOM 8827 C LEU B 540 85.284 19.824 -20.287 1.00 28.87 B C
 ATOM 8828 O LEU B 540 85.139 21.032 -20.076 1.00 28.27 B O
 ATOM 8829 N PRO B 541 86.032 19.039 -19.503 1.00 30.18 B N
 ATOM 8830 CA PRO B 541 86.569 19.564 -18.256 1.00 27.81 B C
 ATOM 8831 CB PRO B 541 87.372 18.392 -17.677 1.00 31.70 B C
 ATOM 8832 CG PRO B 541 87.511 17.412 -18.771 1.00 31.03 B C
 ATOM 8833 CD PRO B 541 86.440 17.643 -19.752 1.00 30.45 B C
 ATOM 8834 C PRO B 541 87.465 20.781 -18.420 1.00 23.81 B C
 ATOM 8835 O PRO B 541 88.036 21.023 -19.493 1.00 23.24 B O
 ATOM 8836 N PHE B 542 87.570 21.544 -17.340 1.00 23.63 B N

ATOM 8837	CA PHE B 542	88.428	22.719	-17.303	1.00	25.63	B	C	ATOM 8903	O2 EDO C	10	37.539	-13.647	-3.807	1.00	56.73	O
ATOM 8838	CB PHE B 542	88.188	23.461	-15.992	1.00	20.98	B	C	ATOM 8904	C2 EDO C	10	38.572	-14.413	-3.187	1.00	53.33	C
ATOM 8839	CG PHE B 542	89.075	24.646	-15.805	1.00	22.67	B	C	ATOM 8905	C1 EDO C	10	38.080	-14.845	-1.828	1.00	66.57	C
ATOM 8840	CD1 PHE B 542	88.875	25.798	-16.545	1.00	24.18	B	C	ATOM 8906	O1 EDO C	10	38.329	-13.862	-0.808	1.00	43.72	O
ATOM 8841	CE1 PHE B 542	89.696	26.892	-16.381	1.00	26.40	B	C	ATOM 8907	O2 EDO C	11	62.286	22.846	-3.976	1.00	95.27	O
ATOM 8842	CZ PHE B 542	90.745	26.847	-15.464	1.00	26.09	B	C	ATOM 8908	C2 EDO C	11	61.432	21.701	-3.837	1.00	78.37	C
ATOM 8843	CE2 PHE B 542	90.956	25.700	-14.730	1.00	28.04	B	C	ATOM 8909	C1 EDO C	11	60.151	21.921	-4.633	1.00	74.32	C
ATOM 8844	CD2 PHE B 542	90.118	24.607	-14.901	1.00	24.54	B	C	ATOM 8910	O1 EDO C	11	59.125	22.519	-3.825	1.00	66.41	O
ATOM 8845	C PHE B 542	89.923	22.335	-17.404	1.00	24.57	B	C	ATOM 8911	O HOH W	1	34.048	30.209	-35.713	1.00	30.57	O
ATOM 8846	O PHE B 542	90.354	21.435	-16.718	1.00	26.15	B	O	ATOM 8912	O HOH W	2	72.221	30.561	-18.308	1.00	34.52	O
ATOM 8847	N GLU B 543	90.691	23.048	-18.229	1.00	30.05	B	N	ATOM 8913	O HOH W	3	42.922	-37.541	1.254	1.00	24.96	O
ATOM 8848	CA GLU B 543	92.144	22.847	-18.358	1.00	45.33	B	C	ATOM 8914	O HOH W	4	50.386	5.471	-4.647	1.00	32.49	O
ATOM 8849	CB GLU B 543	92.475	22.331	-19.754	1.00	51.76	B	C	ATOM 8915	O HOH W	5	33.078	3.362	-9.383	1.00	54.39	O
ATOM 8850	CG GLU B 543	92.258	20.848	-19.967	1.00	58.60	B	C	ATOM 8916	O HOH W	6	52.914	44.981	-20.022	1.00	38.76	O
ATOM 8851	CD GLU B 543	92.868	20.385	-21.281	1.00	70.33	B	C	ATOM 8917	O HOH W	7	46.727	-46.708	-0.071	1.00	28.55	O
ATOM 8852	OE1 GLU B 543	92.308	20.724	-22.346	1.00	78.28	B	O	ATOM 8918	O HOH W	8	43.693	28.326	0.980	1.00	60.87	O
ATOM 8853	OE2 GLU B 543	93.915	19.701	-21.249	1.00	62.47	B	O	ATOM 8919	O HOH W	9	40.812	33.780	-15.967	1.00	55.29	O
ATOM 8854	C GLU B 543	92.921	24.154	-18.139	1.00	55.07	B	C	ATOM 8920	O HOH W	10	34.233	-15.102	-12.393	1.00	69.73	O
ATOM 8855	O GLU B 543	92.409	25.240	-18.410	1.00	68.55	B	O	ATOM 8921	O HOH W	11	60.558	-41.349	3.050	1.00	30.19	O
ATOM 8856	N ARG B 544	94.161	24.048	-17.673	1.00	66.21	B	N	ATOM 8922	O HOH W	12	51.686	-35.679	-4.930	1.00	30.59	O
ATOM 8857	CA ARG B 544	95.063	25.206	-17.600	1.00	66.46	B	C	ATOM 8923	O HOH W	13	41.009	10.787	-34.962	1.00	32.13	O
ATOM 8858	CB ARG B 544	96.449	24.783	-17.115	1.00	72.05	B	C	ATOM 8924	O HOH W	14	72.510	-28.244	9.403	1.00	47.03	O
ATOM 8859	CG ARG B 544	96.630	24.852	-15.618	1.00	82.51	B	C	ATOM 8925	O HOH W	15	58.976	52.860	-18.688	1.00	44.24	O
ATOM 8860	CD ARG B 544	96.466	26.273	-15.082	1.00	82.85	B	C	ATOM 8926	O HOH W	16	38.872	-12.021	23.356	1.00	57.68	O
ATOM 8861	NE ARG B 544	95.163	26.517	-14.456	1.00	83.68	B	N	ATOM 8927	O HOH W	17	52.746	17.543	-10.057	1.00	29.72	O
ATOM 8862	CZ ARG B 544	94.775	26.005	-13.287	1.00	88.75	B	C	ATOM 8928	O HOH W	18	51.072	-32.904	-1.376	1.00	29.37	O
ATOM 8863	NH1 ARG B 544	95.564	25.183	-12.604	1.00	105.01	B	N	ATOM 8929	O HOH W	19	63.526	-35.430	-0.774	1.00	28.10	O
ATOM 8864	NH2 ARG B 544	93.583	26.307	-12.791	1.00	82.97	B	N	ATOM 8930	O HOH W	20	68.058	39.373	-17.925	1.00	39.37	O
ATOM 8865	C ARG B 544	95.208	25.906	-18.947	1.00	60.40	B	C	ATOM 8931	O HOH W	21	33.554	-10.585	-11.360	1.00	67.19	O
ATOM 8866	O ARG B 544	95.633	27.055	-19.008	1.00	50.23	B	O	ATOM 8932	O HOH W	22	37.063	12.291	-2.365	1.00	51.31	O
ATOM 8867	O2 EDO C	1	50.210	-34.939	6.459	1.00	38.13	O	ATOM 8933	O HOH W	23	37.950	-12.663	-6.107	1.00	35.96	O
ATOM 8868	C2 EDO C	1	49.011	-35.682	6.773	1.00	41.21	C	ATOM 8934	O HOH W	24	59.883	20.188	-7.683	1.00	40.62	O
ATOM 8869	C1 EDO C	1	49.054	-36.235	8.192	1.00	45.53	C	ATOM 8935	O HOH W	25	64.280	31.472	-14.859	1.00	54.99	O
ATOM 8870	O1 EDO C	1	49.986	-37.333	8.219	1.00	44.71	O	ATOM 8936	O HOH W	26	50.836	-23.573	23.569	1.00	61.82	O
ATOM 8871	O2 EDO C	2	63.438	-31.727	17.582	1.00	45.81	O	ATOM 8937	O HOH W	27	44.198	36.276	-15.221	1.00	47.21	O
ATOM 8872	C2 EDO C	2	62.577	-30.665	18.072	1.00	74.69	C	ATOM 8938	O HOH W	28	27.068	-13.901	20.678	1.00	58.53	O
ATOM 8873	C1 EDO C	2	61.818	-31.103	19.324	1.00	83.94	C	ATOM 8939	O HOH W	29	59.191	6.102	3.877	1.00	52.78	O
ATOM 8874	O1 EDO C	2	60.663	-31.864	18.957	1.00	82.22	O	ATOM 8940	O HOH W	30	56.173	43.466	-32.287	1.00	55.42	O
ATOM 8875	O2 EDO C	3	35.774	-12.724	19.459	1.00	49.91	O	ATOM 8941	O HOH W	31	48.255	36.614	-25.882	1.00	35.33	O
ATOM 8876	C2 EDO C	3	34.695	-13.626	19.183	1.00	51.62	C	ATOM 8942	O HOH W	32	52.907	8.991	-11.103	1.00	35.35	O
ATOM 8877	C1 EDO C	3	35.066	-15.056	19.586	1.00	50.18	C	ATOM 8943	O HOH W	33	78.772	40.802	-19.806	1.00	64.63	O
ATOM 8878	O1 EDO C	3	34.908	-15.275	20.995	1.00	52.38	O	ATOM 8944	O HOH W	34	35.785	6.639	-16.100	1.00	38.23	O
ATOM 8879	O2 EDO C	4	55.664	-31.020	-7.478	1.00	62.16	O	ATOM 8945	O HOH W	35	34.929	18.983	-26.361	1.00	36.02	O
ATOM 8880	C2 EDO C	4	56.447	-32.199	-7.745	1.00	55.16	C	ATOM 8946	O HOH W	36	65.094	-28.160	-0.117	1.00	30.19	O
ATOM 8881	C1 EDO C	4	57.841	-32.025	-7.181	1.00	46.79	C	ATOM 8947	O HOH W	37	39.427	-1.601	16.456	1.00	37.99	O
ATOM 8882	O1 EDO C	4	57.749	-31.794	-5.762	1.00	44.89	O	ATOM 8948	O HOH W	38	55.902	-54.816	1.904	1.00	37.57	O
ATOM 8883	O2 EDO C	5	59.390	40.828	-24.889	1.00	46.90	O	ATOM 8949	O HOH W	39	61.453	35.126	-30.488	1.00	46.77	O
ATOM 8884	C2 EDO C	5	58.426	41.563	-25.689	1.00	52.84	C	ATOM 8950	O HOH W	40	44.942	4.117	-9.297	1.00	26.04	O
ATOM 8885	C1 EDO C	5	58.953	42.947	-26.019	1.00	60.33	C	ATOM 8951	O HOH W	41	41.406	-41.347	0.269	1.00	28.33	O
ATOM 8886	O1 EDO C	5	59.696	42.902	-27.239	1.00	52.81	O	ATOM 8952	O HOH W	42	57.974	-52.022	-9.497	1.00	40.95	O
ATOM 8887	O2 EDO C	6	67.159	24.576	-21.207	1.00	44.76	O	ATOM 8953	O HOH W	43	42.050	21.939	-12.530	1.00	33.98	O
ATOM 8888	C2 EDO C	6	67.371	23.331	-21.847	1.00	79.38	C	ATOM 8954	O HOH W	44	41.003	-33.274	-1.457	1.00	33.03	O
ATOM 8889	C1 EDO C	6	66.232	23.107	-22.819	1.00	81.18	C	ATOM 8955	O HOH W	45	40.926	-47.571	5.365	1.00	32.94	O
ATOM 8890	O1 EDO C	6	65.631	21.876	-22.429	1.00	57.51	O	ATOM 8956	O HOH W	46	49.424	-10.782	-8.514	1.00	29.03	O
ATOM 8891	O2 EDO C	7	42.814	23.197	-18.005	1.00	43.20	O	ATOM 8957	O HOH W	47	45.277	-21.798	-15.931	1.00	55.04	O
ATOM 8892	C2 EDO C	7	43.711	23.598	-16.933	1.00	55.67	C	ATOM 8958	O HOH W	48	51.511	-44.053	-11.372	1.00	34.36	O
ATOM 8893	C1 EDO C	7	42.980	23.928	-15.622	1.00	49.52	C	ATOM 8959	O HOH W	49	44.630	14.779	-38.339	1.00	50.75	O
ATOM 8894	O1 EDO C	7	41.983	22.938	-15.314	1.00	49.06	O	ATOM 8960	O HOH W	50	67.819	-51.366	2.851	1.00	60.07	O
ATOM 8895	O2 EDO C	8	65.887	35.660	-13.297	1.00	64.73	O	ATOM 8961	O HOH W	51	38.599	22.223	-22.766	1.00	36.92	O
ATOM 8896	C2 EDO C	8	66.494	35.632	-11.997	1.00	60.39	C	ATOM 8962	O HOH W	52	74.566	-28.008	-17.386	1.00	37.79	O
ATOM 8897	C1 EDO C	8	65.653	36.461	-11.041	1.00	51.23	C	ATOM 8963	O HOH W	53	64.915	27.603	-18.440	1.00	30.85	O
ATOM 8898	O1 EDO C	8	64.285	36.084	-11.242	1.00	63.87	O	ATOM 8964	O HOH W	54	47.207	-13.782	9.500	1.00	40.97	O
ATOM 8899	O2 EDO C	9	75.025	-15.092	-7.645	1.00	73.04	O	ATOM 8965	O HOH W	55	66.176	-37.909	3.811	1.00	46.95	O
ATOM 8900	C2 EDO C	9	75.916	-15.591	-6.618	1.00	54.13	C	ATOM 8966	O HOH W	56	53.336	16.841	-7.459	1.00	37.81	O
ATOM 8901	C1 EDO C	9	76.282	-14.481	-5.629	1.00	62.03	C	ATOM 8967	O HOH W	57	73.333	30.235	-30.752	1.00	43.63	O
ATOM 8902	O1 EDO C	9	76.476	-15.036	-4.307	1.00	71.74	O	ATOM 8968	O HOH W	58	33.230	18.696	-28.428	1.00	45.03	O

ATOM 8969 O HOH W 59 66.175 -39.931 -15.870 1.00 39.41 O
 ATOM 8970 O HOH W 60 35.995 14.593 -42.897 1.00 65.27 O
 ATOM 8971 O HOH W 61 58.757 13.049 -4.982 1.00 66.66 O
 ATOM 8972 O HOH W 62 37.415 9.573 12.896 1.00 51.12 O
 ATOM 8973 O HOH W 63 47.051 24.023 -34.571 1.00 47.66 O
 ATOM 8974 O HOH W 64 72.806 -37.016 2.957 1.00 47.83 O
 ATOM 8975 O HOH W 65 73.786 10.617 -12.312 1.00 52.20 O
 ATOM 8976 O HOH W 66 40.427 12.828 10.123 1.00 52.56 O
 ATOM 8977 O HOH W 67 35.371 -1.990 -16.124 1.00 43.14 O
 ATOM 8978 O HOH W 68 38.863 -4.985 16.991 1.00 38.62 O
 ATOM 8979 O HOH W 69 35.770 -4.210 -3.569 1.00 35.17 O
 ATOM 8980 O HOH W 70 68.324 -43.580 -13.697 1.00 43.83 O
 ATOM 8981 O HOH W 71 33.955 -13.890 2.042 1.00 40.37 O
 ATOM 8982 O HOH W 72 61.227 -29.698 2.658 1.00 35.13 O
 ATOM 8983 O HOH W 73 65.711 -50.865 5.677 1.00 43.64 O
 ATOM 8984 O HOH W 74 74.357 -42.812 -10.884 1.00 44.35 O
 ATOM 8985 O HOH W 75 45.510 -11.279 9.183 1.00 53.55 O
 ATOM 8986 O HOH W 76 58.068 37.458 -31.933 1.00 45.05 O
 ATOM 8987 O HOH W 77 29.944 -7.112 9.777 1.00 50.98 O
 ATOM 8988 O HOH W 78 70.628 32.182 -4.862 1.00 50.28 O
 ATOM 8989 O HOH W 79 49.706 -31.542 13.259 1.00 37.73 O
 ATOM 8990 O HOH W 80 39.571 27.621 -39.892 1.00 36.81 O
 ATOM 8991 O HOH W 81 49.230 40.718 -34.169 1.00 39.33 O
 ATOM 8992 O HOH W 82 63.542 44.164 -6.413 1.00 48.75 O
 ATOM 8993 O HOH W 83 75.927 -38.606 -1.097 1.00 47.25 O
 ATOM 8994 O HOH W 84 76.193 41.852 -2.775 1.00 42.75 O
 ATOM 8995 O HOH W 85 70.942 44.418 -21.606 1.00 42.30 O
 ATOM 8996 O HOH W 86 73.469 -41.972 -3.523 1.00 38.48 O
 ATOM 8997 O HOH W 87 69.367 -31.467 -16.366 1.00 53.89 O
 ATOM 8998 O HOH W 88 54.386 16.085 -3.461 1.00 52.54 O
 ATOM 8999 O HOH W 89 66.132 31.872 -19.085 1.00 35.71 O
 ATOM 9000 O HOH W 90 66.404 -41.771 6.383 1.00 38.20 O
 ATOM 9001 O HOH W 91 50.092 22.669 0.190 1.00 51.87 O
 ATOM 9002 O HOH W 92 39.373 -39.231 0.174 1.00 35.92 O
 ATOM 9003 O HOH W 93 65.979 -23.272 11.936 1.00 69.59 O
 ATOM 9004 O HOH W 94 48.792 -13.384 21.980 1.00 74.36 O
 ATOM 9005 O HOH W 95 71.412 -24.600 -16.671 1.00 36.24 O
 ATOM 9006 O HOH W 96 56.586 26.740 -41.218 1.00 41.19 O
 ATOM 9007 O HOH W 97 39.489 -7.587 16.107 1.00 51.95 O
 ATOM 9008 O HOH W 98 53.647 -55.615 -0.148 1.00 51.86 O
 ATOM 9009 O HOH W 99 46.171 -56.680 -2.479 1.00 35.43 O
 ATOM 9010 O HOH W 100 39.972 -32.522 15.077 1.00 48.51 O
 ATOM 9011 O HOH W 101 48.922 -24.272 21.614 1.00 54.16 O
 ATOM 9012 O HOH W 102 74.982 40.128 -38.250 1.00 66.19 O
 ATOM 9013 O HOH W 103 61.120 47.767 -13.833 1.00 40.35 O
 ATOM 9014 O HOH W 104 41.768 -16.179 15.677 1.00 50.58 O
 ATOM 9015 O HOH W 105 60.972 -37.487 -17.532 1.00 53.12 O
 ATOM 9016 O HOH W 106 41.668 -1.875 -29.376 1.00 40.10 O
 ATOM 9017 O HOH W 107 62.308 38.576 -13.930 1.00 39.71 O
 ATOM 9018 O HOH W 108 52.023 -49.412 -4.168 1.00 38.73 O
 ATOM 9019 O HOH W 109 44.425 -14.470 -21.023 1.00 59.71 O
 ATOM 9020 O HOH W 110 68.249 -40.733 1.635 1.00 51.87 O
 ATOM 9021 O HOH W 111 58.014 40.360 -34.091 1.00 58.79 O
 ATOM 9022 O HOH W 112 65.473 -25.959 8.283 1.00 37.98 O
 ATOM 9023 O HOH W 113 58.376 28.638 -34.072 1.00 37.08 O
 ATOM 9024 O HOH W 114 40.956 20.759 -36.052 1.00 34.09 O
 ATOM 9025 O HOH W 115 53.523 -30.166 11.765 1.00 47.29 O
 ATOM 9026 O HOH W 116 81.018 -22.161 -3.491 1.00 48.31 O
 ATOM 9027 O HOH W 117 77.989 31.942 -1.939 1.00 52.87 O
 ATOM 9028 O HOH W 118 30.031 -4.641 5.412 1.00 52.50 O
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 ATOM 9030 O HOH W 120 46.700 19.419 -30.652 1.00 53.45 O
 ATOM 9031 O HOH W 121 63.076 -29.920 0.218 1.00 34.61 O
 ATOM 9032 O HOH W 122 63.859 26.049 -4.564 1.00 64.19 O
 ATOM 9033 O HOH W 123 69.023 -54.334 7.222 1.00 83.51 O
 ATOM 9034 O HOH W 124 65.415 -27.642 -23.447 1.00 60.02 O

ATOM 9035 O HOH W 125 55.626 50.586 -29.608 1.00 55.69 O
 ATOM 9036 O HOH W 126 66.593 44.060 -2.954 1.00 68.62 O
 ATOM 9037 O HOH W 127 58.391 -28.842 16.508 1.00 57.64 O
 ATOM 9038 O HOH W 128 53.900 -39.356 -12.313 1.00 43.15 O
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 ATOM 9044 O HOH W 134 70.265 -31.997 17.051 1.00 57.08 O
 ATOM 9045 O HOH W 135 82.367 -22.862 -5.771 1.00 53.41 O
 ATOM 9046 O HOH W 136 73.877 -43.074 -1.202 1.00 52.04 O
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 ATOM 9064 O HOH W 154 79.194 43.959 0.289 1.00 43.48 O
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 ATOM 9070 O HOH W 160 57.306 -26.687 -3.825 1.00 45.16 O
 ATOM 9071 O HOH W 161 36.627 -11.455 17.346 1.00 37.75 O
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 ATOM 9076 O HOH W 166 50.113 -10.237 -11.005 1.00 29.80 O
 ATOM 9077 O HOH W 167 36.232 0.508 -31.397 1.00 45.29 O
 ATOM 9078 O HOH W 168 43.592 39.061 -19.142 1.00 63.60 O
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 ATOM 9080 O HOH W 170 75.916 -38.941 -4.757 1.00 58.71 O
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 ATOM 9086 O HOH W 176 37.574 17.226 -11.259 1.00 44.53 O
 ATOM 9087 O HOH W 177 67.951 28.566 -6.687 1.00 62.21 O
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 ATOM 9095 O HOH W 185 89.548 24.910 -20.320 1.00 60.31 O
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ATOM 9101 O HOH W 191 55.489 -51.636 -8.793 1.00 51.44 O
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 ATOM 9103 O HOH W 193 36.321 -3.150 -11.179 1.00 53.77 O
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 ATOM 9105 O HOH W 195 68.920 32.752 -21.140 1.00 42.66 O
 ATOM 9106 O HOH W 196 56.053 16.201 4.167 1.00 64.28 O
 ATOM 9107 O HOH W 197 70.643 32.752 -18.624 1.00 40.54 O
 ATOM 9108 O HOH W 198 42.990 18.891 -36.337 1.00 43.70 O
 ATOM 9109 O HOH W 199 32.339 21.015 -35.934 1.00 46.78 O
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 ATOM 9111 O HOH W 201 37.492 -2.289 -14.229 1.00 43.61 O
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 ATOM 9115 O HOH W 205 66.116 -0.774 -1.663 1.00 57.05 O
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 ATOM 9157 O HOH W 247 62.139 39.167 -10.432 1.00 45.40 O
 ATOM 9158 O HOH W 248 49.939 41.406 -17.501 1.00 46.80 O
 ATOM 9159 O HOH W 249 53.513 48.260 -26.270 1.00 60.43 O
 ATOM 9160 O HOH W 250 73.526 23.237 -27.444 1.00 61.10 O
 ATOM 9161 O HOH W 251 69.211 -30.970 14.209 1.00 53.73 O
 ATOM 9162 O HOH W 252 49.336 18.864 -28.048 1.00 57.51 O
 ATOM 9163 O HOH W 253 49.935 1.484 -13.946 1.00 37.90 O
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 ATOM 9166 O HOH W 256 82.305 -35.291 -6.599 1.00 51.37 O

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 ATOM 9168 O HOH W 258 27.976 -9.654 14.307 1.00 48.06 O
 ATOM 9169 O HOH W 259 47.094 -21.051 28.763 1.00 63.75 O
 ATOM 9170 O HOH W 260 41.251 14.226 -35.483 1.00 35.07 O
 ATOM 9171 O HOH W 261 42.481 24.274 -1.324 1.00 69.59 O
 ATOM 9172 O HOH W 262 51.446 20.748 -28.017 1.00 45.64 O
 ATOM 9173 O HOH W 263 72.148 25.241 -29.773 1.00 65.72 O
 ATOM 9174 O HOH W 264 39.401 11.992 -4.214 1.00 49.54 O
 ATOM 9175 O HOH W 265 32.275 12.617 -24.662 1.00 50.59 O
 ATOM 9176 O HOH W 266 55.250 9.269 -25.684 1.00 52.64 O
 ATOM 9177 O HOH W 267 58.661 44.938 -30.151 1.00 61.24 O
 ATOM 9178 O HOH W 268 83.116 -36.414 -4.312 1.00 46.83 O
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 ATOM 9180 O HOH W 270 53.273 -7.575 -8.127 1.00 59.58 O
 ATOM 9181 O HOH W 271 32.659 16.190 -23.905 1.00 38.99 O
 ATOM 9182 O HOH W 272 30.130 -12.373 8.961 1.00 56.13 O
 ATOM 9183 O HOH W 273 38.784 13.668 -36.645 1.00 35.13 O
 ATOM 9184 O HOH W 274 31.104 1.559 23.598 1.00 57.27 O
 ATOM 9185 O HOH W 275 81.657 -36.807 -8.531 1.00 61.00 O
 ATOM 9186 O HOH W 276 28.259 -9.123 17.061 1.00 66.33 O
 ATOM 9187 O HOH W 277 74.640 10.010 -14.448 1.00 58.66 O
 ATOM 9188 O HOH W 278 51.672 47.624 -28.267 1.00 83.54 O
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CLAIMS

What is claimed is:

1. An isolated polypeptide having isoprene synthase activity, wherein the polypeptide variant comprises a substitution at residue X288 corresponding to SEQ ID NO:1, and wherein the polypeptide has increased protein solubility compared a parent polypeptide which does not comprise the substitution at residue X288.
2. The polypeptide of claim 1 wherein the substitution is at S288.
3. The polypeptide of claim 2 wherein the substitution is S288C.
4. The polypeptide of claim 1, where the polypeptide has at least about 5% to at least about 75% increased protein solubility compared to the parent polypeptide.
5. The polypeptide of claim 1 wherein the polypeptide is derived from a parent polypeptide isolated from a plant.
6. The polypeptide of claim 5 wherein the parent polypeptide is isolated from a plant species selected from poplar (*Populus sp.*), kudzu (*Pueraria sp.*), English oak (*Quercus sp.*) or willow (*Salix sp.*).
7. The polypeptide of claim 6 wherein the parent species is *Populus sp.*
8. The polypeptide of claim 7 wherein in the parent is *P. alba*, *P. tremuloides*, *P. trichocarpa*, *P. nigra*.
9. The polypeptide of claim 6 wherein the parent species is *Pueraria sp.*
10. The polypeptide of claim 9 wherein in the parent species is *Pueraria montana*.
11. The polypeptide of claim 6 wherein the parent species is *Quercus sp.*
12. The polypeptide of claim 11 wherein in the parent species is *Quercus rubur*.

13. The polypeptide of claim 6 wherein the parent species is *Salix sp.*
14. The polypeptide of claim 13 wherein the parent species is *S. alba* or *S. baylonica*.
15. A recombinant host cell comprising the polypeptide of any one of claims 1-14.
16. The host cell of claim 15 wherein the host cell is selected from the group consisting of a bacterial, algal, fungal, yeast, cyanobacterial, or Clostridial cell.
17. The host cell of claim 16 wherein the host cell is a bacterial cell.
18. The host cell of claim 17 wherein the bacterial cell is a gram-positive bacterial cell or gram-negative bacterial cell.
19. The host cell of claim 18 wherein the bacterial cell is selected from the group consisting of *E. coli*, *L. acidophilus*, *P. citrea*, *B. subtilis*, *B. licheniformis*, *B. lentus*, *B. brevis*, *B. stearothermophilus*, *B. alkalophilus*, *B. amyloliquefaciens*, *B. clausii*, *B. halodurans*, *B. megaterium*, *B. coagulans*, *B. circulans*, *B. lautus*, *B. thuringiensis*, *S. albus*, *S. lividans*, *S. coelicolor*, *S. griseus*, *Pseudomonas sp.*, *P. alcaligenes*, *C. glutamicum* cells,
20. The host cell of claim 16 wherein the host cell is an algal cell.
21. The host cell of claim 20 wherein the algal cell is selected from the group consisting of green algae, red algae, glaucophytes, chlorarachniophytes, euglenids, chromista, or dinoflagellates.
22. The host cell of claim 16 wherein the host cell is a fungal cell.
23. The host cell of claim 22 wherein the fungal cell is a filamentous fungi.
24. The host cell of claim 16 wherein the host cell is a yeast cell.

25. The host cell of claim 24 wherein the yeast cell is selected from the group consisting of *Saccharomyces sp.*, *Schizosaccharomyces sp.*, *Pichia sp.*, or *Candida sp.*
26. The host cell of claim 25 wherein the yeast cell is a *Saccharomyces cerevisiae* cell.
27. A crystalline form of a polypeptide comprising the amino acid residues of SEQ ID NO. 2 (DW614).
28. A polynucleotide that encodes the polypeptide of claim 1.
29. A vector comprising the polynucleotide of claim 28.
30. A recombinant host cell comprising the vector of claim 29.
31. A method of producing isoprene comprising: (a) culturing the recombinant cell of claim 15 under conditions suitable for the production of isoprene and (b) producing isoprene.
32. A method of producing isoprene comprising: (a) culturing the recombinant cell of claim 30 under conditions suitable for the production of isoprene and (b) producing isoprene.

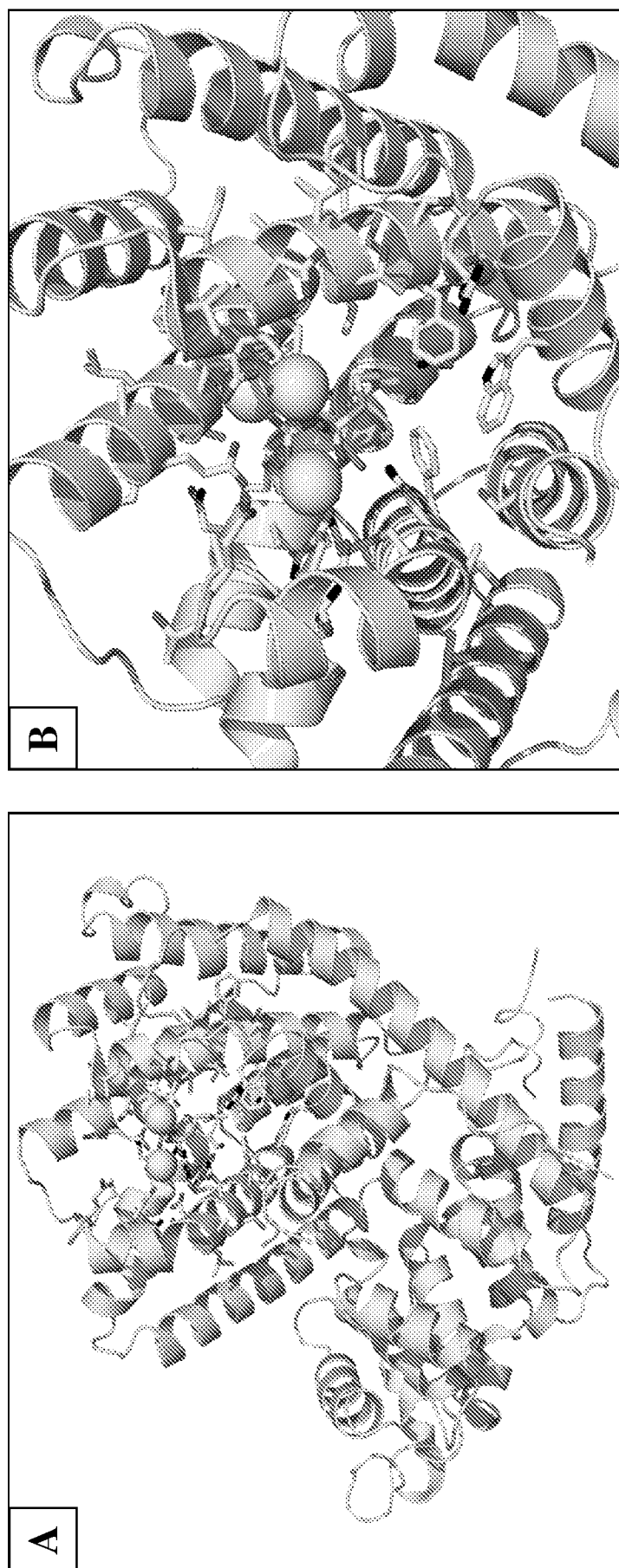


Figure 1

Figure 2

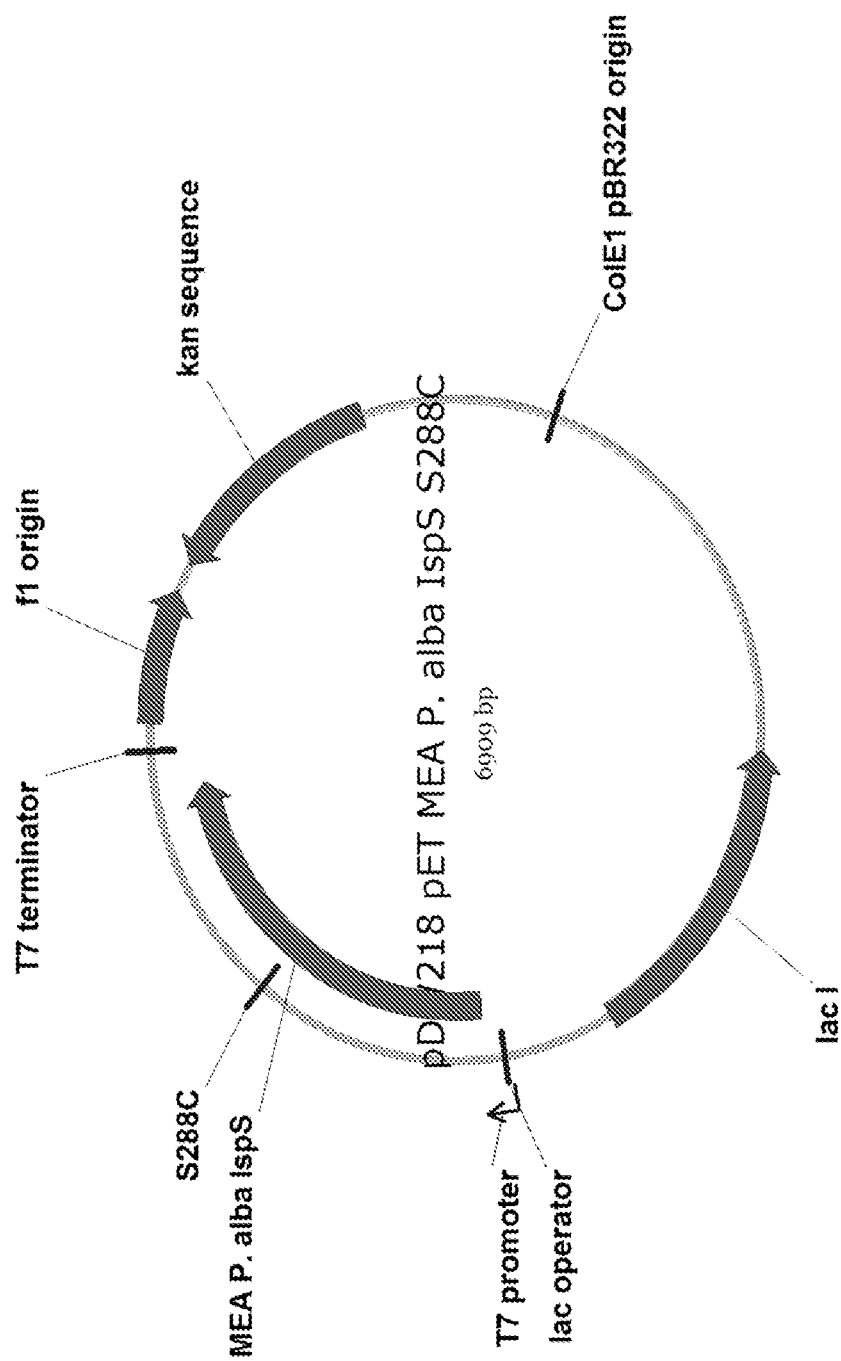


Figure 3

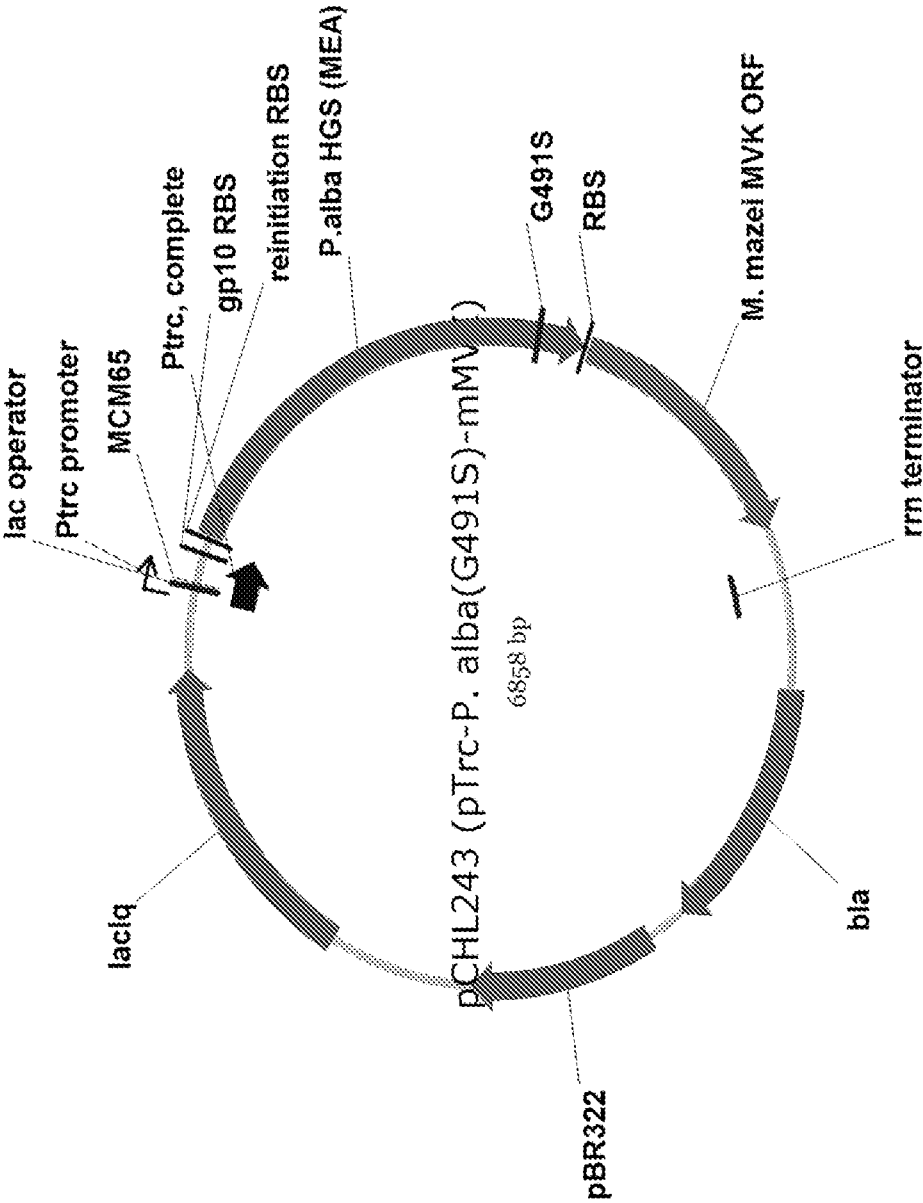
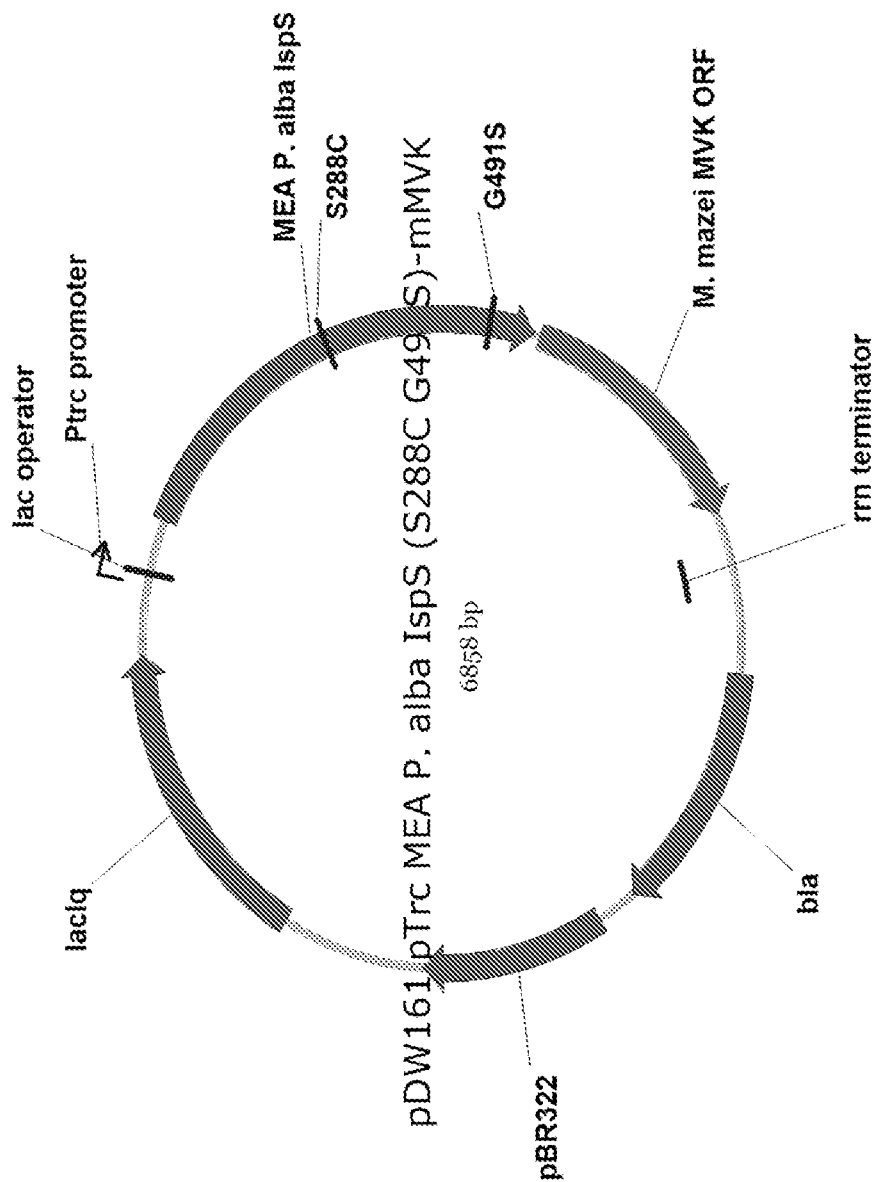


Figure 4



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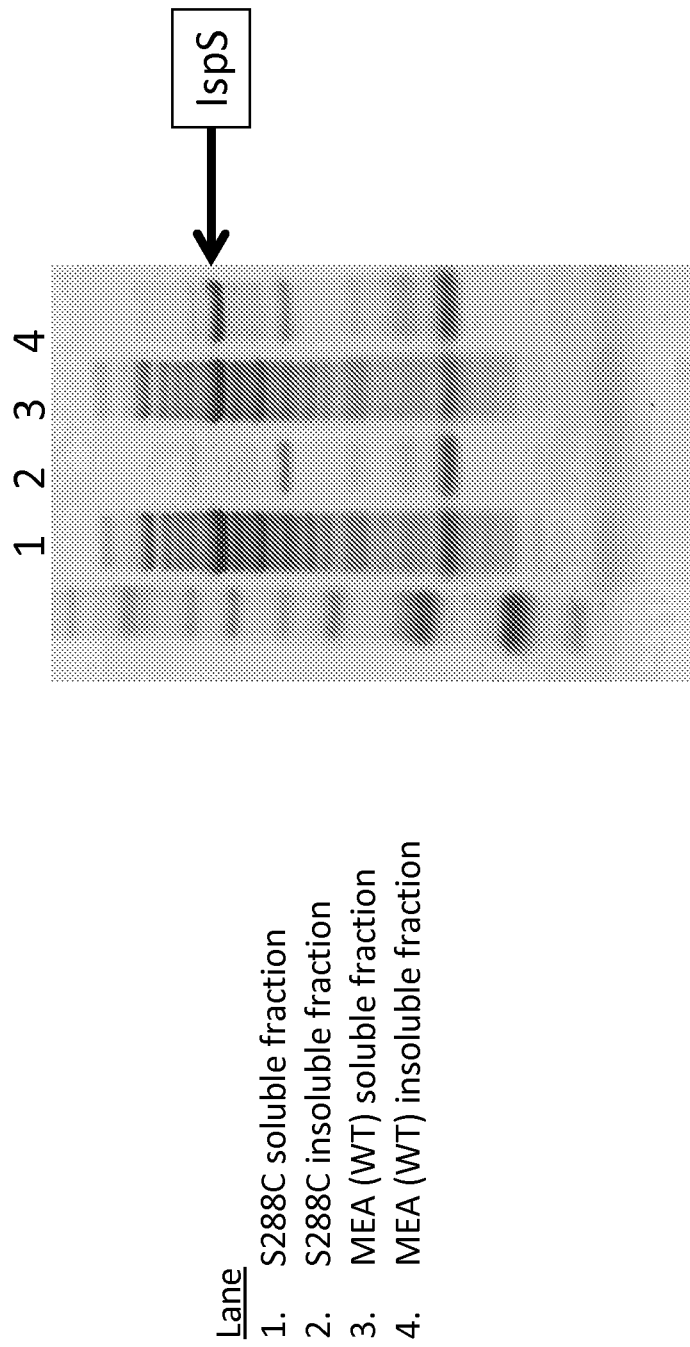
Figure 5

Figure 6

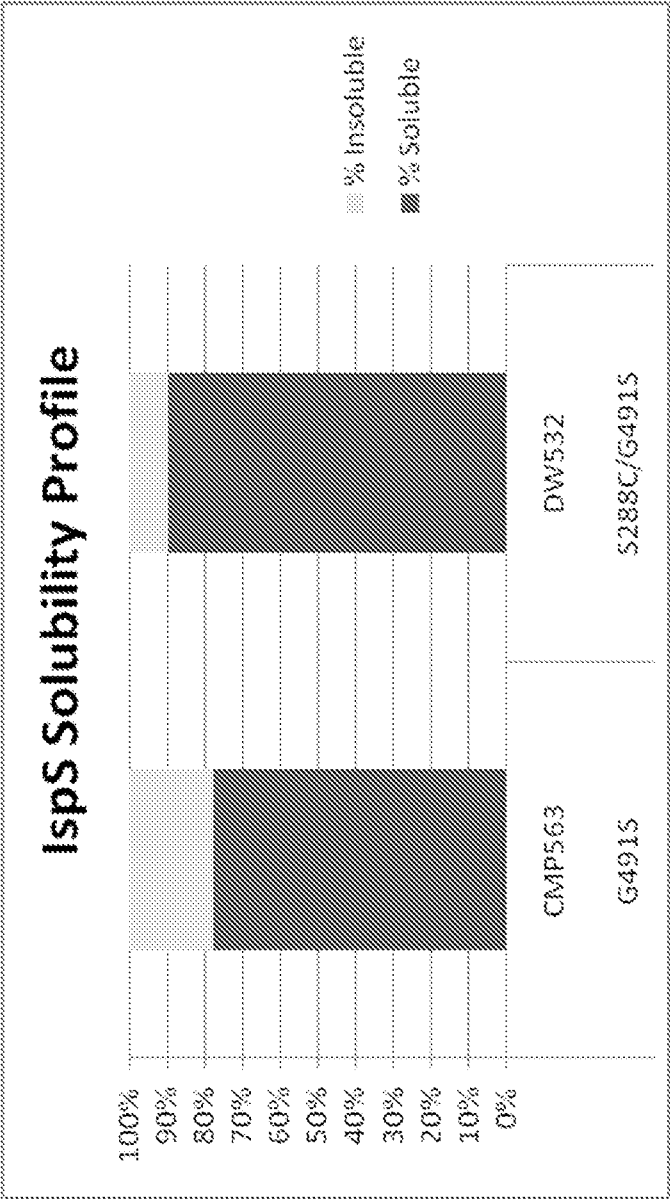


Figure 7

Total alignment length: 544

Number of identity: 499

Number of residues aligned: 544

BLAST style alignment length: 544

Percent identity (BLAST style): 91.73%

Percent identity (GAP style): 91.73%

Percent identity (Needle style): 91.73%

CLUSTAL W (1.83) multiple sequence alignment

```

P.alba    MEARRSANYEPNSWDYDYLSSDTESEIEVYKDKAKKLEAEVRREINNEKAEFLTLELI (SEQ ID NO.44)
S.alba    METRRSANYEPNSWDYDYLSSDTESEIEVYKDKAKKLEAEVRSKINNETAEFLTQLELI (SEQ ID NO.45)
          *:*****:::*****:****:****.*****
          *

P.alba    DNVQRLGLGYRFESDIRGALDRFVSSGGFDAVTKTSLHGTALSFRLLRQHGFEVSQEAFS (SEQ ID NO.44)
S.alba    DTIQRLGLGYRFESDIRRALDRFVSSGGFEAVAKTSLQATALSFRLLRQHGFEVSQEVFN (SEQ ID NO.45)
          *.:***** *****:*.***:*****.*****.*.

P.alba    GFKDQNGNLENLKEDIKAILSLEYEASFLALEGENILDEAKVFAISHLKELSEEKIGKEL (SEQ ID NO.44)
S.alba    GFKDQNGNFMEDLKEDIKALLSLHEASFLALEGENILDEAKVFTISHLKELNEEKIGKDM (SEQ ID NO.45)
          *****:*.*****:***:*****:*****:*****.*****:

P.alba    AEQVNHALELPLHRRQTQRLEAVWSIEAYRKKEEDANQVLELAILDYNMIQSVYQRDLRET (SEQ ID NO.44)
S.alba    VEQVNHALELPLHRRQTQRLEAVWSIEAYRKKEEDANRVLELAILDYNMVQSVYQRDLRET (SEQ ID NO.45)
          .*****:*****:*****:*****:*****:*****

P.alba    SRWWRVGLATKLHFARDRLIESFYWAVGVAFEPQYSDCRNSVAKMFSFVTIIDDYDVY (SEQ ID NO.44)
S.alba    SRWWRVGLATKLHFARDRLIESFYWAVGVAFEPQYSDCRISVAKMFSFVTIIDDYDVY (SEQ ID NO.45)
          *****

P.alba    GTLDELELFTDAVERWDVNAINDLPDYMKLCFLALYNTINEIAYDNLKDKGENILPYLTK (SEQ ID NO.44)
S.alba    GTLEELELFTDAVERWDVSAIDDLDPDYMKLCFLALYNTINEIAYDNLKEKGENILPYLTK (SEQ ID NO.45)
          *****.***:*****:*****:*****:*****

P.alba    AWADLCNAFLQEAkWLYNKSTPTFDDYFGNAWKSSSGPLQLVFAYFAVVQNIKKEEENL (SEQ ID NO.44)
S.alba    AWADLCNAFLQEARFLYNKSTPTFSDYFGNAWKSSSGPLQLVFAYFAVVQNIKKEETENL (SEQ ID NO.45)
          *****:*****.*****:*****:*****

P.alba    QKYHDTISRPSHIFRLCNDLASASAEIARGETANSVSCYMRKGISEELATESVMNLIDE (SEQ ID NO.44)
S.alba    LKYHDIISWFSYIFRLCNDLASASAEIARGETANSVSCYMRKGISEELATESVMNLIDE (SEQ ID NO.45)
          **** * *:*****

P.alba    TWKKMNKEKLGGS�FAKPFVETAINLARQSHCTYHNGDAHTSPDELTRKRVLSVITEPIL (SEQ ID NO.44)
S.alba    TWKKMNKEKLGDSLFAGKPFVETAINLARQSHCTYHNGDAHTSPDELTRKRVLSVITEPIL (SEQ ID NO.45)
          *****.***** *****

P.alba    PFER (SEQ ID NO.44)
S.alba    PLER (SEQ ID NO.45)
          *:**

```

Figure 8

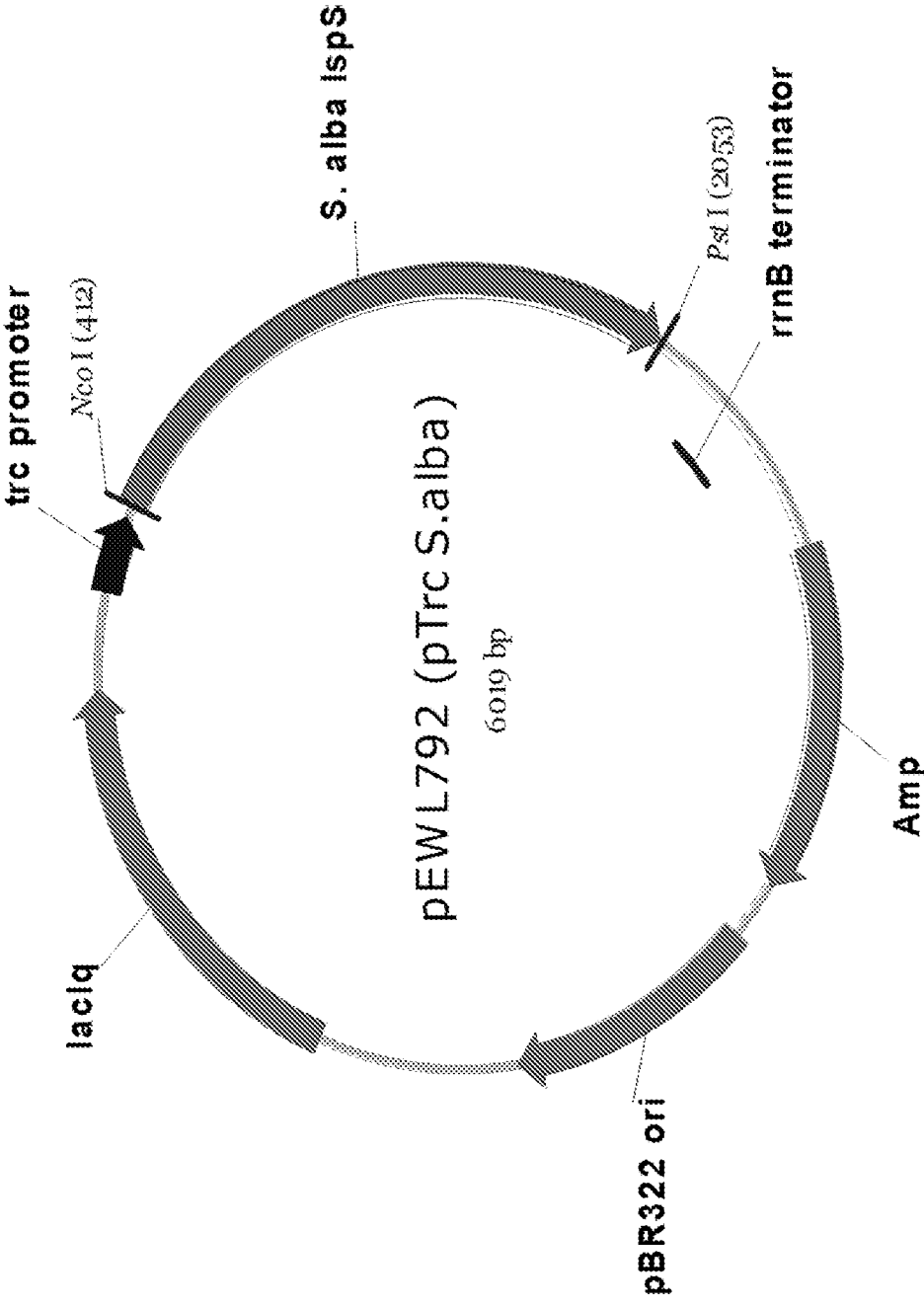
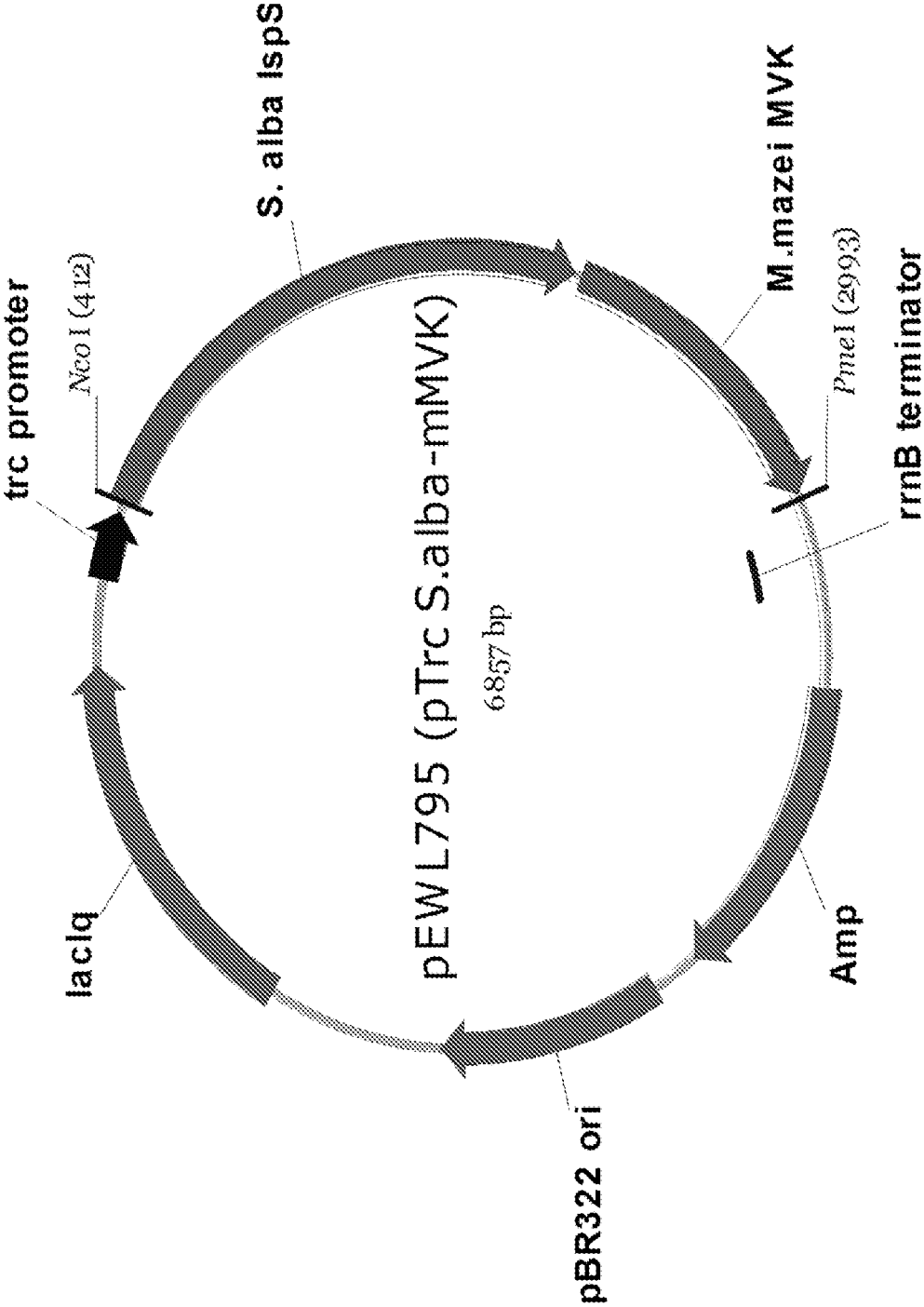


Figure 9



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Figure 10

Total alignment length: 544

Number of identity: 502

Number of residues aligned: 544

BLAST style alignment length: 544

Percent identity (BLAST style): 92.28%

Percent identity (GAP style): 92.28%

Percent identity (Needle style): 92.28%

CLUSTAL W (1.83) multiple sequence alignment

```

P.alba      MEARRSANYEPNSWDYDYLLSSDTEIEVYKDKAKKLEAEVRREINNEKAEFLTLELI (SEQ ID NO.46)
S.babylonica METRRNTANYEPNSWDYDYLLSSDNDDAIELYKDKAKKLEAEVRSKINNEKAEFLTQLELI (SEQ ID NO.47)
          **:**:*****.*:~:~:*****:***:*****

P.alba      DNVQRLGLGYRFESDIRRALDRFVSSGGFDAVTKTSLHGTALSFRLLRQHGFVSEQEAFS (SEQ ID NO.46)
S.babylonica DTIQRLGLGYRFESDIRRALDRYVSSGGFEAVAKTSLHATLSFRLLRQHGFVSEQEVFS (SEQ ID NO.47)
          *:~:*****.*:~:~:*****:~:~:*****.*

P.alba      GFKDQNGNFLENLKEDIKAILSLYEASFLALEGENILDEAKVFAISHLKELSEEKIGKEL (SEQ ID NO.46)
S.babylonica GFKDQNGNFLENLKEDIKAILSLYEASFLALEGENILDEAKVFTISHLKELNEEKIGKDL (SEQ ID NO.47)
          *****:*****:*****:*****.*

P.alba      AEQVNHALELPLHRRRTQRLEAVWSIEAYRKKEGANQVLELAILDYNMIQSVYQRDLRET (SEQ ID NO.46)
S.babylonica ADQVNHALELPLHRRRTQRLEAVWSIEAYRKKEGANRALLELAILDYNMVQSVYQRDLRET (SEQ ID NO.47)
          *:~:*****.*:~:~:*****:~:~:*****

P.alba      SRWRRRVGLATKLHFARDRLIESFYWAVGVAFEPQYSDCRNSVAKMFSFVTIIDDIDYDVY (SEQ ID NO.46)
S.babylonica SRWRRRVGLATKLHFARDRLIESFYWAVGVAFEPQYSDCRKSVAKMFSFVTIIDDIDYDVY (SEQ ID NO.47)
          *****:*****

P.alba      GTLDELELFTDAVERWDVNAINDLPDYMKLCFLALYNTINEIAYDNLKDKGENILPYLTK (SEQ ID NO.46)
S.babylonica GTLDELELFTDAVERWDVSAVDDLPDYMKLCFLALYNTINEIAYDNLKEKGENILPYLTK (SEQ ID NO.47)
          *****.*:~:*****:*****

P.alba      AWADLCNAFLQEAKWLYNKSTPTFDDYFGNAWKSSSGPLQLVFAYFAVVQNIKKEEENL (SEQ ID NO.46)
S.babylonica AWADLCNAFLQEAKWLYNKSTPTFDDYFGNAWKSSSGPLQLVFAYFAVVQNIKKEETENL (SEQ ID NO.47)
          *****:*****

P.alba      QKYHDTISRPSHIFRLCNDLASASAEIARGETANSVSCYMRITKGISEELATESVMNLIDE (SEQ ID NO.46)
S.babylonica QKYHDIISWPSYIFRLCNDLASASAEIARGETANSVSCYIRTKGISEELATESVMNLIDE (SEQ ID NO.47)
          *****

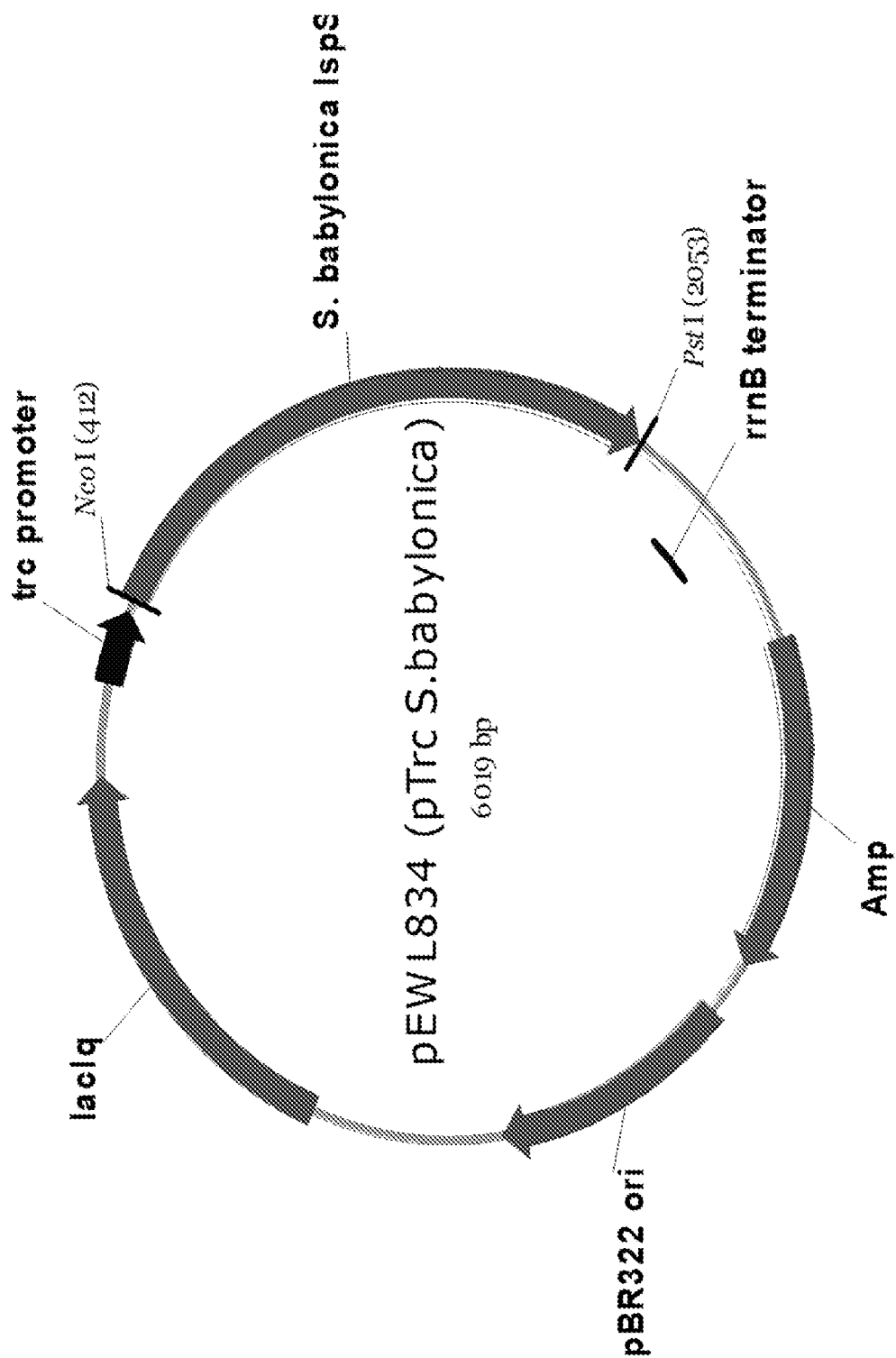
P.alba      TWKKMNKEKLGGSLSFAKPFVETAINLARQSHCTYHNGDAHTSPDELTRKRVLSVITEPIL (SEQ ID NO.46)
S.babylonica TWKKMNKEKVGDSLSFAKQFVETAINLARQSHCTYHNGDAHTSPDELTRKRVLSVITEPIL (SEQ ID NO.47)
          *****:~:*****

P.alba      PFER (SEQ ID NO.46)
S.babylonica PFER (SEQ ID NO.47)
          ****

```

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Figure 11



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Figure 12

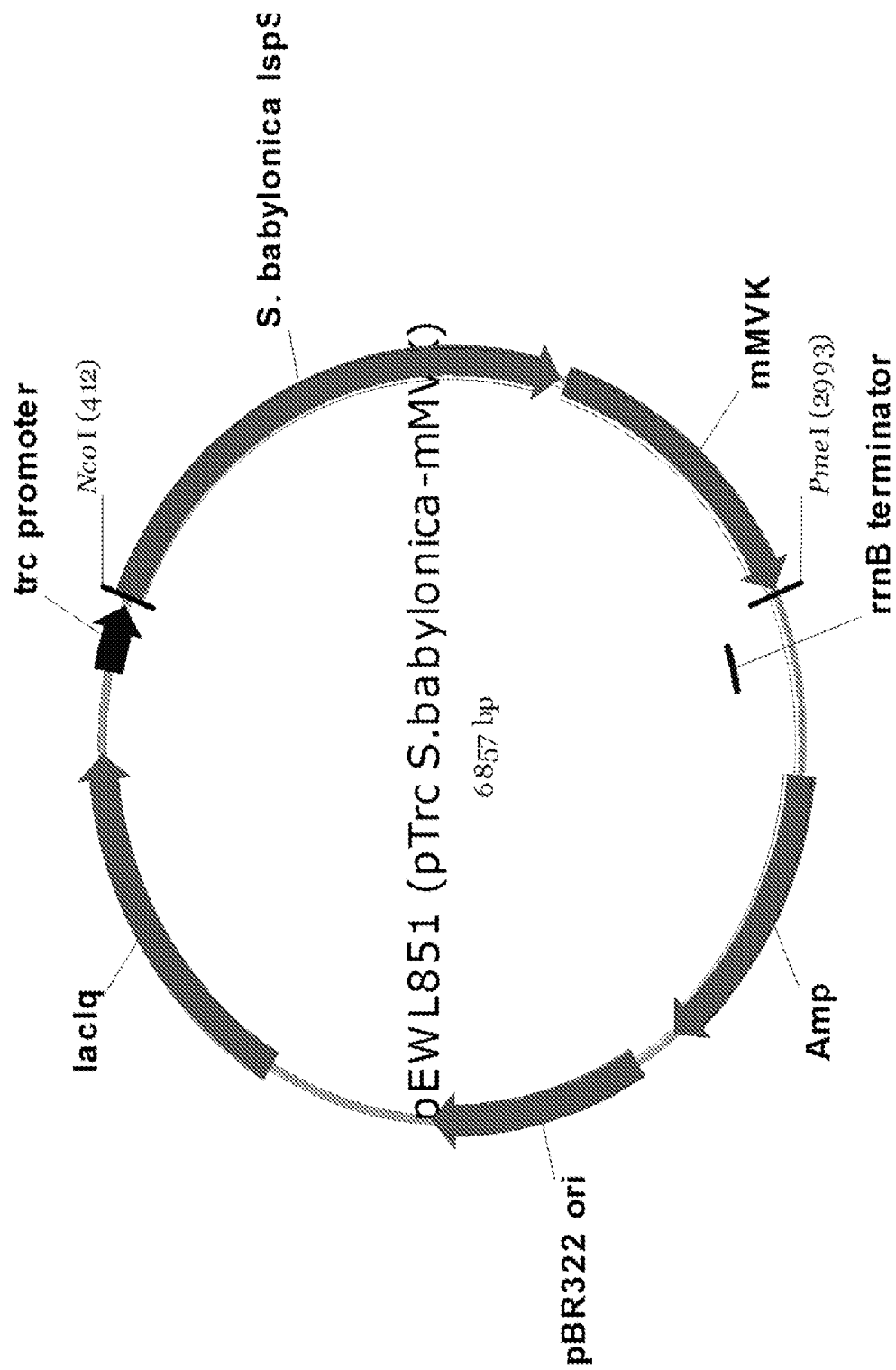


Figure 13

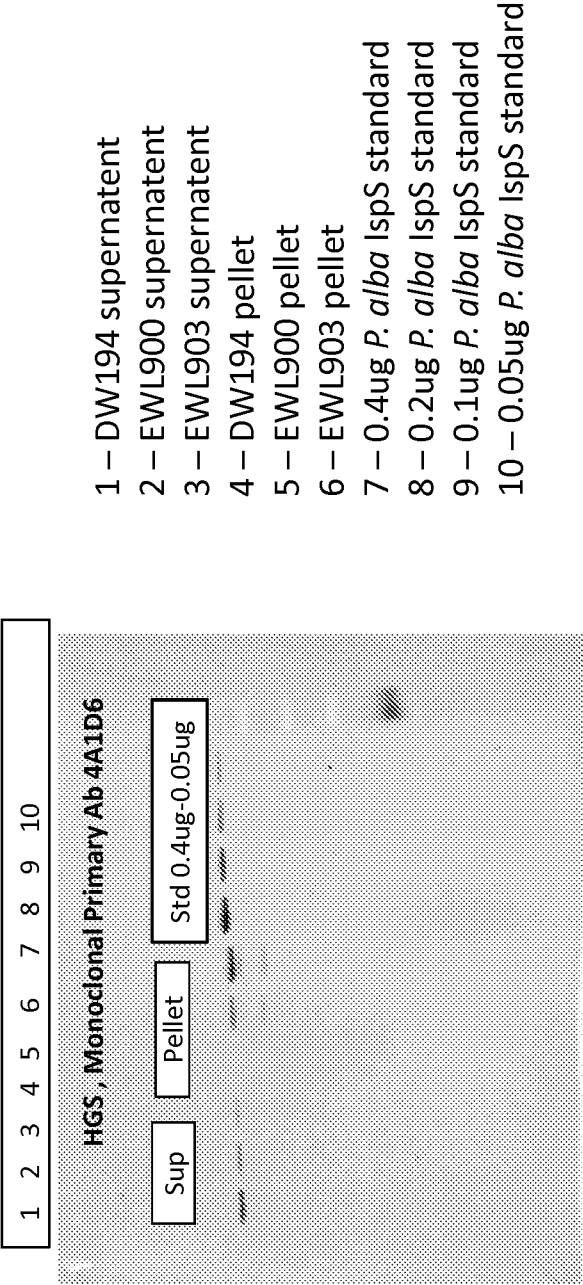


Figure 14

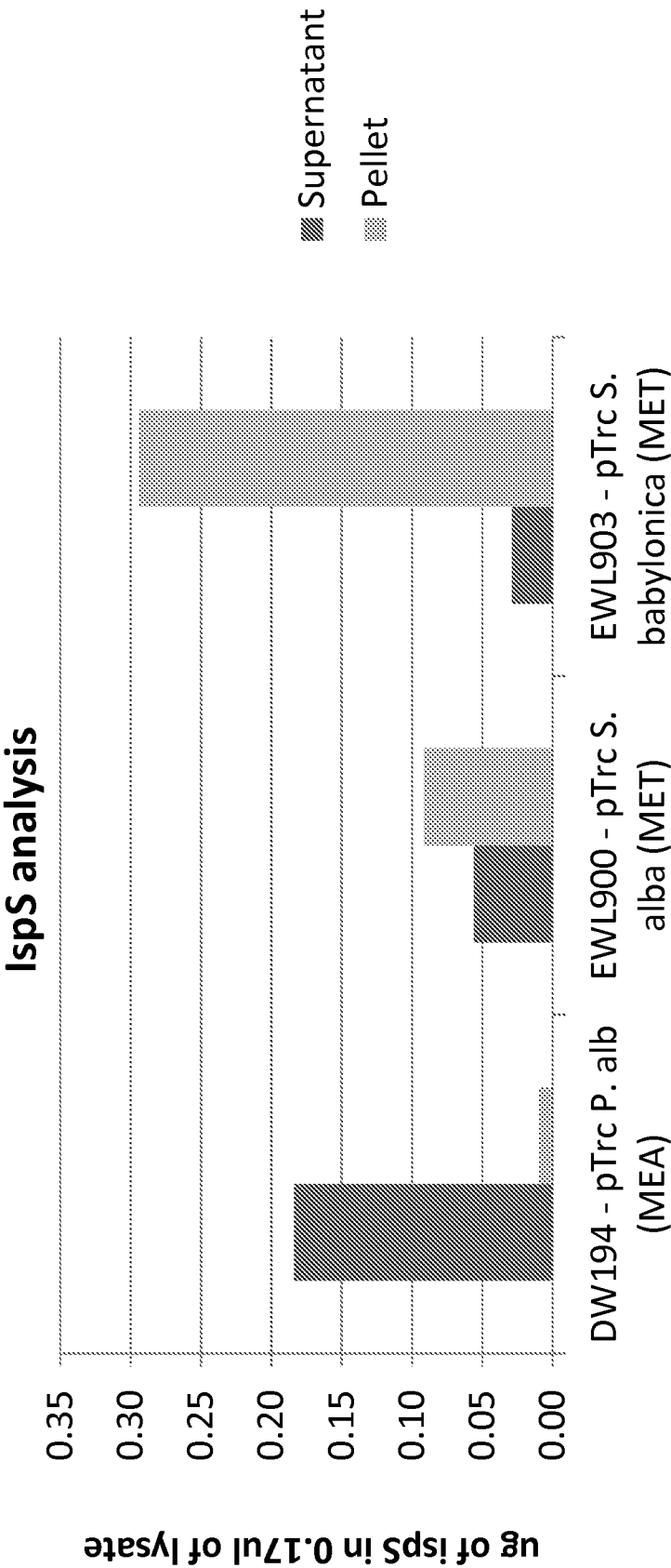


Figure 15

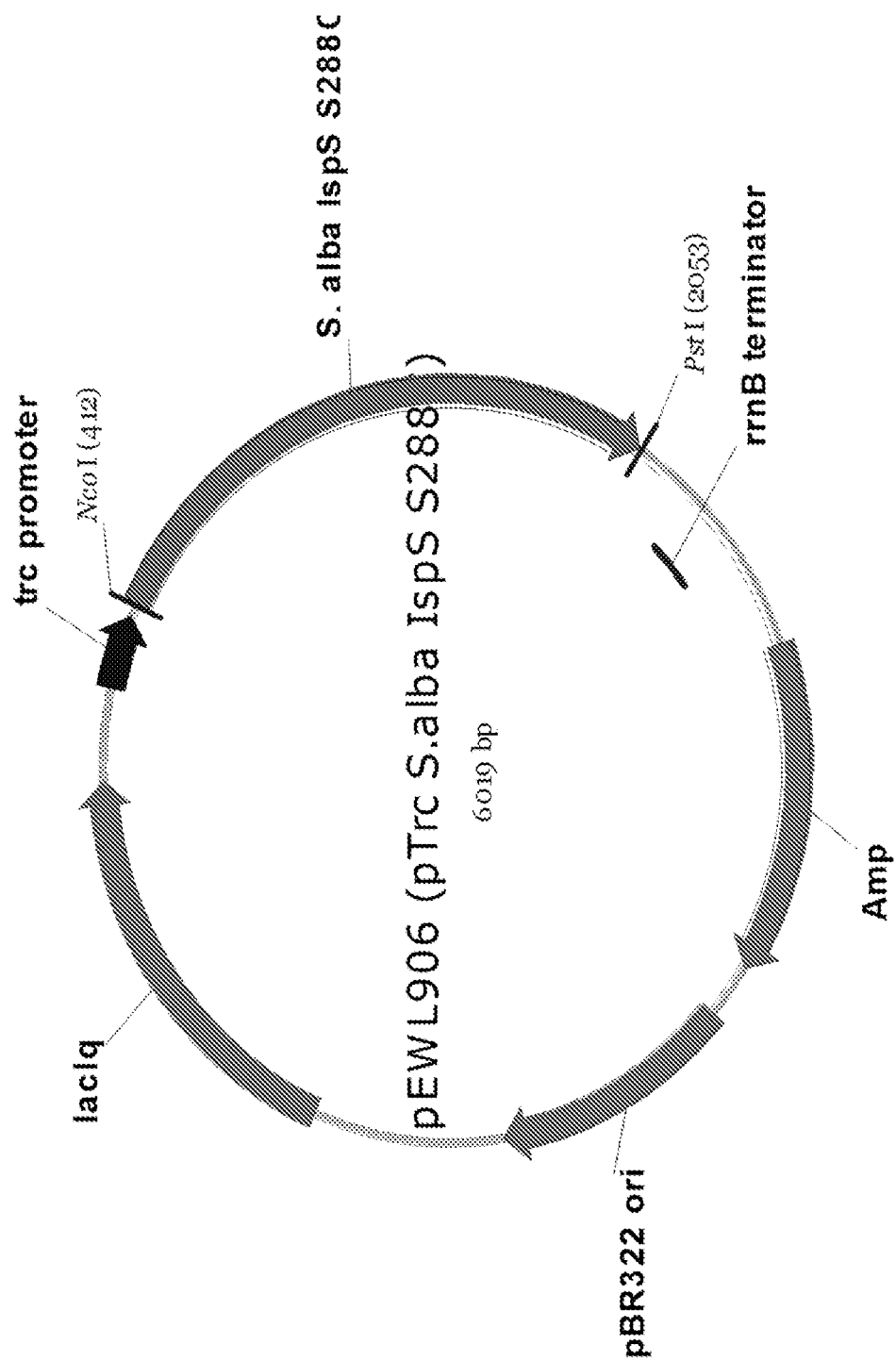


Figure 16

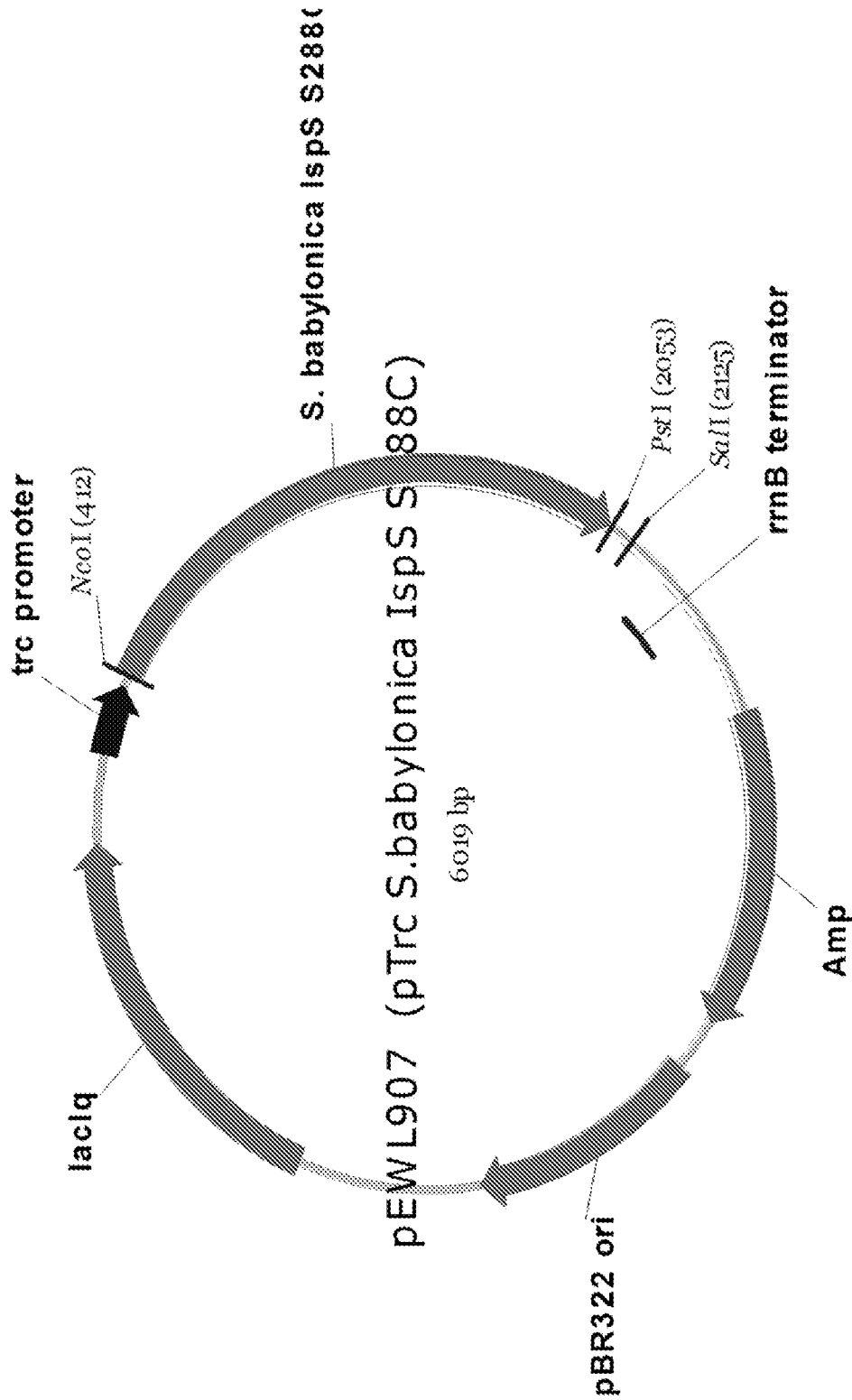
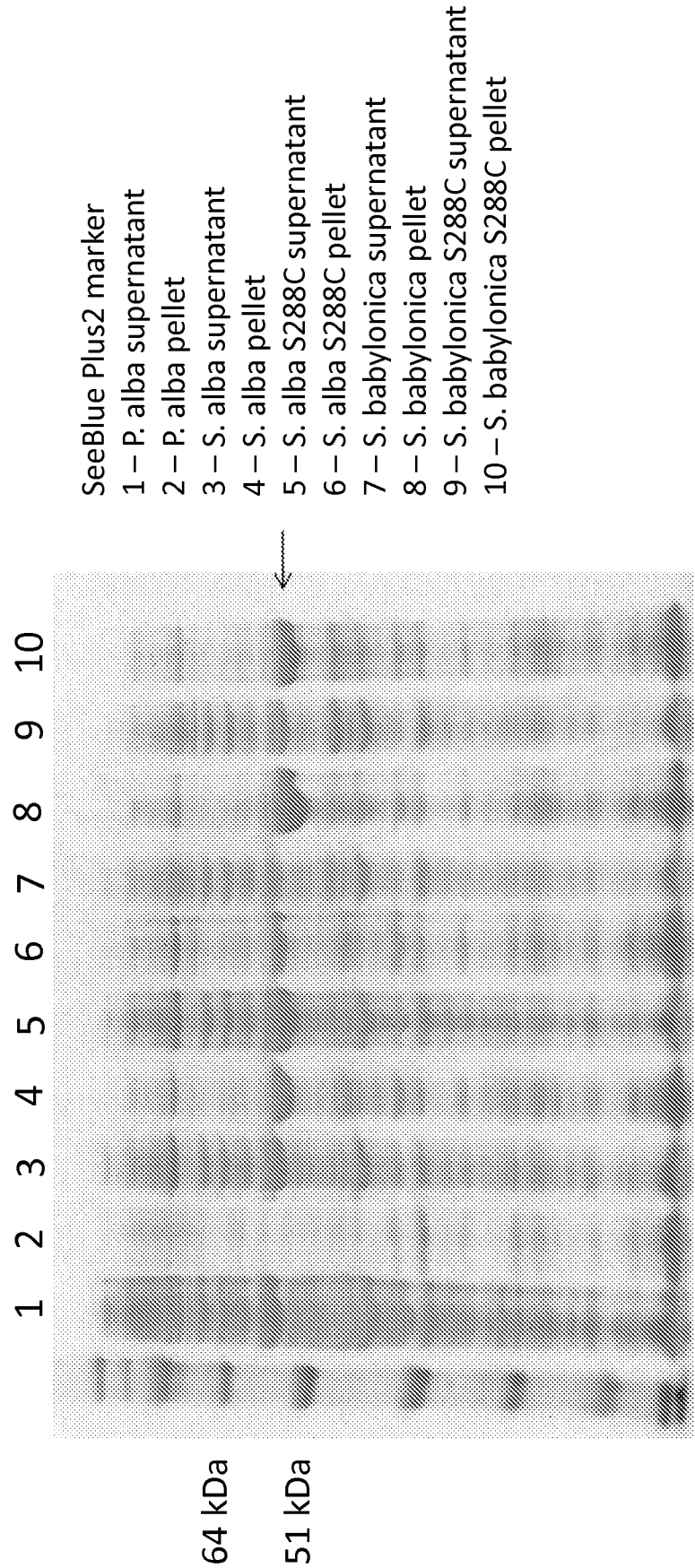


Figure 17



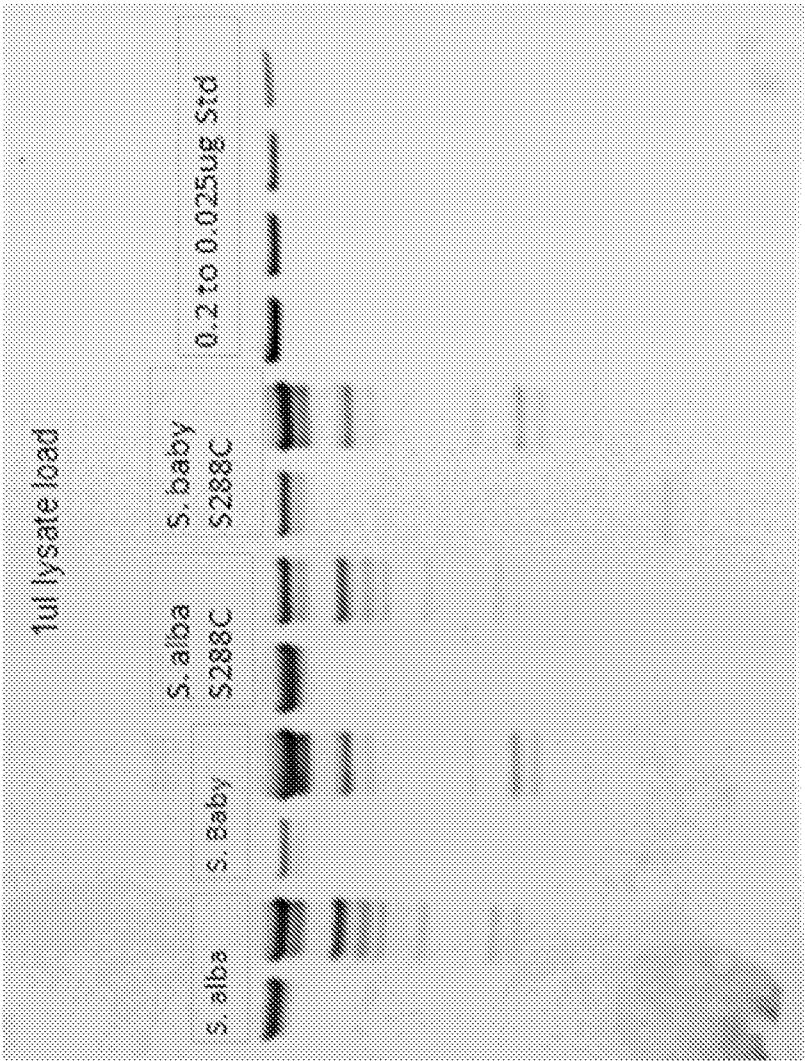


Figure 18

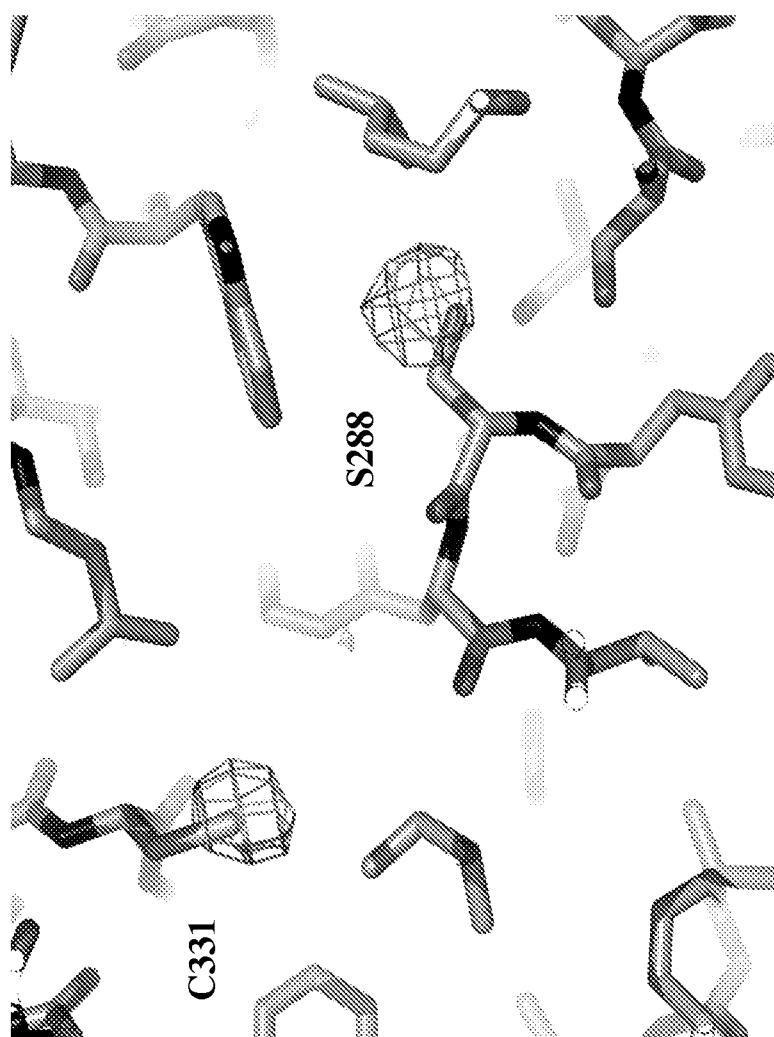


Figure 19

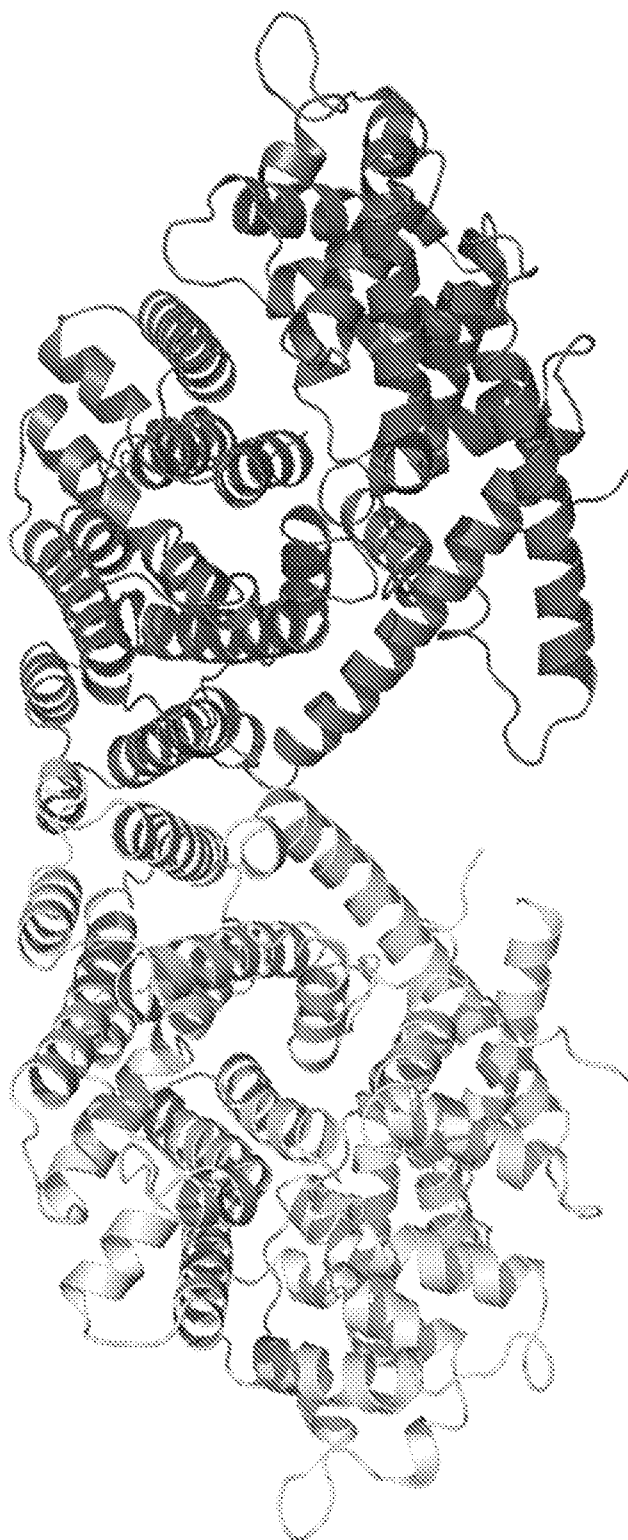


Figure 20



Figure 21

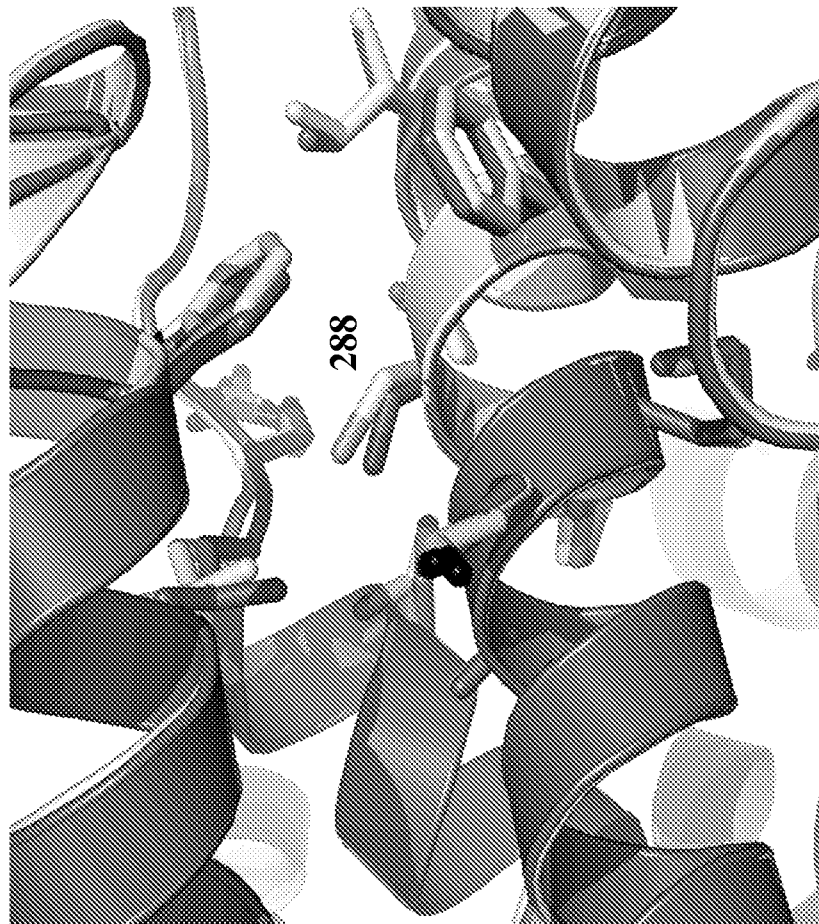


Figure 22

Figure 23

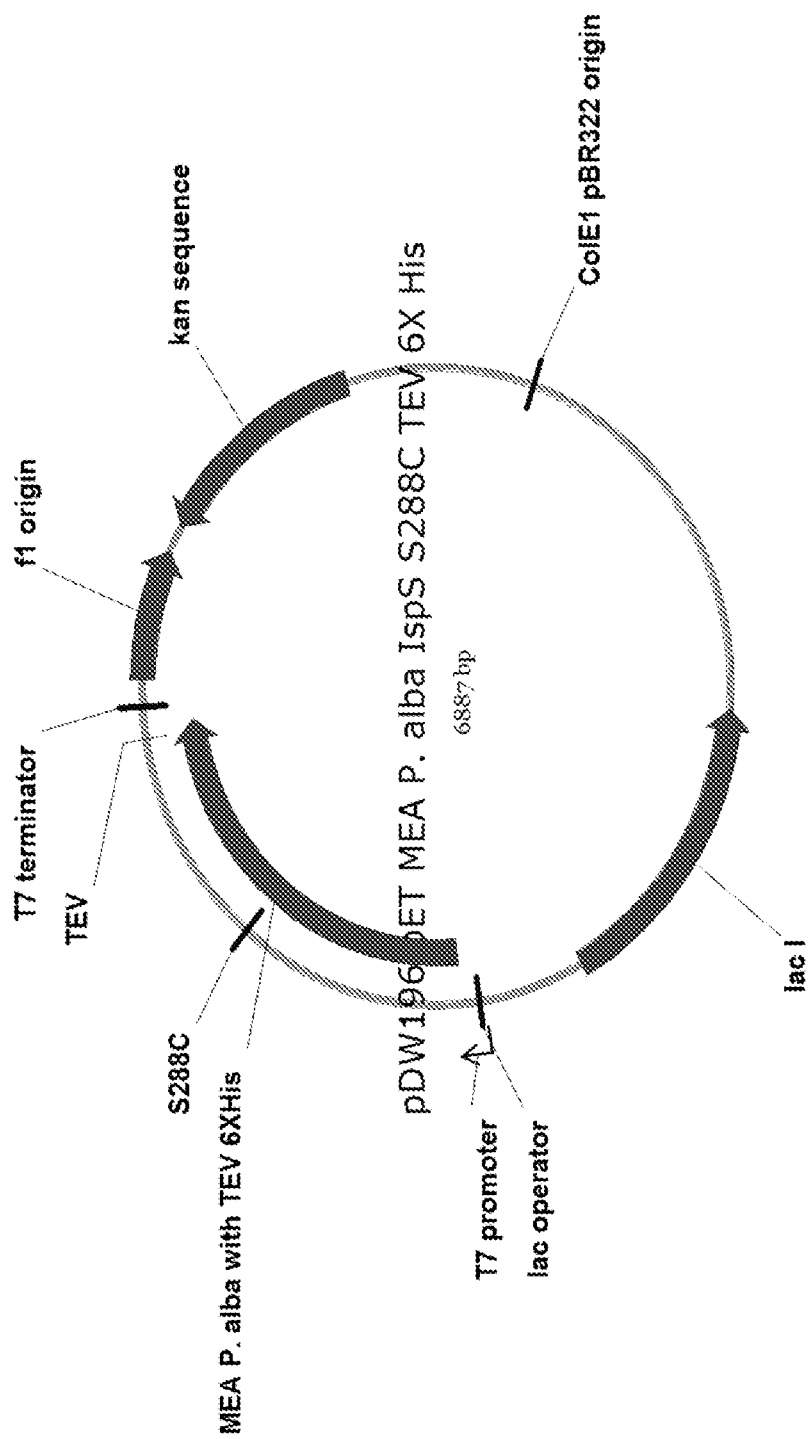


Figure 24

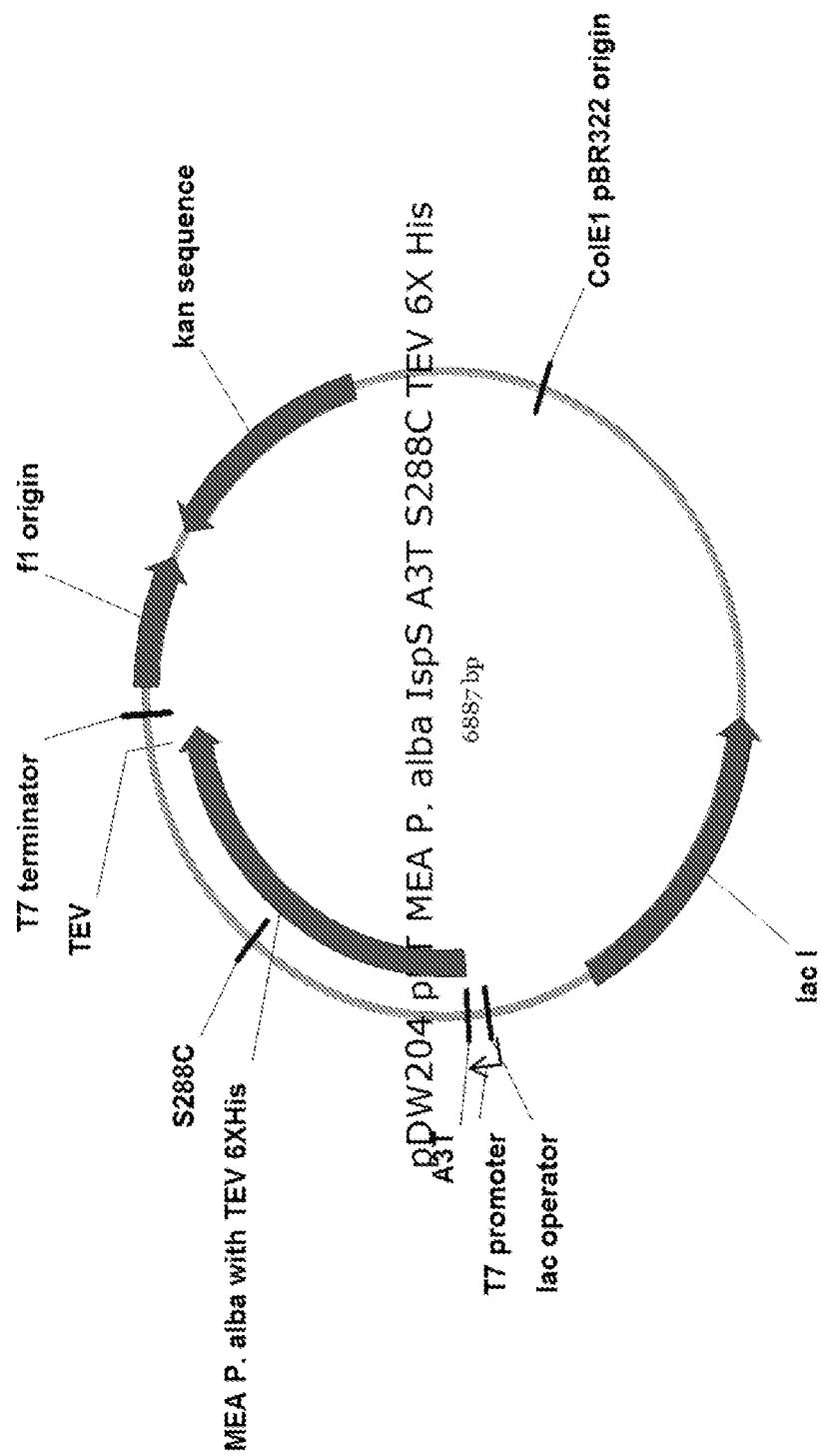




Figure 25



Figure 26

摘要

本发明提供具有改善的溶解性、异戊二烯合酶活性的变体多肽的组合物。特别是，本发明提供异戊二烯合酶变体，用于在重组宿主细胞中增加异戊二烯的生产。