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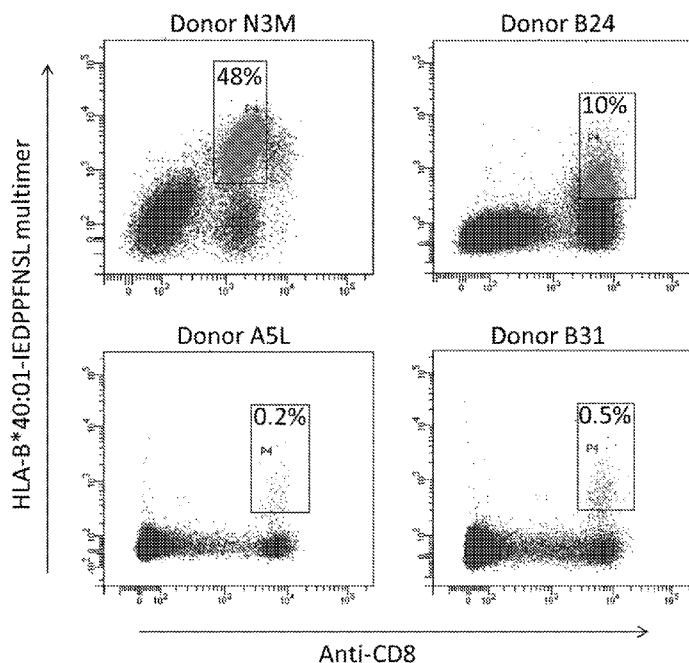


FIG. 1

(57) Abstract: Provided herein are isolated alpha and beta chains of a T-cell receptor (TCR) that is specific for an EBV antigen. Also described herein are TCRs having said alpha and beta chains and methods of making and using same, such as cellular immunotherapy in subjects having an EBV-associated disease, disorder or condition.

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TITLE

T-CELL RECEPTORS AND USES THEREOF

TECHNICAL FIELD

THIS INVENTION relates to T-cell receptors (TCR) capable of recognising antigens from Epstein Barr Virus (EBV). The present invention also relates to the use of TCR gene transfer to produce EBV-specific T cells and their use to treat and/or prevent an EBV-associated disease, disorder or condition.

BACKGROUND

EBV is a member of the herpesvirus family that infects humans throughout the world. Studies show that over 95% of all adults have antibodies against this virus, meaning that they have been infected at some point in their lives [1]. EBV generally persists throughout life and rarely causes any problems. In some cases, however, EBV has been linked to the development of cancers and serious conditions, including Burkitt's lymphoma, Hodgkin lymphoma, nasopharyngeal carcinoma, post-transplant lymphoproliferative disorder, NKT cell lymphoma, diffuse large B-cell lymphoma, gastric cancer and multiple sclerosis [1-3]. EBV protein expression in most of the EBV-associated diseases is very restricted but, in many cases, the latent membrane protein (LMP) 2, LMP1 and EBNA1 proteins are expressed [1].

T cells detect foreign antigens in the form of short 8-15 amino acid peptides presented by major histocompatibility complex (MHC) molecules, which are termed human leukocyte antigens (HLA) in humans. T cells recognise peptide-MHC complexes via the T cell receptor (TCR) [4]. The TCR is a clonotypic, membrane-bound, glycosylated polypeptide comprised of two chains. In $\alpha\beta$ T cells, these chains consist of the TCR α - and β -chains. To engage the vast repertoire of MHC-bound antigenic peptides, TCRs are diversified through the random rearrangement of V and J genes at the TCR α locus, and V, D, and J genes at the TCR β locus of developing thymic T cells. Further potential diversity is created through untemplated addition or deletion of a variable number of nucleotides at the V-(D)-J junctional sites called N regions. The regions of the TCR that make the majority of contacts with the peptide-MHC complex are called the complementarity-determining regions (CDR). The first and second CDRs of the TCR are germline encoded within the V gene segments (*TRAV* and *TRBV*), whereas the CDR3 regions are derived from the V-(D)-J and N regions [5].

In the laboratory, EBV transforms B lymphocytes into immortal lymphoblastoid cell lines (LCLs). Consistent with this, EBV-infected B lymphocytes frequently expand to dangerously high levels in patients being treated with immunosuppressive drugs that repress the immune response to EBV (e.g. in post-transplant lymphoproliferative disorder) [1]. Compelling evidence that CD8+ T lymphocytes play a major role in controlling EBV infection was provided by clinical trials showing that adoptive immunotherapy with *in vitro* expanded EBV-specific cytotoxic T lymphocytes (CTLs) can successfully treat post-transplant lymphoproliferative disorder [6]. Adoptive immunotherapy with *in vitro* expanded EBV-specific CTLs has also shown promise as a treatment option for Hodgkin lymphoma, nasopharyngeal carcinoma, and multiple sclerosis [6]. For these clinical trials, T cells specific for the EBV proteins LMP2, LMP1 and/or EBNA1 were utilized because these antigens are commonly expressed by the malignant cells in Hodgkin lymphoma, nasopharyngeal carcinoma or by EBV-infected B cells in the brain of MS patients [6-8]. Furthermore, T cell responses to these antigens are relatively weak in most EBV-exposed individuals [6].

Although adoptive T cell immunotherapy has shown encouraging efficacy in clinical trials for EBV-associated diseases and other cancer types, it is a labour-intensive and expensive treatment option, and it is often not possible to raise sufficient T cells that are specific for the target cells that need to be killed [6]. Accordingly, improved methods for the treatment of EBV-associated diseases, disorders and conditions are required.

SUMMARY

The present invention is predicated in part on the discovery of alpha and beta TCR chains having CDRs that recognize epitopes derived from the LMP1 and LMP2 antigens of EBV when presented in association with several frequently-occurring human leukocyte antigens.

Accordingly, one form of the invention is broadly directed to TCRs and their use in preventing and/or treating an EBV-associated disease, disorder or condition.

In a first aspect, the invention provides an isolated alpha chain of a T-cell receptor (TCR) or a fragment thereof, comprising at least one complementarity determining region (CDR) amino acid sequence according to any one of SEQ ID

NOS:331-411 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.

In one embodiment, the isolated alpha chain further comprises one or more further CDR amino acid sequences according to any one of SEQ ID NOS:7-87 and 169-249 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.

In some embodiments, the isolated alpha chain comprises, consists essentially of, or consists of an amino acid sequence according to any one of SEQ ID NOS:655-735 and/or Figures 94 to 99, or an amino acid sequence at least 70% identical thereto.

In particular embodiments, the isolated alpha chain comprises a cysteine residue at position 48 of a constant region thereof.

The isolated alpha chain suitably comprises one or more amino acid substitutions at positions 90, 91, 92 and/or 93 of a constant region thereof. In particular embodiments, the isolated alpha chain comprises:

- (a) a P to S substitution at position 90;
- (b) an E to D substitution at position 91;
- (c) a S to V substitution at position 92; and/or
- (d) a S to P substitution at position 93.

In a second aspect, the invention provides an isolated beta chain of a TCR or a fragment thereof, comprising at least one CDR amino acid sequence according to any one of SEQ ID NOS:412-492 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.

In certain embodiments, the isolated beta chain further comprises one or more further CDR amino acid sequences according to any one of SEQ ID NOS:88-168 and 250-330 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.

In one preferred embodiment, the isolated beta chain comprises, consists essentially of, or consists of an amino acid sequence according to any one of SEQ ID NOS:736-816 and/or Figures 94 to 99, or an amino acid sequence at least 70% identical thereto.

Suitably, the isolated beta chain comprises a cysteine residue at position 57 of a constant region thereof.

In some embodiments, the isolated beta chain comprises one or more amino acid substitutions at positions 18, 22, 133, 136 and/or 139 of a constant region thereof. In particular embodiments, the isolated beta chain comprises:

- (a) an E to K substitution at position 18;

- (b) a S to A substitution at position 22;
- (c) a F to I substitution at position 133;
- (d) a V to A substitution at position 136; and/or
- (e) a Q to H substitution at position 139.

In a third aspect, the invention provides an isolated TCR or TCR fragment for binding an antigen derived from an Epstein Barr Virus (EBV), the TCR comprising:

- (i) an isolated alpha chain or fragment thereof according to the first aspect; and/or
- (ii) an isolated beta chain or fragment thereof according to the second aspect.

Suitably, the antigen is at least partly derived from latent membrane protein 1 (LMP-1) and/or latent membrane protein 2 (LMP-2).

In one embodiment, the alpha chain and the beta chain are joined by a linker.

In a fourth aspect, the invention provides an isolated nucleic acid encoding:

- (i) an isolated alpha chain or fragment thereof according to the first aspect;
 - (ii) an isolated beta chain or fragment thereof according to the second aspect;
- or
- (iii) an isolated TCR or TCR fragment according to the third aspect.

In a fifth aspect, the invention provides a genetic construct comprising the isolated nucleic acid of the aforementioned aspect.

In a sixth aspect, the invention provides a host cell comprising the isolated nucleic acid of the fourth aspect and/or the genetic construct of the fifth aspect.

Preferably, the host cell is or comprises a T cell.

In a seventh aspect, the invention provides a method of producing an isolated alpha chain or fragment thereof, an isolated beta chain or fragment thereof and/or an isolated TCR or TCR fragment, said method comprising; (i) culturing the host cell of the aforementioned aspect; and (ii) isolating said alpha chain, beta chain and/or TCR from said host cell cultured in step (i).

In an eighth aspect, the invention provides an antibody or antibody fragment which binds and/or is raised against:

- (i) an isolated alpha chain or fragment thereof according to the first aspect;
 - (ii) an isolated beta chain or fragment thereof according to the second aspect;
- or
- (iii) an isolated TCR or TCR fragment according to the third aspect.

In a ninth aspect, the invention provides a composition comprising:

- (i) an isolated alpha chain or fragment thereof according to the first aspect;
 - (ii) an isolated beta chain or fragment thereof according to the second aspect;
 - (iii) an isolated TCR or TCR fragment according to the third aspect;
 - (iv) an isolated nucleic acid of the fourth aspect;
 - (v) a genetic construct according to the fifth aspect; and/or
 - (vi) a host cell according to the sixth aspect;
- and a pharmaceutically acceptable carrier, diluent or excipient.

In a tenth aspect, the invention provides a method of treating or preventing an EBV-associated disease, disorder or condition in a subject, said method including the step of administering a therapeutically effective amount of an isolated alpha chain or fragment thereof according to the first aspect, an isolated beta chain or fragment thereof according to the second aspect, an isolated TCR or TCR fragment according to the third aspect, an isolated nucleic acid of the fourth aspect, a genetic construct according to the fifth aspect, a host cell according to the sixth aspect, and/or the composition of the ninth aspect to the subject to thereby treat or prevent the EBV-associated disease, disorder or condition in the subject.

In an eleventh aspect, the invention provides a method of performing cellular immunotherapy in a subject having an EBV-associated disease, disorder or condition, said method including the step of administering a therapeutically effective amount of a host cell according to the sixth aspect and optionally a pharmaceutically acceptable carrier, diluent or excipient to the subject.

With respect to the methods of the tenth and eleventh aspects, the EBV-associated disease, disorder or condition suitably is or comprises a cancer. Preferably, the EBV-associated disease, disorder or condition is selected from the group consisting of nasopharyngeal carcinoma, NKT cell lymphoma, Hodgkin's Lymphoma, post-transplant lymphoproliferative disease, Burkitt's lymphoma, Diffuse large B-cell lymphoma, gastric cancer, and any combination thereof. In an alternative embodiment, the EBV-associated disease, disorder or condition suitably is or comprises multiple sclerosis.

Suitably, the isolated alpha chain or fragment thereof according to the first aspect, the isolated beta chain or fragment thereof according to the second aspect, the isolated TCR or TCR fragment according to the third aspect, the isolated nucleic acid of the fourth aspect, the genetic construct according to the fifth aspect, the host cell according to the sixth aspect, or the composition of the ninth aspect are for use in the

method of the tenth aspect.

In particular embodiments, the host cell according to the sixth aspect is for use in the method of the eleventh aspect.

In a twelfth aspect, the invention provides a method of detecting or isolating a T-cell in a biological sample from a subject, the method including the step of contacting the biological sample with an antibody or antibody fragment according to the eighth aspect for a time and under conditions sufficient to thereby detect or isolate said T-cell.

In certain embodiments, the detected or isolated T-cell is suitable for use in cellular immunotherapy of an EBV-associated disease, disorder or condition.

Suitably, the T-cell comprises an alpha chain of the first aspect, a beta chain of the second aspect and/or a T-cell receptor according to the third aspect.

Suitably, the subject of the aforementioned aspects of the invention is a mammal.

Preferably, the subject is a human.

Throughout this specification, unless otherwise indicated, “*comprise*”, “*comprises*” and “*comprising*” are used inclusively rather than exclusively, so that a stated integer or group of integers may include one or more other non-stated integers or groups of integers.

It will also be appreciated that the indefinite articles “*a*” and “*an*” are not to be read as singular indefinite articles or as otherwise excluding more than one or more than a single subject to which the indefinite article refers. For example, “*a*” protein includes one protein, one or more proteins or a plurality of proteins.

By “*consist essentially of*” is meant in this context that the isolated protein or each immunogenic fragment has one, two or no more than three amino acid residues in addition to the recited amino acid sequence. The additional amino acid residues may occur at the N- and/or C-termini of the recited amino acid sequence, although without limitation thereto.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1. Flow cytometry data for sorting of CD8⁺ T cells specific for HLA-B*40:01-IEDPPFNSL for single cell TCR sequencing.

Figure 2. Flow cytometry data for sorting of CD8⁺ T cells specific for HLA-A*11:01-SSCSCPLSK for single cell TCR sequencing.

Figure 3. Flow cytometry data for sorting of CD8⁺ T cells specific for HLA-A*24:02-TYGPVFMCL (Donors D2M and B31) or HLA-A24:02-TYGPVFMSL (Donor Y6W) for single cell TCR sequencing.

Figure 4. Flow cytometry data for sorting of CD8⁺ T cells specific for HLA-A*24:02-PYLFWLAAI for single cell TCR sequencing.

Figure 5. Flow cytometry data for sorting of CD8⁺ T cells specific for HLA-A*02:01-YLLEMLWRL for single cell TCR sequencing.

Figure 6. Flow cytometry data for sorting of CD8⁺ T cells specific for HLA-A*02:01-FLYALALLL for single cell TCR sequencing.

Figure 7. Flow cytometry data for sorting and identification of Jurkat T cells expressing TCRs specific for HLA-A*11:01-SSCSSCPLSK.

Figure 8. Flow cytometry data for sorting and identification of Jurkat T cells expressing TCRs specific for HLA-A*24:02-TYGPVFMCL.

Figure 9. Jurkat T cells, transduced to express a TCR specific for HLA-B*40:01-IEDPPFNSL, were tested for recognition of HLA-B*40:01⁺ B cells (V2D) that were pre-treated with IEDPPFNSL peptide (100 ug/ml, 10 ug/ml, or 1 ug/ml) or left untreated. The elispot assay measured T cell activation by gamma interferon release. As a positive control, antibody to CD3 was used to stimulate the TCR-transduced Jurkat cells, and as a negative control HLA-B*40:01-negative B cells (F6R and T8C) were also added to the Jurkat cells. This assay clearly shows that Jurkat cells transduced with an IEDPPFNSL-specific TCR recognize B cells presenting HLA-B*40:01-IEDPPFNSL.

Figure 10. Jurkat T cells, transduced to express a TCR specific for HLA-A*11:01-SSCSSCPLSK, were tested for recognition of HLA-A*11:01⁺ B cells (T8C) that were pre-treated with SSCSSCPLSK peptide (100 ug/ml, 10 ug/ml, or 1 ug/ml) or left untreated. The elispot assay measured T cell activation by gamma interferon release. As a positive control, antibody to CD3 was used to stimulate the TCR-transduced Jurkat cells, and as a negative control HLA-A*11:01-negative B cells (F6R) were also added to the Jurkat cells. This assay clearly shows that Jurkat cells transduced with an SSCSSCPLSK-specific TCR recognize B cells presenting HLA-A*11:01-SSCSSCPLSK.

Figure 11. Granzyme B expression by primary T cells transduced with a TCR specific for HLA-A*02:01-FLYALALLL. Flow cytometry data for TCR-transduced T cells (A) without stimulation, (B) with added HLA-A*02:01⁺ PBMCs, (C) with

added HLA-A*02:01⁺ PBMCs that were pre-treated with the FLYALALLL peptide (1 μ M); (D) with added HLA-A*02:01-negative LCLs; (E) with added HLA-A*02:01⁺ LCLs; and (F) with added anti-CD3. These results are for cells initially gated for co-staining with an HLA-A*02:01-FLYALALLL multimer and anti-CD8.

Figure 12. Mouse model of EBV-induced B cell lymphoma and treatment with TCR-transgenic T cells. EBV-positive tumors were established in NOD/RAG mice by subcutaneous injection of EBV-positive human B lymphocytes (LCLs) that expressed HLA-A*02:01. Tumors were visible from day 2, and treatment was administered on days 2 and 9 following tumor inoculation. This consisted of two intravenous injections with transgenic T cells derived from a healthy EBV-sero-negative donor that had been generated by stimulation with CD3-CD28 beads. These T cells were transduced with a TCR specific for HLA-A*02:01-FLYALALLL. As controls, untransduced T cells or PBS were also intravenously injected on days 2 and 9. The tumor volume is plotted on the y axis. Time after tumor cell injection is plotted on the x axis. The mean values from each group are plotted. Error bars represent the SEM (n = 6 mice per group; **** p $\leq$ 0.0001; ** p $\leq$ 0.01, analyzed by two-way repeated measures ANOVA).

Figures 13 to 93. TCR nucleotide sequences: With codon optimization (using the JCat Codon Adaptation Tool: <http://www.jcat.de>), and a codon replacement within the constant region encoding a single cysteine on each receptor chain to promote the formation of an additional interchain disulfide bond and reduce TCR mispairing with endogenous TCR subunits (Ref.: Cohen et al., Cancer Res. 2007, 67:3898-3903).

Figures 94 to 99. TCR amino acid sequences (unmodified)

<u>BRIEF DESCRIPTION OF THE SEQUENCES</u>	
SEQ ID NO:1	LMP2 epitope IEDPPFNSL
SEQ ID NO:2	LMP2 epitope SSCSSCPLSK
SEQ ID NO:3	LMP2 epitope TYGPVFMSL
SEQ ID NO:4	LMP2 epitope PYLFWLAAI
SEQ ID NO:5	LMP1 epitope YLLEMLWRL
SEQ ID NO. 6	LMP2 epitope FLYALALLL
SEQ ID NO:7	CDR1 of α -chain of Clone 1 of Donor N3M in Table 2
SEQ ID NO:8	CDR1 of α -chain of Clone 1 of Donor B24 in Table 2
SEQ ID NO:9	CDR1 of α -chain of Clone 2 of Donor B24 in Table 2

SEQ ID NO:10	CDR1 of α -chain of Clone 3 of Donor B24 in Table 2
SEQ ID NO:11	CDR1 of α -chain of Clone 4 of Donor B24 in Table 2
SEQ ID NO:12	CDR1 of α -chain of Clone 1 of Donor A5L in Table 2
SEQ ID NO:13	CDR1 of α -chain of Clone 2 of Donor A5L in Table 2
SEQ ID NO:14	CDR1 of α -chain of Clone 3 of Donor A5L in Table 2
SEQ ID NO:15	CDR1 of α -chain of Clone 4 of Donor A5L in Table 2
SEQ ID NO:16	CDR1 of α -chain of Clone 5 of Donor A5L in Table 2
SEQ ID NO:17	CDR1 of α -chain of Clone 1 of Donor B31 in Table 2
SEQ ID NO:18	CDR1 of α -chain of Clone 2 of Donor B31 in Table 2
SEQ ID NO:19	CDR1 of α -chain of Clone 1 of Donor R7Z in Table 3
SEQ ID NO:20	CDR1 of α -chain of Clone 2 of Donor R7Z in Table 3
SEQ ID NO:21	CDR1 of α -chain of Clone 3 of Donor R7Z in Table 3
SEQ ID NO:22	CDR1 of α -chain of Clone 4 of Donor R7Z in Table 3
SEQ ID NO:23	CDR1 of α -chain of Clone 5 of Donor R7Z in Table 3
SEQ ID NO:24	CDR1 of α -chain of Clone 1 of Donor B5F in Table 3
SEQ ID NO:25	CDR1 of α -chain of Clone 2 of Donor B5F in Table 3
SEQ ID NO:26	CDR1 of α -chain of Clone 1 of Donor T3V in Table 3
SEQ ID NO:27	CDR1 of α -chain of Clone 2 of Donor T3V in Table 3
SEQ ID NO:28	CDR1 of α -chain of Clone 3 of Donor T3V in Table 3
SEQ ID NO:29	CDR1 of α -chain of Clone 1 of Donor P6G in Table 3
SEQ ID NO:30	CDR1 of α -chain of Clone 2 of Donor P6G in Table 3
SEQ ID NO:31	CDR1 of α -chain of Clone 3 of Donor P6G in Table 3
SEQ ID NO:32	CDR1 of α -chain of Clone 1 of Donor A4T in Table 3
SEQ ID NO:33	CDR1 of α -chain of Clone 1 of Donor D2M in Table 4
SEQ ID NO:34	CDR1 of α -chain of Clone 2 of Donor D2M in Table 4
SEQ ID NO:35	CDR1 of α -chain of Clone 3 of Donor D2M in Table 4
SEQ ID NO:36	CDR1 of α -chain of Clone 1 of Donor B31 in Table 4
SEQ ID NO:37	CDR1 of α -chain of Clone 2 of Donor B31 in Table 4
SEQ ID NO:38	CDR1 of α -chain of Clone 3 of Donor B31 in Table 4
SEQ ID NO:39	CDR1 of α -chain of Clone 4 of Donor B31 in Table 4
SEQ ID NO:40	CDR1 of α -chain of Clone 5 of Donor B31 in Table 4
SEQ ID NO:41	CDR1 of α -chain of Clone 6 of Donor B31 in Table 4
SEQ ID NO:42	CDR1 of α -chain of Clone 1 of Donor Y6W in Table 4
SEQ ID NO:43	CDR1 of α -chain of Clone 2 of Donor Y6W in Table 4

SEQ ID NO:44	CDR1 of α -chain of Clone 3 of Donor Y6W in Table 4
SEQ ID NO:45	CDR1 of α -chain of Clone 1 of Donor B33 in Table 5
SEQ ID NO:46	CDR1 of α -chain of Clone 1 of Donor B5F in Table 5
SEQ ID NO:47	CDR1 of α -chain of Clone 1 of Donor Y6W in Table 5
SEQ ID NO:48	CDR1 of α -chain of Clone 2 of Donor Y6W in Table 5
SEQ ID NO:49	CDR1 of α -chain of Clone 3 of Donor Y6W in Table 5
SEQ ID NO:50	CDR1 of α -chain of Clone 4 of Donor Y6W in Table 5
SEQ ID NO:51	CDR1 of α -chain of Clone 5 of Donor Y6W in Table 5
SEQ ID NO:52	CDR1 of α -chain of Clone 6 of Donor Y6W in Table 5
SEQ ID NO:53	CDR1 of α -chain of Clone 7 of Donor Y6W in Table 5
SEQ ID NO:54	CDR1 of α -chain of Clone 8 of Donor Y6W in Table 5
SEQ ID NO:55	CDR1 of α -chain of Clone 9 of Donor Y6W in Table 5
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SEQ ID NO:58	CDR1 of α -chain of Clone 12 of Donor Y6W in Table 5
SEQ ID NO:59	CDR1 of α -chain of Clone 13 of Donor Y6W in Table 5
SEQ ID NO:60	CDR1 of α -chain of Clone 14 of Donor Y6W in Table 5
SEQ ID NO:61	CDR1 of α -chain of Clone 15 of Donor Y6W in Table 5
SEQ ID NO:62	CDR1 of α -chain of Clone 1 of Donor N2W in Table 6
SEQ ID NO:63	CDR1 of α -chain of Clone 2 of Donor N2W in Table 6
SEQ ID NO:64	CDR1 of α -chain of Clone 3 of Donor N2W in Table 6
SEQ ID NO:65	CDR1 of α -chain of Clone 4 of Donor N2W in Table 6
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SEQ ID NO:67	CDR1 of α -chain of Clone 6 of Donor N2W in Table 6
SEQ ID NO:68	CDR1 of α -chain of Clone 1 of Donor B87 in Table 6
SEQ ID NO:69	CDR1 of α -chain of Clone 2 of Donor B87 in Table 6
SEQ ID NO:70	CDR1 of α -chain of Clone 3 of Donor B87 in Table 6
SEQ ID NO:71	CDR1 of α -chain of Clone 1 of Donor J9B in Table 7
SEQ ID NO:72	CDR1 of α -chain of Clone 2 of Donor J9B in Table 7
SEQ ID NO:73	CDR1 of α -chain of Clone 1 of Donor A5L in Table 7
SEQ ID NO:74	CDR1 of α -chain of Clone 2 of Donor A5L in Table 7
SEQ ID NO:75	CDR1 of α -chain of Clone 3 of Donor A5L in Table 7
SEQ ID NO:76	CDR1 of α -chain of Clone 4 of Donor A5L in Table 7
SEQ ID NO:77	CDR1 of α -chain of Clone 5 of Donor A5L in Table 7

SEQ ID NO:78	CDR1 of α -chain of Clone 6 of Donor A5L in Table 7
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SEQ ID NO:91	CDR1 of β -chain of Clone 3 of Donor B24 in Table 2
SEQ ID NO:92	CDR1 of β -chain of Clone 4 of Donor B24 in Table 2
SEQ ID NO:93	CDR1 of β -chain of Clone 1 of Donor A5L in Table 2
SEQ ID NO:94	CDR1 of β -chain of Clone 2 of Donor A5L in Table 2
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SEQ ID NO:102	CDR1 of β -chain of Clone 3 of Donor R7Z in Table 3
SEQ ID NO:103	CDR1 of β -chain of Clone 4 of Donor R7Z in Table 3
SEQ ID NO:104	CDR1 of β -chain of Clone 5 of Donor R7Z in Table 3
SEQ ID NO:105	CDR1 of β -chain of Clone 1 of Donor B5F in Table 3
SEQ ID NO:106	CDR1 of β -chain of Clone 2 of Donor B5F in Table 3
SEQ ID NO:107	CDR1 of β -chain of Clone 1 of Donor T3V in Table 3
SEQ ID NO:108	CDR1 of β -chain of Clone 2 of Donor T3V in Table 3
SEQ ID NO:109	CDR1 of β -chain of Clone 3 of Donor T3V in Table 3
SEQ ID NO:110	CDR1 of β -chain of Clone 1 of Donor P6G in Table 3
SEQ ID NO:111	CDR1 of β -chain of Clone 2 of Donor P6G in Table 3

SEQ ID NO:112	CDR1 of β -chain of Clone 3 of Donor P6G in Table 3
SEQ ID NO:113	CDR1 of β -chain of Clone 1 of Donor A4T in Table 3
SEQ ID NO:114	CDR1 of β -chain of Clone 1 of Donor D2M in Table 4
SEQ ID NO:115	CDR1 of β -chain of Clone 2 of Donor D2M in Table 4
SEQ ID NO:116	CDR1 of β -chain of Clone 3 of Donor D2M in Table 4
SEQ ID NO:117	CDR1 of β -chain of Clone 1 of Donor B31 in Table 4
SEQ ID NO:118	CDR1 of β -chain of Clone 2 of Donor B31 in Table 4
SEQ ID NO:119	CDR1 of β -chain of Clone 3 of Donor B31 in Table 4
SEQ ID NO:120	CDR1 of β -chain of Clone 4 of Donor B31 in Table 4
SEQ ID NO:121	CDR1 of β -chain of Clone 5 of Donor B31 in Table 4
SEQ ID NO:122	CDR1 of β -chain of Clone 6 of Donor B31 in Table 4
SEQ ID NO:123	CDR1 of β -chain of Clone 1 of Donor Y6W in Table 4
SEQ ID NO:124	CDR1 of β -chain of Clone 2 of Donor Y6W in Table 4
SEQ ID NO:125	CDR1 of β -chain of Clone 3 of Donor Y6W in Table 4
SEQ ID NO:126	CDR1 of β -chain of Clone 1 of Donor B33 in Table 5
SEQ ID NO:127	CDR1 of β -chain of Clone 1 of Donor B5F in Table 5
SEQ ID NO:128	CDR1 of β -chain of Clone 1 of Donor Y6W in Table 5
SEQ ID NO:129	CDR1 of β -chain of Clone 2 of Donor Y6W in Table 5
SEQ ID NO:130	CDR1 of β -chain of Clone 3 of Donor Y6W in Table 5
SEQ ID NO:131	CDR1 of β -chain of Clone 4 of Donor Y6W in Table 5
SEQ ID NO:132	CDR1 of β -chain of Clone 5 of Donor Y6W in Table 5
SEQ ID NO:133	CDR1 of β -chain of Clone 6 of Donor Y6W in Table 5
SEQ ID NO:134	CDR1 of β -chain of Clone 7 of Donor Y6W in Table 5
SEQ ID NO:135	CDR1 of β -chain of Clone 8 of Donor Y6W in Table 5
SEQ ID NO:136	CDR1 of β -chain of Clone 9 of Donor Y6W in Table 5
SEQ ID NO:137	CDR1 of β -chain of Clone 10 of Donor Y6W in Table 5
SEQ ID NO:138	CDR1 of β -chain of Clone 11 of Donor Y6W in Table 5
SEQ ID NO:139	CDR1 of β -chain of Clone 12 of Donor Y6W in Table 5
SEQ ID NO:140	CDR1 of β -chain of Clone 13 of Donor Y6W in Table 5
SEQ ID NO:141	CDR1 of β -chain of Clone 14 of Donor Y6W in Table 5
SEQ ID NO:142	CDR1 of β -chain of Clone 15 of Donor Y6W in Table 5
SEQ ID NO:143	CDR1 of β -chain of Clone 1 of Donor N2W in Table 6
SEQ ID NO:144	CDR1 of β -chain of Clone 2 of Donor N2W in Table 6
SEQ ID NO:145	CDR1 of β -chain of Clone 3 of Donor N2W in Table 6

SEQ ID NO:146	CDR1 of β -chain of Clone 4 of Donor N2W in Table 6
SEQ ID NO:147	CDR1 of β -chain of Clone 5 of Donor N2W in Table 6
SEQ ID NO:148	CDR1 of β -chain of Clone 6 of Donor N2W in Table 6
SEQ ID NO:149	CDR1 of β -chain of Clone 1 of Donor B87 in Table 6
SEQ ID NO:150	CDR1 of β -chain of Clone 2 of Donor B87 in Table 6
SEQ ID NO:151	CDR1 of β -chain of Clone 3 of Donor B87 in Table 6
SEQ ID NO:152	CDR1 of β -chain of Clone 1 of Donor J9B in Table 7
SEQ ID NO:153	CDR1 of β -chain of Clone 2 of Donor J9B in Table 7
SEQ ID NO:154	CDR1 of β -chain of Clone 1 of Donor A5L in Table 7
SEQ ID NO:155	CDR1 of β -chain of Clone 2 of Donor A5L in Table 7
SEQ ID NO:156	CDR1 of β -chain of Clone 3 of Donor A5L in Table 7
SEQ ID NO:157	CDR1 of β -chain of Clone 4 of Donor A5L in Table 7
SEQ ID NO:158	CDR1 of β -chain of Clone 5 of Donor A5L in Table 7
SEQ ID NO:159	CDR1 of β -chain of Clone 6 of Donor A5L in Table 7
SEQ ID NO:160	CDR1 of β -chain of Clone 7 of Donor A5L in Table 7
SEQ ID NO:161	CDR1 of β -chain of Clone 8 of Donor A5L in Table 7
SEQ ID NO:162	CDR1 of β -chain of Clone 9 of Donor A5L in Table 7
SEQ ID NO:163	CDR1 of β -chain of Clone 1 of Donor T4W in Table 7
SEQ ID NO:164	CDR1 of β -chain of Clone 2 of Donor T4W in Table 7
SEQ ID NO:165	CDR1 of β -chain of Clone 3 of Donor T4W in Table 7
SEQ ID NO:166	CDR1 of β -chain of Clone 4 of Donor T4W in Table 7
SEQ ID NO:167	CDR1 of β -chain of Clone 5 of Donor T4W in Table 7
SEQ ID NO:168	CDR1 of β -chain of Clone 6 of Donor T4W in Table 7
SEQ ID NO:169	CDR2 of α -chain of Clone 1 of Donor N3M in Table 2
SEQ ID NO:170	CDR2 of α -chain of Clone 1 of Donor B24 in Table 2
SEQ ID NO:171	CDR2 of α -chain of Clone 2 of Donor B24 in Table 2
SEQ ID NO:172	CDR2 of α -chain of Clone 3 of Donor B24 in Table 2
SEQ ID NO:173	CDR2 of α -chain of Clone 4 of Donor B24 in Table 2
SEQ ID NO:174	CDR2 of α -chain of Clone 1 of Donor A5L in Table 2
SEQ ID NO:175	CDR2 of α -chain of Clone 2 of Donor A5L in Table 2
SEQ ID NO:176	CDR2 of α -chain of Clone 3 of Donor A5L in Table 2
SEQ ID NO:177	CDR2 of α -chain of Clone 4 of Donor A5L in Table 2
SEQ ID NO:178	CDR2 of α -chain of Clone 5 of Donor A5L in Table 2
SEQ ID NO:179	CDR2 of α -chain of Clone 1 of Donor B31 in Table 2

SEQ ID NO:180	CDR2 of α -chain of Clone 2 of Donor B31 in Table 2
SEQ ID NO:181	CDR2 of α -chain of Clone 1 of Donor R7Z in Table 3
SEQ ID NO:182	CDR2 of α -chain of Clone 2 of Donor R7Z in Table 3
SEQ ID NO:183	CDR2 of α -chain of Clone 3 of Donor R7Z in Table 3
SEQ ID NO:184	CDR2 of α -chain of Clone 4 of Donor R7Z in Table 3
SEQ ID NO:185	CDR2 of α -chain of Clone 5 of Donor R7Z in Table 3
SEQ ID NO:186	CDR2 of α -chain of Clone 1 of Donor B5F in Table 3
SEQ ID NO:187	CDR2 of α -chain of Clone 2 of Donor B5F in Table 3
SEQ ID NO:188	CDR2 of α -chain of Clone 1 of Donor T3V in Table 3
SEQ ID NO:189	CDR2 of α -chain of Clone 2 of Donor T3V in Table 3
SEQ ID NO:190	CDR2 of α -chain of Clone 3 of Donor T3V in Table 3
SEQ ID NO:191	CDR2 of α -chain of Clone 1 of Donor P6G in Table 3
SEQ ID NO:192	CDR2 of α -chain of Clone 2 of Donor P6G in Table 3
SEQ ID NO:193	CDR2 of α -chain of Clone 3 of Donor P6G in Table 3
SEQ ID NO:194	CDR2 of α -chain of Clone 1 of Donor A4T in Table 3
SEQ ID NO:195	CDR2 of α -chain of Clone 1 of Donor D2M in Table 4
SEQ ID NO:196	CDR2 of α -chain of Clone 2 of Donor D2M in Table 4
SEQ ID NO:197	CDR2 of α -chain of Clone 3 of Donor D2M in Table 4
SEQ ID NO:198	CDR2 of α -chain of Clone 1 of Donor B31 in Table 4
SEQ ID NO:199	CDR2 of α -chain of Clone 2 of Donor B31 in Table 4
SEQ ID NO:200	CDR2 of α -chain of Clone 3 of Donor B31 in Table 4
SEQ ID NO:201	CDR2 of α -chain of Clone 4 of Donor B31 in Table 4
SEQ ID NO:202	CDR2 of α -chain of Clone 5 of Donor B31 in Table 4
SEQ ID NO:203	CDR2 of α -chain of Clone 6 of Donor B31 in Table 4
SEQ ID NO:204	CDR2 of α -chain of Clone 1 of Donor Y6W in Table 4
SEQ ID NO:205	CDR2 of α -chain of Clone 2 of Donor Y6W in Table 4
SEQ ID NO:206	CDR2 of α -chain of Clone 3 of Donor Y6W in Table 4
SEQ ID NO:207	CDR2 of α -chain of Clone 1 of Donor B33 in Table 5
SEQ ID NO:208	CDR2 of α -chain of Clone 1 of Donor B5F in Table 5
SEQ ID NO:209	CDR2 of α -chain of Clone 1 of Donor Y6W in Table 5
SEQ ID NO:210	CDR2 of α -chain of Clone 2 of Donor Y6W in Table 5
SEQ ID NO:211	CDR2 of α -chain of Clone 3 of Donor Y6W in Table 5
SEQ ID NO:212	CDR2 of α -chain of Clone 4 of Donor Y6W in Table 5
SEQ ID NO:213	CDR2 of α -chain of Clone 5 of Donor Y6W in Table 5

SEQ ID NO:214	CDR2 of α -chain of Clone 6 of Donor Y6W in Table 5
SEQ ID NO:215	CDR2 of α -chain of Clone 7 of Donor Y6W in Table 5
SEQ ID NO:216	CDR2 of α -chain of Clone 8 of Donor Y6W in Table 5
SEQ ID NO:217	CDR2 of α -chain of Clone 9 of Donor Y6W in Table 5
SEQ ID NO:218	CDR2 of α -chain of Clone 10 of Donor Y6W in Table 5
SEQ ID NO:219	CDR2 of α -chain of Clone 11 of Donor Y6W in Table 5
SEQ ID NO:220	CDR2 of α -chain of Clone 12 of Donor Y6W in Table 5
SEQ ID NO:221	CDR2 of α -chain of Clone 13 of Donor Y6W in Table 5
SEQ ID NO:222	CDR2 of α -chain of Clone 14 of Donor Y6W in Table 5
SEQ ID NO:223	CDR2 of α -chain of Clone 15 of Donor Y6W in Table 5
SEQ ID NO:224	CDR2 of α -chain of Clone 1 of Donor N2W in Table 6
SEQ ID NO:225	CDR2 of α -chain of Clone 2 of Donor N2W in Table 6
SEQ ID NO:226	CDR2 of α -chain of Clone 3 of Donor N2W in Table 6
SEQ ID NO:227	CDR2 of α -chain of Clone 4 of Donor N2W in Table 6
SEQ ID NO:228	CDR2 of α -chain of Clone 5 of Donor N2W in Table 6
SEQ ID NO:229	CDR2 of α -chain of Clone 6 of Donor N2W in Table 6
SEQ ID NO:230	CDR2 of α -chain of Clone 1 of Donor B87 in Table 6
SEQ ID NO:231	CDR2 of α -chain of Clone 2 of Donor B87 in Table 6
SEQ ID NO:232	CDR2 of α -chain of Clone 3 of Donor B87 in Table 6
SEQ ID NO:233	CDR2 of α -chain of Clone 1 of Donor J9B in Table 7
SEQ ID NO:234	CDR2 of α -chain of Clone 2 of Donor J9B in Table 7
SEQ ID NO:235	CDR2 of α -chain of Clone 1 of Donor A5L in Table 7
SEQ ID NO:236	CDR2 of α -chain of Clone 2 of Donor A5L in Table 7
SEQ ID NO:237	CDR2 of α -chain of Clone 3 of Donor A5L in Table 7
SEQ ID NO:238	CDR2 of α -chain of Clone 4 of Donor A5L in Table 7
SEQ ID NO:239	CDR2 of α -chain of Clone 5 of Donor A5L in Table 7
SEQ ID NO:240	CDR2 of α -chain of Clone 6 of Donor A5L in Table 7
SEQ ID NO:241	CDR2 of α -chain of Clone 7 of Donor A5L in Table 7
SEQ ID NO:242	CDR2 of α -chain of Clone 8 of Donor A5L in Table 7
SEQ ID NO:243	CDR2 of α -chain of Clone 9 of Donor A5L in Table 7
SEQ ID NO:244	CDR2 of α -chain of Clone 1 of Donor T4W in Table 7
SEQ ID NO:245	CDR2 of α -chain of Clone 2 of Donor T4W in Table 7
SEQ ID NO:246	CDR2 of α -chain of Clone 3 of Donor T4W in Table 7
SEQ ID NO:247	CDR2 of α -chain of Clone 4 of Donor T4W in Table 7

SEQ ID NO:248	CDR2 of α -chain of Clone 5 of Donor T4W in Table 7
SEQ ID NO:249	CDR2 of α -chain of Clone 6 of Donor T4W in Table 7
SEQ ID NO:250	CDR2 of β -chain of Clone 1 of Donor N3M in Table 2
SEQ ID NO:251	CDR2 of β -chain of Clone 1 of Donor B24 in Table 2
SEQ ID NO:252	CDR2 of β -chain of Clone 2 of Donor B24 in Table 2
SEQ ID NO:253	CDR2 of β -chain of Clone 3 of Donor B24 in Table 2
SEQ ID NO:254	CDR2 of β -chain of Clone 4 of Donor B24 in Table 2
SEQ ID NO:255	CDR2 of β -chain of Clone 1 of Donor A5L in Table 2
SEQ ID NO:256	CDR2 of β -chain of Clone 2 of Donor A5L in Table 2
SEQ ID NO:257	CDR2 of β -chain of Clone 3 of Donor A5L in Table 2
SEQ ID NO:258	CDR2 of β -chain of Clone 4 of Donor A5L in Table 2
SEQ ID NO:259	CDR2 of β -chain of Clone 5 of Donor A5L in Table 2
SEQ ID NO:260	CDR2 of β -chain of Clone 1 of Donor B31 in Table 2
SEQ ID NO:261	CDR2 of β -chain of Clone 2 of Donor B31 in Table 2
SEQ ID NO:262	CDR2 of β -chain of Clone 1 of Donor R7Z in Table 3
SEQ ID NO:263	CDR2 of β -chain of Clone 2 of Donor R7Z in Table 3
SEQ ID NO:264	CDR2 of β -chain of Clone 3 of Donor R7Z in Table 3
SEQ ID NO:265	CDR2 of β -chain of Clone 4 of Donor R7Z in Table 3
SEQ ID NO:266	CDR2 of β -chain of Clone 5 of Donor R7Z in Table 3
SEQ ID NO:267	CDR2 of β -chain of Clone 1 of Donor B5F in Table 3
SEQ ID NO:268	CDR2 of β -chain of Clone 2 of Donor B5F in Table 3
SEQ ID NO:269	CDR2 of β -chain of Clone 1 of Donor T3V in Table 3
SEQ ID NO:270	CDR2 of β -chain of Clone 2 of Donor T3V in Table 3
SEQ ID NO:271	CDR2 of β -chain of Clone 3 of Donor T3V in Table 3
SEQ ID NO:272	CDR2 of β -chain of Clone 1 of Donor P6G in Table 3
SEQ ID NO:273	CDR2 of β -chain of Clone 2 of Donor P6G in Table 3
SEQ ID NO:274	CDR2 of β -chain of Clone 3 of Donor P6G in Table 3
SEQ ID NO:275	CDR2 of β -chain of Clone 1 of Donor A4T in Table 3
SEQ ID NO:276	CDR2 of β -chain of Clone 1 of Donor D2M in Table 4
SEQ ID NO:277	CDR2 of β -chain of Clone 2 of Donor D2M in Table 4
SEQ ID NO:278	CDR2 of β -chain of Clone 3 of Donor D2M in Table 4
SEQ ID NO:279	CDR2 of β -chain of Clone 1 of Donor B31 in Table 4
SEQ ID NO:280	CDR2 of β -chain of Clone 2 of Donor B31 in Table 4
SEQ ID NO:281	CDR2 of β -chain of Clone 3 of Donor B31 in Table 4

SEQ ID NO:282	CDR2 of β -chain of Clone 4 of Donor B31 in Table 4
SEQ ID NO:283	CDR2 of β -chain of Clone 5 of Donor B31 in Table 4
SEQ ID NO:284	CDR2 of β -chain of Clone 6 of Donor B31 in Table 4
SEQ ID NO:285	CDR2 of β -chain of Clone 1 of Donor Y6W in Table 4
SEQ ID NO:286	CDR2 of β -chain of Clone 2 of Donor Y6W in Table 4
SEQ ID NO:287	CDR2 of β -chain of Clone 3 of Donor Y6W in Table 4
SEQ ID NO:288	CDR2 of β -chain of Clone 1 of Donor B33 in Table 5
SEQ ID NO:289	CDR2 of β -chain of Clone 1 of Donor B5F in Table 5
SEQ ID NO:290	CDR2 of β -chain of Clone 1 of Donor Y6W in Table 5
SEQ ID NO:291	CDR2 of β -chain of Clone 2 of Donor Y6W in Table 5
SEQ ID NO:292	CDR2 of β -chain of Clone 3 of Donor Y6W in Table 5
SEQ ID NO:293	CDR2 of β -chain of Clone 4 of Donor Y6W in Table 5
SEQ ID NO:294	CDR2 of β -chain of Clone 5 of Donor Y6W in Table 5
SEQ ID NO:295	CDR2 of β -chain of Clone 6 of Donor Y6W in Table 5
SEQ ID NO:296	CDR2 of β -chain of Clone 7 of Donor Y6W in Table 5
SEQ ID NO:297	CDR2 of β -chain of Clone 8 of Donor Y6W in Table 5
SEQ ID NO:298	CDR2 of β -chain of Clone 9 of Donor Y6W in Table 5
SEQ ID NO:299	CDR2 of β -chain of Clone 10 of Donor Y6W in Table 5
SEQ ID NO:300	CDR2 of β -chain of Clone 11 of Donor Y6W in Table 5
SEQ ID NO:301	CDR2 of β -chain of Clone 12 of Donor Y6W in Table 5
SEQ ID NO:302	CDR2 of β -chain of Clone 13 of Donor Y6W in Table 5
SEQ ID NO:303	CDR2 of β -chain of Clone 14 of Donor Y6W in Table 5
SEQ ID NO:304	CDR2 of β -chain of Clone 15 of Donor Y6W in Table 5
SEQ ID NO:305	CDR2 of β -chain of Clone 1 of Donor N2W in Table 6
SEQ ID NO:306	CDR2 of β -chain of Clone 2 of Donor N2W in Table 6
SEQ ID NO:307	CDR2 of β -chain of Clone 3 of Donor N2W in Table 6
SEQ ID NO:308	CDR2 of β -chain of Clone 4 of Donor N2W in Table 6
SEQ ID NO:309	CDR2 of β -chain of Clone 5 of Donor N2W in Table 6
SEQ ID NO:310	CDR2 of β -chain of Clone 6 of Donor N2W in Table 6
SEQ ID NO:311	CDR2 of β -chain of Clone 1 of Donor B87 in Table 6
SEQ ID NO:312	CDR2 of β -chain of Clone 2 of Donor B87 in Table 6
SEQ ID NO:313	CDR2 of β -chain of Clone 3 of Donor B87 in Table 6
SEQ ID NO:314	CDR2 of β -chain of Clone 1 of Donor J9B in Table 7
SEQ ID NO:315	CDR2 of β -chain of Clone 2 of Donor J9B in Table 7

SEQ ID NO:316	CDR2 of β -chain of Clone 1 of Donor A5L in Table 7
SEQ ID NO:317	CDR2 of β -chain of Clone 2 of Donor A5L in Table 7
SEQ ID NO:318	CDR2 of β -chain of Clone 3 of Donor A5L in Table 7
SEQ ID NO:319	CDR2 of β -chain of Clone 4 of Donor A5L in Table 7
SEQ ID NO:320	CDR2 of β -chain of Clone 5 of Donor A5L in Table 7
SEQ ID NO:321	CDR2 of β -chain of Clone 6 of Donor A5L in Table 7
SEQ ID NO:322	CDR2 of β -chain of Clone 7 of Donor A5L in Table 7
SEQ ID NO:323	CDR2 of β -chain of Clone 8 of Donor A5L in Table 7
SEQ ID NO:324	CDR2 of β -chain of Clone 9 of Donor A5L in Table 7
SEQ ID NO:325	CDR2 of β -chain of Clone 1 of Donor T4W in Table 7
SEQ ID NO:326	CDR2 of β -chain of Clone 2 of Donor T4W in Table 7
SEQ ID NO:327	CDR2 of β -chain of Clone 3 of Donor T4W in Table 7
SEQ ID NO:328	CDR2 of β -chain of Clone 4 of Donor T4W in Table 7
SEQ ID NO:329	CDR2 of β -chain of Clone 5 of Donor T4W in Table 7
SEQ ID NO:330	CDR2 of β -chain of Clone 6 of Donor T4W in Table 7
SEQ ID NO:331	CDR3 of α -chain of Clone 1 of Donor N3M in Table 2
SEQ ID NO:332	CDR3 of α -chain of Clone 1 of Donor B24 in Table 2
SEQ ID NO:333	CDR3 of α -chain of Clone 2 of Donor B24 in Table 2
SEQ ID NO:334	CDR3 of α -chain of Clone 3 of Donor B24 in Table 2
SEQ ID NO:335	CDR3 of α -chain of Clone 4 of Donor B24 in Table 2
SEQ ID NO:336	CDR3 of α -chain of Clone 1 of Donor A5L in Table 2
SEQ ID NO:337	CDR3 of α -chain of Clone 2 of Donor A5L in Table 2
SEQ ID NO:338	CDR3 of α -chain of Clone 3 of Donor A5L in Table 2
SEQ ID NO:339	CDR3 of α -chain of Clone 4 of Donor A5L in Table 2
SEQ ID NO:340	CDR3 of α -chain of Clone 5 of Donor A5L in Table 2
SEQ ID NO:341	CDR3 of α -chain of Clone 1 of Donor B31 in Table 2
SEQ ID NO:342	CDR3 of α -chain of Clone 2 of Donor B31 in Table 2
SEQ ID NO:343	CDR3 of α -chain of Clone 1 of Donor R7Z in Table 3
SEQ ID NO:344	CDR3 of α -chain of Clone 2 of Donor R7Z in Table 3
SEQ ID NO:345	CDR3 of α -chain of Clone 3 of Donor R7Z in Table 3
SEQ ID NO:346	CDR3 of α -chain of Clone 4 of Donor R7Z in Table 3
SEQ ID NO:347	CDR3 of α -chain of Clone 5 of Donor R7Z in Table 3
SEQ ID NO:348	CDR3 of α -chain of Clone 1 of Donor B5F in Table 3
SEQ ID NO:349	CDR3 of α -chain of Clone 2 of Donor B5F in Table 3

SEQ ID NO:350	CDR3 of α -chain of Clone 1 of Donor T3V in Table 3
SEQ ID NO:351	CDR3 of α -chain of Clone 2 of Donor T3V in Table 3
SEQ ID NO:352	CDR3 of α -chain of Clone 3 of Donor T3V in Table 3
SEQ ID NO:353	CDR3 of α -chain of Clone 1 of Donor P6G in Table 3
SEQ ID NO:354	CDR3 of α -chain of Clone 2 of Donor P6G in Table 3
SEQ ID NO:355	CDR3 of α -chain of Clone 3 of Donor P6G in Table 3
SEQ ID NO:356	CDR3 of α -chain of Clone 1 of Donor A4T in Table 3
SEQ ID NO:357	CDR3 of α -chain of Clone 1 of Donor D2M in Table 4
SEQ ID NO:358	CDR3 of α -chain of Clone 2 of Donor D2M in Table 4
SEQ ID NO:359	CDR3 of α -chain of Clone 3 of Donor D2M in Table 4
SEQ ID NO:360	CDR3 of α -chain of Clone 1 of Donor B31 in Table 4
SEQ ID NO:361	CDR3 of α -chain of Clone 2 of Donor B31 in Table 4
SEQ ID NO:362	CDR3 of α -chain of Clone 3 of Donor B31 in Table 4
SEQ ID NO:363	CDR3 of α -chain of Clone 4 of Donor B31 in Table 4
SEQ ID NO:364	CDR3 of α -chain of Clone 5 of Donor B31 in Table 4
SEQ ID NO:365	CDR3 of α -chain of Clone 6 of Donor B31 in Table 4
SEQ ID NO:366	CDR3 of α -chain of Clone 1 of Donor Y6W in Table 4
SEQ ID NO:367	CDR3 of α -chain of Clone 2 of Donor Y6W in Table 4
SEQ ID NO:368	CDR3 of α -chain of Clone 3 of Donor Y6W in Table 4
SEQ ID NO:369	CDR3 of α -chain of Clone 1 of Donor B33 in Table 5
SEQ ID NO:370	CDR3 of α -chain of Clone 1 of Donor B5F in Table 5
SEQ ID NO:371	CDR3 of α -chain of Clone 1 of Donor Y6W in Table 5
SEQ ID NO:372	CDR3 of α -chain of Clone 2 of Donor Y6W in Table 5
SEQ ID NO:373	CDR3 of α -chain of Clone 3 of Donor Y6W in Table 5
SEQ ID NO:374	CDR3 of α -chain of Clone 4 of Donor Y6W in Table 5
SEQ ID NO:375	CDR3 of α -chain of Clone 5 of Donor Y6W in Table 5
SEQ ID NO:376	CDR3 of α -chain of Clone 6 of Donor Y6W in Table 5
SEQ ID NO:377	CDR3 of α -chain of Clone 7 of Donor Y6W in Table 5
SEQ ID NO:378	CDR3 of α -chain of Clone 8 of Donor Y6W in Table 5
SEQ ID NO:379	CDR3 of α -chain of Clone 9 of Donor Y6W in Table 5
SEQ ID NO:380	CDR3 of α -chain of Clone 10 of Donor Y6W in Table 5
SEQ ID NO:381	CDR3 of α -chain of Clone 11 of Donor Y6W in Table 5
SEQ ID NO:382	CDR3 of α -chain of Clone 12 of Donor Y6W in Table 5
SEQ ID NO:383	CDR3 of α -chain of Clone 13 of Donor Y6W in Table 5

SEQ ID NO:384	CDR3 of α -chain of Clone 14 of Donor Y6W in Table 5
SEQ ID NO:385	CDR3 of α -chain of Clone 15 of Donor Y6W in Table 5
SEQ ID NO:386	CDR3 of α -chain of Clone 1 of Donor N2W in Table 6
SEQ ID NO:387	CDR3 of α -chain of Clone 2 of Donor N2W in Table 6
SEQ ID NO:388	CDR3 of α -chain of Clone 3 of Donor N2W in Table 6
SEQ ID NO:389	CDR3 of α -chain of Clone 4 of Donor N2W in Table 6
SEQ ID NO:390	CDR3 of α -chain of Clone 5 of Donor N2W in Table 6
SEQ ID NO:391	CDR3 of α -chain of Clone 6 of Donor N2W in Table 6
SEQ ID NO:392	CDR3 of α -chain of Clone 1 of Donor B87 in Table 6
SEQ ID NO:393	CDR3 of α -chain of Clone 2 of Donor B87 in Table 6
SEQ ID NO:394	CDR3 of α -chain of Clone 3 of Donor B87 in Table 6
SEQ ID NO:395	CDR3 of α -chain of Clone 1 of Donor J9B in Table 7
SEQ ID NO:396	CDR3 of α -chain of Clone 2 of Donor J9B in Table 7
SEQ ID NO:397	CDR3 of α -chain of Clone 1 of Donor A5L in Table 7
SEQ ID NO:398	CDR3 of α -chain of Clone 2 of Donor A5L in Table 7
SEQ ID NO:399	CDR3 of α -chain of Clone 3 of Donor A5L in Table 7
SEQ ID NO:400	CDR3 of α -chain of Clone 4 of Donor A5L in Table 7
SEQ ID NO:401	CDR3 of α -chain of Clone 5 of Donor A5L in Table 7
SEQ ID NO:402	CDR3 of α -chain of Clone 6 of Donor A5L in Table 7
SEQ ID NO:403	CDR3 of α -chain of Clone 7 of Donor A5L in Table 7
SEQ ID NO:404	CDR3 of α -chain of Clone 8 of Donor A5L in Table 7
SEQ ID NO:405	CDR3 of α -chain of Clone 9 of Donor A5L in Table 7
SEQ ID NO:406	CDR3 of α -chain of Clone 1 of Donor T4W in Table 7
SEQ ID NO:407	CDR3 of α -chain of Clone 2 of Donor T4W in Table 7
SEQ ID NO:408	CDR3 of α -chain of Clone 3 of Donor T4W in Table 7
SEQ ID NO:409	CDR3 of α -chain of Clone 4 of Donor T4W in Table 7
SEQ ID NO:410	CDR3 of α -chain of Clone 5 of Donor T4W in Table 7
SEQ ID NO:411	CDR3 of α -chain of Clone 6 of Donor T4W in Table 7
SEQ ID NO:412	CDR3 of β -chain of Clone 1 of Donor N3M in Table 2
SEQ ID NO:413	CDR3 of β -chain of Clone 1 of Donor B24 in Table 2
SEQ ID NO:414	CDR3 of β -chain of Clone 2 of Donor B24 in Table 2
SEQ ID NO:415	CDR3 of β -chain of Clone 3 of Donor B24 in Table 2
SEQ ID NO:416	CDR3 of β -chain of Clone 4 of Donor B24 in Table 2
SEQ ID NO:417	CDR3 of β -chain of Clone 1 of Donor A5L in Table 2

SEQ ID NO:418	CDR3 of β -chain of Clone 2 of Donor A5L in Table 2
SEQ ID NO:419	CDR3 of β -chain of Clone 3 of Donor A5L in Table 2
SEQ ID NO:420	CDR3 of β -chain of Clone 4 of Donor A5L in Table 2
SEQ ID NO:421	CDR3 of β -chain of Clone 5 of Donor A5L in Table 2
SEQ ID NO:422	CDR3 of β -chain of Clone 1 of Donor B31 in Table 2
SEQ ID NO:423	CDR3 of β -chain of Clone 2 of Donor B31 in Table 2
SEQ ID NO:424	CDR3 of β -chain of Clone 1 of Donor R7Z in Table 3
SEQ ID NO:425	CDR3 of β -chain of Clone 2 of Donor R7Z in Table 3
SEQ ID NO:426	CDR3 of β -chain of Clone 3 of Donor R7Z in Table 3
SEQ ID NO:427	CDR3 of β -chain of Clone 4 of Donor R7Z in Table 3
SEQ ID NO:428	CDR3 of β -chain of Clone 5 of Donor R7Z in Table 3
SEQ ID NO:429	CDR3 of β -chain of Clone 1 of Donor B5F in Table 3
SEQ ID NO:430	CDR3 of β -chain of Clone 2 of Donor B5F in Table 3
SEQ ID NO:431	CDR3 of β -chain of Clone 1 of Donor T3V in Table 3
SEQ ID NO:432	CDR3 of β -chain of Clone 2 of Donor T3V in Table 3
SEQ ID NO:433	CDR3 of β -chain of Clone 3 of Donor T3V in Table 3
SEQ ID NO:434	CDR3 of β -chain of Clone 1 of Donor P6G in Table 3
SEQ ID NO:435	CDR3 of β -chain of Clone 2 of Donor P6G in Table 3
SEQ ID NO:436	CDR3 of β -chain of Clone 3 of Donor P6G in Table 3
SEQ ID NO:437	CDR3 of β -chain of Clone 1 of Donor A4T in Table 3
SEQ ID NO:438	CDR3 of β -chain of Clone 1 of Donor D2M in Table 4
SEQ ID NO:439	CDR3 of β -chain of Clone 2 of Donor D2M in Table 4
SEQ ID NO:440	CDR3 of β -chain of Clone 3 of Donor D2M in Table 4
SEQ ID NO:441	CDR3 of β -chain of Clone 1 of Donor B31 in Table 4
SEQ ID NO:442	CDR3 of β -chain of Clone 2 of Donor B31 in Table 4
SEQ ID NO:443	CDR3 of β -chain of Clone 3 of Donor B31 in Table 4
SEQ ID NO:444	CDR3 of β -chain of Clone 4 of Donor B31 in Table 4
SEQ ID NO:445	CDR3 of β -chain of Clone 5 of Donor B31 in Table 4
SEQ ID NO:446	CDR3 of β -chain of Clone 6 of Donor B31 in Table 4
SEQ ID NO:447	CDR3 of β -chain of Clone 1 of Donor Y6W in Table 4
SEQ ID NO:448	CDR3 of β -chain of Clone 2 of Donor Y6W in Table 4
SEQ ID NO:449	CDR3 of β -chain of Clone 3 of Donor Y6W in Table 4
SEQ ID NO:450	CDR3 of β -chain of Clone 1 of Donor B33 in Table 5
SEQ ID NO:451	CDR3 of β -chain of Clone 1 of Donor B5F in Table 5

SEQ ID NO:452	CDR3 of β -chain of Clone 1 of Donor Y6W in Table 5
SEQ ID NO:453	CDR3 of β -chain of Clone 2 of Donor Y6W in Table 5
SEQ ID NO:454	CDR3 of β -chain of Clone 3 of Donor Y6W in Table 5
SEQ ID NO:455	CDR3 of β -chain of Clone 4 of Donor Y6W in Table 5
SEQ ID NO:456	CDR3 of β -chain of Clone 5 of Donor Y6W in Table 5
SEQ ID NO:457	CDR3 of β -chain of Clone 6 of Donor Y6W in Table 5
SEQ ID NO:458	CDR3 of β -chain of Clone 7 of Donor Y6W in Table 5
SEQ ID NO:459	CDR3 of β -chain of Clone 8 of Donor Y6W in Table 5
SEQ ID NO:460	CDR3 of β -chain of Clone 9 of Donor Y6W in Table 5
SEQ ID NO:461	CDR3 of β -chain of Clone 10 of Donor Y6W in Table 5
SEQ ID NO:462	CDR3 of β -chain of Clone 11 of Donor Y6W in Table 5
SEQ ID NO:463	CDR3 of β -chain of Clone 12 of Donor Y6W in Table 5
SEQ ID NO:464	CDR3 of β -chain of Clone 13 of Donor Y6W in Table 5
SEQ ID NO:465	CDR3 of β -chain of Clone 14 of Donor Y6W in Table 5
SEQ ID NO:466	CDR3 of β -chain of Clone 15 of Donor Y6W in Table 5
SEQ ID NO:467	CDR3 of β -chain of Clone 1 of Donor N2W in Table 6
SEQ ID NO:468	CDR3 of β -chain of Clone 2 of Donor N2W in Table 6
SEQ ID NO:469	CDR3 of β -chain of Clone 3 of Donor N2W in Table 6
SEQ ID NO:470	CDR3 of β -chain of Clone 4 of Donor N2W in Table 6
SEQ ID NO:471	CDR3 of β -chain of Clone 5 of Donor N2W in Table 6
SEQ ID NO:472	CDR3 of β -chain of Clone 6 of Donor N2W in Table 6
SEQ ID NO:473	CDR3 of β -chain of Clone 1 of Donor B87 in Table 6
SEQ ID NO:474	CDR3 of β -chain of Clone 2 of Donor B87 in Table 6
SEQ ID NO:475	CDR3 of β -chain of Clone 3 of Donor B87 in Table 6
SEQ ID NO:476	CDR3 of β -chain of Clone 1 of Donor J9B in Table 7
SEQ ID NO:477	CDR3 of β -chain of Clone 2 of Donor J9B in Table 7
SEQ ID NO:478	CDR3 of β -chain of Clone 1 of Donor A5L in Table 7
SEQ ID NO:479	CDR3 of β -chain of Clone 2 of Donor A5L in Table 7
SEQ ID NO:480	CDR3 of β -chain of Clone 3 of Donor A5L in Table 7
SEQ ID NO:481	CDR3 of β -chain of Clone 4 of Donor A5L in Table 7
SEQ ID NO:482	CDR3 of β -chain of Clone 5 of Donor A5L in Table 7
SEQ ID NO:483	CDR3 of β -chain of Clone 6 of Donor A5L in Table 7
SEQ ID NO:484	CDR3 of β -chain of Clone 7 of Donor A5L in Table 7
SEQ ID NO:485	CDR3 of β -chain of Clone 8 of Donor A5L in Table 7

SEQ ID NO:486	CDR3 of β -chain of Clone 9 of Donor A5L in Table 7
SEQ ID NO:487	CDR3 of β -chain of Clone 1 of Donor T4W in Table 7
SEQ ID NO:488	CDR3 of β -chain of Clone 2 of Donor T4W in Table 7
SEQ ID NO:489	CDR3 of β -chain of Clone 3 of Donor T4W in Table 7
SEQ ID NO:490	CDR3 of β -chain of Clone 4 of Donor T4W in Table 7
SEQ ID NO:491	CDR3 of β -chain of Clone 5 of Donor T4W in Table 7
SEQ ID NO:492	CDR3 of β -chain of Clone 6 of Donor T4W in Table 7
SEQ ID NO:493	nucleotide sequence α -chain of Clone 1 of Donor N3M in Fig 13
SEQ ID NO:494	nucleotide sequence of α -chain of Clone 1 of Donor B24 in Fig 14
SEQ ID NO:495	nucleotide sequence of α -chain of Clone 2 of Donor B24 in Fig 15
SEQ ID NO:496	nucleotide sequence of α -chain of Clone 3 of Donor B24 in Fig 16
SEQ ID NO:497	nucleotide sequence of α -chain of Clone 4 of Donor B24 in Fig 17
SEQ ID NO:498	nucleotide sequence of α -chain of Clone 1 of Donor A5L in Fig 18
SEQ ID NO:499	nucleotide sequence of α -chain of Clone 2 of Donor A5L in Fig 19
SEQ ID NO:500	nucleotide sequence of α -chain of Clone 3 of Donor A5L in Fig 20
SEQ ID NO:501	nucleotide sequence of α -chain of Clone 4 of Donor A5L in Fig 21
SEQ ID NO:502	nucleotide sequence of α -chain of Clone 5 of Donor A5L in Fig 22
SEQ ID NO:503	nucleotide sequence of α -chain of Clone 1 of Donor B31 in Fig 23
SEQ ID NO:504	nucleotide sequence of α -chain of Clone 2 of Donor B31 in Fig 24
SEQ ID NO:505	nucleotide sequence of α -chain of Clone 1 of Donor R7Z in Fig 25
SEQ ID NO:506	nucleotide sequence of α -chain of Clone 2 of Donor R7Z in Fig 26
SEQ ID NO:507	nucleotide sequence of α -chain of Clone 3 of Donor R7Z in Fig 27
SEQ ID NO:508	nucleotide sequence of α -chain of Clone 4 of Donor R7Z in Fig 28
SEQ ID NO:509	nucleotide sequence of α -chain of Clone 5 of Donor R7Z in Fig 29
SEQ ID NO:510	nucleotide sequence of α -chain of Clone 1 of Donor B5F in Fig 30
SEQ ID NO:511	nucleotide sequence of α -chain of Clone 2 of Donor B5F in Fig 31
SEQ ID NO:512	nucleotide sequence of α -chain of Clone 1 of Donor T3V in Fig 32
SEQ ID NO:513	nucleotide sequence of α -chain of Clone 2 of Donor T3V in Fig 33
SEQ ID NO:514	nucleotide sequence of α -chain of Clone 3 of Donor T3V in Fig 34
SEQ ID NO:515	nucleotide sequence of α -chain of Clone 1 of Donor P6G in Fig 35
SEQ ID NO:516	nucleotide sequence of α -chain of Clone 2 of Donor P6G in Fig 36
SEQ ID NO:517	nucleotide sequence of α -chain of Clone 3 of Donor P6G in Fig 37
SEQ ID NO:518	nucleotide sequence of α -chain of Clone 1 of Donor A4T in Fig 38
SEQ ID NO:519	nucleotide sequence α -chain of Clone 1 of Donor D2M in Fig 39

SEQ ID NO:520	nucleotide sequence α -chain of Clone 2 of Donor D2M in Fig 40
SEQ ID NO:521	nucleotide sequence α -chain of Clone 3 of Donor D2M in Fig 41
SEQ ID NO:522	nucleotide sequence of α -chain of Clone 1 of Donor B31 in Fig 42
SEQ ID NO:523	nucleotide sequence of α -chain of Clone 2 of Donor B31 in Fig 43
SEQ ID NO:524	nucleotide sequence of α -chain of Clone 3 of Donor B31 in Fig 44
SEQ ID NO:525	nucleotide sequence of α -chain of Clone 4 of Donor B31 in Fig 45
SEQ ID NO:526	nucleotide sequence of α -chain of Clone 5 of Donor B31 in Fig 46
SEQ ID NO:527	nucleotide sequence of α -chain of Clone 6 of Donor B31 in Fig 47
SEQ ID NO:528	nucleotide sequence α -chain of Clone 1 of Donor Y6W in Fig 48
SEQ ID NO:529	nucleotide sequence α -chain of Clone 2 of Donor Y6W in Fig 49
SEQ ID NO:530	nucleotide sequence α -chain of Clone 3 of Donor Y6W in Fig 50
SEQ ID NO:531	nucleotide sequence of α -chain of Clone 1 of Donor B33 in Fig 51
SEQ ID NO:532	nucleotide sequence of α -chain of Clone 1 of Donor B5F in Fig 52
SEQ ID NO:533	nucleotide sequence α -chain of Clone 1 of Donor Y6W in Fig 53
SEQ ID NO:534	nucleotide sequence α -chain of Clone 2 of Donor Y6W in Fig 54
SEQ ID NO:535	nucleotide sequence α -chain of Clone 3 of Donor Y6W in Fig 55
SEQ ID NO:536	nucleotide sequence α -chain of Clone 4 of Donor Y6W in Fig 56
SEQ ID NO:537	nucleotide sequence α -chain of Clone 5 of Donor Y6W in Fig 57
SEQ ID NO:538	nucleotide sequence α -chain of Clone 6 of Donor Y6W in Fig 58
SEQ ID NO:539	nucleotide sequence α -chain of Clone 7 of Donor Y6W in Fig 59
SEQ ID NO:540	nucleotide sequence α -chain of Clone 8 of Donor Y6W in Fig 60
SEQ ID NO:541	nucleotide sequence α -chain of Clone 9 of Donor Y6W in Fig 61
SEQ ID NO:542	nucleotide sequence α -chain of Clone 10 of Donor Y6W in Fig 62
SEQ ID NO:543	nucleotide sequence α -chain of Clone 11 of Donor Y6W in Fig 63
SEQ ID NO:544	nucleotide sequence α -chain of Clone 12 of Donor Y6W in Fig 64
SEQ ID NO:545	nucleotide sequence α -chain of Clone 13 of Donor Y6W in Fig 65
SEQ ID NO:546	nucleotide sequence α -chain of Clone 14 of Donor Y6W in Fig 66
SEQ ID NO:547	nucleotide sequence α -chain of Clone 15 of Donor Y6W in Fig 67
SEQ ID NO:548	nucleotide sequence α -chain of Clone 1 of Donor N2W in Fig 68
SEQ ID NO:549	nucleotide sequence α -chain of Clone 2 of Donor N2W in Fig 69
SEQ ID NO:550	nucleotide sequence α -chain of Clone 3 of Donor N2W in Fig 70
SEQ ID NO:551	nucleotide sequence α -chain of Clone 4 of Donor N2W in Fig 71
SEQ ID NO:552	nucleotide sequence α -chain of Clone 5 of Donor N2W in Fig 72
SEQ ID NO:553	nucleotide sequence α -chain of Clone 6 of Donor N2W in Fig 73

SEQ ID NO:554	nucleotide sequence α -chain of Clone 1 of Donor B87 in Fig 74
SEQ ID NO:555	nucleotide sequence α -chain of Clone 2 of Donor B87 in Fig 75
SEQ ID NO:556	nucleotide sequence α -chain of Clone 3 of Donor B87 in Fig 76
SEQ ID NO:557	nucleotide sequence α -chain of Clone 1 of Donor J9B in Fig 77
SEQ ID NO:558	nucleotide sequence α -chain of Clone 2 of Donor J9B in Fig 78
SEQ ID NO:559	nucleotide sequence α -chain of Clone 1 of Donor A5L in Fig 79
SEQ ID NO:560	nucleotide sequence α -chain of Clone 2 of Donor A5L in Fig 80
SEQ ID NO:561	nucleotide sequence α -chain of Clone 3 of Donor A5L in Fig 81
SEQ ID NO:562	nucleotide sequence α -chain of Clone 4 of Donor A5L in Fig 82
SEQ ID NO:563	nucleotide sequence α -chain of Clone 5 of Donor A5L in Fig 83
SEQ ID NO:564	nucleotide sequence α -chain of Clone 6 of Donor A5L in Fig 84
SEQ ID NO:565	nucleotide sequence α -chain of Clone 7 of Donor A5L in Fig 85
SEQ ID NO:566	nucleotide sequence α -chain of Clone 8 of Donor A5L in Fig 86
SEQ ID NO:567	nucleotide sequence α -chain of Clone 9 of Donor A5L in Fig 87
SEQ ID NO:568	nucleotide sequence α -chain of Clone 1 of Donor T4W in Fig 88
SEQ ID NO:569	nucleotide sequence α -chain of Clone 2 of Donor T4W in Fig 89
SEQ ID NO:570	nucleotide sequence α -chain of Clone 3 of Donor T4W in Fig 90
SEQ ID NO:571	nucleotide sequence α -chain of Clone 4 of Donor T4W in Fig 91
SEQ ID NO:572	nucleotide sequence α -chain of Clone 5 of Donor T4W in Fig 92
SEQ ID NO:573	nucleotide sequence α -chain of Clone 6 of Donor T4W in Fig 93
SEQ ID NO:574	nucleotide sequence β -chain of Clone 1 of Donor N3M in Fig 13
SEQ ID NO:575	nucleotide sequence of β -chain of Clone 1 of Donor B24 in Fig 14
SEQ ID NO:576	nucleotide sequence of β -chain of Clone 2 of Donor B24 in Fig 15
SEQ ID NO:577	nucleotide sequence of β -chain of Clone 3 of Donor B24 in Fig 16
SEQ ID NO:578	nucleotide sequence of β -chain of Clone 4 of Donor B24 in Fig 17
SEQ ID NO:579	nucleotide sequence of β -chain of Clone 1 of Donor A5L in Fig 18
SEQ ID NO:580	nucleotide sequence of β -chain of Clone 2 of Donor A5L in Fig 19
SEQ ID NO:581	nucleotide sequence of β -chain of Clone 3 of Donor A5L in Fig 20
SEQ ID NO:582	nucleotide sequence of β -chain of Clone 4 of Donor A5L in Fig 21
SEQ ID NO:583	nucleotide sequence of β -chain of Clone 5 of Donor A5L in Fig 22
SEQ ID NO:584	nucleotide sequence of β -chain of Clone 1 of Donor B31 in Fig 23
SEQ ID NO:585	nucleotide sequence of β -chain of Clone 2 of Donor B31 in Fig 24
SEQ ID NO:586	nucleotide sequence of β -chain of Clone 1 of Donor R7Z in Fig 25
SEQ ID NO:587	nucleotide sequence of β -chain of Clone 2 of Donor R7Z in Fig 26

SEQ ID NO:588	nucleotide sequence of β -chain of Clone 3 of Donor R7Z in Fig 27
SEQ ID NO:589	nucleotide sequence of β -chain of Clone 4 of Donor R7Z in Fig 28
SEQ ID NO:590	nucleotide sequence of β -chain of Clone 5 of Donor R7Z in Fig 29
SEQ ID NO:591	nucleotide sequence of β -chain of Clone 1 of Donor B5F in Fig 30
SEQ ID NO:592	nucleotide sequence of β -chain of Clone 2 of Donor B5F in Fig 31
SEQ ID NO:593	nucleotide sequence of β -chain of Clone 1 of Donor T3V in Fig 32
SEQ ID NO:594	nucleotide sequence of β -chain of Clone 2 of Donor T3V in Fig 33
SEQ ID NO:595	nucleotide sequence of β -chain of Clone 3 of Donor T3V in Fig 34
SEQ ID NO:596	nucleotide sequence of β -chain of Clone 1 of Donor P6G in Fig 35
SEQ ID NO:597	nucleotide sequence of β -chain of Clone 2 of Donor P6G in Fig 36
SEQ ID NO:598	nucleotide sequence of β -chain of Clone 3 of Donor P6G in Fig 37
SEQ ID NO:599	nucleotide sequence of β -chain of Clone 1 of Donor A4T in Fig 38
SEQ ID NO:600	nucleotide sequence β -chain of Clone 1 of Donor D2M in Fig 39
SEQ ID NO:601	nucleotide sequence β -chain of Clone 2 of Donor D2M in Fig 40
SEQ ID NO:602	nucleotide sequence β -chain of Clone 3 of Donor D2M in Fig 41
SEQ ID NO:603	nucleotide sequence of β -chain of Clone 1 of Donor B31 in Fig 42
SEQ ID NO:604	nucleotide sequence of β -chain of Clone 2 of Donor B31 in Fig 43
SEQ ID NO:605	nucleotide sequence of β -chain of Clone 3 of Donor B31 in Fig 44
SEQ ID NO:606	nucleotide sequence of β -chain of Clone 4 of Donor B31 in Fig 45
SEQ ID NO:607	nucleotide sequence of β -chain of Clone 5 of Donor B31 in Fig 46
SEQ ID NO:608	nucleotide sequence of β -chain of Clone 6 of Donor B31 in Fig 47
SEQ ID NO:609	nucleotide sequence β -chain of Clone 1 of Donor Y6W in Fig 48
SEQ ID NO:610	nucleotide sequence β -chain of Clone 2 of Donor Y6W in Fig 49
SEQ ID NO:611	nucleotide sequence β -chain of Clone 3 of Donor Y6W in Fig 50
SEQ ID NO:612	nucleotide sequence of β -chain of Clone 1 of Donor B33 in Fig 51
SEQ ID NO:613	nucleotide sequence of β -chain of Clone 1 of Donor B5F in Fig 52
SEQ ID NO:614	nucleotide sequence β -chain of Clone 1 of Donor Y6W in Fig 53
SEQ ID NO:615	nucleotide sequence β -chain of Clone 2 of Donor Y6W in Fig 54
SEQ ID NO:616	nucleotide sequence β -chain of Clone 3 of Donor Y6W in Fig 55
SEQ ID NO:617	nucleotide sequence β -chain of Clone 4 of Donor Y6W in Fig 56
SEQ ID NO:618	nucleotide sequence β -chain of Clone 5 of Donor Y6W in Fig 57
SEQ ID NO:619	nucleotide sequence β -chain of Clone 6 of Donor Y6W in Fig 58
SEQ ID NO:620	nucleotide sequence β -chain of Clone 7 of Donor Y6W in Fig 59
SEQ ID NO:621	nucleotide sequence β -chain of Clone 8 of Donor Y6W in Fig 60

SEQ ID NO:622	nucleotide sequence β -chain of Clone 9 of Donor Y6W in Fig 61
SEQ ID NO:623	nucleotide sequence β -chain of Clone 10 of Donor Y6W in Fig 62
SEQ ID NO:624	nucleotide sequence β -chain of Clone 11 of Donor Y6W in Fig 63
SEQ ID NO:625	nucleotide sequence β -chain of Clone 12 of Donor Y6W in Fig 64
SEQ ID NO:626	nucleotide sequence β -chain of Clone 13 of Donor Y6W in Fig 65
SEQ ID NO:627	nucleotide sequence β -chain of Clone 14 of Donor Y6W in Fig 66
SEQ ID NO:628	nucleotide sequence β -chain of Clone 15 of Donor Y6W in Fig 67
SEQ ID NO:629	nucleotide sequence β -chain of Clone 1 of Donor N2W in Fig 68
SEQ ID NO:630	nucleotide sequence β -chain of Clone 2 of Donor N2W in Fig 69
SEQ ID NO:631	nucleotide sequence β -chain of Clone 3 of Donor N2W in Fig 70
SEQ ID NO:632	nucleotide sequence β -chain of Clone 4 of Donor N2W in Fig 71
SEQ ID NO:633	nucleotide sequence β -chain of Clone 5 of Donor N2W in Fig 72
SEQ ID NO:634	nucleotide sequence β -chain of Clone 6 of Donor N2W in Fig 73
SEQ ID NO:635	nucleotide sequence β -chain of Clone 1 of Donor B87 in Fig 74
SEQ ID NO:636	nucleotide sequence β -chain of Clone 2 of Donor B87 in Fig 75
SEQ ID NO:637	nucleotide sequence β -chain of Clone 3 of Donor B87 in Fig 76
SEQ ID NO:638	nucleotide sequence β -chain of Clone 1 of Donor J9B in Fig 77
SEQ ID NO:639	nucleotide sequence β -chain of Clone 2 of Donor J9B in Fig 78
SEQ ID NO:640	nucleotide sequence β -chain of Clone 1 of Donor A5L in Fig 79
SEQ ID NO:641	nucleotide sequence β -chain of Clone 2 of Donor A5L in Fig 80
SEQ ID NO:642	nucleotide sequence β -chain of Clone 3 of Donor A5L in Fig 81
SEQ ID NO:643	nucleotide sequence β -chain of Clone 4 of Donor A5L in Fig 82
SEQ ID NO:644	nucleotide sequence β -chain of Clone 5 of Donor A5L in Fig 83
SEQ ID NO:645	nucleotide sequence β -chain of Clone 6 of Donor A5L in Fig 84
SEQ ID NO:646	nucleotide sequence β -chain of Clone 7 of Donor A5L in Fig 85
SEQ ID NO:647	nucleotide sequence β -chain of Clone 8 of Donor A5L in Fig 86
SEQ ID NO:648	nucleotide sequence β -chain of Clone 9 of Donor A5L in Fig 87
SEQ ID NO:649	nucleotide sequence β -chain of Clone 1 of Donor T4W in Fig 88
SEQ ID NO:650	nucleotide sequence β -chain of Clone 2 of Donor T4W in Fig 89
SEQ ID NO:651	nucleotide sequence β -chain of Clone 3 of Donor T4W in Fig 90
SEQ ID NO:652	nucleotide sequence β -chain of Clone 4 of Donor T4W in Fig 91
SEQ ID NO:653	nucleotide sequence β -chain of Clone 5 of Donor T4W in Fig 92
SEQ ID NO:654	nucleotide sequence β -chain of Clone 6 of Donor T4W in Fig 93
SEQ ID NO:655	amino acid sequence α -chain of Clone 1 of Donor N3M in Fig 94

SEQ ID NO:656	amino acid sequence of α -chain of Clone 1 of Donor B24 in Fig 94
SEQ ID NO:657	amino acid sequence of α -chain of Clone 2 of Donor B24 in Fig 94
SEQ ID NO:658	amino acid sequence of α -chain of Clone 3 of Donor B24 in Fig 94
SEQ ID NO:659	amino acid sequence α -chain of Clone 4 of Donor B24 in Fig 94
SEQ ID NO:660	amino acid sequence α -chain of Clone 1 of Donor A5L in Fig 94
SEQ ID NO:661	amino acid sequence α -chain of Clone 2 of Donor A5L in Fig 94
SEQ ID NO:662	amino acid sequence α -chain of Clone 3 of Donor A5L in Fig 94
SEQ ID NO:663	amino acid sequence α -chain of Clone 4 of Donor A5L in Fig 94
SEQ ID NO:664	amino acid sequence α -chain of Clone 5 of Donor A5L in Fig 94
SEQ ID NO:665	amino acid sequence of α -chain of Clone 1 of Donor B31 in Fig 94
SEQ ID NO:666	amino acid sequence of α -chain of Clone 2 of Donor B31 in Fig 95
SEQ ID NO:667	amino acid sequence of α -chain of Clone 1 of Donor R7Z in Fig 95
SEQ ID NO:668	amino acid sequence of α -chain of Clone 2 of Donor R7Z in Fig 95
SEQ ID NO:669	amino acid sequence of α -chain of Clone 3 of Donor R7Z in Fig 95
SEQ ID NO:670	amino acid sequence of α -chain of Clone 4 of Donor R7Z in Fig 95
SEQ ID NO:671	amino acid sequence of α -chain of Clone 5 of Donor R7Z in Fig 95
SEQ ID NO:672	amino acid sequence of α -chain of Clone 1 of Donor B5F in Fig 95
SEQ ID NO:673	amino acid sequence of α -chain of Clone 2 of Donor B5F in Fig 95
SEQ ID NO:674	amino acid sequence α -chain of Clone 1 of Donor T3V in Fig 95
SEQ ID NO:675	amino acid sequence α -chain of Clone 2 of Donor T3V in Fig 95
SEQ ID NO:676	amino acid sequence α -chain of Clone 3 of Donor T3V in Fig 95
SEQ ID NO:677	amino acid sequence α -chain of Clone 1 of Donor P6G in Fig 95
SEQ ID NO:678	amino acid sequence α -chain of Clone 2 of Donor P6G in Fig 95
SEQ ID NO:679	amino acid sequence α -chain of Clone 3 of Donor P6G in Fig 95
SEQ ID NO:680	amino acid sequence α -chain of Clone 1 of Donor A4T in Fig 95
SEQ ID NO:681	amino acid sequence α -chain of Clone 1 of Donor D2M in Fig 96
SEQ ID NO:682	amino acid sequence α -chain of Clone 2 of Donor D2M in Fig 96
SEQ ID NO:683	amino acid sequence α -chain of Clone 3 of Donor D2M in Fig 96
SEQ ID NO:684	amino acid sequence of α -chain of Clone 1 of Donor B31 in Fig 96
SEQ ID NO:685	amino acid sequence of α -chain of Clone 2 of Donor B31 in Fig 96
SEQ ID NO:686	amino acid sequence of α -chain of Clone 3 of Donor B31 in Fig 96
SEQ ID NO:687	amino acid sequence of α -chain of Clone 4 of Donor B31 in Fig 96
SEQ ID NO:688	amino acid sequence of α -chain of Clone 5 of Donor B31 in Fig 96
SEQ ID NO:689	amino acid sequence of α -chain of Clone 6 of Donor B31 in Fig 96

SEQ ID NO:690	amino acid sequence α -chain of Clone 1 of Donor Y6W in Fig 96
SEQ ID NO:691	amino acid sequence α -chain of Clone 2 of Donor Y6W in Fig 96
SEQ ID NO:692	amino acid sequence α -chain of Clone 3 of Donor Y6W in Fig 96
SEQ ID NO:693	amino acid sequence of α -chain of Clone 1 of Donor B33 in Fig 97
SEQ ID NO:694	amino acid sequence of α -chain of Clone 1 of Donor B5F in Fig 97
SEQ ID NO:695	amino acid sequence α -chain of Clone 1 of Donor Y6W in Fig 97
SEQ ID NO:696	amino acid sequence α -chain of Clone 2 of Donor Y6W in Fig 97
SEQ ID NO:697	amino acid sequence α -chain of Clone 3 of Donor Y6W in Fig 97
SEQ ID NO:698	amino acid sequence α -chain of Clone 4 of Donor Y6W in Fig 97
SEQ ID NO:699	amino acid sequence α -chain of Clone 5 of Donor Y6W in Fig 97
SEQ ID NO:700	amino acid sequence α -chain of Clone 6 of Donor Y6W in Fig 97
SEQ ID NO:701	amino acid sequence α -chain of Clone 7 of Donor Y6W in Fig 97
SEQ ID NO:702	amino acid sequence α -chain of Clone 8 of Donor Y6W in Fig 97
SEQ ID NO:703	amino acid sequence α -chain of Clone 9 of Donor Y6W in Fig 97
SEQ ID NO:704	amino acid sequence α -chain of Clone 10 of Donor Y6W in Fig 97
SEQ ID NO:705	amino acid sequence α -chain of Clone 11 of Donor Y6W in Fig 97
SEQ ID NO:706	amino acid sequence α -chain of Clone 12 of Donor Y6W in Fig 97
SEQ ID NO:707	amino acid sequence α -chain of Clone 13 of Donor Y6W in Fig 97
SEQ ID NO:708	amino acid sequence α -chain of Clone 14 of Donor Y6W in Fig 97
SEQ ID NO:709	amino acid sequence α -chain of Clone 15 of Donor Y6W in Fig 97
SEQ ID NO:710	amino acid sequence α -chain of Clone 1 of Donor N2W in Fig 98
SEQ ID NO:711	amino acid sequence α -chain of Clone 2 of Donor N2W in Fig 98
SEQ ID NO:712	amino acid sequence α -chain of Clone 3 of Donor N2W in Fig 98
SEQ ID NO:713	amino acid sequence α -chain of Clone 4 of Donor N2W in Fig 98
SEQ ID NO:714	amino acid sequence α -chain of Clone 5 of Donor N2W in Fig 98
SEQ ID NO:715	amino acid sequence α -chain of Clone 6 of Donor N2W in Fig 98
SEQ ID NO:716	amino acid sequence of α -chain of Clone 1 of Donor B87 in Fig 98
SEQ ID NO:717	amino acid sequence of α -chain of Clone 2 of Donor B87 in Fig 98
SEQ ID NO:718	amino acid sequence of α -chain of Clone 3 of Donor B87 in Fig 98
SEQ ID NO:719	amino acid sequence of α -chain of Clone 1 of Donor J9B in Fig 99
SEQ ID NO:720	amino acid sequence α -chain of Clone 2 of Donor J9B in Fig 99
SEQ ID NO:721	amino acid sequence α -chain of Clone 1 of Donor A5L in Fig 99
SEQ ID NO:722	amino acid sequence α -chain of Clone 2 of Donor A5L in Fig 99
SEQ ID NO:723	amino acid sequence α -chain of Clone 3 of Donor A5L in Fig 99

SEQ ID NO:724	amino acid sequence α -chain of Clone 4 of Donor A5L in Fig 99
SEQ ID NO:725	amino acid sequence α -chain of Clone 5 of Donor A5L in Fig 99
SEQ ID NO:726	amino acid sequence α -chain of Clone 6 of Donor A5L in Fig 99
SEQ ID NO:727	amino acid sequence α -chain of Clone 7 of Donor A5L in Fig 99
SEQ ID NO:728	amino acid sequence α -chain of Clone 8 of Donor A5L in Fig 99
SEQ ID NO:729	amino acid sequence α -chain of Clone 9 of Donor A5L in Fig 99
SEQ ID NO:730	amino acid sequence α -chain of Clone 1 of Donor T4W in Fig 99
SEQ ID NO:731	amino acid sequence α -chain of Clone 2 of Donor T4W in Fig 99
SEQ ID NO:732	amino acid sequence α -chain of Clone 3 of Donor T4W in Fig 99
SEQ ID NO:733	amino acid sequence α -chain of Clone 4 of Donor T4W in Fig 99
SEQ ID NO:734	amino acid sequence α -chain of Clone 5 of Donor T4W in Fig 99
SEQ ID NO:735	amino acid sequence α -chain of Clone 6 of Donor T4W in Fig 99
SEQ ID NO:736	amino acid sequence β -chain of Clone 1 of Donor N3M in Fig 94
SEQ ID NO:737	amino acid sequence β -chain of Clone 1 of Donor B24 in Fig 94
SEQ ID NO:738	amino acid sequence β -chain of Clone 2 of Donor B24 in Fig 94
SEQ ID NO:739	amino acid sequence β -chain of Clone 3 of Donor B24 in Fig 94
SEQ ID NO:740	amino acid sequence β -chain of Clone 4 of Donor B24 in Fig 94
SEQ ID NO:741	amino acid sequence β -chain of Clone 1 of Donor A5L in Fig 94
SEQ ID NO:742	amino acid sequence β -chain of Clone 2 of Donor A5L in Fig 94
SEQ ID NO:743	amino acid sequence β -chain of Clone 3 of Donor A5L in Fig 94
SEQ ID NO:744	amino acid sequence β -chain of Clone 4 of Donor A5L in Fig 94
SEQ ID NO:745	amino acid sequence β -chain of Clone 5 of Donor A5L in Fig 94
SEQ ID NO:746	amino acid sequence β -chain of Clone 1 of Donor B31 in Fig 94
SEQ ID NO:747	amino acid sequence β -chain of Clone 2 of Donor B31 in Fig 94
SEQ ID NO:748	amino acid sequence β -chain of Clone 1 of Donor R7Z in Fig 95
SEQ ID NO:749	amino acid sequence β -chain of Clone 2 of Donor R7Z in Fig 95
SEQ ID NO:750	amino acid sequence β -chain of Clone 3 of Donor R7Z in Fig 95
SEQ ID NO:751	amino acid sequence β -chain of Clone 4 of Donor R7Z in Fig 95
SEQ ID NO:752	amino acid sequence β -chain of Clone 5 of Donor R7Z in Fig 95
SEQ ID NO:753	amino acid sequence β -chain of Clone 1 of Donor B5F in Fig 95
SEQ ID NO:754	amino acid sequence β -chain of Clone 2 of Donor B5F in Fig 95
SEQ ID NO:755	amino acid sequence β -chain of Clone 1 of Donor T3V in Fig 95
SEQ ID NO:756	amino acid sequence β -chain of Clone 2 of Donor T3V in Fig 95
SEQ ID NO:757	amino acid sequence β -chain of Clone 3 of Donor T3V in Fig 95

SEQ ID NO:758	amino acid sequence β -chain of Clone 1 of Donor P6G in Fig 95
SEQ ID NO:759	amino acid sequence β -chain of Clone 2 of Donor P6G in Fig 95
SEQ ID NO:760	amino acid sequence β -chain of Clone 3 of Donor P6G in Fig 95
SEQ ID NO:761	amino acid sequence β -chain of Clone 1 of Donor A4T in Fig 95
SEQ ID NO:762	amino acid sequence β -chain of Clone 1 of Donor D2M in Fig 96
SEQ ID NO:763	amino acid sequence β -chain of Clone 2 of Donor D2M in Fig 96
SEQ ID NO:764	amino acid sequence β -chain of Clone 3 of Donor D2M in Fig 96
SEQ ID NO:765	amino acid sequence β -chain of Clone 1 of Donor B31 in Fig 96
SEQ ID NO:766	amino acid sequence β -chain of Clone 2 of Donor B31 in Fig 96
SEQ ID NO:767	amino acid sequence β -chain of Clone 3 of Donor B31 in Fig 96
SEQ ID NO:768	amino acid sequence β -chain of Clone 4 of Donor B31 in Fig 96
SEQ ID NO:769	amino acid sequence β -chain of Clone 5 of Donor B31 in Fig 96
SEQ ID NO:770	amino acid sequence β -chain of Clone 6 of Donor B31 in Fig 96
SEQ ID NO:771	amino acid sequence β -chain of Clone 1 of Donor Y6W in Fig 96
SEQ ID NO:772	amino acid sequence β -chain of Clone 2 of Donor Y6W in Fig 96
SEQ ID NO:773	amino acid sequence β -chain of Clone 3 of Donor Y6W in Fig 96
SEQ ID NO:774	amino acid sequence β -chain of Clone 1 of Donor B33 in Fig 97
SEQ ID NO:775	amino acid sequence β -chain of Clone 1 of Donor B5F in Fig 97
SEQ ID NO:776	amino acid sequence β -chain of Clone 1 of Donor Y6W in Fig 97
SEQ ID NO:777	amino acid sequence β -chain of Clone 2 of Donor Y6W in Fig 97
SEQ ID NO:778	amino acid sequence β -chain of Clone 3 of Donor Y6W in Fig 97
SEQ ID NO:779	amino acid sequence β -chain of Clone 4 of Donor Y6W in Fig 97
SEQ ID NO:780	amino acid sequence β -chain of Clone 5 of Donor Y6W in Fig 97
SEQ ID NO:781	amino acid sequence β -chain of Clone 6 of Donor Y6W in Fig 97
SEQ ID NO:782	amino acid sequence β -chain of Clone 7 of Donor Y6W in Fig 97
SEQ ID NO:783	amino acid sequence β -chain of Clone 8 of Donor Y6W in Fig 97
SEQ ID NO:784	amino acid sequence β -chain of Clone 9 of Donor Y6W in Fig 97
SEQ ID NO:785	amino acid sequence β -chain of Clone 10 of Donor Y6W in Fig 97
SEQ ID NO:786	amino acid sequence β -chain of Clone 11 of Donor Y6W in Fig 97
SEQ ID NO:787	amino acid sequence β -chain of Clone 12 of Donor Y6W in Fig 97
SEQ ID NO:788	amino acid sequence β -chain of Clone 13 of Donor Y6W in Fig 97
SEQ ID NO:789	amino acid sequence β -chain of Clone 14 of Donor Y6W in Fig 97
SEQ ID NO:790	amino acid sequence β -chain of Clone 15 of Donor Y6W in Fig 97
SEQ ID NO:791	amino acid sequence β -chain of Clone 1 of Donor N2W in Fig 98

SEQ ID NO:792	amino acid sequence β -chain of Clone 2 of Donor N2W in Fig 98
SEQ ID NO:793	amino acid sequence β -chain of Clone 3 of Donor N2W in Fig 98
SEQ ID NO:794	amino acid sequence β -chain of Clone 4 of Donor N2W in Fig 98
SEQ ID NO:795	amino acid sequence β -chain of Clone 5 of Donor N2W in Fig 98
SEQ ID NO:796	amino acid sequence β -chain of Clone 6 of Donor N2W in Fig 98
SEQ ID NO:797	amino acid sequence β -chain of Clone 1 of Donor B87 in Fig 98
SEQ ID NO:798	amino acid sequence β -chain of Clone 2 of Donor B87 in Fig 98
SEQ ID NO:799	amino acid sequence β -chain of Clone 3 of Donor B87 in Fig 98
SEQ ID NO:800	amino acid sequence β -chain of Clone 1 of Donor J9B in Fig 99
SEQ ID NO:801	amino acid sequence β -chain of Clone 2 of Donor J9B in Fig 99
SEQ ID NO:802	amino acid sequence β -chain of Clone 1 of Donor A5L in Fig 99
SEQ ID NO:803	amino acid sequence β -chain of Clone 2 of Donor A5L in Fig 99
SEQ ID NO:804	amino acid sequence β -chain of Clone 3 of Donor A5L in Fig 99
SEQ ID NO:805	amino acid sequence β -chain of Clone 4 of Donor A5L in Fig 99
SEQ ID NO:806	amino acid sequence β -chain of Clone 5 of Donor A5L in Fig 99
SEQ ID NO:807	amino acid sequence β -chain of Clone 6 of Donor A5L in Fig 99
SEQ ID NO:808	amino acid sequence β -chain of Clone 7 of Donor A5L in Fig 99
SEQ ID NO:809	amino acid sequence β -chain of Clone 8 of Donor A5L in Fig 99
SEQ ID NO:810	amino acid sequence β -chain of Clone 9 of Donor A5L in Fig 99
SEQ ID NO:811	amino acid sequence β -chain of Clone 1 of Donor T4W in Fig 99
SEQ ID NO:812	amino acid sequence β -chain of Clone 2 of Donor T4W in Fig 99
SEQ ID NO:813	amino acid sequence β -chain of Clone 3 of Donor T4W in Fig 99
SEQ ID NO:814	amino acid sequence β -chain of Clone 4 of Donor T4W in Fig 99
SEQ ID NO:815	amino acid sequence β -chain of Clone 5 of Donor T4W in Fig 99
SEQ ID NO:816	amino acid sequence β -chain of Clone 6 of Donor T4W in Fig 99

DETAILED DESCRIPTION

The present invention arises, in part, from the identification of sequences of TCR complementarity determining regions (CDRs) that recognize epitopes derived from EBV antigens and presented in association with several frequently-occurring human leukocyte antigens. These TCRs may be particularly suitable for the production of genetically engineered T cells and their administration to humans to prevent and/or treat an EBV-associated disease, disorder or condition, such as an EBV-positive cancer.

In a first aspect, the invention provides an isolated alpha chain of a T-cell receptor (TCR) or a fragment thereof, comprising at least one complementarity determining region (CDR) amino acid sequence (e.g., a CDR3 amino acid sequence) according to any one of SEQ ID NOS:331-411 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.

For the purposes of this invention, the term “*isolated*” refers to material, such as the alpha chain, beta chain and TCR proteins or peptides described herein, that has been removed from its natural state or otherwise been subjected to human manipulation. Isolated material may be substantially or essentially free from components that normally accompany it in its natural state, or may be manipulated so as to be in an artificial state together with components that normally accompany it in its natural state. Isolated material may be in native, chemical synthetic or recombinant form. Isolated material may also, or alternatively, be in enriched, partially purified or purified form.

It will be understood that a T cell receptor or TCR is the molecule found on the surface of T cells that is responsible for recognizing antigenic peptides bound to MHC or HLA molecules. The TCR heterodimer typically includes an alpha chain and a beta chain in 95% of T cells, whereas 5% of T cells generally have TCRs consisting of gamma and delta chains.

With respect to the alpha and beta chains, these generally broadly comprise variable, joining and constant regions, and the beta chain also usually contains a short diversity region between the variable and joining regions, but this diversity region is often considered as part of the joining region. Each variable region comprises three CDRs (i.e., CDR1, CDR2 and CDR3) embedded in a framework sequence, one being the hypervariable region named CDR3. There are typically several types of alpha chain variable ($V\alpha$) regions and several types of beta chain variable ($V\beta$) regions known in the art and as distinguished by their framework, CDR1 and CDR2 sequences, and by a partly defined CDR3 sequence.

Accordingly, the alpha chain proteins or peptides of the present aspects, inclusive of fragments thereof, may further comprise one or more further CDR amino acid sequences, such as CDR1 and/or CDR2 amino acid sequences, according to any one of SEQ ID NOS:7-87 and 169-249 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.

In some embodiments, the alpha chain of the present aspect comprises,

consists essentially of, or consists of an amino acid sequence according to any one of SEQ ID NOS:655-735 and/or Figures 94 to 99, or an amino acid sequence at least 70% identical thereto.

In particular embodiments, the isolated alpha chain comprises a cysteine residue, such as at position 48 of a constant region thereof. It will be appreciated that such a cysteine substitution may form a disulphide bridge or bond (i.e., a linker) with a corresponding cysteine residue on a counterpart TCR beta chain, such as those described below, to assist in stabilising a TCR molecule derived therefrom.

It will be appreciated that the TCR alpha chain of the present invention may be a hybrid TCR alpha chain comprising sequences derived from more than one species, such as human and mouse. By way of example, it has surprisingly been found that exchanging the constant regions of human TCRs with the murine counterpart may improve function as well as expression levels on human T cells (see, *e.g.*, Sommermeyer and Uckert, J Immunol, 2010, which is incorporated by reference herein). The TCR may therefore comprise human-derived variable regions and murine-derived constant regions.

Accordingly, in particular embodiments, the isolated alpha chain comprises one or more amino acid substitutions at positions 90, 91, 92 and/or 93 of a constant region thereof. In particular embodiments, the isolated alpha chain comprises:

- (a) a P to S substitution at position 90;
- (b) an E to D substitution at position 91;
- (c) a S to V substitution at position 92; and/or
- (d) a S to P substitution at position 93.

In another aspect, the invention provides an isolated beta chain of a TCR or a fragment thereof, comprising at least one CDR amino acid sequence according to any one of SEQ ID NOS:412-492 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.

In some embodiments, the isolated beta chain or fragment thereof further comprises one or more further CDR amino acid sequences (*e.g.*, CDR1 and/or CDR2 amino acid sequences) according to any one of SEQ ID NOS:88-168 and 250-330 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.

In particular embodiments, the isolated beta chain of the present aspect comprises, consists essentially of, or consists of an amino acid sequence according to any one of SEQ ID NOS:736-816 and/or Figures 94 to 99, or an amino acid sequence

at least 70% identical thereto.

In one embodiment, the isolated beta chain comprises a cysteine residue, such as at position 57 of a constant region thereof. Again, it will be appreciated that such a cysteine substitution may form a disulphide bridge or bond (*i.e.*, a linker) with a corresponding cysteine residue on a counterpart TCR alpha chain.

Similar to that for the TCR alpha chain above, the TCR beta chain of the present invention may also be a hybrid TCR beta chain comprising sequences derived from more than one species, such as human and mouse. By way of example, the isolated beta chain may comprise one or more amino acid substitutions at positions 18, 22, 133, 136 and/or 139 of a constant region thereof. In particular embodiments, the isolated beta chain comprises:

- (a) an E to K substitution at position 18;
- (b) a S to A substitution at position 22;
- (c) a F to I substitution at position 133;
- (d) a V to A substitution at position 136; and/or
- (e) a Q to H substitution at position 139.

In another aspect, the invention provides an isolated TCR or TCR fragment for binding an antigen derived from an Epstein Barr Virus (EBV), the TCR or TCR fragment comprising:

- (i) an isolated alpha chain or fragment thereof according to the first mentioned aspect; and/or
- (ii) an isolated beta chain or fragment thereof according to the second mentioned aspect.

In view of the foregoing, the term "*T-cell receptor*" is used herein in a conventional manner to mean a molecule capable of recognising a peptide when presented by an MHC or HLA molecule. The molecule may be a heterodimer of two chains alpha (α) and beta (β) (or optionally gamma (γ) and delta (δ)) or it may be a single chain TCR construct.

In particular embodiments the antigen is derived, at least in part, from a latent membrane protein 1 (LMP-1) protein and/or a latent membrane protein 2 (LMP-2) protein (inclusive of fragments thereof) of EBV. In this regard, the TCR or TCR fragment may selectively bind to one or more epitopes or antigenic determinants derived from LMP-1 and/or LMP-2 (*i.e.*, demonstrates antigenic specificity) when presented by a MHC or HLA molecule. Accordingly, the TCR of the present

invention may recognize a full or partial amino acid sequence of LMP-1 and/or LMP 2 of EBV (*e.g.*, SEQ ID NOS: 1-6).

The phrase “*antigenic specificity*,” as used herein, means that the TCR (including functional portions and functional variants thereof) can specifically bind to and immunologically recognize one or more EBV antigens, such as those in SEQ ID NOS:1-6, with high avidity.

In certain embodiments, the alpha chain and beta chain of the T-cell receptor of the present aspect can be joined by a linker, such as those known in the art. By way of example, the linker can join the alpha and beta chains of the TCR of the invention by way of a disulphide bridge or bond.

Particular embodiments of isolated alpha chain, isolated beta chain and isolated TCR proteins comprise amino acid sequences set forth in SEQ ID NOS:655-816, and as shown in Figures 94 to 99, or an amino acid sequence at least 70% identical thereto.

In some embodiments, the TCR of the present aspect is or comprises a soluble TCR. It will be appreciated that soluble TCRs can be conjugated to immunostimulatory peptides and/or proteins, and/or moieties such as, but not limited, to CD3 agonists (*e.g.*, anti-CD3 antibodies). The CD3 antigen is present on mature human T-cells, thymocytes, and a subset of natural killer cells. It can be associated with the TCR so as to facilitate signal transduction of the TCR. Antibodies specific for the human CD3 antigen are well known in the art (see, *e.g.*, PCT International Patent Application Publication No. WO 2004/106380; U.S. Patent Application Publication No. 2004/0202657; U.S. Pat. No. 6,750,325; U.S. Pat. No. 6,706,265; Great Britain Patent Publication GB 224931 OA; Clark et al., 1988; U.S. Pat. No. 5,968,509; U.S. Patent Application Publication No. 2009/0117102).

Suitably, the soluble TCR may be included in one or more bi-specific immunotherapeutic agents such as ImmTACs (Immune mobilising TCRs against cancer) (Liddy, et al. (2012) Nat Med 18: 980- 987) or BiTEs (Bispecific T-cell engaging antibodies) (Baeuerle, et al. (2009). Curr Opin Mol Ther 11 (1): 22-30). ImmTACs represent bifunctional proteins that combine affinity monoclonal T-cell receptor (mTCR) targeting with a therapeutic mechanism of action (*e.g.*, an anti-CD3 scFv).

By “*protein*” is meant an amino acid polymer. The amino acids may be natural or non-natural amino acids, D- or L-amino acids as are well understood in the art.

The term “*protein*” includes and encompasses “*peptide*”, which is typically used to describe a protein having no more than fifty (50) amino acids and “*polypeptide*”, which is typically used to describe a protein having more than fifty (50) amino acids.

The invention also provides variants of the isolated alpha and beta chains and TCR proteins described herein.

As used herein, a protein “*variant*” shares a definable nucleotide or amino acid sequence relationship with an isolated protein or fragment disclosed herein. Preferably, protein variants share at least 25%, 30%, 35%, 40%, 45%, 50% or more preferably at least 55%, 60% or 65% or even more preferably 70%, 71%, 72%, 73%, 74%, 75%, 76%, 77%, 78%, 79%, 80%, 81%, 82%, 83%, 84%, 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98% or 99% sequence identity with an amino acid sequence of the invention, such as the amino acid sequence set forth in any one of SEQ ID NOS:7-492, 655-816, Tables 2-7 and Figures 94-99.

The “*variant*” proteins or fragments disclosed herein have one or more amino acids deleted or substituted by different amino acids. It is well understood in the art that some amino acids may be substituted or deleted without changing the activity of the immunogenic fragment and/or protein (conservative substitutions). For instance, the conservative amino acid substitution can be an acidic amino acid substituted for another acidic amino acid (e.g., Asp or Glu), an amino acid with a nonpolar side chain substituted for another amino acid with a nonpolar side chain (e.g., Ala, Gly, Val, Ile, Leu, Met, Phe, Pro, Trp, Val, etc.), a basic amino acid substituted for another basic amino acid (Lys, Arg, etc.), an amino acid with a polar side chain substituted for another amino acid with a polar side chain (Asn, Cys, Gln, Ser, Thr, Tyr, etc.), etc. Preferably, any amino acid changes should maintain or improve the capacity of the variants, such as functional variants, described herein to bind MHC or HLA molecules and/or an antigen presented thereby when compared to the parent or wildtype TCR, polypeptide, or protein.

The term “*variant*” also includes isolated proteins or fragments thereof disclosed herein, produced from, or comprising amino acid sequences of, naturally occurring (e.g., allelic) variants, orthologs (e.g., from a species other than humans) and synthetic variants, such as produced *in vitro* using mutagenesis techniques.

Variants may retain the biological activity of a corresponding wild type

protein (*e.g.*, allelic variants, paralogs and orthologs) or may lack, or have a substantially reduced, biological activity compared to a corresponding wild type protein.

Terms used generally herein to describe sequence relationships between respective proteins and nucleic acids include “*comparison window*”, “*sequence identity*”, “*percentage of sequence identity*” and “*substantial identity*”. Because respective nucleic acids/proteins may each comprise (1) only one or more portions of a complete nucleic acid/protein sequence that are shared by the nucleic acids/proteins, and (2) one or more portions which are divergent between the nucleic acids/proteins, sequence comparisons are typically performed by comparing sequences over a “comparison window” to identify and compare local regions of sequence similarity. A “*comparison window*” refers to a conceptual segment of typically 6, 9 or 12 contiguous residues that is compared to a reference sequence. The comparison window may comprise additions or deletions (*i.e.*, gaps) of about 20% or less as compared to the reference sequence for optimal alignment of the respective sequences. Optimal alignment of sequences for aligning a comparison window may be conducted by computerised implementations of algorithms (Geneworks program by Intelligenetics; GAP, BESTFIT, FASTA, and TFASTA in the Wisconsin Genetics Software Package Release 7.0, Genetics Computer Group, 575 Science Drive Madison, WI, USA, incorporated herein by reference) or by inspection and the best alignment (*i.e.* resulting in the highest percentage homology over the comparison window) generated by any of the various methods selected. Reference also may be made to the BLAST family of programs as for example disclosed by Altschul *et al.*, 1997, Nucl. Acids Res. **25** 3389, which is incorporated herein by reference. A detailed discussion of sequence analysis can be found in Unit 19.3 of CURRENT PROTOCOLS IN MOLECULAR BIOLOGY Eds. Ausubel *et al.* (John Wiley & Sons Inc NY, 1995-1999).

The term “*sequence identity*” is used herein in its broadest sense to include the number of exact nucleotide or amino acid matches having regard to an appropriate alignment using a standard algorithm, having regard to the extent that sequences are identical over a window of comparison. Thus, a “*percentage of sequence identity*” is calculated by comparing two optimally aligned sequences over the window of comparison, determining the number of positions at which the identical nucleic acid base (*e.g.*, A, T, C, G, I) occurs in both sequences to yield the number of matched

positions, dividing the number of matched positions by the total number of positions in the window of comparison (*i.e.*, the window size), and multiplying the result by 100 to yield the percentage of sequence identity. For example, “*sequence identity*” may be understood to mean the “match percentage” calculated by the DNASIS computer program (Version 2.5 for windows; available from Hitachi Software engineering Co., Ltd., South San Francisco, California, USA).

Derivatives of the alpha chain, beta chain and TCR proteins described herein are also provided.

As used herein, “*derivative*” proteins have been altered, for example by conjugation or complexing with other chemical moieties, by post-translational modification (*e.g.* phosphorylation, acetylation and the like), modification of glycosylation (*e.g.* adding, removing or altering glycosylation) and/or inclusion of additional amino acid sequences as would be understood in the art.

Additional amino acid sequences may include fusion partner amino acid sequences which create a fusion protein. By way of example, fusion partner amino acid sequences may assist in detection and/or purification of the isolated fusion protein. Non-limiting examples include metal-binding (*e.g.* polyhistidine) fusion partners, maltose binding protein (MBP), Protein A, glutathione S-transferase (GST), fluorescent protein sequences (*e.g.* GFP), epitope tags such as myc, FLAG and haemagglutinin tags.

Other derivatives contemplated by the invention include, but are not limited to, modification to side chains, incorporation of unnatural amino acids and/or their derivatives during peptide, or protein synthesis and the use of crosslinkers and other methods which impose conformational constraints on the immunogenic proteins, fragments and variants of the invention.

In this regard, the skilled person is referred to Chapter 15 of CURRENT PROTOCOLS IN PROTEIN SCIENCE, Eds. Coligan *et al.* (John Wiley & Sons NY 1995-2008) for more extensive methodology relating to chemical modification of proteins.

The isolated proteins, variants, fragments and/or derivatives of the present invention may be produced by any means known in the art, including but not limited to, chemical synthesis, recombinant DNA technology and proteolytic cleavage to produce peptide fragments.

Chemical synthesis is inclusive of solid phase and solution phase synthesis.

Such methods are well known in the art, although reference is made to examples of chemical synthesis techniques as provided in Chapter 9 of SYNTHETIC VACCINES Ed. Nicholson (Blackwell Scientific Publications) and Chapter 15 of CURRENT PROTOCOLS IN PROTEIN SCIENCE Eds. Coligan *et al.*, (John Wiley & Sons, Inc. NY USA 1995-2008). In this regard, reference is also made to International Publication WO 99/02550 and International Publication WO 97/45444.

In one preferred embodiment, the isolated alpha chain, the isolated beta chain and/or the isolated TCR proteins of the present invention are recombinant proteins.

Recombinant proteins may be conveniently prepared by a person skilled in the art using standard protocols as for example described in Sambrook *et al.*, MOLECULAR CLONING. A Laboratory Manual (Cold Spring Harbor Press, 1989), in particular Sections 16 and 17; CURRENT PROTOCOLS IN MOLECULAR BIOLOGY Eds. Ausubel *et al.*, (John Wiley & Sons, Inc. NY USA 1995-2008), in particular Chapters 10 and 16; and CURRENT PROTOCOLS IN PROTEIN SCIENCE Eds. Coligan *et al.*, (John Wiley & Sons, Inc. NY USA 1995-2008), in particular Chapters 1, 5 and 6.

In some aspects, the invention provides fragments of the isolated alpha chain, the isolated beta chain and the TCR proteins of the invention.

A “*fragment*” is a segment, domain, portion or region of a protein, which constitutes less than 100% of the amino acid sequence of the protein.

In general, fragments may comprise up to 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 200, 250, 300, 350, 400, 450, 550 or up to about 600 amino acids of an amino acid sequence.

Fragments of the invention can be produced by those methods hereinbefore described. Alternatively, fragments can be produced, for example, by digestion of an alpha chain, beta chain or TCR protein with proteinases such as endoLys-C, endoArg-C, endoGlu-C and V8-protease. The digested fragments can be purified by chromatographic techniques as are well known in the art.

Particular embodiments of the invention provide an immunogenic fragment of the isolated alpha chain, the isolated beta chain and/or the TCR of the invention. By “*immunogenic*” is meant capable of eliciting an immune response upon administration to an animal, such as a human, mouse or rabbit. The immune response may include the production, activation or stimulation of the innate and/or adaptive arms of the immune system inclusive of immune cells such as B and/or T lymphocytes, NK cells,

granulocytes, macrophages and dendritic cells and/or molecules such as antibodies, cytokines and chemokines, although without limitation thereto.

Accordingly, such immunogenic fragments may be suitable for the production of antibodies of the invention as hereinafter described. Preferably, the immunogenic fragment comprises the entire CDR3 sequence of any one of SEQ ID NOS:331-492 or those listed in Tables 2 to 7. The invention also provides an isolated protein comprising one or a plurality of the aforementioned immunogenic fragments, such as in the form of a "*polytope*" protein. For example, said immunogenic fragments may be present singly or as repeats, which also includes tandemly repeated fragments. Heterologous amino acid sequences (*e.g.* "spacer" amino acids) may also be included between one or a plurality of the immunogenic fragments present in said isolated protein.

In yet a further embodiment, the invention of the present aspect provides an isolated protein or peptide that consists of: (i) a segment, domain, portion or region (*e.g.*, a CDR) of one or more of the isolated alpha chain, the isolated beta chain and/or the TCR proteins described herein, such as those according to SEQ ID NOS:7-492, 655-816, Tables 2-7 and Figures 94-99, and inclusive of fragments, variants or derivatives thereof; and (ii) optionally one or more additional amino acid sequences. In this regard, the additional amino acid sequences are preferably heterologous amino acid sequences that can be at the N- and/or C-termini of the recited amino acid sequence of the aforementioned proteins, although without limitation thereto.

In another aspect, the present invention contemplates isolated nucleic acids that encode, or are complementary to a nucleic acid sequence which encodes, the isolated proteins (*e.g.*, alpha chain, beta chain and TCR proteins, inclusive of fragments, variants and derivatives thereof) disclosed herein.

Nucleotide sequences encoding the isolated proteins, isolated immunogenic fragments, variants, derivatives and polytopes of the invention may be readily deduced from one or more of the complete nucleic acid sequences provided herein (*see, e.g.*, SEQ ID NOS:493-654), although without limitation thereto.

This aspect also includes fragments, variants and derivatives of said isolated nucleic acid, such as those herein before described.

The term "*nucleic acid*" as used herein designates single- or double-stranded DNA and RNA. DNA includes genomic DNA and cDNA. RNA includes mRNA, RNA, RNAi, siRNA, cRNA and autocatalytic RNA. Nucleic acids may also be DNA-

RNA hybrids. A nucleic acid comprises a nucleotide sequence which typically includes nucleotides that comprise an A, G, C, T or U base. However, nucleotide sequences may include other bases such as inosine, methylcytosine, methylinosine, methyladenosine and/or thiouridine, although without limitation thereto.

Accordingly, in particular embodiments, the isolated nucleic acid is cDNA.

A “*polynucleotide*” is a nucleic acid having eighty (80) or more contiguous nucleotides, while an “*oligonucleotide*” has less than eighty (80) contiguous nucleotides.

A “*probe*” may be a single or double-stranded oligonucleotide or polynucleotide, suitably labelled for the purpose of detecting complementary sequences in Northern or Southern blotting, for example.

A “*primer*” is usually a single-stranded oligonucleotide, preferably having 15-50 contiguous nucleotides, which is capable of annealing to a complementary nucleic acid “template” and being extended in a template-dependent fashion by the action of a DNA polymerase such as *Taq* polymerase, RNA-dependent DNA polymerase or SequenaseTM.

Another particular aspect of the invention provides a variant of an isolated nucleic acid that encodes an isolated immunogenic fragment or protein of the invention.

In one embodiment, nucleic acid variants encode a variant of an isolated protein of the invention.

In another embodiment, nucleic acid variants share at least 40%, 45%, 50%, 55%, 60% or 65%, 66%, 67%, 68%, 69%, preferably at least 70%, 71%, 72%, 73%, 74% or 75%, more preferably at least 80%, 81%, 82%, 83%, 84%, or 85%, and even more preferably at least 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98% or 99% nucleotide sequence identity with an isolated nucleic acid of the invention.

In one particular embodiment, the isolated nucleic acid of the present aspect consists of: (a) a nucleic acid that: (i) encodes a segment, domain, portion or region of an isolated alpha chain protein, an isolated beta chain protein and/or an isolated TCR protein described herein, such as those according to SEQ ID NOS:7-492, 655-816, Tables 2-7 and Figures 94-99, and inclusive of variants or derivatives thereof; or (ii) comprises, consists essentially of, or consists of a nucleic acid sequence according to any one of SEQ ID NOS:493-654 or a nucleic acid sequence at least 70% identical thereto; and (b) optionally one or more additional nucleic acid sequences. In this

regard, the additional nucleic acid sequences are preferably heterologous nucleic acid sequences that can be at the 5' (5-prime) and/or 3' (3-prime) ends of the isolated nucleic acid sequence, although without limitation thereto.

The present invention also contemplates nucleic acids that have been modified such as by taking advantage of codon sequence redundancy. In a more particular example, codon usage may be modified to optimize expression of a nucleic acid in a particular organism or cell type.

The invention further provides use of modified purines (for example, inosine, methylinosine and methyladenosine) and modified pyrimidines (for example, thiouridine and methylcytosine) in nucleic acids of the invention.

It will be well appreciated by a person of skill in the art that the isolated nucleic acids of the invention can be conveniently prepared using standard protocols such as those described in Chapter 2 and Chapter 3 of CURRENT PROTOCOLS IN MOLECULAR BIOLOGY (Eds. Ausubel *et al.* John Wiley & Sons NY, 1995-2008).

In yet another embodiment, complementary nucleic acids hybridise to nucleic acids of the invention under high stringency conditions.

"Hybridise and Hybridisation" is used herein to denote the pairing of at least partly complementary nucleotide sequences to produce a DNA-DNA, RNA-RNA or DNA-RNA hybrid. Hybrid sequences comprising complementary nucleotide sequences occur through base-pairing.

"Stringency" as used herein, refers to temperature and ionic strength conditions, and presence or absence of certain organic solvents and/or detergents during hybridisation. The higher the stringency, the higher will be the required level of complementarity between hybridizing nucleotide sequences.

"Stringent conditions" designates those conditions under which only nucleic acid having a high frequency of complementary bases will hybridize.

Stringent conditions are well-known in the art, such as described in Chapters 2.9 and 2.10 of Ausubel *et al.*, *supra*, which are herein incorporated by reference. A skilled addressee will also recognize that various factors can be manipulated to optimize the specificity of the hybridization. Optimization of the stringency of the final washes can serve to ensure a high degree of hybridization.

Complementary nucleotide sequences may be identified by blotting techniques that include a step whereby nucleotides are immobilized on a matrix (preferably a synthetic membrane such as nitrocellulose), a hybridization step, and a detection step,

typically using a labelled probe or other complementary nucleic acid. Southern blotting is used to identify a complementary DNA sequence; Northern blotting is used to identify a complementary RNA sequence. Dot blotting and slot blotting can be used to identify complementary DNA/DNA, DNA/RNA or RNA/RNA polynucleotide sequences. Such techniques are well known by those skilled in the art, and have been described in Ausubel *et al.*, *supra*, at pages 2.9.1 through 2.9.20. According to such methods, Southern blotting involves separating DNA molecules according to size by gel electrophoresis, transferring the size-separated DNA to a synthetic membrane, and hybridizing the membrane bound DNA to a complementary nucleotide sequence. An alternative blotting step is used when identifying complementary nucleic acids in a cDNA or genomic DNA library, such as through the process of plaque or colony hybridization. Other typical examples of this procedure are described in Chapters 8-12 of Sambrook *et al.*, MOLECULAR CLONING. A Laboratory Manual (Cold Spring Harbor Press, 1989).

Methods for detecting labelled nucleic acids hybridized to an immobilized nucleic acid are well known to practitioners in the art. Such methods include autoradiography, chemiluminescent, fluorescent and colorimetric detection.

Nucleic acids may also be isolated, detected and/or subjected to recombinant DNA technology using nucleic acid sequence amplification techniques.

Suitable nucleic acid amplification techniques covering both thermal and isothermal methods are well known to the skilled addressee, and include polymerase chain reaction (PCR); strand displacement amplification (SDA); rolling circle replication (RCR); nucleic acid sequence-based amplification (NASBA), Q- β replicase amplification, recombinase polymerase amplification (RPA) and helicase-dependent amplification, although without limitation thereto.

As used herein, an “*amplification product*” refers to a nucleic acid product generated by nucleic acid amplification.

Nucleic acid amplification techniques may include particular quantitative and semi-quantitative techniques such as qPCR, real-time PCR and competitive PCR, as are well known in the art.

In another aspect, the invention provides a genetic construct comprising: (i) the isolated nucleic acid described herein; or (ii) an isolated nucleic acid comprising a nucleotide sequence complementary thereto. Preferably, the isolated nucleic acid is operably linked or connected to one or more regulatory sequences in an expression

vector.

Suitably, the genetic construct is in the form of, or comprises genetic components of, a plasmid, bacteriophage, a cosmid, a yeast or bacterial artificial chromosome as are well understood in the art. Genetic constructs may be suitable for maintenance and propagation of the isolated nucleic acid in bacteria or other host cells, for manipulation by recombinant DNA technology and/or expression of the nucleic acid or an encoded protein of the invention.

For the purposes of host cell expression, the genetic construct can be an expression construct. Suitably, the expression construct comprises the nucleic acid of the invention operably linked to one or more additional sequences in an expression vector. An “*expression vector*” may be either a self-replicating extra-chromosomal vector such as a plasmid, or a vector that integrates into a host genome. In this regard, the vector may be capable of transferring a nucleotide of the invention to a host cell, such as a T-cell, such that the cell expresses an EBV-specific TCR. The vector should ideally be capable of sustained high-level expression in T cells.

By “*operably linked*” is meant that said additional nucleotide sequence(s) is/are positioned relative to the nucleic acid of the invention preferably to initiate, regulate or otherwise control transcription.

Regulatory nucleotide sequences will generally be appropriate for the host cell used for expression. Numerous types of appropriate expression vectors and suitable regulatory sequences are known in the art for a variety of host cells.

Typically, said one or more regulatory nucleotide sequences may include, but are not limited to, promoter sequences, leader or signal sequences, ribosomal binding sites, transcriptional start and termination sequences, translational start and termination sequences, and enhancer or activator sequences.

Constitutive or inducible promoters as known in the art are contemplated by the invention.

In particular embodiments, the expression construct is or comprises one or more viral delivery systems, such as an adenovirus vector, an adeno- associated viral (AAV) vector, a herpes viral vector, a retroviral vector, a lentiviral vector and a baculoviral vector.

In a further aspect, the invention provides a host cell transformed with a nucleic acid molecule or a genetic construct described herein.

Suitable host cells for expression may be prokaryotic or eukaryotic. For

example, suitable host cells may include but are not limited to mammalian cells (e.g. *HeLa*, *HEK293T*, *Jurkat cells*), yeast cells (e.g. *Saccharomyces cerevisiae*), insect cells (e.g. *Sf9*, *Trichoplusia ni*) utilized with or without a baculovirus expression system, plant cells (e.g. *Chlamydomonas reinhardtii*, *Phaeodactylum tricoratum*) or bacterial cells, such as *E. coli*. Introduction of genetic constructs into host cells (whether prokaryotic or eukaryotic) is well known in the art, as for example described in CURRENT PROTOCOLS IN MOLECULAR BIOLOGY Eds. Ausubel *et al.*, (John Wiley & Sons, Inc. 1995-2009), in particular Chapters 9 and 16.

In particular embodiments, the host cell is or comprises a T cell. It is envisaged that the T cell can be any T cell, such as a cultured T cell, e.g., a primary T cell, or a T cell from a cultured T cell line, e.g., Jurkat, SupT1, etc., or a T cell obtained from a mammal. If obtained from a mammal, the T cell can be obtained from numerous sources, including but not limited to blood, bone marrow, lymph node, the thymus, or other tissues or fluids. T cells can also be enriched for or purified. Preferably, the T cell is a human T cell. The T cell can be any type of T cell and can be of any developmental stage, including but not limited to, CD4⁺/CD8⁺ double positive T cells, CD4⁺ helper T cells, e.g., Th₁ and Th₂ cells, CD4⁺ T cells, CD8⁺ T cells (e.g., cytotoxic T cells), tumor infiltrating lymphocytes (TILs), memory T cells (e.g., central memory T cells and effector memory T cells), naïve T cells, and the like.

Suitably, the T-cell is or comprises a CD4⁺ helper T cell and/or a CD8⁺ cytotoxic T cell. In this regard, the T-cell of the present aspect may be in a mixed population of CD4⁺ helper T cell/CD8⁺ cytotoxic T cells. It will further be appreciated that expression of the alpha chain, the beta chain and/or TCR proteins of the present invention by regulatory T cells (e.g., CD4⁺25⁺ regulatory T-cells) may be undesirable as they can suppress the anti-viral activity of cytotoxic and helper T cells that also express such proteins.

Advantageously, the isolated alpha chain, the isolated beta chain and/or the isolated TCR of the present invention can be utilised in TCR gene transfer, an approach that is rapid, reliable and capable of generating large quantities of T cells (>10⁸-10¹⁰ cells/patient) with specificity to, for example, one or more of those EBV antigens described herein (e.g., LMP-1 and/or LMP-2), inclusive of those associated with EBV positive cancers, regardless of the patient's pre-existing immune repertoire. For example, retroviral transductions may require only 48 hours of culture with pre-

activated T-cells. Further, large numbers of autologous T-cells can be obtained from leukaphoresis of a blood sample from a subject. Thus, it may be possible to engineer 10^8 - 10^9 transformed or transfected T-cells for infusion in a few days.

Accordingly, a host cell (*e.g.*, T cell) of the present invention can be used in the treatment of an EBV-associated disease, disorder or condition by means of adoptive transfer. To this end, T cells are typically isolated from a biological sample taken from a subject, inclusive of donor subjects, for use in the adoptive transfer of genetically modified cells.

Preferably, the T-cells transduced or transformed with the isolated alpha chain, the isolated beta chain and/or the isolated TCR of the present invention (such as those proteins set forth in SEQ ID NOs:7-492, 655-816, Tables 2-7 and Figures 94-99) contain a mixture of naive, central memory and effector memory cells.

Also provided by the invention is a population of cells comprising at least one host cell described herein. The population of cells can be a heterogeneous population comprising the host cell comprising any of the recombinant expression vectors described, in addition to at least one other cell, *e.g.*, a host cell (*e.g.*, a T cell), which does not comprise any of the recombinant expression vectors, or a cell other than a T cell, *e.g.*, a B cell, a macrophage, a neutrophil, an erythrocyte, a hepatocyte, an endothelial cell, an epithelial cell, a muscle cell, a brain cell, etc. Alternatively, the population of cells can be a substantially homogeneous population, in which the population comprises mainly of host cells (*e.g.*, consisting essentially of) comprising the recombinant expression vector. The population also can be a clonal population of cells, in which all cells of the population are clones of a single host cell comprising a recombinant expression vector, such that all cells of the population comprise the recombinant expression vector. In one embodiment of the invention, the population of cells is a clonal population comprising host cells comprising a recombinant expression vector as described herein.

In one embodiment, the number of cells in the population may be rapidly expanded. Expansion of the numbers of T cells can be accomplished by any of a number of methods as are known in the art as described in, for example, U.S. Patent 8,034,334; U.S. Patent 8,383,099; U.S. Patent Application Publication No. 2012/0244133; Dudley et al., *J. Immunother.*, 26:332-42 (2003); and Riddell et al., *J. Immunol. Methods*, 128:189-201 (1990).

In alternative embodiments, the host cell is, or is derived from, a stem cell,

such as a haemopoietic stem cell (HSC). To this end, the host cell may therefore be a gene-modified stem cell, which, upon differentiation, produces a T-cell expressing an alpha chain, a beta chain and/or a TCR of the invention.

In yet another aspect, the invention provides a method of producing an isolated protein described herein, comprising; (i) culturing the previously transformed host cell hereinbefore described; and (ii) isolating said protein from said host cell cultured in step (i).

The recombinant protein may be conveniently prepared by a person skilled in the art using standard protocols as for example described in Sambrook, *et al.*, MOLECULAR CLONING. A Laboratory Manual (Cold Spring Harbor Press, 1989), in particular Sections 16 and 17; CURRENT PROTOCOLS IN MOLECULAR BIOLOGY Eds. Ausubel *et al.*, (John Wiley & Sons, Inc. 1995-2009), in particular Chapters 10 and 16; and CURRENT PROTOCOLS IN PROTEIN SCIENCE Eds. Coligan *et al.*, (John Wiley & Sons, Inc. 1995-2009), in particular Chapters 1, 5 and 6.

In a further aspect, the invention provides an antibody or antibody fragment which binds and/or is raised against an isolated alpha chain, an isolated beta chain and/or an isolated TCR described herein, inclusive of fragments, variants and derivatives thereof.

As generally used herein, an “*antibody*” is or comprises an immunoglobulin protein. The term “*immunoglobulin*” includes any antigen-binding protein product of a mammalian immunoglobulin gene complex, including immunoglobulin isotypes IgA, IgD, IgM, IgG and IgE and antigen-binding fragments thereof. Included in the term “*immunoglobulin*” are immunoglobulins that are chimeric or humanised or otherwise comprise altered or variant amino acid residues, sequences and/or glycosylation, whether naturally occurring or produced by human intervention (*e.g.* by recombinant DNA technology).

Suitably, said antibody or antibody fragment specifically binds said isolated protein. Preferably, the antibody or antibody fragment specifically or selectively binds or recognizes a full or partial amino acid sequence of a CDR3 of an alpha chain and/or a beta chain described herein (*e.g.*, SEQ ID NOs: 331-492). In this regard, the antibody or antibody fragment of the present aspect may be suitable for use in methods of detecting or isolating a T-cell that expresses the TCR having that particular CDR3 in a biological sample from a subject, as hereinafter described. It will be appreciated that the detected or isolated T-cell may be suitable for subsequent use

in cellular immunotherapy of an EBV-associated disease, disorder or condition.

Antibodies may be polyclonal or monoclonal, native or recombinant. Well-known protocols applicable to antibody production, purification and use may be found, for example, in Chapter 2 of Coligan *et al.*, CURRENT PROTOCOLS IN IMMUNOLOGY (John Wiley & Sons NY, 1991-1994) and Harlow, E. & Lane, D. *Antibodies: A Laboratory Manual*, Cold Spring Harbor, Cold Spring Harbor Laboratory, 1988, which are both herein incorporated by reference.

Generally, antibodies of the invention bind to or conjugate with an isolated protein, fragment, variant, or derivative of the invention. For example, the antibodies may be polyclonal antibodies. Such antibodies may be prepared for example by injecting an isolated protein, fragment, variant or derivative of the invention into a production species, which may include mice or rabbits, to obtain polyclonal antisera. Methods of producing polyclonal antibodies are well known to those skilled in the art. Exemplary protocols which may be used are described for example in Coligan *et al.*, CURRENT PROTOCOLS IN IMMUNOLOGY, *supra*, and in Harlow & Lane, 1988, *supra*.

Monoclonal antibodies may be produced using the standard method as for example, described in an article by Köhler & Milstein, 1975, Nature **256**, 495, which is herein incorporated by reference, or by more recent modifications thereof as for example, described in Coligan *et al.*, CURRENT PROTOCOLS IN IMMUNOLOGY, *supra* by immortalizing spleen or other antibody producing cells derived from a production species which has been inoculated with one or more of the isolated proteins, fragments, variants or derivatives of the invention.

The invention also includes within its scope antibody fragments, such as Fc, Fab or F(ab)₂ fragments of the polyclonal or monoclonal antibodies referred to above. Alternatively, the antibodies may comprise single chain Fv antibodies (scFvs) against the peptides of the invention. Such scFvs may be prepared, for example, in accordance with the methods described respectively in United States Patent No 5,091,513, European Patent No 239,400 or the article by Winter & Milstein, 1991, Nature 349:293, which are incorporated herein by reference. The invention is also contemplated to include multivalent recombinant antibody fragments, so-called diabodies, triabodies and/or tetrabodies, comprising a plurality of scFvs, as well as dimerisation-activated demibodies (*e.g.*, WO/2007/062466). By way of example, such antibodies may be prepared in accordance with the methods described in Holliger et

al., 1993 Proc Natl Acad Sci USA 90:6444-6448; or in Kipriyanov, 2009 Methods Mol Biol 562:177-93 and herein incorporated by reference in their entirety.

Antibodies and antibody fragments of the invention may be particularly suitable for affinity chromatography purification of the isolated proteins described herein, such as those purified from a biological sample of a subject donor or those recombinantly made. For example reference may be made to affinity chromatographic procedures described in Chapter 9.5 of Coligan *et al.*, CURRENT PROTOCOLS IN IMMUNOLOGY, *supra*.

In one further aspect, the invention provides a composition comprising:

- (i) an isolated alpha chain or fragment, variant or derivative thereof described herein;
 - (ii) an isolated beta chain or fragment, variant or derivative thereof described herein;
 - (iii) an isolated TCR or TCR fragment, variant or derivative described herein;
 - (iv) an isolated nucleic acid or fragment, variant or derivative described herein;
 - (v) a genetic construct described herein; and/or
 - (vi) a host cell described herein;
- and optionally a pharmaceutically acceptable carrier, diluent or excipient.

By “*pharmaceutically-acceptable carrier, diluent or excipient*” is meant a solid or liquid filler, diluent or encapsulating substance that may be safely used in systemic administration. Depending upon the particular route of administration, a variety of carriers, well known in the art may be used. These carriers may be selected from a group including sugars, starches, cellulose and its derivatives, malt, gelatine, talc, calcium sulfate, vegetable oils, synthetic oils, polyols, alginic acid, phosphate buffered solutions, emulsifiers, isotonic saline and salts such as mineral acid salts including hydrochlorides, bromides and sulfates, organic acids such as acetates, propionates and malonates and pyrogen-free water.

A useful reference describing pharmaceutically acceptable carriers, diluents and excipients is Remington's Pharmaceutical Sciences (Mack Publishing Co. N.J. USA, 1991) which is incorporated herein by reference.

In particular aspects, the invention provides a method of treating or preventing an EBV-associated disease, disorder or condition in a subject, said method including the step of administering a therapeutically effective amount of an isolated alpha chain

or fragment, variant or derivative thereof described herein, an isolated beta chain or fragment, variant or derivative thereof described herein, an isolated TCR or TCR fragment, variant or derivative described herein, an isolated nucleic acid or fragment, variant or derivative described herein, a genetic construct described herein, a host cell described herein, and/or a composition described herein to the subject to thereby treat or prevent the EBV-associated disease, disorder or condition in the subject.

As used herein, “*treating*” (or “*treat*” or “*treatment*”) refers to a therapeutic intervention that ameliorates a sign or symptom of an EBV-associated disease, disorder or condition after it has begun to develop. The term “*ameliorating*,” in respect of a EBV-associated disease, disorder or condition, refers to any observable beneficial effect of the treatment. Treatment need not be absolute to be beneficial to the subject. The beneficial effect can be determined using any methods or standards known to the ordinarily skilled artisan.

As used herein, “*preventing*” (or “*prevent*” or “*prevention*”) refers to a course of action initiated prior to the onset of a symptom, aspect, or characteristic of an EBV-associated disease, disorder or condition, so as to prevent or reduce the symptom, aspect, or characteristic. It is to be understood that such preventing need not be absolute to be beneficial to a subject. A “prophylactic” treatment is a treatment administered to a subject who does not exhibit signs of an EBV-associated disease, disorder or condition, or exhibits only early signs for the purpose of decreasing the risk of developing a symptom, aspect, or characteristic of an EBV-associated disease, disorder or condition.

In the context of the present invention, by “*EBV-associated disease, disorder or condition*” is meant any clinical pathology resulting from infection by an Epstein Barr virus. To this end, EBV-associated disease, disorder or condition can mean any disease caused, directly or indirectly, by EBV as well as diseases which predispose a patient to infection by EBV. Examples of diseases falling into the former category include infectious mononucleosis, nasopharyngeal carcinoma, and Burkitt's lymphoma. Diseases in the latter category (*i.e.*, those which place the patient at risk of EBV infection) include acquired immune deficiency syndrome and, generally, any condition that causes a state of immunosuppression or decreased function of the immune system such as patients who receive organ transplants and certain cancer therapies. In one particular embodiment, the EBV-associated disease, disorder or condition suitably is or comprises multiple sclerosis.

In preferred embodiments, the EBV-associated disease, disorder or condition is or comprises an EBV-associated and/or -positive cancer. As used herein, and unless otherwise specified, the term “*EBV-associated cancer*” or “*EBV-positive cancer*” refers to a cancer that has been linked to the Epstein-Barr virus (EBV). In certain embodiments, EBV-positive cancers are cancers wherein greater than about 30%, greater than about 40%, greater than about 50%, greater than about 60%, greater than about 70%, or greater than about 80% contain or express the EBV virus. Suitably, the EBV-associated cancer is selected from the group consisting of nasopharyngeal carcinoma, NKT cell lymphoma, Hodgkin's lymphoma, post-transplant lymphoproliferative disease, Burkitt's lymphoma, Diffuse large B-cell lymphoma, gastric cancer, glioblastoma multiforme and any combination thereof.

As generally used herein, the terms “*cancer*”, “*tumour*”, “*malignant*” and “*malignancy*” refer to diseases or conditions, or to cells or tissues associated with the diseases or conditions, characterized by aberrant or abnormal cell proliferation, differentiation and/or migration often accompanied by an aberrant or abnormal molecular phenotype that includes one or more genetic mutations or other genetic changes associated with oncogenesis, expression of tumour markers, loss of tumour suppressor expression or activity and/or aberrant or abnormal cell surface marker expression.

Cancers may include any aggressive or potentially aggressive cancers, tumours or other malignancies such as listed in the NCI Cancer Index at <http://www.cancer.gov/cancertopics/alphabet>, including all major cancer forms such as sarcomas, carcinomas, lymphomas, leukaemias and blastomas, although without limitation thereto. These may include breast cancer, lung cancer inclusive of lung adenocarcinoma, cancers of the reproductive system inclusive of ovarian cancer, cervical cancer, uterine cancer and prostate cancer, cancers of the brain and nervous system, head and neck cancers, gastrointestinal cancers inclusive of colon cancer, colorectal cancer and gastric cancer, liver cancer, kidney cancer, skin cancers such as melanoma and skin carcinomas, blood cell cancers inclusive of lymphoid cancers and myelomonocytic cancers, cancers of the endocrine system such as pancreatic cancer and pituitary cancers, musculoskeletal cancers inclusive of bone and soft tissue cancers, although without limitation thereto. In particular embodiments, the cancer is a solid cancer or a leukaemia or liquid cancer. Suitably, the cancer expresses, such as overexpresses, one or more EBV antigens, such as those hereinbefore described.

By “*administering*” or “*administration*” is meant the introduction of an isolated protein, encoding nucleic acid, genetic construct, host cell or composition disclosed herein into an animal subject by a particular chosen route.

Any safe route of administration may be employed, inclusive of oral, rectal, parenteral, sublingual, buccal, intravenous, intra-articular, intra-muscular, intra-dermal, transdermal, subcutaneous, inhalational, intraocular, intraperitoneal and intracerebroventricular administration.

Dosage forms include tablets, dispersions, suspensions, injections, solutions, syrups, troches, capsules, nasal sprays, suppositories, aerosols, transdermal patches and the like. These dosage forms may also include injecting or implanting controlled releasing devices designed specifically for this purpose or other forms of implants modified to act additionally in this fashion. Controlled release of the therapeutic agent may be effected by coating the same, for example, with hydrophobic polymers including acrylic resins, waxes, higher aliphatic alcohols, polylactic and polyglycolic acids and certain cellulose derivatives such as hydroxypropylmethyl cellulose. In addition, the controlled release may be effected by using other polymer matrices, liposomes and/or microspheres.

Compositions of the present invention suitable for oral or parenteral administration may be presented as discrete units such as capsules, sachets, functional foods/feeds or tablets each containing a pre-determined amount of one or more therapeutic agents of the invention, as a powder or granules or as a solution or a suspension in an aqueous liquid, a non-aqueous liquid, an oil-in-water emulsion or a water-in-oil liquid emulsion. Such compositions may be prepared by any of the methods of pharmacy but all methods include the step of bringing into association one or more agents as described above with the carrier which constitutes one or more necessary ingredients. In general, the compositions are prepared by uniformly and intimately admixing the agents of the invention with liquid carriers or finely divided solid carriers or both, and then, if necessary, shaping the product into the desired presentation.

The above compositions may be administered in a manner compatible with the dosage formulation, and in such amount as is pharmaceutically-effective. The dose administered to a patient, in the context of the present invention, should be sufficient to effect a beneficial response in a patient over an appropriate period of time. The quantity of agent(s) to be administered may depend on the subject to be treated

inclusive of the age, sex, weight and general health condition thereof, factors that will depend on the judgement of the practitioner.

One particular broad application of the present invention is the provision of methods of performing cellular or adoptive immunotherapy in a subject having an EBV-associated disease, disorder or condition, such as those hereinbefore described, said method including the step of administering a therapeutically effective amount of a host cell (e.g., T-cell) described herein and optionally a pharmaceutically acceptable carrier, diluent or excipient to the subject.

The terms “*cellular immunotherapy*” or “*adoptive immunotherapy*” denote the transfer of immunocompetent cells, such as T-cells, for the treatment of cancer or infectious diseases (see, e.g., June, C. H., ed., 2001, In: Cancer Chemotherapy and Biotherapy: Principles and Practice, Lippincott Williams & Wilkins, Baltimore; Vonderheide et al., 2003, Immun. Research 27:1-15). To this end, it will be understood that adoptive immunotherapy is a strategy typically aimed at replacing, repairing, or enhancing the biological function of a tissue or system, such as the immune system, by means of autologous or allogeneic cells, such as T-cells.

In particular embodiments, the EBV-associated disease, disorder or condition is or comprises a cancer, such as those hereinbefore provided.

In another aspect, the invention provides a method of detecting or isolating a T-cell in a biological sample from a subject, the method including the step of contacting the biological sample with an antibody or antibody fragment hereinbefore described for a time and under conditions sufficient to thereby detect or isolate said T-cell.

Preferably, the detected or isolated T-cell comprises an alpha chain, a beta chain and/or a T-cell receptor provided herein, such that the detected or isolated T-cell is preferably suitable for use in cellular immunotherapy of an EBV-associated disease, disorder or condition. In this regard, the T-cells may be autologous and/or allogeneic (i.e., derived or obtained from a donor, such as a genetically matched donor) cells.

In certain embodiments, the biological sample may be a pathology sample that comprises one or more fluids, cells, tissues, organs or organ samples, such as cancer cells and/or tissues, obtained from an animal. Non-limiting examples include blood, plasma, serum, lymphocytes, urine, faeces, amniotic fluid, cervical samples, cerebrospinal fluid, tissue biopsies, bone marrow, bronchoalveolar lavage fluid, sputum and skin.

In particular embodiments, the method of the present aspect further includes the step of obtaining the biological sample from the subject.

Suitably, the methods described herein are performed on a mammal.

In one embodiment, the mammal is a human.

While the principles described herein are based on methods of treatment for humans, this invention may also be extended to other mammals such as livestock (*e.g.* cattle, sheep), performance animals (*e.g.* racehorses) and domestic pets (*e.g.* dogs, cats), although without limitation thereto.

All computer programs, algorithms, patent and scientific literature referred to herein is incorporated herein by reference.

So that the invention may be readily understood and put into practical effect, reference is made to the following non-limiting Examples.

EXAMPLE 1

Very few $\alpha\beta$ TCR pairs have been identified from the T cells that recognize the LMP2, LMP1 and EBNA1 proteins of EBV. The present Example describes the identification of $\alpha\beta$ TCR pairs that recognize epitopes derived from the LMP1 and LMP2 antigens and presented in association with several frequently-occurring human leukocyte antigens.

Materials and Methods

Generation of T cell lines

Peripheral blood mononuclear cells (PBMCs) were isolated by Ficoll-Hypaque centrifugation into RPMI 1640 medium supplemented with 10% FCS (R10). Blood donors were healthy, EBV-seropositive individuals who had given written informed consent. Approval for this research was obtained from the QIMR Berghofer Medical Research Institute Human Ethics Committee (Brisbane, Australia). EBV-specific T cell cultures were raised by culturing PBMCs (2×10^6 /2ml well) with autologous PBMCs that had been treated with a synthetic peptide (1 μ g/ml) and washed once to remove unbound peptide (10^6 /2ml well). Cultures were supplemented with recombinant IL-2 (20 IU/ml) from day 3 and analyzed on day 10. Synthetic peptides were purchased from GL Biochem (Shanghai, China) and dissolved in DMSO.

Sorting of single CD8⁺ T cells specific for each EBV peptide epitope

T cell lines were labelled with an allophycocyanin (APC)-conjugated HLA-peptide multimer (ProImmune Ltd., Oxford, UK) by incubation for 30 minutes at room temperature. Cells were then washed and incubated with Cy5.5-PerCP conjugated anti-human CD8 mAb (BioLegend, San Diego, CA) for 30 minutes at 4°C. Cells were washed, analyzed and sorted as single cells into 96-well PCR plates (Eppendorf, Hamburg, Germany) using the FACS Aria III flow cytometer (BD Biosciences).

Single-cell paired TCR $\alpha\beta$ sequencing

Multiplex-nested RT-PCR for paired TCR $\alpha\beta$ sequencing was performed as previously described [14]. Briefly, mRNA in the cells was reverse transcribed to create cDNA which was then subjected to 2 rounds of PCR using specific primers that amplified the α and β chains of the TCR gene present in the one cell. This PCR product was purified and sequenced then analysed using the IMGT website software. The α and β chains with their respective CDR3 regions were determined.

TCR gene transfer

Some of the TCR α and β chain sequences were modified by codon optimization and the introduction of a single cysteine residue into each receptor chain to promote the formation of an additional interchain disulfide bond and reduce the likelihood of TCR mispairing with the endogenous TCR subunits [15]. The TCRs were also modified within the constant regions to enhance stability and expression levels by exchange of selected amino acids with the murine counterparts. For the α -chain the amino acid exchanges were made at positions 90, 91, 92 and 93 and for the β -chain the amino acid exchanges were at positions 18, 22, 133, 136 and 139 [16]. The TCR α and β chain sequences were then synthetically introduced into a lentivirus plasmid as one transcript using a cleavage protein to produce the α and β chains as 2 products in equal ratios driven by the promoter human elongation factor-1 alpha (EF-1 alpha) (Biosettia Inc., San Diego). The Lentiplasmid was then used to produce lentivirus (Biosettia Inc., San Diego) that was transduced into human T cells. The human T cells were either the Jurkat cell line or T cells from healthy donors that had been stimulated with CD3-CD28 beads (Thermo Fisher Scientific, Massachusetts) and expanded in culture with R10 supplemented with recombinant IL-2 (20 IU/ml). Cells

were then tested for the presence of the introduced TCR by FACS analysis on the Fortessa 4 using the corresponding peptide-HLA multimer and TCR V β antibody (where available). The ability of the transferred TCR to recognize the relevant EBV epitope was also confirmed in some cases by using γ -interferon (IFN- γ) enzyme-linked immunosorbent spot (ELISpot) assays or by FACS analysis of Granzyme B expression.

ELISpot assays

IFN- γ ELISpot assays were performed using cytokine capture and detection reagents according to the manufacturer's instructions (Mabtech, Stockholm, Sweden). Briefly, 96-well nitrocellulose plates pre-coated with anti-IFN- γ monoclonal antibody were seeded with $1-4 \times 10^4$ /well TCR-transduced T cells and lymphoblastoid cell lines (LCLs; 10^4 /well) that had, or had not, been treated with an EBV peptide at various concentrations. After incubation for 18 hours at 37°C in 5% CO $_2$, the cells were discarded and captured IFN- γ was detected with a biotinylated anti-IFN γ antibody, followed by development with an alkaline phosphatase substrate solution (BCIP/NBT-plus). All samples were tested in triplicate and spots were counted using an automated plate counter.

Mouse model of EBV-induced B cell lymphoma and treatment with TCR-transgenic T cells

EBV-positive tumors were established in 18 NOD/RAG mice by subcutaneous injection of 5×10^6 LCLs from an HLA-A*02:01 $^+$ individual. Tumor size was monitored daily at the injection site, and mice were euthanized when tumors reached a maximum of 1000 cubic mm. Tumor treatment was on days 2 and 9 following tumor inoculation and consisted of two intravenous injections with TCR-transgenic T cells (8×10^6 and 6×10^6 , respectively) derived from a healthy EBV-sero-negative donor and generated by stimulation with CD3-CD28 beads and expansion in culture with R10 supplemented with recombinant IL-2 (20 IU/ml). Prior to injection into the mice, these expanded T cells were transduced with a TCR specific for HLA-A*02:01-FLYALALLL, followed by sorting using the FACS Aria III flow cytometer for co-expression of CD8 and the β -chain variable gene used by the transduced TCR (using a TCR V β 13S1 antibody) (for 6 mice). As controls, untransduced T cells from the same donor (sorted for CD8 expression) or PBS were also intravenously injected on days 2

and 9 (6 mice each). Tumour size was determined by caliper measurement of perpendicular diameters of each tumour and was calculated using the following formula: tumour volume (mm^3) = [(length) x (width) x (width)]/2

Results

The present Example involves the identification of TCRs that recognize the LMP2 and LMP1 antigens of EBV, and are restricted by human leukocyte antigens that occur frequently throughout most world-wide populations. These could be used in TCR gene therapy to treat many EBV-associated diseases.

The first step involved sorting single T cells from peptide-stimulated T cell cultures using flow cytometry, following staining with anti-CD8 antibodies and peptide-HLA multimers that bind specifically to the relevant TCR. The flow cytometry data for five of the LMP2 epitopes and an HLA-A*02:01-restricted LMP1 epitope are shown in Fig. 1-6.

Using single-cell TCR sequencing on healthy EBV-seropositive blood donors expressing one or more frequently occurring HLA alleles (A*02:01, A*11:01, A*24:02, or B*40:01; Table 1), we have successfully identified TCR sequences that recognize the LMP2 epitopes IEDPPFNSL (presented by HLA-B*40:01; Table 2; [17]), SSCSSCPLSK (presented by HLA-A*11:01; Table 3; [17]), TYGPVFMCL/TYGPVFMCL (presented by HLA-A*24:02; Table 4; [17]), PYLFWLAAL (presented by HLA-A*24:02; Table 5; [18]), the LMP1 epitope YLLEMLWRL (presented by HLA-A*02:01; Table 6; [19]), and the LMP2 epitope FLYALALL (presented by HLA-A*02:01; Table 7; Lautscham et al, J. Virol. 2003 Feb;77(4):2757-61). The frequency of these four HLA alleles in different population groups is shown in Table 8.

To confirm that the TCRs that were identified using the aforementioned methodology do indeed recognize the EBV epitopes used to sort the T cells, representative TCRs specific for some of the EBV peptides (highlighted in aqua in Tables 2-4 and 7) were synthetically engineered into a lentivirus expression system. The recombinant lentivirus constructs were then used to infect the Jurkat T cell line, and these were stained with an antibody specific for the relevant TCR β chain variable gene product and a multimer of the relevant peptide-HLA complex. Data for the TCRs specific for SSCSSCPLSK-HLA-A*11:01 (Fig. 7) and TYGPVFMCL-HLA-A*24:02 (Fig. 8) confirm that a significant proportion of the transduced Jurkat cells

express the correctly assembled TCR on the cell surface.

The Jurkat T cell line transduced with the recombinant lentivirus constructs were then screened for recognition of the relevant peptide-HLA complex using functional assays. These ELISpot assays detected interferon gamma release from the TCR-transduced Jurkat cells when added to stimulator cells that expressed the relevant HLA allele and had been pre-treated with the relevant EBV peptide (Fig. 9 & 10).

Primary human T lymphocytes were also transduced with a recombinant lentivirus construct encoding a TCR specific for the LMP2 antigen. This TCR was specific for the HLA-A*02:01-FLYALALLL complex, and it was screened for recognition of this peptide-HLA complex using a functional assay that measured granzyme B expression with flow cytometry. Granzyme B expression by the TCR-transduced T cells was observed following the addition of HLA-A*02:01⁺ PBMCs that had been pre-treated with FLYALALLL peptide, but not without peptide treatment, thereby confirming the specificity of this TCR (Fig. 11). Importantly, the TCR-transduced T cells were also activated to express granzyme B with the addition of HLA-A*02:01⁺ LCLs, but not HLA-A*02:01-negative LCLs, demonstrating that this TCR can recognize EBV-infected cells, without exogenous peptide addition (Fig. 11).

To investigate the *in vivo* efficacy of primary human T cells transduced with LMP2-specific TCRs in controlling EBV-infected tumors, a mouse model of EBV-induced B cell lymphoma was utilized. EBV-positive tumors were established in NOD/RAG mice by subcutaneous injection of EBV-positive human B lymphocytes (LCLs) that expressed HLA-A*02:01. Tumors were visible from day 2, and treatment was administered on days 2 and 9 following tumor inoculation. This consisted of two intravenous injections with transgenic T cells (8×10^6 and 6×10^6 , respectively) derived from a healthy EBV-sero-negative donor that had been generated by stimulation with CD3-CD28 beads. These T cells were transduced with a TCR specific for HLA-A*02:01-FLYALALLL (6 mice). As controls, untransduced T cells or PBS were also intravenously injected on days 2 and 9 (6 mice each). The results of this experiment clearly demonstrated that TCRs specific for this LMP2 epitope induced a statistically significant regression of tumors compared to the control groups (Fig. 12).

Table 1: Class I HLA Type of Donors used in Study

Donor	HLA-A	HLA-B
N3M	A*24:02, A*24:10	B*38:02, B*40:01
B24	A*02:01, A*02:01	B*40:01, B*40:01
A5L	A*02:01, A*23:01	B*40:01, B*44:03
B31	A*24:02, A*24:07	B*15:02, B*40:01
R7Z (Chinese)	A*11:01, A*33:03	B*46:01, B*58:01
B5F	A*11:01, A*24:02	B*15:01, B*35:41
T3V (Vietnamese)	A*11:02, A*29:01	B*07:05, B*27:04
P6G (Caucasian)	A*02:01, A*11:01	B*44:02, B*44:03
A4T (Chinese)	A*02:07, A*11:01	B*13:01, B*40:01
D2M (Caucasian)	A*24:02, A*29:02	B*44:03, B*44:05
B33	A*24:02, A*29:02	B*18:01, B*44:03
N2W (Caucasian)	A*02:01, A*25:01	B*15:01, B*40:01
B87	A*01:01, A*02:01	B*08:01, B*57:01
Y6W (Singapore Chinese)	A*24:02, A*29:01	B*07:05, B*39:09
J9B (Caucasian)	A*01:01, A*02:01	B*44:02, B*49:01
T4W (Caucasian)	A*02:01, A*02:01	B*07:02, B*07:02

Table 2: α - and β -chain gene usage and CDR sequences for TCRs specific for HLA-B*40:01-IEDPPFNSL

Alpha Chain: V & J gene usage and CDR sequences	Beta Chain: V & J gene usage and CDR sequences	Number of cells	Donor & Clone no.
TRAV21 TRAJ28*01 CDR1: DSAIYN CDR2: IQSSQRE CDR3: CAVYSAGASYQLTF	TRBV27*01 TRBJ2-7*01 CDR1: MNHEY CDR2: SMNVEV CDR3: CASRTGGVNEQYF	2	Donor N3M Clone 1
TRAV1-2*01 TRAJ9*01 CDR1: TSGFNG CDR2: NVLDG CDR3: CAVGGNTGGFKTIF	TRBV9*01 TRBJ2-1*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSAGQGLAGDEQFF	4	Donor B24 Clone 1
TRAV19*01 TRAJ42*01 CDR1: TRDTTYY CDR2: RNSFDEQ CDR3: CALSEARGSQGNLIF	TRBV4-1 TRBJ2-1*01 CDR1: MGHRA CDR2: YSYEKL CDR3: CASSQEAASGGLINEQFF	3	Donor B24 Clone 2
TRAV26-2*01 TRAJ9*01 CDR1: TISGTDY CDR2: GLTS CDR3: CILRDVTGGFKTIF	TRBV27*01 TRBJ2-7*01 CDR1: MNHEY CDR2: SMNVEV CDR3: CASSYSGGPLYEQYF	1	Donor B24 Clone 3
TRAV35*02 TRAJ21*01 CDR1: SIFNT CDR2: LYKAGE CDR3: CAGRGSYNFKFYF	TRBV27*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SMNVEV CDR3: CASSYAGGPQYGYTF	1	Donor B24 Clone 4
TRAV1-1 TRAJ23*01 CDR1: TSGFYG CDR2: NALDG CDR3: CASSEGKLIF	TRBV20-1 TRBJ2-1*01 CDR1: DFQATT CDR2: SNEGSKA CDR3: CSARDGSPAGGLNEQFF	18	Donor A5L Clone 1
TRAV16*01 TRAJ36*01 CDR1: YSGSPE CDR2: HIS CDR3: CALRWQTGANNLFF	TRBV27*01 TRBJ2-7*01 CDR1: MNHEY CDR2: SMNVEV CDR3: CASSYSGGPLYEQYF	4	Donor A5L Clone 2
TRAV1-2*01 TRAJ9*01 CDR1: TSGFNG CDR2: NVLDG CDR3: CAVNGGTGGFKTIF	TRBV9*01 TRBJ2-3*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSVGEGLAGDTQYF	2	Donor A5L Clone 3
TRAV24*01 TRAJ8*01 CDR1: SSNFYA CDR2: MTLNGD CDR3: CASPRTGFQKLVF	TRBV27*01 TRBJ2-1*01 CDR1: MNHEY CDR2: SMNVEV CDR3: CASRYSGGPLYEQFF	2	Donor A5L Clone 4

TRAV1-1 TRAJ23*01 CDR1: TSGFYG CDR2: NALDG CDR3: CASTEGKLIF	TRBV20-1 TRBJ2-1*01 CDR1: DFQATT CDR2: SNEGSKA CDR3: CSARDGSPAGGLNEQFF	1	Donor A5L Clone 5
TRAV38-1 TRAJ23*01 CDR1: TSENYY CDR2: QEAYKQQ CDR3: CAFMTVYNQGGKLIF	TRBV4-1 TRBJ2-3*01 CDR1: MGHRA CDR2: YSYEKL CDR3: CASSQEAGRQNTQYF	4	Donor B31 Clone 1
TRAV21 TRAJ28*01 CDR1: DSAIYN CDR2: IQSSQRE CDR3: CAPYSGAGAYQLTF	TRBV27*01 TRBJ2-1*01 CDR1: MNHEY CDR2: SMNVEV CDR3: CATRTGAVNEQFF	1	Donor B31 Clone 2

The TCR highlighted in aqua was subsequently synthetically engineered into a lentivirus expression system.

Table 3: α - and β -chain gene usage and CDR sequences for TCRs specific for HLA-A*11:01-SSCSSCPLSK

Alpha Chain: V & J gene usage and CDR sequences	Beta Chain: V & J gene usage and CDR sequences	Number of cells	Donor & Clone no.
TRAV21*01 TRAJ52*01 CDR1: DSAIYN CDR2: IQSSQRE CDR3: CAVWAGGTSYGKLTFF	TRBV28*01 TRBJ1-6*01 CDR1: MDHEN CDR2: SYDVKM CDR3: CASSPAGRPGKPLHF	1	Donor R7Z Clone 1
TRAV22*01 TRAJ43*01 CDR1: DSVNN CDR2: IPSG CDR3: CAVVINNDMRF	TRBV9*01 TRBJ2-7*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSVAPFYEQYF	1	Donor R7Z Clone 2
TRAV3*01 TRAJ36*01 CDR1: VSGNPY CDR2: YITGDNLV CDR3: CAVREASGANNLFF	TRBV30*01 TRBJ1-6*01 CDR1: GTSNPN CDR2: SVGIG CDR3: CAWSPQGNSPLHF	1	Donor R7Z Clone 3
TRAV8-2 TRAJ5*01 CDR1: SSYSPS CDR2: YTSAATL CDR3: CVVSYLGGDTGRRALTF	TRBV2 TRBJ2-2*01 CDR1: SNHLY CDR2: FYNNEI CDR3: CASSESGSPTGELFF	1	Donor R7Z Clone 4
TRAV22*01 TRAJ43*01 CDR1: DSVNN CDR2: IPSG CDR3: CAVVGNNNDMRF	TRBV9*01 TRBJ2-7*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSVAPWYEQYF	1	Donor R7Z Clone 5
TRAV22*01 TRAJ43*01 CDR1: DSVNN CDR2: IPSG CDR3: CAVLNNNDMRF	TRBV9*01 TRBJ2-1*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSVSSWYEQFF	2	Donor B5F Clone 1
TRAV13-2 TRAJ13*02 CDR1: NSASDY CDR2: IRSNMD CDR3: CAETPGGYQKVTF	TRBV27*01 TRBJ1-6*01 CDR1: MNHEY CDR2: SMNVEV CDR3: CASSLWTSNSPLHF	17	Donor B5F Clone 2
TRAV29/DV5*01 TRAJ26*01 CDR1: NSMFDY CDR2: ISSIKDK CDR3: CAASAGGQNFVF	TRBV10-3 TRBJ2-1*01 CDR1: ENHRY CDR2: SYGVKD CDR3: CAIRRGSSYNEQFF	2	Donor T3V Clone 1
TRAV1-2*01 TRAJ33*01 CDR1: TSGFNG CDR2: NVLDG CDR3: CAVKDSNYQLIW	TRBV6-4 TRBJ2-3*01 CDR1: MRHNA CDR2: SNTAGT CDR3: CASSADQGDGTDQYF	1	Donor T3V Clone 2
TRAV1-1*01 TRAJ31*01 CDR1: TSGFYG CDR2: NALDG CDR3: CAVPRRNNNARLMF	TRBV27*01 TRBJ1-1*01 CDR1: MNHEY CDR2: SMNVEV CDR3: CASSLNTGMNTEAFF	1	Donor T3V Clone 3

TRAV21 TRAJ28*01 CDR1: DSAIYN CDR2: IQSSQRE CDR3: CAVGGDDSGAGSYQLTF	TRBV9*01 TRBJ2-1*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSRPEGIYNEQFF	5	Donor P6G Clone 1
TRAV25*01 TRAJ23*01 CDR1: TTLSN CDR2: LVKSGE CDR3: CAGPGIYNQGGKLIF	TRBV19 TRBJ2-7*01 CDR1: LNHDA CDR2: SQIVND CDR3: CASSPGLADYEQYF	1	Donor P6G Clone 2
TRAV14 TRAJ52*01 CDR1: TSDQSYG CDR2: QGSYDEQ CDR3: CAMSSSNAGGTSYGKLTf	TRBV30 TRBJ2-7*01 CDR1: GTSNPN CDR2: SVGIG CDR3: CAWRLEQGLNQEYF	1	Donor P6G Clone 3
TRAV29/DV5*01 TRAJ29*01 CDR1: NSMFDY CDR2: ISSIKDK CDR3: CAASGLVEGNTPLVF	TRBV11-2*01 TRBJ2-7*01 CDR1: SGHAT CDR2: FQNGGV CDR3: CASSLFPGTGIHEQYF	2	Donor A4T Clone 1

The TCR highlighted in aqua was subsequently synthetically engineered into a lentivirus expression system.

Table 4: α - and β -chain gene usage and CDR sequences for TCRs specific for HLA-A*24:02-TYGPVFMSL/TYGPVFMCL

Alpha Chain: V & J gene usage and CDR sequences	Beta Chain: V & J gene usage and CDR sequences	Number of cells	Donor & Clone no.
TRAV17*01 TRAJ7*01 CDR1: TSINN CDR2: IRSNER CDR3: CATDGPYGNNRLAF	TRBV25-1*01 TRBJ2-1*01 CDR1: MGHDK CDR2: SYGVNS CDR3: CASSPLGRSSSYNEQFF	16	Donor D2M Clone 1
TRAV17*01 TRAJ7*01 CDR1: TSINN CDR2: IRSNER CDR3: CATDGPYGNNRLAF	TRBV25-1*01 TRBJ2-1*01 CDR1: MGHDK CDR2: SYGVNS CDR3: CASSALGQSSSYNEQFF	26	Donor D2M Clone 2
TRAV17*01 TRAJ7*01 CDR1: TSINN CDR2: IRSNER CDR3: CATDGRHGNRLAF	TRBV25-1*01 TRBJ2-1*01 CDR1: MGHDK CDR2: SYGVNS CDR3: CASSDLGRGSAVNEQFF	1	Donor D2M Clone 3
TRAV25*01 TRAJ18*01 CDR1: TTLSN CDR2: LVKSGE CDR3: CAGERGSTLGRLYF	TRBV7-9 TRBJ2-7*01 CDR1: SEHNR CDR2: FQNEAQ CDR3: CASSPLDRGTYEQYF	20	Donor B31 Clone 1
TRAV25*01 TRAJ18*01 CDR1: TTLSN CDR2: LVKSGE CDR3: CAGERGSTLGRLYF	TRBV7-9 TRBJ2-7*01 CDR1: SEHNR CDR2: FQNEAQ CDR3: CASSPLERGTYEQYF	1	Donor B31 Clone 2
TRAV25*01 TRAJ18*01 CDR1: TTLSN CDR2: LVKSGE CDR3: CAGERGSTLGRLYF	TRBV7-9 TRBJ2-7*01 CDR1: SEHNR CDR2: FQNEAQ CDR3: CASSLLSSGDYEQYF	1	Donor B31 Clone 3
TRAV13-1*02 TRAJ17*01 CDR1: DSASNY CDR2: IRSNVG CDR3: CAAPRGAAGNKLTF	TRBV19 TRBJ2-7*01 CDR1: LNHDA CDR2: SQIVND CDR3: CASSKGASGMRTEQYF	1	Donor B31 Clone 4
TRAV25*01 TRAJ18*01 CDR1: TTLSN CDR2: LVKSGE CDR3: CAGERGSTLGRLYF	TRBV24-1*01 TRBJ2-7*02 CDR1: KGHDR CDR2: SFDVKD CDR3: CATSDTTSTRPTEQYV	6	Donor B31 Clone 5
TRAV17*01 TRAJ54*01 CDR1: TSINN CDR2: IRSNER CDR3: CAALQGAQKLVF	TRBV2 TRBJ2-1*01 CDR1: SNHLY CDR2: FYNNEI CDR3: CASSATSGSYNEQFF	1	Donor B31 Clone 6
TRAV4*01 TRAJ4*01 CDR1: NIATNDY CDR2: GYKT CDR3: CLVVPFGGYNKLIF	TRBV29-1 TRBJ2-1 CDR1: SQVTM CDR2: ANQGSEA CDR3: CSVGEGTSGYESYNEQFF	65	Donor Y6W Clone 1

TRAV25*01 TRAJ18*01 CDR1: TTLSN CDR2: LVKSGE CDR3: CAGERGSTLGRLYF	TRBV7-9 TRBJ2-7*01 CDR1: SEHNR CDR2: FQNEAQ CDR3: CASSSLDRGDYEQYF	3	Donor Y6W Clone 2
TRAV17*01 TRAJ34*01 CDR1: TSINN CDR2: IRSNER CDR3: CAPDRPDTDKLIF	TRBV7-9 TRBJ2-1*01 CDR1: SEHNR CDR2: FQNEAQ CDR3: CASQNRREGRSEQFF	1	Donor Y6W Clone 3

The TCR highlighted in aqua was subsequently synthetically engineered into a lentivirus expression system.

Table 5: α - and β -chain gene usage and CDR sequences for TCRs specific for HLA-A*24:02-PYLFWLAAI

Alpha Chain: V & J gene usage and CDR sequences	Beta Chain: V & J gene usage and CDR sequences	Number of cells	Donor & Clone no.
TRAV25*01 TRAJ28*01 CDR1: TTLSN CDR2: LVKSGE CDR3: CAGPGTGAGSYQLTF	TRBV28*01 TRBJ2-1*01 CDR1: MDHEN CDR2: SYDVKM CDR3: CASIKSSGYNEQFF	29	Donor B33 Clone 1
TRAV25*01 TRAJ28*01 CDR1: TTLSN CDR2: LVKSGE CDR3: CAGPYSGAGSYQLTF	TRBV28*01 TRBJ2-1*01 CDR1: MDHEN CDR2: SYDVKM CDR3: CASILSSGYNEQFF	65	Donor B5F Clone 1
TRAV4*01 TRAJ4*01 CDR1: NIATNDY CDR2: GYKT CDR3: CLVVPFGGYNKLIF	TRBV29-1 TRBJ2-1*01 CDR1: SQVTM CDR2: ANQGSEA CDR3: CSVGEGTSGYESYNEQFF	39	Donor Y6W Clone 1
TRAV12-2 TRAJ8*01 CDR1: DRGSQS CDR2: IYSNG CDR3: CAVNVGNTGFQKLVF	TRBV30*01 or *05 TRBJ2-2*01 CDR1: GTSNPN CDR2: SVGIG CDR3: CACQWQGLGGELFF	3	Donor Y6W Clone 2
TRAV13-1*01 TRAJ49*01 CDR1: DSASNY CDR2: IRSNVG CDR3: CAASEFQFYF	TRBV9*01 TRBJ2-2*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSPGQRANTGELFF	1	Donor Y6W Clone 3
TRAV14/DV4*02 TRAJ33*01 CDR1: TSDQSYG CDR2: QGSYDEQ CDR3: CAMREGVDYQLIW	TRBV10-2*01 or *03 TRBJ1-4*01 CDR1: WSHSY CDR2: SAAADI CDR3: CASSYENEKLFF	1	Donor Y6W Clone 4
TRAV8-1*01 TRAJ21*01 CDR1: YGGTVN CDR2: YFSGDPL CDR3:CAVKANFNKFYF	TRBV2 TRBJ2-1*01 CDR1: SNHLY CDR2: FYNNEI CDR3: CASSWGNEQFF	1	Donor Y6W Clone 5
TRAV12-2 TRAJ12*01 CDR1: DRGSQS CDR2: IYSNG CDR3: CAAEPFSSYKLIF	TRBV 7-2 TRBJ2-1*01 CDR1: SGHTA CDR2: FQGNSA CDR3: CASSFIGGTGLNEQFF	1	Donor Y6W Clone 6
TRAV36/DV7*01 TRAJ54*01 CDR1: VTNFRS CDR2: LTSSGI CDR3: CAVESLIQGAQKLVF	TRBV20-1 TRBJ1-4*01 CDR1: DFQATT CDR2: SNEGSKA CDR3: CSARDRFWGTNNEKLFF	1	Donor Y6W Clone 7
TRAV26-1*01 or *02 TRAJ52*01 CDR1: TISGNEY CDR2: GLKN CDR3: CIVRVAGGTSYGKLTf	TRBV30*01 or *05 TRBJ1-5*01 CDR1: GTSNPN CDR2: SVGIG CDR3: CAWSSAPDRGHRQPQHF	1	Donor Y6W Clone 8

TRAV14/DV4*02 TRAJ13*02 CDR1: TSDQSYG CDR2: QGSYDEQ CDR3: CAMRVNSGGYQKVTF	TRBV15*02 TRBJ2-7*01 CDR1: LNHNV CDR2: YYDKDF CDR3: CATSRDRGTGPPYEQYF	1	Donor Y6W Clone 9
TRAV12-1*01 TRAJ28*01 CDR1: NSASQS CDR2: VYSSG CDR3: CVLSGAGSYQLTF	TRBV6-1*01 TRBJ2-5*01 CDR1: MNHNS CDR2: SASEGT CDR3: CASSEWREETQYF	1	Donor Y6W Clone 10
TRAV6*01 or *02 or *05 TRAJ8*01 CDR1: NYSPAY CDR2: IRENEK CDR3: CALDEGNTGFQKLVF	TRBV30*01 or *05 TRBJ2-7*01 CDR1: GTSNPN CDR2: SVGIG CDR3: CAWSGTDSSYEQYF	1	Donor Y6W Clone 11
TRAV1-2*01 TRAJ8*01 CDR1: TSGFNG CDR2: NVLDG CDR3: RNTGFQKLVF	TRBV28*01 TRBJ2-1*01 CDR1: MDHEN CDR2: SYDVKM CDR3: CASSPEQGAAGDEQFF	1	Donor Y6W Clone 12
TRAV8-3*01 TRAJ41*01 CDR1: YGATPY CDR2: YFSGDTL CDR3: CAAPGVGSNSGYALNF	TRBV9*01 TRBJ1-6*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSPSWAANSPLHF	1	Donor Y6W Clone 13
TRAV1-2*01 TRAJ36*01 CDR1: TSGFNG CDR2: NVLDG CDR3: CAGEDQTGANNLFF	TRBV28*01 TRBJ2-1*01 CDR1: MDHEN CDR2: SYDVKM CDR3: CASGTLSEYNEQFF	1	Donor Y6W Clone 14
TRAV12-2 TRAJ8*01 CDR1: DRGSQS CDR2: IYSNG CDR3: CAVKVGTFQKLVF	TRBV7-9 TRBJ1-1*01 CDR1: SEHNR CDR2: FQNEAQ CDR3: CASSLVGQGNTTEAFF	1	Donor Y6W Clone 15

Table 6: α - and β -chain gene usage and CDR sequences for TCRs specific for HLA-A*02:01- YLLEMLWRL

Alpha Chain: V & J gene usage and CDR sequences	Beta Chain: V & J gene usage and CDR sequences	Number of cells	Donor & Clone no.
TRAV8-1*01 TRAJ43*01 CDR1: YGGTVN CDR2: YFSGDPL CDR3: CAVSMRF	TRBV11-2*01 TRBJ2-7*01 CDR1: SGHAT CDR2: FQNNGV CDR3: CASSLDEGTVTYEQYF	11	Donor N2W Clone 1
TRAV12-2 TRAJ53*01 CDR1: DRGSQS CDR2: IYSNG CDR3: CAVNPTPSVGSNYKLTF	TRBV9*01 TRBJ1-1*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSVGGEGLAFF	4	Donor N2W Clone 2
TRAV36/DV7*04 TRAJ26*01 CDR1: VTNFRS CDR2: LTSSGI CDR3: CAVAAENYGQNFVF	TRBV7-6 TRBJ2-1*01 CDR1: SGHVS CDR2: FNYEAQ CDR3: CASSLEGDYNEQFF	3	Donor N2W Clone 3
TRAV24*01 TRAJ22*01 CDR1: SSNFYA CDR2: MTLNGD CDR3: CAFISSGSARQLTF	TRBV7-6 TRBJ1-4*01 CDR1: SGHVS CDR2: FNYEAQ CDR3: CASSLEADNEKLFF	2	Donor N2W Clone 4
TRAV14/DV4*02 TRAJ50*01 CDR1: TSDQSYG CDR2: QGSYDEQ CDR3: CAMREDLRSNDKVIF	TRBV9*01 TRBJ2-3*01 CDR1: SGDLS CDR2: YYNGEE CDR3: CASSVGDSGQAQYF	1	Donor N2W Clone 5
TRAV8-1*01 TRAJ42*01 CDR1: YGGTVN CDR2: YFSGDPL CDR3: CAAGGGSQGNLIF	TRBV5-6*01 TRBJ2-2*01 CDR1: SGHDT CDR2: YYEEEE CDR3: CASSWWDGGTGELFF	1	Donor N2W Clone 6
TRAV14/DV4*01 TRAJ20*01 CDR1: TSDPSYG CDR2: QGSYDQQ CDR3: CAMRELNDYKLSF	TRBV24-1*01 TRBJ1-1*01 CDR1: KGHDR CDR2: SFDVKD CDR3: CATRDDLLAEAFF	6	Donor B87 Clone 1
TRAV17*01 TRAJ43*01 CDR1: TSINN CDR2: IRSNER CDR3: CATDGLPRF	TRBV13 TRBJ2-2*01 CDR1: PRHDT CDR2: FYEKMVQ CDR3: CASSFGTNTGELFF	2	Donor B87 Clone 2
TRAV8-1*01 TRAJ53*01 CDR1: YGGTVN CDR2: YFSGDPL CDR3: CAVNRPSGGSNYKLTF	TRBV11-1*01 TRBJ2-1*01 CDR1: SGHAT CDR2: FQDESQV CDR3: CASSFGQYNEQFF	1	Donor B87 Clone 3

Table 7: α - and β -chain gene usage and CDR sequences for TCRs specific for HLA-A*02:01-FLYALALL

Alpha Chain: V & J gene usage and CDR sequences	Beta Chain: V & J gene usage and CDR sequences	Number of cells	Donor & Clone no.
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATTGNSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSYGGGYGYTF	18	Donor J9B Clone 1
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CARVGDSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSYQGTGAYGYTF	10	Donor J9B Clone 2
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATEGDSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSYQGGSYGYTF	6	Donor A5L Clone 1
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATEGDSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSRQGGSYGYTF	4	Donor A5L Clone 2
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATEGDSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSPQGGNYGYTF	3	Donor A5L Clone 3
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATSGDSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSPQGGNYGYTF	3	Donor A5L Clone 4
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATVGNSGYSTLTF	TRBV6-5*01 TRBJ2-1*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSFQGGNEQFF	1	Donor A5L Clone 5
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATVGNSGYSTLTF	TRBV6-5*01 TRBJ1-5*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSTQGGYQPQHF	1	Donor A5L Clone 6
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATVGDSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSRQGGIDGYTF	1	Donor A5L Clone 7
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATVGNSGYSTLTF	TRBV6-5*01 TRBJ2-1*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSKQGGNEQFF	1	Donor A5L Clone 8

TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATVGNSGYSTLTF	TRBV6-5*01 TRBJ2-1*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSPQGGNEQFF	1	Donor A5L Clone 9
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATEGNSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASNRQGGNYGYTF	23	Donor T4W Clone 1
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATEGDSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSRQGGNYGYTF	11	Donor T4W Clone 2
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATEGNSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSQGGDHYGYTF	7	Donor T4W Clone 3
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATEGNSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSPQGGSRGYTF	4	Donor T4W Clone 4
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATEGDSGYSTLTF	TRBV6-5*01 TRBJ1-2*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASRLQGGFNGYTF	1	Donor T4W Clone 5
TRAV17*01 TRAJ11*01 CDR1: TSINN CDR2: IRSNER CDR3: CATVGDSGYSTLTF	TRBV6-5*01 TRBJ2-7*01 CDR1: MNHEY CDR2: SVGAGI CDR3: CASSVQGAHEQYF	1	Donor T4W Clone 6

The TCR highlighted in aqua was subsequently synthetically engineered into a lentivirus expression system.

Table 8: % of individuals that have HLA allele

	HLA- A*24:02	HLA- A*11:01	HLA- B*40:01	HLA- A*02:01
Austria	20.0%	6.5%	6.0%	48.0%
Belgium	12.5%	9.4%	12.2%	50.0%
England North West	13.8%	13.1%	11.4%	50.7%
France Southeast	20.0%	8.5%	4.6%	38.5%
Hong Kong Chinese	28.0%	48.8%	28.0%	11.9%
Indonesian Java Western	25.8%	30.1%	7.2%	12.7%
Ireland South	13.2%	11.2%	5.2%	43.6%
Ireland Northern	12.0%	15.0%	10.2%	46.8%
Italy North	11.5%	15.4%	?	53.8%
Malaysia Peninsular Malay	35.3%	30.7%	7.2%	11.6%
Netherlands	28.1%	9.4%	15.6%	45.3%
Singapore Chinese	28.2%	47.7%	28.2%	19.5%
Sri Lanka Colombo	30.3%	26.5%	3.4%	6.6%
USA Caucasian (Bethesda)	20.6%	14.0%	12.4%	47.8%
USA Caucasian(Philadelphia)	20.0%	12.6%	8.1%	40.7%
USA African American (Bethesda)	8.9%	0.0%	4.2%	16.8%

Reference: <http://www.allelefrequencies.net>

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CLAIMS

1. An isolated alpha chain of a T-cell receptor (TCR) or a fragment thereof, comprising at least one complementarity determining region (CDR) amino acid sequence according to any one of SEQ ID NOS:331-411 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.
2. The isolated alpha chain of Claim 1, further comprising one or more further CDR amino acid sequences according to any one of SEQ ID NOS: 7-87 and 169-249 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.
3. The isolated alpha chain of Claim 1 or Claim 2, which comprises, consists essentially of or consists of an amino acid sequence according to any one of SEQ ID NOS:655-735 and/or Figures 94 to 99, or an amino acid sequence at least 70% identical thereto.
4. The isolated alpha chain of any one of the preceding claims, comprising a cysteine residue at position 48 of a constant region thereof.
5. The isolated alpha chain of any one of the preceding claims, comprising one or more amino acid substitutions at positions 90, 91, 92 and/or 93 of a constant region thereof.
6. An isolated beta chain of a TCR or a fragment thereof, comprising at least one CDR amino acid sequence according to any one of SEQ ID NOS: 412-492 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.
7. The isolated beta chain of Claim 6, further comprising one or more further CDR amino acid sequences according to any one of SEQ ID NOS:88-168 and 250-330 and/or Tables 2-7 or an amino acid sequence at least 70% identical thereto.
8. The isolated beta chain of Claim 6 or Claim 7, which comprises, consists essentially of or consists of an amino acid sequence according to any one of SEQ ID NOS:736-816 and/or Figures 94 to 99, or an amino acid sequence at least 70%

identical thereto.

9. The isolated beta chain of any one of Claims 6 to 8, comprising a cysteine residue at position 57 of a constant region thereof.

10. The isolated beta chain of any one of Claims 6 to 9, comprising one or more amino acid substitutions at positions 18, 22, 133, 136 and/or 139 of a constant region thereof.

11. An isolated TCR or TCR fragment for binding an antigen derived from an Epstein Barr Virus (EBV), the TCR comprising:

(i) an isolated alpha chain or fragment thereof according to any one of Claims 1 to 5; and/or

(ii) an isolated beta chain or fragment thereof according to any one of Claims 6 to 10.

12. The isolated TCR of Claim 5, wherein the antigen is derived from latent membrane protein 1 (LMP-1) and/or latent membrane protein 2 (LMP-2).

13. The isolated TCR of Claim 11 or Claim 12, wherein the alpha chain and the beta chain are joined by a linker.

14. An isolated nucleic acid encoding:

(i) an isolated alpha chain or fragment thereof according to any one of Claims 1 to 5;

(ii) an isolated beta chain or fragment thereof according to any one of Claims 6 to 10; or

(iii) an isolated TCR or TCR fragment according to any one of Claims 11 to 13.

15. A genetic construct comprising the isolated nucleic acid of Claim 14.

16. A host cell comprising the isolated nucleic acid of Claim 14 and/or the genetic construct of Claim 15.

17. The host cell of Claim 16, wherein the host cell is or comprises a T cell.
18. A method of producing an isolated alpha chain or fragment thereof, an isolated beta chain or fragment thereof and/or an isolated TCR or TCR fragment, said method comprising; (i) culturing the host cell of Claim 16 or Claim 17; and (ii) isolating said alpha chain, beta chain and/or TCR from said host cell cultured in step (i).
19. An antibody or antibody fragment which binds and/or is raised against:
- (i) an isolated alpha chain or fragment thereof according to any one of Claims 1 to 5;
 - (ii) an isolated beta chain or fragment thereof according to any one of Claims 6 to 10; or
 - (iii) an isolated TCR or TCR fragment according to any one of Claims 11 to 13.
20. A composition comprising:
- (i) an isolated alpha chain or fragment thereof according to any one of Claims 1 to 5;
 - (ii) an isolated beta chain or fragment thereof according to any one of Claims 6 to 10;
 - (iii) an isolated TCR or TCR fragment according to any one of Claims 11 to 13;
 - (iv) an isolated nucleic acid of Claim 14;
 - (v) a genetic construct according to Claim 15; and/or
 - (vi) a host cell according to Claim 16 or Claim 17;
- and a pharmaceutically acceptable carrier, diluent or excipient.
21. A method of treating or preventing an EBV-associated disease, disorder or condition in a subject, said method including the step of administering a therapeutically effective amount of an isolated alpha chain or fragment thereof according to any one of Claims 1 to 5, an isolated beta chain or fragment thereof according to any one of Claims 6 to 10, an isolated TCR or TCR fragment according to any one of Claims 11 to 13, an isolated nucleic acid of Claim 14, a genetic

construct according to Claim 15, a host cell according to Claim 16 or Claim 17, and/or the composition of Claim 20 to the subject to thereby treat or prevent the EBV-associated disease, disorder or condition in the subject.

22. A method of performing cellular immunotherapy in a subject having an EBV-associated disease, disorder or condition, said method including the step of administering a therapeutically effective amount of a host cell according to Claim 16 or Claim 17 and optionally a pharmaceutically acceptable carrier, diluent or excipient to the subject.

23. The method of Claim 21 or Claim 22, wherein the EBV-associated disease, disorder or condition is or comprises a cancer.

24. The method of Claim 23, wherein the EBV-associated disease, disorder or condition is selected from the group consisting of nasopharyngeal carcinoma, NKT cell lymphoma, Hodgkin's Lymphoma, post-transplant lymphoproliferative disease, Burkitt's lymphoma, Diffuse large B-cell lymphoma, gastric cancer, and any combination thereof.

25. The method of Claim 22, wherein the EBV-associated disease, disorder or condition is or comprises multiple sclerosis.

26. The isolated alpha chain or fragment thereof according to any one of Claims 1 to 5, the isolated beta chain or fragment thereof according to any one of Claims 6 to 10, the isolated TCR or TCR fragment according to any one of Claims 11 to 13, the isolated nucleic acid of Claim 14, the genetic construct according to Claim 15, the host cell according to Claim 16 or Claim 17, or the composition of Claim 20 for use in the method of Claims 21 or 23 to 25.

27. The host cell according to Claim 16 or Claim 17, for use in the method of any one of Claims 22 to 25.

28. A method of detecting or isolating a T-cell in a biological sample from a subject, the method including the step of contacting the biological sample with an

antibody or antibody fragment according to Claim 19 for a time and under conditions sufficient to thereby detect or isolate said T-cell.

29. The method of Claim 28, wherein the detected or isolated T-cell is suitable for use in cellular immunotherapy of an EBV-associated disease, disorder or condition.

30. The method of Claim 28 or Claim 29, wherein the T-cell comprises an alpha chain of any one of Claims 1 to 5, a beta chain of any one of Claims 6 to 10 and/or a T-cell receptor according to one of Claims 11 to 13.

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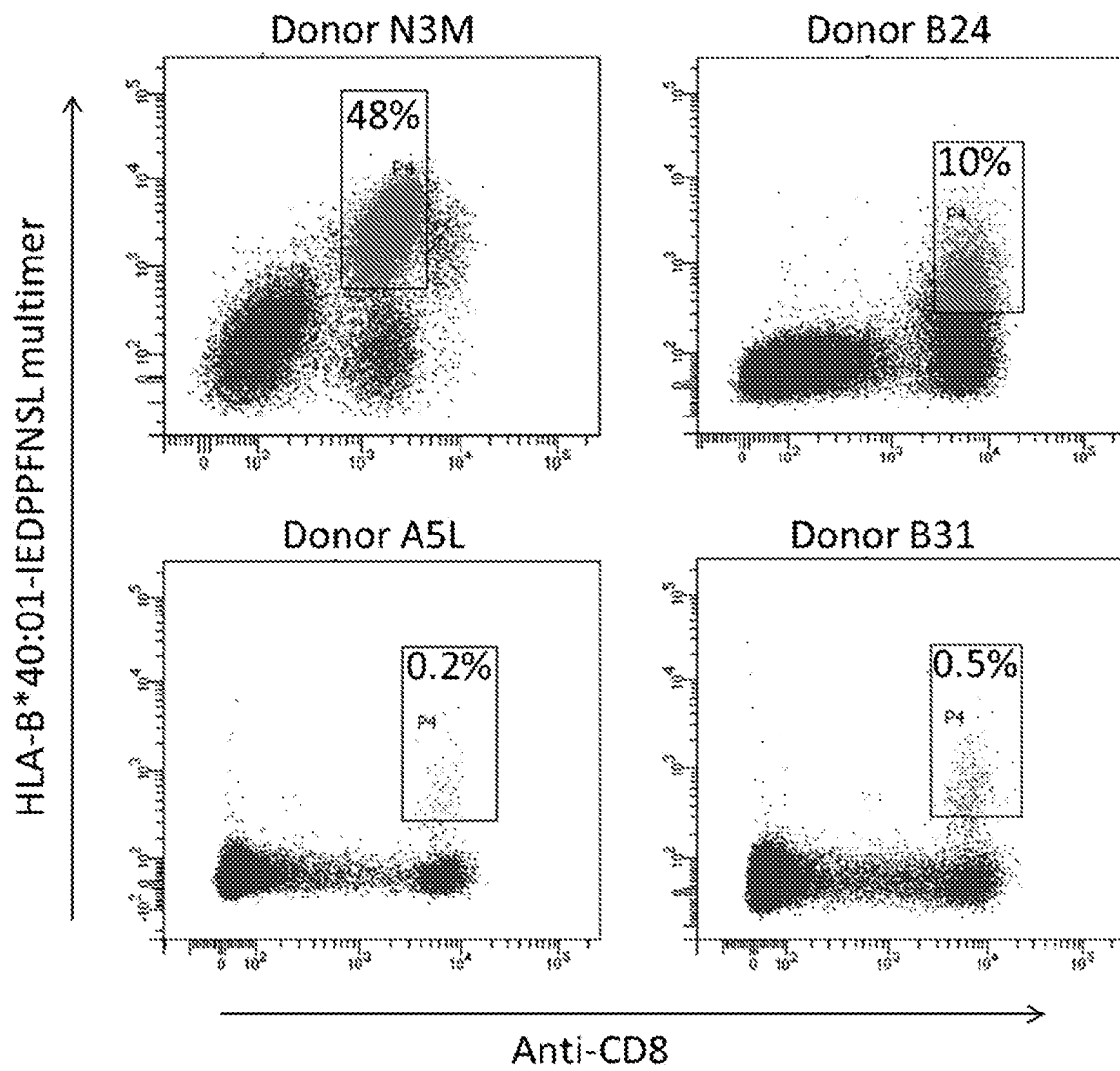


FIG. 1

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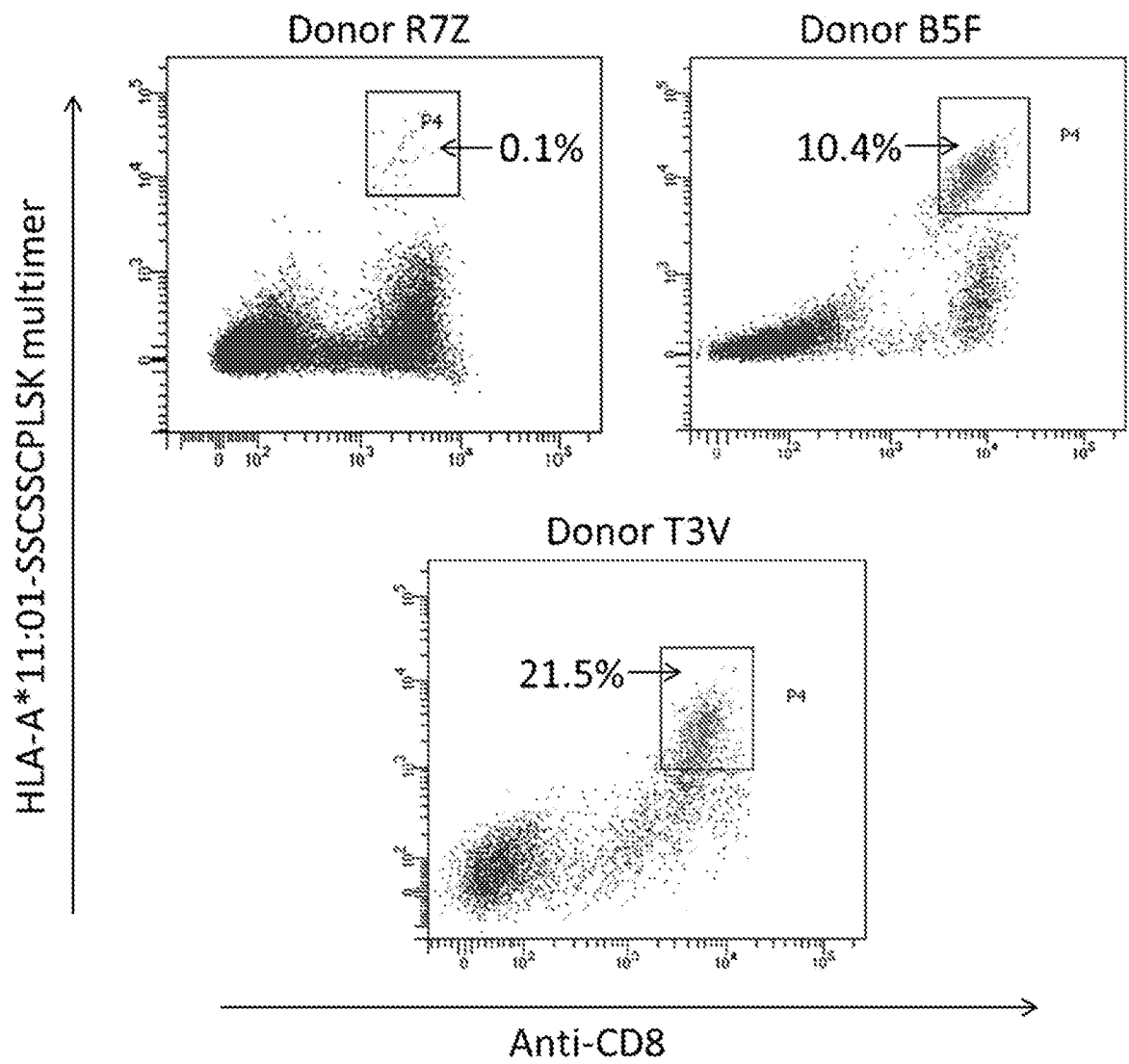


FIG. 2

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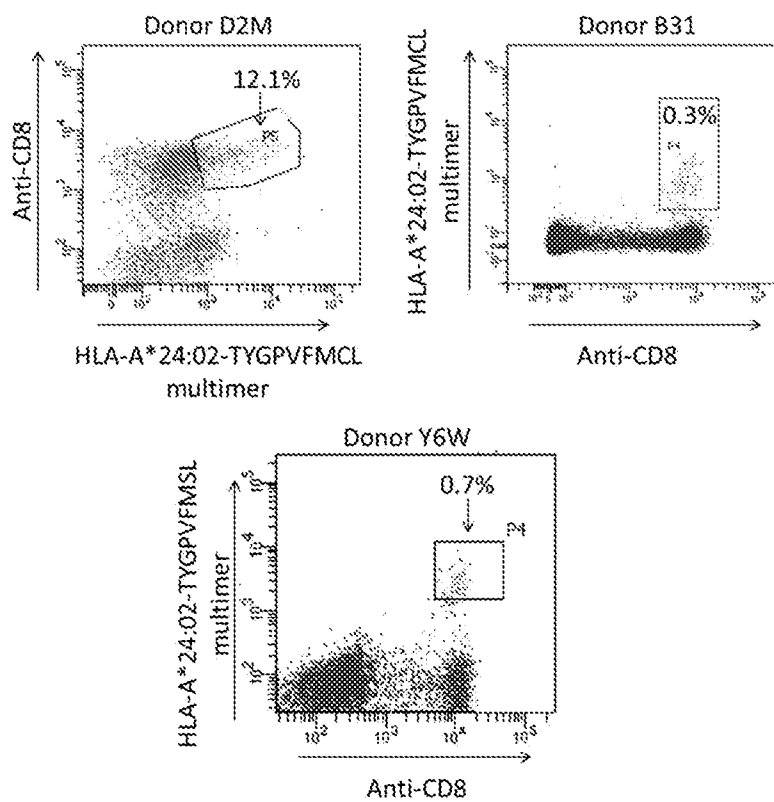


FIG. 3

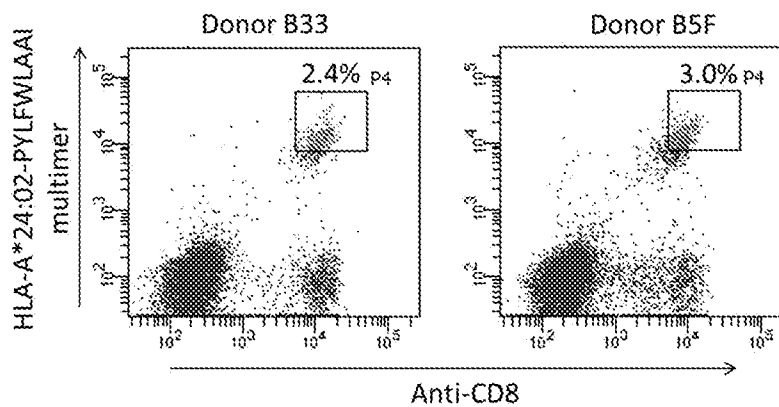


FIG. 4

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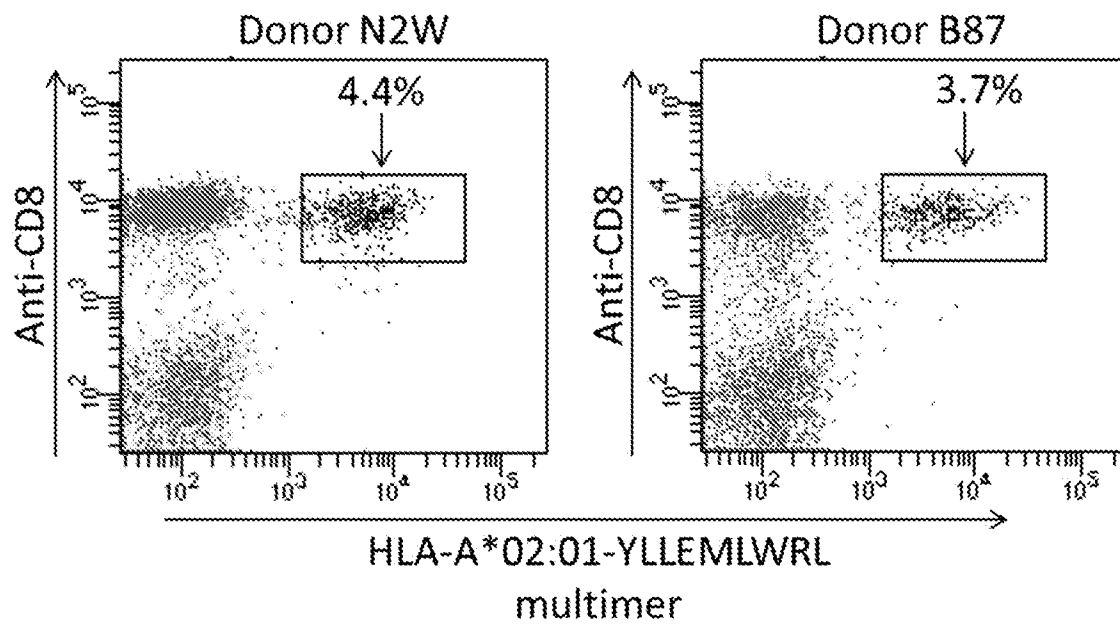


FIG. 5

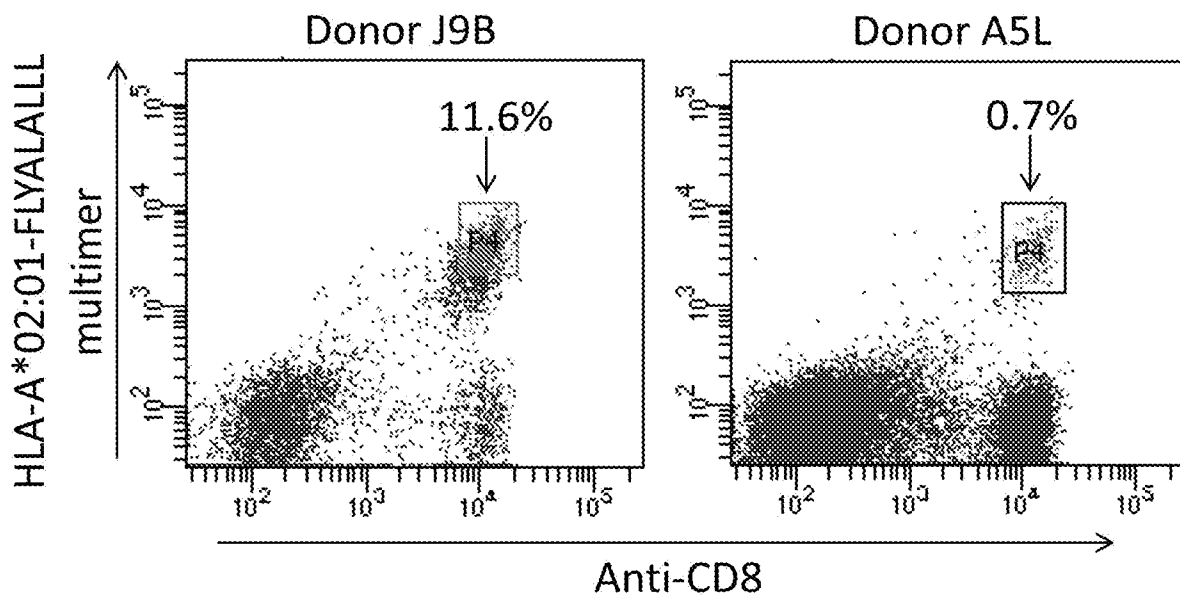


FIG. 6

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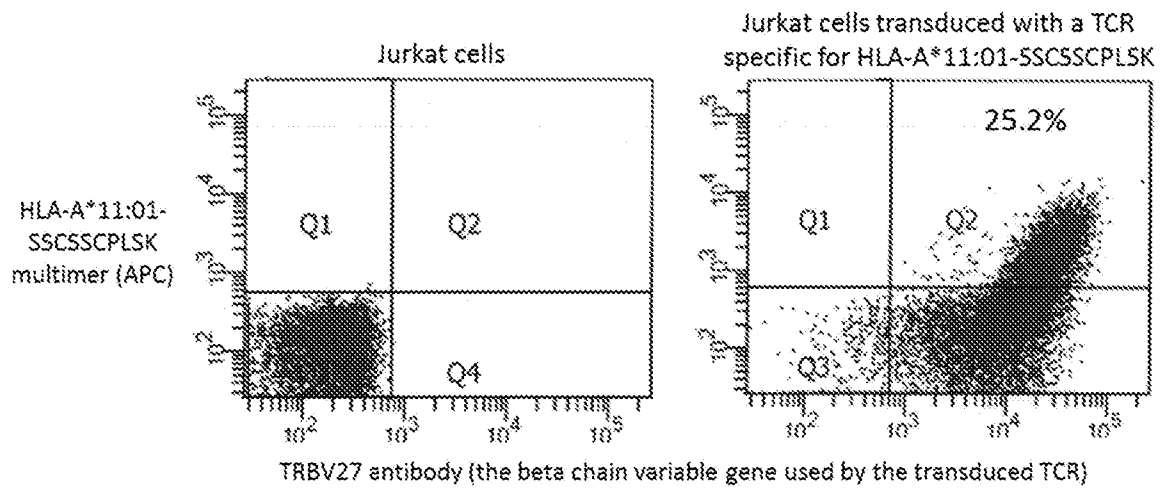


FIG. 7

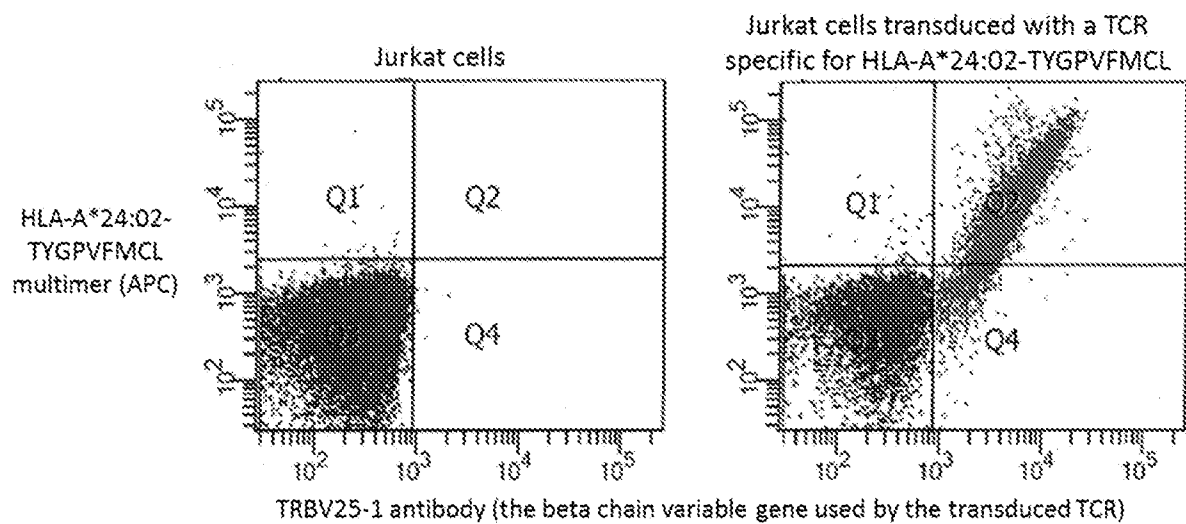


FIG. 8

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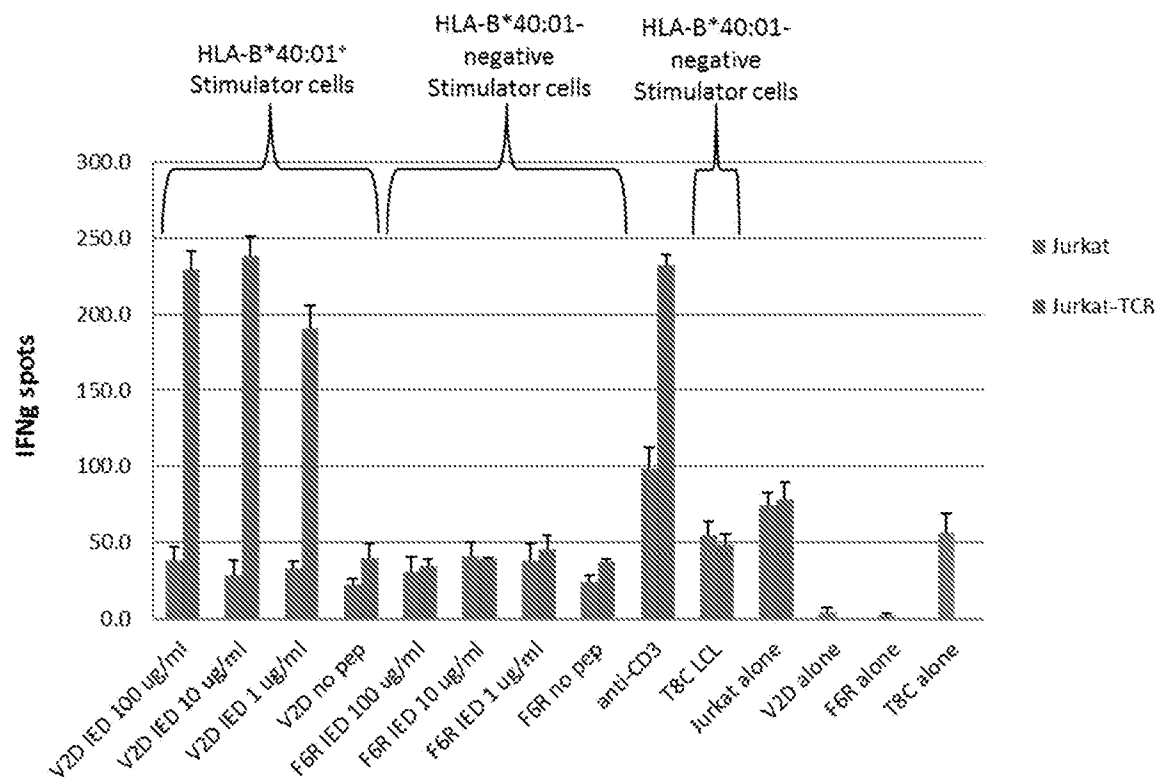


FIG. 9

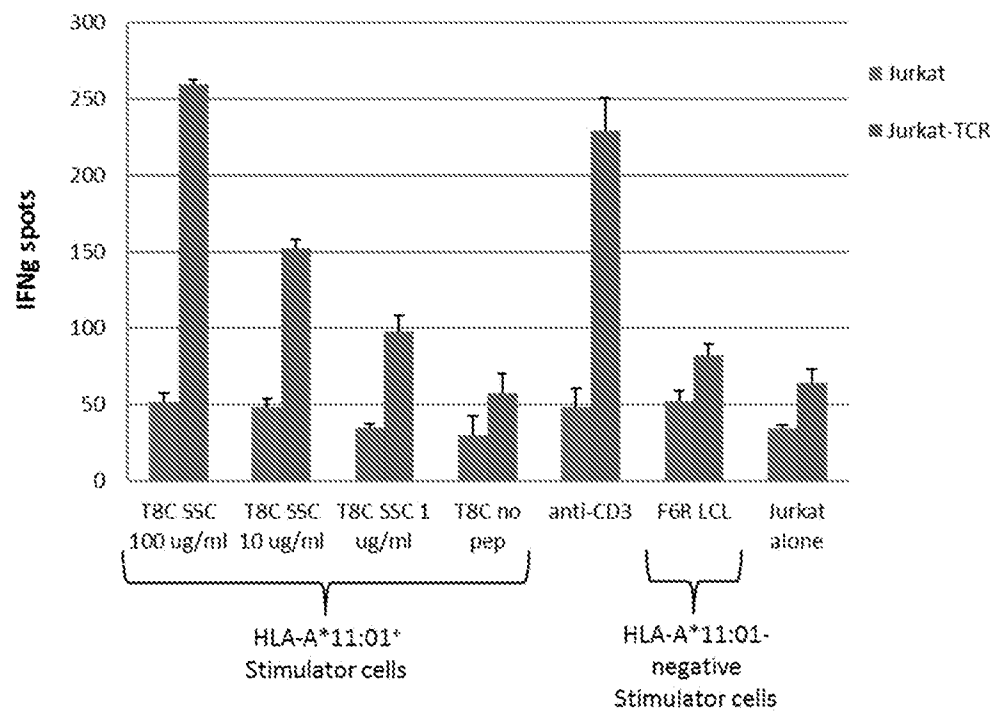


FIG. 10

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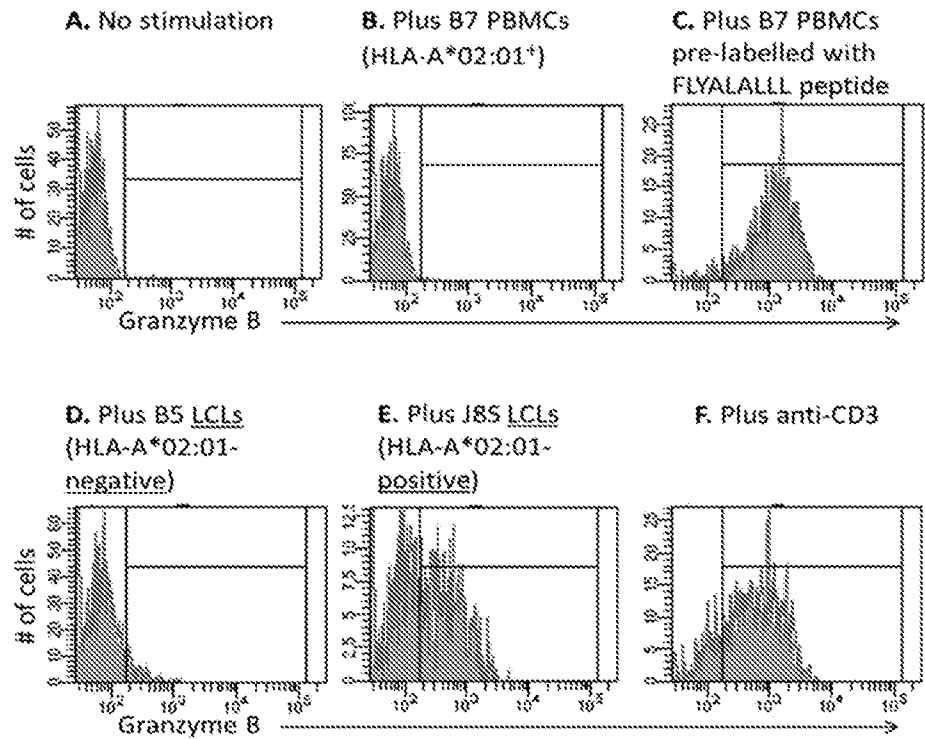


FIG. 11

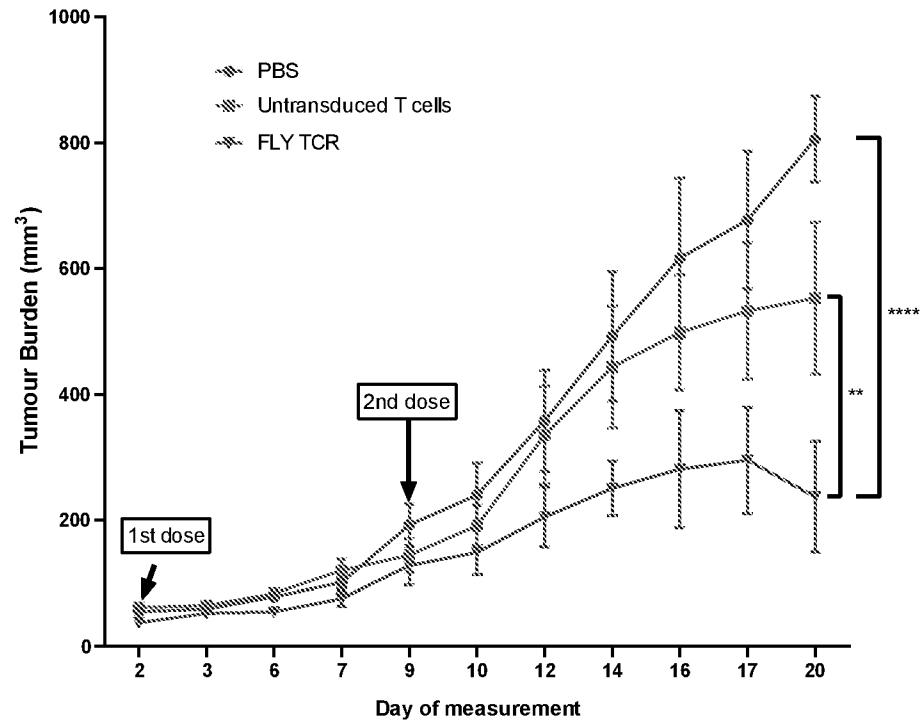


FIG. 12

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TCRs specific for HLA-B*40:01-IEDPPFNSL**Donor N3M Clone 1 (IED)****Alpha chain:**

ATGGAGACCCTGCTGGGCCTGCTGATCCTGTGGCTGCAGCTGCAGTGGGT	50
GAGCAGCAAGCAGGAGGTGACCCAGATCCCCGCCGCCCTGAGCGTGCCCG	100
AGGGCGAGAACCTGGTGTGAACTGCAGCTTCACCGACAGCGCCATCTAC	150
AACCTGCAGTGGTTCCGCCAGGACCCCGCAAGGGCCTGACCAGCCTGCT	200
GCTGATCCAGAGCAGCCAGCGCGAGCAGACCAGCGGCCGCCCTGAACGCCA	250
GCCTGGACAAGAGCAGCGGCCCGCAGCACCTGTACATCGCCGCCAGCCAG	300
CCCGGCCGACAGCGCCACCTACCTGTGCGCCGTGTACAGCGGCCGCCGCGAG	350
CTACCAGCTGACCTTCGGCAAGGGCACCAAGCTGAGCGTGATCCCCAACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCCCCCAGCTGCTGGGCTACGTGGTGCTGTGCCTGCTGGGCGCCGG	50
CCCCCTGGAGGCCCAGGTGACCCAGAACCCCGCTACCTGATCACCGTGA	100
CCGGCAAGAAGCTGACCGTGACCTGCAGCCAGAACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCCCTGGGCCCTGCGCCAGATCTACTA	200
CAGCATGAACGTGGAGGTGACCGACAAGGGCGACGTGCCCCGAGGGCTACA	250
AGGTGAGCCGCAAGGAGAAGCGCAACTTCCCCCTGATCCTGGAGAGCCCC	300
AGCCCCAACCCAGACCAGCCTGTACTTCTGCGCCAGCCGCACCGGCGGCGT	350
GAACGAGCAGTACTTCGGCCCCGGCACCCGCCCTGACCGTGACCGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTGCACCGACCCCCAGCCCTGAAGGAGCAGCCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCGTGGGGCCGCGCCGACTGCGGCTTCAACAGCGT	800
GAGCTACCAGCAGGGCGTGTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 13

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Donor B24 Clone 1 (IED)**Alpha chain:**

ATGTGGGGCGTGTTCCTGCTGTACGTGAGCATGAAGATGGGCGGCACCAC	50
CGGCCAGAACATCGACCAGCCCACCGAGATGACCGCCACCGAGGGCGCCA	100
TCGTGCAGATCAACTGCACCTACCAGACCAGCGGCTTCAACGGCCTGTTC	150
TGGTACCAGCAGCACGCCGGCGAGGCCCCCACCTTCCTGAGCTACAACGT	200
GCTGGACGGCCTGGAGGAGAAGGGCCGCTTCAGCAGCTTCCTGAGCCGCA	250
GCAAGGGCTACAGCTACCTGCTGCTGAAGGAGCTGCAGATGAAGGACAGC	300
GCCAGCTACCTGTGCGCCGTGGGCGGCAACACCGGCGGCTTCAAGACCAT	350
CTTCGGCGCCGGCACCCGCTGTTCGTGAAGGCCAACATCCAGAACCCCG	400
ACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTG	450
TGCCTGTTACCCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGA	500
CAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGG	550
ACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCC	600
TGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCC	650
CAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGA	700
CCGACACCAACCTGAACTTCAGAACCTGAGCGTGATCGGCTTCCGCATC	750
CTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTG	800
GAGCAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGCGCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCTGCGCTGCAGCCCCCGCAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCCTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCGCCGGCCAGGG	350
CCTGGCCGGCGACGAGCAGTTCTTCGGCCCCGGCACCCGCCCTGACCGTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 14

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Donor B24 Clone 2 (IED)**Alpha chain:**

ATGCTGACCGCCAGCCTGCTGCGCGCCGTGATCGCCAGCATCTGCGTGGT	50
GAGCAGCATGGCCCAGAAGGTGACCCAGGCCCAGACCGAGATCAGCGTGG	100
TGGAGAAGGAGGACGTGACCCTGGACTGCGTGACGAGACCCGCGACACC	150
ACCTACTACCTGTTCTGGTACAAGCAGCCCCCAGCGGCGAGCTGGTGTT	200
CCTGATCCGCCGCAACAGCTTCGACGAGCAGAACGAGATCAGCGGCCGCT	250
ACAGCTGGAACCTTCCAGAAGAGCACCAGCAGCTTCAACTTCACCATCACC	300
GCCAGCCAGGTGGTGGACAGCGCCGTGTACTTCTGCGCCCTGAGCGAGGC	350
CCGCGGCAGCCAGGGCAACCTGATCTTCGGCAAGGGCACCAAGCTGAGCG	400
TGAAGCCCCAACATCCAGAACCCCGACCCGCGCTGTACCAGCTGCGCGAC	450
AGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCA	500
GACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCAGACAAGT	550
GCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCC	600
TGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCAT	650
CATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGA	700
AGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAAC	750
CTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAA	800
CCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCTGCCGCTGCTGTGCTGCGCCGTGCTGTGCCTGCTGGGCGCCGT	50
GCCCCATCGACACCGAGGTGACCCAGACCCCCAAGCACCTGGTGATGGGCA	100
TGACCAACAAGAAGAGCCTGAAGTGCGAGCAGCACATGGGCCACCGCGCC	150
ATGTACTGGTACAAGCAGAAGGCCAAGAAGCCCCCGAGCTGATGTTCTGT	200
GTACAGCTACGAGAAGCTGAGCATCAACGAGAGCGTGCCCAGCCGCTTCA	250
GCCCCGAGTGCCCCAACAGCAGCCTGCTGAACCTGCACCTGCACGCCCTG	300
CAGCCCCGAGGACAGCGCCCTGTACCTGTGCGCCAGCAGCCAGGAGGCCGC	350
CAGCGGCGGCCTGATCAACGAGCAGTTCTTCGGCCCCGGCACCCGCCTGA	400
CCGTGCTGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTT	450
GAGCCCAGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTG	500
CCTGGCCACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGA	550
ACGGCAAGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCTGAAG	600
GAGCAGCCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCG	650
CGTGAGCGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGG	700
TGCAGTTCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCC	750
AAGCCCGTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTG	800
CGGCTTCACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCC	850
TGTACGAGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGC	900
GCCCTGGTGTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 15

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Donor B24 Clone 3 (IED)**Alpha chain:**

ATGAAGCTGGTGACCAGCATCACCGTGCTGCTGAGCCTGGGCATCATGGG	50
CGACGCCAAGACCACCCAGCCCCAACAGCATGGAGAGCAACGAGGAGGAGC	100
CCGTGCACCTGCCCTGCAACCACAGCACCATCAGCGGCACCGACTACATC	150
CACTGGTACCGCCAGCTGCCCAGCCAGGGCCCCGAGTACGTGATCCACGG	200
CCTGACCAGCAACGTGAACAACCGCATGGCCAGCCTGGCCATCGCCGAGG	250
ACCGCAAGAGCAGCACCCCTGATCCTGCACCGCGCCACCCTGCGCGACGCC	300
GCCGTGTACTACTGCATCCTGCGCGACGTGACCGGCGGCTTCAAGACCAT	350
CTTCGGCGCCGGCACCCGCTGTTTCGTGAAGGCCAACATCCAGAACCCCG	400
ACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTG	450
TGCCTGTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGA	500
CAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGG	550
ACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCC	600
TGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCC	650
CAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGA	700
CCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATC	750
CTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTGCGCCTGTG	800
GAGCAGC	

Beta chain:

ATGGGCCCCCAGCTGCTGGGCTACGTGGTGCTGTGCCTGCTGGGCGCCGG	50
CCCCCTGGAGGCCCAGGTGACCCAGAACCCCCGCTACCTGATCACCGTGA	100
CCGGCAAGAAGCTGACCGTGACCTGCAGCCAGAACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCCGGCCTGGGCTGCGCCAGATCTACTA	200
CAGCATGAACGTGGAGGTGACCGACAAGGGCGACGTGCCCCGAGGGCTACA	250
AGGTGAGCCGCAAGGAGAAGCGCAACTTCCCCCTGATCCTGGAGAGCCCC	300
AGCCCCAACCCAGACCAGCCTGTACTTCTGCGCCAGCAGCTACAGCGGCGG	350
CCCCCTGTACGAGCAGTACTTCGGCCCCCGGCACCCGCCTGACCGTGACCG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCTG	750
ACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 16

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Donor B24 Clone 4 (IED)**Alpha chain:**

ATGCTGCTGGAGCACCTGCTGATCATCCTGTGGATGCAGCTGACCTGGGT	50
GAGCGGCCAGCAGCTGAACCAGAGCCCCCAGAGCATGTTTCATCCAGGAGG	100
GCGAGGACGTGAGCATGAACTGCACCAGCAGCAGCATCTTCAACACCTGG	150
CTGTGGTACAAGCAGGACCCCGGCGAGGGCCCCGTGCTGCTGATCGCCCT	200
GTACAAGGCCGGCGAGCTGACCAGCAACGGCCGCTGACCGCCCAGTTTCG	250
GCATCACCCGCAAGGACAGCTTCTTGAACATCAGCGCCAGCATCCCCAGC	300
GACGTGGGCATCTACTTCTGCGCCGGCCGCGGCAGCTACAACCTTCAACAA	350
GTTCTACTTTCGGCAGCGGCACCAAGCTGAACGTGAAGCCCCAACATCCAGA	400
ACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAG	450
AGCGTGTGCCTGTTTCAACGACTTCGACAGCCAGACCAACGTGAGCCAGAG	500
CAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCA	550
GCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGAC	600
TTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTT	650
CTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCT	700
TCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTC	750
CGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTTGC	800
CCTGTGGAGCAGC	

Beta chain:

ATGGGCCCCCAGCTGCTGGGCTACGTGGTGCTGTGCCTGCTGGGCGCCGG	50
CCCCCTGGAGGCCCAGGTGACCCAGAACCCCCGCTACCTGATCACCGTGA	100
CCGGCAAGAAGCTGACCGTGACCTGCAGCCAGAACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCCCTGGGCTGCGCCAGATCTACTA	200
CAGCATGAACGTGGAGGTGACCGACAAGGGCGACGTGCCCCGAGGGCTACA	250
AGGTGAGCCGCAAGGAGAAGCGCAACTTCCCCCTGATCCTGGAGAGCCCC	300
AGCCCCAACCAGACCAGCCTGTACTTCTGCGCCAGCAGCTACGCCGGCGG	350
CCCCCAGTACGGCTACACCTTCGGCAGCGGCACCCGCTGACCGTGGTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCTG	750
ACCCAGATCGTGAGCGCCGAGGCCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCGTGCTGGTGGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 17

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Donor A5L Clone 1 (IED)**Alpha chain:**

ATGTGGGGCGCCTTCTCTGCTGTACGTGAGCATGAAGATGGGCGGCACCGC	50
CGGCCAGAGCCTGGAGCAGCCCAGCGAGGTGACCGCCGTGGAGGGCGCCA	100
TCGTGCAGATCAACTGCACCTACCAGACCAGCGGCTTCTACGGCCTGAGC	150
TGGTACCAGCAGCACGACGGCGGCGCCCCACCTTCTGAGCTACAACGC	200
CCTGGACGGCCTGGAGGAGACCGGCCGCTTCAGCAGCTTCTGAGCCGCA	250
GCGACAGCTACGGCTACCTGCTGCTGCAGGAGCTGCAGATGAAGGACAGC	300
GCCAGCTACTTCTGCGCCAGCAGCGAGGGCAAGCTGATCTTCGGCCAGGG	350
CACCGAGCTGAGCGTGAAGCCCCAACATCCAGAACCCCGACCCCGCCGTGT	400
ACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTCAAC	450
GACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTA	500
CATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCA	550
ACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCC	600
TTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAG	650
CAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACC	700
TGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAG	750
GTGGCCGGCTTCAACCTGCTGATGACCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGCTGCTGCTGCTGCTGCTGCTGGGCCCCGGCATCAGCCTGCTGCTGCC	50
CGGCAGCCTGGCCGGCAGCGGCCTGGGCGCCGTGGTGAGCCAGCACCCCA	100
GCTGGGTGATCTGCAAGAGCGGCACACAGCGTGAAGATCGAGTGCCGCAGC	150
CTGGACTTCCAGGCCACCACCATGTTCTGGTACCGCCAGTTCCCCAAGCA	200
GAGCCTGATGCTGATGGCCACCAGCAACGAGGGCAGCAAGGCCACCTACG	250
AGCAGGGCGTGAGAGAAGGACAAGTTCTCTGATCAACCACGCCAGCCTGACC	300
CTGAGCACCTTGACCGTGACCAGCGCCCCACCCGAGGACAGCAGCTTCTA	350
CATCTGCAGCGCCCCGCGACGGCAGCCCCATCGCCGGCGGCCCTGAACGAGC	400
AGTTCTTCGGCCCCGGCACCCGCCCTGACCGTGCTGGAGGACCTGAACAAG	450
GTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCCGAGATCAG	500
CCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTTCTTCCCCG	550
ACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGCACAGCGGC	600
GTGTGCACCGACCCCCAGCCCCTGAAGGAGCAGCCCGCCCTGAACGACAG	650
CCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTTCTGGCAGA	700
ACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCCTGAGCGAG	750
AACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAGATCGTGAG	800
CGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAACAGCGTGAGCTACC	850
AGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGCTGGGCAAG	900
GCCACCCTGTACGCCGTGCTGGTGAAGCGCCCTGGTGTGATGGCCATGGT	950
GAAGCGCAAGGACTTC	

FIG. 18

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Donor A5L Clone 2 (IED)**Alpha chain:**

ATGAAGCCCACCCCTGATCAGCGTGCTGGTGATCATCTTCATCCTGCGCGG	50
CACCCGCGCCCGAGCGCGTGACCCAGCCCGAGAAGCTGCTGAGCGTGTTCA	100
AGGGCGCCCCCGTGAGCTGAAGTGCAACTACAGCTACAGCGGCAGCCCC	150
GAGCTGTTCTGGTACGTGCAGTACAGCCGCCAGCGCCTGCAGCTGCTGCT	200
GCGCCACATCAGCCGCGAGAGCATCAAGGGCTTCACCGCCGACCTGAACA	250
AGGGCGAGACCAGCTTCCACCTGAAGAAGCCCTTCGCCCAGGAGGAGGAC	300
AGCGCCATGTACTACTGCGCCCTGCGCTGGCAGACCGGCGCCAACAACCT	350
GTTCTTCGGCACCGGCACCCGCCTGACCGTGATCCCCTACATCCAGAACC	400
CCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGC	450
GTGTGCCTGTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAA	500
GGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCA	550
TGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTC	600
GCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTT	650
CCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCG	700
AGACCGACACCAACCTGAACCTTCCAGAACCTGAGCGTGATCGGCTTCCGC	750
ATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCCTGCGCCT	800
GTGGAGCAGC	

Beta chain:

ATGGGCCCCCAGCTGCTGGGCTACGTGGTGCTGTGCCTGCTGGGCGCCGG	50
CCCCCTGGAGGCCCAGGTGACCCAGAACCCCCGCTACCTGATCACCGTGA	100
CCGGCAAGAAGCTGACCGTGACCTGCAGCCAGAACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCCGGCCTGGGCTGCGCCAGATCTACTA	200
CAGCATGAACGTGGAGGTGACCGACAAGGGCGACGTGCCCCGAGGGCTACA	250
AGGTGAGCCGCAAGGAGAAGCGCAACTTCCCCCTGATCCTGGAGAGCCCC	300
AGCCCCAACCCAGACCAGCCTGTACTTCTGCGCCAGCAGCTACAGCGGCGG	350
CCCCCTGTACGAGCAGTACTTCGGCCCCCGCACCCGCCTGACCGTGACCG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCTG	750
ACCCAGATCGTGAGCGCCGAGGCCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 19

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Donor A5L Clone 3 (IED)**Alpha chain:**

ATGTGGGGCGTGTTCTCTGCTGTACGTGAGCATGAAGATGGGCGGCACCAC	50
CGGCCAGAACATCGACCAGCCCACCGAGATGACCGCCACCGAGGGCGCCA	100
TCGTGCAGATCAACTGCACCTACCAGACCAGCGGCTTCAACGGCCTGTTC	150
TGGTACCAGCAGCACGCCGGCGAGGCCCCACCTTCTGAGCTACAACGT	200
GCTGGACGGCCTGGAGGAGAAGGGCCGCTTCAGCAGCTTCTGAGCCGCA	250
GCAAGGGCTACAGCTACCTGCTGCTGAAGGAGCTGCAGATGAAGGACAGC	300
GCCAGCTACCTGTGCGCCGTGAACGGCGGCACCGGCGGCTTCAAGACCAT	350
CTTCGGCGCCGGCACCCGCTGTTCGTGAAGGCCAACATCCAGAACCCCG	400
ACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTG	450
TGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGA	500
CAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGG	550
ACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCC	600
TGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCC	650
CAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGA	700
CCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATC	750
CTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTTGCGCCTGTG	800
GAGCAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGCCCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCTGCGCTGCAGCCCCCGCAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCGTGGGCGAGGG	350
CCTGGCCGGCGACACCCAGTACTTCGGCCCCGGCACCCGCCCTGACCGTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCTGTACGCCGTGCTGGTGGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 20

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Donor A5L Clone 4 (IED)**Alpha chain:**

ATGGAGAAGAACCCCTGGCCGCCCCCTGCTGATCCTGTGGTTCCACCT	50
GGACTGCGTGAGCAGCATCCTGAACGTGGAGCAGAGCCCCAGAGCCTGC	100
ACGTGCAGGAGGGCGACAGCACCAACTTCACCTGCAGCTTCCCCAGCAGC	150
AACTTCTACGCCCTGCACTGGTACCGCTGGGAGACCGCCAAGAGCCCCGA	200
GGCCCTGTTTCGTGATGACCCTGAACGGCGACGAGAAGAAGAAGGGCCGCA	250
TCAGCGCCACCCTGAACACCAAGGAGGGCTACAGCTACCTGTACATCAAG	300
GGCAGCCAGCCCCGAGGACAGCGCCACCTACCTGTGCGCCAGCCCCCGCAC	350
CGGCTTCCAGAAGCTGGTGTTCGGCACCGGCACCCGCTGCTGGTGAGCC	400
CCAACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAG	450
AGCAGCGACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAA	500
CGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGC	550
TGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGC	600
AACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCC	650
CGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGG	700
TGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGC	750
GTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCT	800
GATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCCCCCAGCTGCTGGGCTACGTGGTGCTGTGCCTGCTGGGCGCCGG	50
CCCCCTGGAGGCCCAGGTGACCCAGAACCCCGCTACCTGATCACCGTGA	100
CCGGCAAGAAGCTGACCGTGACCTGCAGCCAGAACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCCCTGGGCTGCGCCAGATCTACTA	200
CAGCATGAACGTGGAGGTGACCGACAAGGGCGACGTGCCCCGAGGGCTACA	250
AGGTGAGCCGCAAGGAGAAGCGCAACTTCCCCCTGATCCTGGAGAGCCCC	300
AGCCCCAACCAGACCAGCCTGTACTTCTGCGCCAGCCGCTACAGCGGCGG	350
CCCCCTGTACGAGCAGTTCTTCGGCCCCCGGCACCCGCTGACCGTGCTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGGCCAAGCCCGTG	750
ACCCAGATCGTGAGCGCCGAGGCCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 21

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Donor A5L Clone 5 (IED)**Alpha chain:**

ATGTGGGGCGCCTTCCTGCTGTACGTGAGCATGAAGATGGGCGGCACCGC	50
CGGCCAGAGCCTGGAGCAGCCCAGCGAGGTGACCGCCGTGGAGGGCGCCA	100
TCGTGCAGATCAACTGCACCTACCAGACCAGCGGCTTCTACGGCCTGAGC	150
TGGTACCAGCAGCACGACGGCGGCGCCCCACCTTCCTGAGCTACAACGC	200
CCTGGACGGCCTGGAGGAGACCGGCCGCTTCAGCAGCTTCCTGAGCCGCA	250
GCGACAGCTACGGCTACCTGCTGCTGCAGGAGCTGCAGATGAAGGACAGC	300
GCCAGCTACTTCTGCGCCAGCACCGAGGGCAAGCTGATCTTCGGCCAGGG	350
CACCGAGCTGAGCGTGAAGCCCCAACATCCAGAACCCCGACCCCGCCGTGT	400
ACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTCAAC	450
GACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTA	500
CATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCA	550
ACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCC	600
TTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAG	650
CAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACC	700
TGAACTTCAGAACCTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAG	750
GTGGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGCTGCTGCTGCTGCTGCTGCTGGGCCCCGGCATCAGCCTGCTGCTGCC	50
CGGCAGCCTGGCCGGCAGCGGCCTGGGCGCCGTGGTGAGCCAGCACCCCA	100
GCTGGGTGATCTGCAAGAGCGGCACACAGCGTGAAGATCGAGTGCCGCAGC	150
CTGGACTTCCAGGCCACCACCATGTTCTGGTACCGCCAGTTCCCCAAGCA	200
GAGCCTGATGCTGATGGCCACCAGCAACGAGGGCAGCAAGGCCACCTACG	250
AGCAGGGCGTGGAAGAAGGACAAGTTCCCTGATCAACCACGCCAGCCTGACC	300
CTGAGCACCCCTGACCGTGACCAGCGCCCCACCCGAGGACAGCAGCTTCTA	350
CATCTGCAGCGCCCCGCGACGGCAGCCCCATCGCCGGCGGCCCTGAACGAGC	400
AGTTCTTCGGCCCCGGCACCCGCCCTGACCGTGCTGGAGGACCTGAACAAG	450
GTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCCGAGATCAG	500
CCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTTCTTCCCCG	550
ACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGCACAGCGGC	600
GTGTGCACCGACCCCCAGCCCCTGAAGGAGCAGCCCGCCCTGAACGACAG	650
CCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTTCTGGCAGA	700
ACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCCTGAGCGAG	750
AACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAGATCGTGAG	800
CGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAACAGCGTGAGCTACC	850
AGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGCTGGGCAAG	900
GCCACCCTGTACGCCGTGCTGGTGAAGCGCCCTGGTGTGCTGATGGCCATGGT	950
GAAGCGCAAGGACTTC	

FIG. 22

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Donor B31 Clone 1 (IED)**Alpha chain:**

ATGACCCGCGTGAGCCTGCTGTGGGCCGTGGTGGTGAGCACCTGCCTGGA	50
GAGCGGCATGGCCCAGACCGTGACCCAGAGCCAGCCCGAGATGAGCGTGC	100
AGGAGGCCGAGACCGTGACCCCTGAGCTGCACCTACGACACCAGCGAGAAC	150
AACTACTACCTGTTCTGGTACAAGCAGCCCCCAGCCGCCAGATGATCCT	200
GGTGATCCGCCAGGAGGCCTACAAGCAGCAGAACGCCACCGAGAACCGCT	250
TCAGCGTGAACCTTCCAGAAGGCCGCCAAGAGCTTCAGCCTGAAGATCAGC	300
GACAGCCAGCTGGGCGACACCGCCATGTACTTCTGCGCCTTCATGACCGT	350
GTACAACCAGGGCGGCAAGCTGATCTTCGGCCAGGGCACCGAGCTGAGCG	400
TGAAGCCCCAACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGAC	450
AGCAAGAGCAGCGACAAGAGCGTGTGCCGTTCACCGACTTCGACAGCCA	500
GACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGT	550
GCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCC	600
TGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCAT	650
CATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGA	700
AGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAAC	750
CTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAA	800
CCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCTGCCGCCTGCTGTGCTGCGCCGTGCTGTGCCTGCTGGGCGCCGT	50
GCCCCATCGACACCGAGGTGACCCAGACCCCCAAGCACCTGGTGATGGGCA	100
TGACCAACAAGAAGAGCCTGAAGTGCGAGCAGCACATGGGCCCACCGCGCC	150
ATGTACTGGTACAAGCAGAAGGCCAAGAAGCCCCCGAGCTGATGTTTCGT	200
GTACAGCTACGAGAAGCTGAGCATCAACGAGAGCGTGCCCAGCCGCTTCA	250
GCCCCGAGTGCCCCAACAGCAGCCTGCTGAACCTGCACCTGCACGCCCTG	300
CAGCCCCGAGGACAGCGCCCTGTACCTGTGCGCCAGCAGCCAGGAGGCCGG	350
CCGCCAGAACACCCAGTACTTTCGGCCCCGGCACCCGCTGACCGTGCTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCTG	750
ACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCCTGTACGCCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 23

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Donor B31 Clone 2 (IED)**Alpha chain:**

ATGGAGACCCTGCTGGGCCTGCTGATCCTGTGGCTGCAGCTGCAGTGGGT	50
GAGCAGCAAGCAGGAGGTGACCCAGATCCCCGCCGCCCTGAGCGTGCCCG	100
AGGGCGAGAACCTGGTGTGAACTGCAGCTTCACCGACAGCGCCATCTAC	150
AACCTGCAGTGGTTCCGCCAGGACCCCGCAAGGGCCTGACCAGCCTGCT	200
GCTGATCCAGAGCAGCCAGCGCGAGCAGACCAGCGGCCGCCCTGAACGCCA	250
GCCTGGACAAGAGCAGCGGCCGAGCACCCTGTACATCGCCGCCAGCCAG	300
CCCGGCGACAGCGCCACCTACCTGTGCGCCCCCTACAGCGGCCCGGCGC	350
CTACCAGCTGACCTTCGGCAAGGGCACCAAGCTGAGCGTGATCCCCAACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCCCCCAGCTGCTGGGCTACGTGGTGCTGTGCCTGCTGGGCGCCGG	50
CCCCCTGGAGGCCCAGGTGACCCAGAACCCCCGCTACCTGATCACCGTGA	100
CCGGCAAGAAGCTGACCGTGACCTGCAGCCAGAACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCCCTGGGCTGCGCCAGATCTACTA	200
CAGCATGAACGTGGAGGTGACCGACAAGGGCGACGTGCCCCGAGGGCTACA	250
AGGTGAGCCGCAAGGAGAAGCGCAACTTCCCCCTGATCCTGGAGAGCCCC	300
AGCCCCAACCAGACCAGCCTGTACTTCTGCGCCACCCGCACCGGCGCCGT	350
GAACGAGCAGTTCTTCGGCCCCGGCACCCGCCCTGACCGTGCTGGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 24

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TCRs specific for HLA-A*11:01-SSCSCPLSK

Donor R7Z Clone 1 (SSC)

Alpha chain:

ATGGAGACCTGCTGGGCCTGCTGATCCTGTGGCTGCAGCTGCAGTGGGT	50
GAGCAGCAAGCAGGAGGTGACCCAGATCCCCGCCGCCCTGAGCGTGCCCG	100
AGGGCGAGAACCTGGTGTGAACTGCAGCTTCACCGACAGCGCCATCTAC	150
AACCTGCAGTGGTTCCGCCAGGACCCCGGCCAAGGGCCTGACCAGCCTGCT	200
GCTGATCCAGAGCAGCCAGCGCGAGCAGACCAGCGGCCCGCCTGAACGCCA	250
GCCTGGACAAGAGCAGCGGCCCGCAGCACCCTGTACATCGCCGCCAGCCAG	300
CCCGGCCGACAGCGCCACCTACCTGTGCGCCGTGTGGGCCGGCGGCACCAG	350
CTACGGCAAGCTGACCTTCGGCCAGGGCACCATCCTGACCGTGACCCCCA	400
ACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGC	450
AGCGACAAGAGCGTGTGCCTGTTACCGACTTCGACAGCCAGACCAACGT	500
GAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGG	550
ACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAAC	600
AAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGA	650
GGACACCTTCTTCCCCAGCCCGAGAGCAGCTGCGACGTGAAGCTGGTGG	700
AGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTG	750
ATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGAT	800
GACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCATCCGCCTGCTGTGCGCGGTGGCCTTCTGCTTCCTGGCCGTGGG	50
CCTGGTGGACGTGAAGGTGACCCAGAGCAGCCGCTACCTGGTGAAGCGCA	100
CCGGCGAGAAGGTGTTCTGGAGTGCGTGCAAGGACATGGACCACGAGAAC	150
ATGTTCTGGTACCGCCAGGACCCCGCCCTGGGCCTGCGCCTGATCTACTT	200
CAGCTACGACGTGAAGATGAAGGAGAAGGGCGACATCCCCGAGGGCTACA	250
GCGTGAGCCGCGAGAAGAAGGAGCGCTTCAGCCTGATCCTGGAGAGCGCC	300
AGCACCAACCAGACCAGCATGTACCTGTGCGCCAGCAGCCCCGCCGGCCG	350
CCCCGGCAAGCCCTGCACTTCGGCAACGGCACCCGCCCTGACCGTGACCG	400
AGGACCTGAACAAGGTGTTCCCCCCGAGGTGGCCGTGTTGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCGAGCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTG	750
ACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 25

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Donor R7Z Clone 2 (SSC)**Alpha chain:**

ATGAAGCGCATCCTGGGCGCCCTGCTGGGCCTGCTGAGCGCCCAGGTGTG	50
CTGCGTGCGCGGCATCCAGGTGGAGCAGAGCCCCCGACCTGATCCTGC	100
AGGAGGGCGCCAAACAGCACCCCTGCGCTGCAACTTCAGCGACAGCGTGAAC	150
AACCTGCAGTGGTTCCACCAGAACCCCTGGGGCCAGCTGATCAACCTGTT	200
CTACATCCCCAGCGGCACCAAGCAGAACGGCCGCCTGAGCGCCACCACCG	250
TGGCCACCGAGCGCTACAGCCTGCTGTACATCAGCAGCAGCCAGACCACC	300
GACAGCGGCGTGTAATTCTGCGCCGTGGTGATCAACAACGACATGCGCTT	350
CGGCGCCGGCACCCGCCTGACCGTGAAGCCCAACATCCAGAACCCCGACC	400
CCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGC	450
CTGTTACCCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAG	500
CGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGGACT	550
TCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGC	600
GCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCCCAG	650
CCCCGAGAGCAGCTGCGACGTGAAGCTGGTGAGAAAGAGCTTCGAGACCG	700
ACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTG	750
CTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAG	800
CAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGCCCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCCCTGCGCTGCAGCCCCCGCAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCCTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCGTGGCCCCCTT	350
CTACGAGCAGTACTTCGGCCCCGGCACCCGCTGACCGTGACCGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 26

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Donor R7Z Clone 3 (SSC)**Alpha chain:**

ATGGCCAGCGCCCCCATCAGCATGCTGGCCATGCTGTTACCCCTGAGCGG	50
CCTGCGCGCCAGAGCGTGGCCAGCCCGAGGACCAGGTGAACGTGGCCG	100
AGGGCAACCCCTGACCGTGAAGTGCACCTACAGCGTGAGCGGCAACCCC	150
TACCTGTTCTGGTACGTGCAGTACCCCAACCGCGGCCTGCAGTTCCTGCT	200
GAAGTACATCACCGGCGACAACCTGGTGAAGGGCAGCTACGGCTTCGAGG	250
CCGAGTTCAACAAGAGCCAGACCAGCTTCCACCTGAAGAAGCCCAGCGCC	300
CTGGTGAGCGACAGCGCCCTGTACTTCTGCGCCGTGCGCGAGGCCAGCGG	350
CGCCAACAACCTGTTCTTCGGCACCGGCACCCGCCTGACCGTGATCCCCCT	400
ACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGC	450
AGCGACAAGAGCGTGTGCCTGTTACCGACTTCGACAGCCAGACCAACGT	500
GAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGG	550
ACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAAC	600
AAGAGCGACTTTCGCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGA	650
GGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGG	700
AGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTG	750
ATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGAT	800
GACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGCTGTGCAGCCTGCTGGCCCTGCTGCTGGGCACCTTCTTCGGCGTGCG	50
CAGCCAGACCATCCACCAGTGGCCCGCCACCCCTGGTGCAGCCCGTGGGCA	100
GCCCCCTGAGCCTGGAGTGCACCGTGGAGGGCACCAGCAACCCCAACCTG	150
TACTGGTACCGCCAGGCCCGCCGGCCGCGGCCTGCAGCTGCTGTTCTACAG	200
CGTGGGCATCGGCCAGATCAGCAGCGAGGTGCCCCAGAACCTGAGCGCCA	250
GCCGCCCCCAGGACCGCCAGTTCATCCTGAGCAGCAAGAAGCTGCTGCTG	300
AGCGACAGCGGCTTCTACCTGTGCGCCTGGAGCCCCCAGGGCAACAGCCC	350
CCTGCACTTCGGCAACGGCACCCGCCTGACCGTGACCGAGGACCTGAACA	400
AGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCCGAGATC	450
AGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTTCTTCCC	500
CGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGCACAGCG	550
GCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCCCTGAACGAC	600
AGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTTCTGGCA	650
GAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCCTGAGCG	700
AGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAGATCGTG	750
AGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTACCAGCGTGAGCTA	800
CCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGCTGGGCA	850
AGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATGGCCATG	900
GTGAAGCGCAAGGACTTC	

FIG. 27

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Donor R7Z Clone 4 (SSC)**Alpha chain:**

ATGCTGCTGCTGCTGGTGCCCGTGCTGGAGGTGATCTTCACCCTGGGCGG	50
CACCCGCGCCAGAGCGTGACCCAGCTGGACAGCCACGTGAGCGTGAGCG	100
AGGGCACCCCGTGCTGCTGCGCTGCAACTACAGCAGCAGCTACAGCCCC	150
AGCCTGTTCTGGTACGTGCAGCACCCCAACAAGGGCCTGCAGCTGCTGCT	200
GAAGTACACCAGCGCCGCCACCCTGGTGAAGGGCATCAACGGCTTCGAGG	250
CCGAGTTCAAGAAGAGCGAGACCAGCTTCCACCTGACCAAGCCCAGCGCC	300
CACATGAGCGACGCCCGCGAGTACTTCTGCGTGGTGAGCTACCTGGGCGA	350
CACCGGCCCGCCGCGCCCTGACCTTCGGCAGCGGCACCCGCCTGCAGGTGC	400
AGCCCAACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGC	450
AAGAGCAGCGACAAGAGCGTGTGCCTGTTCAACCGACTTCGACAGCCAGAC	500
CAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCG	550
TGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGG	600
AGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCAT	650
CCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGC	700
TGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTG	750
AGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCT	800
GCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGACACCTGGCTGGTGTGCTGGGCCATCTTCAGCCTGCTGAAGGCCGG	50
CCTGACCGAGCCCGAGGTGACCCAGACCCCGACCCAGGTGACCCAGA	100
TGGGCCAGGAGGTGATCCTGCGCTGCGTGCCCATCAGCAACCACCTGTAC	150
TTCTACTGGTACCGCCAGATCCTGGGCCAGAAGGTGGAGTTCCTGGTGAG	200
CTTCTACAACAACGAGATCAGCGAGAAGAGCGAGATCTTCGACGACCAGT	250
TCAGCGTGGAGCGCCCCGACGGCAGCAACTTCACCCTGAAGATCCGCAGC	300
ACCAAGCTGGAGGACAGCGCCATGTACTTCTGCGCCAGCAGCGAGAGCGG	350
CAGCCCCACCGGCGAGCTGTTCTTCGGCGAGGGCAGCCGCCTGACCGTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 28

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Donor R7Z Clone 5 (SSC)**Alpha chain:**

ATGAAGCGCATCCTGGGCGCCCTGCTGGGCCTGCTGAGCGCCCAGGTGTG	50
CTGCGTGCGCGGCATCCAGGTGGAGCAGAGCCCCCGACCTGATCCTGC	100
AGGAGGGCGCCAACAGCACCCCTGCGCTGCAACTTCAGCGACAGCGTGAAC	150
AACCTGCAGTGGTTCCACCAGAACCCTGGGGCCAGCTGATCAACCTGTT	200
CTACATCCCCAGCGGCACCAAGCAGAACGGCCGCTGAGCGCCACCACCG	250
TGGCCACCGAGCGCTACAGCCTGCTGTACATCAGCAGCAGCCAGACCACC	300
GACAGCGGCGTGTACTTCTGCGCCGTGGTGGGCAACAACGACATGCGCTT	350
CGGCGCCGGCACCCGCTGACCGTGAAGCCCAACATCCAGAACCCCGACC	400
CCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGC	450
CTGTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAG	500
CGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGGACT	550
TCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGC	600
GCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCCCAG	650
CCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCG	700
ACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTG	750
CTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAG	800
CAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGCCCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCCCTGCGCTGCAGCCCCCGCAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCCTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCGTGGCCCCCTG	350
GTACGAGCAGTACTTCGGCCCCGGCACCCGCTGACCGTGACCGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTGCACCGACCCCCAGCCCTGAAGGAGCAGCCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGAAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 29

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Donor B5F Clone 1 (SSC)**Alpha chain:**

ATGAAGCGCATCCTGGGCGCCCTGCTGGGCCTGCTGAGCGCCCAGGTGTG	50
CTGCGTGCGCGGCATCCAGGTGGAGCAGAGCCCCCGACCTGATCCTGC	100
AGGAGGGCGCCAAACAGCACCCCTGCGCTGCAACTTCAGCGACAGCGTGAAC	150
AACCTGCAGTGGTTCCACCAGAACCCCTGGGGCCAGCTGATCAACCTGTT	200
CTACATCCCCAGCGGCACCAAGCAGAACGGCCGCCTGAGCGCCACCACCG	250
TGGCCACCGAGCGCTACAGCCTGCTGTACATCAGCAGCAGCCAGACCACC	300
GACAGCGGCGTGTAATTCTGCGCCGTGCTGAACAACAACGACATGCGCTT	350
CGGCGCCGGCACCCGCCTGACCGTGAAGCCCAACATCCAGAACCCCGACC	400
CCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGC	450
CTGTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAG	500
CGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGGACT	550
TCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGC	600
GCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCCCAG	650
CCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCG	700
ACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTG	750
CTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAG	800
CAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGCCCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCCCTGCGCTGCAGCCCCCGCAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCCTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCGTGAGCAGCTG	350
GTACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGCTGGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTGCACCGACCCCCAGCCCTGAAGGAGCAGCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGAAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 30

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Donor B5F Clone 2 (SSC)**Alpha chain:**

ATGGCCGGCATCCGCGCCCTGTTTCATGTACCTGTGGCTGCAGCTGGACTG	50
GGTGAGCCGCGGCGAGAGCGTGGGCCTGCACCTGCCACCCCTGAGCGTGC	100
AGGAGGGCGACAACAGCATCATCAACTGCGCCTACAGCAACAGCGCCAGC	150
GACTACTTCATCTGGTACAAGCAGGAGAGCGGCAAGGGCCCCAGTTCAT	200
CATCGACATCCGCAGCAACATGGACAAGCGCCAGGGCCAGCGCGTGACCG	250
TGCTGCTGAACAAGACCGTGAAGCACCTGAGCCTGCAGATCGCCGCCACC	300
CAGCCCCGGCGACAGCGCCGTGTACTTCTGCGCCGAGACCCCCGGCGGCTA	350
CCAGAAGGTGACCTTCGGCACCCGGCACCAAGCTGCAGGTGATCCCCAACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCCCCCAGCTGCTGGGCTACGTGGTGCTGTGCCTGCTGGGCGCCGG	50
CCCCCTGGAGGCCAGGTGACCCAGAACCCCCGCTACCTGATCACCGTGA	100
CCGGCAAGAAGCTGACCGTGACCTGCAGCCAGAACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCCGGCCTGGGCTGCGCCAGATCTACTA	200
CAGCATGAACGTGGAGGTGACCGACAAGGGCGACGTGCCCCGAGGGCTACA	250
AGGTGAGCCGCAAGGAGAAGCGCAACTTCCCCCTGATCCTGGAGAGCCCC	300
AGCCCCAACCAGACCAGCCTGTACTTCTGCGCCAGCAGCCTGTGGACCAG	350
CAACAGCCCCCTGCACTTTCGGCAACGGCACCCGCTGACCGTGACCGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 31

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Donor T3V Clone 1 (SSC)**Alpha chain:**

ATGGCCATGCTGCTGGGCGCCAGCGTGCTGATCCTGTGGCTGCAGCCCGA	50
CTGGGTGAACAGCCAGCAGAAGAACGACGACCAGCAGGTGAAGCAGAACA	100
GCCCCAGCCTGAGCGTGCAGGAGGGCCGCATCAGCATCCTGAACTGCGAC	150
TACACCAACAGCATGTTTCGACTACTTCTGTGGTACAAGAAGTACCCCGC	200
CGAGGGCCCCACCTTCCTGATCAGCATCAGCAGCATCAAGGACAAGAACG	250
AGGACGGCCGCTTACCGTGTTCCTGAACAAGAGCGCCAAGCACCTGAGC	300
CTGCACATCGTGCCAGCCAGCCGGCGACAGCGCCGTGTACTTCTGCGC	350
CGCCAGCGCCGGCGGCCAGAACTTCGTGTTCTGGCCCCGGCACCCGCTGA	400
GCGTGCTGCCCTACATCCAGAACCCCCGACCCCGCCGTGTACCAGCTGCGC	450
GACAGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTCACCGACTTCGACAG	500
CCAGACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACA	550
AGTGCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTG	600
GCCTGGAGCAACAAGAGCGACTTTCGCCTGCGCCAACGCCTTCAACAACAG	650
CATCATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACG	700
TGAAGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAG	750
AACCTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTT	800
CAACCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCACCCGCTGTTCTTCTACGTGGCCCTGTGCCTGCTGTGGACCGG	50
CCACATGGACGCCGGCATCACCCAGAGCCCCCGCCACAAGGTGACCGAGA	100
CCGGCACCCCCGTGACCCTGCGCTGCCACCAGACCGAGAACCACCGCTAC	150
ATGTACTGGTACCGCCAGGACCCCCGGCCACGGCCTGCGCCTGATCCACTA	200
CAGCTACGGCGTGAAGGACACCGACAAGGGCGAGGTGAGCGACGGCTACA	250
GCGTGAGCCGCAGCAAGACCGAGGACTTCTGCTGACCCTGGAGAGCGCC	300
ACCAGCAGCCAGACCAGCGTGTACTTCTGCGCCATCCGCCGCGGCGGCAG	350
CAGCTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGCTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCCCAAGCCCGTG	750
ACCCAGATCGTGAGCGCCGAGGCCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 32

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Donor T3V Clone 2 (SSC)**Alpha chain:**

ATGTGGGGCGTGTTCTCTGCTGTACGTGAGCATGAAGATGGGCGGCACCAC	50
CGGCCAGAACATCGACCAGCCCACCGAGATGACCGCCACCGAGGGCGCCA	100
TCGTGCAGATCAACTGCACCTACCAGACCAGCGGCTTCAACGGCCTGTTC	150
TGGTACCAGCAGCACGCCGGCGAGGCCCCACCTTCTGAGCTACAACGT	200
GCTGGACGGCCTGGAGGAGAAGGGCCGCTTCAGCAGCTTCTGAGCCGCA	250
GCAAGGGCTACAGCTACCTGCTGCTGAAGGAGCTGCAGATGAAGGACAGC	300
GCCAGCTACCTGTGCGCCGTGAAGGACAGCAACTACCAGCTGATCTGGGG	350
CGCCGGCACCAAGCTGATCATCAAGCCCCGACATCCAGAACCCCGACCCCG	400
CCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGCCCTG	450
TTCACCGACTTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAGCGA	500
CGTGATACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGGACTTCA	550
AGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGCGCC	600
AACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCCCAGCCC	650
CGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCGACA	700
CCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTGCTG	750
CTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAGCAG	800
C	

Beta chain:

ATGCGCATCCGCCTGCTGTGCTGCGTGCCCTTCAGCCTGCTGTGGGCCGG	50
CCCCGTGATCGCCGGCATCACCCAGGCCCCCCACCGCCAGATCCTGGCCG	100
CCGGCCGCCGCATGACCCTGCGCTGCACCCAGGACATGCGCCACAACGCC	150
ATGTACTGGTACCGCCAGGACCTGGGCCTGGGCCTGCGCCTGATCCACTA	200
CAGCAACACCGCCGGCACCAACCGGCAAGGGCGAGGTGCCCCGACGGCTACA	250
GCGTGAGCCGCGCCAACACCGACGACTTCCCCCTGACCCTGGCCAGCGCC	300
GTGCCCAGCCAGACCAGCGTGACTTCTGCGCCAGCAGCGCCGACCAGGG	350
CGACGGCACCGACACCCAGTACTTCGGCCCCGGCACCCGCCTGACCCTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 33

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Donor T3V Clone 3 (SSC)**Alpha chain:**

ATGTGGGGCGCCTTCCTGCTGTACGTGAGCATGAAGATGGGCGGCACCGC	50
CGGCCAGAGCCTGGAGCAGCCCAGCGAGGTGACCGCGTGGAGGGCGCCA	100
TCGTGCAGATCAACTGCACCTACCAGACCAGCGGCTTCTACGGCCTGAGC	150
TGGTACCAGCAGCACGACGGCGGCGCCCCACCTTCCTGAGCTACAACGC	200
CCTGGACGGCCTGGAGGAGACCGGCCGCTTCAGCAGCTTCCTGAGCCGCA	250
GCGACAGCTACGGCTACCTGCTGCTGCAGGAGCTGCAGATGAAGGACAGC	300
GCCAGCTACTTCTGCGCCGTGCCCCGCCGCAACAACAACGCCCGCCTGAT	350
GTTTCGGCGACGGCACCCAGCTGGTGGTGAAGCCCAACATCCAGAACCCCG	400
ACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTG	450
TGCCTGTTACCCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGA	500
CAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGG	550
ACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCC	600
TGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCC	650
CAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGA	700
CCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATC	750
CTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTGCGCCTGTG	800
GAGCAGC	

Beta chain:

ATGGGCCCCCAGCTGCTGGGCTACGTGGTGCTGTGCCTGCTGGGCGCCGG	50
CCCCCTGGAGGCCCAGGTGACCCAGAACCCCCGCTACCTGATCACCGTGA	100
CCGGCAAGAAGCTGACCGTGACCTGCAGCCAGAACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCCGGCCTGGGCTGCGCCAGATCTACTA	200
CAGCATGAACGTGGAGGTGACCGACAAGGGCGACGTGCCCCGAGGGCTACA	250
AGGTGAGCCGCAAGGAGAAGCGCAACTTCCCCCTGATCCTGGAGAGCCCC	300
AGCCCCAACCAGACCAGCCTGTACTTCTGCGCCAGCAGCCTGAACACCGG	350
CATGAACACCGAGGCCTTCTTCGGCCAGGGCACCCGCCTGACCGTGGTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCCGAAGCCCGTG	750
ACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 34

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Donor P6G Clone 1 (SSC)

Alpha chain:

ATGGAGACCCTGCTGGGCCTGCTGATCCTGTGGCTGCAGCTGCAGTGGGT	50
GAGCAGCAAGCAGGAGGTGACCCAGATCCCCGCCGCCCTGAGCGTGCCCG	100
AGGGCGAGAACCTGGTGTGAACTGCAGCTTCACCGACAGCGCCATCTAC	150
AACCTGCAGTGGTTCCGCCAGGACCCCGCAAGGGCCTGACCAGCCTGCT	200
GCTGATCCAGAGCAGCCAGCGCGAGCAGACCAGCGGCCCGCTGAACGCCA	250
GCCTGGACAAGAGCAGCGGCCGCGAGCACCTGTACATCGCCGCCAGCCAG	300
CCCGGCGCAGACGCCACCTACCTGTGCGCCGTGGGCGGCGACGACAGCGG	350
CGCCGGCAGCTACCAGCTGACCTTCGGCAAGGGCACCAAGCTGAGCGTGA	400
TCCCCAACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGC	450
AAGAGCAGCGACAAGAGCGTGTGCCTGTTCAACCGACTTCGACAGCCAGAC	500
CAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCG	550
TGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGG	600
AGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCAT	650
CCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGC	700
TGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTG	750
AGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCT	800
GCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGGCCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCCTGCGCTGCAGCCCCCGCAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCTTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCCGCCCGAGGG	350
CATCTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGCTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGACCCAGGACCGCGCCAAGCCCCTG	750
ACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 35

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Donor P6G Clone 2 (SSC)**Alpha chain:**

ATGCTGCTGATCACCAGCATGCTGGTGCTGTGGATGCAGCTGAGCCAGGT	50
GAACGGCCAGCAGGTGATGCAGATCCCCAGTACCAGCACGTGCAGGAGG	100
GCGAGGACTTCACCACCTACTGCAACAGCAGCACCACCCTGAGCAACATC	150
CAGTGGTACAAGCAGCGCCCCGGCGGCCACCCCGTGTTCCCTGATCCAGCT	200
GGTGAAGAGCGGCGAGGTGAAGAAGCAGAAGCGCCTGACCTTCCAGTTCG	250
GCGAGGCCAAGAAGAACAGCAGCCTGCACATCACCGCCACCCAGACCACC	300
GACGTGGGCACCTACTTCTGCGCCGGCCCCGGCATCTACAACCAGGGCGG	350
CAAGCTGATCTTCGGCCAGGGCACCAGCTGAGCGTGAAGCCCAACATCC	400
AGAACCCCCGACCCCCGCGTGTAACAGCTGCGCGACAGCAAGAGCAGCGAC	450
AAGAGCGTGTGCCTGTTTACCGACTTCGACAGCCAGACCAACGTGAGCCA	500
GAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCCTGCTGGACATGC	550
GCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGC	600
GACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACAC	650
CTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGA	700
GCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGC	750
TTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCT	800
GCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCAACCAGGTGCTGTGCTGCGTGCTGTGCTTCCTGGGCGCCAA	50
CACCGTGGACGGCGGCATCACCCAGAGCCCCAAGTACCTGTTCCGCAAGG	100
AGGGCCAGAACGTGACCCTGAGCTGCGAGCAGAACCTGAACCACGACGCC	150
ATGTACTGGTACCGCCAGGACCCCCGGCCAGGGCCTGCGCCTGATCTACTA	200
CAGCCAGATCGTGAACGACTTCCAGAAGGGCGACATCGCCGAGGGCTACA	250
GCGTGAGCCGCGAGAAGAAGGAGAGCTTCCCCCTGACCGTGACCAGCGCC	300
CAGAAGAACCCCCACCGCCTTCTACCTGTGCGCCAGCAGCCCCGGCCTGGC	350
CGACTACGAGCAGTACTTCGGCCCCGGCACCCGCCTGACCGTGACCAGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGTCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 36

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Donor P6G Clone 3 (SSC)**Alpha chain:**

ATGAGCCTGAGCAGCCTGCTGAAGGTGGTGACCGCCAGCCTGTGGCTGGG	50
CCCCGGCATCGCCCAGAAGATCACCCAGACCCAGCCCGGCATGTTCTGTGC	100
AGGAGAAGGAGGCCGTGACCCTGGACTGCACCTACGACACCAGCGACCCC	150
AGCTACGGCCTGTTCTGGTACAAGCAGCCCAGCAGCGGCGAGATGATCTT	200
CCTGATCTACCAGGGCAGCTACGACCAGCAGAACGCCACCGAGGGCCGCT	250
ACAGCCTGAACTTCCAGAAGGCCCCGCAAGAGCGCCAACCTGGTGATCAGC	300
GCCAGCCAGCTGGGCGACAGCGCCATGTACTTCTGCGCCATGAGCAGCAG	350
CAACGCCGGCGGCACCAAGCTACGGCAAGCTGACCTTCGGCCAGGGCACCA	400
TCCTGACCGTGCACCCCAACATCCAGAACCCCGACCCCGCCGTGTACCAG	450
CTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTCAACCGACTT	500
CGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCA	550
CCGACAAGTGCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGC	600
GCCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAA	650
CAACAGCATCATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCT	700
GCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAAC	750
TTCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGC	800
CGGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGCTGTGCAGCCTGCTGGCCCTGCTGCTGGGCACCTTCTTCGGCGTGCG	50
CAGCCAGACCATCCACCAGTGGCCCGCCACCCTGGTGCAGCCCGTGGGCA	100
GCCCCCTGAGCCTGGAGTGCACCGTGGAGGGCACCAGCAACCCCAACCTG	150
TACTGGTACCGCCAGGCCGCGCGCCGCGCCTGCAGCTGCTGTTCTACAG	200
CGTGGGCATCGGCCAGATCAGCAGCGAGGTGCCCCAGAACCTGAGCGCCA	250
GCCGCCCCCAGGACCGCCAGTTCATCCTGAGCAGCAAGAAGCTGCTGCTG	300
AGCGACAGCGGCTTCTACCTGTGCGCCTGGCGCCTGGAGCAGGGCCTGAA	350
CTACGAGCAGTACTTCGGCCCCGGCACCCGCCCTGACCGTGACCGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTCGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTCACCGACCCCCAGCCCTGAAGGAGCAGCCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 37

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Donor A4T Clone 1 (SSC)

Alpha chain:

ATGGCCATGCTGCTGGGCGCCAGCGTGCTGATCCTGTGGCTGCAGCCCGA	50
CTGGGTGAACAGCCAGCAGAAAGAACGACGACCAGCAGGTGAAGCAGAACA	100
GCCCCAGCCTGAGCGTGCAGGAGGGCCGCATCAGCATCCTGAACTGCGAC	150
TACACCAACAGCATGTTTCGACTACTTCTGTGGTACAAGAAGTACCCCGC	200
CGAGGGCCCCACCTTCCTGATCAGCATCAGCAGCATCAAGGACAAGAACG	250
AGGACGGCCGCTTACCGTGTTCCTGAACAAGAGCGCCAAGCACCTGAGC	300
CTGCACATCGTGCCCAAGCCAGCCCGGCGACAGCGCCGTGTACTTCTGCGC	350
CGCCAGCGGCCTGGTGGAGGGCAACACCCCCCTGGTGTTCGGCAAGGGCA	400
CCCGCCTGAGCGTGATCGCCAACATCCAGAACCCCGACCCCGCCGTGTAC	450
CAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTTACCCGA	500
CTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTACA	550
TCACCGACAAGTGCCTGCTGGACATGCGCAGCATGGACTTCAAGAGCAAC	600
AGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTT	650
CAACAACAGCATCATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCA	700
GCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACCTG	750
AACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGT	800
GGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCACCCGCTGCTGTGCTGGGCGGCCCTGTGCCTGCTGGGCGCCGA	50
GCTGACCGAGGCCGGCGTGGCCAGAGCCCCCGCTACAAGATCATCGAGA	100
AGCGCCAGAGCGTGGCCTTCTGGTGCAACCCCATCAGCGGCCACGCCACC	150
CTGTACTGGTACCAGCAGATCCTGGGCCAGGGCCCCAAGCTGCTGATCCA	200
GTTCCAGAACAACGGCGTGGTGGACGACAGCCAGCTGCCCAAGGACCGCT	250
TCAGCGCCGAGCGCCTGAAGGGCGTGGACAGCACCCCTGAAGATCCAGCCC	300
GCCAAGCTGGAGGACAGCGCCGTGTACCTGTGCGCCAGCAGCCTGTTCCC	350
CGGCACCGGCATCCACGAGCAGTACTTCGGCCCCGGCACCCGCTGACCG	400
TGACCGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAG	450
CCCAGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCT	500
GGCCACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACG	550
GCAAGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAG	600
CAGCCCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGT	650
GAGCGCCACCTTCTGGCAGAACCCCGCAACCACTTCCGCTGCCAGGTGC	700
AGTTCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAG	750
CCCGTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGG	800
CTTCACCAAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGT	850
ACGAGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCC	900
CTGGTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 38

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TCRs specific for HLA-A*24:02-TYGPVFMSL**Donor D2M Clone 1 (TYG)****Alpha chain:**

ATGGAGACCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGACGGCCCCCTACGGCAA	350
CAACCGCCTGGCCTTCGGCAAGGGCAACCAGGTGGTGGTGATCCCCAACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCCTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGACCATCCGCCTGCTGTGCTACATGGGCTTCTACTTCCTGGGCGCCGG	50
CCTGATGGAGGCCGACATCTACCAGACCCCCCGCTACCTGGTGATCGGCA	100
CCGGCAAGAAGATCACCTGGAGTGCAGCCAGACCATGGGCCACGACAAG	150
ATGTACTGGTACCAGCAGGACCCCGGCATGGAGCTGCACCTGATCCACTA	200
CAGCTACGGCGTGAACAGCACCGAGAAGGGCGACCTGAGCAGCGAGAGCA	250
CCGTGAGCCGCATCCGCACCGAGCACTTCCCCCTGACCCTGGAGAGCGCC	300
CGCCCCAGCCACACCAGCCAGTACCTGTGCGCCAGCAGCCCCCTGGGCCG	350
CAGCAGCAGCTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCG	400
TGCTGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAG	450
CCCAGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCT	500
GGCCACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACG	550
GCAAGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAG	600
CAGCCCCGCTTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGT	650
GAGCGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGC	700
AGTTCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAG	750
CCCGTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGG	800
CTTCACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGT	850
ACGAGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCC	900
CTGGTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 39

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Donor D2M Clone 2 (TYG)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCCGCCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGACGGCCCCCTACGGCAA	350
CAACCGCCTGGCCTTCGGCAAGGGCAACCAGGTGGTGGTGATCCCCAACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGACCATCCGCCTGCTGTGCTACATGGGCTTCTACTTCTTGGGCGCCGG	50
CCTGATGGAGGCCGACATCTACCAGACCCCCGCTACCTGGTGATCGGCA	100
CCGGCAAGAAGATCACCTTGGAGTGCAGCCAGACCATGGGCCACGACAAG	150
ATGTACTGGTACCAGCAGGACCCCCGGCATGGAGCTGCACCTGATCCACTA	200
CAGCTACGGCGTGAACAGCACCGAGAAGGGCGACCTGAGCAGCGAGAGCA	250
CCGTGAGCCGCATCCGCACCGAGCACTTCCCCCTGACCCTGGAGAGCGCC	300
CGCCCCAGCCACACCAGCCAGTACCTGTGCGCCAGCAGCGCCCTGGGCCA	350
GAGCAGCAGCTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCCCTGACCG	400
TGCTGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAG	450
CCCAGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCT	500
GGCCACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACG	550
GCAAGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAG	600
CAGCCCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGT	650
GAGCGCCACCTTCTGGCAGAACCCCGCAACCACTTCCGCTGCCAGGTGC	700
AGTTCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAG	750
CCCGTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGG	800
CTTACACAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGT	850
ACGAGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCC	900
CTGGTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 40

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Donor D2M Clone 3 (TYG)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGACGGCCGCCACGGCAA	350
CAACCGCCTGGCCTTCGGCAAGGGCAACCAGGTGGTGGTGATCCCCAACA	400
TCCAGAACCCCGACCCGCGCTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCAGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGACCATCCGCCTGCTGTGCTACATGGGCTTCTACTTCTTGGGCGCCGG	50
CCTGATGGAGGCCGACATCTACCAGACCCCCGCTACCTGGTGATCGGCA	100
CCGGCAAGAAGATCACCTTGGAGTGCAGCCAGACCATGGGCCACGACAAG	150
ATGTACTGGTACCAGCAGGACCCCCGGCATGGAGCTGCACCTGATCCACTA	200
CAGCTACGGCGTGAACAGCACCGAGAAGGGCGACCTGAGCAGCGAGAGCA	250
CCGTGAGCCGCATCCGCACCGAGCACTTCCCCCTGACCCTGGAGAGCGCC	300
CGCCCCAGCCACACCAGCCAGTACCTGTGCGCCAGCAGCGACCTGGGCCG	350
CGGCAGCGCCGTGAACGAGCAGTTCTTCGGCCCCGGCACCCGCCCTGACCG	400
TGCTGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAG	450
CCCAGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCT	500
GGCCACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACG	550
GCAAGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAG	600
CAGCCCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGT	650
GAGCGCCACCTTCTGGCAGAACCCCGCAACCACTTCCGCTGCCAGGTGC	700
AGTTCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAG	750
CCCGTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGG	800
CTTCACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGT	850
ACGAGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCC	900
CTGGTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 41

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Donor B31 Clone 1 (TYG)**Alpha chain:**

ATGCTGCTGATCACCAGCATGCTGGTGCTGTGGATGCAGCTGAGCCAGGT	50
GAACGGCCAGCAGGTGATGCAGATCCCCAGTACCAGCACGTGCAGGAGG	100
GCGAGGACTTCACCACCTACTGCAACAGCAGCACCACCCTGAGCAACATC	150
CAGTGGTACAAGCAGCGCCCCGGCGGCCACCCCGTGTTCCTGATCCAGCT	200
GGTGAAGAGCGGCGAGGTGAAGAAGCAGAAGCGCCTGACCTTCCAGTTCG	250
GCGAGGCCAAGAAGAACAGCAGCCTGCACATCACCGCCACCCAGACCACC	300
GACGTGGGCACCTACTTCTGCGCCGGCGAGCGCGGCAGCACCCCTGGGCCG	350
CCTGTACTTTCGGCCGCGGCACCCAGCTGACCGTGTGGCCCCGACATCCAGA	400
ACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAG	450
AGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAGCCAGAG	500
CAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCA	550
GCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGAC	600
TTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTT	650
CTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCT	700
TCGAGACCGACACCAACCTGAACTTCAGAACCTGAGCGTGATCGGCTTC	750
CGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTGCG	800
CCTGTGGAGCAGC	

Beta chain:

ATGGGCACCAGCCTGCTGTGCTGGATGGCCCTGTGCCTGCTGGGCGCCGA	50
CCACGCCGACACCGGCGTGAGCCAGAACCCCCGCCACAAGATCACCAAGC	100
GCGGCCAGAACGTGACCTTCCGCTGCGACCCCATCAGCGAGCACAAACCGC	150
CTGTACTGGTACCGCCAGACCCTGGGCCAGGGCCCCGAGTTCCTGACCTA	200
CTTCCAGAACGAGGCCAGCTGGAGAAGAGCCGCCTGCTGAGCGACCGCT	250
TCAGCGCCGAGCGCCCCAAGGGCAGCTTCAGCACCCCTGGAGATCCAGCGC	300
ACCGAGCAGGGCGACAGCGCCATGTACCTGTGCGCCAGCAGCCCCCTGGA	350
CCGCGGCACCTACGAGCAGTACTTCGGCCCCGGCACCCGCCTGACCGTGA	400
CCGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCGTGACGCCGTGCTGGTGGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 42

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Donor B31 Clone 2 (TYG)**Alpha chain:**

ATGCTGCTGATCACCAGCATGCTGGTGCTGTGGATGCAGCTGAGCCAGGT	50
GAACGGCCAGCAGGTGATGCAGATCCCCAGTACCAGCACGTGCAGGAGG	100
GCGAGGACTTCACCACCTACTGCAACAGCAGCACCACCCTGAGCAACATC	150
CAGTGGTACAAGCAGCGCCCCGGCGGCCACCCCGTGTTCCTGATCCAGCT	200
GGTGAAGAGCGGCGAGGTGAAGAAGCAGAAGCGCCTGACCTTCCAGTTCG	250
GCGAGGCCAAGAAGAACAGCAGCCTGCACATCACCGCCACCCAGACCACC	300
GACGTGGGCACCTACTTCTGCGCCGGCGAGCGCGGCAGCACCCCTGGGCCG	350
CCTGTACTTTCGGCCGCGGCACCCAGCTGACCGTGTGGCCCCGACATCCAGA	400
ACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAG	450
AGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAGCCAGAG	500
CAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCA	550
GCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGAC	600
TTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTT	650
CTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCT	700
TCGAGACCGACACCAACCTGAACTTCAGAACCTGAGCGTGATCGGCTTC	750
CGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTTGC	800
CCTGTGGAGCAGC	

Beta chain:

ATGGGCACCAGCCTGCTGTGCTGGATGGCCCTGTGCCTGCTGGGCGCCGA	50
CCACGCCGACACCGGCGTGAGCCAGAACCCCCGCCACAAGATCACCAAGC	100
GCGGCCAGAACGTGACCTTCCGCTGCGACCCCATCAGCGAGCACAAACCGC	150
CTGTACTGGTACCGCCAGACCCTGGGGCCAGGGCCCCGAGTTCCTGACCTA	200
CTTCCAGAACGAGGCCAGCTGGAGAAGAGCCGCCTGCTGAGCGACCGCT	250
TCAGCGCCGAGCGCCCCAAGGGCAGCTTCAGCACCCCTGGAGATCCAGCGC	300
ACCGAGCAGGGCGACAGCGCCATGTACCTGTGCGCCAGCAGCCCCCTGGA	350
GCGCGGCACCTACGAGCAGTACTTCGGCCCCGGCACCCGCCTGACCGTGA	400
CCGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACGAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 43

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Donor B31 Clone 3 (TYG)**Alpha chain:**

ATGCTGCTGATCACCAGCATGCTGGTGCTGTGGATGCAGCTGAGCCAGGT	50
GAACGGCCAGCAGGTGATGCAGATCCCCAGTACCAGCACGTGCAGGAGG	100
GCGAGGACTTCACCACCTACTGCAACAGCAGCACCACCCTGAGCAACATC	150
CAGTGGTACAAGCAGCGCCCCGGCGGCCACCCCGTGTTCCTGATCCAGCT	200
GGTGAAGAGCGGCGAGGTGAAGAAGCAGAAGCGCCTGACCTTCCAGTTCG	250
GCGAGGCCAAGAAGAACAGCAGCCTGCACATCACCGCCACCCAGACCACC	300
GACGTGGGCACCTACTTCTGCGCCGGCGAGCGCGGCAGCACCCCTGGGCCG	350
CCTGTACTTTCGGCCGCGGCACCCAGCTGACCGTGTGGCCCCGACATCCAGA	400
ACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAG	450
AGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAGCCAGAG	500
CAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCA	550
GCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGAC	600
TTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTT	650
CTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCT	700
TCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTC	750
CGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTTGC	800
CCTGTGGAGCAGC	

Beta chain:

ATGGGCACCAGCCTGCTGTGCTGGATGGCCCTGTGCCTGCTGGGCGCCGA	50
CCACGCCGACACCGGCGTGAGCCAGAACCCCCGCCACAAGATCACCAAGC	100
GCGGCCAGAACGTGACCTTCCGCTGCGACCCCATCAGCGAGCACAAACCGC	150
CTGTACTGGTACCGCCAGACCCTGGGGCCAGGGCCCCGAGTTCCTGACCTA	200
CTTCCAGAACGAGGCCAGCTGGAGAAGAGCCGCCTGCTGAGCGACCGCT	250
TCAGCGCCGAGCGCCCCAAGGGCAGCTTCAGCACCCCTGGAGATCCAGCGC	300
ACCGAGCAGGGCGACAGCGCCATGTACCTGTGCGCCAGCAGCCTGCTGAG	350
CAGCGGCGACTACGAGCAGTACTTCGGCCCCGGCACCCGCCTGACCGTGA	400
CCGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 44

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Donor B31 Clone 4 (TYG)**Alpha chain:**

ATGACCAGCATCCGCGCCGTGTTTCATCTTCCTGTGGCTGCAGCTGGACCT	50
GGTGAACGGCGAGAACGTGGAGCAGCACCCAGCACCTGAGCGTGCAGG	100
AGGGCGACAGCGCCGTGATCAAGTGACCTACAGCGACAGCGCCAGCAAC	150
TACTTCCCCTGGTACAAGCAGGAGCTGGGCAAGCGCCCCAGCTGATCAT	200
CGACATCCGCAGCAACGTGGGCGAGAAGAAGGACCAGCGCATCGCCGTGA	250
CCCTGAACAAGACCGCCAAGCACTTCAGCCTGCACATCACCGAGACCCAG	300
CCCGAGGACAGCGCCGTGTACTTCTGCGCCGCCCCCGCGGCGCCGCGG	350
CAACAAGCTGACCTTCGGCGGCGGCACCCGCGTGCTGGTGAAGCCCAACA	400
TCCAGAACCCCGACCCGCGCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCAACCAGGTGCTGTGCTGCGTGCTGCTGTGCTTCCTGGGCGCCAA	50
CACCGTGACGGCGGCATCACCCAGAGCCCCAAGTACCTGTTCCGCAAGG	100
AGGGCCAGAACGTGACCTGAGCTGCGAGCAGAACCTGAACCACGACGCC	150
ATGTACTGGTACCGCCAGGACCCCCGGCCAGGGCCTGCGCCTGATCTACTA	200
CAGCCAGATCGTGAACGACTTCCAGAAGGGCGACATCGCCGAGGGCTACA	250
GCGTGAGCCGCGAGAAGAAGGAGAGCTTCCCCCTGACCGTGACCAGCGCC	300
CAGAAGAACCCACCGCCTTCTACCTGTGCGCCAGCAGCAAGGGCGCCAG	350
CGGCATGCGCACCGAGCAGTACTTCGGCCCCGGCACCCGCTGACCGTGA	400
CCGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCTGTACGCCGTGCTGGTGAAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 45

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Donor B31 Clone 5 (TYG)**Alpha chain:**

ATGCTGCTGATCACCAGCATGCTGGTGCTGTGGATGCAGCTGAGCCAGGT	50
GAACGGCCAGCAGGTGATGCAGATCCCCAGTACCAGCACGTGCAGGAGG	100
GCGAGGACTTCACCACCTACTGCAACAGCAGCACCACCCTGAGCAACATC	150
CAGTGGTACAAGCAGCGCCCCGGCGGCCACCCCGTGTTCCTGATCCAGCT	200
GGTGAAGAGCGGCGAGGTGAAGAAGCAGAAGCGCCTGACCTTCCAGTTCG	250
GCGAGGCCAAGAAGAACAGCAGCCTGCACATCACCGCCACCCAGACCACC	300
GACGTGGGCACCTACTTCTGCGCCGGCGAGCGCGGCAGCACCCCTGGGCCG	350
CCTGTACTTTCGGCCGCGGCACCCAGCTGACCGTGTGGCCCCGACATCCAGA	400
ACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAG	450
AGCGTGTGCCTGTTTCAACGACTTCGACAGCCAGACCAACGTGAGCCAGAG	500
CAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCA	550
GCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGAC	600
TTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTT	650
CTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCT	700
TCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTC	750
CGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTTGC	800
CCTGTGGAGCAGC	

Beta chain:

ATGGCCAGCCTGCTGTTCTTCTGCGGCGCCTTCTACCTGCTGGGCACCGG	50
CAGCATGGACGCGGACGTGACCCAGACCCCCGCAACCGCATCACCAAGA	100
CCGGCAAGCGCATCATGCTGGAGTGCAGCCAGACCAAGGGCCACGACCGC	150
ATGTACTGGTACCGCCAGGACCCCCGGCCTGGGCCTGCGCCTGATCTACTA	200
CAGCTTCGACGTGAAGGACATCAACAAGGGCGAGATCAGCGACGGCTACA	250
GCGTGAGCCGCCAGGCCAGGCCAAGTTTCAACCTGAGCCTGGAGAGCGCC	300
ATCCCCAACCAGACCGCCCTGTACTTCTGCGCCACCAGCGACACCACCAG	350
CACCCGCCCCACCGAGCAGTACGTGGGCCCCGGCACCCGCTGACCGTGA	400
CCGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 46

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Donor B31 Clone 6 (TYG)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCGAGGCCCTGAGCATCC	100
AGGAGGGCGGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCCGCCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCGCCCTGCAGGGCGCCCAGAA	350
GCTGGTGTTCGGCCAGGGCACCCGCTGACCATCAACCCCAACATCCAGA	400
ACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAG	450
AGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAGCCAGAG	500
CAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCA	550
GCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGAC	600
TTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTT	650
CTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCT	700
TCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTC	750
CGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTTGC	800
CCTGTGGAGCAGC	

Beta chain:

ATGGACACCTGGCTGGTGTGCTGGGCCATCTTCAGCCTGCTGAAGGCCGG	50
CCTGACCGAGCCCGAGGTGACCCAGACCCCGACCCAGGTGACCCAGA	100
TGGGCCAGGAGGTGATCCTGCGCTGCGTGCCCATCAGCAACCACCTGTAC	150
TTCTACTGGTACCGCCAGATCCTGGGCCAGAAGGTGGAGTTCTTGGTGA	200
CTTCTACAACAACGAGATCAGCGAGAAGAGCGAGATCTTCGACGACCAGT	250
TCAGCGTGGAGCGCCCCGACGGCAGCAACTTCACCCCTGAAGATCCGCAGC	300
ACCAAGCTGGAGGACAGCGCCATGTACTTCTGCGCCAGCAGCGCCACCAG	350
CGGCAGCTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCGAGCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACGAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCTGTACGCCGTGCTGGTGGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 47

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Donor Y6W Clone 1 (TYG)**Alpha chain:**

ATGCGCCAGGTGGCCCCGCGTGATCGTGTTTCCTGACCCTGAGCACCCCTGAG	50
CCTGGCCAAGACCACCCAGCCCATCAGCATGGACAGCTACGAGGGCCAGG	100
AGGTGAACATCACCTGCAGCCACAACAACATCGCCACCAACGACTACATC	150
ACCTGGTACCAGCAGTTCCCCAGCCAGGGCCCCCGCTTCATCATCCAGGG	200
CTACAAGACCAAGGTGACCAACGAGGTGGCCAGCCTGTTTCATCCCCGCCG	250
ACCGCAAGAGCAGCACCCCTGAGCCTGCCCCGCGTGAGCCTGAGCGACACC	300
GCCGTGTACTACTGCCTGGTGGTGCCCTTCGGCGGCTACAACAAGCTGAT	350
CTTCGGCGCCGGCACCCGCTGGCCGTGCACCCCTACATCCAGAACCCCG	400
ACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTG	450
TGCCTGTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGA	500
CAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGG	550
ACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCC	600
TGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCC	650
CAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGA	700
CCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATC	750
CTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCCTGCGCCTGTG	800
GAGCAGC	

Beta chain:

ATGCTGAGCCTGCTGCTGCTGCTGCTGGGCCTGGGCAGCGTGTTTCAGCGC	50
CGTGATCAGCCAGAAGCCCAGCCGCGACATCTGCCAGCGCGGCACCAGCC	100
TGACCATCCAGTGCCAGGTGGACAGCCAGGTGACCATGATGTTCTGGTAC	150
CGCCAGCAGCCCCGGCCAGAGCCTGACCCTGATCGCCACCGCCAACCAGGG	200
CAGCGAGGCCACCTACGAGAGCGGGCTTCGTGATCGACAAGTTCCCCATCA	250
GCCGCCCCAACCTGACCTTCAGCACCCCTGACCGTGAGCAACATGAGCCCC	300
GAGGACAGCAGCATCTACCTGTGCAGCGTGGGCGAGGGCACCCAGCGGCTA	350
CGAGAGCTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCCTGACCGTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCCTGTACGCCGTGCTGGTGGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 48

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Donor Y6W Clone 2 (TYG)**Alpha chain:**

ATGCTGCTGATCACCAGCATGCTGGTGCTGTGGATGCAGCTGAGCCAGGT	50
GAACGGCCAGCAGGTGATGCAGATCCCCAGTACCAGCACGTGCAGGAGG	100
GCGAGGACTTCACCACCTACTGCAACAGCAGCACCACCCTGAGCAACATC	150
CAGTGGTACAAGCAGCGCCCCGGCGGGCCACCCCGTGTTCTTGATCCAGCT	200
GGTGAAGAGCGGGCAGGTGAAGAAGCAGAAGCGCCTGACCTTCCAGTTCG	250
GCGAGGCCAAGAAGAACAGCAGCCTGCACATCACCGCCACCCAGACCACC	300
GACGTGGGCACCTACTTCTGCGCCGGCGAGCGCGGCAGCACCCTGGGCCG	350
CCTGTACTTTCGGCCGCGGGCACCCAGCTGACCGTGTGGCCCGACATCCAGA	400
ACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAG	450
AGCGTGTGCCTGTTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAG	500
CAAGGACAGCGCAGTGTACATCACCAGACAAGTGCGTGCTGGACATGCGCA	550
GCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGAC	600
TTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTT	650
CTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCT	700
TCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTC	750
CGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCG	800
CCTGTGGAGCAGC	

Beta chain:

ATGGGCACCAGCCTGCTGTGCTGGATGGCCCTGTGCCTGCTGGGCGCCGA	50
CCACGCCGACACCGGCGTGAGCCAGAACCCCCGCCACAAGATCACCAAGC	100
GCGGCCAGAACGTGACCTTCCGCTGCGACCCCATCAGCGAGCACAAACGC	150
CTGTACTGGTACCGCCAGACCCTGGGCCAGGGCCCCGAGTTCCTGACCTA	200
CTTCCAGAACGAGGCCCAGCTGGAGAAGAGCCGCTGCTGAGCGACCGCT	250
TCAGCGCCGAGCGCCCCAAGGGCAGCTTCAGCACCTGGAGATCCAGCGC	300
ACCGAGCAGGGCGACAGCGCCATGTACCTGTGCGCCAGCAGCAGCCTGGA	350
CCGCGGCGACTACGAGCAGTACTTCGGCCCCGGCACCCGCCTGACCGTGA	400
CCGAGGACCTGAACAAGGTGTTCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGAACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 49

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Donor Y6W Clone 3 (TYG)**Alpha chain:**

ATGGAGACCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCCGCGGCCTGGTGACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCCGCCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCCCCGACCGCCCCGACACCGA	350
CAAGCTGATCTTCGGCACCGGCACCCGCCTGCAGGTGTTCCCCAACATCC	400
AGAACCCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGAC	450
AAGAGCGTGTGCCTGTTTACCGACTTCGACAGCCAGACCAACGTGAGCCA	500
GAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCCTGCTGGACATGC	550
GCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGC	600
GACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACAC	650
CTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGA	700
GCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGC	750
TTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCT	800
GCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCACACGCTGCTGTGCTGGATGGCCCTGTGCCTGCTGGGCGCCGA	50
CCACGCCGACACCGGCGTGAGCCAGAACCCCCGCCACAAGATCACCAAGC	100
GCGGCCAGAACGTGACCTTCCGCTGCGACCCCATCAGCGAGCACAAACGC	150
CTGTACTGGTACCGCCAGACCCTGGGCGAGGGCCCCGAGTTCCTGACCTA	200
CTTCCAGAACGAGGCCCAGCTGGAGAAGAGCCGCCTGCTGAGCGACCGCT	250
TCAGCGCCGAGCGCCCCAAGGGCAGCTTCAGCACCTTGAGATCCAGCGC	300
ACCGAGCAGGGCGACAGCGCCATGTACCTGTGCGCCAGCCAGAACC GCCG	350
CGAGGGCCGCGAGCGAGCAGTTCTTCGGCCCCGGCACCCGCCTGACCGTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTCACCGACCCCCAGCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 50

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TCRs specific for HLA-A*24:02-PYLFWLAAl

Donor B33 Clone 1 (PYL)

Alpha chain:

ATGCTGCTGATCACCAGCATGCTGGTGTGTGGATGCAGCTGAGCCAGGT	50
GAACGGCCAGCAGGTGATGCAGATCCCCAGTACCAGCACGTGCAGGAGG	100
GCGAGGACTTCACCACCTACTGCAACAGCAGCACCACCCTGAGCAACATC	150
CAGTGGTACAAGCAGCGCCCCGGCGGCCACCCCGTGTTCCTGATCCAGCT	200
GGTGAAGAGCGGCGAGGTGAAGAAGCAGAAGCGCCTGACCTTCCAGTTTCG	250
GCGAGGCCAAGAAGAACAGCAGCCTGCACATCACCGCCACCCAGACCACC	300
GACGTGGGCACCTACTTCTGCGCCGGCCCCGGCACCGGCGCCGGCAGCTA	350
CCAGCTGACCTTCGGCAAGGGCACCAAGCTGAGCGTGATCCCCAACATCC	400
AGAACCCCCGACCCCCGCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGAC	450
AAGAGCGTGTGCCTGTTTACCGACTTCGACAGCCAGACCAACGTGAGCCA	500
GAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCCTGCTGGACATGC	550
GCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGC	600
GACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACAC	650
CTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGA	700
GCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGC	750
TTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCT	800
GCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCATCCGCCTGCTGTGCCGCGTGGCCTTCTGCTTCCTGGCCGTGGG	50
CCTGGTGGACGTGAAGGTGACCCAGAGCAGCCGCTACCTGGTGAAGCGCA	100
CCGGCGAGAAGGTGTTTCTGGAGTGCGTGCAGGACATGGACCACGAGAAC	150
ATGTTCTGGTACCGCCAGGACCCCCGGCCTGGGCTGCGCCTGATCTACTT	200
CAGCTACGACGTGAAGATGAAGGAGAAGGGCGACATCCCCGAGGGCTACA	250
GCGTGAGCCGCGAGAAGAAGGAGCGCTTCAGCCTGATCCTGGAGAGCGCC	300
AGCACCAACCAGACCAGCATGTACCTGTGCGCCAGCATCAAGAGCAGCGG	350
CTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGCTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGAACCCAGGACCGCGCCAAGCCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 51

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Donor B5F Clone 1 (PYL)**Alpha chain:**

ATGCTGCTGATCACCAGCATGCTGGTGCTGTGGATGCAGCTGAGCCAGGT	50
GAACGGCCAGCAGGTGATGCAGATCCCCAGTACCAGCACGTGCAGGAGG	100
GCGAGGACTTCACCACCTACTGCAACAGCAGCACCACCCTGAGCAACATC	150
CAGTGGTACAAGCAGCGCCCCGGCGGCCACCCCGTGTTCCTGATCCAGCT	200
GGTGAAGAGCGGCGAGGTGAAGAAGCAGAAGCGCCTGACCTTCCAGTTCG	250
GCGAGGCCAAGAAGAACAGCAGCCTGCACATCACCGCCACCCAGACCACC	300
GACGTGGGCACCTACTTCTGCGCCGGCCCTACAGCGGCGCCGGCAGCTA	350
CCAGCTGACCTTCGGCAAGGGCACCAAGCTGAGCGTGATCCCCAACATCC	400
AGAACCCCCGACCCCCGCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGAC	450
AAGAGCGTGTCCTGTTTACCGACTTCGACAGCCAGACCAACGTGAGCCA	500
GAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGC	550
GCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGC	600
GACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACAC	650
CTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGA	700
GCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGC	750
TTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCT	800
GCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCATCCGCCTGCTGTGCGCGTGCCCTTCTGCTTCTGGCCGTGGG	50
CCTGGTGGACGTGAAGGTGACCCAGAGCAGCCGCTACCTGGTGAAGCGCA	100
CCGGCGAGAAGGTGTTTCTGGAGTGCGTGACGACATGGACCACGAGAAC	150
ATGTTCTGGTACCGCCAGGACCCCCGGCCTGGGCTGCGCCTGATCTACTT	200
CAGCTACGACGTGAAGATGAAGGAGAAGGGCGACATCCCCGAGGGCTACA	250
GCGTGAGCCGCGAGAAGAAGGAGCGCTTCAGCCTGATCCTGGAGAGCGCC	300
AGCACCAACCAGACCAGCATGTACCTGTGCGCCAGCATCCTGAGCAGCGG	350
CTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGCTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 52

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Donor Y6W Clone 1 (PYL)**Alpha chain:**

ATGCGCCAGGTGGCCCCGCGTGATCGTGTTTCCTGACCCTGAGCACCCCTGAG	50
CCTGGCCAAGACCACCCAGCCCATCAGCATGGACAGCTACGAGGGCCAGG	100
AGGTGAACATCACCTGCAGCCACAACAACATCGCCACCAACGACTACATC	150
ACCTGGTACCAGCAGTTCCCCAGCCAGGGCCCCCGCTTCATCATCCAGGG	200
CTACAAGACCAAGGTGACCAACGAGGTGGCCAGCCTGTTTCATCCCCGCCG	250
ACCGCAAGAGCAGCACCCCTGAGCCTGCCCCGCGTGAGCCTGAGCGACACC	300
GCCGTGTACTACTGCCTGGTGGTGCCCTTCGGCGGCTACAACAAGCTGAT	350
CTTCGGCGCCGGCACCCGCTGGCCGTGCACCCCTACATCCAGAACCCCG	400
ACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTG	450
TGCCTGTTACCCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGA	500
CAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGG	550
ACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCC	600
TGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCC	650
CAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGA	700
CCGACACCAACCTGAACTTCAGAACCTGAGCGTGATCGGCTTCCGCATC	750
CTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTG	800
GAGCAGC	

Beta chain:

ATGCTGAGCCTGCTGCTGCTGCTGCTGGGCCCTGGGCAGCGTGTTTCAGCGC	50
CGTGATCAGCCAGAAGCCAGCCGCGACATCTGCCAGCGCGGCACCAGCC	100
TGACCATCCAGTGCCAGGTGGACAGCCAGGTGACCATGATGTTCTGGTAC	150
CGCCAGCAGCCCCGGCCAGAGCCTGACCCTGATCGCCACCGCCAACCAGGG	200
CAGCGAGGCCACCTACGAGAGCGGCTTCGTGATCGACAAGTTCCCCATCA	250
GCCGCCCCAACCTGACCTTCAGCACCCCTGACCGTGAGCAACATGAGCCCC	300
GAGGACAGCAGCATCTACCTGTGCAGCGTGGGCGAGGGCACCAGCGGCTA	350
CGAGAGCTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCCCTGACCGTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGAACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 53

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Donor Y6W Clone 2 (PYL)

Alpha chain:

ATGAAGAGCCTGCGCGTGCTGCTGGTGATCCTGTGGCTGCAGCTGAGCTG	50
GGTGTGGAGCCAGCAGAAGGAGGTGGAGCAGAACAGCGGCCCCCTGAGCG	100
TGCCCCAGGGGCGCCATCGCCAGCCTGAACTGCACCTACAGCGACCGCGGC	150
AGCCAGAGCTTCTTCTGGTACCGCCAGTACAGCGGCAAGAGCCCCGAGCT	200
GATCATGTTTCATCTACAGCAACGGCGACAAGGAGGACGGCCGCTTCACCG	250
CCCAGCTGAACAAGGCCAGCCAGTACGTGAGCCTGCTGATCCGCGACAGC	300
CAGCCCAGCGACAGCGCCACCTACCTGTGCGCCGTGAACGTGGGCAACAC	350
CGGCTTCCAGAAGCTGGTGTTCGGCACCGGCACCCGCTGCTGGTGAGCC	400
CCAACATCCAGAACCCCGACCCGCGCTGTACCAGCTGCGCGACAGCAAG	450
AGCAGCGACAAGAGCGTGTGCCTGTTACCGACTTCGACAGCCAGACCAA	500
CGTGAGCCAGAGCAAGGACAGCGAGTGTACATCACCGACAAGTGCGTGC	550
TGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGC	600
AACAAGAGCGACTTCGCTGCGCCAACGCTTCAACAACAGCATCATCCC	650
CGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGG	700
TGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGC	750
GTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCT	800
GATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGCTGTGCAGCCTGCTGGCCCTGCTGCTGGGCACCTTCTTCGGCGTGCG	50
CAGCCAGACCATCCACCAGTGGCCCGCCACCCTGGTGCAGCCCGTGGGCA	100
GCCCCCTGAGCCTGGAGTGCACCGTGGAGGGCACCAGCAACCCCAACCTG	150
TACTGGTACCGCCAGGCCCGCCGCGCGCCTGCAGCTGCTGTTCTACAG	200
CGTGGGCATCGGCCAGATCAGCAGCGAGGTGCCCCAGAACCTGAGCGCCA	250
GCCGCCCCCAGGACCGCCAGTTTCATCCTGAGCAGCAAGAAGCTGCTGCTG	300
AGCGACAGCGGCTTCTACCTGTGCGCCTGCCAGTGGCAGGGCCTGGGCGG	350
CGAGCTGTTCTTCGGCGAGGGCAGCCGCCTGACCGTGTGGAGGACCTGA	400
ACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCCGAG	450
ATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTTCTT	500
CCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGCACA	550
GCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCCCTGAAC	600
GACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCACCTTCTG	650
GCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCCTGA	700
GCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCGTGACCCAGATC	750
GTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTACCAGCGTGAG	800
CTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGCTGG	850
GCAAGGCCACCCTGTACGCCGTGCTGGTGTGAGCGCCCTGGTGTGATGGCC	900
ATGGTGAAGCGCAAGGACTTC	

FIG. 54

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Donor Y6W Clone 3 (PYL)

Alpha chain:

ATGACCAGCATCCGCGCCGTGTTTCATCTTCCTGTGGCTGCAGCTGGACCT	50
GGTGAACGGCGAGAACGTGGAGCAGCACCCAGCACCTGAGCGTGCAGG	100
AGGGCGACAGCGCCGTGATCAAGTGCACCTACAGCGACAGCGCCAGCAAC	150
TACTTCCCCTGGTACAAGCAGGAGCTGGGCAAGGGCCCCCAGCTGATCAT	200
CGACATCCGCGAGCAACGTGGGCGAGAAGAAGGACCAGCGCATCGCCGTGA	250
CCCTGAACAAGACCGCCAAGCACTTCAGCCTGCACATCACCGAGACCCAG	300
CCCGAGGACAGCGCCGTGTACTTCTGCGCCGCGAGCGAGTTCCAGTTCTA	350
CTTCGGCACCGGCACCAGCCTGACCGTGATCCCCAACATCCAGAACCCCG	400
ACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTG	450
TGCCTGTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGA	500
CAGCGACGTGTACATCACCGACAAGTGCCTGCTGGACATGCGCAGCATGG	550
ACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCC	600
TGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCC	650
CAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGA	700
CCGACACCAACCTGAACTTCAGAACCTGAGCGTGATCGGCTTCCGCATC	750
CTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCTGCGCCTGTG	800
GAGCAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGGCCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCTGCGCTGCAGCCCCCGAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCTTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCCCCGGCCAGCG	350
CGCCAACACCGGCGAGCTGTTCTTCGGCGAGGGCAGCCGCCTGACCGTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAAGGCCACCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTCACCGACCCCCAGCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGAACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 55

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Donor Y6W Clone 4 (PYL)**Alpha chain:**

ATGAGCCTGAGCAGCCTGCTGAAGGTGGTGACCGCCAGCCTGTGGCTGGG	50
CCCCGGCATCGCCCAGAAGATCACCCAGACCCAGCCCGGCATGTTCTGTGC	100
AGGAGAAGGAGGCCGTGACCCTGGACTGCACCTACGACACCAGCGACCCC	150
AGCTACGGCCTGTTCTGGTACAAGCAGCCCAGCAGCGGCGAGATGATCTT	200
CCTGATCTACCAGGGCAGCTACGACCAGCAGAACGCCACCGAGGGCCGCT	250
ACAGCCTGAACTTCCAGAAGGCCCCGAAGAGCGCCAACCTGGTGATCAGC	300
GCCAGCCAGCTGGGCGACAGCGCCATGTACTTCTGCGCCATGCGCGAGGG	350
CGTGGAATACCAGCTGATCTGGGGCGCCGGCACCAAGCTGATCATCAAGC	400
CCGACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAG	450
AGCAGCGACAAGAGCGTGTGCCTGTTACCGACTTCGACAGCCAGACCAA	500
CGTGAGCCAGAGCAAGGACAGCGAGTGTACATCACCGACAAGTGCGTGC	550
TGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGC	600
AACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCC	650
CGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGG	700
TGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGC	750
GTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCT	800
GATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCACCCGCCTGTTCTTCTACGTGGCCCTGTGCCTGCTGTGGGCCGG	50
CCACCGCGACGCCGGCATCACCCAGAGCCCCCGCTACAAGATCACCGAGA	100
CCGGCCGCCAGGTGACCCTGATGTGCCACCAGACCTGGAGCCACAGCTAC	150
ATGTTCTGGTACCGCCAGGACCTGGGCCACGGCCTGCGCCTGATCTACTA	200
CAGCGCCGCCGCCGACATCACCGACAAGGGCGAGGTGCCCCGACGGCTACG	250
TGGTGAGCCGCAGCAAGACCGAGAACTTCCCCCTGACCCTGGAGAGCGCC	300
ACCCGCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCTACGAGAACGA	350
GAAGCTGTTCTTCGGCAGCGGCACCCAGCTGAGCGTGCTGGAGGACCTGA	400
ACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCCGAG	450
ATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTTCTT	500
CCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGCACA	550
GCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCCGCCCTGAAC	600
GACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCACCTTCTG	650
GCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCCTGA	700
GCGAGAACGACGAGTGGAACCCAGGACCGCGCCAAGCCCCGTGACCCAGATC	750
GTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTACCAGCGTGAG	800
CTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGCTGG	850
GCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATGGCC	900
ATGGTGAAGCGCAAGGACTTC	

FIG. 56

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Donor Y6W Clone 5 (PYL)**Alpha chain:**

ATGCTGCTGCTGCTGATCCCCGTGCTGGGCATGATCTTCGCCCTGCGCGA	50
CGCCCCGCGCCAGAGCGTGAGCCAGCACAAACCACCACGTGATCCTGAGCG	100
AGGCCGCCAGCCTGGAGCTGGGCTGCAACTACAGCTACGGCGGCACCGTG	150
AACCTGTTCTGGTACGTGCAGTACCCCGCCAGCACCTGCAGCTGCTGCT	200
GAAGTACTTCAGCGGCGACCCCCCTGGTGAAGGGCATCAAGGGCTTCGAGG	250
CCGAGTTCATCAAGAGCAAGTTCAGCTTCAACCTGCGCAAGCCCAGCGTG	300
CAGTGGAGCGACACCGCCGAGTACTTCTGCGCCGTGAAGGCCAACTTCAA	350
CAAGTTCTACTTCGGCAGCGGCACCAAGCTGAACGTGAAGCCCAACATCC	400
AGAACCCCCGACCCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGAC	450
AAGAGCGTGTGCCTGTTTACCGACTTCGACAGCCAGACCAACGTGAGCCA	500
GAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCCTGCTGGACATGC	550
GCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGC	600
GACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACAC	650
CTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGA	700
GCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGC	750
TTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCT	800
GCGCCTGTGGAGCAGC	

Beta chain:

ATGGACACCTGGCTGGTGTGCTGGGCCATCTTCAGCCTGCTGAAGGCCGG	50
CCTGACCGAGCCCGAGGTGACCCAGACCCCCAGCCACCAGGTGACCCAGA	100
TGGGCCAGGAGGTGATCCTGCGCTGCGTGCCCATCAGCAACCACCTGTAC	150
TTCTACTGGTACCGCCAGATCCTGGGCCAGAAGGTGGAGTTCTTGGTGAG	200
CTTCTACAACAACGAGATCAGCGAGAAGAGCGAGATCTTCGACGACCAGT	250
TCAGCGTGGAGCGCCCCGACGGCAGCAACTTCACCCTGAAGATCCGCAGC	300
ACCAAGCTGGAGGACAGCGCCATGTACTTCTGCGCCAGCAGCTGGGGCAA	350
CGAGCAGTTCTTCGGCCCCCGGCACCCGCCTGACCGTGCTGGAGGACCTGA	400
ACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCCGAG	450
ATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTTCTT	500
CCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGCACA	550
GCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCCGCCCTGAAC	600
GACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCACCTTCTG	650
GCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCCTGA	700
GCGAGAACGACGAGTGAGACCCAGGACCGCGCCAAGCCCCGTGACCCAGATC	750
GTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTACCAGCGTGAG	800
CTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGCTGG	850
GCAAGGCCACCCTGTACGCCGTGCTGGTGAAGCGCCCTGGTGTGATGGCC	900
ATGGTGAAGCGCAAGGACTTC	

FIG. 57

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Donor Y6W Clone 6 (PYL)**Alpha chain:**

ATGAAGAGCCTGCGCGTGCTGCTGGTGATCCTGTGGCTGCAGCTGAGCTG	50
GGTGTGGAGCCAGCAGAAGGAGGTGGAGCAGAACAGCGGCCCCCTGAGCG	100
TGCCCCAGGGGCGCCATCGCCAGCCTGAACTGCACCTACAGCGACCGCGGC	150
AGCCAGAGCTTCTTCTGGTACCGCCAGTACAGCGGCAAGAGCCCCGAGCT	200
GATCATGTTTCATCTACAGCAACGGCGACAAGGAGGACGGCCGCTTCACCG	250
CCCAGCTGAACAAGGCCAGCCAGTACGTGAGCCTGCTGATCCGCGACAGC	300
CAGCCCAGCGACAGCGCCACCTACCTGTGCGCCGCCGAGCCCTTCAGCAG	350
CTACAAGCTGATCTTCGGCAGCGGCACCCGCTGCTGGTGCGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCACCCGCCTGCTGTTCTGGGTGGCCTTCTGCCTGCTGGGCGCCGA	50
CCACACCGGCGCCGGCGTGAGCCAGAGCCCCAGCAACAAGGTGACCGAGA	100
AGGGCAAGGACGTGGAGCTGCGCTGCGACCCCATCAGCGGCCACACCGCC	150
CTGTACTGGTACCGCCAGAGCCTGGGCCAGGGCCTGGAGTTCTTGATCTA	200
CTTCCAGGGCAACAGCGCCCCCGACAAGAGCGGCCTGCCCAGCGACCGCT	250
TCAGCGCCGAGCGCACCGGCGGCAGCGTGAGCACCTGACCATCCAGCGC	300
ACCCAGCAGGAGGACAGCGCCGTGTACCTGTGCGCCAGCAGCTTCATCGG	350
CGGCACCGGCCTGAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCG	400
TGCTGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAG	450
CCCAGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCTGGTGTGCCT	500
GGCCACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACG	550
GCAAGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAG	600
CAGCCCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGT	650
GAGCGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGC	700
AGTTCTACGGCCTGAGCGAGAACGACGAGTGGAACCCAGGACCGCGCCAAG	750
CCCGTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGG	800
CTTCACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGT	850
ACGAGATCCTGCTGGGCAAGGCCACCTGTACGCCGTGCTGGTGAGCGCC	900
CTGGTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 58

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Donor Y6W Clone 7 (PYL)**Alpha chain:**

ATGATGAAGTGCCCCCAGGCCCTGCTGGCCATCTTCTGGCTGCTGCTGAG	50
CTGGGTGAGCAGCGAGGACAAGGTGGTGCAGAGCCCCCTGAGCCTGGTGG	100
TGCACGAGGGCGACACCGTGACCCCTGAACTGCAGCTACGAGGTGACCAAC	150
TTCCGCAGCCTGCTGTGGTACAAGCAGGAGAAGAAGGCCCCCACCTTCCT	200
GTTTCATGCTGACCAGCAGCGGCATCGAGAAGAAGAGCGGCCGCCTGAGCA	250
GCATCCTGGACAAGAAGGAGCTGAGCAGCATCCTGAACATCACCGCCACC	300
CAGACCGGCGACAGCGCCATCTACCTGTGCGCCGTGGAGAGCCTGATCCA	350
GGGCGCCCAGAAGCTGGTGTTCGGCCAGGGCACCCGCTGACCATCAACC	400
CCAACATCCAGAACCCCGACCCGCGCTGTACCAGCTGCGCGACAGCAAG	450
AGCAGCGACAAGAGCGTGTGCCTGTTACCGACTTCGACAGCCAGACCAA	500
CGTGAGCCAGAGCAAGGACAGCGAGTGTACATCACCGACAAGTGCGTGC	550
TGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGC	600
AACAAGAGCGACTTCGCTGCGCCAACGCTTCAACAACAGCATCATCCC	650
CGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGG	700
TGGAGAAGAGCTTCGAGACCGACCAACCTGAACTTCCAGAACCTGAGC	750
GTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCT	800
GATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGCTGCTGCTGCTGCTGCTGCTGGGCCCCGGCATCAGCCTGCTGCTGCC	50
CGGCAGCCTGGCCGGCAGCGGCCTGGGCGCCGTGGTGAGCCAGCACCCCA	100
GCTGGGTGATCTGCAAGAGCGGCACACGCGTGAAGATCGAGTGCCGCAGC	150
CTGGACTTCCAGGCCACCACCATGTTCTGGTACCGCCAGTTCCCCAAGCA	200
GAGCCTGATGCTGATGGCCACCAGCAACGAGGGCAGCAAGGCCACCTACG	250
AGCAGGGCGTGGAGAAGGACAAGTTCTCTGATCAACCACGCCAGCCTGACC	300
CTGAGCACCCCTGACCGTGACCAGCGCCCCACCCGAGGACAGCAGCTTCTA	350
CATCTGCAGCGCCCCGCGACCGCTTCTGGGGCACCAACAACGAGAAGCTGT	400
TCTTCGGCAGCGGCACCCAGCTGAGCGTGCTGGAGGACCTGAACAAGGTG	450
TTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCCGAGATCAGCCA	500
CACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTTCTTCCCCGACC	550
ACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGCACAGCGGCGTG	600
TGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCCGCCCTGAACGACAGCCG	650
CTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCACCTTCTGGCAGAACC	700
CCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCCTGAGCGAGAAC	750
GACGAGTGGACCCAGGACCGCGCCAAGCCCCGTGACCCAGATCGTGAGCGC	800
CGAGGCCTGGGGCCGCGCCGACTGCGGCTTACCAGCGTGAGCTACCAGC	850
AGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGCTGGGCAAGGCC	900
ACCCTGTACGCCGTGCTGGTGAAGCGCCCTGGTGTGATGGCCATGGTGAA	950
GCGCAAGGACTTC	

FIG. 59

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Donor Y6W Clone 8 (PYL)

Alpha chain:

ATGCGCCTGGTGGCCCCGCGTGACCGTGTTTCCTGACCTTCGGGCACCATCAT	50
CGACGCCAAGACCACCCAGCCCCCAGCATGGACTGCGCCGAGGGCCGCG	100
CCGCCAACCTGCCCTGCAACCACAGCACCATCAGCGGCAACGAGTACGTG	150
TACTGGTACCGCCAGATCCACAGCCAGGGCCCCCAGTACATCATCCACGG	200
CCTGAAGAACAACGAGACCAACGAGATGGCCAGCCTGATCATCACCGAGG	250
ACCGCAAGAGCAGCACCCCTGATCCTGCCCCACGCCACCCTGCGCGACACC	300
GCCGTGTACTACTGCATCGTGCGCGTGGCCGGCGGCACCAGCTACGGCAA	350
GCTGACCTTCGGCCAGGGCACCATCCTGACCGTGACCCCCAACATCCAGA	400
ACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAG	450
AGCGTGTGCCTGTTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAG	500
CAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCA	550
GCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGAC	600
TTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTT	650
CTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCT	700
TCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTC	750
CGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCG	800
CCTGTGGAGCAGC	

Beta chain:

ATGCTGTGCAGCCTGCTGGCCCTGCTGCTGGGCACCTTCTTCGGCGTGCG	50
CAGCCAGACCATCCACCAGTGGCCCGCCACCCTGGTGCAGCCCGTGGGCA	100
GCCCCCTGAGCCTGGAGTGCACCGTGGAGGGCACCAGCAACCCCAACCTG	150
TACTGGTACCGCCAGGCCCGCCGCGCGCCTGCAGCTGCTGTTCTACAG	200
CGTGGGCATCGGCCAGATCAGCAGCGAGGTGCCCCAGAACCTGAGCGCCA	250
GCCGCCCCCAGGACCGCCAGTTTCATCCTGAGCAGCAAGAAGCTGCTGCTG	300
AGCGACAGCGGCTTCTACCTGTGCGCCTGGAGCAGCGCCCCCGACCGCGG	350
CCACCGCCAGCCCCAGCACTTCGGCGACGGCACCCGCTGAGCATCCTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCTG	750
ACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 60

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Donor Y6W Clone 9 (PYL)

Alpha chain:

ATGAGCCTGAGCAGCCTGCTGAAGGTGGTGACCGCCAGCCTGTGGCTGGG	50
CCCCGGCATCGCCCAGAAGATCACCCAGACCCAGCCCGGCATGTTCTGTGC	100
AGGAGAAGGAGGCCGTGACCCTGGACTGCACCTACGACACCAGCGACCAG	150
AGCTACGGCCTGTTCTGGTACAAGCAGCCCAGCAGCGGCGAGATGATCTT	200
CCTGATCTACCAGGGCAGCTACGACGAGCAGAACGCCACCGAGGGCCGCT	250
ACAGCCTGAACTTCCAGAAGGCCCCGAAGAGCGCCAACCTGGTGATCAGC	300
GCCAGCCAGCTGGGCGACAGCGCCATGTACTTCTGCGCCATGCGCGTGAA	350
CAGCGGCGGCTACCAGAAGGTGACCTTCGGCACCGGCACCAAGCTGCAGG	400
TGATCCCCAACATCCAGAACCCGACCCCGCCGTGTACCAGCTGCGCGAC	450
AGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCA	500
GACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGT	550
GCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCC	600
TGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCAT	650
CATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGA	700
AGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAAC	750
CTGAGCGTGATCGGCTTCCGCATCCTGTGCTGAAGGTGGCCGGCTTCAA	800
CCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCCCCGGCCTGCTGCACTGGATGGCCCTGTGCCTGCTGGGCACCGG	50
CCACGGCGACGCCATGGTGATCCAGAACCCCGCTACCAGGTGACCCAGT	100
TCGGCAAGCCCGTGACCCTGAGCTGCAGCCAGACCCCTGAACCACAACGTG	150
ATGTACTGGTACCAGCAGAAGAGCAGCCAGGCCCCCAAGCTGCTGTTCCA	200
CTACTACGACAAGGACTTCAACAACGAGGGCCGACACCCCGACAACCTTCC	250
AGAGCCGCCGCCCAACACCAGCTTCTGCTTCCTGGACATCCGCAGCCCC	300
GGCCTGGGCGACACCGCCATGTACCTGTGCGCCACCAGCCGCGACCGCGG	350
CACCGGCCCCCCCCCTACGAGCAGTACTTCGGCCCCGGCACCCGCTGACCG	400
TGACCGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAG	450
CCCAGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCT	500
GGCCACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACG	550
GCAAGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAG	600
CAGCCCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGT	650
GAGCGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGC	700
AGTTCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAG	750
CCCGTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGG	800
CTTCACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGT	850
ACGAGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCC	900
CTGGTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 61

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Donor Y6W Clone 10 (PYL)**Alpha chain:**

ATGATCAGCCTGCGCGTGCTGCTGGTGATCCTGTGGCTGCAGCTGAGCTG	50
GGTGTGGAGCCAGCGCAAGGAGGTGGAGCAGGACCCCGGCCCTTCAACG	100
TGCCCCGAGGGCGCCACCGTGGCCTTCAACTGCACCTACAGCAACAGCGCC	150
AGCCAGAGCTTCTTCTGGTACCGCCAGGACTGCCGCAAGGAGCCCAAGCT	200
GCTGATGAGCGTGACAGCAGCGGCAACGAGGACGGCCGCTTCACCGCCC	250
AGCTGAACCGCGCCAGCCAGTACATCAGCCTGCTGATCCGCGACAGCAAG	300
CTGAGCGACAGCGCCACCTACCTGTGCGTGCTGAGCGGCGCCGGCAGCTA	350
CCAGCTGACCTTCGGCAAGGGCACCAAGCTGAGCGTGATCCCCAACATCC	400
AGAACCCCCGACCCCGCGTGTAACAGCTGCGCGACAGCAAGAGCAGCGAC	450
AAGAGCGTGTCCTGTTTACCGACTTCGACAGCCAGACCAACGTGAGCCA	500
GAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCCTGCTGGACATGC	550
GCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGC	600
GACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACAC	650
CTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGA	700
GCTTCGAGACCGACACCAACCTGAACCTCCAGAACCTGAGCGTGATCGGC	750
TTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCT	800
GCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGTGCCCTTCAGCCTGCTGTGGGCCAG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACAACAGC	150
ATGTACTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCTACTA	200
CAGCGCCAGCGAGGGCACCAACGACAAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCGCTGAACAAGCGCGAGTTTCAACCTGCGCCTGGAGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGACTTCTGCGCCAGCAGCGAGTGGCGCGA	350
GGAGACCCAGTACTTCGGCCCCGGCACCCGCTGCTGGTGCTGGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGCTGTTTCGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTCACCGACCCCCAGCCCTGAAGGAGCAGCCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 62

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Donor Y6W Clone 11 (PYL)**Alpha chain:**

ATGGAGAGCTTCCTGGGCGGCGTGCTGCTGATCCTGTGGCTGCAGGTGGA	50
CTGGGTGAAGAGCCAGAAGATCGAGCAGAACAGCGAGGCCCTGAACATCC	100
AGGAGGGCAAGACCGCCACCCTGACCTGCAACTACACCAACTACAGCCCC	150
GCCTACCTGCAGTGGTACCGCCAGGACCCCGGCCGCGGCCCGCTGTTCCCT	200
GCTGCTGATCCGCGAGAACGAGAAGGAGAAGCGCAAGGAGCGCCTGAAGG	250
TGACCTTCGACACCACCCTGAAGCAGAGCCTGTTCCACATCACC GCCAGC	300
CAGCCCCCGACAGCGCCACCTACCTGTGCGCCCTGGACGAGGGCAACAC	350
CGGCTTCCAGAAGCTGGTGTTCGGCACCGGCACCCGCTGCTGGTGAGCC	400
CCAACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAG	450
AGCAGCGACAAGAGCGTGTGCCTGTTACCCGACTTCGACAGCCAGACCAA	500
CGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACC GACAAGTGCGTGC	550
TGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGC	600
AACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCC	650
CGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGG	700
TGGAGAAGAGCTTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGC	750
GTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCT	800
GATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGCTGTGCAGCCTGCTGGCCCTGCTGCTGGGCACCTTCTTCGGCGTGCG	50
CAGCCAGACCATCCACCAGTGGCCCGCCACCCTGGTGCAGCCCGTGGGCA	100
GCCCCCTGAGCCTGGAGTGCACCGTGGAGGGCACCAGCAACCCCAACCTG	150
TACTGGTACCGCCAGGCCCGCCGGCCGCGGCCCTGCAGCTGCTGTTCTACAG	200
CGTGGGCATCGGCCAGATCAGCAGCGAGGTGCCCCAGAACCTGAGCGCCA	250
GCCGCCCCCAGGACCGCCAGTTCATCCTGAGCAGCAAGAAGCTGCTGCTG	300
AGCGACAGCGGCTTCTACCTGTGCGCCTGGAGCGGCACCGACAGCAGCTA	350
CGAGCAGTACTTCGGCCCCGGCACCCGCCTGACCGTGACCGAGGACCTGA	400
ACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCCGAG	450
ATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTTCTT	500
CCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGCACA	550
GCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCCCTGAAC	600
GACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTTCTG	650
GCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCCTGA	700
GCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAGATC	750
GTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGTGAG	800
CTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGCTGG	850
GCAAGGCCACCCTGTACGCCGTGCTGGTGTGAGCGCCCTGGTGTGATGGCC	900
ATGGTGAAGCGCAAGGACTTC	

FIG. 63

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Donor Y6W Clone 12 (PYL)

Alpha chain:

ATGTGGGGCGTGTTCTTGCTGTACGTGAGCATGAAGATGGGCGGCACCAC	50
CGGCCAGAACATCGACCAGCCCCACCGAGATGACCGCCACCGAGGGCGCCA	100
TCGTGCAGATCAACTGCACCTACCAGACCAGCGGCTTCAACGGCCTGTTC	150
TGGTACCAGCAGCACGCCGGCGAGGCCCCACCTTCTTGAGCTACAACGT	200
GCTGGACGGCCTGGAGGAGAAGGGCCGCTTCAGCAGCTTCTTGAGCCGCA	250
GCAAGGGCTACAGCTACCTGCTGCTGAAGGAGCTGCAGATGAAGGACAGC	300
GCCAGCCGCAACACCGGCTTCCAGAAGCTGGTGTTCGGCACCGGCACCCG	350
CCTGCTGGTGAGCCCCAACATCCAGAACCCGACCCGCGCTGTACCAGC	400
TGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTCAACGACTTC	450
GACAGCCAGACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCAC	500
CGACAAGTGCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCG	550
CCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAAC	600
AACAGCATCATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTG	650
CGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACT	700
TCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCC	750
GGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCATCCGCCTGCTGTGCCGCGTGGCCTTCTGCTTCTTGCCCGTGGG	50
CCTGGTGGACGTGAAGGTGACCCAGAGCAGCCGCTACCTGGTGAAGCGCA	100
CCGGCGAGAAGGTGTTCTTGAGTTCGTGCAGGACATGGACCACGAGAAC	150
ATGTTCTGGTACCGCCAGGACCCCGGCTGGGCTGCGCCTGATCTACTT	200
CAGCTACGACGTGAAGATGAAGGAGAAGGGCGACATCCCCGAGGGCTACA	250
GCGTGAGCCGCGAGAAGAAGGAGCGCTTCAGCCTGATCCTGGAGAGCGCC	300
AGCACCAACCAGACCAGCATGTACCTGTGCGCCAGCAGCCCCGAGCAGGG	350
CGCCGCCGGCGACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGC	400
TGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 64

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Donor Y6W Clone 13 (PYL)**Alpha chain:**

ATGCTGCTGGAGCTGATCCCCCTGCTGGGCATCCACTTCGTGCTGCGCAC	50
CGCCCGCGCCAGAGCGTGACCCAGCCCGACATCCACATCACCGTGAGCG	100
AGGGCGCCAGCCTGGAGCTGCGCTGCAACTACAGCTACGGCGCCACCCCC	150
TACCTGTTCTGGTACGTGCAGAGCCCCGGCCAGGGCCTGCAGCTGCTGCT	200
GAAGTACTTCAGCGGCACACCCTGGTGAGGGCATCAAGGGCTTCGAGG	250
CCGAGTTCAAGCGCAGCCAGAGCAGCTTCAACCTGCGCAAGCCCAGCGTG	300
CACTGGAGCGACGCCGCCGAGTACTTCTGCGCCGCCCCGGCGTGGGCAG	350
CAACAGCGGTACGCCCTGAACTTCGGCAAGGGCACCAAGCCTGCTGGTGA	400
CCCCCACATCCAGAACCCCCGACCCCGCCGTGTACCAGCTGCGCGACAGC	450
AAGAGCAGCGACAAGAGCGTGTGCCTGTTCAACCGACTTCGACAGCCAGAC	500
CAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCG	550
TGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGG	600
AGCAACAAGAGCGACTTCGCCTGCGCCAACGCCCTTCAACAACAGCATCAT	650
CCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGC	700
TGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTG	750
AGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCT	800
GCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGGCCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCCCTGCGCTGCAGCCCCCGCAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCCTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCCCCAGCTGGGC	350
CGCCAACAGCCCCCTGCACTTCGGCAACGGCACCCGCCCTGACCGTGACCG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTG	750
ACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 65

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Donor Y6W Clone 14 (PYL)**Alpha chain:**

ATGTGGGGCGTGTTCTGCTGTACGTGAGCATGAAGATGGGCGGCACCAC	50
CGGCCAGAACATCGACCAGCCCACCGAGATGACCGCCACCGAGGGCGCCA	100
TCGTGCAGATCAACTGCACCTACCAGACCAGCGGCTTCAACGGCCTGTTC	150
TGGTACCAGCAGCACGCCGGCGAGGCCCCACCTTCCTGAGCTACAACGT	200
GCTGGACGGCCTGGAGGAGAAGGGCCGCTTCAGCAGCTTCCTGAGCCGCA	250
GCAAGGGCTACAGCTACCTGCTGCTGAAGGAGCTGCAGATGAAGGACAGC	300
GCCAGCTACCTGTGCGCCGGCGAGGACCAGACCGGCGCCAACAACCTGTT	350
CTTCGGCACCGGCACCCGCTGACCGTGATCCCCCTACATCCAGAACCCCG	400
ACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTG	450
TGCCTGTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGA	500
CAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGG	550
ACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCC	600
TGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCC	650
CAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGA	700
CCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATC	750
CTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCCTGCGCCTGTG	800
GAGCAGC	

Beta chain:

ATGGGCATCCGCCTGCTGTGCCGCGTGGCCTTCTGCTTCCTGGCCGTGGG	50
CCTGGTGGACGTGAAGGTGACCCAGAGCAGCCGCTACCTGGTGAAGCGCA	100
CCGGCGAGAAGGTGTTCTGGAGTGCGTGACAGGACATGGACCACGAGAAC	150
ATGTTCTGGTACCGCCAGGACCCCCGGCCTGGGCCTGCGCCTGATCTACTT	200
CAGCTACGACGTGAAGATGAAGGAGAAGGGCGACATCCCCGAGGGCTACA	250
GCGTGAGCCGCGAGAAGAAGGAGCGCTTCAGCCTGATCCTGGAGAGCGCC	300
AGCACCAACCAGACCAGCATGTACCTGTGCGCCAGCGGCACCCTGAGCTA	350
CAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGCTGGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAACAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 66

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Donor Y6W Clone 15 (PYL)**Alpha chain:**

ATGAAGAGCCTGCGCGTGCTGCTGGTGATCCTGTGGCTGCAGCTGAGCTG	50
GGTGTGGAGCCAGCAGAAGGAGGTGGAGCAGAACAGCGGCCCCCTGAGCG	100
TGCCCCGAGGGCGCCATCGCCAGCCTGAACTGCACCTACAGCGACCGCGGC	150
AGCCAGAGCTTCTTCTGGTACCGCCAGTACAGCGGCAAGAGCCCCGAGCT	200
GATCATGTTTCATCTACAGCAACGGCGACAAGGAGGACGGCCGCTTCACCG	250
CCCAGCTGAACAAGGCCAGCCAGTACGTGAGCCTGCTGATCCGCGACAGC	300
CAGCCCAGCGACAGCGCCACCTACCTGTGCGCCGTGAAGGTGGGCACCGG	350
CTTCCAGAAGCTGGTGTTCGGCACCGGCACCCGCCCTGCTGGTGAGCCCCA	400
ACATCCAGAACCCCCGACCCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGC	450
AGCGACAAGAGCGTGTGCCTGTTACCGACTTCGACAGCCAGACCAACGT	500
GAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCCTGCTGG	550
ACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAAC	600
AAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGA	650
GGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGG	700
AGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTG	750
ATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGAT	800
GACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCACACAGCCTGCTGTGCTGGATGGCCCTGTGCCTGCTGGGCGCCGA	50
CCACGCCGACACCGGCGTGAGCCAGAACCCCCGCCACAAGATCACCAAGC	100
GCGGCCAGAACGTGACCTTCCGCTGCGACCCCATCAGCGAGCACAACCGC	150
CTGTACTGGTACCGCCAGACCCTGGGCCAGGGCCCCGAGTTCTTGACCTA	200
CTTCCAGAACGAGGCCAGCTGGAGAAGAGCCGCCTGCTGAGCGACCGCT	250
TCAGCGCCGAGCGCCCCAAGGGCAGCTTCAGCACCTGGAGATCCAGCGC	300
ACCGAGCAGGGCGACAGCGCCATGTACCTGTGCGCCAGCAGCCTGGTGGG	350
CCAGGGCAACACCGAGGCCTTCTTCGGCCAGGGCACCCGCCCTGACCGTGG	400
TGGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCC	450
AGCGAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGC	500
CACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCA	550
AGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAG	600
CCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAG	650
CGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGT	700
TCTACGGCCTGAGCGAGAACGACGAGTGGAACCCAGGACCGCGCCAAGCCC	750
GTGACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTT	800
CACCAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACG	850
AGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTG	900
GTGCTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 67

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TCRs specific for HLA-A*02:01- YLLEMLWRL**Donor N2W Clone 1 (YLL)****Alpha chain:**

ATGCTGCTGCTGCTGATCCCCGTGCTGGGCATGATCTTCGCCCTGCGCGA	50
CGCCCGCGCCAGAGCGTGAGCCAGCACAAACCACCACGTGATCCTGAGCG	100
AGGCCGCCAGCCTGGAGCTGGGCTGCAACTACAGCTACGGCGGCACCGTG	150
AACCTGTTCTGGTACGTGCAGTACCCCGGCCAGCACCTGCAGCTGCTGCT	200
GAAGTACTTCAGCGGCGACCCCTGGTGAAGGGCATCAAGGGCTTCGAGG	250
CCGAGTTCATCAAGAGCAAGTTCAGCTTCAACCTGCGCAAGCCCAGCGTG	300
CAGTGGAGCGACACCGCCGAGTACTTCTGCGCCGTGAGCATGCGCTTCGG	350
CGCCGGCACCCGCTGACCGTGAAGCCCAACATCCAGAACCCCGACCCCG	400
CCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGCCTG	450
TTCACCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAGCGA	500
CGTGTACATCACCGACAAGTGCCTGCTGGACATGCGCAGCATGGACTTCA	550
AGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCTGCGCC	600
AACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCCCAGCCC	650
CGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCGACA	700
CCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTGCTG	750
CTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAGCAG	800

C

Beta chain:

ATGGGCACCCGCCTGCTGTGCTGGGCCGCCCTGTGCCTGCTGGGCGCCGA	50
GCTGACCGAGGCCCGGCGTGGCCAGAGCCCCCGCTACAAGATCATCGAGA	100
AGCGCCAGAGCGTGGCCTTCTGGTGAACCCCATCAGCGGCCACGCCACC	150
CTGTACTGGTACCAGCAGATCCTGGGCCAGGGCCCCAAGCTGCTGATCCA	200
GTTCCAGAACACGGCGTGGTGGACGACAGCCAGCTGCCCCAAGGACCGCT	250
TCAGCGCCGAGCGCCTGAAGGGCGTGGACAGCACCCCTGAAGATCCAGCCC	300
GCCAAGCTGGAGGACAGCGCCGTGTACCTGTGCGCCAGCAGCCTGGACGA	350
GGGCACCGTGACCTACGAGCAGTACTTCGGCCCCGGCACCCGCTGACCG	400
TGACCGAGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAG	450
CCCAGCGAGGCCGAGATCAGCCACACCCAGAAAGGCCACCCTGGTGTGCCT	500
GGCCACCGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACG	550
GCAAGGAGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAG	600
CAGCCCCGCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGT	650
GAGCGCCACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGC	700
AGTTCTACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAG	750
CCCGTGACCCAGATCGTGAGCGCCGAGGCGTGGGGCCGCGCCGACTGCGG	800
CTTCACCAGCGTGAGCTACCAGCAGGGCGTGTGAGCGCCACCATCCTGT	850
ACGAGATCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGGAGCGCC	900

CTGGTGTGATGGCCATGGTGAAGCGCAAGGACTTC

FIG. 68

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Donor N2W Clone 2 (YLL)**Alpha chain:**

ATGAAGAGCCTGCGCGTGCTGCTGGTGATCCTGTGGCTGCAGCTGAGCTG	50
GGTGTGGAGCCAGCAGAAGGAGGTGGAGCAGAACAGCGGCCCCCTGAGCG	100
TGCCCCGAGGGCGCCATCGCCAGCCTGAACTGCACCTACAGCGACCGCGGC	150
AGCCAGAGCTTCTTCTGGTACCGCCAGTACAGCGGCAAGAGCCCCGAGCT	200
GATCATGTTTCATCTACAGCAACGGCGACAAGGAGGACGGCCGCTTCACCG	250
CCCAGCTGAACAAGGCCAGCCAGTACGTGAGCCTGCTGATCCGCGACAGC	300
CAGCCCAGCGACAGCGCCACCTACCTGTGCGCCGTGAACCCCAACCCCAAG	350
CGTGGGCAGCAACTACAAGCTGACCTTCGGCAAGGGCACCCCTGCTGACCG	400
TGAACCCCAACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGAC	450
AGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTACCGACTTCGACAGCCA	500
GACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGT	550
GCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCC	600
TGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCAT	650
CATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGA	700
AGCTGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAAC	750
CTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAA	800
CCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGCCCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCTGCGCTGCAGCCCCCGCAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCCTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCGTGGGCGGCGA	350
GGGCCTGGCCTTCTTCCGCCAGGGCACCCGCTGACCGTGGTGGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGAAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 69

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Donor N2W Clone 3 (YLL)**Alpha chain:**

ATGATGAAGTGCCCCCAGGCCCTGCTGGCCATCTTCTGGCTGCTGCTGAG	50
CTGGGTGAGCAGCGAGGACAAGGTGGTGCAGAGCCCCCTGAGCCTGGTGG	100
TGCACGAGGGCGACACCGTGACCCTGAACTGCAGCTACGAGGTGACCAAC	150
TTCCGCAGCCTGCTGTGGTACAAGCAGGAGAAGAAGGCCCCCACCTTCCT	200
GTTTCATGCTGACCAGCAGCGGCATCGAGAAGAAGAGCGGCCGCTGAGCA	250
GCATCCTGGACAAGAAGGAGCTGTTTACGATCCTGAACATCACCGCCACC	300
CAGACCGGCGACAGCGCCGTGTACCTGTGCGCCGTGGCCGCCGAGAACTA	350
CGGCCAGAACTTCGTGTTTCGGCCCCGGCACCCGCTGAGCGTGCTGCCCT	400
ACATCCAGAACCCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGC	450
AGCGACAAGAGCGTGTGCCTGTTTACCGACTTCGACAGCCAGACCAACGT	500
GAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGG	550
ACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAAC	600
AAGAGCGACTTTCGCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGA	650
GGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGG	700
AGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTG	750
ATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGAT	800
GACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCACACAGCCTGCTGTGCTGGGTGGTGGTGGGCTTCCTGGGCACCGA	50
CCACACCGGCGCCGGCGTGAGCCAGAGCCCCGCTACAAGGTGACCAAGC	100
GCGGCCAGGACGTGGCCCTGCGCTGCGACCCCATCAGCGGCCACGTGAGC	150
CTGTACTGGTACCGCCAGGCCCTGGGCCAGGGCCCCGAGTTCTTGACCTA	200
CTTCAACTACGAGGCCCCAGCAGGACAAGAGCGGCCTGCCCCAACGACCGCT	250
TCAGCGCCGAGCGCCCCGAGGGCAGCATCAGCACCCCTGACCATCCAGCGC	300
ACCGAGCAGCGCGACAGCGCCATGTACCGCTGCGCCAGCAGCCTGGAGGG	350
CGACTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGCTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGGCCAAGCCCCTG	750
ACCCAGATCGTGAGCGCCGAGGCCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCGTGCTGGTGGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 70

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Donor N2W Clone 4 (YLL)**Alpha chain:**

ATGGAGAAGAACCCCTGGCCGCCCCCTGCTGATCCTGTGGTTCCACCT	50
GGACTGCGTGAGCAGCATCCTGAACGTGGAGCAGAGCCCCAGAGCCTGC	100
ACGTGCAGGAGGGCGACAGCACCAACTTCACCTGCAGCTTCCCCAGCAGC	150
AACTTCTACGCCCTGCACTGGTACCGCTGGGAGACCGCCAAGAGCCCCGA	200
GGCCCTGTTTCGTGATGACCCTGAACGGCGACGAGAAGAAGAAGGGCCGCA	250
TCAGCGCCACCCTGAACACCAAGGAGGGCTACAGCTACCTGTACATCAAG	300
GGCAGCCAGCCCCGAGGACAGCGCCACCTACCTGTGCGCCTTCATCAGCAG	350
CGGCAGCGCCCGCCAGCTGACCTTCGGCAGCGGCACCCAGCTGACCGTGC	400
TGCCCCGACATCCAGAACCCCCGACCCCGCCGTGTACCAGCTGCGCGACAGC	450
AAGAGCAGCGACAAGAGCGTGTGCCTGTTCAACCGACTTCGACAGCCAGAC	500
CAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCG	550
TGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGG	600
AGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCAT	650
CCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGC	700
TGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTG	750
AGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCT	800
GCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCACCAGCCTGCTGTGCTGGGTGGTGCTGGGCTTCCTGGGCACCGA	50
CCACACCGGCGCCGGCGTGAGCCAGAGCCCCGCTACAAGGTGACCAAGC	100
GCGGCCAGGACGTGGCCCTGCGCTGCGACCCCATCAGCGGCCACGTGAGC	150
CTGTACTGGTACCGCCAGGCCCTGGGCCAGGGCCCCGAGTTCCTGACCTA	200
CTTCAACTACGAGGCCCCAGCAGGACAAGAGCGGCCTGCCCCAACGACCGCT	250
TCAGCGCCGAGCGCCCCGAGGGCAGCATCAGCACCCCTGACCATCCAGCGC	300
ACCGAGCAGCGCGACAGCGCCATGTACCGCTGCGCCAGCAGCCTGGAGGC	350
CGACAACGAGAAGCTGTTCTTCGGCAGCGGCACCCAGCTGAGCGTGCTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTG	750
ACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCCTGTACGCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 71

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Donor N2W Clone 5 (YLL)**Alpha chain:**

ATGAGCCTGAGCAGCCTGCTGAAGGTGGTGACCGCCAGCCTGTGGCTGGG	50
CCCCGGCATCGCCCAGAAGATCACCCAGACCCAGCCCGGCATGTTTCGTGC	100
AGGAGAAGGAGGCCGTGACCCTGGACTGCACCTACGACACCAGCGACCAG	150
AGCTACGGCCTGTTCTGGTACAAGCAGCCCAGCAGCGGCGAGATGATCTT	200
CCTGATCTACCAGGGCAGCTACGACGAGCAGAACGCCACCGAGGGCCGCT	250
ACAGCCTGAACTTCCAGAAGGCCCCGAAGAGCGCCAACCTGGTGATCAGC	300
GCCAGCCAGCTGGGCGACAGCGCCATGTACTTCTGCGCCATGCGCGAGGA	350
CCTGCGCAGCAACGACAAGGTGATCTTCGGCCCCGGCACCAGCCTGAGCG	400
TGATCCCCAACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGAC	450
AGCAAGAGCAGCGACAAGAGCGTGTGCCTGTTACCCGACTTCGACAGCCA	500
GACCAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGT	550
GCGTGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCC	600
TGGAGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCAT	650
CATCCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGA	700
AGCTGGTGAGAAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAAC	750
CTGAGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAA	800
CCTGCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCTTCCGCCTGCTGTGCTGCGTGCGCTTCTGCCTGCTGGGCGCCGG	50
CCCCGTGGACAGCGGCGTGACCCAGACCCCCAAGCACCTGATCACCGCCA	100
CCGGCCAGCGCGTGACCCTGCGCTGCAGCCCCCGCAGCGGCGACCTGAGC	150
GTGTACTGGTACCAGCAGAGCCTGGACCAGGGCCTGCAGTTCCTGATCCA	200
GTACTACAACGGCGAGGAGCGCGCCAAGGGCAACATCCTGGAGCGCTTCA	250
GCGCCCAGCAGTTCCCCGACCTGCACAGCGAGCTGAACCTGAGCAGCCTG	300
GAGCTGGGCGACAGCGCCCTGTACTTCTGCGCCAGCAGCGTGGGCGACAG	350
CGGCCAGGCCCAGTACTTCGGCCCCGGCACCCGCTGACCGTGCTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 72

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Donor N2W Clone 6 (YLL)**Alpha chain:**

ATGCTGCTGCTGCTGATCCCCGTGCTGGGCATGATCTTCGCCCTGCGCGA	50
CGCCCGCGCCAGAGCGTGAGCCAGCACAAACCACCACGTGATCCTGAGCG	100
AGGCCGCCAGCCTGGAGCTGGGCTGCAACTACAGCTACGGCGGCACCGTG	150
AACCTGTTCTGGTACGTGCAGTACCCCGGCCAGCACCTGCAGCTGCTGCT	200
GAAGTACTTCAGCGGCGACCCCCCTGGTGAAGGGCATCAAGGGCTTCGAGG	250
CCGAGTTCATCAAGAGCAAGTTCAGCTTCAACCTGCGCAAGCCCAGCGTG	300
CAGTGGAGCGACACCGCCGAGTACTTCTGCGCCGCCGGCGGCGGCAGCCA	350
GGGCAACCTGATCTTCGGCAAGGGCACCAAGCTGAGCGTGAAGCCCCAACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGGCCCCCGCCTGCTGTGCTGGGCCCTGCTGTGCCTGCTGGGCGCCGG	50
CCTGGTGGACGCCGGCGTGACCCAGAGCCCCACCCACCTGATCAAGACCC	100
GCGGCCAGCAGGTGACCTGCGCTGCAGCCCCAAGAGCGGCCACGACACC	150
GTGAGCTGGTACCAGCAGGCCCTGGGCCAGGGCCCCCAGTTCATCTTCCA	200
GTACTACGAGGAGGAGGAGCGCCAGCGCGGCAACTTCCCCGACCGCTTCA	250
GCGGCCACCAGTTCCCCAACTACAGCAGCGAGCTGAACGTGAACGCCCTG	300
CTGCTGGGCGACAGCGCCCTGTACCTGTGCGCCAGCAGCTGGTGGGACGG	350
CGGCACCGGCGAGCTGTTCTTCGGCGAGGGCAGCCGCTGACCGTGCTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGGCCAAGCCCGTG	750
ACCCAGATCGTGAGCGCCGAGGCCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 73

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Donor B87 Clone 1 (YLL)**Alpha chain:**

ATGAGCCTGAGCAGCCTGCTGAAGGTGGTGACCGCCAGCCTGTGGCTGGG	50
CCCCGGCATCGCCCAGAAGATCACCCAGACCCAGCCGGCATGTTCTGTGC	100
AGGAGAAGGAGGCCGTGACCCTGGACTGCACCTACGACACCAGCGACCCC	150
AGCTACGGCCTGTTCTGGTACAAGCAGCCCAGCAGCGGCGAGATGATCTT	200
CCTGATCTACCAGGGCAGCTACGACCAGCAGAACGCCACCGAGGGCCGCT	250
ACAGCCTGAACTTCCAGAAGGCCCCGCAAGAGCGCCAACCTGGTGATCAGC	300
GCCAGCCAGCTGGGCGACAGCGCCATGTACTTCTGCGCCATGCGCGAGCT	350
GAACGACTACAAGCTGAGCTTCGGCGCCGGCACCACCGTGACCGTGCGCG	400
CCAACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAG	450
AGCAGCGACAAGAGCGTGTGCCTGTTCAACCGACTTCGACAGCCAGACCAA	500
CGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTG	550
TGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGC	600
AACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCC	650
CGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGG	700
TGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGC	750
GTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCT	800
GATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGGCCAGCCTGCTGTTCTTCTGCGGCGCCTTCTACCTGCTGGGACCCGG	50
CAGCATGGACGCCGACGTGACCCAGACCCCCGCAACCGCATCACCAAGA	100
CCGGCAAGCGCATCATGCTGGAGTGACGCCAGACCAAGGGCCACGACCGC	150
ATGTACTGGTACCGCCAGGACCCCCGGCCTGGGCTGCGCCTGATCTACTA	200
CAGCTTCGACGTGAAGGACATCAACAAGGGCGAGATCAGCGACGGCTACA	250
GCGTGAGCCGCCAGGCCAGGCCAAGTTTCAACCTGAGCCTGGAGAGCGCC	300
ATCCCCAACCAGACCGCCCTGTACTTCTGCGCCACCCGCGACGACCTGCT	350
GGCCGAGGCCTTCTTCCGCCAGGGCACCCGCCCTGACCGTGGTGGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGAGCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 74

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Donor B87 Clone 2 (YLL)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCAAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAAGCAGCGGCCGCGCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGACGGCCTGCCCCGCTT	350
CGGCGCCGGCACCCGCTGACCGTGAAGCCCAACATCCAGAACCCCGACC	400
CCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGCGACAAGAGCGTGTGC	450
CTGTTACCGACTTCGACAGCCAGACCAACGTGAGCCAGAGCAAGGACAG	500
CGACGTGTACATCACCGACAAGTGCGTGCTGGACATGCGCAGCATGGACT	550
TCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAGAGCGACTTCGCCTGC	600
GCCAACGCCTTCAACAACAGCATCATCCCCGAGGACACCTTCTTCCCCAG	650
CCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGAAGAGCTTCGAGACCG	700
ACACCAACCTGAACTTCCAGAACCTGAGCGTGATCGGCTTCCGCATCCTG	750
CTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGACCCTGCGCCTGTGGAG	800
CAGC	

Beta chain:

ATGCTGAGCCCCGACCTGCCCGACAGCGCCTGGAACACCCGCCTGCTGTG	50
CCACGTGATGCTGTGCCTGCTGGGCGCCGTGAGCGTGGCCGCCGGCGTGA	100
TCCAGAGCCCCCGCCACCTGATCAAGGAGAAGCGCGAGACCGCCACCCTG	150
AAGTGCTACCCCATCCCCCGCCACGACACCGTGTAAGTGGTACCAGCAGGG	200
CCCCGGCCAGGACCCCCAGTTCTCTGATCAGCTTCTACGAGAAGATGCAGA	250
GCGACAAGGGCAGCATCCCCGACCGCTTCAGCGCCCAGCAGTTTCAGCGAC	300
TACCACAGCGAGCTGAACATGAGCAGCCTGGAGCTGGGCGACAGCGCCCT	350
GTACTTCTGCGCCAGCAGCTTCGGCACCAACACCGGCGAGCTGTTCTTCG	400
GCGAGGGCAGCCGCCTGACCGTGCTGGAGGACCTGAACAAGGTGTTCCCC	450
CCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCCGAGATCAGCCACACCCA	500
GAAGGCCACCTGGTGTGCCTGGCCACCGGCTTCTTCCCCGACCACGTGG	550
AGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGCACAGCGGCGTGTGCACC	600
GACCCCCAGCCCCCTGAAGGAGCAGCCGCCCCCTGAACGACAGCCGCTACTG	650
CCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTTCTGGCAGAACCCCCGCA	700
ACCACTTCCGCTGCCAGGTGCAGTTCTACGGCCTGAGCGAGAACGACGAG	750
TGGACCCAGGACCGCGCCAAGCCCGTGACCCAGATCGTGAGCGCCGAGGC	800
CTGGGGCCGCGCCGACTGCGGCTTCACCAGCGTGAGCTACCAGCAGGGCG	850
TGCTGAGCGCCACCATCCTGTACGAGATCCTGCTGGGCAAGGCCACCCTG	900
TACGCCGTGCTGGTGAAGCGCCCTGGTGTGATGGCCATGGTGAAGCGCAA	950
GGACTTC	

FIG. 75

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Donor B87 Clone 3 (YLL)**Alpha chain:**

ATGCTGCTGCTGCTGATCCCCGTGCTGGGCATGATCTTCGCCCTGCGCGA	50
CGCCCGCGCCAGAGCGTGAGCCAGCACAAACCACCACGTGATCCTGAGCG	100
AGGCCGCCAGCCTGGAGCTGGGCTGCAACTACAGCTACGGCGGCACCGTG	150
AACCTGTTCTGGTACGTGCAGTACCCCGGCCAGCACCTGCAGCTGCTGCT	200
GAAGTACTTCAGCGGCGACCCCTGGTGAAGGGCATCAAGGGCTTCGAGG	250
CCGAGTTCATCAAGAGCAAGTTCAGCTTCAACCTGCGCAAGCCCAGCGTG	300
CAGTGGAGCGACACCGCCGAGTACTTCTGCGCCGTGAACCGCCCCAGCGG	350
CGGCAGCAACTACAAGCTGACCTTCGGCAAGGGCACCCTGCTGACCGTGA	400
ACCCCAACATCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGC	450
AAGAGCAGCGACAAGAGCGTGTGCCTGTTCAACCGACTTCGACAGCCAGAC	500
CAACGTGAGCCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCG	550
TGCTGGACATGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGG	600
AGCAACAAGAGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCAT	650
CCCCGAGGACACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGC	700
TGGTGGAGAAGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTG	750
AGCGTGATCGGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCT	800
GCTGATGACCCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCACCCGCCTGCTGTGCTGGATGGCCCTGTGCCTGCTGGGCGCCGA	50
GCTGAGCGAGGCCGAGGTGGCCAGAGCCCCCGCTACAAGATCACCGAGA	100
AGAGCCAGGCCGTGGCCTTCTGGTGCAGCCCCATCAGCGGCCACGCCACC	150
CTGTACTGGTACCGCCAGATCCTGGGCCAGGGCCCCGAGCTGCTGGTGCA	200
GTTCCAGGACGAGAGCGTGGTGGACGACAGCCAGCTGCCCCAAGGACCGCT	250
TCAGCGCCGAGCGCCTGAAGGGCGTGGACAGCACCCCTGAAGATCCAGCCC	300
GCCGAGCTGGGCGACAGCGCCATGTACCTGTGCGCCAGCAGCTTCGGCCA	350
GTACAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGCTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 76

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TCRs specific for HLA-A*02:01-FLYALALL

Donor J9B Clone 1 (FLY)

Alpha chain:

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCACCGGCAACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCCTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCCGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCGCAGCACCCAGGAGCTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCTACGGCGGCGG	350
CTACTACGGCTACACCTTCGGCAGCGGCACCCGCCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGTCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 77

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Donor J9B Clone 2 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCAAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAAGCAGCGGCCGCGCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCCGCCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCCGCTGGGCGACAGCGGCTA	350
CAGCACCTTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAAGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCGCAGCACCACCGAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCTACCAGGGCAC	350
CGGCGCCTACGGCTACACCTTCGGCAGCGGCACCCGCCCTGACCGTGGTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGACCCAGGACCGGCCAAGCCCGTG	750
ACCCAGATCGTGAGCGCCGAGGCCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCCTGTACGCCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 78

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Donor A5L Clone 1 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGAGGGCGACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCCGCAGCACCCAGGAGCTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCTACCAGGGCGG	350
CAGCTACGGCTACACCTTCGGCAGCGGCACCCGCCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGTCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 79

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Donor A5L Clone 2 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGAGGGCGACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCCGCAGCACCCAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCCGCCAGGGCGG	350
CAGCTACGGCTACACCTTCGGCAGCGGCACCCGCCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGTCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 80

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Donor A5L Clone 3 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGAGGGCGACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCCGCAGCACCACCGAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCCCCCAGGGCGG	350
CAACTACGGCTACACCTTCGGCAGCGGCACCCGCCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 81

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Donor A5L Clone 4 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCAGCGGCGACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCCGCAGCACCCAGGAGCTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCCCCAGGGCGG	350
CAACTACGGCTACACCTTCGGCAGCGGCACCCGCCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 82

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Donor A5L Clone 5 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGTGGGCAACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCCGCAGCACCCACCGAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCTTCCAGGGCGG	350
CAACGAGCAGTTCTTCGGCCCCGGCACCCGCCTGACCGTGCTGGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 83

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Donor A5L Clone 6 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGTGGGCAACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCCGCAGCACCACCGAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGACCCAGGGCGG	350
CTACCAGCCCCAGCACTTCGGCGACGGCACCCGCCTGAGCATCCTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 84

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Donor A5L Clone 7 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGTGGGCGACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCCGCAGCACCACCGAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCCGCCAGGGCGG	350
CATCGACGGCTACACCTTCGGCAGCGGCACCCGCCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 85

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Donor A5L Clone 8 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGTGGGCAACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCCGCAGCACCACCGAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCAAGCAGGGCGG	350
CAACGAGCAGTTCTTCGGCCCCGGCACCCGCCTGACCGTGCTGGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTCACCGACCCCCAGCCCTGAAGGAGCAGCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 86

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Donor A5L Clone 9 (FLY)**Alpha chain:**

ATGGAGACCCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGTGGGCAACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCCGGCATGGGCCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCAACGGCTACA	250
ACGTGAGCCGCAGCACCACCGAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCCCCCAGGGCGG	350
CAACGAGCAGTTCTTCGGCCCCGGCACCCGCTGACCGTGCTGGAGGACC	400
TGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAGGCC	450
GAGATCAGCCACACCCAGAAGGCCACCCCTGGTGTGCCTGGCCACCGGCTT	500
CTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGGTGC	550
ACAGCGGCGTGTGCACCGACCCCCAGCCCTGAAGGAGCAGCCCGCCCTG	600
AACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCACCTT	650
CTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACGGCC	700
TGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACCCAG	750
ATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAACAGCGT	800
GAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCCTGC	850
TGGGCAAGGCCACCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTGATG	900
GCCATGGTGAAGCGCAAGGACTTC	

FIG. 87

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Donor T4W Clone 1 (FLY)**Alpha chain:**

ATGGAGACCCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGAGGGCAACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAAGCTGGTGA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCCGCAGCACCACCGAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAACCGCCAGGGCGG	350
CAACTACGGCTACACCTTCGGCAGCGGCACCCGCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCGTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 88

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Donor T4W Clone 2 (FLY)**Alpha chain:**

ATGGAGACCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGAGGGCGACAGCGGCTA	350
CAGCACCTTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCAACGGCTACA	250
ACGTGAGCCGCAGCACCCAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCCGCCAGGGCGG	350
CAACTACGGCTACACCTTCGGCAGCGGCACCCGCCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGTCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 89

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Donor T4W Clone 3 (FLY)**Alpha chain:**

ATGGAGACCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGAGGGCAACAGCGGCTA	350
CAGCACCTTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCCGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCGCAGCACCCAGGAGCTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCCAGAGGGCGG	350
CGACCACTACGGCTACACCTTCGGCAGCGGCACCCGCTGACCGTGGTGG	400
AGGACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTGAGCCCAGC	450
GAGGCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCAC	500
CGGCTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGG	550
AGGTGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCC	600
GCCCTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGC	650
CACCTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCT	700
ACGGCCTGAGCGAGAACGACGAGTGGAACCCAGGACCGCGCCAAGCCCGTG	750
ACCCAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCAC	800
CAGCGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGA	850
TCCTGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTG	900
CTGATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 90

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Donor T4W Clone 4 (FLY)**Alpha chain:**

ATGGAGACCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGAGGGCAACAGCGGCTA	350
CAGCACCTTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCGCGCGTGTAACAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACAGGGCGAGGTGCCCAACGGCTACA	250
ACGTGAGCCGCAGCACCCAGGAGCTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCCCCAGGGCGG	350
CAGCCGCGGCTACACCTTCGGCAGCGGCACCCGCCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCTGTACGCCGTGCTGGTGAGCGCCCTGGTGTCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 91

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Donor T4W Clone 5 (FLY)

Alpha chain:

ATGGAGACCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGGCCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCCGCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGAGGGCGACAGCGGCTA	350
CAGCACCTTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCACCGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCAACGGCTACA	250
ACGTGAGCCGCAGCACCCAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCCGCTGCAGGGCGG	350
CTTCAACGGCTACACCTTCGGCAGCGGCACCCGCCTGACCGTGGTGGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTGCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGTCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 92

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Donor T4W Clone 6 (FLY)**Alpha chain:**

ATGGAGACCCCTGCTGGGCGTGAGCCTGGTGATCCTGTGGCTGCAGCTGGC	50
CCGCGTGAACAGCCAGCAGGGCGAGGAGGACCCCCAGGCCCTGAGCATCC	100
AGGAGGGCGGAGAACGCCACCATGAACTGCAGCTACAAGACCAGCATCAAC	150
AACCTGCAGTGGTACCGCCAGAACAGCGGCCGCGCCTGGTGCACCTGAT	200
CCTGATCCGCAGCAACGAGCGCGAGAAGCACAGCGGCCCGCCTGCGCGTGA	250
CCCTGGACACCAGCAAGAAGAGCAGCAGCCTGCTGATCACCGCCAGCCGC	300
GCCGCCGACACCGCCAGCTACTTCTGCGCCACCGTGGGCGACAGCGGCTA	350
CAGCACCCCTGACCTTCGGCAAGGGCACCATGCTGCTGGTGAGCCCCGACA	400
TCCAGAACCCCGACCCCGCCGTGTACCAGCTGCGCGACAGCAAGAGCAGC	450
GACAAGAGCGTGTGCCTGTTCAACGACTTCGACAGCCAGACCAACGTGAG	500
CCAGAGCAAGGACAGCGACGTGTACATCACCGACAAGTGCGTGCTGGACA	550
TGCGCAGCATGGACTTCAAGAGCAACAGCGCCGTGGCCTGGAGCAACAAG	600
AGCGACTTCGCCTGCGCCAACGCCTTCAACAACAGCATCATCCCCGAGGA	650
CACCTTCTTCCCCAGCCCCGAGAGCAGCTGCGACGTGAAGCTGGTGGAGA	700
AGAGCTTCGAGACCGACACCAACCTGAACTTCCAGAACCTGAGCGTGATC	750
GGCTTCCGCATCCTGCTGCTGAAGGTGGCCGGCTTCAACCTGCTGATGAC	800
CCTGCGCCTGTGGAGCAGC	

Beta chain:

ATGAGCATCGGCCTGCTGTGCTGCGCCGCCCTGAGCCTGCTGTGGGCCGG	50
CCCCGTGAACGCCGGCGTGACCCAGACCCCCAAGTTCCAGGTGCTGAAGA	100
CCGGCCAGAGCATGACCCTGCAGTGCGCCCAGGACATGAACCACGAGTAC	150
ATGAGCTGGTACCGCCAGGACCCCGGCATGGGCCTGCGCCTGATCCACTA	200
CAGCGTGGGCGCCGGCATCACCGACCAGGGCGAGGTGCCCCAACGGCTACA	250
ACGTGAGCCGCGAGCACCAACCGAGGACTTCCCCCTGCGCCTGCTGAGCGCC	300
GCCCCCAGCCAGACCAGCGTGTACTTCTGCGCCAGCAGCGTGACGGGCGG	350
CGCCACGAGCAGTACTTCGGCCCCGGCACCCGCCTGACCGTGACCGAGG	400
ACCTGAACAAGGTGTTCCCCCCCCGAGGTGGCCGTGTTTCGAGCCCAGCGAG	450
GCCGAGATCAGCCACACCCAGAAGGCCACCCTGGTGTGCCTGGCCACCGG	500
CTTCTTCCCCGACCACGTGGAGCTGAGCTGGTGGGTGAACGGCAAGGAGG	550
TGCACAGCGGCGTGTCACCGACCCCCAGCCCCCTGAAGGAGCAGCCCGCC	600
CTGAACGACAGCCGCTACTGCCTGAGCAGCCCGCTGCGCGTGAGCGCCAC	650
CTTCTGGCAGAACCCCCGCAACCACTTCCGCTGCCAGGTGCAGTTCTACG	700
GCCTGAGCGAGAACGACGAGTGGACCCAGGACCGCGCCAAGCCCCGTGACC	750
CAGATCGTGAGCGCCGAGGCCTGGGGCCGCGCCGACTGCGGCTTCACCAG	800
CGTGAGCTACCAGCAGGGCGTGCTGAGCGCCACCATCCTGTACGAGATCC	850
TGCTGGGCAAGGCCACCCTGTACGCCGTGCTGGTGAGCGCCCTGGTGCTG	900
ATGGCCATGGTGAAGCGCAAGGACTTC	

FIG. 93

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TCRs specific for HLA-B*40:01-IEDPPFNSL**Donor N3M Clone 1 (IED)**

Alpha chain:

METLLGLLILWLQLQWVSSKQEVTTQIPAALSVPEGENLVNCSFTDSAIYNLQWFRQDPG
KGLTSLLLIQSSQREQTSGRNLNASLDKSSGRSTLYIAASQPGDSATYLCAVYSGAGSYQLTFGKGTKLSVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKVAGFNLLMTLRLWSS

Beta chain:

MGPQLLGYVVLCLLGAGPLEAQVTQNPRYLITVTGKKLTVTCSQNMNHEYMSWYRQDPGL
GLRQIYYSMNVEVTDKGDVPEGYKVSKEKRNFLILESPSPNQTSLYFCASRTGGVNEQYFGPGTRTLVT
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRQCQVQFYGLSENDEWTQDRAKPVTDI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor B24 Clone 1 (IED)

Alpha chain:

MWGVFLLYVSMKMGTTGQNIQDQPTMTATEGAIVQINCTYQTSGFNGLFWYQQHAGEAP
TFLSYNVLGDEEKGRFSSFLSRKSGSYLLKELQMKDSASYLCAVGGNTGGFKTIFGAGTRLFVKA
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKVAGFNLLMTLRLWSS

Beta chain:

MGRLLCCVAFCLLGAGPVDGVTQTPKHLITATGQRTVLRCSRGDLSVYVYQQSLDQ
GLQFLIQYNGEERAKGNILERSAQQFPDLHSELNLSLELGDALYFCASSAGQGLAGDEQFFGPGTRTLVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRQCQVQFYGLSENDEWTQDRAKPVTDI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor B24 Clone 2 (IED)

Alpha chain:

MLTASLLRAVIASICVSSMAQKVTQAQTEISVVEKEDVTLDCVYETRDITYLFWYKQP
PSGELVFLIRNSFDEQNEISGRYSWNFQKSTSSFNFTITASQVVDASVYFCALSEARGSQGNLIFGKGTKLSVKP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKVAGFNLLMTLRLWSS

Beta chain:

MGRLLCCAVLCLLGAVPIDTEVTQTPKHLVGMGMTNKKSLKCEQHMGHRAMYWYKQKAKK
PPELMFVYSYEKLSINESVPSRFSPECNSSLNLHLHALQPEDSALYLCASSQEAASGGLINEQFFGPGTRTLVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRQCQVQFYGLSENDEWTQDRAKPVTDI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

FIG. 94

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Donor B24 Clone 3 (IED)

Alpha chain:

MKLVTSTVLLSLGIMGDAKTTQPNSMESNEEPPVHLPCHSTISGTDYIHWYRQLPSQG
 PEYVIHGLTSNVNRMASLAIAEDRKSSTLILHRATLRDAVYCYLRDVTGGFKTIFGAGTRLFVKA
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKVAGFNLLMTLRLWSS

Beta chain:

MGPQLLGYYVLCLLGAGPLEAQVTQNPRYLITVTGKKLTVTCSQNMNHEYMSWYRQDPGL
 GLRQIYYSMNVEVTDKGDVPEGYKVSKEKRNFLILESPSPNQTSLYFCASSYSGGPLYEQYFGPGTRTLTV
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMMAMVKKRDF

Donor B24 Clone 4 (IED)

Alpha chain:

MILLEHLLIILWMQLTWVSGQQLNQSPQSMFIQEGEDVSMNCTSSSIFNTWLWYKQDPGEG
 PVLLIALYKAGELTSNGRLTAQFGITRKDSFLNISASIPSDVGIFYCAGRGSYNFKFYFGSGTKLNVKP
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKVAGFNLLMTLRLWSS

Beta chain:

MGPQLLGYYVLCLLGAGPLEAQVTQNPRYLITVTGKKLTVTCSQNMNHEYMSWYRQDPGL
 GLRQIYYSMNVEVTDKGDVPEGYKVSKEKRNFLILESPSPNQTSLYFCASSYAGGPQYGYTFGSGTRTLTV
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMMAMVKKRDF

Donor A5L Clone 1 (IED)

Alpha chain:

MWGAFLLYVSMKMGGTAGQSLEQPSEVTAVEGAIVQINCTYQTSGFYGLSWYQQHDGGAP
 TFLSYNALDGLEETGRFSSFLSRDSYGYLLLQELQMKDSASYFCASSEGLIFGQGTLSVKP
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKVAGFNLLMTLRLWSS

Beta chain:

MLLLLLLLGPGISLLLPGLAGSGLGAVVSQHPSWVICKSGTSVKIECRSLDFQATTMFWYRQFPKQSLM
 LMATSNESKATYEQGVEKDKFLINHASLTSLTVTSAHPEDSSFYICSARDGSPAGGLNEQFFGPGTRTLVL
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMMAMVKKRDF

FIG. 94 cont'd

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Donor A5L Clone 2 (IED)

Alpha chain:

MKPTLISVLVIFILRGTRAQRVTQPEKLLSVFKGAPVELKCNYSYSGSPELFWYVQYSR
 QRLQLLRHISRESIKGFTADLNKGETSFHLKKPFAQEEDSAMYYCALRWQTGANNLFFGTGTRLTVIP
 YIQNPDPVAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGPQLLGYYVLCCLLGAGPLEAQVTQNPRYLITVTGKKLTVTCSQNMNHEYMSWYRQDPGL
 GLRQIYYSMNVEVTDKGDVPEGYKVSKEKRNFLILESPSPNQTSLYFCASSYSGGPLYEQYFGPGTRLTVT
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor A5L Clone 3 (IED)

Alpha chain:

MWGVFLLYVSMKMGTTGQNIQPTMTATEGAIVQINCTYQTSGFNGLFWYQQHAGEAP
 TFLSYNVLDGLEEKGRFSSFLSRSGYSYLLKELQMKDSASYLCAVNGGTGGFKTIFGAGTRLFVKA
 NIQNPDPVAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGFRLLCCVAFCLLGAGPVDGVTQTPKHLITATGQRVTLRCSPRSGDLSVYVYQQSLDQ
 GLQFLIQYNGEERAKGNILERSAQQFQDLHSELNLSSELGDSALYFCASSVGEGLAGDTQYFGPGTRLTVL
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor A5L Clone 4 (IED)

Alpha chain:

MEKNPLAAPLLILWFHLDVSSILNVEQSPQSLHVQEGDSTNFTCSFPSSNFYALHWYRW
 ETAKSPEALFVMTLNGDEKKKGRISATLNTKEGYSYLYIKGSQPEDSATYLCASPRTGFQKLVTGTGTRLLVSP
 NIQNPDPVAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGPQLLGYYVLCCLLGAGPLEAQVTQNPRYLITVTGKKLTVTCSQNMNHEYMSWYRQDPGL
 GLRQIYYSMNVEVTDKGDVPEGYKVSKEKRNFLILESPSPNQTSLYFCASRYSGGPLYEQFFGPGTRLTVL
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

FIG. 94 cont'd

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Donor A5L Clone 5 (IED)

Alpha chain:

MWGAFLLYVSMKMGGTAGQSLEQPSEVTAVEGAIVQINCTYQTSGFYGLSWYQQHDGGAP
 TFLSYNALDGLEETGRFSSFLSRSDSYGYLLLQELQMKDSASYFCASTEGKLIFGQGTELSVKP
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MLLLLLLLPGISLLPGSLAGSGLGAVVSQHPSWVICKSGTSVKIECRSLDFQATTMFWYRQFPKQSLM
 LMATSNESKATYEQGVEKDKFLINHASLTSLTLTVSAHPEDSSFYICSARDGSPAGGLNEQFFGPGTRTLTVL
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor B31 Clone 1 (IED)

Alpha chain:

MTRVSLWAVVSTCLESMAQTVTQSQPEMSVQEAETVTLSCYDTSENNYYLFWYKQP
 PSRQMILVIRQEAYKQQNATENRFSVNFQKAAKSFSLSKISDSQLGDTAMYFCAFMTVYNQGGKLIFGQGTELSVKP
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGCRLCCAVLCLLGAVPIDTEVTQTPKHLVMGMTNKKSLKCEQHMGHRAMYWYKQKAKK
 PPELMFVYSYEKLSINESVPSRFSPECNSSLNLHLHALQPEDSALYLCASSQEAGRQNTQYFGPGTRTLTVL
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor B31 Clone 2 (IED)

Alpha chain:

METLLGLLILWLQLQWVSSKQEVQIPAALSVPEGENLVNCSFTDSAIYNLQWFRQDPG
 KGLTSLLLIQSSQREQTSGRLNASLDKSSGRSTLYIAASQPGDSATYLCAPYSGAGAYQLTFGKGTKLSVIP
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGPQLLGYVVLCLLGAGPLEAQVTQNPRYLITVTGKKLTVTCSQNMNHEYMSWYRQDPGL
 GLRQIYYSMNVEVTDKGDVPEGYKVSKEKRNFLILESPSPNQTSLYFCATRTGAVNEQFFGPGTRTLTVL
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

FIG. 94 cont'd

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TCRs specific for HLA-A*11:01-SSCSCPLSK**Donor R7Z Clone 1 (SSC)**

Alpha chain:

METLLGLLLWLQLQWVSSKQEVTPAALSVPEGENLVNCSFTDSAIYNLQWFRQDPG
KGLTSLLLIQSSQREQTSGRNLASLDKSSGRSTLYIAASQPGDSATYLCAVWAGGTSYGKLTFGQGTLTVHP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGIRLLCRVAFCLAVGLVDVKVTQSSRYLVKRTGEKVFLECVQDMDHENMFWYRQDPGL
GLRLIYFSYDVKMKEKGDIPGYSVSREKKERFSLILESASTNQTSMYLCASSPAGRPGKPLHFGNGTRLTVT
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor R7Z Clone 2 (SSC)

Alpha chain:

MKRILGALLGLLSAQVCCVRGIQVEQSPDLILQEGANSTLRNCFSDSVNNLQWFHQNPW
GQLINLFYIPSGTKQNGRLSATTVATERYSLLYISSQTTDSGVYFCAVVINNDMRFGAGTRLTVKP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGFRLLCCVAFCLLGAAPVDSGVTQTPKHLITATGQRVTLRCSPRSGDLSVYVYQQSLDQ
GLQLFIQYNGEERAKGNILERSAQQFQPDHSELNLSLELGDALYFCASSVAPFYEQYFGPGTRLTVT
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor R7Z Clone 3 (SSC)

Alpha chain:

MASAPISMLAMLFTLSGLRAQSVAQPEDQVNVAEGNPLTVKCTYSVSGNPYLFWYVQYPN
RGLQLFLKYITGDNLVKGSYGFEAFNKSQTSFHLKKPSALVSDSALYFCVREASGANNLFFGTGTRLTVIP
YIQNPDPVAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MLCSLLALLLGTFFGVRSTIHWQPATLVQPVGSPLSELECTVEGTSNPPLYWYRQAAGRG
LQLLFYSVGIGQISSEVPQNLASRPQDRQFILSSKLLLSDSGFYLCWSPQGNLHFGNGTRLTVT
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

FIG. 95

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Donor R7Z Clone 4 (SSC)

Alpha chain:

MLLLLVPVLEVIFTLGGTRAQSVTQLDSHVSVSEGTPVLLRCNYSSSYSPSLFWYVQHPN
KGLQLLLKYTSAATLVKGINGFEAEFKKSETSFHLTKPSAHMSDAAEYFCVVSYLGDGTGRRALTFGSGTRLQVQP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MDTWLVCWAIFSLKAGLTEPEVTQTPSHQVTQMGQEVILRCVPISNHLYFYWYRQILGQ
KVEFLVSFYNNSEIKSEIFDDQFSVERPDGNSFTLKIRSTKLEDAMYFCASSESGSPTGELFFGEGSRLTVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor R7Z Clone 5 (SSC)

Alpha chain:

MKRILGALLGLLSAQVCCVRGIQVEQSPDLILQEGANSTLRCNFSDSVNNLQWFHQNPW
GQLINLFYIPSGTKQNGRLSATTVATERYSLLYISSSQTTDSGVYFCAVVGNNDMRFGAGTRLTVKP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGFRLLCCVAFCLLGAGPVDGVTQTPKHLITATGQRVTLRCSPRSGDLSVYWYQQSLDQ
GLQFLIQYYNGEERAKGNILERSAQQFQDLHSELNLSLELGDALYFCASSVAPWYEQYFGPGTRLTVI
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor B5F Clone 1 (SSC)

Alpha chain:

MKRILGALLGLLSAQVCCVRGIQVEQSPDLILQEGANSTLRCNFSDSVNNLQWFHQNPW
GQLINLFYIPSGTKQNGRLSATTVATERYSLLYISSSQTTDSGVYFCAVLNNNDMRFGAGTRLTVKP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGFRLLCCVAFCLLGAGPVDGVTQTPKHLITATGQRVTLRCSPRSGDLSVYWYQQSLDQ
GLQFLIQYYNGEERAKGNILERSAQQFQDLHSELNLSLELGDALYFCASSVSSWYEQFFGPGTRLTVI
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

FIG. 95 cont'd

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Donor B5F Clone 2 (SSC)

Alpha chain:

MAGIRALFMYLWLQLDWVSRGESVGLHPTLSVQEGDNSIINCAYSNSASDYFIWYKQES
 GKGPQFIIDIRSNMDKRQGQRVTVLLNKTVKHLSLQIAATQPGDSAVYFCAETPGGYQKVTFGTGTLQVIP
 NIQNPDPNAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGPQLLGYYVLLCLLGAGPLEAQVTQNPRYLITVTGKKLTVTCSQNMNHEYMSWYRQDPGL
 GLRQIYYSMNVEVTDKGDVPEGYKVSRRKEKRNFLILESPSPNQTSLYFCASSLWTSNSPLHFGNGTRLTVT
 EDLNKVFPEPEAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor T3V Clone 1 (SSC)

Alpha chain:

MAMLLGASVLILWLQPDWVNSQQKNDQQVKQNSPSLSVQEGRISILNCDYTNSMFDYFL
 WYKKYPAEGPTFLISSIKDKNEDGRFTVFLNKSARKHLSLHIVPSQPGDSAVYFCAASAGGQNFVFGPGTRLSVLP
 YIQNPDPNAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTRLFFYVALCLLWTGHMDAGITQSPRHKVTETGTPVTLRCHQTENHRYMYWYRQDPGH
 GLRLIHYSYGVKDTDKGEVSDGYSVSRKTEDFLLTLESATSSQTSVYFCAIRRGSSYNEQFFGPGTRLTVL
 EDLNKVFPEPEAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor T3V Clone 2 (SSC)

Alpha chain:

MWGVFLLYVSMKMGTTGQNIQPTTEMTATEGAIVQINCTYQTSGFNGLFWYQQHAGEAP
 TFLSYNVLDGLEEKGRFSSFLSRKGYSYLLKELQMKDSASYLCAVKDSNYQLIWGAGTKLIKP
 DIQNPDPNAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MRIRLLCCVAFSLLWAGPVIAGITQAPTSQILAAGRRMTLRCTQDMRHNAMYWYRQDLGL
 GLRLIHYSNTAGTTGKGEVPDGYSVSRANTDDFPLTASAVPSQTSVYFCASSADQGDGTDQYFGPGTRLTVL
 EDLNKVFPEPEAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

FIG. 95 cont'd

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Donor T3V Clone 3 (SSC)

Alpha chain:

MWGAFLLYVSMKMGGTAGQSLEQPSEVTAVEGAIVQINCTYQTSGFYGLSWYQQHDGGAP
 TFLSYNALDGLEETGRFSSFLSRSDSYGYLLLQELQMKDSASYFCVPRRNNNARLMFGDGTQLVVKP
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKVAGFNLLMTLRLWSS

Beta chain:

MGPQLLGYVVLCLLGAGPLEAQVTQNPRYLITVTGKKLTVTCSQNMNHEYMSWYRQDPGL
 GLRQIYYSMNVEVTDKGDVPEGYKVSKEKRNFLILESPSPNQTSLYFCASSLNTGMNTEAFFGQGTRLTIV
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor P6G Clone 1 (SSC)

Alpha chain:

METLLGLLILWLQLQWVSSKQEVTVIPAALSVPEGENLVNCSFTDSAIYNLQWFRQDPG
 KGLTSLLLIQSSQREQTSGRNLNASLDKSSGRSTLYIAASQPGDSATYLCAVGGDDSGAGSYQLTFGKGTCLSVIPNIQ
 NPDPVAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKVAGFNLLMTLRLWSS

Beta chain:

MGFRLLCCVAFCLLGAGPVDGVTQTPKHLITATGQRVTLRCSPRSGDLSVYVYQQSLDQ
 GLQFLIQYNGEERAKGNILERSAQQFQDLHSELNLSSELGDSALYFCASSRPEGIYNEQFFGPGTRLTIV
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor P6G Clone 2 (SSC)

Alpha chain:

MLLITSMVLVLMQLSQVNGQQVMQIPQYQHVQEGEDFTTYCNSSTLSNIQWYKQRPGGH
 PVFLIQLVKSGEVKKQKRLTFQFGEAKKNSSLHITATQTTDVGTYFCAGPGIYNQGGKLIFGQGTLSVKP
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKVAGFNLLMTLRLWSS

Beta chain:

MSNQVLCCVLCFLGANTVDGGITQSPKYLFRKEGQNVTLSCQNLNHDAMYWYRQDPGQ
 GLRLIYYSQIVNDFQKGDIAEGYSVSREKKESFPLTVTSAQKNPTAFYLCASSPGLADYEYFGPGTRLTIV
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

FIG. 95 cont'd

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Donor P6G Clone 3 (SSC)

Alpha chain:

MSLSLLKVVATSLWLGPQIAQKITQTQPGMFVQEKEAVTLDCTYDTS DPSYGLFWYKQPSSGE
MIFLIYQGSYDQQNATEGRYSLNFQKARKSANLVISASQLGDSAMYFCAMSSSNAGGTSYGKLTFGQGTLTVHP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MLCSLLALLGTFFGVRSQTIHQWPATLVQPVGSPLSELECTVEGTSNPPLYWYRQAAGRG
LQLLFYSVGIGQISSEVPQNLSASRPQDRQFILSSKLLSDSGFYLCARLEQGLNVEQYFGPGTRLTVT
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRQVQFYGLSENDEWTQDRAKPVQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor A4T Clone 1 (SSC)

Alpha chain:

MAMLLGASVLILWLQPDWVNSQQKNDDQVKQNSPSLSVQEGRISILNCDYTNSMFDYFLW
YKKYPAEGPTFLISSIKDKNEDGRFTVFLNKS AKHLSLHIVPSQPGDSAVYFCAASGLVEGNTPLVFGKTRLSVIA
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTRLLCWAALCLLGAELTEAGVAQSPRYKII EKRSVAFWCNPISGHATLYWYQQILGQ
GPKLLIQFNNGVVDDSQLPKDRFSAERLKGVDSTLKIQPAKLEDSAVYLCASSLFPGTGIHEQYFGPGTRLTVT
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRQVQFYGLSENDEWTQDRAKPVQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

FIG. 95 cont'd

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TCRs specific for HLA-A*24:02-TYGPVFMSL**Donor D2M Clone 1 (TYG)**

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATDGPYGNRLAFGKGNQVVVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MTIRLLCYMGFYFLGAGLMEADYQTPRYLVIGTGKKITLECSQTMGHDKMYWYQQDPGM
ELHLIHYSYGVNSTEKGDLSESTVSRIRTEHFPLTLESARPSHTSQYLCASSPLGRSSSYNEQFFGPGTRTLTVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCCVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor D2M Clone 2 (TYG)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATDGPYGNRLAFGKGNQVVVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MTIRLLCYMGFYFLGAGLMEADYQTPRYLVIGTGKKITLECSQTMGHDKMYWYQQDPGM
ELHLIHYSYGVNSTEKGDLSESTVSRIRTEHFPLTLESARPSHTSQYLCASSALGQSSSYNEQFFGPGTRTLTVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCCVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor D2M Clone 3 (TYG)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATDGRHGNNRLAFGKGNQVVVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MTIRLLCYMGFYFLGAGLMEADYQTPRYLVIGTGKKITLECSQTMGHDKMYWYQQDPGM
ELHLIHYSYGVNSTEKGDLSESTVSRIRTEHFPLTLESARPSHTSQYLCASSDLGRGSAVNEQFFGPGTRTLTVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCCVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

FIG. 96

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Donor B31 Clone 1 (TYG)

Alpha chain:

MLLITSMVLVLMQLSQVNGQQVMQIPQYQHVQEGEDFTTYCNSSTLSNIQWYKQRPGGH
 PVFLIQLVKSGEVKKQKRLTFQFGEAKKNSSLHITATQTTDVGTYFCAGERGSTLGRLYFGRGTQLTVWP
 DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTSLLCWMALCLLGADHADTGVSQNPRHKITKRGQNVTFRCDPSEHNRLYWYRQTLGQ
 GPEFLTYFQNEAQLEKSRLLSDRFSERPKGSFSTLEIQRTEQGDSAMYLCASSPLDRGTYEQYFGPGTRTLVT
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor B31 Clone 2 (TYG)

Alpha chain:

MLLITSMVLVLMQLSQVNGQQVMQIPQYQHVQEGEDFTTYCNSSTLSNIQWYKQRPGGH
 PVFLIQLVKSGEVKKQKRLTFQFGEAKKNSSLHITATQTTDVGTYFCAGERGSTLGRLYFGRGTQLTVWP
 DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTSLLCWMALCLLGADHADTGVSQNPRHKITKRGQNVTFRCDPSEHNRLYWYRQTLGQ
 GPEFLTYFQNEAQLEKSRLLSDRFSERPKGSFSTLEIQRTEQGDSAMYLCASSPLERGTYEYFGPGTRTLVT
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor B31 Clone 3 (TYG)

Alpha chain:

MLLITSMVLVLMQLSQVNGQQVMQIPQYQHVQEGEDFTTYCNSSTLSNIQWYKQRPGGH
 PVFLIQLVKSGEVKKQKRLTFQFGEAKKNSSLHITATQTTDVGTYFCAGERGSTLGRLYFGRGTQLTVWP
 DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTSLLCWMALCLLGADHADTGVSQNPRHKITKRGQNVTFRCDPSEHNRLYWYRQTLGQ
 GPEFLTYFQNEAQLEKSRLLSDRFSERPKGSFSTLEIQRTEQGDSAMYLCASSLLSSGDYEQYFGPGTRTLVT
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

FIG. 96 cont'd

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Donor B31 Clone 4 (TYG)

Alpha chain:

MTSIRAVFIFLWLQLDLVNGENVEQHPSTLSVQEGDSAVIKCTYSDSASNYFPWYKQELG
KRPQLIIDIRSNVGEKKDQRIAVTLNKTAKHFSLHITETQPEDSAVYFCAAPRGAAGNKLTFGGGTRVLVKP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSNQVLCVVLCLGANTVDGGITQSPKYLFKEGQNVTLSCQNLNHDAMYWYRQDPGQ
GLRLIYYSQIVNDFQKGDIAEGYSVSREKKESFPLTVTSAQKNPTAFYLCASSKGASGMRTQYFGPGTRTLVT
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor B31 Clone 5 (TYG)

Alpha chain:

MLLITSMVLVLMQLSQVNGQQVMQIPQYQHVQEGEDFTTYCNSSTLSNIQWYKQRPGGH
PVFLIQLVKSGEVKKQKRLTFQFGEAKKNSSLHITATQTTDVGTYFCAGERGSTLGRLYFGRGTQLTVWP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MASLLFFCGAFYLLGTGSMADAVTQTPRNRITKTGKRIMLECSQTKGHDRMYWYRQDPGL
GLRLIYYSFDVKDINKGEISDGYSVSRQAQAKFSLSLEAIPNQATLYFCATSDTTSTRPTEQYVGPGRTLTVT
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor B31 Clone 6 (TYG)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRLRVTLDTSKKSSSLITASRAADTASYFCAALQGAQKL VFGQGTRLTINP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MDTWLVCWAIFSLKAGLTEPEVTQTPSHQVTQMGEVILRCVPISNHLYFYWYRQILGQ
KVEFLVSFYNN EISEKSEIFDDQFSVERPDGSNFTLKIRSTKLEDSAMYFCASSATSGSYNEQFFGPGTRTLTVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

FIG. 96 cont'd

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Donor Y6W Clone 1 (TYG)

Alpha chain:

MRQVARVIVFLTLSTLSLAKTTQPISMDSYEGQEVNITCSHNNIATNDYITWYQQFPSQG
 PRFIIQGYKTKVTNEVASLFIPADRKSSSTLSLPRVSLSDTAVYYCLVVPFGGYNKLIFGAGTRLAVHP
 YIQNPDPVAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MLSLLLLLLGLGSVFSAVISQKPSRDICQRGTSLTIQCQVDSQVTMMFWYRQQPGQSLTL
 IATANQGSEATYESGFVIDKFPISRPNLTFSTLTVSNMSPEDSSIIYLCVGEGETSGYESYNEQFFGPGTRTLTVL
 EDLNKVFPEPEAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor Y6W Clone 2 (TYG)

Alpha chain:

MLLITSMVLVLMQLSQVNGQQVMQIPQYQHVQEGEDFTTYCNSSTLSNIQWYKQRPGGH
 PVFLIQLVKSGEVKKQKRLTFQGEAKKNSSLHITATQTTDVGTYFCAGERGSTLGRLYFGRGTQLTVWP
 DIQNPDPVAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTSLLCWMALCCLLGADHADTGVSQNPRHKITKRGQNVTFRCDPSEHNRLYWYRQTLGQ
 GPEFLTYFQNEAQLEKSRLLSDRFSERPKGSFSTLEIQRTEQGDSAMYLCASSSLDRGDYEYFPGTRTLTVL
 EDLNKVFPEPEAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor Y6W Clone 3 (TYG)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
 RGLVHLILIRSNEREKHSRRLRVTLDTSKKSSSLITASRAADTASYFCAPDRPDTDKLIFGTGTRLQVFP
 NIQNPDPVAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTSLLCWMALCCLLGADHADTGVSQNPRHKITKRGQNVTFRCDPSEHNRLYWYRQTLGQ
 GPEFLTYFQNEAQLEKSRLLSDRFSERPKGSFSTLEIQRTEQGDSAMYLCA SQNRREGRSEQFFGPGTRTLTVL
 EDLNKVFPEPEAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

FIG. 96 cont'd

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TCRs specific for HLA-A*24:02-PYLFWLAAI**Donor B33 Clone 1 (PYL)**

Alpha chain:

MLLITSMVLVWMLSQVNGQQVMQIPQYQHVQEGEDFTTYCNSSTLSNIQWYKQRPGGH
PVFLIQLVKSGEVKKQKRLTFQGEAKKNSSLHITATQTTDVGTYFCAGPGTGAGSYQLTFGKGTKLSVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGIRLLCRVAFCLAVGLVDVKVTQSSRYLVKRTGEKVFLECVQDMDHENMFWYRQDPGL
GLRLIYFSYDVKMKEKGDPIPEGYSVSREKKERFSLILESASTNQTSMYLCASIKSSGYNEQFFGPGTRTLTVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor B5F Clone 1 (PYL)

Alpha chain:

MLLITSMVLVWMLSQVNGQQVMQIPQYQHVQEGEDFTTYCNSSTLSNIQWYKQRPGGH
PVFLIQLVKSGEVKKQKRLTFQGEAKKNSSLHITATQTTDVGTYFCAGPYSGAGSYQLTFGKGTKLSVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGIRLLCRVAFCLAVGLVDVKVTQSSRYLVKRTGEKVFLECVQDMDHENMFWYRQDPGL
GLRLIYFSYDVKMKEKGDPIPEGYSVSREKKERFSLILESASTNQTSMYLCASILSSGYNEQFFGPGTRTLTVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor Y6W Clone 1 (PYL)

Alpha chain:

MRQVARVIVFLTLSTLSLAKTTQPISMDSYEGQEVNITCSHNNIATNDYITWYQQFPSQG
PRFIIQGYKTKVTNEVASLFIPADRKSSSTLSLPRVSLSDTAVYVCLVVPFGGYNKLIFGAGTRLAVHPYIQNPDPVYQ
LRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MLSLLLLLLGLGSVFSAVISQKPSRDICQRGTSITQCCQVDSQVTMMFWYRQQPGQSLTL
IATANQGSEATYESGFVIDKFPISRPNLTFSTLTVSNMSPEDSSYILCSVGEGTSGYESYNEQFFGPGTRTLTVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

FIG. 97

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Donor Y6W Clone 2 (PYL)

Alpha chain:

MKSLRVLLVILWLQLSWVWSQQKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQY
SGKSPELIMFIYSNGDKEDGRFTAQLNKASQYVSLIRDSQPSDSATYLCAVNVGNTGFQKLVEGTGTRLLVSP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKVAGFNLLMTLRLWSS

Beta chain:

MLCSLLALLLGTFFGVRSQTIHQWPATLVQPVGSPLSELECTVEGTSNPPLYWYRQAAGRG
LQLLFYSVGIGQISSEVPQNLSASRPQDRQFILSSKLLLSDSGFYLCACQWQGLGGELFFGEGSRLTVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRSATFWQNPRNHFRQCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKKRDF

Donor Y6W Clone 3 (PYL)

Alpha chain:

MTSIRAVFIFLWLQLDLVNGENVEQHPSTLSVQEGDSAVIKCTYSDSASNYFPWYKQELG
KGPQLIIDIRSNVGEKKDQRIAVTLNKTAKHFSLHITETQPEDSAVYFCAASEFQFYFGTGTSLTVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKVAGFNLLMTLRLWSS

Beta chain:

MGFRLLCCVAFCLLGAGPVDGVTQTPKHLITATGQRVTLRCSPRSGDLSVYWYQQSLDQ
GLQFLIQYNGEERAKGNILERSAQQFPDLHSELNLSSLELGDALYFCASSPGQRANTGELFFGEGSRLTVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRSATFWQNPRNHFRQCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKKRDF

Donor Y6W Clone 4 (PYL)

Alpha chain:

MSLSLLKVVTASLWLGPAGIAQKITQTQPGMFVQKEAVTLDCTYDTS DPSYGLFWYKQP
SSGEMIFLIYQGSYDQQNATEGRYSLNFQKARKSANLVISASQLGDSAMYFCAMREGVDYQLIWGAGTKLIKP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKVAGFNLLMTLRLWSS

Beta chain:

MGTRLFFYVALCLLWAGHRDAGITQSPRYKITETGRQVTLMCHQTWSHSYMFWYRQDLGH
GLRLIYSAADITDKGEVPDGYVVSRSKTENFPLTLESATRSQTSVYFCASSYENEKLFSGGTQLSVL
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRSATFWQNPRNHFRQCQVQFYGLSENDEWTQDRAKPVTVI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKKRDF

FIG. 97 cont'd

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Donor Y6W Clone 5 (PYL)

Alpha chain:

MLLLLIPVLGMIFALRDARAQSVSQHNHHVILSEAASLELGCNYSYGGTVNLFWYVQYPG
QHLQLLLKYFSGDPLVKGIKGFEAEFIKSKFSFNLRKPSVQWSDTAEYFCAVKANFNKFFGSGTKLNVKP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MDTWLVCWAIFSLKAGLTEPEVTQTPSHQVTQMGQEVILRCVPISNHLYFYWYRQILGQ
KVEFLVSFYNNSEIKSEIFDDQFSVERPDGSNFTLKIRSTKLEDSAMYFCASSWGNEQFFGPGTRLTVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKKRDF

Donor Y6W Clone 6 (PYL)

Alpha chain:

MKSLRVLLVILWLQLSWVWSQQKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQY
SGKSPELIMFIYSNGDKEDGRFTAQLNKASQYVSLIRDSQPSDSATYLCAAEPSSYKLIFGSGTRLLVRP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTRLLFWVAFCLLGADHTGAGVSQSPSNKVTEKGDVELRCDPISGHTALYWYRQSLGQ
GLEFLIYFQGNSAPDKSGLPSDRFSAERTGGSVSTLTIRTTQQEDSAVYLCASSFIGGTGLNEQFFGPGTRLTVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKKRDF

Donor Y6W Clone 7 (PYL)

Alpha chain:

MMKCPQALLAIFWLLLSWVSSDKVQSPSLVVEGDTVTLNCSYEVTNFRSLLWYKQE
KKAPTFLFMLTSSGIEKKSGRLSSILDKKELSSILNITATQTGDSAIYLCAVESLIQGAQKLVFGQGTRLTINP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MLLLLLLPGISLLLPGLAGSGLGAVVSQHPSWVICKSGTSVKIECRSLDFQATTMFW
YRQFPKQSLMLMATSNEGSKATYEQGVEKDKFLINHASLTSLTSTVSAHPEDSSFYICSARDRFWGTNNEKLFFGS
GTQLSVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKKRDF

FIG. 97 cont'd

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Donor Y6W Clone 8 (PYL)

Alpha chain:

MRLVARVTVFLTFGTIIDAKTTQPPSMDCAEGRAANLPCNHSTISGNEYVYWYRQIHSQG
PQYIIHGLKNNETNEMASLIITEDRKSSTLILPHATLRDTAVYYCIVRVAGGTSYGKLTFGQGTLTVHP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MLCSLLALLLGTFFGVRSQTIHQWPATLVQPVGSPLSELECTVEGTSNPPLYWYRQAAGRG
LQLLFYSVGIGQISSEVPQNLSASRPQDRQFILSSKLLLSDSGFYLCAWSSAPDRGHRQPQHFGDGTRLSIL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor Y6W Clone 9 (PYL)

Alpha chain:

MSLSLLKVVATSLWLGPQIAQKITQTQPGMFVQEKEAVTLDCTYDTSQSYGLFWYKQP
SSGEMIFLIYQGSYDEQNATEGRYSLNFQKARKSANLVISASQLGDSAMYFCAMRVNSGGYQKVTFGTGTLQVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGPGLLHWMALCLLGTGHGDAMVIQNPRYQVTQFGKPVTLSCSQTLNHNVMYWYQQKSSQ
APKLLFHYDKDFNNEADTPDNFQSRPNTSFCFLDIRSPGLGDTAMYLCATSRDRGTGPPYEYFGPGTRLTVT
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

Donor Y6W Clone 10 (PYL)

Alpha chain:

MISLRVLLVILWLQLSWVWSQRKEVEQDPGPFNVPEGATVAFNCTYSNSASQSFFWYRQD
CRKEPKLLMSVYSSGNEDGRFTAQLNRSQYISLLIRDSKLSDSATYLCVLSGAGSYQLTFGKGTKLSVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCVAFSLLWASPVNAGVTQTPKFQVLKTGQSMTLQCAQDMNHNSMYWYRQDPGM
GLRLIYSASEGTTDKGEVPNGYNVSRNKRFLRLSAAPSQTSVYFCASSEWREETQYFGPGTRLLVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTVQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLAMVKKRDF

FIG. 97 cont'd

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Donor Y6W Clone 11 (PYL)

Alpha chain:

MESFLGGVLLILWLQVDWVKSQKIEQNSEALNIQEGKTATLTCNYTNYSPAYLQWYRQDP
GRGPVFLLLIRENEKEKRERLKVTFDRTLKQSLFHITASQPADSATYLCALDEGNTGFQKL VFGTGTRLLVSP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MLCSLLALLLGTFFGVRSQTIHQWPATLVQPVGSPLSELECTVEGTSNPPLYWYRQAAGRG
LQLLFYSVGIGQISSEVPQNLSASRPQDRQFILSSKLLLSDSGFYLCAWSGTDSSYEYFGPGTRTLVT
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKKRDF

Donor Y6W Clone 12 (PYL)

Alpha chain:

MWGVFLLYVSMKMGGTTGQNIQPTMTATEGAIVQINCTYQTS GFNGLFWYQQHAGEAP
TFLSYNVL DGLEEKGRFSSFLSRSGYSYLLKELQMKDSASRNTGFQKL VFGTGTRLLVSP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGIRLLCRVAFCLAVGLVDVKVTQSSRYLVKRTGEKVFLECVQDMDHENMFWYRQDPGL
GLRLIYFSYDVKMKEKGDIPEGYSVSREKKERFSLILESASTNQTS MYLCASSPEQGAAGDEQFFGPGTRTLVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKKRDF

Donor Y6W Clone 13 (PYL)

Alpha chain:

MLLELIPLLGIHFVLR TARAQSVTQPDIIHTVSE GASLELR CNYSYGATPYLFWYVQSPG
QGLQLLLKYFSGDTLVQGIKGF EA EFKRSQSSFNLRKPSVHWS DAAEYFCAAPGVGSNSGYALNFGKGT SLLVTP
HIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDSVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGFRLLCCVAFCLLGAGPVD SGVTQTPKHLITATGQRVTLRCS PRSGDLSVYWYQQSLDQ
GLQFLIQYYNGEERAKGNILERFSAQQFPDLHSELNLSSLELGDSALYFCASSPSWAANSPLHFGNGTRTLVT
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKKRDF

FIG. 97 cont'd

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Donor Y6W Clone 14 (PYL)

Alpha chain:

MWGVFLLYVSMKMGTTGQNIDQPTMTATEGAIVQINCTYQTSGFNGLFWYQQHAGEAP
TFLSYNVDGLEEKGRFSSFLSRKGYSYLLKELQMKDSASYLCAGEDQTGANNLFFGTGTRLTVIP
YIQNPDPVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGIRLLCRVAFCLAVGLVDVKVTQSSRYLVKRTGEKVFLECVQDMDHENMFWYRQDPGL
GLRLIYFSYDVKMKEKGDIEGYSVSREKKERFSLILESASTNQTSMYLCASGTLSENEQFFGPGTRLTVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKKRDF

Donor Y6W Clone 15 (PYL)

Alpha chain:

MKSLRVLLVILWLQLSWVWSQQKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQY
SGKSPELIMFIYSNGDKEDGRFTAQLNKASQYVSLIRDSQPSDSATYLCVAVKVGTFQKLVFGTGTRLLVSP
NIQNPDPVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLSVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTSLLCWMALCLLGADHADTGVSQNPRHKITKRGQNVTFRCDPSEHNRLYWYRQTLGQ
GPEFLTYFQNEAQLEKSRLLSDRFSERPKGSFSTLEIQRTEQGDSAMYLCASSLVGQGNTAEFFGQGTRLTVV
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKKRDF

FIG. 97 cont'd

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TCRs specific for HLA-A*02:01- YLLEMLWRL**Donor N2W Clone 1 (YLL)**

Alpha chain:

MLLLLIPVLGMIFALRDARAQSVSQHNHHVILSEAASLELGCNYSYGGTVNLFWYVQYPG
QHLQLLLKYFSGDPLVKGIKGFEAEFIKSKFSFNLKPSVQWSDTAEYFCAVSMRFGAGTRLTVP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTRLLCWAALCCLGAELTEAGVAQSPRYKIIKQSVAFWCNPISGHATLYWYQQILGQ
GPKLLIQFQNGVVDSDQLPKDRFSAERLKGVDSTLKIQPAKLEDSAVYLCASSLDEGTVTEYQYFGPGTRLTVT
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQTI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor N2W Clone 2 (YLL)

Alpha chain:

MKSLRVLLVILWLQLSWVWSQQKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQY
SGKSPELIMFIYSNGDKEDGRFTAQLNKASQYVSLIRDSQPSDSATYLCVNPPTPSVGSNYKLTFGKGTLLTVNP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGFRLLCCVAFCLLGAGPVDGVTQTPKHLITATGQRVTLRCSPRSGDLSVYWYQQSLDQ
GLQFLIQYNGEERAKGNILERSAQQFQDLHSELNLSSELGDSALYFCASSVGGEGLAFFGQGTTLTV
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQTI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor N2W Clone 3 (YLL)

Alpha chain:

MMKCPQALLAIFWLLLSWVSSDKVVQSPLSLVHEGDTVTLNCSYEVTNFRSLLWYKQE
KKAPTFLFMLTSSGIEKSGRLSSILDKKELFSILNITATQTGDSAVYLCAVAAENYQNFVFGPGTRLSVLP
YIQNPDPVAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTSLLCWVVLGFLGTDHTGAGVSQSPRYKVTKRGQDVALRCDPISGHVSLYWYRQALGQ
GPEFLTYFNIEAQQDKSGLPNDRFSAERPEGSISTLTIRTEQRDSAMYRCASSLEGDYNEQFFGPGTRLTVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQTI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

FIG. 98

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Donor N2W Clone 4 (YLL)

Alpha chain:

MEKNPLAAPLLILWFHLDVCSSILNVEQSPQSLHVQEGDSTNFTCSFPSSNFYALHWYRW
ETAKSPEALFVMTLNGDEKKKGRISATLNTKEGYSYLIKGSQPEDSATYLCAFISSGSARQLTFGSGTQLTVLP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGTSLLCWVVLGFLGTDHTGAGVSQSPRYKVTKRGQDVALRCDPISGHVSLYWYRQALGQ
GPEFLTYFNIEAQQDKSGLPNDRFSAERPEGSISTLTIRTEQRDSAMYRCASSLEADNEKLFFGSGTQLSVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTDI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor N2W Clone 5 (YLL)

Alpha chain:

MSLSLLKVVTASLWLGPGLAQKITQTQPGMFVQEKEAVTLDCTYDTSQSYGLFWYKQP
SSGEMIFLIYQGSYDEQNATEGRYSLNFQKARKSANLVISASQLGDSAMYFCAMREDLRSNDKVIFGPGTSLSVIP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGFRLLCCVAFCLLGAGPVDGVTQTPKHLITATGQRVTLRCSPRSGDLSVYVYQQSLDQ
GLQLFIQYNGEERAKGNILERSAQQFQDLHSELNLSLELGDALYFCASSVGDSGQAQYFGPGRTRTLV
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTDI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

Donor N2W Clone 6 (YLL)

Alpha chain:

MLLLLIPVLGMIFALRDARAQSVSQHNHHVILSEAASLELGCNYSYGGTVNLFWYVQYPG
QHLQLLLKYFGSDPLVKIGKFEAEFIKSKFSFNLKPSVQWSDTAEYFCAAGGGSQGNLIFGKGTCLSVKP
NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MGPGLLCWALLCLLGAGLVDAGVTQSPTHLIKTRGQVTLRCSPKSGHDTVSWYQQALGQ
GPQFIFQYEEEEERQGNFPDRFSGHQFPNYSSELNVNALLGDSALYLCASSWWDGGTGELFFGEGSRLTVL
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTDI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLVSAVLMLMAMVKRKDF

FIG. 98 cont'd

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Donor B87 Clone 1 (YLL)

Alpha chain:

MSLSLLKVVATSLWLGPQIAQKITQTQPGMFVQEKEAVTLDCYDTSYGLFWYKQP
 SSGEMIFLIYQGSYDQQNATEGRYSLNFQKARKSANLVISASQLGDSAMYFCAMRELNDYKLSFGAGTTTVTRA
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MASLLFFCGAFYLLGTGSMADAVTQTPRNRITKTGKRIMLECSQTKGHDRMYWYRQDPGL
 GLRLIYYSFDVKDINKGEISDGYSVSRQAQAKFSLSEAI PNQTALYFCATRDDLAEAFFGQGRRLTVV
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor B87 Clone 2 (YLL)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
 RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSLLITASRAADTASYFCATDGLPRFGAGTRLTVPK
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MLSPDLPSAWNTRLLCHVMLC LLGAVSVAAGVIQSPRH LIKEKRETATLKCYP IPRHDTVYWYQQGPGQ
 DPQFLISFY EKMQSDKGSIPDRFSAQQFSDYHSELNMSSLELGDSALYFCASSFGTNTGELFFGEGSRLTVL
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor B87 Clone 3 (YLL)

Alpha chain:

MLLLLIPVLGMIFALRDARAQSVSQHNHHVILSEAASLELGCNYSYGGTVNLFWYVQYPG
 QHLQLLLKYFGDPLVKIGKFEAEFIKSKFSFNL RKPSVQWSDTA EYFCVNRPSGGSNYKLTFGKGTLLTVNP
 NIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNLVIGF
 RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSTRLLCWMALC LLGAELSEAEVAQSPRYKITEKSQAVAFWCDPISGHATLYWYRQILGQ
 GPELLVQFQDESVDSDQLPKDRFSAERLKGVDSTLKIQPAELGDSAMYL CASSFGQYNEQFFGPGTRLTVL
 EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

FIG. 98 cont'd

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TCRs specific for HLA-A*02:01-FLYALALL**Donor J9B Clone 1 (FLY)**

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGR LRVTLDTSKKSSSLLITASRAADTASYFCATTGNSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQD PGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSYGGGYGYTFGSGTRLT VV
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor J9B Clone 2 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGR LRVTLDTSKKSSSLLITASRAADTASYFCARVGDSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQD PGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSYQGTGAYGYTFGSGTRLT VV
EDLNKVFPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

FIG. 99

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Donor A5L Clone 1 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATEGDSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSYQGGSYGYTFGSGTRLTVV
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor A5L Clone 2 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATEGDSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSRQGGSYGYTFGSGTRLTVV
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor A5L Clone 3 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATEGDSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSPQGGNYGYTFGSGTRLTVV
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRVSATFWQNPRNHFRCQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

FIG. 99 cont'd

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Donor A5L Clone 4 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
 RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATSGDSGYSTLTFGKGTMLLVSP
 DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNL SVIGF
 RILLK VAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQD PGM
 GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSPQGGNYGYTFGSGTRLT VV
 EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPV TQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor A5L Clone 5 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
 RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATVGN SGYSTLTFGKGTMLLVSP
 DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNL SVIGF
 RILLK VAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQD PGM
 GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSFQGGNEQFFGPGTRLT V
 EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPV TQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor A5L Clone 6 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
 RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATVGN SGYSTLTFGKGTMLLVSP
 DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
 SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNL SVIGF
 RILLK VAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQD PGM
 GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSTQGGYQPQHFGDGTRLS IL
 EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
 QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPV TQI
 VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

FIG. 99 cont'd

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Donor A5L Clone 7 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATVGDSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSRQGGIDGYTFGSGTRLT V
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor A5L Clone 8 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATVGNSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSKQGGNEQFFGPGTRLT V
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor A5L Clone 9 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATVGNSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPSSCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSPQGGNEQFFGPGTRLT V
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

FIG. 99 cont'd

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Donor T4W Clone 1 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATEGNSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASNRQGGNYGYTFGSGTRLTVV
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor T4W Clone 2 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATEGDSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSRQGGNYGYTFGSGTRLTVV
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor T4W Clone 3 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATEGNSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESCDVKLVEKSFETDTNLFQNLVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSQQGGDHYGYTFGSGTRLTVV
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPV TQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

FIG. 99 cont'd

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Donor T4W Clone 4 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATEGNSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSPQGGSRGYTFGSGTRLT VV
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor T4W Clone 5 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATEGDSGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASRLQGGFN GYTFGSGTRLT VV
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

Donor T4W Clone 6 (FLY)

Alpha chain:

METLLGVSLVILWLQLARVNSQQGEEDPQALSIQEGENATMNC SYKTSINN LQWYRQNSG
RGLVHLILIRSNEREKHSGRRLRVTLDTSKKSSSLLITASRAADTASYFCATVGD SGYSTLTFGKGTMLLVSP
DIQNPDPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSN
SAVAWSNKSDFACANAFNNSIIPEDTFFPSPESSCDVKLVEKSFETDTNLFQNL SVIGF
RILLKLVAGFNLLMTLRLWSS

Beta chain:

MSIGLLCCAALSLLWAGPVNAGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQDPGM
GLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASSVQGAHEQYFGPGTRLT VV
EDLNKVPPEVAVFEPSEAEISHTQKATLVCLATGFFPDHVELSWWVNGKEVHSGVSTDP
QPLKEQPALNDSRYCLSSRLRV SATFWQNPRNHFR CQVQFYGLSENDEWTQDRAKPVTQI
VSAEAWGRADCGFTSVSYQQGVLSATILYEILLGKATLYAVLV SALVLMAMVKRKDF

FIG. 99 cont'd

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2019/051165

A. CLASSIFICATION OF SUBJECT MATTER

C07K 14/725 (2006.01) C07K 16/08 (2006.01) A61K 38/00 (2006.01) A61K 38/17 (2006.01) A61K 48/00 (2006.01)
A61P 37/04 (2006.01) C12N 15/85 (2006.01) G01N 33/569 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

STN: Chemical Abstracts, Registry and CAPLUS: Protein sequence search based on SEQ ID NOS: 395-411, SEQ ID NOS:476-492 and sequences in Table 7 and Keywords: T-cell Receptor and EBV or Epstein Barr Virus and similar terms.

Google, Google Scholar, Google patents: Keyword search: T-cell Receptor and EBV or Epstein Barr Virus and similar terms.

An applicant and inventor search was also conducted in Espacenet and Patentscope and internal databases.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"D" document cited by the applicant in the international application	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
16 January 2020

Date of mailing of the international search report
16 January 2020

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INTERNATIONAL SEARCH REPORT		International application No.
C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		PCT/AU2019/051165
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2018/136762 A1 (ATARA BIOTHERAPEUTICS, INC. et al.) 26 July 2018 Abstract; pp. 10-11, Table 1; p. 55, Example 1; claims, in particular claim 1 and claim 29.	1-30
A	WO 2016/095783 A1 (GUANGZHOU INSTITUTES OF BIOMEDICINE AND HEALTH et al.) 23 June 2016 & English translation obtained from Espacenet. Abstract; claims, in particular claim 1 and 24.	1-30
X	WO 2015/160928 A2 (UNIVERSITY OF VIRGINIA PATENT FOUNDATION) 22 October 2015 Title, abstract, pp. 29-30; p. 12, lines 10-25, pp. 48-51; p. 54, lines 9-15; p. 11, lines 10-15; claims; SEQ ID NO: 36.	1, 11, 13-18, 20-23 and 26-27
X	Leb, Victoria M., et al. "Molecular and functional analysis of the antigen receptor of Art v 1-specific helper T lymphocytes." <i>Journal of Allergy and Clinical Immunology</i> 121.1 (2008): 64-71. Abstract; p. 66, Figure 1.; p. 65, Methods; p. 65, right hand column third paragraph; p. 67, Fig 2; p. 65, right hand column, second paragraph.	1, 2, 11, 14-20 and 26-27
X	WO 2018/129270 A1 (FRED HUTCHINSON CANCER RESEARCH CENTER) 12 July 2018 Abstract; pp. 18-19, [0072]- [0074]; p. 21, [0087]; p. 8, [0047]; pp. 9-10, [0050], [0052]; claims; SEQ ID NOS: 35 and 37.	6-7, 11, 13-23, and 26-30
X	WO 2006/054096 A2 (AVIDEX LTD) 26 May 2006 Abstract; Figure 2b, SEQ ID NO: 11; SEQ ID NO: 17 (Figure 5b) and SEQ ID NO: 21 (Figure 7b); SEQ ID NO: 10, Figure 2a; p.21, lines 25-30; p. 19, lines 25-30; claims.	6-7, 9, 11,13-16, 20-21, 23-24 and 26

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
the subject matter listed in Rule 39 on which, under Article 17(2)(a)(i), an international search is not required to be carried out, including
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See Supplemental Box for Details

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-30 (in part)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

Supplemental Box**Continuation of: Box III**

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept.

This Authority has found that there are different inventions based on the following features that separate the claims into distinct groups:

- Claims 1-30 (in part) are directed towards an isolated alpha chain of T-cell receptor (TCR) or fragment thereof comprising at least one CDR according to SEQ ID NOS: 331-342; an isolated beta chain of a TCR comprising at least one CDR according to SEQ ID NOS:412-423; an isolated TCR comprising said alpha or beta chain; an isolated nucleic acid encoding the alpha/beta chain or TCR; a genetic construct, a host cell; a method of producing said alpha/beta chain or TCR; an antibody or antibody fragment thereof raised against said alpha/beta chain or TCR; as well as compositions thereof and methods of treating an EBV associated disease. The feature of a CDR identified by response to the LMP2 epitope IEDPPFNSL is specific to this group of claims.
- Claims 1-30 (in part) are directed towards an isolated alpha chain of T-cell receptor (TCR) or fragment thereof comprising at least one CDR according to SEQ ID NOS: 343-356; an isolated beta chain of a TCR comprising at least one CDR according to SEQ ID NOS:424-437; an isolated TCR comprising said alpha or beta chain; an isolated nucleic acid encoding the alpha/beta chain or TCR; a genetic construct, a host cell; a method of producing said alpha/beta chain or TCR; an antibody or antibody fragment thereof raised against said alpha/beta chain or TCR; as well as compositions thereof and methods of treating an EBV associated disease. The feature of a CDR identified by response to the LMP2 epitope SSCSSCPLSK is specific to this group of claims.
- Claims 1-30 (in part) are directed towards an isolated alpha chain of T-cell receptor (TCR) or fragment thereof comprising at least one CDR according to SEQ ID NOS: 357-368; an isolated beta chain of a TCR comprising at least one CDR according to SEQ ID NOS:438-449; an isolated TCR comprising said alpha or beta chain; an isolated nucleic acid encoding the alpha/beta chain or TCR; a genetic construct, a host cell; a method of producing said alpha/beta chain or TCR; an antibody or antibody fragment thereof raised against said alpha/beta chain or TCR; as well as compositions thereof and methods of treating an EBV associated disease. The feature of a CDR identified by response to the LMP2 epitope TYGPVFMSL is specific to this group of claims.
- Claims 1-30 (in part) are directed towards an isolated alpha chain of T-cell receptor (TCR) or fragment thereof comprising at least one CDR according to SEQ ID NOS: 369-385; an isolated beta chain of a TCR comprising at least one CDR according to SEQ ID NOS:450-466; an isolated TCR comprising said alpha or beta chain; an isolated nucleic acid encoding the alpha/beta chain or TCR; a genetic construct, a host cell; a method of producing said alpha/beta chain or TCR; an antibody or antibody fragment thereof raised against said alpha/beta chain or TCR; as well as compositions thereof and methods of treating an EBV associated disease. The feature of a CDR identified by response to the LMP2 epitope PYLFWLAAI is specific to this group of claims.
- Claims 1-30 (in part) are directed towards an isolated alpha chain of T-cell receptor (TCR) or fragment thereof comprising at least one CDR according to SEQ ID NOS: 386-394; an isolated beta chain of a TCR comprising at least one CDR according to SEQ ID NOS:467-475; an isolated TCR comprising said alpha or beta chain; an isolated nucleic acid encoding the alpha/beta chain or TCR; a genetic construct, a host cell; a method of producing said alpha/beta chain or TCR; an antibody or antibody fragment thereof raised against said alpha/beta chain or TCR; as well as compositions thereof and methods of treating an EBV associated disease. The feature of a CDR identified by response to the LMP1 epitope YLLEMLWRL is specific to this group of claims.
- Claims 1-30 (in part) are directed towards an isolated alpha chain of T-cell receptor (TCR) or fragment thereof comprising at least one CDR according to SEQ ID NOS: 395-411; an isolated beta chain of a TCR comprising at least one CDR according to SEQ ID NOS:476-492; an isolated TCR comprising said alpha or beta chain; an isolated nucleic acid encoding the alpha/beta chain or TCR; a genetic construct, a host cell; a method of producing said alpha/beta chain or TCR; an antibody or antibody fragment thereof raised against said alpha/beta chain or TCR; as well as compositions thereof and methods of treating an EBV associated disease. The feature of a CDR identified by response to the LMP2 epitope FLYALALLL is specific to this group of claims.

Supplemental Box

PCT Rule 13.2, first sentence, states that unity of invention is only fulfilled when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. PCT Rule 13.2, second sentence, defines a special technical feature as a feature which makes a contribution over the prior art.

When there is no special technical feature common to all the claimed inventions there is no unity of invention.

In the above groups of claims, the identified features may have the potential to make a contribution over the prior art but are not common to all the claimed inventions and therefore cannot provide the required technical relationship. The only feature common to all of the claimed inventions and which provides a technical relationship among them is considered to be a T-cell receptor that specifically binds to an EBV peptide presented on a class I MHC molecule (see instant pages 61-71, Tables 2-7).

However this feature does not make a contribution over the prior art because it is disclosed in:

D1 (WO 2018/136762 A1 (ATARA BIOTHERAPEUTICS, INC. et al) 26 July 2018) discloses T-cells expressing a T-cell receptor that specifically binds to an Epstein Barr virus (EBV) (abstract; pp. 10-11, Table 1, claim 1).

D2 (WO 2016/095783 A1 (GUANGZHOU INST BIOMED & HEALTH [CN]) 23 June 2016) discloses a TCR capable of binding to the SSCSSCPLSK-HLA A1101 complex (abstract; claim 1).

Therefore in the light of this document this common feature cannot be a special technical feature. Therefore there is no special technical feature common to all the claimed inventions and the requirements for unity of invention are consequently not satisfied *a posteriori*.

The applicant has filed a response asking for the invention 6 to be searched relating to the feature of a CDR identified by response to the LMP2 epitope FLYALALLL. Consequently search and examination has been restricted to Claims 1-30 (in part) and SEQ ID NOS: 395-411, SEQ ID NOS:467-475 and Table 7.

INTERNATIONAL SEARCH REPORT Information on patent family members		International application No. PCT/AU2019/051165	
This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.			
Patent Document/s Cited in Search Report		Patent Family Member/s	
Publication Number	Publication Date	Publication Number	Publication Date
WO 2018/136762 A1	26 July 2018	None	
WO 2016/095783 A1	23 June 2016	WO 2016095783 A1	23 Jun 2016
		CN 107001444 A	01 Aug 2017
WO 2015/160928 A2	22 October 2015	WO 2015160928 A2	22 Oct 2015
		AU 2015247727 A1	03 Nov 2016
		CA 2945816 A1	22 Oct 2015
		EP 3137100 A2	08 Mar 2017
		US 2017029484 A1	02 Feb 2017
WO 2018/129270 A1	12 July 2018	WO 2018129270 A1	12 Jul 2018
		CA 3049244 A1	12 Jul 2018
		CN 110121336 A	13 Aug 2019
		EP 3565535 A1	13 Nov 2019
WO 2006/054096 A2	26 May 2006	WO 2006054096 A2	26 May 2006
		EP 1812574 A2	01 Aug 2007
		JP 2008520227 A	19 Jun 2008
		US 2008274133 A1	06 Nov 2008
End of Annex			
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001. Form PCT/ISA/210 (Family Annex)(July 2019)			