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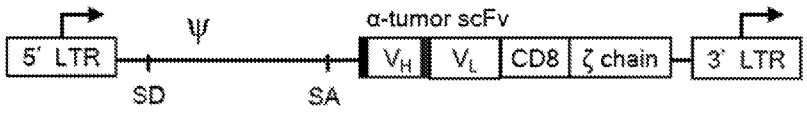
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(54) Title: TIM3-BINDING CHIMERIC ANTIGEN RECEPTORS



CAR retroviral vector

FIG. 1

(57) Abstract: Disclosed herein are chimeric antigen receptor (CAR) polypeptides that can be used with adoptive cell transfer to target and kill TIM3-expressing cancers. Also disclosed are immune effector cells, such as T cells or Natural Killer (NK) cells, that are engineered to express these CARs. Therefore, also disclosed are methods of providing an anti-tumor immunity in a subject with a TIM3 -expressing cancer that involves adoptive transfer of the disclosed immune effector cells engineered to express the disclosed CARs.

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TIM3-BINDING CHIMERIC ANTIGEN RECEPTORS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims benefit of U.S. Provisional Application No. 62/462,059, filed February 22, 2017, and Application Serial No. 62/592,110, filed November 29, 2017, which are hereby incorporated herein by reference in their entirety.

BACKGROUND

Surgery, radiation therapy, and chemotherapy have been the standard accepted approaches for treatment of cancers including leukemia, solid tumors, and metastases. Immunotherapy (sometimes called biological therapy, biotherapy, or biological response modifier therapy), which uses the body's immune system, either directly or indirectly, to shrink or eradicate cancer has been studied for many years as an adjunct to conventional cancer therapy. It is believed that the human immune system is an untapped resource for cancer therapy and that effective treatment can be developed once the components of the immune system are properly harnessed.

SUMMARY

Disclosed herein are chimeric antigen receptor (CAR) polypeptides that can be used with adoptive cell transfer to target and kill TIM3-expressing cancers. The disclosed CAR polypeptides contain in an ectodomain an anti-TIM3 binding agent that can bind TIM3-expressing cancer cells. The anti-TIM3 binding agent is in some embodiments an antibody fragment that specifically binds TIM3. For example, the antigen binding domain can be a Fab or a single-chain variable fragment (scFv) of an antibody that specifically binds TIM3. The anti-TIM3 binding agent is in some embodiments an aptamer that specifically binds TIM3. For example, the anti-TIM3 binding agent can be a peptide aptamer selected from a random sequence pool based on its ability to bind TIM3. The anti-TIM3 binding agent can also be a natural ligand of TIM3, or a variant and/or fragment thereof capable of binding TIM3.

In some cases, the anti-TIM3 V_H domain comprises the amino acid sequence QVTLKESGPGILQPSQTLSLTCSFSGFSLSTSNMAVSWIRQPSGKGLEWLALIYWD DDKRYNPSLKSRLTISKDTSRNQVFLKITSVDAADTATYYCVRSQLLRFAYWGQGTL VTVSA (SEQ ID NO:1), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_H domain comprises the amino acid sequence QVQLQQPGAELVKPGASVKLSCKASGYTGTSYYMYWVKQRPGQGLEWIGGINPS

NGGTNFNEKFKSKATLTVDKSSSTAYMQLSSLTSEDSAVYYCTTAYFDYWGQGTTL TVSS (SEQ ID NO:2), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence DIQMTQSSSYLSVSLGGRVTITCKASDHINNWLAWYQQKPGNAPRLLISGATSLETG VPSRFSGRGSGKDYTLSITSLQTEDVATYYCQQYWSTPVTFGAGTKLELKAAA (SEQ ID NO:3), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence DIVMTQSPATLSVTPGDRVSLSCRASQSISDYLHWYQQKSHESPRLLIKYASQSISGI PSRFSGSGSGSDFTLSINSVEPEDVGVYYCQNGHSFPRTFGGGTKLEIKAAA (SEQ ID NO:4), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence EIVLTQSPAITAASLGQKVTITCSASSSVSYMHWYQQKSGTSPKPWIYEISKLASGVP ARFSGSGSGTSYSLTISSMEAEDAAIYYCQQWNYPLYTFGGGTKLEIKAAA (SEQ ID NO:5), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence QIVLTQSPAIMSASPGEKVTMSCSASPGEKVTMSCSASSSLTYMYWFQQKPGSSP KPWIYRTSNLASGVPARFSGSGSGTSYSLTISSMEAEDAATYTCQQYHSYPPTFGG GTKLEIKAAA (SEQ ID NO:6), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence XIVXTQSPAXXSXSXGXXVTXXCXASXSXXXYXXWYQQKXGXSPXXXIXXXSXLXS GVPXRFSGSGSGXXYXLXIXSXEXEDXAXYYCQXXSXPXTFGGGTKLEIKAAA (SEQ ID NO:7), wherein “X” is any amino acid or no amino acid, or a fragment or variant thereof able to bind TIM3. Also disclosed are other consensus sequences based on the alignments shown in Figures 9 and 10, e.g. based on conservative substitutions at variable residues.

As with other CARs, the disclosed polypeptides can also contain a transmembrane domain and an endodomain capable of activating an immune effector cell. For example, the endodomain can contain a signaling domain and one or more co-stimulatory signaling regions.

In some embodiments, the intracellular signaling domain is a CD3 zeta (CD3ζ) signaling domain. In some embodiments, the costimulatory signaling region comprises the cytoplasmic domain of CD28, 4-1BB, or a combination thereof. In some cases, the costimulatory signaling region contains 1, 2, 3, or 4 cytoplasmic domains of one or more intracellular signaling and/or costimulatory molecules. In some embodiments, the co-stimulatory signaling region contains one or more mutations in the cytoplasmic domains of CD28 and/or 4-1BB that enhance signaling.

In some embodiments, the CAR polypeptide contains an incomplete endodomain. For example, the CAR polypeptide can contain only an intracellular signaling domain or a co-stimulatory domain, but not both. In these embodiments, the immune effector cell is not activated unless it and a second CAR polypeptide (or endogenous T-cell receptor) that contains the missing domain both bind their respective antigens. Therefore, in some embodiments, the CAR polypeptide contains a CD3 zeta (CD3ζ) signaling domain but does not contain a costimulatory signaling region (CSR). In other embodiments, the CAR polypeptide contains the cytoplasmic domain of CD28, 4-1BB, or a combination thereof, but does not contain a CD3 zeta (CD3ζ) signaling domain (SD).

Also disclosed are isolated nucleic acid sequences encoding the disclosed CAR polypeptides, vectors comprising these isolated nucleic acids, and cells containing these vectors. For example, the cell can be an immune effector cell selected from the group consisting of an alpha-beta T cells, a gamma-delta T cell, a Natural Killer (NK) cells, a Natural Killer T (NKT) cell, a B cell, an innate lymphoid cell (ILC), a cytokine induced killer (CIK) cell, a cytotoxic T lymphocyte (CTL), a lymphokine activated killer (LAK) cell, and a regulatory T cell.

In some embodiments, the cell exhibits an anti-tumor immunity when the antigen binding domain of the CAR binds to TIM3.

Also disclosed is a method of providing an anti-cancer immunity in a subject with a TIM3-expressing cancer that involves administering to the subject an effective amount of an immune effector cell genetically modified with a disclosed TIM3-specific CAR. For example, in some embodiments, the cancer is a hematological cancer, such as acute myeloid leukemia (AML).

The details of one or more embodiments of the invention are set forth in the accompanying drawings and the description below. Other features, objects, and advantages of the invention will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

Figure 1 is an illustration of a TIM3-specific chimeric antigen receptor (CAR).

Figure 2 illustrates a next generation sequencing (NGS) screening procedure for identifying anti-TIM3 sequences. 1) immunizing mice, 2) isolate splenic B cells, 3) isolate RNA, 4) FuzeSeq™ (GENEWIZ) antibody sequencing, 5) bioinformatics analysis of IgH and IgL rearrangements to select putative anti-TIM3 sequences, and 6) in vitro screening to validate.

Figure 3 illustrates how next generation sequencing (NGS) can improve in vivo discovery methods using hybridomas.

Figure 4 illustrates the work flow of B cell antibody library profiling using NGS. Advantages include a snapshot of antibody responses at a certain moment, in depth profiling of diverse antibody repertoire, no humanization needed for therapeutic antibody, saves time and effort creating and selecting hybridomas, and no dropout of high affinity antibodies due to inefficient cell fusion.

Figure 5 illustrates the process for preparing a library for NGS.

Figure 6 illustrates the data analysis workflow and deliverables of B cell antibody library profiling using NGS. This involves data quality control, multiplexing, and quality trimming; CDR identification and frequency analysis; V-D-J usage an lineage frequency; and CDR length distribution and CDR3 clustering.

Figures 7A and 7B show the most common shared VJ_K (Fig. 7A) and VDJ_H (Fig. 7B) rearrangements in three TIM3 immunized mice. Sequences selected for validation are boxed (Vk13-85 is not in the top 10 vk sequences and was included as a control).

Figure 8 illustrates an example scFv constructed to target TIM3 (IGHV812-IGKV461 scFv).

Figure 9 is a sequence alignment of IGHV812-based anti-TIM3 scFv sequences. IGHV812 is paired with one of four IGK rearrangements to create 4 separate anti-TIM3 scFv. IGHV812-IGKV1385: SEQ ID NO:15; IGHV812-IGKV539: SEQ ID NO:16; IGHV812-IGKV486: SEQ ID NO:17; IGHV812-IGKV461: SEQ ID NO:18.

Figure 10 is a sequence alignment of IGHV1S81-based anti-TIM3 scFv sequences. IGHV1S81 is paired with one of four IGK rearrangements to create 4 separate anti-TIM3 scFv. IGHV1S81-IGKV461: SEQ ID NO:19; IGHV1S81-IGKV539: SEQ ID NO:20; IGHV1S81-IGKV1385: SEQ ID NO:21; IGHV1S81-IGKV486: SEQ ID NO:22.

Figure 11 shows an example anti-TIM3/BBz GFP CAR construct. The transmembrane and hinge domains are derived from CD8. Human 41BB intracellular co-stimulatory domain is fused to human CD3zeta.

Figures 12A and 12B show TIM3 retargeting of Jurkat T cells transduced with IGHV812-based anti-TIM3 scFv. Figure 12A shows TIM3-positive targets, and Figure 12B shows TIM3-negative targets. Interferon-gamma is secreted only when TIM3-postive targets are encountered.

Figures 13A and 13B show TIM3 retargeting of Jurkat T cells transduced with IGHV1S81-based anti-TIM3 scFv. Figure 13A shows TIM3-positive targets, and Figure 13B shows TIM3-negative targets. Interferon-gamma is secreted only when TIM3-postive targets are encountered.

Figures 14A to 14D show primary human T cells expressing anti-TIM3 CARs can effectively kill TIM3 target cells as measured using a Real-Time cell Analysis cytotoxicity assay. Target cells are CHO-TIM3. E:T ratio of 10:1 was used. Untransduced cells are negative control for T cells. CHO-CD20 are negative controls for targets.

Figures 15A to 15H show primary human T cells expressing anti-TIM3 CARs can effectively kill TIM3 target cells as measured using a Real-Time cell Analysis cytotoxicity assay. Target cells are CHO-TIM3. E:T ratio of 10:1 was used. Untransduced cells are negative control for T cells. CHO-CD20 are negative controls for targets.

Figures 16A to 16H show primary human T cells expressing anti-TIM3 CARs can effectively kill TIM3 target cells as measured using a Real-Time cell Analysis cytotoxicity assay. Target cells are CHO-TIM3. Untransduced cells are negative control for T cells. CHO-CD20 are negative controls for targets. They compare killing at an E:T 10:1 vs. 5:1 ratios.

Figures 17A and 17B show primary human T cells expressing anti-TIM3 CARs can effectively kill TIM3 target cells as measured using a Real-Time cell Analysis cytotoxicity assay. T cells were treated with TIM3 blocking antibody before added to target cells. Target cells are CHO-TIM3 or CHO-CD20. E:T ratio of 10:1 was used.

Figures 18A to 18H show primary human T cells expressing anti-TIM3 CARs can effectively kill TIM3 target cells as measured using a Real-Time cell Analysis cytotoxicity assay. T cells were treated with TIM3 blocking antibody before added to target cells. Target cells are CHO-TIM3 or CHO-CD20. E:T ratio of 10:1 was used.

Figures 19A to 19C show Jurkat cells expressing anti-TIM3 CAR VHS-539 have robust gene transfer (B) and IFNγ expression (A) after stimulation with target cells expressing TIM3.

Figures 20A to 20H show primary human T cells transduced with anti-TIM3 CARs have significantly increased secretion of cytokines after TIM3 antigen-stimulation for 24hr. Cytokines measured by Luminex.

Figures 21A and 21B show proliferation of TIM3 CAR-T in vivo and AML Killing. Figure 21A shows CAR T cell numbers analyzed via GFP fluorescence

showed significant expansion of TIM3 CAR T cells in human AML xenografted mice compared to control group. Figure 21B shows TIM3 CAR-T were able to kill the Human AML (CD33+CD45+) cells compared to control CAR T untreated group in peripheral blood. NSG mice were engrafted with patient derived AML cells via IV injection. Six weeks after confirmation of engraftment, xenografted mice were treated TIM3 directed CAR T cells or saline as a control generated from normal healthy donor T cells. Three weeks following CAR T cells injection, mice were bled to quantitate CAR T cells proliferation and myeloid cells ablation.

DETAILED DESCRIPTION

Disclosed herein are chimeric antigen receptors (CAR) that can specifically recognize tumor-associated antigens (TAA) on TIM3-expressing cancers. Also disclosed are immune effector cells, such as T cells or Natural Killer (NK) cells, that are engineered to express these CARs. Therefore, also disclosed are methods for providing an anti-tumor immunity in a subject with TIM3-expressing cancers that involves adoptive transfer of the disclosed immune effector cells engineered to express the disclosed TIM3-specific CARs.

TIM3-specific chimeric antigen receptors (CAR)

CARs generally incorporate an antigen recognition domain from the single-chain variable fragments (scFv) of a monoclonal antibody (mAb) with transmembrane signaling motifs involved in lymphocyte activation (Sadelain M, et al. Nat Rev Cancer 2003 3:35–45). Disclosed herein is a TIM3-specific chimeric antigen receptor (CAR) that can be that can be expressed in immune effector cells to enhance antitumor activity against TIM3-specific CARs.

The disclosed CAR is generally made up of three domains: an ectodomain, a transmembrane domain, and an endodomain. The ectodomain comprises the TIM3-binding region and is responsible for antigen recognition. It also optionally contains a signal peptide (SP) so that the CAR can be glycosylated and anchored in the cell membrane of the immune effector cell. The transmembrane domain (TD), is as its name suggests, connects the ectodomain to the endodomain and resides within the cell membrane when expressed by a cell. The endodomain is the business end of the CAR that transmits an activation signal to the immune effector cell after antigen recognition. For example, the endodomain can contain a signaling domain (SD) and a co-stimulatory signaling region (CSR).

A “signaling domain (SD)” generally contains immunoreceptor tyrosine-based activation motifs (ITAMs) that activate a signaling cascade when the ITAM is phosphorylated. The term “co-stimulatory signaling region (CSR)” refers to

intracellular signaling domains from costimulatory protein receptors, such as CD28, 41BB, and ICOS, that are able to enhance T-cell activation by T-cell receptors.

In some embodiments, the endodomain contains an SD or a CSR, but not both. In these embodiments, an immune effector cell containing the disclosed CAR is only activated if another CAR (or a T-cell receptor) containing the missing domain also binds its respective antigen.

In some embodiments, the disclosed CAR is defined by the formula:

SP–TIM3–HG–TM–CSR–SD; or

SP–TIM3–HG–TM–SD–CSR

wherein “SP” represents an optional signal peptide,

wherein “TIM3” represents a TIM3-binding region,

wherein “HG” represents an optional hinge domain,

wherein “TM” represents a transmembrane domain,

wherein “CSR” represents one or more co-stimulatory signaling regions,

wherein “SD” represents a signaling domain, and

wherein “–” represents a peptide bond or linker.

Additional CAR constructs are described, for example, in Fresnak AD, et al. Engineered T cells: the promise and challenges of cancer immunotherapy. Nat Rev Cancer. 2016 Aug 23;16(9):566-81, which is incorporated by reference in its entirety for the teaching of these CAR models.

For example, the CAR can be a TRUCK, Universal CAR, Self-driving CAR, Armored CAR, Self-destruct CAR, Conditional CAR, Marked CAR, TenCAR, Dual CAR, or sCAR.

TRUCKs (T cells redirected for universal cytokine killing) co-express a chimeric antigen receptor (CAR) and an antitumor cytokine. Cytokine expression may be constitutive or induced by T cell activation. Targeted by CAR specificity, localized production of pro-inflammatory cytokines recruits endogenous immune cells to tumor sites and may potentiate an antitumor response.

Universal, allogeneic CAR T cells are engineered to no longer express endogenous T cell receptor (TCR) and/or major histocompatibility complex (MHC) molecules, thereby preventing graft-versus-host disease (GVHD) or rejection, respectively.

Self-driving CARs co-express a CAR and a chemokine receptor, which binds to a tumor ligand, thereby enhancing tumor homing.

CAR T cells engineered to be resistant to immunosuppression (Armored CARs) may be genetically modified to no longer express various immune checkpoint

molecules (for example, cytotoxic T lymphocyte-associated antigen 4 (CTLA4) or programmed cell death protein 1 (PD1)), with an immune checkpoint switch receptor, or may be administered with a monoclonal antibody that blocks immune checkpoint signaling.

A self-destruct CAR may be designed using RNA delivered by electroporation to encode the CAR. Alternatively, inducible apoptosis of the T cell may be achieved based on ganciclovir binding to thymidine kinase in gene-modified lymphocytes or the more recently described system of activation of human caspase 9 by a small-molecule dimerizer.

A conditional CAR T cell is by default unresponsive, or switched 'off', until the addition of a small molecule to complete the circuit, enabling full transduction of both signal 1 and signal 2, thereby activating the CAR T cell. Alternatively, T cells may be engineered to express an adaptor-specific receptor with affinity for subsequently administered secondary antibodies directed at target antigen.

Marked CAR T cells express a CAR plus a tumor epitope to which an existing monoclonal antibody agent binds. In the setting of intolerable adverse effects, administration of the monoclonal antibody clears the CAR T cells and alleviates symptoms with no additional off-tumor effects.

A tandem CAR (TanCAR) T cell expresses a single CAR consisting of two linked single-chain variable fragments (scFvs) that have different affinities fused to intracellular co-stimulatory domain(s) and a CD3ζ domain. TanCAR T cell activation is achieved only when target cells co–express both targets.

A dual CAR T cell expresses two separate CARs with different ligand binding targets; one CAR includes only the CD3ζ domain and the other CAR includes only the co-stimulatory domain(s). Dual CAR T cell activation requires co–expression of both targets on the tumor.

A safety CAR (sCAR) consists of an extracellular scFv fused to an intracellular inhibitory domain. sCAR T cells co–expressing a standard CAR become activated only when encountering target cells that possess the standard CAR target but lack the sCAR target.

The antigen recognition domain of the disclosed CAR is usually an scFv. There are however many alternatives. An antigen recognition domain from native T-cell receptor (TCR) alpha and beta single chains have been described, as have simple ectodomains (e.g. CD4 ectodomain to recognize HIV infected cells) and more exotic recognition components such as a linked cytokine (which leads to recognition

of cells bearing the cytokine receptor). In fact almost anything that binds a given target with high affinity can be used as an antigen recognition region.

The endodomain is the business end of the CAR that after antigen recognition transmits a signal to the immune effector cell, activating at least one of the normal effector functions of the immune effector cell. Effector function of a T cell, for example, may be cytolytic activity or helper activity including the secretion of cytokines. Therefore, the endodomain may comprise the "signaling domain" of a T cell receptor (TCR). While usually the entire intracellular signaling domain can be employed, in many cases it is not necessary to use the entire chain. To the extent that a truncated portion of the intracellular signaling domain is used, such truncated portion may be used in place of the intact chain as long as it transduces the effector function signal.

Cytoplasmic signaling sequences that regulate primary activation of the TCR complex that act in a stimulatory manner may contain signaling motifs which are known as immunoreceptor tyrosine-based activation motifs (ITAMs). Examples of ITAM containing cytoplasmic signaling sequences include those derived from CD8, CD3ζ, CD3δ, CD3γ, CD3ε, CD32 (Fc gamma RIIa), DAP10, DAP12, CD79a, CD79b, FcγRIγ, FcγRIIIγ, FcεRIβ (FCERIB), and FcεRIγ (FCERIG).

In particular embodiments, the signaling domain is derived from CD3 zeta (CD3ζ) (TCR zeta, GenBank accno. BAG36664.1). T-cell surface glycoprotein CD3 zeta (CD3ζ) chain, also known as T-cell receptor T3 zeta chain or CD247 (Cluster of Differentiation 247), is a protein that in humans is encoded by the *CD247* gene.

First-generation CARs typically had the intracellular domain from the CD3ζ chain, which is the primary transmitter of signals from endogenous TCRs. Second-generation CARs add intracellular signaling domains from various costimulatory protein receptors (e.g., CD28, 41BB, ICOS) to the endodomain of the CAR to provide additional signals to the T cell. Preclinical studies have indicated that the second generation of CAR designs improves the antitumor activity of T cells. More recent, third-generation CARs combine multiple signaling domains to further augment potency. T cells grafted with these CARs have demonstrated improved expansion, activation, persistence, and tumor-eradicating efficiency independent of costimulatory receptor/ligand interaction (Imai C, et al. Leukemia 2004 18:676–84; Maher J, et al. Nat Biotechnol 2002 20:70–5).

For example, the endodomain of the CAR can be designed to comprise the CD3ζ signaling domain by itself or combined with any other desired cytoplasmic domain(s) useful in the context of the CAR of the invention. For example, the

cytoplasmic domain of the CAR can comprise a CD3ζ chain portion and a costimulatory signaling region. The costimulatory signaling region refers to a portion of the CAR comprising the intracellular domain of a costimulatory molecule. A costimulatory molecule is a cell surface molecule other than an antigen receptor or their ligands that is required for an efficient response of lymphocytes to an antigen. Examples of such molecules include CD27, CD28, 4-1BB (CD137), OX40, CD30, CD40, ICOS, lymphocyte function-associated antigen-1 (LFA-1), CD2, CD7, LIGHT, NKG2C, B7-H3, and a ligand that specifically binds with CD83, CD8, CD4, b2c, CD80, CD86, DAP10, DAP12, MyD88, BTNL3, and NKG2D. Thus, while the CAR is exemplified primarily with CD28 as the co-stimulatory signaling element, other costimulatory elements can be used alone or in combination with other co-stimulatory signaling elements.

In some embodiments, the CAR comprises a hinge sequence. A hinge sequence is a short sequence of amino acids that facilitates antibody flexibility (see, e.g., Woof et al., Nat. Rev. Immunol., 4(2): 89-99 (2004)). The hinge sequence may be positioned between the antigen recognition moiety (e.g., anti-TIM3 scFv) and the transmembrane domain. The hinge sequence can be any suitable sequence derived or obtained from any suitable molecule. In some embodiments, for example, the hinge sequence is derived from a CD8a molecule or a CD28 molecule.

The transmembrane domain may be derived either from a natural or from a synthetic source. Where the source is natural, the domain may be derived from any membrane-bound or transmembrane protein. For example, the transmembrane region may be derived from (i.e. comprise at least the transmembrane region(s) of) the alpha, beta or zeta chain of the T-cell receptor, CD28, CD3 epsilon, CD45, CD4, CD5, CD8 (e.g., CD8 alpha, CD8 beta), CD9, CD16, CD22, CD33, CD37, CD64, CD80, CD86, CD134, CD137, or CD154, KIRDS2, OX40, CD2, CD27, LFA-1 (CD11a, CD18) , ICOS (CD278) , 4-1BB (CD137) , GITR, CD40, BAFFR, HVEM (LIGHTR) , SLAMF7, NKp80 (KLRF1) , CD160, CD19, IL2R beta, IL2R gamma, IL7R α, ITGA1, VLA1, CD49a, ITGA4, IA4, CD49D, ITGA6, VLA-6, CD49f, ITGAD, CD11d, ITGAE, CD103, ITGAL, CD11a, LFA-1, ITGAM, CD11b, ITGAX, CD11c, ITGB1, CD29, ITGB2, CD18, LFA-1, ITGB7, TNFR2, DNAM1 (CD226) , SLAMF4 (CD244, 2B4) , CD84, CD96 (Tactile) , CEACAM1, CRTAM, Ly9 (CD229) , CD160 (BY55) , PSGL1, CD100 (SEMA4D) , SLAMF6 (NTB-A, Ly108) , SLAM (SLAMF1, CD150, IPO-3) , BLAME (SLAMF8) , SELPLG (CD162) , LTBR, and PAG/Cbp. Alternatively the transmembrane domain may be synthetic, in which case it will comprise predominantly hydrophobic residues such as leucine and valine. In some cases, a

triplet of phenylalanine, tryptophan and valine will be found at each end of a synthetic transmembrane domain. A short oligo- or polypeptide linker, such as between 2 and 10 amino acids in length, may form the linkage between the transmembrane domain and the endoplasmic domain of the CAR.

In some embodiments, the CAR has more than one transmembrane domain, which can be a repeat of the same transmembrane domain, or can be different transmembrane domains.

In some embodiments, the CAR is a multi-chain CAR, as described in WO2015/039523, which is incorporated by reference for this teaching. A multi-chain CAR can comprise separate extracellular ligand binding and signaling domains in different transmembrane polypeptides. The signaling domains can be designed to assemble in juxtamembrane position, which forms flexible architecture closer to natural receptors, that confers optimal signal transduction. For example, the multi-chain CAR can comprise a part of an FCERI alpha chain and a part of an FCERI beta chain such that the FCERI chains spontaneously dimerize together to form a CAR.

Tables 1, 2, and 3 below provide some example combinations of TIM3-binding region, co-stimulatory signaling regions, and signaling domains that can occur in the disclosed CARs. Tables 4 to 6 provide examples of combinations without either a signaling domain or a co-stimulatory signal region, i.e. so the CAR provides suboptimal activation upon binding to TIM3 and requires a second CAR containing the missing domain to bind its respective antigen in order for the cell to be activated.

Table 1. First Generation CARs

ScFv	Signal Domain
TIM3	CD8
TIM3	CD3ζ
TIM3	CD3δ
TIM3	CD3γ
TIM3	CD3ε
TIM3	FcγRI-γ
TIM3	FcγRIII-γ
TIM3	FcεRIβ
TIM3	FcεRIγ
TIM3	DAP10
TIM3	DAP12
TIM3	CD32
TIM3	CD79a

Table 2. Second Generation CARs

ScFv	Co-stimulatory	Signal	ScFv	Co-stimulatory	Signal

	Signal	Domain			Signal	Domain
TIM3	CD28	CD8		TIM3	CD80	FcεRIβ
TIM3	CD28	CD3ζ		TIM3	CD80	FcεRIγ
TIM3	CD28	CD3δ		TIM3	CD80	DAP10
TIM3	CD28	CD3γ		TIM3	CD80	DAP12
TIM3	CD28	CD3ε		TIM3	CD80	CD32
TIM3	CD28	FcγRI-γ		TIM3	CD80	CD79a
TIM3	CD28	FcγRIII-γ		TIM3	CD80	CD79b
TIM3	CD28	FcεRIβ		TIM3	CD86	CD8
TIM3	CD28	FcεRIγ		TIM3	CD86	CD3ζ
TIM3	CD28	DAP10		TIM3	CD86	CD3δ
TIM3	CD28	DAP12		TIM3	CD86	CD3γ
TIM3	CD28	CD32		TIM3	CD86	CD3ε
TIM3	CD28	CD79a		TIM3	CD86	FcγRI-γ
TIM3	CD28	CD79b		TIM3	CD86	FcγRIII-γ
TIM3	CD8	CD8		TIM3	CD86	FcεRIβ
TIM3	CD8	CD3ζ		TIM3	CD86	FcεRIγ
TIM3	CD8	CD3δ		TIM3	CD86	DAP10
TIM3	CD8	CD3γ		TIM3	CD86	DAP12
TIM3	CD8	CD3ε		TIM3	CD86	CD32
TIM3	CD8	FcγRI-γ		TIM3	CD86	CD79a
TIM3	CD8	FcγRIII-γ		TIM3	CD86	CD79b
TIM3	CD8	FcεRIβ		TIM3	OX40	CD8
TIM3	CD8	FcεRIγ		TIM3	OX40	CD3ζ
TIM3	CD8	DAP10		TIM3	OX40	CD3δ
TIM3	CD8	DAP12		TIM3	OX40	CD3γ
TIM3	CD8	CD32		TIM3	OX40	CD3ε
TIM3	CD8	CD79a		TIM3	OX40	FcγRI-γ
TIM3	CD8	CD79b		TIM3	OX40	FcγRIII-γ
TIM3	CD4	CD8		TIM3	OX40	FcεRIβ
TIM3	CD4	CD3ζ		TIM3	OX40	FcεRIγ
TIM3	CD4	CD3δ		TIM3	OX40	DAP10
TIM3	CD4	CD3γ		TIM3	OX40	DAP12
TIM3	CD4	CD3ε		TIM3	OX40	CD32
TIM3	CD4	FcγRI-γ		TIM3	OX40	CD79a
TIM3	CD4	FcγRIII-γ		TIM3	OX40	CD79b
TIM3	CD4	FcεRIβ		TIM3	DAP10	CD8
TIM3	CD4	FcεRIγ		TIM3	DAP10	CD3ζ
TIM3	CD4	DAP10		TIM3	DAP10	CD3δ
TIM3	CD4	DAP12		TIM3	DAP10	CD3γ
TIM3	CD4	CD32		TIM3	DAP10	CD3ε
TIM3	CD4	CD79a		TIM3	DAP10	FcγRI-γ
TIM3	CD4	CD79b		TIM3	DAP10	FcγRIII-γ
TIM3	b2c	CD8		TIM3	DAP10	FcεRIβ
TIM3	b2c	CD3ζ		TIM3	DAP10	FcεRIγ
TIM3	b2c	CD3δ		TIM3	DAP10	DAP10
TIM3	b2c	CD3γ		TIM3	DAP10	DAP12
TIM3	b2c	CD3ε		TIM3	DAP10	CD32
TIM3	b2c	FcγRI-γ		TIM3	DAP10	CD79a
TIM3	b2c	FcγRIII-γ		TIM3	DAP10	CD79b
TIM3	b2c	FcεRIβ		TIM3	DAP12	CD8
TIM3	b2c	FcεRIγ		TIM3	DAP12	CD3ζ

TIM3	b2c	DAP10		TIM3	DAP12	CD3δ
TIM3	b2c	DAP12		TIM3	DAP12	CD3γ
TIM3	b2c	CD32		TIM3	DAP12	CD3ε
TIM3	b2c	CD79a		TIM3	DAP12	FcγRI-γ
TIM3	b2c	CD79b		TIM3	DAP12	FcγRIII-γ
TIM3	CD137/41BB	CD8		TIM3	DAP12	FcεRIβ
TIM3	CD137/41BB	CD3ζ		TIM3	DAP12	FcεRIγ
TIM3	CD137/41BB	CD3δ		TIM3	DAP12	DAP10
TIM3	CD137/41BB	CD3γ		TIM3	DAP12	DAP12
TIM3	CD137/41BB	CD3ε		TIM3	DAP12	CD32
TIM3	CD137/41BB	FcγRI-γ		TIM3	DAP12	CD79a
TIM3	CD137/41BB	FcγRIII-γ		TIM3	DAP12	CD79b
TIM3	CD137/41BB	FcεRIβ		TIM3	MyD88	CD8
TIM3	CD137/41BB	FcεRIγ		TIM3	MyD88	CD3ζ
TIM3	CD137/41BB	DAP10		TIM3	MyD88	CD3δ
TIM3	CD137/41BB	DAP12		TIM3	MyD88	CD3γ
TIM3	CD137/41BB	CD32		TIM3	MyD88	CD3ε
TIM3	CD137/41BB	CD79a		TIM3	MyD88	FcγRI-γ
TIM3	CD137/41BB	CD79b		TIM3	MyD88	FcγRIII-γ
TIM3	ICOS	CD8		TIM3	MyD88	FcεRIβ
TIM3	ICOS	CD3ζ		TIM3	MyD88	FcεRIγ
TIM3	ICOS	CD3δ		TIM3	MyD88	DAP10
TIM3	ICOS	CD3γ		TIM3	MyD88	DAP12
TIM3	ICOS	CD3ε		TIM3	MyD88	CD32
TIM3	ICOS	FcγRI-γ		TIM3	MyD88	CD79a
TIM3	ICOS	FcγRIII-γ		TIM3	MyD88	CD79b
TIM3	ICOS	FcεRIβ		TIM3	CD7	CD8
TIM3	ICOS	FcεRIγ		TIM3	CD7	CD3ζ
TIM3	ICOS	DAP10		TIM3	CD7	CD3δ
TIM3	ICOS	DAP12		TIM3	CD7	CD3γ
TIM3	ICOS	CD32		TIM3	CD7	CD3ε
TIM3	ICOS	CD79a		TIM3	CD7	FcγRI-γ
TIM3	ICOS	CD79b		TIM3	CD7	FcγRIII-γ
TIM3	CD27	CD8		TIM3	CD7	FcεRIβ
TIM3	CD27	CD3ζ		TIM3	CD7	FcεRIγ
TIM3	CD27	CD3δ		TIM3	CD7	DAP10
TIM3	CD27	CD3γ		TIM3	CD7	DAP12
TIM3	CD27	CD3ε		TIM3	CD7	CD32
TIM3	CD27	FcγRI-γ		TIM3	CD7	CD79a
TIM3	CD27	FcγRIII-γ		TIM3	CD7	CD79b
TIM3	CD27	FcεRIβ		TIM3	BTNL3	CD8
TIM3	CD27	FcεRIγ		TIM3	BTNL3	CD3ζ
TIM3	CD27	DAP10		TIM3	BTNL3	CD3δ
TIM3	CD27	DAP12		TIM3	BTNL3	CD3γ
TIM3	CD27	CD32		TIM3	BTNL3	CD3ε
TIM3	CD27	CD79a		TIM3	BTNL3	FcγRI-γ
TIM3	CD27	CD79b		TIM3	BTNL3	FcγRIII-γ
TIM3	CD28δ	CD8		TIM3	BTNL3	FcεRIβ
TIM3	CD28δ	CD3ζ		TIM3	BTNL3	FcεRIγ
TIM3	CD28δ	CD3δ		TIM3	BTNL3	DAP10
TIM3	CD28δ	CD3γ		TIM3	BTNL3	DAP12
TIM3	CD28δ	CD3ε		TIM3	BTNL3	CD32

TIM3	CD28δ	FcγRI-γ		TIM3	BTNL3	CD79a
TIM3	CD28δ	FcγRIII-γ		TIM3	BTNL3	CD79b
TIM3	CD28δ	FcεRIβ		TIM3	NKG2D	CD8
TIM3	CD28δ	FcεRIγ		TIM3	NKG2D	CD3ζ
TIM3	CD28δ	DAP10		TIM3	NKG2D	CD3δ
TIM3	CD28δ	DAP12		TIM3	NKG2D	CD3γ
TIM3	CD28δ	CD32		TIM3	NKG2D	CD3ε
TIM3	CD28δ	CD79a		TIM3	NKG2D	FcγRI-γ
TIM3	CD28δ	CD79b		TIM3	NKG2D	FcγRIII-γ
TIM3	CD80	CD8		TIM3	NKG2D	FcεRIβ
TIM3	CD80	CD3ζ		TIM3	NKG2D	FcεRIγ
TIM3	CD80	CD3δ		TIM3	NKG2D	DAP10
TIM3	CD80	CD3γ		TIM3	NKG2D	DAP12
TIM3	CD80	CD3ε		TIM3	NKG2D	CD32
TIM3	CD80	FcγRI-γ		TIM3	NKG2D	CD79a
TIM3	CD80	FcγRIII-γ		TIM3	NKG2D	CD79b

Table 3. Third Generation CARs

ScFv	Co-stimulatory Signal	Co-stimulatory Signal	Signal Domain
TIM3	CD28	CD28	CD8
TIM3	CD28	CD28	CD3ζ
TIM3	CD28	CD28	CD3δ
TIM3	CD28	CD28	CD3γ
TIM3	CD28	CD28	CD3ε
TIM3	CD28	CD28	FcγRI-γ
TIM3	CD28	CD28	FcγRIII-γ
TIM3	CD28	CD28	FcεRIβ
TIM3	CD28	CD28	FcεRIγ
TIM3	CD28	CD28	DAP10
TIM3	CD28	CD28	DAP12
TIM3	CD28	CD28	CD32
TIM3	CD28	CD28	CD79a
TIM3	CD28	CD28	CD79b
TIM3	CD28	CD8	CD8
TIM3	CD28	CD8	CD3ζ
TIM3	CD28	CD8	CD3δ
TIM3	CD28	CD8	CD3γ
TIM3	CD28	CD8	CD3ε
TIM3	CD28	CD8	FcγRI-γ
TIM3	CD28	CD8	FcγRIII-γ
TIM3	CD28	CD8	FcεRIβ
TIM3	CD28	CD8	FcεRIγ
TIM3	CD28	CD8	DAP10
TIM3	CD28	CD8	DAP12
TIM3	CD28	CD8	CD32
TIM3	CD28	CD8	CD79a
TIM3	CD28	CD8	CD79b
TIM3	CD28	CD4	CD8
TIM3	CD28	CD4	CD3ζ
TIM3	CD28	CD4	CD3δ
TIM3	CD28	CD4	CD3γ

TIM3	CD28	CD4	CD3ε
TIM3	CD28	CD4	FcγRI-γ
TIM3	CD28	CD4	FcγRIII-γ
TIM3	CD28	CD4	FcεRIβ
TIM3	CD28	CD4	FcεRIγ
TIM3	CD28	CD4	DAP10
TIM3	CD28	CD4	DAP12
TIM3	CD28	CD4	CD32
TIM3	CD28	CD4	CD79a
TIM3	CD28	CD4	CD79b
TIM3	CD28	b2c	CD8
TIM3	CD28	b2c	CD3ζ
TIM3	CD28	b2c	CD3δ
TIM3	CD28	b2c	CD3γ
TIM3	CD28	b2c	CD3ε
TIM3	CD28	b2c	FcγRI-γ
TIM3	CD28	b2c	FcγRIII-γ
TIM3	CD28	b2c	FcεRIβ
TIM3	CD28	b2c	FcεRIγ
TIM3	CD28	b2c	DAP10
TIM3	CD28	b2c	DAP12
TIM3	CD28	b2c	CD32
TIM3	CD28	b2c	CD79a
TIM3	CD28	b2c	CD79b
TIM3	CD28	CD137/41BB	CD8
TIM3	CD28	CD137/41BB	CD3ζ
TIM3	CD28	CD137/41BB	CD3δ
TIM3	CD28	CD137/41BB	CD3γ
TIM3	CD28	CD137/41BB	CD3ε
TIM3	CD28	CD137/41BB	FcγRI-γ
TIM3	CD28	CD137/41BB	FcγRIII-γ
TIM3	CD28	CD137/41BB	FcεRIβ
TIM3	CD28	CD137/41BB	FcεRIγ
TIM3	CD28	CD137/41BB	DAP10
TIM3	CD28	CD137/41BB	DAP12
TIM3	CD28	CD137/41BB	CD32
TIM3	CD28	CD137/41BB	CD79a
TIM3	CD28	CD137/41BB	CD79b
TIM3	CD28	ICOS	CD8
TIM3	CD28	ICOS	CD3ζ
TIM3	CD28	ICOS	CD3δ
TIM3	CD28	ICOS	CD3γ
TIM3	CD28	ICOS	CD3ε
TIM3	CD28	ICOS	FcγRI-γ
TIM3	CD28	ICOS	FcγRIII-γ
TIM3	CD28	ICOS	FcεRIβ
TIM3	CD28	ICOS	FcεRIγ
TIM3	CD28	ICOS	DAP10
TIM3	CD28	ICOS	DAP12
TIM3	CD28	ICOS	CD32
TIM3	CD28	ICOS	CD79a
TIM3	CD28	ICOS	CD79b

TIM3	CD28	CD27	CD8
TIM3	CD28	CD27	CD3ζ
TIM3	CD28	CD27	CD3δ
TIM3	CD28	CD27	CD3γ
TIM3	CD28	CD27	CD3ε
TIM3	CD28	CD27	FcγRI-γ
TIM3	CD28	CD27	FcγRIII-γ
TIM3	CD28	CD27	FcεRIβ
TIM3	CD28	CD27	FcεRIγ
TIM3	CD28	CD27	DAP10
TIM3	CD28	CD27	DAP12
TIM3	CD28	CD27	CD32
TIM3	CD28	CD27	CD79a
TIM3	CD28	CD27	CD79b
TIM3	CD28	CD28δ	CD8
TIM3	CD28	CD28δ	CD3ζ
TIM3	CD28	CD28δ	CD3δ
TIM3	CD28	CD28δ	CD3γ
TIM3	CD28	CD28δ	CD3ε
TIM3	CD28	CD28δ	FcγRI-γ
TIM3	CD28	CD28δ	FcγRIII-γ
TIM3	CD28	CD28δ	FcεRIβ
TIM3	CD28	CD28δ	FcεRIγ
TIM3	CD28	CD28δ	DAP10
TIM3	CD28	CD28δ	DAP12
TIM3	CD28	CD28δ	CD32
TIM3	CD28	CD28δ	CD79a
TIM3	CD28	CD28δ	CD79b
TIM3	CD28	CD80	CD8
TIM3	CD28	CD80	CD3ζ
TIM3	CD28	CD80	CD3δ
TIM3	CD28	CD80	CD3γ
TIM3	CD28	CD80	CD3ε
TIM3	CD28	CD80	FcγRI-γ
TIM3	CD28	CD80	FcγRIII-γ
TIM3	CD28	CD80	FcεRIβ
TIM3	CD28	CD80	FcεRIγ
TIM3	CD28	CD80	DAP10
TIM3	CD28	CD80	DAP12
TIM3	CD28	CD80	CD32
TIM3	CD28	CD80	CD79a
TIM3	CD28	CD80	CD79b
TIM3	CD28	CD86	CD8
TIM3	CD28	CD86	CD3ζ
TIM3	CD28	CD86	CD3δ
TIM3	CD28	CD86	CD3γ
TIM3	CD28	CD86	CD3ε
TIM3	CD28	CD86	FcγRI-γ
TIM3	CD28	CD86	FcγRIII-γ
TIM3	CD28	CD86	FcεRIβ
TIM3	CD28	CD86	FcεRIγ
TIM3	CD28	CD86	DAP10

TIM3	CD28	CD86	DAP12
TIM3	CD28	CD86	CD32
TIM3	CD28	CD86	CD79a
TIM3	CD28	CD86	CD79b
TIM3	CD28	OX40	CD8
TIM3	CD28	OX40	CD3ζ
TIM3	CD28	OX40	CD3δ
TIM3	CD28	OX40	CD3γ
TIM3	CD28	OX40	CD3ε
TIM3	CD28	OX40	FcγRI-γ
TIM3	CD28	OX40	FcγRIII-γ
TIM3	CD28	OX40	FcεRIβ
TIM3	CD28	OX40	FcεRIγ
TIM3	CD28	OX40	DAP10
TIM3	CD28	OX40	DAP12
TIM3	CD28	OX40	CD32
TIM3	CD28	OX40	CD79a
TIM3	CD28	OX40	CD79b
TIM3	CD28	DAP10	CD8
TIM3	CD28	DAP10	CD3ζ
TIM3	CD28	DAP10	CD3δ
TIM3	CD28	DAP10	CD3γ
TIM3	CD28	DAP10	CD3ε
TIM3	CD28	DAP10	FcγRI-γ
TIM3	CD28	DAP10	FcγRIII-γ
TIM3	CD28	DAP10	FcεRIβ
TIM3	CD28	DAP10	FcεRIγ
TIM3	CD28	DAP10	DAP10
TIM3	CD28	DAP10	DAP12
TIM3	CD28	DAP10	CD32
TIM3	CD28	DAP10	CD79a
TIM3	CD28	DAP10	CD79b
TIM3	CD28	DAP12	CD8
TIM3	CD28	DAP12	CD3ζ
TIM3	CD28	DAP12	CD3δ
TIM3	CD28	DAP12	CD3γ
TIM3	CD28	DAP12	CD3ε
TIM3	CD28	DAP12	FcγRI-γ
TIM3	CD28	DAP12	FcγRIII-γ
TIM3	CD28	DAP12	FcεRIβ
TIM3	CD28	DAP12	FcεRIγ
TIM3	CD28	DAP12	DAP10
TIM3	CD28	DAP12	DAP12
TIM3	CD28	DAP12	CD32
TIM3	CD28	DAP12	CD79a
TIM3	CD28	DAP12	CD79b
TIM3	CD28	MyD88	CD8
TIM3	CD28	MyD88	CD3ζ
TIM3	CD28	MyD88	CD3δ
TIM3	CD28	MyD88	CD3γ
TIM3	CD28	MyD88	CD3ε
TIM3	CD28	MyD88	FcγRI-γ

TIM3	CD28	MyD88	FcγRIII-γ
TIM3	CD28	MyD88	FcεRIβ
TIM3	CD28	MyD88	FcεRIγ
TIM3	CD28	MyD88	DAP10
TIM3	CD28	MyD88	DAP12
TIM3	CD28	MyD88	CD32
TIM3	CD28	MyD88	CD79a
TIM3	CD28	MyD88	CD79b
TIM3	CD28	CD7	CD8
TIM3	CD28	CD7	CD3ζ
TIM3	CD28	CD7	CD3δ
TIM3	CD28	CD7	CD3γ
TIM3	CD28	CD7	CD3ε
TIM3	CD28	CD7	FcγRI-γ
TIM3	CD28	CD7	FcγRIII-γ
TIM3	CD28	CD7	FcεRIβ
TIM3	CD28	CD7	FcεRIγ
TIM3	CD28	CD7	DAP10
TIM3	CD28	CD7	DAP12
TIM3	CD28	CD7	CD32
TIM3	CD28	CD7	CD79a
TIM3	CD28	CD7	CD79b
TIM3	CD28	BTNL3	CD8
TIM3	CD28	BTNL3	CD3ζ
TIM3	CD28	BTNL3	CD3δ
TIM3	CD28	BTNL3	CD3γ
TIM3	CD28	BTNL3	CD3ε
TIM3	CD28	BTNL3	FcγRI-γ
TIM3	CD28	BTNL3	FcγRIII-γ
TIM3	CD28	BTNL3	FcεRIβ
TIM3	CD28	BTNL3	FcεRIγ
TIM3	CD28	BTNL3	DAP10
TIM3	CD28	BTNL3	DAP12
TIM3	CD28	BTNL3	CD32
TIM3	CD28	BTNL3	CD79a
TIM3	CD28	BTNL3	CD79b
TIM3	CD28	NKG2D	CD8
TIM3	CD28	NKG2D	CD3ζ
TIM3	CD28	NKG2D	CD3δ
TIM3	CD28	NKG2D	CD3γ
TIM3	CD28	NKG2D	CD3ε
TIM3	CD28	NKG2D	FcγRI-γ
TIM3	CD28	NKG2D	FcγRIII-γ
TIM3	CD28	NKG2D	FcεRIβ
TIM3	CD28	NKG2D	FcεRIγ
TIM3	CD28	NKG2D	DAP10
TIM3	CD28	NKG2D	DAP12
TIM3	CD28	NKG2D	CD32
TIM3	CD28	NKG2D	CD79a
TIM3	CD28	NKG2D	CD79b
TIM3	CD8	CD28	CD8
TIM3	CD8	CD28	CD3ζ

TIM3	CD8	CD28	CD3δ
TIM3	CD8	CD28	CD3γ
TIM3	CD8	CD28	CD3ε
TIM3	CD8	CD28	FcγRI-γ
TIM3	CD8	CD28	FcγRIII-γ
TIM3	CD8	CD28	FcεRIβ
TIM3	CD8	CD28	FcεRIγ
TIM3	CD8	CD28	DAP10
TIM3	CD8	CD28	DAP12
TIM3	CD8	CD28	CD32
TIM3	CD8	CD28	CD79a
TIM3	CD8	CD28	CD79b
TIM3	CD8	CD8	CD8
TIM3	CD8	CD8	CD3ζ
TIM3	CD8	CD8	CD3δ
TIM3	CD8	CD8	CD3γ
TIM3	CD8	CD8	CD3ε
TIM3	CD8	CD8	FcγRI-γ
TIM3	CD8	CD8	FcγRIII-γ
TIM3	CD8	CD8	FcεRIβ
TIM3	CD8	CD8	FcεRIγ
TIM3	CD8	CD8	DAP10
TIM3	CD8	CD8	DAP12
TIM3	CD8	CD8	CD32
TIM3	CD8	CD8	CD79a
TIM3	CD8	CD8	CD79b
TIM3	CD8	CD4	CD8
TIM3	CD8	CD4	CD3ζ
TIM3	CD8	CD4	CD3δ
TIM3	CD8	CD4	CD3γ
TIM3	CD8	CD4	CD3ε
TIM3	CD8	CD4	FcγRI-γ
TIM3	CD8	CD4	FcγRIII-γ
TIM3	CD8	CD4	FcεRIβ
TIM3	CD8	CD4	FcεRIγ
TIM3	CD8	CD4	DAP10
TIM3	CD8	CD4	DAP12
TIM3	CD8	CD4	CD32
TIM3	CD8	CD4	CD79a
TIM3	CD8	CD4	CD79b
TIM3	CD8	b2c	CD8
TIM3	CD8	b2c	CD3ζ
TIM3	CD8	b2c	CD3δ
TIM3	CD8	b2c	CD3γ
TIM3	CD8	b2c	CD3ε
TIM3	CD8	b2c	FcγRI-γ
TIM3	CD8	b2c	FcγRIII-γ
TIM3	CD8	b2c	FcεRIβ
TIM3	CD8	b2c	FcεRIγ
TIM3	CD8	b2c	DAP10
TIM3	CD8	b2c	DAP12
TIM3	CD8	b2c	CD32

TIM3	CD8	b2c	CD79a
TIM3	CD8	b2c	CD79b
TIM3	CD8	CD137/41BB	CD8
TIM3	CD8	CD137/41BB	CD3ζ
TIM3	CD8	CD137/41BB	CD3δ
TIM3	CD8	CD137/41BB	CD3γ
TIM3	CD8	CD137/41BB	CD3ε
TIM3	CD8	CD137/41BB	FcγRI-γ
TIM3	CD8	CD137/41BB	FcγRIII-γ
TIM3	CD8	CD137/41BB	FcεRIβ
TIM3	CD8	CD137/41BB	FcεRIγ
TIM3	CD8	CD137/41BB	DAP10
TIM3	CD8	CD137/41BB	DAP12
TIM3	CD8	CD137/41BB	CD32
TIM3	CD8	CD137/41BB	CD79a
TIM3	CD8	CD137/41BB	CD79b
TIM3	CD8	ICOS	CD8
TIM3	CD8	ICOS	CD3ζ
TIM3	CD8	ICOS	CD3δ
TIM3	CD8	ICOS	CD3γ
TIM3	CD8	ICOS	CD3ε
TIM3	CD8	ICOS	FcγRI-γ
TIM3	CD8	ICOS	FcγRIII-γ
TIM3	CD8	ICOS	FcεRIβ
TIM3	CD8	ICOS	FcεRIγ
TIM3	CD8	ICOS	DAP10
TIM3	CD8	ICOS	DAP12
TIM3	CD8	ICOS	CD32
TIM3	CD8	ICOS	CD79a
TIM3	CD8	ICOS	CD79b
TIM3	CD8	CD27	CD8
TIM3	CD8	CD27	CD3ζ
TIM3	CD8	CD27	CD3δ
TIM3	CD8	CD27	CD3γ
TIM3	CD8	CD27	CD3ε
TIM3	CD8	CD27	FcγRI-γ
TIM3	CD8	CD27	FcγRIII-γ
TIM3	CD8	CD27	FcεRIβ
TIM3	CD8	CD27	FcεRIγ
TIM3	CD8	CD27	DAP10
TIM3	CD8	CD27	DAP12
TIM3	CD8	CD27	CD32
TIM3	CD8	CD27	CD79a
TIM3	CD8	CD27	CD79b
TIM3	CD8	CD28δ	CD8
TIM3	CD8	CD28δ	CD3ζ
TIM3	CD8	CD28δ	CD3δ
TIM3	CD8	CD28δ	CD3γ
TIM3	CD8	CD28δ	CD3ε
TIM3	CD8	CD28δ	FcγRI-γ
TIM3	CD8	CD28δ	FcγRIII-γ
TIM3	CD8	CD28δ	FcεRIβ

TIM3	CD8	CD28δ	FcεRIγ
TIM3	CD8	CD28δ	DAP10
TIM3	CD8	CD28δ	DAP12
TIM3	CD8	CD28δ	CD32
TIM3	CD8	CD28δ	CD79a
TIM3	CD8	CD28δ	CD79b
TIM3	CD8	CD80	CD8
TIM3	CD8	CD80	CD3ζ
TIM3	CD8	CD80	CD3δ
TIM3	CD8	CD80	CD3γ
TIM3	CD8	CD80	CD3ε
TIM3	CD8	CD80	FcγRI-γ
TIM3	CD8	CD80	FcγRIII-γ
TIM3	CD8	CD80	FcεRIβ
TIM3	CD8	CD80	FcεRIγ
TIM3	CD8	CD80	DAP10
TIM3	CD8	CD80	DAP12
TIM3	CD8	CD80	CD32
TIM3	CD8	CD80	CD79a
TIM3	CD8	CD80	CD79b
TIM3	CD8	CD86	CD8
TIM3	CD8	CD86	CD3ζ
TIM3	CD8	CD86	CD3δ
TIM3	CD8	CD86	CD3γ
TIM3	CD8	CD86	CD3ε
TIM3	CD8	CD86	FcγRI-γ
TIM3	CD8	CD86	FcγRIII-γ
TIM3	CD8	CD86	FcεRIβ
TIM3	CD8	CD86	FcεRIγ
TIM3	CD8	CD86	DAP10
TIM3	CD8	CD86	DAP12
TIM3	CD8	CD86	CD32
TIM3	CD8	CD86	CD79a
TIM3	CD8	CD86	CD79b
TIM3	CD8	OX40	CD8
TIM3	CD8	OX40	CD3ζ
TIM3	CD8	OX40	CD3δ
TIM3	CD8	OX40	CD3γ
TIM3	CD8	OX40	CD3ε
TIM3	CD8	OX40	FcγRI-γ
TIM3	CD8	OX40	FcγRIII-γ
TIM3	CD8	OX40	FcεRIβ
TIM3	CD8	OX40	FcεRIγ
TIM3	CD8	OX40	DAP10
TIM3	CD8	OX40	DAP12
TIM3	CD8	OX40	CD32
TIM3	CD8	OX40	CD79a
TIM3	CD8	OX40	CD79b
TIM3	CD8	DAP10	CD8
TIM3	CD8	DAP10	CD3ζ
TIM3	CD8	DAP10	CD3δ
TIM3	CD8	DAP10	CD3γ

TIM3	CD8	DAP10	CD3ε
TIM3	CD8	DAP10	FcγRI-γ
TIM3	CD8	DAP10	FcγRIII-γ
TIM3	CD8	DAP10	FcεRIβ
TIM3	CD8	DAP10	FcεRIγ
TIM3	CD8	DAP10	DAP10
TIM3	CD8	DAP10	DAP12
TIM3	CD8	DAP10	CD32
TIM3	CD8	DAP10	CD79a
TIM3	CD8	DAP10	CD79b
TIM3	CD8	DAP12	CD8
TIM3	CD8	DAP12	CD3ζ
TIM3	CD8	DAP12	CD3δ
TIM3	CD8	DAP12	CD3γ
TIM3	CD8	DAP12	CD3ε
TIM3	CD8	DAP12	FcγRI-γ
TIM3	CD8	DAP12	FcγRIII-γ
TIM3	CD8	DAP12	FcεRIβ
TIM3	CD8	DAP12	FcεRIγ
TIM3	CD8	DAP12	DAP10
TIM3	CD8	DAP12	DAP12
TIM3	CD8	DAP12	CD32
TIM3	CD8	DAP12	CD79a
TIM3	CD8	DAP12	CD79b
TIM3	CD8	MyD88	CD8
TIM3	CD8	MyD88	CD3ζ
TIM3	CD8	MyD88	CD3δ
TIM3	CD8	MyD88	CD3γ
TIM3	CD8	MyD88	CD3ε
TIM3	CD8	MyD88	FcγRI-γ
TIM3	CD8	MyD88	FcγRIII-γ
TIM3	CD8	MyD88	FcεRIβ
TIM3	CD8	MyD88	FcεRIγ
TIM3	CD8	MyD88	DAP10
TIM3	CD8	MyD88	DAP12
TIM3	CD8	MyD88	CD32
TIM3	CD8	MyD88	CD79a
TIM3	CD8	MyD88	CD79b
TIM3	CD8	CD7	CD8
TIM3	CD8	CD7	CD3ζ
TIM3	CD8	CD7	CD3δ
TIM3	CD8	CD7	CD3γ
TIM3	CD8	CD7	CD3ε
TIM3	CD8	CD7	FcγRI-γ
TIM3	CD8	CD7	FcγRIII-γ
TIM3	CD8	CD7	FcεRIβ
TIM3	CD8	CD7	FcεRIγ
TIM3	CD8	CD7	DAP10
TIM3	CD8	CD7	DAP12
TIM3	CD8	CD7	CD32
TIM3	CD8	CD7	CD79a
TIM3	CD8	CD7	CD79b

TIM3	CD8	BTNL3	CD8
TIM3	CD8	BTNL3	CD3ζ
TIM3	CD8	BTNL3	CD3δ
TIM3	CD8	BTNL3	CD3γ
TIM3	CD8	BTNL3	CD3ε
TIM3	CD8	BTNL3	FcγRI-γ
TIM3	CD8	BTNL3	FcγRIII-γ
TIM3	CD8	BTNL3	FcεRIβ
TIM3	CD8	BTNL3	FcεRIγ
TIM3	CD8	BTNL3	DAP10
TIM3	CD8	BTNL3	DAP12
TIM3	CD8	BTNL3	CD32
TIM3	CD8	BTNL3	CD79a
TIM3	CD8	BTNL3	CD79b
TIM3	CD8	NKG2D	CD8
TIM3	CD8	NKG2D	CD3ζ
TIM3	CD8	NKG2D	CD3δ
TIM3	CD8	NKG2D	CD3γ
TIM3	CD8	NKG2D	CD3ε
TIM3	CD8	NKG2D	FcγRI-γ
TIM3	CD8	NKG2D	FcγRIII-γ
TIM3	CD8	NKG2D	FcεRIβ
TIM3	CD8	NKG2D	FcεRIγ
TIM3	CD8	NKG2D	DAP10
TIM3	CD8	NKG2D	DAP12
TIM3	CD8	NKG2D	CD32
TIM3	CD8	NKG2D	CD79a
TIM3	CD8	NKG2D	CD79b
TIM3	CD4	CD28	CD8
TIM3	CD4	CD28	CD3ζ
TIM3	CD4	CD28	CD3δ
TIM3	CD4	CD28	CD3γ
TIM3	CD4	CD28	CD3ε
TIM3	CD4	CD28	FcγRI-γ
TIM3	CD4	CD28	FcγRIII-γ
TIM3	CD4	CD28	FcεRIβ
TIM3	CD4	CD28	FcεRIγ
TIM3	CD4	CD28	DAP10
TIM3	CD4	CD28	DAP12
TIM3	CD4	CD28	CD32
TIM3	CD4	CD28	CD79a
TIM3	CD4	CD28	CD79b
TIM3	CD4	CD8	CD8
TIM3	CD4	CD8	CD3ζ
TIM3	CD4	CD8	CD3δ
TIM3	CD4	CD8	CD3γ
TIM3	CD4	CD8	CD3ε
TIM3	CD4	CD8	FcγRI-γ
TIM3	CD4	CD8	FcγRIII-γ
TIM3	CD4	CD8	FcεRIβ
TIM3	CD4	CD8	FcεRIγ
TIM3	CD4	CD8	DAP10

TIM3	CD4	CD8	DAP12
TIM3	CD4	CD8	CD32
TIM3	CD4	CD8	CD79a
TIM3	CD4	CD8	CD79b
TIM3	CD4	CD4	CD8
TIM3	CD4	CD4	CD3ζ
TIM3	CD4	CD4	CD3δ
TIM3	CD4	CD4	CD3γ
TIM3	CD4	CD4	CD3ε
TIM3	CD4	CD4	FcγRI-γ
TIM3	CD4	CD4	FcγRIII-γ
TIM3	CD4	CD4	FcεRIβ
TIM3	CD4	CD4	FcεRIγ
TIM3	CD4	CD4	DAP10
TIM3	CD4	CD4	DAP12
TIM3	CD4	CD4	CD32
TIM3	CD4	CD4	CD79a
TIM3	CD4	CD4	CD79b
TIM3	CD4	b2c	CD8
TIM3	CD4	b2c	CD3ζ
TIM3	CD4	b2c	CD3δ
TIM3	CD4	b2c	CD3γ
TIM3	CD4	b2c	CD3ε
TIM3	CD4	b2c	FcγRI-γ
TIM3	CD4	b2c	FcγRIII-γ
TIM3	CD4	b2c	FcεRIβ
TIM3	CD4	b2c	FcεRIγ
TIM3	CD4	b2c	DAP10
TIM3	CD4	b2c	DAP12
TIM3	CD4	b2c	CD32
TIM3	CD4	b2c	CD79a
TIM3	CD4	b2c	CD79b
TIM3	CD4	CD137/41BB	CD8
TIM3	CD4	CD137/41BB	CD3ζ
TIM3	CD4	CD137/41BB	CD3δ
TIM3	CD4	CD137/41BB	CD3γ
TIM3	CD4	CD137/41BB	CD3ε
TIM3	CD4	CD137/41BB	FcγRI-γ
TIM3	CD4	CD137/41BB	FcγRIII-γ
TIM3	CD4	CD137/41BB	FcεRIβ
TIM3	CD4	CD137/41BB	FcεRIγ
TIM3	CD4	CD137/41BB	DAP10
TIM3	CD4	CD137/41BB	DAP12
TIM3	CD4	CD137/41BB	CD32
TIM3	CD4	CD137/41BB	CD79a
TIM3	CD4	CD137/41BB	CD79b
TIM3	CD4	ICOS	CD8
TIM3	CD4	ICOS	CD3ζ
TIM3	CD4	ICOS	CD3δ
TIM3	CD4	ICOS	CD3γ
TIM3	CD4	ICOS	CD3ε
TIM3	CD4	ICOS	FcγRI-γ

TIM3	CD4	ICOS	FcγRIII-γ
TIM3	CD4	ICOS	FcεRIβ
TIM3	CD4	ICOS	FcεRIγ
TIM3	CD4	ICOS	DAP10
TIM3	CD4	ICOS	DAP12
TIM3	CD4	ICOS	CD32
TIM3	CD4	ICOS	CD79a
TIM3	CD4	ICOS	CD79b
TIM3	CD4	CD27	CD8
TIM3	CD4	CD27	CD3ζ
TIM3	CD4	CD27	CD3δ
TIM3	CD4	CD27	CD3γ
TIM3	CD4	CD27	CD3ε
TIM3	CD4	CD27	FcγRI-γ
TIM3	CD4	CD27	FcγRIII-γ
TIM3	CD4	CD27	FcεRIβ
TIM3	CD4	CD27	FcεRIγ
TIM3	CD4	CD27	DAP10
TIM3	CD4	CD27	DAP12
TIM3	CD4	CD27	CD32
TIM3	CD4	CD27	CD79a
TIM3	CD4	CD27	CD79b
TIM3	CD4	CD28δ	CD8
TIM3	CD4	CD28δ	CD3ζ
TIM3	CD4	CD28δ	CD3δ
TIM3	CD4	CD28δ	CD3γ
TIM3	CD4	CD28δ	CD3ε
TIM3	CD4	CD28δ	FcγRI-γ
TIM3	CD4	CD28δ	FcγRIII-γ
TIM3	CD4	CD28δ	FcεRIβ
TIM3	CD4	CD28δ	FcεRIγ
TIM3	CD4	CD28δ	DAP10
TIM3	CD4	CD28δ	DAP12
TIM3	CD4	CD28δ	CD32
TIM3	CD4	CD28δ	CD79a
TIM3	CD4	CD28δ	CD79b
TIM3	CD4	CD80	CD8
TIM3	CD4	CD80	CD3ζ
TIM3	CD4	CD80	CD3δ
TIM3	CD4	CD80	CD3γ
TIM3	CD4	CD80	CD3ε
TIM3	CD4	CD80	FcγRI-γ
TIM3	CD4	CD80	FcγRIII-γ
TIM3	CD4	CD80	FcεRIβ
TIM3	CD4	CD80	FcεRIγ
TIM3	CD4	CD80	DAP10
TIM3	CD4	CD80	DAP12
TIM3	CD4	CD80	CD32
TIM3	CD4	CD80	CD79a
TIM3	CD4	CD80	CD79b
TIM3	CD4	CD86	CD8
TIM3	CD4	CD86	CD3ζ

TIM3	CD4	CD86	CD3δ
TIM3	CD4	CD86	CD3γ
TIM3	CD4	CD86	CD3ε
TIM3	CD4	CD86	FcγRI-γ
TIM3	CD4	CD86	FcγRIII-γ
TIM3	CD4	CD86	FcεRIβ
TIM3	CD4	CD86	FcεRIγ
TIM3	CD4	CD86	DAP10
TIM3	CD4	CD86	DAP12
TIM3	CD4	CD86	CD32
TIM3	CD4	CD86	CD79a
TIM3	CD4	CD86	CD79b
TIM3	CD4	OX40	CD8
TIM3	CD4	OX40	CD3ζ
TIM3	CD4	OX40	CD3δ
TIM3	CD4	OX40	CD3γ
TIM3	CD4	OX40	CD3ε
TIM3	CD4	OX40	FcγRI-γ
TIM3	CD4	OX40	FcγRIII-γ
TIM3	CD4	OX40	FcεRIβ
TIM3	CD4	OX40	FcεRIγ
TIM3	CD4	OX40	DAP10
TIM3	CD4	OX40	DAP12
TIM3	CD4	OX40	CD32
TIM3	CD4	OX40	CD79a
TIM3	CD4	OX40	CD79b
TIM3	CD4	DAP10	CD8
TIM3	CD4	DAP10	CD3ζ
TIM3	CD4	DAP10	CD3δ
TIM3	CD4	DAP10	CD3γ
TIM3	CD4	DAP10	CD3ε
TIM3	CD4	DAP10	FcγRI-γ
TIM3	CD4	DAP10	FcγRIII-γ
TIM3	CD4	DAP10	FcεRIβ
TIM3	CD4	DAP10	FcεRIγ
TIM3	CD4	DAP10	DAP10
TIM3	CD4	DAP10	DAP12
TIM3	CD4	DAP10	CD32
TIM3	CD4	DAP10	CD79a
TIM3	CD4	DAP10	CD79b
TIM3	CD4	DAP12	CD8
TIM3	CD4	DAP12	CD3ζ
TIM3	CD4	DAP12	CD3δ
TIM3	CD4	DAP12	CD3γ
TIM3	CD4	DAP12	CD3ε
TIM3	CD4	DAP12	FcγRI-γ
TIM3	CD4	DAP12	FcγRIII-γ
TIM3	CD4	DAP12	FcεRIβ
TIM3	CD4	DAP12	FcεRIγ
TIM3	CD4	DAP12	DAP10
TIM3	CD4	DAP12	DAP12
TIM3	CD4	DAP12	CD32

TIM3	CD4	DAP12	CD79a
TIM3	CD4	DAP12	CD79b
TIM3	CD4	MyD88	CD8
TIM3	CD4	MyD88	CD3ζ
TIM3	CD4	MyD88	CD3δ
TIM3	CD4	MyD88	CD3γ
TIM3	CD4	MyD88	CD3ε
TIM3	CD4	MyD88	FcγRI-γ
TIM3	CD4	MyD88	FcγRIII-γ
TIM3	CD4	MyD88	FcεRIβ
TIM3	CD4	MyD88	FcεRIγ
TIM3	CD4	MyD88	DAP10
TIM3	CD4	MyD88	DAP12
TIM3	CD4	MyD88	CD32
TIM3	CD4	MyD88	CD79a
TIM3	CD4	MyD88	CD79b
TIM3	CD4	CD7	CD8
TIM3	CD4	CD7	CD3ζ
TIM3	CD4	CD7	CD3δ
TIM3	CD4	CD7	CD3γ
TIM3	CD4	CD7	CD3ε
TIM3	CD4	CD7	FcγRI-γ
TIM3	CD4	CD7	FcγRIII-γ
TIM3	CD4	CD7	FcεRIβ
TIM3	CD4	CD7	FcεRIγ
TIM3	CD4	CD7	DAP10
TIM3	CD4	CD7	DAP12
TIM3	CD4	CD7	CD32
TIM3	CD4	CD7	CD79a
TIM3	CD4	CD7	CD79b
TIM3	CD4	BTNL3	CD8
TIM3	CD4	BTNL3	CD3ζ
TIM3	CD4	BTNL3	CD3δ
TIM3	CD4	BTNL3	CD3γ
TIM3	CD4	BTNL3	CD3ε
TIM3	CD4	BTNL3	FcγRI-γ
TIM3	CD4	BTNL3	FcγRIII-γ
TIM3	CD4	BTNL3	FcεRIβ
TIM3	CD4	BTNL3	FcεRIγ
TIM3	CD4	BTNL3	DAP10
TIM3	CD4	BTNL3	DAP12
TIM3	CD4	BTNL3	CD32
TIM3	CD4	BTNL3	CD79a
TIM3	CD4	BTNL3	CD79b
TIM3	CD4	NKG2D	CD8
TIM3	CD4	NKG2D	CD3ζ
TIM3	CD4	NKG2D	CD3δ
TIM3	CD4	NKG2D	CD3γ
TIM3	CD4	NKG2D	CD3ε
TIM3	CD4	NKG2D	FcγRI-γ
TIM3	CD4	NKG2D	FcγRIII-γ
TIM3	CD4	NKG2D	FcεRIβ

TIM3	CD4	NKG2D	FcεRIγ
TIM3	CD4	NKG2D	DAP10
TIM3	CD4	NKG2D	DAP12
TIM3	CD4	NKG2D	CD32
TIM3	CD4	NKG2D	CD79a
TIM3	CD4	NKG2D	CD79b
TIM3	b2c	CD28	CD8
TIM3	b2c	CD28	CD3ζ
TIM3	b2c	CD28	CD3δ
TIM3	b2c	CD28	CD3γ
TIM3	b2c	CD28	CD3ε
TIM3	b2c	CD28	FcγRI-γ
TIM3	b2c	CD28	FcγRIII-γ
TIM3	b2c	CD28	FcεRIβ
TIM3	b2c	CD28	FcεRIγ
TIM3	b2c	CD28	DAP10
TIM3	b2c	CD28	DAP12
TIM3	b2c	CD28	CD32
TIM3	b2c	CD28	CD79a
TIM3	b2c	CD28	CD79b
TIM3	b2c	CD8	CD8
TIM3	b2c	CD8	CD3ζ
TIM3	b2c	CD8	CD3δ
TIM3	b2c	CD8	CD3γ
TIM3	b2c	CD8	CD3ε
TIM3	b2c	CD8	FcγRI-γ
TIM3	b2c	CD8	FcγRIII-γ
TIM3	b2c	CD8	FcεRIβ
TIM3	b2c	CD8	FcεRIγ
TIM3	b2c	CD8	DAP10
TIM3	b2c	CD8	DAP12
TIM3	b2c	CD8	CD32
TIM3	b2c	CD8	CD79a
TIM3	b2c	CD8	CD79b
TIM3	b2c	CD4	CD8
TIM3	b2c	CD4	CD3ζ
TIM3	b2c	CD4	CD3δ
TIM3	b2c	CD4	CD3γ
TIM3	b2c	CD4	CD3ε
TIM3	b2c	CD4	FcγRI-γ
TIM3	b2c	CD4	FcγRIII-γ
TIM3	b2c	CD4	FcεRIβ
TIM3	b2c	CD4	FcεRIγ
TIM3	b2c	CD4	DAP10
TIM3	b2c	CD4	DAP12
TIM3	b2c	CD4	CD32
TIM3	b2c	CD4	CD79a
TIM3	b2c	CD4	CD79b
TIM3	b2c	b2c	CD8
TIM3	b2c	b2c	CD3ζ
TIM3	b2c	b2c	CD3δ
TIM3	b2c	b2c	CD3γ

TIM3	b2c	b2c	CD3ε
TIM3	b2c	b2c	FcγRI-γ
TIM3	b2c	b2c	FcγRIII-γ
TIM3	b2c	b2c	FcεRIβ
TIM3	b2c	b2c	FcεRIγ
TIM3	b2c	b2c	DAP10
TIM3	b2c	b2c	DAP12
TIM3	b2c	b2c	CD32
TIM3	b2c	b2c	CD79a
TIM3	b2c	b2c	CD79b
TIM3	b2c	CD137/41BB	CD8
TIM3	b2c	CD137/41BB	CD3ζ
TIM3	b2c	CD137/41BB	CD3δ
TIM3	b2c	CD137/41BB	CD3γ
TIM3	b2c	CD137/41BB	CD3ε
TIM3	b2c	CD137/41BB	FcγRI-γ
TIM3	b2c	CD137/41BB	FcγRIII-γ
TIM3	b2c	CD137/41BB	FcεRIβ
TIM3	b2c	CD137/41BB	FcεRIγ
TIM3	b2c	CD137/41BB	DAP10
TIM3	b2c	CD137/41BB	DAP12
TIM3	b2c	CD137/41BB	CD32
TIM3	b2c	CD137/41BB	CD79a
TIM3	b2c	CD137/41BB	CD79b
TIM3	b2c	ICOS	CD8
TIM3	b2c	ICOS	CD3ζ
TIM3	b2c	ICOS	CD3δ
TIM3	b2c	ICOS	CD3γ
TIM3	b2c	ICOS	CD3ε
TIM3	b2c	ICOS	FcγRI-γ
TIM3	b2c	ICOS	FcγRIII-γ
TIM3	b2c	ICOS	FcεRIβ
TIM3	b2c	ICOS	FcεRIγ
TIM3	b2c	ICOS	DAP10
TIM3	b2c	ICOS	DAP12
TIM3	b2c	ICOS	CD32
TIM3	b2c	ICOS	CD79a
TIM3	b2c	ICOS	CD79b
TIM3	b2c	CD27	CD8
TIM3	b2c	CD27	CD3ζ
TIM3	b2c	CD27	CD3δ
TIM3	b2c	CD27	CD3γ
TIM3	b2c	CD27	CD3ε
TIM3	b2c	CD27	FcγRI-γ
TIM3	b2c	CD27	FcγRIII-γ
TIM3	b2c	CD27	FcεRIβ
TIM3	b2c	CD27	FcεRIγ
TIM3	b2c	CD27	DAP10
TIM3	b2c	CD27	DAP12
TIM3	b2c	CD27	CD32
TIM3	b2c	CD27	CD79a
TIM3	b2c	CD27	CD79b

TIM3	b2c	CD28δ	CD8
TIM3	b2c	CD28δ	CD3ζ
TIM3	b2c	CD28δ	CD3δ
TIM3	b2c	CD28δ	CD3γ
TIM3	b2c	CD28δ	CD3ε
TIM3	b2c	CD28δ	FcγRI-γ
TIM3	b2c	CD28δ	FcγRIII-γ
TIM3	b2c	CD28δ	FcεRIβ
TIM3	b2c	CD28δ	FcεRIγ
TIM3	b2c	CD28δ	DAP10
TIM3	b2c	CD28δ	DAP12
TIM3	b2c	CD28δ	CD32
TIM3	b2c	CD28δ	CD79a
TIM3	b2c	CD28δ	CD79b
TIM3	b2c	CD80	CD8
TIM3	b2c	CD80	CD3ζ
TIM3	b2c	CD80	CD3δ
TIM3	b2c	CD80	CD3γ
TIM3	b2c	CD80	CD3ε
TIM3	b2c	CD80	FcγRI-γ
TIM3	b2c	CD80	FcγRIII-γ
TIM3	b2c	CD80	FcεRIβ
TIM3	b2c	CD80	FcεRIγ
TIM3	b2c	CD80	DAP10
TIM3	b2c	CD80	DAP12
TIM3	b2c	CD80	CD32
TIM3	b2c	CD80	CD79a
TIM3	b2c	CD80	CD79b
TIM3	b2c	CD86	CD8
TIM3	b2c	CD86	CD3ζ
TIM3	b2c	CD86	CD3δ
TIM3	b2c	CD86	CD3γ
TIM3	b2c	CD86	CD3ε
TIM3	b2c	CD86	FcγRI-γ
TIM3	b2c	CD86	FcγRIII-γ
TIM3	b2c	CD86	FcεRIβ
TIM3	b2c	CD86	FcεRIγ
TIM3	b2c	CD86	DAP10
TIM3	b2c	CD86	DAP12
TIM3	b2c	CD86	CD32
TIM3	b2c	CD86	CD79a
TIM3	b2c	CD86	CD79b
TIM3	b2c	OX40	CD8
TIM3	b2c	OX40	CD3ζ
TIM3	b2c	OX40	CD3δ
TIM3	b2c	OX40	CD3γ
TIM3	b2c	OX40	CD3ε
TIM3	b2c	OX40	FcγRI-γ
TIM3	b2c	OX40	FcγRIII-γ
TIM3	b2c	OX40	FcεRIβ
TIM3	b2c	OX40	FcεRIγ
TIM3	b2c	OX40	DAP10

TIM3	b2c	OX40	DAP12
TIM3	b2c	OX40	CD32
TIM3	b2c	OX40	CD79a
TIM3	b2c	OX40	CD79b
TIM3	b2c	DAP10	CD8
TIM3	b2c	DAP10	CD3ζ
TIM3	b2c	DAP10	CD3δ
TIM3	b2c	DAP10	CD3γ
TIM3	b2c	DAP10	CD3ε
TIM3	b2c	DAP10	FcγRI-γ
TIM3	b2c	DAP10	FcγRIII-γ
TIM3	b2c	DAP10	FcεRIβ
TIM3	b2c	DAP10	FcεRIγ
TIM3	b2c	DAP10	DAP10
TIM3	b2c	DAP10	DAP12
TIM3	b2c	DAP10	CD32
TIM3	b2c	DAP10	CD79a
TIM3	b2c	DAP10	CD79b
TIM3	b2c	DAP12	CD8
TIM3	b2c	DAP12	CD3ζ
TIM3	b2c	DAP12	CD3δ
TIM3	b2c	DAP12	CD3γ
TIM3	b2c	DAP12	CD3ε
TIM3	b2c	DAP12	FcγRI-γ
TIM3	b2c	DAP12	FcγRIII-γ
TIM3	b2c	DAP12	FcεRIβ
TIM3	b2c	DAP12	FcεRIγ
TIM3	b2c	DAP12	DAP10
TIM3	b2c	DAP12	DAP12
TIM3	b2c	DAP12	CD32
TIM3	b2c	DAP12	CD79a
TIM3	b2c	DAP12	CD79b
TIM3	b2c	MyD88	CD8
TIM3	b2c	MyD88	CD3ζ
TIM3	b2c	MyD88	CD3δ
TIM3	b2c	MyD88	CD3γ
TIM3	b2c	MyD88	CD3ε
TIM3	b2c	MyD88	FcγRI-γ
TIM3	b2c	MyD88	FcγRIII-γ
TIM3	b2c	MyD88	FcεRIβ
TIM3	b2c	MyD88	FcεRIγ
TIM3	b2c	MyD88	DAP10
TIM3	b2c	MyD88	DAP12
TIM3	b2c	MyD88	CD32
TIM3	b2c	MyD88	CD79a
TIM3	b2c	MyD88	CD79b
TIM3	b2c	CD7	CD8
TIM3	b2c	CD7	CD3ζ
TIM3	b2c	CD7	CD3δ
TIM3	b2c	CD7	CD3γ
TIM3	b2c	CD7	CD3ε
TIM3	b2c	CD7	FcγRI-γ

TIM3	b2c	CD7	FcγRIII-γ
TIM3	b2c	CD7	FcεRIβ
TIM3	b2c	CD7	FcεRIγ
TIM3	b2c	CD7	DAP10
TIM3	b2c	CD7	DAP12
TIM3	b2c	CD7	CD32
TIM3	b2c	CD7	CD79a
TIM3	b2c	CD7	CD79b
TIM3	b2c	BTNL3	CD8
TIM3	b2c	BTNL3	CD3ζ
TIM3	b2c	BTNL3	CD3δ
TIM3	b2c	BTNL3	CD3γ
TIM3	b2c	BTNL3	CD3ε
TIM3	b2c	BTNL3	FcγRI-γ
TIM3	b2c	BTNL3	FcγRIII-γ
TIM3	b2c	BTNL3	FcεRIβ
TIM3	b2c	BTNL3	FcεRIγ
TIM3	b2c	BTNL3	DAP10
TIM3	b2c	BTNL3	DAP12
TIM3	b2c	BTNL3	CD32
TIM3	b2c	BTNL3	CD79a
TIM3	b2c	BTNL3	CD79b
TIM3	b2c	NKG2D	CD8
TIM3	b2c	NKG2D	CD3ζ
TIM3	b2c	NKG2D	CD3δ
TIM3	b2c	NKG2D	CD3γ
TIM3	b2c	NKG2D	CD3ε
TIM3	b2c	NKG2D	FcγRI-γ
TIM3	b2c	NKG2D	FcγRIII-γ
TIM3	b2c	NKG2D	FcεRIβ
TIM3	b2c	NKG2D	FcεRIγ
TIM3	b2c	NKG2D	DAP10
TIM3	b2c	NKG2D	DAP12
TIM3	b2c	NKG2D	CD32
TIM3	b2c	NKG2D	CD79a
TIM3	b2c	NKG2D	CD79b
TIM3	CD137/41BB	CD28	CD8
TIM3	CD137/41BB	CD28	CD3ζ
TIM3	CD137/41BB	CD28	CD3δ
TIM3	CD137/41BB	CD28	CD3γ
TIM3	CD137/41BB	CD28	CD3ε
TIM3	CD137/41BB	CD28	FcγRI-γ
TIM3	CD137/41BB	CD28	FcγRIII-γ
TIM3	CD137/41BB	CD28	FcεRIβ
TIM3	CD137/41BB	CD28	FcεRIγ
TIM3	CD137/41BB	CD28	DAP10
TIM3	CD137/41BB	CD28	DAP12
TIM3	CD137/41BB	CD28	CD32
TIM3	CD137/41BB	CD28	CD79a
TIM3	CD137/41BB	CD28	CD79b
TIM3	CD137/41BB	CD8	CD8
TIM3	CD137/41BB	CD8	CD3ζ

TIM3	CD137/41BB	CD8	CD3δ
TIM3	CD137/41BB	CD8	CD3γ
TIM3	CD137/41BB	CD8	CD3ε
TIM3	CD137/41BB	CD8	FcγRI-γ
TIM3	CD137/41BB	CD8	FcγRIII-γ
TIM3	CD137/41BB	CD8	FcεRIβ
TIM3	CD137/41BB	CD8	FcεRIγ
TIM3	CD137/41BB	CD8	DAP10
TIM3	CD137/41BB	CD8	DAP12
TIM3	CD137/41BB	CD8	CD32
TIM3	CD137/41BB	CD8	CD79a
TIM3	CD137/41BB	CD8	CD79b
TIM3	CD137/41BB	CD4	CD8
TIM3	CD137/41BB	CD4	CD3ζ
TIM3	CD137/41BB	CD4	CD3δ
TIM3	CD137/41BB	CD4	CD3γ
TIM3	CD137/41BB	CD4	CD3ε
TIM3	CD137/41BB	CD4	FcγRI-γ
TIM3	CD137/41BB	CD4	FcγRIII-γ
TIM3	CD137/41BB	CD4	FcεRIβ
TIM3	CD137/41BB	CD4	FcεRIγ
TIM3	CD137/41BB	CD4	DAP10
TIM3	CD137/41BB	CD4	DAP12
TIM3	CD137/41BB	CD4	CD32
TIM3	CD137/41BB	CD4	CD79a
TIM3	CD137/41BB	CD4	CD79b
TIM3	CD137/41BB	b2c	CD8
TIM3	CD137/41BB	b2c	CD3ζ
TIM3	CD137/41BB	b2c	CD3δ
TIM3	CD137/41BB	b2c	CD3γ
TIM3	CD137/41BB	b2c	CD3ε
TIM3	CD137/41BB	b2c	FcγRI-γ
TIM3	CD137/41BB	b2c	FcγRIII-γ
TIM3	CD137/41BB	b2c	FcεRIβ
TIM3	CD137/41BB	b2c	FcεRIγ
TIM3	CD137/41BB	b2c	DAP10
TIM3	CD137/41BB	b2c	DAP12
TIM3	CD137/41BB	b2c	CD32
TIM3	CD137/41BB	b2c	CD79a
TIM3	CD137/41BB	b2c	CD79b
TIM3	CD137/41BB	CD137/41BB	CD8
TIM3	CD137/41BB	CD137/41BB	CD3ζ
TIM3	CD137/41BB	CD137/41BB	CD3δ
TIM3	CD137/41BB	CD137/41BB	CD3γ
TIM3	CD137/41BB	CD137/41BB	CD3ε
TIM3	CD137/41BB	CD137/41BB	FcγRI-γ
TIM3	CD137/41BB	CD137/41BB	FcγRIII-γ
TIM3	CD137/41BB	CD137/41BB	FcεRIβ
TIM3	CD137/41BB	CD137/41BB	FcεRIγ
TIM3	CD137/41BB	CD137/41BB	DAP10
TIM3	CD137/41BB	CD137/41BB	DAP12
TIM3	CD137/41BB	CD137/41BB	CD32

TIM3	CD137/41BB	CD137/41BB	CD79a
TIM3	CD137/41BB	CD137/41BB	CD79b
TIM3	CD137/41BB	ICOS	CD8
TIM3	CD137/41BB	ICOS	CD3ζ
TIM3	CD137/41BB	ICOS	CD3δ
TIM3	CD137/41BB	ICOS	CD3γ
TIM3	CD137/41BB	ICOS	CD3ε
TIM3	CD137/41BB	ICOS	FcγRI-γ
TIM3	CD137/41BB	ICOS	FcγRIII-γ
TIM3	CD137/41BB	ICOS	FcεRIβ
TIM3	CD137/41BB	ICOS	FcεRIγ
TIM3	CD137/41BB	ICOS	DAP10
TIM3	CD137/41BB	ICOS	DAP12
TIM3	CD137/41BB	ICOS	CD32
TIM3	CD137/41BB	ICOS	CD79a
TIM3	CD137/41BB	ICOS	CD79b
TIM3	CD137/41BB	CD27	CD8
TIM3	CD137/41BB	CD27	CD3ζ
TIM3	CD137/41BB	CD27	CD3δ
TIM3	CD137/41BB	CD27	CD3γ
TIM3	CD137/41BB	CD27	CD3ε
TIM3	CD137/41BB	CD27	FcγRI-γ
TIM3	CD137/41BB	CD27	FcγRIII-γ
TIM3	CD137/41BB	CD27	FcεRIβ
TIM3	CD137/41BB	CD27	FcεRIγ
TIM3	CD137/41BB	CD27	DAP10
TIM3	CD137/41BB	CD27	DAP12
TIM3	CD137/41BB	CD27	CD32
TIM3	CD137/41BB	CD27	CD79a
TIM3	CD137/41BB	CD27	CD79b
TIM3	CD137/41BB	CD28δ	CD8
TIM3	CD137/41BB	CD28δ	CD3ζ
TIM3	CD137/41BB	CD28δ	CD3δ
TIM3	CD137/41BB	CD28δ	CD3γ
TIM3	CD137/41BB	CD28δ	CD3ε
TIM3	CD137/41BB	CD28δ	FcγRI-γ
TIM3	CD137/41BB	CD28δ	FcγRIII-γ
TIM3	CD137/41BB	CD28δ	FcεRIβ
TIM3	CD137/41BB	CD28δ	FcεRIγ
TIM3	CD137/41BB	CD28δ	DAP10
TIM3	CD137/41BB	CD28δ	DAP12
TIM3	CD137/41BB	CD28δ	CD32
TIM3	CD137/41BB	CD28δ	CD79a
TIM3	CD137/41BB	CD28δ	CD79b
TIM3	CD137/41BB	CD80	CD8
TIM3	CD137/41BB	CD80	CD3ζ
TIM3	CD137/41BB	CD80	CD3δ
TIM3	CD137/41BB	CD80	CD3γ
TIM3	CD137/41BB	CD80	CD3ε
TIM3	CD137/41BB	CD80	FcγRI-γ
TIM3	CD137/41BB	CD80	FcγRIII-γ
TIM3	CD137/41BB	CD80	FcεRIβ

TIM3	CD137/41BB	CD80	FcεRIγ
TIM3	CD137/41BB	CD80	DAP10
TIM3	CD137/41BB	CD80	DAP12
TIM3	CD137/41BB	CD80	CD32
TIM3	CD137/41BB	CD80	CD79a
TIM3	CD137/41BB	CD80	CD79b
TIM3	CD137/41BB	CD86	CD8
TIM3	CD137/41BB	CD86	CD3ζ
TIM3	CD137/41BB	CD86	CD3δ
TIM3	CD137/41BB	CD86	CD3γ
TIM3	CD137/41BB	CD86	CD3ε
TIM3	CD137/41BB	CD86	FcγRI-γ
TIM3	CD137/41BB	CD86	FcγRIII-γ
TIM3	CD137/41BB	CD86	FcεRIβ
TIM3	CD137/41BB	CD86	FcεRIγ
TIM3	CD137/41BB	CD86	DAP10
TIM3	CD137/41BB	CD86	DAP12
TIM3	CD137/41BB	CD86	CD32
TIM3	CD137/41BB	CD86	CD79a
TIM3	CD137/41BB	CD86	CD79b
TIM3	CD137/41BB	OX40	CD8
TIM3	CD137/41BB	OX40	CD3ζ
TIM3	CD137/41BB	OX40	CD3δ
TIM3	CD137/41BB	OX40	CD3γ
TIM3	CD137/41BB	OX40	CD3ε
TIM3	CD137/41BB	OX40	FcγRI-γ
TIM3	CD137/41BB	OX40	FcγRIII-γ
TIM3	CD137/41BB	OX40	FcεRIβ
TIM3	CD137/41BB	OX40	FcεRIγ
TIM3	CD137/41BB	OX40	DAP10
TIM3	CD137/41BB	OX40	DAP12
TIM3	CD137/41BB	OX40	CD32
TIM3	CD137/41BB	OX40	CD79a
TIM3	CD137/41BB	OX40	CD79b
TIM3	CD137/41BB	DAP10	CD8
TIM3	CD137/41BB	DAP10	CD3ζ
TIM3	CD137/41BB	DAP10	CD3δ
TIM3	CD137/41BB	DAP10	CD3γ
TIM3	CD137/41BB	DAP10	CD3ε
TIM3	CD137/41BB	DAP10	FcγRI-γ
TIM3	CD137/41BB	DAP10	FcγRIII-γ
TIM3	CD137/41BB	DAP10	FcεRIβ
TIM3	CD137/41BB	DAP10	FcεRIγ
TIM3	CD137/41BB	DAP10	DAP10
TIM3	CD137/41BB	DAP10	DAP12
TIM3	CD137/41BB	DAP10	CD32
TIM3	CD137/41BB	DAP10	CD79a
TIM3	CD137/41BB	DAP10	CD79b
TIM3	CD137/41BB	DAP12	CD8
TIM3	CD137/41BB	DAP12	CD3ζ
TIM3	CD137/41BB	DAP12	CD3δ
TIM3	CD137/41BB	DAP12	CD3γ

TIM3	CD137/41BB	DAP12	CD3ε
TIM3	CD137/41BB	DAP12	FcγRI-γ
TIM3	CD137/41BB	DAP12	FcγRIII-γ
TIM3	CD137/41BB	DAP12	FcεRIβ
TIM3	CD137/41BB	DAP12	FcεRIγ
TIM3	CD137/41BB	DAP12	DAP10
TIM3	CD137/41BB	DAP12	DAP12
TIM3	CD137/41BB	DAP12	CD32
TIM3	CD137/41BB	DAP12	CD79a
TIM3	CD137/41BB	DAP12	CD79b
TIM3	CD137/41BB	MyD88	CD8
TIM3	CD137/41BB	MyD88	CD3ζ
TIM3	CD137/41BB	MyD88	CD3δ
TIM3	CD137/41BB	MyD88	CD3γ
TIM3	CD137/41BB	MyD88	CD3ε
TIM3	CD137/41BB	MyD88	FcγRI-γ
TIM3	CD137/41BB	MyD88	FcγRIII-γ
TIM3	CD137/41BB	MyD88	FcεRIβ
TIM3	CD137/41BB	MyD88	FcεRIγ
TIM3	CD137/41BB	MyD88	DAP10
TIM3	CD137/41BB	MyD88	DAP12
TIM3	CD137/41BB	MyD88	CD32
TIM3	CD137/41BB	MyD88	CD79a
TIM3	CD137/41BB	MyD88	CD79b
TIM3	CD137/41BB	CD7	CD8
TIM3	CD137/41BB	CD7	CD3ζ
TIM3	CD137/41BB	CD7	CD3δ
TIM3	CD137/41BB	CD7	CD3γ
TIM3	CD137/41BB	CD7	CD3ε
TIM3	CD137/41BB	CD7	FcγRI-γ
TIM3	CD137/41BB	CD7	FcγRIII-γ
TIM3	CD137/41BB	CD7	FcεRIβ
TIM3	CD137/41BB	CD7	FcεRIγ
TIM3	CD137/41BB	CD7	DAP10
TIM3	CD137/41BB	CD7	DAP12
TIM3	CD137/41BB	CD7	CD32
TIM3	CD137/41BB	CD7	CD79a
TIM3	CD137/41BB	CD7	CD79b
TIM3	CD137/41BB	BTNL3	CD8
TIM3	CD137/41BB	BTNL3	CD3ζ
TIM3	CD137/41BB	BTNL3	CD3δ
TIM3	CD137/41BB	BTNL3	CD3γ
TIM3	CD137/41BB	BTNL3	CD3ε
TIM3	CD137/41BB	BTNL3	FcγRI-γ
TIM3	CD137/41BB	BTNL3	FcγRIII-γ
TIM3	CD137/41BB	BTNL3	FcεRIβ
TIM3	CD137/41BB	BTNL3	FcεRIγ
TIM3	CD137/41BB	BTNL3	DAP10
TIM3	CD137/41BB	BTNL3	DAP12
TIM3	CD137/41BB	BTNL3	CD32
TIM3	CD137/41BB	BTNL3	CD79a
TIM3	CD137/41BB	BTNL3	CD79b

TIM3	CD137/41BB	NKG2D	CD8
TIM3	CD137/41BB	NKG2D	CD3ζ
TIM3	CD137/41BB	NKG2D	CD3δ
TIM3	CD137/41BB	NKG2D	CD3γ
TIM3	CD137/41BB	NKG2D	CD3ε
TIM3	CD137/41BB	NKG2D	FcγRI-γ
TIM3	CD137/41BB	NKG2D	FcγRIII-γ
TIM3	CD137/41BB	NKG2D	FcεRIβ
TIM3	CD137/41BB	NKG2D	FcεRIγ
TIM3	CD137/41BB	NKG2D	DAP10
TIM3	CD137/41BB	NKG2D	DAP12
TIM3	CD137/41BB	NKG2D	CD32
TIM3	CD137/41BB	NKG2D	CD79a
TIM3	CD137/41BB	NKG2D	CD79b
TIM3	ICOS	CD28	CD8
TIM3	ICOS	CD28	CD3ζ
TIM3	ICOS	CD28	CD3δ
TIM3	ICOS	CD28	CD3γ
TIM3	ICOS	CD28	CD3ε
TIM3	ICOS	CD28	FcγRI-γ
TIM3	ICOS	CD28	FcγRIII-γ
TIM3	ICOS	CD28	FcεRIβ
TIM3	ICOS	CD28	FcεRIγ
TIM3	ICOS	CD28	DAP10
TIM3	ICOS	CD28	DAP12
TIM3	ICOS	CD28	CD32
TIM3	ICOS	CD28	CD79a
TIM3	ICOS	CD28	CD79b
TIM3	ICOS	CD8	CD8
TIM3	ICOS	CD8	CD3ζ
TIM3	ICOS	CD8	CD3δ
TIM3	ICOS	CD8	CD3γ
TIM3	ICOS	CD8	CD3ε
TIM3	ICOS	CD8	FcγRI-γ
TIM3	ICOS	CD8	FcγRIII-γ
TIM3	ICOS	CD8	FcεRIβ
TIM3	ICOS	CD8	FcεRIγ
TIM3	ICOS	CD8	DAP10
TIM3	ICOS	CD8	DAP12
TIM3	ICOS	CD8	CD32
TIM3	ICOS	CD8	CD79a
TIM3	ICOS	CD8	CD79b
TIM3	ICOS	CD4	CD8
TIM3	ICOS	CD4	CD3ζ
TIM3	ICOS	CD4	CD3δ
TIM3	ICOS	CD4	CD3γ
TIM3	ICOS	CD4	CD3ε
TIM3	ICOS	CD4	FcγRI-γ
TIM3	ICOS	CD4	FcγRIII-γ
TIM3	ICOS	CD4	FcεRIβ
TIM3	ICOS	CD4	FcεRIγ
TIM3	ICOS	CD4	DAP10

TIM3	ICOS	CD4	DAP12
TIM3	ICOS	CD4	CD32
TIM3	ICOS	CD4	CD79a
TIM3	ICOS	CD4	CD79b
TIM3	ICOS	b2c	CD8
TIM3	ICOS	b2c	CD3ζ
TIM3	ICOS	b2c	CD3δ
TIM3	ICOS	b2c	CD3γ
TIM3	ICOS	b2c	CD3ε
TIM3	ICOS	b2c	FcγRI-γ
TIM3	ICOS	b2c	FcγRIII-γ
TIM3	ICOS	b2c	FcεRIβ
TIM3	ICOS	b2c	FcεRIγ
TIM3	ICOS	b2c	DAP10
TIM3	ICOS	b2c	DAP12
TIM3	ICOS	b2c	CD32
TIM3	ICOS	b2c	CD79a
TIM3	ICOS	b2c	CD79b
TIM3	ICOS	CD137/41BB	CD8
TIM3	ICOS	CD137/41BB	CD3ζ
TIM3	ICOS	CD137/41BB	CD3δ
TIM3	ICOS	CD137/41BB	CD3γ
TIM3	ICOS	CD137/41BB	CD3ε
TIM3	ICOS	CD137/41BB	FcγRI-γ
TIM3	ICOS	CD137/41BB	FcγRIII-γ
TIM3	ICOS	CD137/41BB	FcεRIβ
TIM3	ICOS	CD137/41BB	FcεRIγ
TIM3	ICOS	CD137/41BB	DAP10
TIM3	ICOS	CD137/41BB	DAP12
TIM3	ICOS	CD137/41BB	CD32
TIM3	ICOS	CD137/41BB	CD79a
TIM3	ICOS	CD137/41BB	CD79b
TIM3	ICOS	ICOS	CD8
TIM3	ICOS	ICOS	CD3ζ
TIM3	ICOS	ICOS	CD3δ
TIM3	ICOS	ICOS	CD3γ
TIM3	ICOS	ICOS	CD3ε
TIM3	ICOS	ICOS	FcγRI-γ
TIM3	ICOS	ICOS	FcγRIII-γ
TIM3	ICOS	ICOS	FcεRIβ
TIM3	ICOS	ICOS	FcεRIγ
TIM3	ICOS	ICOS	DAP10
TIM3	ICOS	ICOS	DAP12
TIM3	ICOS	ICOS	CD32
TIM3	ICOS	ICOS	CD79a
TIM3	ICOS	ICOS	CD79b
TIM3	ICOS	CD27	CD8
TIM3	ICOS	CD27	CD3ζ
TIM3	ICOS	CD27	CD3δ
TIM3	ICOS	CD27	CD3γ
TIM3	ICOS	CD27	CD3ε
TIM3	ICOS	CD27	FcγRI-γ

TIM3	ICOS	CD27	FcγRIII-γ
TIM3	ICOS	CD27	FcεRIβ
TIM3	ICOS	CD27	FcεRIγ
TIM3	ICOS	CD27	DAP10
TIM3	ICOS	CD27	DAP12
TIM3	ICOS	CD27	CD32
TIM3	ICOS	CD27	CD79a
TIM3	ICOS	CD27	CD79b
TIM3	ICOS	CD28δ	CD8
TIM3	ICOS	CD28δ	CD3ζ
TIM3	ICOS	CD28δ	CD3δ
TIM3	ICOS	CD28δ	CD3γ
TIM3	ICOS	CD28δ	CD3ε
TIM3	ICOS	CD28δ	FcγRI-γ
TIM3	ICOS	CD28δ	FcγRIII-γ
TIM3	ICOS	CD28δ	FcεRIβ
TIM3	ICOS	CD28δ	FcεRIγ
TIM3	ICOS	CD28δ	DAP10
TIM3	ICOS	CD28δ	DAP12
TIM3	ICOS	CD28δ	CD32
TIM3	ICOS	CD28δ	CD79a
TIM3	ICOS	CD28δ	CD79b
TIM3	ICOS	CD80	CD8
TIM3	ICOS	CD80	CD3ζ
TIM3	ICOS	CD80	CD3δ
TIM3	ICOS	CD80	CD3γ
TIM3	ICOS	CD80	CD3ε
TIM3	ICOS	CD80	FcγRI-γ
TIM3	ICOS	CD80	FcγRIII-γ
TIM3	ICOS	CD80	FcεRIβ
TIM3	ICOS	CD80	FcεRIγ
TIM3	ICOS	CD80	DAP10
TIM3	ICOS	CD80	DAP12
TIM3	ICOS	CD80	CD32
TIM3	ICOS	CD80	CD79a
TIM3	ICOS	CD80	CD79b
TIM3	ICOS	CD86	CD8
TIM3	ICOS	CD86	CD3ζ
TIM3	ICOS	CD86	CD3δ
TIM3	ICOS	CD86	CD3γ
TIM3	ICOS	CD86	CD3ε
TIM3	ICOS	CD86	FcγRI-γ
TIM3	ICOS	CD86	FcγRIII-γ
TIM3	ICOS	CD86	FcεRIβ
TIM3	ICOS	CD86	FcεRIγ
TIM3	ICOS	CD86	DAP10
TIM3	ICOS	CD86	DAP12
TIM3	ICOS	CD86	CD32
TIM3	ICOS	CD86	CD79a
TIM3	ICOS	CD86	CD79b
TIM3	ICOS	OX40	CD8
TIM3	ICOS	OX40	CD3ζ

TIM3	ICOS	OX40	CD3δ
TIM3	ICOS	OX40	CD3γ
TIM3	ICOS	OX40	CD3ε
TIM3	ICOS	OX40	FcγRI-γ
TIM3	ICOS	OX40	FcγRIII-γ
TIM3	ICOS	OX40	FcεRIβ
TIM3	ICOS	OX40	FcεRIγ
TIM3	ICOS	OX40	DAP10
TIM3	ICOS	OX40	DAP12
TIM3	ICOS	OX40	CD32
TIM3	ICOS	OX40	CD79a
TIM3	ICOS	OX40	CD79b
TIM3	ICOS	DAP10	CD8
TIM3	ICOS	DAP10	CD3ζ
TIM3	ICOS	DAP10	CD3δ
TIM3	ICOS	DAP10	CD3γ
TIM3	ICOS	DAP10	CD3ε
TIM3	ICOS	DAP10	FcγRI-γ
TIM3	ICOS	DAP10	FcγRIII-γ
TIM3	ICOS	DAP10	FcεRIβ
TIM3	ICOS	DAP10	FcεRIγ
TIM3	ICOS	DAP10	DAP10
TIM3	ICOS	DAP10	DAP12
TIM3	ICOS	DAP10	CD32
TIM3	ICOS	DAP10	CD79a
TIM3	ICOS	DAP10	CD79b
TIM3	ICOS	DAP12	CD8
TIM3	ICOS	DAP12	CD3ζ
TIM3	ICOS	DAP12	CD3δ
TIM3	ICOS	DAP12	CD3γ
TIM3	ICOS	DAP12	CD3ε
TIM3	ICOS	DAP12	FcγRI-γ
TIM3	ICOS	DAP12	FcγRIII-γ
TIM3	ICOS	DAP12	FcεRIβ
TIM3	ICOS	DAP12	FcεRIγ
TIM3	ICOS	DAP12	DAP10
TIM3	ICOS	DAP12	DAP12
TIM3	ICOS	DAP12	CD32
TIM3	ICOS	DAP12	CD79a
TIM3	ICOS	DAP12	CD79b
TIM3	ICOS	MyD88	CD8
TIM3	ICOS	MyD88	CD3ζ
TIM3	ICOS	MyD88	CD3δ
TIM3	ICOS	MyD88	CD3γ
TIM3	ICOS	MyD88	CD3ε
TIM3	ICOS	MyD88	FcγRI-γ
TIM3	ICOS	MyD88	FcγRIII-γ
TIM3	ICOS	MyD88	FcεRIβ
TIM3	ICOS	MyD88	FcεRIγ
TIM3	ICOS	MyD88	DAP10
TIM3	ICOS	MyD88	DAP12
TIM3	ICOS	MyD88	CD32

TIM3	ICOS	MyD88	CD79a
TIM3	ICOS	MyD88	CD79b
TIM3	ICOS	CD7	CD8
TIM3	ICOS	CD7	CD3ζ
TIM3	ICOS	CD7	CD3δ
TIM3	ICOS	CD7	CD3γ
TIM3	ICOS	CD7	CD3ε
TIM3	ICOS	CD7	FcγRI-γ
TIM3	ICOS	CD7	FcγRIII-γ
TIM3	ICOS	CD7	FcεRIβ
TIM3	ICOS	CD7	FcεRIγ
TIM3	ICOS	CD7	DAP10
TIM3	ICOS	CD7	DAP12
TIM3	ICOS	CD7	CD32
TIM3	ICOS	CD7	CD79a
TIM3	ICOS	CD7	CD79b
TIM3	ICOS	BTNL3	CD8
TIM3	ICOS	BTNL3	CD3ζ
TIM3	ICOS	BTNL3	CD3δ
TIM3	ICOS	BTNL3	CD3γ
TIM3	ICOS	BTNL3	CD3ε
TIM3	ICOS	BTNL3	FcγRI-γ
TIM3	ICOS	BTNL3	FcγRIII-γ
TIM3	ICOS	BTNL3	FcεRIβ
TIM3	ICOS	BTNL3	FcεRIγ
TIM3	ICOS	BTNL3	DAP10
TIM3	ICOS	BTNL3	DAP12
TIM3	ICOS	BTNL3	CD32
TIM3	ICOS	BTNL3	CD79a
TIM3	ICOS	BTNL3	CD79b
TIM3	ICOS	NKG2D	CD8
TIM3	ICOS	NKG2D	CD3ζ
TIM3	ICOS	NKG2D	CD3δ
TIM3	ICOS	NKG2D	CD3γ
TIM3	ICOS	NKG2D	CD3ε
TIM3	ICOS	NKG2D	FcγRI-γ
TIM3	ICOS	NKG2D	FcγRIII-γ
TIM3	ICOS	NKG2D	FcεRIβ
TIM3	ICOS	NKG2D	FcεRIγ
TIM3	ICOS	NKG2D	DAP10
TIM3	ICOS	NKG2D	DAP12
TIM3	ICOS	NKG2D	CD32
TIM3	ICOS	NKG2D	CD79a
TIM3	ICOS	NKG2D	CD79b
TIM3	CD27	CD28	CD8
TIM3	CD27	CD28	CD3ζ
TIM3	CD27	CD28	CD3δ
TIM3	CD27	CD28	CD3γ
TIM3	CD27	CD28	CD3ε
TIM3	CD27	CD28	FcγRI-γ
TIM3	CD27	CD28	FcγRIII-γ
TIM3	CD27	CD28	FcεRIβ

TIM3	CD27	CD28	FcεRIγ
TIM3	CD27	CD28	DAP10
TIM3	CD27	CD28	DAP12
TIM3	CD27	CD28	CD32
TIM3	CD27	CD28	CD79a
TIM3	CD27	CD28	CD79b
TIM3	CD27	CD8	CD8
TIM3	CD27	CD8	CD3ζ
TIM3	CD27	CD8	CD3δ
TIM3	CD27	CD8	CD3γ
TIM3	CD27	CD8	CD3ε
TIM3	CD27	CD8	FcγRI-γ
TIM3	CD27	CD8	FcγRIII-γ
TIM3	CD27	CD8	FcεRIβ
TIM3	CD27	CD8	FcεRIγ
TIM3	CD27	CD8	DAP10
TIM3	CD27	CD8	DAP12
TIM3	CD27	CD8	CD32
TIM3	CD27	CD8	CD79a
TIM3	CD27	CD8	CD79b
TIM3	CD27	CD4	CD8
TIM3	CD27	CD4	CD3ζ
TIM3	CD27	CD4	CD3δ
TIM3	CD27	CD4	CD3γ
TIM3	CD27	CD4	CD3ε
TIM3	CD27	CD4	FcγRI-γ
TIM3	CD27	CD4	FcγRIII-γ
TIM3	CD27	CD4	FcεRIβ
TIM3	CD27	CD4	FcεRIγ
TIM3	CD27	CD4	DAP10
TIM3	CD27	CD4	DAP12
TIM3	CD27	CD4	CD32
TIM3	CD27	CD4	CD79a
TIM3	CD27	CD4	CD79b
TIM3	CD27	b2c	CD8
TIM3	CD27	b2c	CD3ζ
TIM3	CD27	b2c	CD3δ
TIM3	CD27	b2c	CD3γ
TIM3	CD27	b2c	CD3ε
TIM3	CD27	b2c	FcγRI-γ
TIM3	CD27	b2c	FcγRIII-γ
TIM3	CD27	b2c	FcεRIβ
TIM3	CD27	b2c	FcεRIγ
TIM3	CD27	b2c	DAP10
TIM3	CD27	b2c	DAP12
TIM3	CD27	b2c	CD32
TIM3	CD27	b2c	CD79a
TIM3	CD27	b2c	CD79b
TIM3	CD27	CD137/41BB	CD8
TIM3	CD27	CD137/41BB	CD3ζ
TIM3	CD27	CD137/41BB	CD3δ
TIM3	CD27	CD137/41BB	CD3γ

TIM3	CD27	CD137/41BB	CD3ε
TIM3	CD27	CD137/41BB	FcγRI-γ
TIM3	CD27	CD137/41BB	FcγRIII-γ
TIM3	CD27	CD137/41BB	FcεRIβ
TIM3	CD27	CD137/41BB	FcεRIγ
TIM3	CD27	CD137/41BB	DAP10
TIM3	CD27	CD137/41BB	DAP12
TIM3	CD27	CD137/41BB	CD32
TIM3	CD27	CD137/41BB	CD79a
TIM3	CD27	CD137/41BB	CD79b
TIM3	CD27	ICOS	CD8
TIM3	CD27	ICOS	CD3ζ
TIM3	CD27	ICOS	CD3δ
TIM3	CD27	ICOS	CD3γ
TIM3	CD27	ICOS	CD3ε
TIM3	CD27	ICOS	FcγRI-γ
TIM3	CD27	ICOS	FcγRIII-γ
TIM3	CD27	ICOS	FcεRIβ
TIM3	CD27	ICOS	FcεRIγ
TIM3	CD27	ICOS	DAP10
TIM3	CD27	ICOS	DAP12
TIM3	CD27	ICOS	CD32
TIM3	CD27	ICOS	CD79a
TIM3	CD27	ICOS	CD79b
TIM3	CD27	CD27	CD8
TIM3	CD27	CD27	CD3ζ
TIM3	CD27	CD27	CD3δ
TIM3	CD27	CD27	CD3γ
TIM3	CD27	CD27	CD3ε
TIM3	CD27	CD27	FcγRI-γ
TIM3	CD27	CD27	FcγRIII-γ
TIM3	CD27	CD27	FcεRIβ
TIM3	CD27	CD27	FcεRIγ
TIM3	CD27	CD27	DAP10
TIM3	CD27	CD27	DAP12
TIM3	CD27	CD27	CD32
TIM3	CD27	CD27	CD79a
TIM3	CD27	CD27	CD79b
TIM3	CD27	CD28δ	CD8
TIM3	CD27	CD28δ	CD3ζ
TIM3	CD27	CD28δ	CD3δ
TIM3	CD27	CD28δ	CD3γ
TIM3	CD27	CD28δ	CD3ε
TIM3	CD27	CD28δ	FcγRI-γ
TIM3	CD27	CD28δ	FcγRIII-γ
TIM3	CD27	CD28δ	FcεRIβ
TIM3	CD27	CD28δ	FcεRIγ
TIM3	CD27	CD28δ	DAP10
TIM3	CD27	CD28δ	DAP12
TIM3	CD27	CD28δ	CD32
TIM3	CD27	CD28δ	CD79a
TIM3	CD27	CD28δ	CD79b

TIM3	CD27	CD80	CD8
TIM3	CD27	CD80	CD3ζ
TIM3	CD27	CD80	CD3δ
TIM3	CD27	CD80	CD3γ
TIM3	CD27	CD80	CD3ε
TIM3	CD27	CD80	FcγRI-γ
TIM3	CD27	CD80	FcγRIII-γ
TIM3	CD27	CD80	FcεRIβ
TIM3	CD27	CD80	FcεRIγ
TIM3	CD27	CD80	DAP10
TIM3	CD27	CD80	DAP12
TIM3	CD27	CD80	CD32
TIM3	CD27	CD80	CD79a
TIM3	CD27	CD80	CD79b
TIM3	CD27	CD86	CD8
TIM3	CD27	CD86	CD3ζ
TIM3	CD27	CD86	CD3δ
TIM3	CD27	CD86	CD3γ
TIM3	CD27	CD86	CD3ε
TIM3	CD27	CD86	FcγRI-γ
TIM3	CD27	CD86	FcγRIII-γ
TIM3	CD27	CD86	FcεRIβ
TIM3	CD27	CD86	FcεRIγ
TIM3	CD27	CD86	DAP10
TIM3	CD27	CD86	DAP12
TIM3	CD27	CD86	CD32
TIM3	CD27	CD86	CD79a
TIM3	CD27	CD86	CD79b
TIM3	CD27	OX40	CD8
TIM3	CD27	OX40	CD3ζ
TIM3	CD27	OX40	CD3δ
TIM3	CD27	OX40	CD3γ
TIM3	CD27	OX40	CD3ε
TIM3	CD27	OX40	FcγRI-γ
TIM3	CD27	OX40	FcγRIII-γ
TIM3	CD27	OX40	FcεRIβ
TIM3	CD27	OX40	FcεRIγ
TIM3	CD27	OX40	DAP10
TIM3	CD27	OX40	DAP12
TIM3	CD27	OX40	CD32
TIM3	CD27	OX40	CD79a
TIM3	CD27	OX40	CD79b
TIM3	CD27	DAP10	CD8
TIM3	CD27	DAP10	CD3ζ
TIM3	CD27	DAP10	CD3δ
TIM3	CD27	DAP10	CD3γ
TIM3	CD27	DAP10	CD3ε
TIM3	CD27	DAP10	FcγRI-γ
TIM3	CD27	DAP10	FcγRIII-γ
TIM3	CD27	DAP10	FcεRIβ
TIM3	CD27	DAP10	FcεRIγ
TIM3	CD27	DAP10	DAP10

TIM3	CD27	DAP10	DAP12
TIM3	CD27	DAP10	CD32
TIM3	CD27	DAP10	CD79a
TIM3	CD27	DAP10	CD79b
TIM3	CD27	DAP12	CD8
TIM3	CD27	DAP12	CD3ζ
TIM3	CD27	DAP12	CD3δ
TIM3	CD27	DAP12	CD3γ
TIM3	CD27	DAP12	CD3ε
TIM3	CD27	DAP12	FcγRI-γ
TIM3	CD27	DAP12	FcγRIII-γ
TIM3	CD27	DAP12	FcεRIβ
TIM3	CD27	DAP12	FcεRIγ
TIM3	CD27	DAP12	DAP10
TIM3	CD27	DAP12	DAP12
TIM3	CD27	DAP12	CD32
TIM3	CD27	DAP12	CD79a
TIM3	CD27	DAP12	CD79b
TIM3	CD27	MyD88	CD8
TIM3	CD27	MyD88	CD3ζ
TIM3	CD27	MyD88	CD3δ
TIM3	CD27	MyD88	CD3γ
TIM3	CD27	MyD88	CD3ε
TIM3	CD27	MyD88	FcγRI-γ
TIM3	CD27	MyD88	FcγRIII-γ
TIM3	CD27	MyD88	FcεRIβ
TIM3	CD27	MyD88	FcεRIγ
TIM3	CD27	MyD88	DAP10
TIM3	CD27	MyD88	DAP12
TIM3	CD27	MyD88	CD32
TIM3	CD27	MyD88	CD79a
TIM3	CD27	MyD88	CD79b
TIM3	CD27	CD7	CD8
TIM3	CD27	CD7	CD3ζ
TIM3	CD27	CD7	CD3δ
TIM3	CD27	CD7	CD3γ
TIM3	CD27	CD7	CD3ε
TIM3	CD27	CD7	FcγRI-γ
TIM3	CD27	CD7	FcγRIII-γ
TIM3	CD27	CD7	FcεRIβ
TIM3	CD27	CD7	FcεRIγ
TIM3	CD27	CD7	DAP10
TIM3	CD27	CD7	DAP12
TIM3	CD27	CD7	CD32
TIM3	CD27	CD7	CD79a
TIM3	CD27	CD7	CD79b
TIM3	CD27	BTNL3	CD8
TIM3	CD27	BTNL3	CD3ζ
TIM3	CD27	BTNL3	CD3δ
TIM3	CD27	BTNL3	CD3γ
TIM3	CD27	BTNL3	CD3ε
TIM3	CD27	BTNL3	FcγRI-γ

TIM3	CD27	BTNL3	FcγRIII-γ
TIM3	CD27	BTNL3	FcεRIβ
TIM3	CD27	BTNL3	FcεRIγ
TIM3	CD27	BTNL3	DAP10
TIM3	CD27	BTNL3	DAP12
TIM3	CD27	BTNL3	CD32
TIM3	CD27	BTNL3	CD79a
TIM3	CD27	BTNL3	CD79b
TIM3	CD27	NKG2D	CD8
TIM3	CD27	NKG2D	CD3ζ
TIM3	CD27	NKG2D	CD3δ
TIM3	CD27	NKG2D	CD3γ
TIM3	CD27	NKG2D	CD3ε
TIM3	CD27	NKG2D	FcγRI-γ
TIM3	CD27	NKG2D	FcγRIII-γ
TIM3	CD27	NKG2D	FcεRIβ
TIM3	CD27	NKG2D	FcεRIγ
TIM3	CD27	NKG2D	DAP10
TIM3	CD27	NKG2D	DAP12
TIM3	CD27	NKG2D	CD32
TIM3	CD27	NKG2D	CD79a
TIM3	CD27	NKG2D	CD79b
TIM3	CD28δ	CD28	CD8
TIM3	CD28δ	CD28	CD3ζ
TIM3	CD28δ	CD28	CD3δ
TIM3	CD28δ	CD28	CD3γ
TIM3	CD28δ	CD28	CD3ε
TIM3	CD28δ	CD28	FcγRI-γ
TIM3	CD28δ	CD28	FcγRIII-γ
TIM3	CD28δ	CD28	FcεRIβ
TIM3	CD28δ	CD28	FcεRIγ
TIM3	CD28δ	CD28	DAP10
TIM3	CD28δ	CD28	DAP12
TIM3	CD28δ	CD28	CD32
TIM3	CD28δ	CD28	CD79a
TIM3	CD28δ	CD28	CD79b
TIM3	CD28δ	CD8	CD8
TIM3	CD28δ	CD8	CD3ζ
TIM3	CD28δ	CD8	CD3δ
TIM3	CD28δ	CD8	CD3γ
TIM3	CD28δ	CD8	CD3ε
TIM3	CD28δ	CD8	FcγRI-γ
TIM3	CD28δ	CD8	FcγRIII-γ
TIM3	CD28δ	CD8	FcεRIβ
TIM3	CD28δ	CD8	FcεRIγ
TIM3	CD28δ	CD8	DAP10
TIM3	CD28δ	CD8	DAP12
TIM3	CD28δ	CD8	CD32
TIM3	CD28δ	CD8	CD79a
TIM3	CD28δ	CD8	CD79b
TIM3	CD28δ	CD4	CD8
TIM3	CD28δ	CD4	CD3ζ

TIM3	CD28δ	CD4	CD3δ
TIM3	CD28δ	CD4	CD3γ
TIM3	CD28δ	CD4	CD3ε
TIM3	CD28δ	CD4	FcγRI-γ
TIM3	CD28δ	CD4	FcγRIII-γ
TIM3	CD28δ	CD4	FcεRIβ
TIM3	CD28δ	CD4	FcεRIγ
TIM3	CD28δ	CD4	DAP10
TIM3	CD28δ	CD4	DAP12
TIM3	CD28δ	CD4	CD32
TIM3	CD28δ	CD4	CD79a
TIM3	CD28δ	CD4	CD79b
TIM3	CD28δ	b2c	CD8
TIM3	CD28δ	b2c	CD3ζ
TIM3	CD28δ	b2c	CD3δ
TIM3	CD28δ	b2c	CD3γ
TIM3	CD28δ	b2c	CD3ε
TIM3	CD28δ	b2c	FcγRI-γ
TIM3	CD28δ	b2c	FcγRIII-γ
TIM3	CD28δ	b2c	FcεRIβ
TIM3	CD28δ	b2c	FcεRIγ
TIM3	CD28δ	b2c	DAP10
TIM3	CD28δ	b2c	DAP12
TIM3	CD28δ	b2c	CD32
TIM3	CD28δ	b2c	CD79a
TIM3	CD28δ	b2c	CD79b
TIM3	CD28δ	CD137/41BB	CD8
TIM3	CD28δ	CD137/41BB	CD3ζ
TIM3	CD28δ	CD137/41BB	CD3δ
TIM3	CD28δ	CD137/41BB	CD3γ
TIM3	CD28δ	CD137/41BB	CD3ε
TIM3	CD28δ	CD137/41BB	FcγRI-γ
TIM3	CD28δ	CD137/41BB	FcγRIII-γ
TIM3	CD28δ	CD137/41BB	FcεRIβ
TIM3	CD28δ	CD137/41BB	FcεRIγ
TIM3	CD28δ	CD137/41BB	DAP10
TIM3	CD28δ	CD137/41BB	DAP12
TIM3	CD28δ	CD137/41BB	CD32
TIM3	CD28δ	CD137/41BB	CD79a
TIM3	CD28δ	CD137/41BB	CD79b
TIM3	CD28δ	ICOS	CD8
TIM3	CD28δ	ICOS	CD3ζ
TIM3	CD28δ	ICOS	CD3δ
TIM3	CD28δ	ICOS	CD3γ
TIM3	CD28δ	ICOS	CD3ε
TIM3	CD28δ	ICOS	FcγRI-γ
TIM3	CD28δ	ICOS	FcγRIII-γ
TIM3	CD28δ	ICOS	FcεRIβ
TIM3	CD28δ	ICOS	FcεRIγ
TIM3	CD28δ	ICOS	DAP10
TIM3	CD28δ	ICOS	DAP12
TIM3	CD28δ	ICOS	CD32

TIM3	CD28δ	ICOS	CD79a
TIM3	CD28δ	ICOS	CD79b
TIM3	CD28δ	CD27	CD8
TIM3	CD28δ	CD27	CD3ζ
TIM3	CD28δ	CD27	CD3δ
TIM3	CD28δ	CD27	CD3γ
TIM3	CD28δ	CD27	CD3ε
TIM3	CD28δ	CD27	FcγRI-γ
TIM3	CD28δ	CD27	FcγRIII-γ
TIM3	CD28δ	CD27	FcεRIβ
TIM3	CD28δ	CD27	FcεRIγ
TIM3	CD28δ	CD27	DAP10
TIM3	CD28δ	CD27	DAP12
TIM3	CD28δ	CD27	CD32
TIM3	CD28δ	CD27	CD79a
TIM3	CD28δ	CD27	CD79b
TIM3	CD28δ	CD28δ	CD8
TIM3	CD28δ	CD28δ	CD3ζ
TIM3	CD28δ	CD28δ	CD3δ
TIM3	CD28δ	CD28δ	CD3γ
TIM3	CD28δ	CD28δ	CD3ε
TIM3	CD28δ	CD28δ	FcγRI-γ
TIM3	CD28δ	CD28δ	FcγRIII-γ
TIM3	CD28δ	CD28δ	FcεRIβ
TIM3	CD28δ	CD28δ	FcεRIγ
TIM3	CD28δ	CD28δ	DAP10
TIM3	CD28δ	CD28δ	DAP12
TIM3	CD28δ	CD28δ	CD32
TIM3	CD28δ	CD28δ	CD79a
TIM3	CD28δ	CD28δ	CD79b
TIM3	CD28δ	CD80	CD8
TIM3	CD28δ	CD80	CD3ζ
TIM3	CD28δ	CD80	CD3δ
TIM3	CD28δ	CD80	CD3γ
TIM3	CD28δ	CD80	CD3ε
TIM3	CD28δ	CD80	FcγRI-γ
TIM3	CD28δ	CD80	FcγRIII-γ
TIM3	CD28δ	CD80	FcεRIβ
TIM3	CD28δ	CD80	FcεRIγ
TIM3	CD28δ	CD80	DAP10
TIM3	CD28δ	CD80	DAP12
TIM3	CD28δ	CD80	CD32
TIM3	CD28δ	CD80	CD79a
TIM3	CD28δ	CD80	CD79b
TIM3	CD28δ	CD86	CD8
TIM3	CD28δ	CD86	CD3ζ
TIM3	CD28δ	CD86	CD3δ
TIM3	CD28δ	CD86	CD3γ
TIM3	CD28δ	CD86	CD3ε
TIM3	CD28δ	CD86	FcγRI-γ
TIM3	CD28δ	CD86	FcγRIII-γ
TIM3	CD28δ	CD86	FcεRIβ

TIM3	CD28δ	CD86	FcεRIγ
TIM3	CD28δ	CD86	DAP10
TIM3	CD28δ	CD86	DAP12
TIM3	CD28δ	CD86	CD32
TIM3	CD28δ	CD86	CD79a
TIM3	CD28δ	CD86	CD79b
TIM3	CD28δ	OX40	CD8
TIM3	CD28δ	OX40	CD3ζ
TIM3	CD28δ	OX40	CD3δ
TIM3	CD28δ	OX40	CD3γ
TIM3	CD28δ	OX40	CD3ε
TIM3	CD28δ	OX40	FcγRI-γ
TIM3	CD28δ	OX40	FcγRIII-γ
TIM3	CD28δ	OX40	FcεRIβ
TIM3	CD28δ	OX40	FcεRIγ
TIM3	CD28δ	OX40	DAP10
TIM3	CD28δ	OX40	DAP12
TIM3	CD28δ	OX40	CD32
TIM3	CD28δ	OX40	CD79a
TIM3	CD28δ	OX40	CD79b
TIM3	CD28δ	DAP10	CD8
TIM3	CD28δ	DAP10	CD3ζ
TIM3	CD28δ	DAP10	CD3δ
TIM3	CD28δ	DAP10	CD3γ
TIM3	CD28δ	DAP10	CD3ε
TIM3	CD28δ	DAP10	FcγRI-γ
TIM3	CD28δ	DAP10	FcγRIII-γ
TIM3	CD28δ	DAP10	FcεRIβ
TIM3	CD28δ	DAP10	FcεRIγ
TIM3	CD28δ	DAP10	DAP10
TIM3	CD28δ	DAP10	DAP12
TIM3	CD28δ	DAP10	CD32
TIM3	CD28δ	DAP10	CD79a
TIM3	CD28δ	DAP10	CD79b
TIM3	CD28δ	DAP12	CD8
TIM3	CD28δ	DAP12	CD3ζ
TIM3	CD28δ	DAP12	CD3δ
TIM3	CD28δ	DAP12	CD3γ
TIM3	CD28δ	DAP12	CD3ε
TIM3	CD28δ	DAP12	FcγRI-γ
TIM3	CD28δ	DAP12	FcγRIII-γ
TIM3	CD28δ	DAP12	FcεRIβ
TIM3	CD28δ	DAP12	FcεRIγ
TIM3	CD28δ	DAP12	DAP10
TIM3	CD28δ	DAP12	DAP12
TIM3	CD28δ	DAP12	CD32
TIM3	CD28δ	DAP12	CD79a
TIM3	CD28δ	DAP12	CD79b
TIM3	CD28δ	MyD88	CD8
TIM3	CD28δ	MyD88	CD3ζ
TIM3	CD28δ	MyD88	CD3δ
TIM3	CD28δ	MyD88	CD3γ

TIM3	CD28δ	MyD88	CD3ε
TIM3	CD28δ	MyD88	FcγRI-γ
TIM3	CD28δ	MyD88	FcγRIII-γ
TIM3	CD28δ	MyD88	FcεRIβ
TIM3	CD28δ	MyD88	FcεRIγ
TIM3	CD28δ	MyD88	DAP10
TIM3	CD28δ	MyD88	DAP12
TIM3	CD28δ	MyD88	CD32
TIM3	CD28δ	MyD88	CD79a
TIM3	CD28δ	MyD88	CD79b
TIM3	CD28δ	CD7	CD8
TIM3	CD28δ	CD7	CD3ζ
TIM3	CD28δ	CD7	CD3δ
TIM3	CD28δ	CD7	CD3γ
TIM3	CD28δ	CD7	CD3ε
TIM3	CD28δ	CD7	FcγRI-γ
TIM3	CD28δ	CD7	FcγRIII-γ
TIM3	CD28δ	CD7	FcεRIβ
TIM3	CD28δ	CD7	FcεRIγ
TIM3	CD28δ	CD7	DAP10
TIM3	CD28δ	CD7	DAP12
TIM3	CD28δ	CD7	CD32
TIM3	CD28δ	CD7	CD79a
TIM3	CD28δ	CD7	CD79b
TIM3	CD28δ	BTNL3	CD8
TIM3	CD28δ	BTNL3	CD3ζ
TIM3	CD28δ	BTNL3	CD3δ
TIM3	CD28δ	BTNL3	CD3γ
TIM3	CD28δ	BTNL3	CD3ε
TIM3	CD28δ	BTNL3	FcγRI-γ
TIM3	CD28δ	BTNL3	FcγRIII-γ
TIM3	CD28δ	BTNL3	FcεRIβ
TIM3	CD28δ	BTNL3	FcεRIγ
TIM3	CD28δ	BTNL3	DAP10
TIM3	CD28δ	BTNL3	DAP12
TIM3	CD28δ	BTNL3	CD32
TIM3	CD28δ	BTNL3	CD79a
TIM3	CD28δ	BTNL3	CD79b
TIM3	CD28δ	NKG2D	CD8
TIM3	CD28δ	NKG2D	CD3ζ
TIM3	CD28δ	NKG2D	CD3δ
TIM3	CD28δ	NKG2D	CD3γ
TIM3	CD28δ	NKG2D	CD3ε
TIM3	CD28δ	NKG2D	FcγRI-γ
TIM3	CD28δ	NKG2D	FcγRIII-γ
TIM3	CD28δ	NKG2D	FcεRIβ
TIM3	CD28δ	NKG2D	FcεRIγ
TIM3	CD28δ	NKG2D	DAP10
TIM3	CD28δ	NKG2D	DAP12
TIM3	CD28δ	NKG2D	CD32
TIM3	CD28δ	NKG2D	CD79a
TIM3	CD28δ	NKG2D	CD79b

TIM3	CD80	CD28	CD8
TIM3	CD80	CD28	CD3ζ
TIM3	CD80	CD28	CD3δ
TIM3	CD80	CD28	CD3γ
TIM3	CD80	CD28	CD3ε
TIM3	CD80	CD28	FcγRI-γ
TIM3	CD80	CD28	FcγRIII-γ
TIM3	CD80	CD28	FcεRIβ
TIM3	CD80	CD28	FcεRIγ
TIM3	CD80	CD28	DAP10
TIM3	CD80	CD28	DAP12
TIM3	CD80	CD28	CD32
TIM3	CD80	CD28	CD79a
TIM3	CD80	CD28	CD79b
TIM3	CD80	CD8	CD8
TIM3	CD80	CD8	CD3ζ
TIM3	CD80	CD8	CD3δ
TIM3	CD80	CD8	CD3γ
TIM3	CD80	CD8	CD3ε
TIM3	CD80	CD8	FcγRI-γ
TIM3	CD80	CD8	FcγRIII-γ
TIM3	CD80	CD8	FcεRIβ
TIM3	CD80	CD8	FcεRIγ
TIM3	CD80	CD8	DAP10
TIM3	CD80	CD8	DAP12
TIM3	CD80	CD8	CD32
TIM3	CD80	CD8	CD79a
TIM3	CD80	CD8	CD79b
TIM3	CD80	CD4	CD8
TIM3	CD80	CD4	CD3ζ
TIM3	CD80	CD4	CD3δ
TIM3	CD80	CD4	CD3γ
TIM3	CD80	CD4	CD3ε
TIM3	CD80	CD4	FcγRI-γ
TIM3	CD80	CD4	FcγRIII-γ
TIM3	CD80	CD4	FcεRIβ
TIM3	CD80	CD4	FcεRIγ
TIM3	CD80	CD4	DAP10
TIM3	CD80	CD4	DAP12
TIM3	CD80	CD4	CD32
TIM3	CD80	CD4	CD79a
TIM3	CD80	CD4	CD79b
TIM3	CD80	b2c	CD8
TIM3	CD80	b2c	CD3ζ
TIM3	CD80	b2c	CD3δ
TIM3	CD80	b2c	CD3γ
TIM3	CD80	b2c	CD3ε
TIM3	CD80	b2c	FcγRI-γ
TIM3	CD80	b2c	FcγRIII-γ
TIM3	CD80	b2c	FcεRIβ
TIM3	CD80	b2c	FcεRIγ
TIM3	CD80	b2c	DAP10

TIM3	CD80	b2c	DAP12
TIM3	CD80	b2c	CD32
TIM3	CD80	b2c	CD79a
TIM3	CD80	b2c	CD79b
TIM3	CD80	CD137/41BB	CD8
TIM3	CD80	CD137/41BB	CD3ζ
TIM3	CD80	CD137/41BB	CD3δ
TIM3	CD80	CD137/41BB	CD3γ
TIM3	CD80	CD137/41BB	CD3ε
TIM3	CD80	CD137/41BB	FcγRI-γ
TIM3	CD80	CD137/41BB	FcγRIII-γ
TIM3	CD80	CD137/41BB	FcεRIβ
TIM3	CD80	CD137/41BB	FcεRIγ
TIM3	CD80	CD137/41BB	DAP10
TIM3	CD80	CD137/41BB	DAP12
TIM3	CD80	CD137/41BB	CD32
TIM3	CD80	CD137/41BB	CD79a
TIM3	CD80	CD137/41BB	CD79b
TIM3	CD80	ICOS	CD8
TIM3	CD80	ICOS	CD3ζ
TIM3	CD80	ICOS	CD3δ
TIM3	CD80	ICOS	CD3γ
TIM3	CD80	ICOS	CD3ε
TIM3	CD80	ICOS	FcγRI-γ
TIM3	CD80	ICOS	FcγRIII-γ
TIM3	CD80	ICOS	FcεRIβ
TIM3	CD80	ICOS	FcεRIγ
TIM3	CD80	ICOS	DAP10
TIM3	CD80	ICOS	DAP12
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TIM3	CD80	CD27	CD3ζ
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TIM3	CD80	CD27	FcγRIII-γ
TIM3	CD80	CD27	FcεRIβ
TIM3	CD80	CD27	FcεRIγ
TIM3	CD80	CD27	DAP10
TIM3	CD80	CD27	DAP12
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TIM3	CD80	CD28δ	CD8
TIM3	CD80	CD28δ	CD3ζ
TIM3	CD80	CD28δ	CD3δ
TIM3	CD80	CD28δ	CD3γ
TIM3	CD80	CD28δ	CD3ε
TIM3	CD80	CD28δ	FcγRI-γ

TIM3	CD80	CD28δ	FcγRIII-γ
TIM3	CD80	CD28δ	FcεRIβ
TIM3	CD80	CD28δ	FcεRIγ
TIM3	CD80	CD28δ	DAP10
TIM3	CD80	CD28δ	DAP12
TIM3	CD80	CD28δ	CD32
TIM3	CD80	CD28δ	CD79a
TIM3	CD80	CD28δ	CD79b
TIM3	CD80	CD80	CD8
TIM3	CD80	CD80	CD3ζ
TIM3	CD80	CD80	CD3δ
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TIM3	CD80	CD80	FcεRIβ
TIM3	CD80	CD80	FcεRIγ
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TIM3	CD80	CD80	DAP12
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TIM3	CD80	CD86	CD3δ
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TIM3	CD80	CD86	CD3ε
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TIM3	CD80	CD86	FcγRIII-γ
TIM3	CD80	CD86	FcεRIβ
TIM3	CD80	CD86	FcεRIγ
TIM3	CD80	CD86	DAP10
TIM3	CD80	CD86	DAP12
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TIM3	CD80	CD86	CD79b
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TIM3	CD80	OX40	FcγRIII-γ
TIM3	CD80	OX40	FcεRIβ
TIM3	CD80	OX40	FcεRIγ
TIM3	CD80	OX40	DAP10
TIM3	CD80	OX40	DAP12
TIM3	CD80	OX40	CD32
TIM3	CD80	OX40	CD79a
TIM3	CD80	OX40	CD79b
TIM3	CD80	DAP10	CD8
TIM3	CD80	DAP10	CD3ζ

TIM3	CD80	DAP10	CD3δ
TIM3	CD80	DAP10	CD3γ
TIM3	CD80	DAP10	CD3ε
TIM3	CD80	DAP10	FcγRI-γ
TIM3	CD80	DAP10	FcγRIII-γ
TIM3	CD80	DAP10	FcεRIβ
TIM3	CD80	DAP10	FcεRIγ
TIM3	CD80	DAP10	DAP10
TIM3	CD80	DAP10	DAP12
TIM3	CD80	DAP10	CD32
TIM3	CD80	DAP10	CD79a
TIM3	CD80	DAP10	CD79b
TIM3	CD80	DAP12	CD8
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TIM3	CD80	DAP12	CD3γ
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TIM3	CD80	DAP12	CD32
TIM3	CD80	DAP12	CD79a
TIM3	CD80	DAP12	CD79b
TIM3	CD80	MyD88	CD8
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TIM3	CD80	MyD88	CD3δ
TIM3	CD80	MyD88	CD3γ
TIM3	CD80	MyD88	CD3ε
TIM3	CD80	MyD88	FcγRI-γ
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TIM3	CD80	MyD88	FcεRIγ
TIM3	CD80	MyD88	DAP10
TIM3	CD80	MyD88	DAP12
TIM3	CD80	MyD88	CD32
TIM3	CD80	MyD88	CD79a
TIM3	CD80	MyD88	CD79b
TIM3	CD80	CD7	CD8
TIM3	CD80	CD7	CD3ζ
TIM3	CD80	CD7	CD3δ
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TIM3	CD80	CD7	CD3ε
TIM3	CD80	CD7	FcγRI-γ
TIM3	CD80	CD7	FcγRIII-γ
TIM3	CD80	CD7	FcεRIβ
TIM3	CD80	CD7	FcεRIγ
TIM3	CD80	CD7	DAP10
TIM3	CD80	CD7	DAP12
TIM3	CD80	CD7	CD32

TIM3	CD80	CD7	CD79a
TIM3	CD80	CD7	CD79b
TIM3	CD80	BTNL3	CD8
TIM3	CD80	BTNL3	CD3ζ
TIM3	CD80	BTNL3	CD3δ
TIM3	CD80	BTNL3	CD3γ
TIM3	CD80	BTNL3	CD3ε
TIM3	CD80	BTNL3	FcγRI-γ
TIM3	CD80	BTNL3	FcγRIII-γ
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TIM3	CD80	BTNL3	FcεRIγ
TIM3	CD80	BTNL3	DAP10
TIM3	CD80	BTNL3	DAP12
TIM3	CD80	BTNL3	CD32
TIM3	CD80	BTNL3	CD79a
TIM3	CD80	BTNL3	CD79b
TIM3	CD80	NKG2D	CD8
TIM3	CD80	NKG2D	CD3ζ
TIM3	CD80	NKG2D	CD3δ
TIM3	CD80	NKG2D	CD3γ
TIM3	CD80	NKG2D	CD3ε
TIM3	CD80	NKG2D	FcγRI-γ
TIM3	CD80	NKG2D	FcγRIII-γ
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TIM3	CD80	NKG2D	FcεRIγ
TIM3	CD80	NKG2D	DAP10
TIM3	CD80	NKG2D	DAP12
TIM3	CD80	NKG2D	CD32
TIM3	CD80	NKG2D	CD79a
TIM3	CD80	NKG2D	CD79b
TIM3	CD86	CD28	CD8
TIM3	CD86	CD28	CD3ζ
TIM3	CD86	CD28	CD3δ
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TIM3	CD86	CD28	FcεRIβ
TIM3	CD86	CD28	FcεRIγ
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TIM3	CD86	CD8	CD3ζ
TIM3	CD86	CD8	CD3δ
TIM3	CD86	CD8	CD3γ
TIM3	CD86	CD8	CD3ε
TIM3	CD86	CD8	FcγRI-γ
TIM3	CD86	CD8	FcγRIII-γ
TIM3	CD86	CD8	FcεRIβ

TIM3	CD86	CD8	FcεRIγ
TIM3	CD86	CD8	DAP10
TIM3	CD86	CD8	DAP12
TIM3	CD86	CD8	CD32
TIM3	CD86	CD8	CD79a
TIM3	CD86	CD8	CD79b
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TIM3	CD86	CD4	CD3ζ
TIM3	CD86	CD4	CD3δ
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TIM3	CD86	CD4	FcεRIγ
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TIM3	CD86	CD4	DAP12
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TIM3	CD86	b2c	CD3ζ
TIM3	CD86	b2c	CD3δ
TIM3	CD86	b2c	CD3γ
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TIM3	CD86	CD137/41BB	CD3ζ
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TIM3	CD86	CD137/41BB	CD3γ
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TIM3	CD86	CD137/41BB	FcγRIII-γ
TIM3	CD86	CD137/41BB	FcεRIβ
TIM3	CD86	CD137/41BB	FcεRIγ
TIM3	CD86	CD137/41BB	DAP10
TIM3	CD86	CD137/41BB	DAP12
TIM3	CD86	CD137/41BB	CD32
TIM3	CD86	CD137/41BB	CD79a
TIM3	CD86	CD137/41BB	CD79b
TIM3	CD86	ICOS	CD8
TIM3	CD86	ICOS	CD3ζ
TIM3	CD86	ICOS	CD3δ
TIM3	CD86	ICOS	CD3γ

TIM3	CD86	ICOS	CD3ε
TIM3	CD86	ICOS	FcγRI-γ
TIM3	CD86	ICOS	FcγRIII-γ
TIM3	CD86	ICOS	FcεRIβ
TIM3	CD86	ICOS	FcεRIγ
TIM3	CD86	ICOS	DAP10
TIM3	CD86	ICOS	DAP12
TIM3	CD86	ICOS	CD32
TIM3	CD86	ICOS	CD79a
TIM3	CD86	ICOS	CD79b
TIM3	CD86	CD27	CD8
TIM3	CD86	CD27	CD3ζ
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TIM3	CD86	CD27	FcεRIβ
TIM3	CD86	CD27	FcεRIγ
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TIM3	CD86	CD27	DAP12
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TIM3	CD86	CD28δ	CD3δ
TIM3	CD86	CD28δ	CD3γ
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TIM3	CD86	CD28δ	FcγRI-γ
TIM3	CD86	CD28δ	FcγRIII-γ
TIM3	CD86	CD28δ	FcεRIβ
TIM3	CD86	CD28δ	FcεRIγ
TIM3	CD86	CD28δ	DAP10
TIM3	CD86	CD28δ	DAP12
TIM3	CD86	CD28δ	CD32
TIM3	CD86	CD28δ	CD79a
TIM3	CD86	CD28δ	CD79b
TIM3	CD86	CD80	CD8
TIM3	CD86	CD80	CD3ζ
TIM3	CD86	CD80	CD3δ
TIM3	CD86	CD80	CD3γ
TIM3	CD86	CD80	CD3ε
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TIM3	CD86	CD80	FcγRIII-γ
TIM3	CD86	CD80	FcεRIβ
TIM3	CD86	CD80	FcεRIγ
TIM3	CD86	CD80	DAP10
TIM3	CD86	CD80	DAP12
TIM3	CD86	CD80	CD32
TIM3	CD86	CD80	CD79a
TIM3	CD86	CD80	CD79b

TIM3	CD86	CD86	CD8
TIM3	CD86	CD86	CD3ζ
TIM3	CD86	CD86	CD3δ
TIM3	CD86	CD86	CD3γ
TIM3	CD86	CD86	CD3ε
TIM3	CD86	CD86	FcγRI-γ
TIM3	CD86	CD86	FcγRIII-γ
TIM3	CD86	CD86	FcεRIβ
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TIM3	CD86	CD86	DAP12
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TIM3	CD86	CD86	CD79b
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TIM3	CD86	OX40	CD3δ
TIM3	CD86	OX40	CD3γ
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TIM3	CD86	DAP10	FcγRI-γ
TIM3	CD86	DAP10	FcγRIII-γ
TIM3	CD86	DAP10	FcεRIβ
TIM3	CD86	DAP10	FcεRIγ
TIM3	CD86	DAP10	DAP10
TIM3	CD86	DAP10	DAP12
TIM3	CD86	DAP10	CD32
TIM3	CD86	DAP10	CD79a
TIM3	CD86	DAP10	CD79b
TIM3	CD86	DAP12	CD8
TIM3	CD86	DAP12	CD3ζ
TIM3	CD86	DAP12	CD3δ
TIM3	CD86	DAP12	CD3γ
TIM3	CD86	DAP12	CD3ε
TIM3	CD86	DAP12	FcγRI-γ
TIM3	CD86	DAP12	FcγRIII-γ
TIM3	CD86	DAP12	FcεRIβ
TIM3	CD86	DAP12	FcεRIγ
TIM3	CD86	DAP12	DAP10

TIM3	CD86	DAP12	DAP12
TIM3	CD86	DAP12	CD32
TIM3	CD86	DAP12	CD79a
TIM3	CD86	DAP12	CD79b
TIM3	CD86	MyD88	CD8
TIM3	CD86	MyD88	CD3ζ
TIM3	CD86	MyD88	CD3δ
TIM3	CD86	MyD88	CD3γ
TIM3	CD86	MyD88	CD3ε
TIM3	CD86	MyD88	FcγRI-γ
TIM3	CD86	MyD88	FcγRIII-γ
TIM3	CD86	MyD88	FcεRIβ
TIM3	CD86	MyD88	FcεRIγ
TIM3	CD86	MyD88	DAP10
TIM3	CD86	MyD88	DAP12
TIM3	CD86	MyD88	CD32
TIM3	CD86	MyD88	CD79a
TIM3	CD86	MyD88	CD79b
TIM3	CD86	CD7	CD8
TIM3	CD86	CD7	CD3ζ
TIM3	CD86	CD7	CD3δ
TIM3	CD86	CD7	CD3γ
TIM3	CD86	CD7	CD3ε
TIM3	CD86	CD7	FcγRI-γ
TIM3	CD86	CD7	FcγRIII-γ
TIM3	CD86	CD7	FcεRIβ
TIM3	CD86	CD7	FcεRIγ
TIM3	CD86	CD7	DAP10
TIM3	CD86	CD7	DAP12
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TIM3	CD86	CD7	CD79b
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TIM3	CD86	BTNL3	CD3ζ
TIM3	CD86	BTNL3	CD3δ
TIM3	CD86	BTNL3	CD3γ
TIM3	CD86	BTNL3	CD3ε
TIM3	CD86	BTNL3	FcγRI-γ
TIM3	CD86	BTNL3	FcγRIII-γ
TIM3	CD86	BTNL3	FcεRIβ
TIM3	CD86	BTNL3	FcεRIγ
TIM3	CD86	BTNL3	DAP10
TIM3	CD86	BTNL3	DAP12
TIM3	CD86	BTNL3	CD32
TIM3	CD86	BTNL3	CD79a
TIM3	CD86	BTNL3	CD79b
TIM3	CD86	NKG2D	CD8
TIM3	CD86	NKG2D	CD3ζ
TIM3	CD86	NKG2D	CD3δ
TIM3	CD86	NKG2D	CD3γ
TIM3	CD86	NKG2D	CD3ε
TIM3	CD86	NKG2D	FcγRI-γ

TIM3	CD86	NKG2D	FcγRIII-γ
TIM3	CD86	NKG2D	FcεRIβ
TIM3	CD86	NKG2D	FcεRIγ
TIM3	CD86	NKG2D	DAP10
TIM3	CD86	NKG2D	DAP12
TIM3	CD86	NKG2D	CD32
TIM3	CD86	NKG2D	CD79a
TIM3	CD86	NKG2D	CD79b
TIM3	OX40	CD28	CD8
TIM3	OX40	CD28	CD3ζ
TIM3	OX40	CD28	CD3δ
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TIM3	OX40	CD28	CD3ε
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TIM3	OX40	CD28	DAP12
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TIM3	OX40	CD28	CD79a
TIM3	OX40	CD28	CD79b
TIM3	OX40	CD8	CD8
TIM3	OX40	CD8	CD3ζ
TIM3	OX40	CD8	CD3δ
TIM3	OX40	CD8	CD3γ
TIM3	OX40	CD8	CD3ε
TIM3	OX40	CD8	FcγRI-γ
TIM3	OX40	CD8	FcγRIII-γ
TIM3	OX40	CD8	FcεRIβ
TIM3	OX40	CD8	FcεRIγ
TIM3	OX40	CD8	DAP10
TIM3	OX40	CD8	DAP12
TIM3	OX40	CD8	CD32
TIM3	OX40	CD8	CD79a
TIM3	OX40	CD8	CD79b
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TIM3	OX40	CD4	CD3ζ
TIM3	OX40	CD4	CD3δ
TIM3	OX40	CD4	CD3γ
TIM3	OX40	CD4	CD3ε
TIM3	OX40	CD4	FcγRI-γ
TIM3	OX40	CD4	FcγRIII-γ
TIM3	OX40	CD4	FcεRIβ
TIM3	OX40	CD4	FcεRIγ
TIM3	OX40	CD4	DAP10
TIM3	OX40	CD4	DAP12
TIM3	OX40	CD4	CD32
TIM3	OX40	CD4	CD79a
TIM3	OX40	CD4	CD79b
TIM3	OX40	b2c	CD8
TIM3	OX40	b2c	CD3ζ

TIM3	OX40	b2c	CD3δ
TIM3	OX40	b2c	CD3γ
TIM3	OX40	b2c	CD3ε
TIM3	OX40	b2c	FcγRI-γ
TIM3	OX40	b2c	FcγRIII-γ
TIM3	OX40	b2c	FcεRIβ
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TIM3	OX40	b2c	CD79a
TIM3	OX40	b2c	CD79b
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TIM3	OX40	CD137/41BB	CD3δ
TIM3	OX40	CD137/41BB	CD3γ
TIM3	OX40	CD137/41BB	CD3ε
TIM3	OX40	CD137/41BB	FcγRI-γ
TIM3	OX40	CD137/41BB	FcγRIII-γ
TIM3	OX40	CD137/41BB	FcεRIβ
TIM3	OX40	CD137/41BB	FcεRIγ
TIM3	OX40	CD137/41BB	DAP10
TIM3	OX40	CD137/41BB	DAP12
TIM3	OX40	CD137/41BB	CD32
TIM3	OX40	CD137/41BB	CD79a
TIM3	OX40	CD137/41BB	CD79b
TIM3	OX40	ICOS	CD8
TIM3	OX40	ICOS	CD3ζ
TIM3	OX40	ICOS	CD3δ
TIM3	OX40	ICOS	CD3γ
TIM3	OX40	ICOS	CD3ε
TIM3	OX40	ICOS	FcγRI-γ
TIM3	OX40	ICOS	FcγRIII-γ
TIM3	OX40	ICOS	FcεRIβ
TIM3	OX40	ICOS	FcεRIγ
TIM3	OX40	ICOS	DAP10
TIM3	OX40	ICOS	DAP12
TIM3	OX40	ICOS	CD32
TIM3	OX40	ICOS	CD79a
TIM3	OX40	ICOS	CD79b
TIM3	OX40	CD27	CD8
TIM3	OX40	CD27	CD3ζ
TIM3	OX40	CD27	CD3δ
TIM3	OX40	CD27	CD3γ
TIM3	OX40	CD27	CD3ε
TIM3	OX40	CD27	FcγRI-γ
TIM3	OX40	CD27	FcγRIII-γ
TIM3	OX40	CD27	FcεRIβ
TIM3	OX40	CD27	FcεRIγ
TIM3	OX40	CD27	DAP10
TIM3	OX40	CD27	DAP12
TIM3	OX40	CD27	CD32

TIM3	OX40	CD27	CD79a
TIM3	OX40	CD27	CD79b
TIM3	OX40	CD28δ	CD8
TIM3	OX40	CD28δ	CD3ζ
TIM3	OX40	CD28δ	CD3δ
TIM3	OX40	CD28δ	CD3γ
TIM3	OX40	CD28δ	CD3ε
TIM3	OX40	CD28δ	FcγRI-γ
TIM3	OX40	CD28δ	FcγRIII-γ
TIM3	OX40	CD28δ	FcεRIβ
TIM3	OX40	CD28δ	FcεRIγ
TIM3	OX40	CD28δ	DAP10
TIM3	OX40	CD28δ	DAP12
TIM3	OX40	CD28δ	CD32
TIM3	OX40	CD28δ	CD79a
TIM3	OX40	CD28δ	CD79b
TIM3	OX40	CD80	CD8
TIM3	OX40	CD80	CD3ζ
TIM3	OX40	CD80	CD3δ
TIM3	OX40	CD80	CD3γ
TIM3	OX40	CD80	CD3ε
TIM3	OX40	CD80	FcγRI-γ
TIM3	OX40	CD80	FcγRIII-γ
TIM3	OX40	CD80	FcεRIβ
TIM3	OX40	CD80	FcεRIγ
TIM3	OX40	CD80	DAP10
TIM3	OX40	CD80	DAP12
TIM3	OX40	CD80	CD32
TIM3	OX40	CD80	CD79a
TIM3	OX40	CD80	CD79b
TIM3	OX40	CD86	CD8
TIM3	OX40	CD86	CD3ζ
TIM3	OX40	CD86	CD3δ
TIM3	OX40	CD86	CD3γ
TIM3	OX40	CD86	CD3ε
TIM3	OX40	CD86	FcγRI-γ
TIM3	OX40	CD86	FcγRIII-γ
TIM3	OX40	CD86	FcεRIβ
TIM3	OX40	CD86	FcεRIγ
TIM3	OX40	CD86	DAP10
TIM3	OX40	CD86	DAP12
TIM3	OX40	CD86	CD32
TIM3	OX40	CD86	CD79a
TIM3	OX40	CD86	CD79b
TIM3	OX40	OX40	CD8
TIM3	OX40	OX40	CD3ζ
TIM3	OX40	OX40	CD3δ
TIM3	OX40	OX40	CD3γ
TIM3	OX40	OX40	CD3ε
TIM3	OX40	OX40	FcγRI-γ
TIM3	OX40	OX40	FcγRIII-γ
TIM3	OX40	OX40	FcεRIβ

TIM3	OX40	OX40	FcεRIγ
TIM3	OX40	OX40	DAP10
TIM3	OX40	OX40	DAP12
TIM3	OX40	OX40	CD32
TIM3	OX40	OX40	CD79a
TIM3	OX40	OX40	CD79b
TIM3	OX40	DAP10	CD8
TIM3	OX40	DAP10	CD3ζ
TIM3	OX40	DAP10	CD3δ
TIM3	OX40	DAP10	CD3γ
TIM3	OX40	DAP10	CD3ε
TIM3	OX40	DAP10	FcγRI-γ
TIM3	OX40	DAP10	FcγRIII-γ
TIM3	OX40	DAP10	FcεRIβ
TIM3	OX40	DAP10	FcεRIγ
TIM3	OX40	DAP10	DAP10
TIM3	OX40	DAP10	DAP12
TIM3	OX40	DAP10	CD32
TIM3	OX40	DAP10	CD79a
TIM3	OX40	DAP10	CD79b
TIM3	OX40	DAP12	CD8
TIM3	OX40	DAP12	CD3ζ
TIM3	OX40	DAP12	CD3δ
TIM3	OX40	DAP12	CD3γ
TIM3	OX40	DAP12	CD3ε
TIM3	OX40	DAP12	FcγRI-γ
TIM3	OX40	DAP12	FcγRIII-γ
TIM3	OX40	DAP12	FcεRIβ
TIM3	OX40	DAP12	FcεRIγ
TIM3	OX40	DAP12	DAP10
TIM3	OX40	DAP12	DAP12
TIM3	OX40	DAP12	CD32
TIM3	OX40	DAP12	CD79a
TIM3	OX40	DAP12	CD79b
TIM3	OX40	MyD88	CD8
TIM3	OX40	MyD88	CD3ζ
TIM3	OX40	MyD88	CD3δ
TIM3	OX40	MyD88	CD3γ
TIM3	OX40	MyD88	CD3ε
TIM3	OX40	MyD88	FcγRI-γ
TIM3	OX40	MyD88	FcγRIII-γ
TIM3	OX40	MyD88	FcεRIβ
TIM3	OX40	MyD88	FcεRIγ
TIM3	OX40	MyD88	DAP10
TIM3	OX40	MyD88	DAP12
TIM3	OX40	MyD88	CD32
TIM3	OX40	MyD88	CD79a
TIM3	OX40	MyD88	CD79b
TIM3	OX40	CD7	CD8
TIM3	OX40	CD7	CD3ζ
TIM3	OX40	CD7	CD3δ
TIM3	OX40	CD7	CD3γ

TIM3	OX40	CD7	CD3ε
TIM3	OX40	CD7	FcγRI-γ
TIM3	OX40	CD7	FcγRIII-γ
TIM3	OX40	CD7	FcεRIβ
TIM3	OX40	CD7	FcεRIγ
TIM3	OX40	CD7	DAP10
TIM3	OX40	CD7	DAP12
TIM3	OX40	CD7	CD32
TIM3	OX40	CD7	CD79a
TIM3	OX40	CD7	CD79b
TIM3	OX40	BTNL3	CD8
TIM3	OX40	BTNL3	CD3ζ
TIM3	OX40	BTNL3	CD3δ
TIM3	OX40	BTNL3	CD3γ
TIM3	OX40	BTNL3	CD3ε
TIM3	OX40	BTNL3	FcγRI-γ
TIM3	OX40	BTNL3	FcγRIII-γ
TIM3	OX40	BTNL3	FcεRIβ
TIM3	OX40	BTNL3	FcεRIγ
TIM3	OX40	BTNL3	DAP10
TIM3	OX40	BTNL3	DAP12
TIM3	OX40	BTNL3	CD32
TIM3	OX40	BTNL3	CD79a
TIM3	OX40	BTNL3	CD79b
TIM3	OX40	NKG2D	CD8
TIM3	OX40	NKG2D	CD3ζ
TIM3	OX40	NKG2D	CD3δ
TIM3	OX40	NKG2D	CD3γ
TIM3	OX40	NKG2D	CD3ε
TIM3	OX40	NKG2D	FcγRI-γ
TIM3	OX40	NKG2D	FcγRIII-γ
TIM3	OX40	NKG2D	FcεRIβ
TIM3	OX40	NKG2D	FcεRIγ
TIM3	OX40	NKG2D	DAP10
TIM3	OX40	NKG2D	DAP12
TIM3	OX40	NKG2D	CD32
TIM3	OX40	NKG2D	CD79a
TIM3	OX40	NKG2D	CD79b
TIM3	DAP10	CD28	CD8
TIM3	DAP10	CD28	CD3ζ
TIM3	DAP10	CD28	CD3δ
TIM3	DAP10	CD28	CD3γ
TIM3	DAP10	CD28	CD3ε
TIM3	DAP10	CD28	FcγRI-γ
TIM3	DAP10	CD28	FcγRIII-γ
TIM3	DAP10	CD28	FcεRIβ
TIM3	DAP10	CD28	FcεRIγ
TIM3	DAP10	CD28	DAP10
TIM3	DAP10	CD28	DAP12
TIM3	DAP10	CD28	CD32
TIM3	DAP10	CD28	CD79a
TIM3	DAP10	CD28	CD79b

TIM3	DAP10	CD8	CD8
TIM3	DAP10	CD8	CD3ζ
TIM3	DAP10	CD8	CD3δ
TIM3	DAP10	CD8	CD3γ
TIM3	DAP10	CD8	CD3ε
TIM3	DAP10	CD8	FcγRI-γ
TIM3	DAP10	CD8	FcγRIII-γ
TIM3	DAP10	CD8	FcεRIβ
TIM3	DAP10	CD8	FcεRIγ
TIM3	DAP10	CD8	DAP10
TIM3	DAP10	CD8	DAP12
TIM3	DAP10	CD8	CD32
TIM3	DAP10	CD8	CD79a
TIM3	DAP10	CD8	CD79b
TIM3	DAP10	CD4	CD8
TIM3	DAP10	CD4	CD3ζ
TIM3	DAP10	CD4	CD3δ
TIM3	DAP10	CD4	CD3γ
TIM3	DAP10	CD4	CD3ε
TIM3	DAP10	CD4	FcγRI-γ
TIM3	DAP10	CD4	FcγRIII-γ
TIM3	DAP10	CD4	FcεRIβ
TIM3	DAP10	CD4	FcεRIγ
TIM3	DAP10	CD4	DAP10
TIM3	DAP10	CD4	DAP12
TIM3	DAP10	CD4	CD32
TIM3	DAP10	CD4	CD79a
TIM3	DAP10	CD4	CD79b
TIM3	DAP10	b2c	CD8
TIM3	DAP10	b2c	CD3ζ
TIM3	DAP10	b2c	CD3δ
TIM3	DAP10	b2c	CD3γ
TIM3	DAP10	b2c	CD3ε
TIM3	DAP10	b2c	FcγRI-γ
TIM3	DAP10	b2c	FcγRIII-γ
TIM3	DAP10	b2c	FcεRIβ
TIM3	DAP10	b2c	FcεRIγ
TIM3	DAP10	b2c	DAP10
TIM3	DAP10	b2c	DAP12
TIM3	DAP10	b2c	CD32
TIM3	DAP10	b2c	CD79a
TIM3	DAP10	b2c	CD79b
TIM3	DAP10	CD137/41BB	CD8
TIM3	DAP10	CD137/41BB	CD3ζ
TIM3	DAP10	CD137/41BB	CD3δ
TIM3	DAP10	CD137/41BB	CD3γ
TIM3	DAP10	CD137/41BB	CD3ε
TIM3	DAP10	CD137/41BB	FcγRI-γ
TIM3	DAP10	CD137/41BB	FcγRIII-γ
TIM3	DAP10	CD137/41BB	FcεRIβ
TIM3	DAP10	CD137/41BB	FcεRIγ
TIM3	DAP10	CD137/41BB	DAP10

TIM3	DAP10	CD137/41BB	DAP12
TIM3	DAP10	CD137/41BB	CD32
TIM3	DAP10	CD137/41BB	CD79a
TIM3	DAP10	CD137/41BB	CD79b
TIM3	DAP10	ICOS	CD8
TIM3	DAP10	ICOS	CD3ζ
TIM3	DAP10	ICOS	CD3δ
TIM3	DAP10	ICOS	CD3γ
TIM3	DAP10	ICOS	CD3ε
TIM3	DAP10	ICOS	FcγRI-γ
TIM3	DAP10	ICOS	FcγRIII-γ
TIM3	DAP10	ICOS	FcεRIβ
TIM3	DAP10	ICOS	FcεRIγ
TIM3	DAP10	ICOS	DAP10
TIM3	DAP10	ICOS	DAP12
TIM3	DAP10	ICOS	CD32
TIM3	DAP10	ICOS	CD79a
TIM3	DAP10	ICOS	CD79b
TIM3	DAP10	CD27	CD8
TIM3	DAP10	CD27	CD3ζ
TIM3	DAP10	CD27	CD3δ
TIM3	DAP10	CD27	CD3γ
TIM3	DAP10	CD27	CD3ε
TIM3	DAP10	CD27	FcγRI-γ
TIM3	DAP10	CD27	FcγRIII-γ
TIM3	DAP10	CD27	FcεRIβ
TIM3	DAP10	CD27	FcεRIγ
TIM3	DAP10	CD27	DAP10
TIM3	DAP10	CD27	DAP12
TIM3	DAP10	CD27	CD32
TIM3	DAP10	CD27	CD79a
TIM3	DAP10	CD27	CD79b
TIM3	DAP10	CD28δ	CD8
TIM3	DAP10	CD28δ	CD3ζ
TIM3	DAP10	CD28δ	CD3δ
TIM3	DAP10	CD28δ	CD3γ
TIM3	DAP10	CD28δ	CD3ε
TIM3	DAP10	CD28δ	FcγRI-γ
TIM3	DAP10	CD28δ	FcγRIII-γ
TIM3	DAP10	CD28δ	FcεRIβ
TIM3	DAP10	CD28δ	FcεRIγ
TIM3	DAP10	CD28δ	DAP10
TIM3	DAP10	CD28δ	DAP12
TIM3	DAP10	CD28δ	CD32
TIM3	DAP10	CD28δ	CD79a
TIM3	DAP10	CD28δ	CD79b
TIM3	DAP10	CD80	CD8
TIM3	DAP10	CD80	CD3ζ
TIM3	DAP10	CD80	CD3δ
TIM3	DAP10	CD80	CD3γ
TIM3	DAP10	CD80	CD3ε
TIM3	DAP10	CD80	FcγRI-γ

TIM3	DAP10	CD80	FcγRIII-γ
TIM3	DAP10	CD80	FcεRIβ
TIM3	DAP10	CD80	FcεRIγ
TIM3	DAP10	CD80	DAP10
TIM3	DAP10	CD80	DAP12
TIM3	DAP10	CD80	CD32
TIM3	DAP10	CD80	CD79a
TIM3	DAP10	CD80	CD79b
TIM3	DAP10	CD86	CD8
TIM3	DAP10	CD86	CD3ζ
TIM3	DAP10	CD86	CD3δ
TIM3	DAP10	CD86	CD3γ
TIM3	DAP10	CD86	CD3ε
TIM3	DAP10	CD86	FcγRI-γ
TIM3	DAP10	CD86	FcγRIII-γ
TIM3	DAP10	CD86	FcεRIβ
TIM3	DAP10	CD86	FcεRIγ
TIM3	DAP10	CD86	DAP10
TIM3	DAP10	CD86	DAP12
TIM3	DAP10	CD86	CD32
TIM3	DAP10	CD86	CD79a
TIM3	DAP10	CD86	CD79b
TIM3	DAP10	OX40	CD8
TIM3	DAP10	OX40	CD3ζ
TIM3	DAP10	OX40	CD3δ
TIM3	DAP10	OX40	CD3γ
TIM3	DAP10	OX40	CD3ε
TIM3	DAP10	OX40	FcγRI-γ
TIM3	DAP10	OX40	FcγRIII-γ
TIM3	DAP10	OX40	FcεRIβ
TIM3	DAP10	OX40	FcεRIγ
TIM3	DAP10	OX40	DAP10
TIM3	DAP10	OX40	DAP12
TIM3	DAP10	OX40	CD32
TIM3	DAP10	OX40	CD79a
TIM3	DAP10	OX40	CD79b
TIM3	DAP10	DAP10	CD8
TIM3	DAP10	DAP10	CD3ζ
TIM3	DAP10	DAP10	CD3δ
TIM3	DAP10	DAP10	CD3γ
TIM3	DAP10	DAP10	CD3ε
TIM3	DAP10	DAP10	FcγRI-γ
TIM3	DAP10	DAP10	FcγRIII-γ
TIM3	DAP10	DAP10	FcεRIβ
TIM3	DAP10	DAP10	FcεRIγ
TIM3	DAP10	DAP10	DAP10
TIM3	DAP10	DAP10	DAP12
TIM3	DAP10	DAP10	CD32
TIM3	DAP10	DAP10	CD79a
TIM3	DAP10	DAP10	CD79b
TIM3	DAP10	DAP12	CD8
TIM3	DAP10	DAP12	CD3ζ

TIM3	DAP10	DAP12	CD3δ
TIM3	DAP10	DAP12	CD3γ
TIM3	DAP10	DAP12	CD3ε
TIM3	DAP10	DAP12	FcγRI-γ
TIM3	DAP10	DAP12	FcγRIII-γ
TIM3	DAP10	DAP12	FcεRIβ
TIM3	DAP10	DAP12	FcεRIγ
TIM3	DAP10	DAP12	DAP10
TIM3	DAP10	DAP12	DAP12
TIM3	DAP10	DAP12	CD32
TIM3	DAP10	DAP12	CD79a
TIM3	DAP10	DAP12	CD79b
TIM3	DAP10	MyD88	CD8
TIM3	DAP10	MyD88	CD3ζ
TIM3	DAP10	MyD88	CD3δ
TIM3	DAP10	MyD88	CD3γ
TIM3	DAP10	MyD88	CD3ε
TIM3	DAP10	MyD88	FcγRI-γ
TIM3	DAP10	MyD88	FcγRIII-γ
TIM3	DAP10	MyD88	FcεRIβ
TIM3	DAP10	MyD88	FcεRIγ
TIM3	DAP10	MyD88	DAP10
TIM3	DAP10	MyD88	DAP12
TIM3	DAP10	MyD88	CD32
TIM3	DAP10	MyD88	CD79a
TIM3	DAP10	MyD88	CD79b
TIM3	DAP10	CD7	CD8
TIM3	DAP10	CD7	CD3ζ
TIM3	DAP10	CD7	CD3δ
TIM3	DAP10	CD7	CD3γ
TIM3	DAP10	CD7	CD3ε
TIM3	DAP10	CD7	FcγRI-γ
TIM3	DAP10	CD7	FcγRIII-γ
TIM3	DAP10	CD7	FcεRIβ
TIM3	DAP10	CD7	FcεRIγ
TIM3	DAP10	CD7	DAP10
TIM3	DAP10	CD7	DAP12
TIM3	DAP10	CD7	CD32
TIM3	DAP10	CD7	CD79a
TIM3	DAP10	CD7	CD79b
TIM3	DAP10	BTNL3	CD8
TIM3	DAP10	BTNL3	CD3ζ
TIM3	DAP10	BTNL3	CD3δ
TIM3	DAP10	BTNL3	CD3γ
TIM3	DAP10	BTNL3	CD3ε
TIM3	DAP10	BTNL3	FcγRI-γ
TIM3	DAP10	BTNL3	FcγRIII-γ
TIM3	DAP10	BTNL3	FcεRIβ
TIM3	DAP10	BTNL3	FcεRIγ
TIM3	DAP10	BTNL3	DAP10
TIM3	DAP10	BTNL3	DAP12
TIM3	DAP10	BTNL3	CD32

TIM3	DAP10	BTNL3	CD79a
TIM3	DAP10	BTNL3	CD79b
TIM3	DAP10	NKG2D	CD8
TIM3	DAP10	NKG2D	CD3ζ
TIM3	DAP10	NKG2D	CD3δ
TIM3	DAP10	NKG2D	CD3γ
TIM3	DAP10	NKG2D	CD3ε
TIM3	DAP10	NKG2D	FcγRI-γ
TIM3	DAP10	NKG2D	FcγRIII-γ
TIM3	DAP10	NKG2D	FcεRIβ
TIM3	DAP10	NKG2D	FcεRIγ
TIM3	DAP10	NKG2D	DAP10
TIM3	DAP10	NKG2D	DAP12
TIM3	DAP10	NKG2D	CD32
TIM3	DAP10	NKG2D	CD79a
TIM3	DAP10	NKG2D	CD79b
TIM3	DAP12	CD28	CD8
TIM3	DAP12	CD28	CD3ζ
TIM3	DAP12	CD28	CD3δ
TIM3	DAP12	CD28	CD3γ
TIM3	DAP12	CD28	CD3ε
TIM3	DAP12	CD28	FcγRI-γ
TIM3	DAP12	CD28	FcγRIII-γ
TIM3	DAP12	CD28	FcεRIβ
TIM3	DAP12	CD28	FcεRIγ
TIM3	DAP12	CD28	DAP10
TIM3	DAP12	CD28	DAP12
TIM3	DAP12	CD28	CD32
TIM3	DAP12	CD28	CD79a
TIM3	DAP12	CD28	CD79b
TIM3	DAP12	CD8	CD8
TIM3	DAP12	CD8	CD3ζ
TIM3	DAP12	CD8	CD3δ
TIM3	DAP12	CD8	CD3γ
TIM3	DAP12	CD8	CD3ε
TIM3	DAP12	CD8	FcγRI-γ
TIM3	DAP12	CD8	FcγRIII-γ
TIM3	DAP12	CD8	FcεRIβ
TIM3	DAP12	CD8	FcεRIγ
TIM3	DAP12	CD8	DAP10
TIM3	DAP12	CD8	DAP12
TIM3	DAP12	CD8	CD32
TIM3	DAP12	CD8	CD79a
TIM3	DAP12	CD8	CD79b
TIM3	DAP12	CD4	CD8
TIM3	DAP12	CD4	CD3ζ
TIM3	DAP12	CD4	CD3δ
TIM3	DAP12	CD4	CD3γ
TIM3	DAP12	CD4	CD3ε
TIM3	DAP12	CD4	FcγRI-γ
TIM3	DAP12	CD4	FcγRIII-γ
TIM3	DAP12	CD4	FcεRIβ

TIM3	DAP12	CD4	FcεRIγ
TIM3	DAP12	CD4	DAP10
TIM3	DAP12	CD4	DAP12
TIM3	DAP12	CD4	CD32
TIM3	DAP12	CD4	CD79a
TIM3	DAP12	CD4	CD79b
TIM3	DAP12	b2c	CD8
TIM3	DAP12	b2c	CD3ζ
TIM3	DAP12	b2c	CD3δ
TIM3	DAP12	b2c	CD3γ
TIM3	DAP12	b2c	CD3ε
TIM3	DAP12	b2c	FcγRI-γ
TIM3	DAP12	b2c	FcγRIII-γ
TIM3	DAP12	b2c	FcεRIβ
TIM3	DAP12	b2c	FcεRIγ
TIM3	DAP12	b2c	DAP10
TIM3	DAP12	b2c	DAP12
TIM3	DAP12	b2c	CD32
TIM3	DAP12	b2c	CD79a
TIM3	DAP12	b2c	CD79b
TIM3	DAP12	CD137/41BB	CD8
TIM3	DAP12	CD137/41BB	CD3ζ
TIM3	DAP12	CD137/41BB	CD3δ
TIM3	DAP12	CD137/41BB	CD3γ
TIM3	DAP12	CD137/41BB	CD3ε
TIM3	DAP12	CD137/41BB	FcγRI-γ
TIM3	DAP12	CD137/41BB	FcγRIII-γ
TIM3	DAP12	CD137/41BB	FcεRIβ
TIM3	DAP12	CD137/41BB	FcεRIγ
TIM3	DAP12	CD137/41BB	DAP10
TIM3	DAP12	CD137/41BB	DAP12
TIM3	DAP12	CD137/41BB	CD32
TIM3	DAP12	CD137/41BB	CD79a
TIM3	DAP12	CD137/41BB	CD79b
TIM3	DAP12	ICOS	CD8
TIM3	DAP12	ICOS	CD3ζ
TIM3	DAP12	ICOS	CD3δ
TIM3	DAP12	ICOS	CD3γ
TIM3	DAP12	ICOS	CD3ε
TIM3	DAP12	ICOS	FcγRI-γ
TIM3	DAP12	ICOS	FcγRIII-γ
TIM3	DAP12	ICOS	FcεRIβ
TIM3	DAP12	ICOS	FcεRIγ
TIM3	DAP12	ICOS	DAP10
TIM3	DAP12	ICOS	DAP12
TIM3	DAP12	ICOS	CD32
TIM3	DAP12	ICOS	CD79a
TIM3	DAP12	ICOS	CD79b
TIM3	DAP12	CD27	CD8
TIM3	DAP12	CD27	CD3ζ
TIM3	DAP12	CD27	CD3δ
TIM3	DAP12	CD27	CD3γ

TIM3	DAP12	CD27	CD3ε
TIM3	DAP12	CD27	FcγRI-γ
TIM3	DAP12	CD27	FcγRIII-γ
TIM3	DAP12	CD27	FcεRIβ
TIM3	DAP12	CD27	FcεRIγ
TIM3	DAP12	CD27	DAP10
TIM3	DAP12	CD27	DAP12
TIM3	DAP12	CD27	CD32
TIM3	DAP12	CD27	CD79a
TIM3	DAP12	CD27	CD79b
TIM3	DAP12	CD28δ	CD8
TIM3	DAP12	CD28δ	CD3ζ
TIM3	DAP12	CD28δ	CD3δ
TIM3	DAP12	CD28δ	CD3γ
TIM3	DAP12	CD28δ	CD3ε
TIM3	DAP12	CD28δ	FcγRI-γ
TIM3	DAP12	CD28δ	FcγRIII-γ
TIM3	DAP12	CD28δ	FcεRIβ
TIM3	DAP12	CD28δ	FcεRIγ
TIM3	DAP12	CD28δ	DAP10
TIM3	DAP12	CD28δ	DAP12
TIM3	DAP12	CD28δ	CD32
TIM3	DAP12	CD28δ	CD79a
TIM3	DAP12	CD28δ	CD79b
TIM3	DAP12	CD80	CD8
TIM3	DAP12	CD80	CD3ζ
TIM3	DAP12	CD80	CD3δ
TIM3	DAP12	CD80	CD3γ
TIM3	DAP12	CD80	CD3ε
TIM3	DAP12	CD80	FcγRI-γ
TIM3	DAP12	CD80	FcγRIII-γ
TIM3	DAP12	CD80	FcεRIβ
TIM3	DAP12	CD80	FcεRIγ
TIM3	DAP12	CD80	DAP10
TIM3	DAP12	CD80	DAP12
TIM3	DAP12	CD80	CD32
TIM3	DAP12	CD80	CD79a
TIM3	DAP12	CD80	CD79b
TIM3	DAP12	CD86	CD8
TIM3	DAP12	CD86	CD3ζ
TIM3	DAP12	CD86	CD3δ
TIM3	DAP12	CD86	CD3γ
TIM3	DAP12	CD86	CD3ε
TIM3	DAP12	CD86	FcγRI-γ
TIM3	DAP12	CD86	FcγRIII-γ
TIM3	DAP12	CD86	FcεRIβ
TIM3	DAP12	CD86	FcεRIγ
TIM3	DAP12	CD86	DAP10
TIM3	DAP12	CD86	DAP12
TIM3	DAP12	CD86	CD32
TIM3	DAP12	CD86	CD79a
TIM3	DAP12	CD86	CD79b

TIM3	DAP12	OX40	CD8
TIM3	DAP12	OX40	CD3ζ
TIM3	DAP12	OX40	CD3δ
TIM3	DAP12	OX40	CD3γ
TIM3	DAP12	OX40	CD3ε
TIM3	DAP12	OX40	FcγRI-γ
TIM3	DAP12	OX40	FcγRIII-γ
TIM3	DAP12	OX40	FcεRIβ
TIM3	DAP12	OX40	FcεRIγ
TIM3	DAP12	OX40	DAP10
TIM3	DAP12	OX40	DAP12
TIM3	DAP12	OX40	CD32
TIM3	DAP12	OX40	CD79a
TIM3	DAP12	OX40	CD79b
TIM3	DAP12	DAP10	CD8
TIM3	DAP12	DAP10	CD3ζ
TIM3	DAP12	DAP10	CD3δ
TIM3	DAP12	DAP10	CD3γ
TIM3	DAP12	DAP10	CD3ε
TIM3	DAP12	DAP10	FcγRI-γ
TIM3	DAP12	DAP10	FcγRIII-γ
TIM3	DAP12	DAP10	FcεRIβ
TIM3	DAP12	DAP10	FcεRIγ
TIM3	DAP12	DAP10	DAP10
TIM3	DAP12	DAP10	DAP12
TIM3	DAP12	DAP10	CD32
TIM3	DAP12	DAP10	CD79a
TIM3	DAP12	DAP10	CD79b
TIM3	DAP12	DAP12	CD8
TIM3	DAP12	DAP12	CD3ζ
TIM3	DAP12	DAP12	CD3δ
TIM3	DAP12	DAP12	CD3γ
TIM3	DAP12	DAP12	CD3ε
TIM3	DAP12	DAP12	FcγRI-γ
TIM3	DAP12	DAP12	FcγRIII-γ
TIM3	DAP12	DAP12	FcεRIβ
TIM3	DAP12	DAP12	FcεRIγ
TIM3	DAP12	DAP12	DAP10
TIM3	DAP12	DAP12	DAP12
TIM3	DAP12	DAP12	CD32
TIM3	DAP12	DAP12	CD79a
TIM3	DAP12	DAP12	CD79b
TIM3	DAP12	MyD88	CD8
TIM3	DAP12	MyD88	CD3ζ
TIM3	DAP12	MyD88	CD3δ
TIM3	DAP12	MyD88	CD3γ
TIM3	DAP12	MyD88	CD3ε
TIM3	DAP12	MyD88	FcγRI-γ
TIM3	DAP12	MyD88	FcγRIII-γ
TIM3	DAP12	MyD88	FcεRIβ
TIM3	DAP12	MyD88	FcεRIγ
TIM3	DAP12	MyD88	DAP10

TIM3	DAP12	MyD88	DAP12
TIM3	DAP12	MyD88	CD32
TIM3	DAP12	MyD88	CD79a
TIM3	DAP12	MyD88	CD79b
TIM3	DAP12	CD7	CD8
TIM3	DAP12	CD7	CD3ζ
TIM3	DAP12	CD7	CD3δ
TIM3	DAP12	CD7	CD3γ
TIM3	DAP12	CD7	CD3ε
TIM3	DAP12	CD7	FcγRI-γ
TIM3	DAP12	CD7	FcγRIII-γ
TIM3	DAP12	CD7	FcεRIβ
TIM3	DAP12	CD7	FcεRIγ
TIM3	DAP12	CD7	DAP10
TIM3	DAP12	CD7	DAP12
TIM3	DAP12	CD7	CD32
TIM3	DAP12	CD7	CD79a
TIM3	DAP12	CD7	CD79b
TIM3	DAP12	BTNL3	CD8
TIM3	DAP12	BTNL3	CD3ζ
TIM3	DAP12	BTNL3	CD3δ
TIM3	DAP12	BTNL3	CD3γ
TIM3	DAP12	BTNL3	CD3ε
TIM3	DAP12	BTNL3	FcγRI-γ
TIM3	DAP12	BTNL3	FcγRIII-γ
TIM3	DAP12	BTNL3	FcεRIβ
TIM3	DAP12	BTNL3	FcεRIγ
TIM3	DAP12	BTNL3	DAP10
TIM3	DAP12	BTNL3	DAP12
TIM3	DAP12	BTNL3	CD32
TIM3	DAP12	BTNL3	CD79a
TIM3	DAP12	BTNL3	CD79b
TIM3	DAP12	NKG2D	CD8
TIM3	DAP12	NKG2D	CD3ζ
TIM3	DAP12	NKG2D	CD3δ
TIM3	DAP12	NKG2D	CD3γ
TIM3	DAP12	NKG2D	CD3ε
TIM3	DAP12	NKG2D	FcγRI-γ
TIM3	DAP12	NKG2D	FcγRIII-γ
TIM3	DAP12	NKG2D	FcεRIβ
TIM3	DAP12	NKG2D	FcεRIγ
TIM3	DAP12	NKG2D	DAP10
TIM3	DAP12	NKG2D	DAP12
TIM3	DAP12	NKG2D	CD32
TIM3	DAP12	NKG2D	CD79a
TIM3	DAP12	NKG2D	CD79b
TIM3	MyD88	CD28	CD8
TIM3	MyD88	CD28	CD3ζ
TIM3	MyD88	CD28	CD3δ
TIM3	MyD88	CD28	CD3γ
TIM3	MyD88	CD28	CD3ε
TIM3	MyD88	CD28	FcγRI-γ

TIM3	MyD88	CD28	FcγRIII-γ
TIM3	MyD88	CD28	FcεRIβ
TIM3	MyD88	CD28	FcεRIγ
TIM3	MyD88	CD28	DAP10
TIM3	MyD88	CD28	DAP12
TIM3	MyD88	CD28	CD32
TIM3	MyD88	CD28	CD79a
TIM3	MyD88	CD28	CD79b
TIM3	MyD88	CD8	CD8
TIM3	MyD88	CD8	CD3ζ
TIM3	MyD88	CD8	CD3δ
TIM3	MyD88	CD8	CD3γ
TIM3	MyD88	CD8	CD3ε
TIM3	MyD88	CD8	FcγRI-γ
TIM3	MyD88	CD8	FcγRIII-γ
TIM3	MyD88	CD8	FcεRIβ
TIM3	MyD88	CD8	FcεRIγ
TIM3	MyD88	CD8	DAP10
TIM3	MyD88	CD8	DAP12
TIM3	MyD88	CD8	CD32
TIM3	MyD88	CD8	CD79a
TIM3	MyD88	CD8	CD79b
TIM3	MyD88	CD4	CD8
TIM3	MyD88	CD4	CD3ζ
TIM3	MyD88	CD4	CD3δ
TIM3	MyD88	CD4	CD3γ
TIM3	MyD88	CD4	CD3ε
TIM3	MyD88	CD4	FcγRI-γ
TIM3	MyD88	CD4	FcγRIII-γ
TIM3	MyD88	CD4	FcεRIβ
TIM3	MyD88	CD4	FcεRIγ
TIM3	MyD88	CD4	DAP10
TIM3	MyD88	CD4	DAP12
TIM3	MyD88	CD4	CD32
TIM3	MyD88	CD4	CD79a
TIM3	MyD88	CD4	CD79b
TIM3	MyD88	b2c	CD8
TIM3	MyD88	b2c	CD3ζ
TIM3	MyD88	b2c	CD3δ
TIM3	MyD88	b2c	CD3γ
TIM3	MyD88	b2c	CD3ε
TIM3	MyD88	b2c	FcγRI-γ
TIM3	MyD88	b2c	FcγRIII-γ
TIM3	MyD88	b2c	FcεRIβ
TIM3	MyD88	b2c	FcεRIγ
TIM3	MyD88	b2c	DAP10
TIM3	MyD88	b2c	DAP12
TIM3	MyD88	b2c	CD32
TIM3	MyD88	b2c	CD79a
TIM3	MyD88	b2c	CD79b
TIM3	MyD88	CD137/41BB	CD8
TIM3	MyD88	CD137/41BB	CD3ζ

TIM3	MyD88	CD137/41BB	CD3δ
TIM3	MyD88	CD137/41BB	CD3γ
TIM3	MyD88	CD137/41BB	CD3ε
TIM3	MyD88	CD137/41BB	FcγRI-γ
TIM3	MyD88	CD137/41BB	FcγRIII-γ
TIM3	MyD88	CD137/41BB	FcεRIβ
TIM3	MyD88	CD137/41BB	FcεRIγ
TIM3	MyD88	CD137/41BB	DAP10
TIM3	MyD88	CD137/41BB	DAP12
TIM3	MyD88	CD137/41BB	CD32
TIM3	MyD88	CD137/41BB	CD79a
TIM3	MyD88	CD137/41BB	CD79b
TIM3	MyD88	ICOS	CD8
TIM3	MyD88	ICOS	CD3ζ
TIM3	MyD88	ICOS	CD3δ
TIM3	MyD88	ICOS	CD3γ
TIM3	MyD88	ICOS	CD3ε
TIM3	MyD88	ICOS	FcγRI-γ
TIM3	MyD88	ICOS	FcγRIII-γ
TIM3	MyD88	ICOS	FcεRIβ
TIM3	MyD88	ICOS	FcεRIγ
TIM3	MyD88	ICOS	DAP10
TIM3	MyD88	ICOS	DAP12
TIM3	MyD88	ICOS	CD32
TIM3	MyD88	ICOS	CD79a
TIM3	MyD88	ICOS	CD79b
TIM3	MyD88	CD27	CD8
TIM3	MyD88	CD27	CD3ζ
TIM3	MyD88	CD27	CD3δ
TIM3	MyD88	CD27	CD3γ
TIM3	MyD88	CD27	CD3ε
TIM3	MyD88	CD27	FcγRI-γ
TIM3	MyD88	CD27	FcγRIII-γ
TIM3	MyD88	CD27	FcεRIβ
TIM3	MyD88	CD27	FcεRIγ
TIM3	MyD88	CD27	DAP10
TIM3	MyD88	CD27	DAP12
TIM3	MyD88	CD27	CD32
TIM3	MyD88	CD27	CD79a
TIM3	MyD88	CD27	CD79b
TIM3	MyD88	CD28δ	CD8
TIM3	MyD88	CD28δ	CD3ζ
TIM3	MyD88	CD28δ	CD3δ
TIM3	MyD88	CD28δ	CD3γ
TIM3	MyD88	CD28δ	CD3ε
TIM3	MyD88	CD28δ	FcγRI-γ
TIM3	MyD88	CD28δ	FcγRIII-γ
TIM3	MyD88	CD28δ	FcεRIβ
TIM3	MyD88	CD28δ	FcεRIγ
TIM3	MyD88	CD28δ	DAP10
TIM3	MyD88	CD28δ	DAP12
TIM3	MyD88	CD28δ	CD32

TIM3	MyD88	CD28δ	CD79a
TIM3	MyD88	CD28δ	CD79b
TIM3	MyD88	CD80	CD8
TIM3	MyD88	CD80	CD3ζ
TIM3	MyD88	CD80	CD3δ
TIM3	MyD88	CD80	CD3γ
TIM3	MyD88	CD80	CD3ε
TIM3	MyD88	CD80	FcγRI-γ
TIM3	MyD88	CD80	FcγRIII-γ
TIM3	MyD88	CD80	FcεRIβ
TIM3	MyD88	CD80	FcεRIγ
TIM3	MyD88	CD80	DAP10
TIM3	MyD88	CD80	DAP12
TIM3	MyD88	CD80	CD32
TIM3	MyD88	CD80	CD79a
TIM3	MyD88	CD80	CD79b
TIM3	MyD88	CD86	CD8
TIM3	MyD88	CD86	CD3ζ
TIM3	MyD88	CD86	CD3δ
TIM3	MyD88	CD86	CD3γ
TIM3	MyD88	CD86	CD3ε
TIM3	MyD88	CD86	FcγRI-γ
TIM3	MyD88	CD86	FcγRIII-γ
TIM3	MyD88	CD86	FcεRIβ
TIM3	MyD88	CD86	FcεRIγ
TIM3	MyD88	CD86	DAP10
TIM3	MyD88	CD86	DAP12
TIM3	MyD88	CD86	CD32
TIM3	MyD88	CD86	CD79a
TIM3	MyD88	CD86	CD79b
TIM3	MyD88	OX40	CD8
TIM3	MyD88	OX40	CD3ζ
TIM3	MyD88	OX40	CD3δ
TIM3	MyD88	OX40	CD3γ
TIM3	MyD88	OX40	CD3ε
TIM3	MyD88	OX40	FcγRI-γ
TIM3	MyD88	OX40	FcγRIII-γ
TIM3	MyD88	OX40	FcεRIβ
TIM3	MyD88	OX40	FcεRIγ
TIM3	MyD88	OX40	DAP10
TIM3	MyD88	OX40	DAP12
TIM3	MyD88	OX40	CD32
TIM3	MyD88	OX40	CD79a
TIM3	MyD88	OX40	CD79b
TIM3	MyD88	DAP10	CD8
TIM3	MyD88	DAP10	CD3ζ
TIM3	MyD88	DAP10	CD3δ
TIM3	MyD88	DAP10	CD3γ
TIM3	MyD88	DAP10	CD3ε
TIM3	MyD88	DAP10	FcγRI-γ
TIM3	MyD88	DAP10	FcγRIII-γ
TIM3	MyD88	DAP10	FcεRIβ

TIM3	MyD88	DAP10	FcεRIγ
TIM3	MyD88	DAP10	DAP10
TIM3	MyD88	DAP10	DAP12
TIM3	MyD88	DAP10	CD32
TIM3	MyD88	DAP10	CD79a
TIM3	MyD88	DAP10	CD79b
TIM3	MyD88	DAP12	CD8
TIM3	MyD88	DAP12	CD3ζ
TIM3	MyD88	DAP12	CD3δ
TIM3	MyD88	DAP12	CD3γ
TIM3	MyD88	DAP12	CD3ε
TIM3	MyD88	DAP12	FcγRI-γ
TIM3	MyD88	DAP12	FcγRIII-γ
TIM3	MyD88	DAP12	FcεRIβ
TIM3	MyD88	DAP12	FcεRIγ
TIM3	MyD88	DAP12	DAP10
TIM3	MyD88	DAP12	DAP12
TIM3	MyD88	DAP12	CD32
TIM3	MyD88	DAP12	CD79a
TIM3	MyD88	DAP12	CD79b
TIM3	MyD88	MyD88	CD8
TIM3	MyD88	MyD88	CD3ζ
TIM3	MyD88	MyD88	CD3δ
TIM3	MyD88	MyD88	CD3γ
TIM3	MyD88	MyD88	CD3ε
TIM3	MyD88	MyD88	FcγRI-γ
TIM3	MyD88	MyD88	FcγRIII-γ
TIM3	MyD88	MyD88	FcεRIβ
TIM3	MyD88	MyD88	FcεRIγ
TIM3	MyD88	MyD88	DAP10
TIM3	MyD88	MyD88	DAP12
TIM3	MyD88	MyD88	CD32
TIM3	MyD88	MyD88	CD79a
TIM3	MyD88	MyD88	CD79b
TIM3	MyD88	CD7	CD8
TIM3	MyD88	CD7	CD3ζ
TIM3	MyD88	CD7	CD3δ
TIM3	MyD88	CD7	CD3γ
TIM3	MyD88	CD7	CD3ε
TIM3	MyD88	CD7	FcγRI-γ
TIM3	MyD88	CD7	FcγRIII-γ
TIM3	MyD88	CD7	FcεRIβ
TIM3	MyD88	CD7	FcεRIγ
TIM3	MyD88	CD7	DAP10
TIM3	MyD88	CD7	DAP12
TIM3	MyD88	CD7	CD32
TIM3	MyD88	CD7	CD79a
TIM3	MyD88	CD7	CD79b
TIM3	MyD88	BTNL3	CD8
TIM3	MyD88	BTNL3	CD3ζ
TIM3	MyD88	BTNL3	CD3δ
TIM3	MyD88	BTNL3	CD3γ

TIM3	MyD88	BTNL3	CD3ε
TIM3	MyD88	BTNL3	FcγRI-γ
TIM3	MyD88	BTNL3	FcγRIII-γ
TIM3	MyD88	BTNL3	FcεRIβ
TIM3	MyD88	BTNL3	FcεRIγ
TIM3	MyD88	BTNL3	DAP10
TIM3	MyD88	BTNL3	DAP12
TIM3	MyD88	BTNL3	CD32
TIM3	MyD88	BTNL3	CD79a
TIM3	MyD88	BTNL3	CD79b
TIM3	MyD88	NKG2D	CD8
TIM3	MyD88	NKG2D	CD3ζ
TIM3	MyD88	NKG2D	CD3δ
TIM3	MyD88	NKG2D	CD3γ
TIM3	MyD88	NKG2D	CD3ε
TIM3	MyD88	NKG2D	FcγRI-γ
TIM3	MyD88	NKG2D	FcγRIII-γ
TIM3	MyD88	NKG2D	FcεRIβ
TIM3	MyD88	NKG2D	FcεRIγ
TIM3	MyD88	NKG2D	DAP10
TIM3	MyD88	NKG2D	DAP12
TIM3	MyD88	NKG2D	CD32
TIM3	MyD88	NKG2D	CD79a
TIM3	MyD88	NKG2D	CD79b
TIM3	CD7	CD28	CD8
TIM3	CD7	CD28	CD3ζ
TIM3	CD7	CD28	CD3δ
TIM3	CD7	CD28	CD3γ
TIM3	CD7	CD28	CD3ε
TIM3	CD7	CD28	FcγRI-γ
TIM3	CD7	CD28	FcγRIII-γ
TIM3	CD7	CD28	FcεRIβ
TIM3	CD7	CD28	FcεRIγ
TIM3	CD7	CD28	DAP10
TIM3	CD7	CD28	DAP12
TIM3	CD7	CD28	CD32
TIM3	CD7	CD28	CD79a
TIM3	CD7	CD28	CD79b
TIM3	CD7	CD8	CD8
TIM3	CD7	CD8	CD3ζ
TIM3	CD7	CD8	CD3δ
TIM3	CD7	CD8	CD3γ
TIM3	CD7	CD8	CD3ε
TIM3	CD7	CD8	FcγRI-γ
TIM3	CD7	CD8	FcγRIII-γ
TIM3	CD7	CD8	FcεRIβ
TIM3	CD7	CD8	FcεRIγ
TIM3	CD7	CD8	DAP10
TIM3	CD7	CD8	DAP12
TIM3	CD7	CD8	CD32
TIM3	CD7	CD8	CD79a
TIM3	CD7	CD8	CD79b

TIM3	CD7	CD4	CD8
TIM3	CD7	CD4	CD3ζ
TIM3	CD7	CD4	CD3δ
TIM3	CD7	CD4	CD3γ
TIM3	CD7	CD4	CD3ε
TIM3	CD7	CD4	FcγRI-γ
TIM3	CD7	CD4	FcγRIII-γ
TIM3	CD7	CD4	FcεRIβ
TIM3	CD7	CD4	FcεRIγ
TIM3	CD7	CD4	DAP10
TIM3	CD7	CD4	DAP12
TIM3	CD7	CD4	CD32
TIM3	CD7	CD4	CD79a
TIM3	CD7	CD4	CD79b
TIM3	CD7	b2c	CD8
TIM3	CD7	b2c	CD3ζ
TIM3	CD7	b2c	CD3δ
TIM3	CD7	b2c	CD3γ
TIM3	CD7	b2c	CD3ε
TIM3	CD7	b2c	FcγRI-γ
TIM3	CD7	b2c	FcγRIII-γ
TIM3	CD7	b2c	FcεRIβ
TIM3	CD7	b2c	FcεRIγ
TIM3	CD7	b2c	DAP10
TIM3	CD7	b2c	DAP12
TIM3	CD7	b2c	CD32
TIM3	CD7	b2c	CD79a
TIM3	CD7	b2c	CD79b
TIM3	CD7	CD137/41BB	CD8
TIM3	CD7	CD137/41BB	CD3ζ
TIM3	CD7	CD137/41BB	CD3δ
TIM3	CD7	CD137/41BB	CD3γ
TIM3	CD7	CD137/41BB	CD3ε
TIM3	CD7	CD137/41BB	FcγRI-γ
TIM3	CD7	CD137/41BB	FcγRIII-γ
TIM3	CD7	CD137/41BB	FcεRIβ
TIM3	CD7	CD137/41BB	FcεRIγ
TIM3	CD7	CD137/41BB	DAP10
TIM3	CD7	CD137/41BB	DAP12
TIM3	CD7	CD137/41BB	CD32
TIM3	CD7	CD137/41BB	CD79a
TIM3	CD7	CD137/41BB	CD79b
TIM3	CD7	ICOS	CD8
TIM3	CD7	ICOS	CD3ζ
TIM3	CD7	ICOS	CD3δ
TIM3	CD7	ICOS	CD3γ
TIM3	CD7	ICOS	CD3ε
TIM3	CD7	ICOS	FcγRI-γ
TIM3	CD7	ICOS	FcγRIII-γ
TIM3	CD7	ICOS	FcεRIβ
TIM3	CD7	ICOS	FcεRIγ
TIM3	CD7	ICOS	DAP10

TIM3	CD7	ICOS	DAP12
TIM3	CD7	ICOS	CD32
TIM3	CD7	ICOS	CD79a
TIM3	CD7	ICOS	CD79b
TIM3	CD7	CD27	CD8
TIM3	CD7	CD27	CD3ζ
TIM3	CD7	CD27	CD3δ
TIM3	CD7	CD27	CD3γ
TIM3	CD7	CD27	CD3ε
TIM3	CD7	CD27	FcγRI-γ
TIM3	CD7	CD27	FcγRIII-γ
TIM3	CD7	CD27	FcεRIβ
TIM3	CD7	CD27	FcεRIγ
TIM3	CD7	CD27	DAP10
TIM3	CD7	CD27	DAP12
TIM3	CD7	CD27	CD32
TIM3	CD7	CD27	CD79a
TIM3	CD7	CD27	CD79b
TIM3	CD7	CD28δ	CD8
TIM3	CD7	CD28δ	CD3ζ
TIM3	CD7	CD28δ	CD3δ
TIM3	CD7	CD28δ	CD3γ
TIM3	CD7	CD28δ	CD3ε
TIM3	CD7	CD28δ	FcγRI-γ
TIM3	CD7	CD28δ	FcγRIII-γ
TIM3	CD7	CD28δ	FcεRIβ
TIM3	CD7	CD28δ	FcεRIγ
TIM3	CD7	CD28δ	DAP10
TIM3	CD7	CD28δ	DAP12
TIM3	CD7	CD28δ	CD32
TIM3	CD7	CD28δ	CD79a
TIM3	CD7	CD28δ	CD79b
TIM3	CD7	CD80	CD8
TIM3	CD7	CD80	CD3ζ
TIM3	CD7	CD80	CD3δ
TIM3	CD7	CD80	CD3γ
TIM3	CD7	CD80	CD3ε
TIM3	CD7	CD80	FcγRI-γ
TIM3	CD7	CD80	FcγRIII-γ
TIM3	CD7	CD80	FcεRIβ
TIM3	CD7	CD80	FcεRIγ
TIM3	CD7	CD80	DAP10
TIM3	CD7	CD80	DAP12
TIM3	CD7	CD80	CD32
TIM3	CD7	CD80	CD79a
TIM3	CD7	CD80	CD79b
TIM3	CD7	CD86	CD8
TIM3	CD7	CD86	CD3ζ
TIM3	CD7	CD86	CD3δ
TIM3	CD7	CD86	CD3γ
TIM3	CD7	CD86	CD3ε
TIM3	CD7	CD86	FcγRI-γ

TIM3	CD7	CD86	FcγRIII-γ
TIM3	CD7	CD86	FcεRIβ
TIM3	CD7	CD86	FcεRIγ
TIM3	CD7	CD86	DAP10
TIM3	CD7	CD86	DAP12
TIM3	CD7	CD86	CD32
TIM3	CD7	CD86	CD79a
TIM3	CD7	CD86	CD79b
TIM3	CD7	OX40	CD8
TIM3	CD7	OX40	CD3ζ
TIM3	CD7	OX40	CD3δ
TIM3	CD7	OX40	CD3γ
TIM3	CD7	OX40	CD3ε
TIM3	CD7	OX40	FcγRI-γ
TIM3	CD7	OX40	FcγRIII-γ
TIM3	CD7	OX40	FcεRIβ
TIM3	CD7	OX40	FcεRIγ
TIM3	CD7	OX40	DAP10
TIM3	CD7	OX40	DAP12
TIM3	CD7	OX40	CD32
TIM3	CD7	OX40	CD79a
TIM3	CD7	OX40	CD79b
TIM3	CD7	DAP10	CD8
TIM3	CD7	DAP10	CD3ζ
TIM3	CD7	DAP10	CD3δ
TIM3	CD7	DAP10	CD3γ
TIM3	CD7	DAP10	CD3ε
TIM3	CD7	DAP10	FcγRI-γ
TIM3	CD7	DAP10	FcγRIII-γ
TIM3	CD7	DAP10	FcεRIβ
TIM3	CD7	DAP10	FcεRIγ
TIM3	CD7	DAP10	DAP10
TIM3	CD7	DAP10	DAP12
TIM3	CD7	DAP10	CD32
TIM3	CD7	DAP10	CD79a
TIM3	CD7	DAP10	CD79b
TIM3	CD7	DAP12	CD8
TIM3	CD7	DAP12	CD3ζ
TIM3	CD7	DAP12	CD3δ
TIM3	CD7	DAP12	CD3γ
TIM3	CD7	DAP12	CD3ε
TIM3	CD7	DAP12	FcγRI-γ
TIM3	CD7	DAP12	FcγRIII-γ
TIM3	CD7	DAP12	FcεRIβ
TIM3	CD7	DAP12	FcεRIγ
TIM3	CD7	DAP12	DAP10
TIM3	CD7	DAP12	DAP12
TIM3	CD7	DAP12	CD32
TIM3	CD7	DAP12	CD79a
TIM3	CD7	DAP12	CD79b
TIM3	CD7	MyD88	CD8
TIM3	CD7	MyD88	CD3ζ

TIM3	CD7	MyD88	CD3δ
TIM3	CD7	MyD88	CD3γ
TIM3	CD7	MyD88	CD3ε
TIM3	CD7	MyD88	FcγRI-γ
TIM3	CD7	MyD88	FcγRIII-γ
TIM3	CD7	MyD88	FcεRIβ
TIM3	CD7	MyD88	FcεRIγ
TIM3	CD7	MyD88	DAP10
TIM3	CD7	MyD88	DAP12
TIM3	CD7	MyD88	CD32
TIM3	CD7	MyD88	CD79a
TIM3	CD7	MyD88	CD79b
TIM3	CD7	CD7	CD8
TIM3	CD7	CD7	CD3ζ
TIM3	CD7	CD7	CD3δ
TIM3	CD7	CD7	CD3γ
TIM3	CD7	CD7	CD3ε
TIM3	CD7	CD7	FcγRI-γ
TIM3	CD7	CD7	FcγRIII-γ
TIM3	CD7	CD7	FcεRIβ
TIM3	CD7	CD7	FcεRIγ
TIM3	CD7	CD7	DAP10
TIM3	CD7	CD7	DAP12
TIM3	CD7	CD7	CD32
TIM3	CD7	CD7	CD79a
TIM3	CD7	CD7	CD79b
TIM3	CD7	BTNL3	CD8
TIM3	CD7	BTNL3	CD3ζ
TIM3	CD7	BTNL3	CD3δ
TIM3	CD7	BTNL3	CD3γ
TIM3	CD7	BTNL3	CD3ε
TIM3	CD7	BTNL3	FcγRI-γ
TIM3	CD7	BTNL3	FcγRIII-γ
TIM3	CD7	BTNL3	FcεRIβ
TIM3	CD7	BTNL3	FcεRIγ
TIM3	CD7	BTNL3	DAP10
TIM3	CD7	BTNL3	DAP12
TIM3	CD7	BTNL3	CD32
TIM3	CD7	BTNL3	CD79a
TIM3	CD7	BTNL3	CD79b
TIM3	CD7	NKG2D	CD8
TIM3	CD7	NKG2D	CD3ζ
TIM3	CD7	NKG2D	CD3δ
TIM3	CD7	NKG2D	CD3γ
TIM3	CD7	NKG2D	CD3ε
TIM3	CD7	NKG2D	FcγRI-γ
TIM3	CD7	NKG2D	FcγRIII-γ
TIM3	CD7	NKG2D	FcεRIβ
TIM3	CD7	NKG2D	FcεRIγ
TIM3	CD7	NKG2D	DAP10
TIM3	CD7	NKG2D	DAP12
TIM3	CD7	NKG2D	CD32

TIM3	CD7	NKG2D	CD79a
TIM3	CD7	NKG2D	CD79b
TIM3	BTNL3	CD28	CD8
TIM3	BTNL3	CD28	CD3ζ
TIM3	BTNL3	CD28	CD3δ
TIM3	BTNL3	CD28	CD3γ
TIM3	BTNL3	CD28	CD3ε
TIM3	BTNL3	CD28	FcγRI-γ
TIM3	BTNL3	CD28	FcγRIII-γ
TIM3	BTNL3	CD28	FcεRIβ
TIM3	BTNL3	CD28	FcεRIγ
TIM3	BTNL3	CD28	DAP10
TIM3	BTNL3	CD28	DAP12
TIM3	BTNL3	CD28	CD32
TIM3	BTNL3	CD28	CD79a
TIM3	BTNL3	CD28	CD79b
TIM3	BTNL3	CD8	CD8
TIM3	BTNL3	CD8	CD3ζ
TIM3	BTNL3	CD8	CD3δ
TIM3	BTNL3	CD8	CD3γ
TIM3	BTNL3	CD8	CD3ε
TIM3	BTNL3	CD8	FcγRI-γ
TIM3	BTNL3	CD8	FcγRIII-γ
TIM3	BTNL3	CD8	FcεRIβ
TIM3	BTNL3	CD8	FcεRIγ
TIM3	BTNL3	CD8	DAP10
TIM3	BTNL3	CD8	DAP12
TIM3	BTNL3	CD8	CD32
TIM3	BTNL3	CD8	CD79a
TIM3	BTNL3	CD8	CD79b
TIM3	BTNL3	CD4	CD8
TIM3	BTNL3	CD4	CD3ζ
TIM3	BTNL3	CD4	CD3δ
TIM3	BTNL3	CD4	CD3γ
TIM3	BTNL3	CD4	CD3ε
TIM3	BTNL3	CD4	FcγRI-γ
TIM3	BTNL3	CD4	FcγRIII-γ
TIM3	BTNL3	CD4	FcεRIβ
TIM3	BTNL3	CD4	FcεRIγ
TIM3	BTNL3	CD4	DAP10
TIM3	BTNL3	CD4	DAP12
TIM3	BTNL3	CD4	CD32
TIM3	BTNL3	CD4	CD79a
TIM3	BTNL3	CD4	CD79b
TIM3	BTNL3	b2c	CD8
TIM3	BTNL3	b2c	CD3ζ
TIM3	BTNL3	b2c	CD3δ
TIM3	BTNL3	b2c	CD3γ
TIM3	BTNL3	b2c	CD3ε
TIM3	BTNL3	b2c	FcγRI-γ
TIM3	BTNL3	b2c	FcγRIII-γ
TIM3	BTNL3	b2c	FcεRIβ

TIM3	BTNL3	b2c	FcεRIγ
TIM3	BTNL3	b2c	DAP10
TIM3	BTNL3	b2c	DAP12
TIM3	BTNL3	b2c	CD32
TIM3	BTNL3	b2c	CD79a
TIM3	BTNL3	b2c	CD79b
TIM3	BTNL3	CD137/41BB	CD8
TIM3	BTNL3	CD137/41BB	CD3ζ
TIM3	BTNL3	CD137/41BB	CD3δ
TIM3	BTNL3	CD137/41BB	CD3γ
TIM3	BTNL3	CD137/41BB	CD3ε
TIM3	BTNL3	CD137/41BB	FcγRI-γ
TIM3	BTNL3	CD137/41BB	FcγRIII-γ
TIM3	BTNL3	CD137/41BB	FcεRIβ
TIM3	BTNL3	CD137/41BB	FcεRIγ
TIM3	BTNL3	CD137/41BB	DAP10
TIM3	BTNL3	CD137/41BB	DAP12
TIM3	BTNL3	CD137/41BB	CD32
TIM3	BTNL3	CD137/41BB	CD79a
TIM3	BTNL3	CD137/41BB	CD79b
TIM3	BTNL3	ICOS	CD8
TIM3	BTNL3	ICOS	CD3ζ
TIM3	BTNL3	ICOS	CD3δ
TIM3	BTNL3	ICOS	CD3γ
TIM3	BTNL3	ICOS	CD3ε
TIM3	BTNL3	ICOS	FcγRI-γ
TIM3	BTNL3	ICOS	FcγRIII-γ
TIM3	BTNL3	ICOS	FcεRIβ
TIM3	BTNL3	ICOS	FcεRIγ
TIM3	BTNL3	ICOS	DAP10
TIM3	BTNL3	ICOS	DAP12
TIM3	BTNL3	ICOS	CD32
TIM3	BTNL3	ICOS	CD79a
TIM3	BTNL3	ICOS	CD79b
TIM3	BTNL3	CD27	CD8
TIM3	BTNL3	CD27	CD3ζ
TIM3	BTNL3	CD27	CD3δ
TIM3	BTNL3	CD27	CD3γ
TIM3	BTNL3	CD27	CD3ε
TIM3	BTNL3	CD27	FcγRI-γ
TIM3	BTNL3	CD27	FcγRIII-γ
TIM3	BTNL3	CD27	FcεRIβ
TIM3	BTNL3	CD27	FcεRIγ
TIM3	BTNL3	CD27	DAP10
TIM3	BTNL3	CD27	DAP12
TIM3	BTNL3	CD27	CD32
TIM3	BTNL3	CD27	CD79a
TIM3	BTNL3	CD27	CD79b
TIM3	BTNL3	CD28δ	CD8
TIM3	BTNL3	CD28δ	CD3ζ
TIM3	BTNL3	CD28δ	CD3δ
TIM3	BTNL3	CD28δ	CD3γ

TIM3	BTNL3	CD28δ	CD3ε
TIM3	BTNL3	CD28δ	FcγRI-γ
TIM3	BTNL3	CD28δ	FcγRIII-γ
TIM3	BTNL3	CD28δ	FcεRIβ
TIM3	BTNL3	CD28δ	FcεRIγ
TIM3	BTNL3	CD28δ	DAP10
TIM3	BTNL3	CD28δ	DAP12
TIM3	BTNL3	CD28δ	CD32
TIM3	BTNL3	CD28δ	CD79a
TIM3	BTNL3	CD28δ	CD79b
TIM3	BTNL3	CD80	CD8
TIM3	BTNL3	CD80	CD3ζ
TIM3	BTNL3	CD80	CD3δ
TIM3	BTNL3	CD80	CD3γ
TIM3	BTNL3	CD80	CD3ε
TIM3	BTNL3	CD80	FcγRI-γ
TIM3	BTNL3	CD80	FcγRIII-γ
TIM3	BTNL3	CD80	FcεRIβ
TIM3	BTNL3	CD80	FcεRIγ
TIM3	BTNL3	CD80	DAP10
TIM3	BTNL3	CD80	DAP12
TIM3	BTNL3	CD80	CD32
TIM3	BTNL3	CD80	CD79a
TIM3	BTNL3	CD80	CD79b
TIM3	BTNL3	CD86	CD8
TIM3	BTNL3	CD86	CD3ζ
TIM3	BTNL3	CD86	CD3δ
TIM3	BTNL3	CD86	CD3γ
TIM3	BTNL3	CD86	CD3ε
TIM3	BTNL3	CD86	FcγRI-γ
TIM3	BTNL3	CD86	FcγRIII-γ
TIM3	BTNL3	CD86	FcεRIβ
TIM3	BTNL3	CD86	FcεRIγ
TIM3	BTNL3	CD86	DAP10
TIM3	BTNL3	CD86	DAP12
TIM3	BTNL3	CD86	CD32
TIM3	BTNL3	CD86	CD79a
TIM3	BTNL3	CD86	CD79b
TIM3	BTNL3	OX40	CD8
TIM3	BTNL3	OX40	CD3ζ
TIM3	BTNL3	OX40	CD3δ
TIM3	BTNL3	OX40	CD3γ
TIM3	BTNL3	OX40	CD3ε
TIM3	BTNL3	OX40	FcγRI-γ
TIM3	BTNL3	OX40	FcγRIII-γ
TIM3	BTNL3	OX40	FcεRIβ
TIM3	BTNL3	OX40	FcεRIγ
TIM3	BTNL3	OX40	DAP10
TIM3	BTNL3	OX40	DAP12
TIM3	BTNL3	OX40	CD32
TIM3	BTNL3	OX40	CD79a
TIM3	BTNL3	OX40	CD79b

TIM3	BTNL3	DAP10	CD8
TIM3	BTNL3	DAP10	CD3ζ
TIM3	BTNL3	DAP10	CD3δ
TIM3	BTNL3	DAP10	CD3γ
TIM3	BTNL3	DAP10	CD3ε
TIM3	BTNL3	DAP10	FcγRI-γ
TIM3	BTNL3	DAP10	FcγRIII-γ
TIM3	BTNL3	DAP10	FcεRIβ
TIM3	BTNL3	DAP10	FcεRIγ
TIM3	BTNL3	DAP10	DAP10
TIM3	BTNL3	DAP10	DAP12
TIM3	BTNL3	DAP10	CD32
TIM3	BTNL3	DAP10	CD79a
TIM3	BTNL3	DAP10	CD79b
TIM3	BTNL3	DAP12	CD8
TIM3	BTNL3	DAP12	CD3ζ
TIM3	BTNL3	DAP12	CD3δ
TIM3	BTNL3	DAP12	CD3γ
TIM3	BTNL3	DAP12	CD3ε
TIM3	BTNL3	DAP12	FcγRI-γ
TIM3	BTNL3	DAP12	FcγRIII-γ
TIM3	BTNL3	DAP12	FcεRIβ
TIM3	BTNL3	DAP12	FcεRIγ
TIM3	BTNL3	DAP12	DAP10
TIM3	BTNL3	DAP12	DAP12
TIM3	BTNL3	DAP12	CD32
TIM3	BTNL3	DAP12	CD79a
TIM3	BTNL3	DAP12	CD79b
TIM3	BTNL3	MyD88	CD8
TIM3	BTNL3	MyD88	CD3ζ
TIM3	BTNL3	MyD88	CD3δ
TIM3	BTNL3	MyD88	CD3γ
TIM3	BTNL3	MyD88	CD3ε
TIM3	BTNL3	MyD88	FcγRI-γ
TIM3	BTNL3	MyD88	FcγRIII-γ
TIM3	BTNL3	MyD88	FcεRIβ
TIM3	BTNL3	MyD88	FcεRIγ
TIM3	BTNL3	MyD88	DAP10
TIM3	BTNL3	MyD88	DAP12
TIM3	BTNL3	MyD88	CD32
TIM3	BTNL3	MyD88	CD79a
TIM3	BTNL3	MyD88	CD79b
TIM3	BTNL3	CD7	CD8
TIM3	BTNL3	CD7	CD3ζ
TIM3	BTNL3	CD7	CD3δ
TIM3	BTNL3	CD7	CD3γ
TIM3	BTNL3	CD7	CD3ε
TIM3	BTNL3	CD7	FcγRI-γ
TIM3	BTNL3	CD7	FcγRIII-γ
TIM3	BTNL3	CD7	FcεRIβ
TIM3	BTNL3	CD7	FcεRIγ
TIM3	BTNL3	CD7	DAP10

TIM3	BTNL3	CD7	DAP12
TIM3	BTNL3	CD7	CD32
TIM3	BTNL3	CD7	CD79a
TIM3	BTNL3	CD7	CD79b
TIM3	BTNL3	BTNL3	CD8
TIM3	BTNL3	BTNL3	CD3ζ
TIM3	BTNL3	BTNL3	CD3δ
TIM3	BTNL3	BTNL3	CD3γ
TIM3	BTNL3	BTNL3	CD3ε
TIM3	BTNL3	BTNL3	FcγRI-γ
TIM3	BTNL3	BTNL3	FcγRIII-γ
TIM3	BTNL3	BTNL3	FcεRIβ
TIM3	BTNL3	BTNL3	FcεRIγ
TIM3	BTNL3	BTNL3	DAP10
TIM3	BTNL3	BTNL3	DAP12
TIM3	BTNL3	BTNL3	CD32
TIM3	BTNL3	BTNL3	CD79a
TIM3	BTNL3	BTNL3	CD79b
TIM3	BTNL3	NKG2D	CD8
TIM3	BTNL3	NKG2D	CD3ζ
TIM3	BTNL3	NKG2D	CD3δ
TIM3	BTNL3	NKG2D	CD3γ
TIM3	BTNL3	NKG2D	CD3ε
TIM3	BTNL3	NKG2D	FcγRI-γ
TIM3	BTNL3	NKG2D	FcγRIII-γ
TIM3	BTNL3	NKG2D	FcεRIβ
TIM3	BTNL3	NKG2D	FcεRIγ
TIM3	BTNL3	NKG2D	DAP10
TIM3	BTNL3	NKG2D	DAP12
TIM3	BTNL3	NKG2D	CD32
TIM3	BTNL3	NKG2D	CD79a
TIM3	BTNL3	NKG2D	CD79b
TIM3	NKG2D	CD28	CD8
TIM3	NKG2D	CD28	CD3ζ
TIM3	NKG2D	CD28	CD3δ
TIM3	NKG2D	CD28	CD3γ
TIM3	NKG2D	CD28	CD3ε
TIM3	NKG2D	CD28	FcγRI-γ
TIM3	NKG2D	CD28	FcγRIII-γ
TIM3	NKG2D	CD28	FcεRIβ
TIM3	NKG2D	CD28	FcεRIγ
TIM3	NKG2D	CD28	DAP10
TIM3	NKG2D	CD28	DAP12
TIM3	NKG2D	CD28	CD32
TIM3	NKG2D	CD28	CD79a
TIM3	NKG2D	CD28	CD79b
TIM3	NKG2D	CD8	CD8
TIM3	NKG2D	CD8	CD3ζ
TIM3	NKG2D	CD8	CD3δ
TIM3	NKG2D	CD8	CD3γ
TIM3	NKG2D	CD8	CD3ε
TIM3	NKG2D	CD8	FcγRI-γ

TIM3	NKG2D	CD8	FcγRIII-γ
TIM3	NKG2D	CD8	FcεRIβ
TIM3	NKG2D	CD8	FcεRIγ
TIM3	NKG2D	CD8	DAP10
TIM3	NKG2D	CD8	DAP12
TIM3	NKG2D	CD8	CD32
TIM3	NKG2D	CD8	CD79a
TIM3	NKG2D	CD8	CD79b
TIM3	NKG2D	CD4	CD8
TIM3	NKG2D	CD4	CD3ζ
TIM3	NKG2D	CD4	CD3δ
TIM3	NKG2D	CD4	CD3γ
TIM3	NKG2D	CD4	CD3ε
TIM3	NKG2D	CD4	FcγRI-γ
TIM3	NKG2D	CD4	FcγRIII-γ
TIM3	NKG2D	CD4	FcεRIβ
TIM3	NKG2D	CD4	FcεRIγ
TIM3	NKG2D	CD4	DAP10
TIM3	NKG2D	CD4	DAP12
TIM3	NKG2D	CD4	CD32
TIM3	NKG2D	CD4	CD79a
TIM3	NKG2D	CD4	CD79b
TIM3	NKG2D	b2c	CD8
TIM3	NKG2D	b2c	CD3ζ
TIM3	NKG2D	b2c	CD3δ
TIM3	NKG2D	b2c	CD3γ
TIM3	NKG2D	b2c	CD3ε
TIM3	NKG2D	b2c	FcγRI-γ
TIM3	NKG2D	b2c	FcγRIII-γ
TIM3	NKG2D	b2c	FcεRIβ
TIM3	NKG2D	b2c	FcεRIγ
TIM3	NKG2D	b2c	DAP10
TIM3	NKG2D	b2c	DAP12
TIM3	NKG2D	b2c	CD32
TIM3	NKG2D	b2c	CD79a
TIM3	NKG2D	b2c	CD79b
TIM3	NKG2D	CD137/41BB	CD8
TIM3	NKG2D	CD137/41BB	CD3ζ
TIM3	NKG2D	CD137/41BB	CD3δ
TIM3	NKG2D	CD137/41BB	CD3γ
TIM3	NKG2D	CD137/41BB	CD3ε
TIM3	NKG2D	CD137/41BB	FcγRI-γ
TIM3	NKG2D	CD137/41BB	FcγRIII-γ
TIM3	NKG2D	CD137/41BB	FcεRIβ
TIM3	NKG2D	CD137/41BB	FcεRIγ
TIM3	NKG2D	CD137/41BB	DAP10
TIM3	NKG2D	CD137/41BB	DAP12
TIM3	NKG2D	CD137/41BB	CD32
TIM3	NKG2D	CD137/41BB	CD79a
TIM3	NKG2D	CD137/41BB	CD79b
TIM3	NKG2D	ICOS	CD8
TIM3	NKG2D	ICOS	CD3ζ

TIM3	NKG2D	ICOS	CD3δ
TIM3	NKG2D	ICOS	CD3γ
TIM3	NKG2D	ICOS	CD3ε
TIM3	NKG2D	ICOS	FcγRI-γ
TIM3	NKG2D	ICOS	FcγRIII-γ
TIM3	NKG2D	ICOS	FcεRIβ
TIM3	NKG2D	ICOS	FcεRIγ
TIM3	NKG2D	ICOS	DAP10
TIM3	NKG2D	ICOS	DAP12
TIM3	NKG2D	ICOS	CD32
TIM3	NKG2D	ICOS	CD79a
TIM3	NKG2D	ICOS	CD79b
TIM3	NKG2D	CD27	CD8
TIM3	NKG2D	CD27	CD3ζ
TIM3	NKG2D	CD27	CD3δ
TIM3	NKG2D	CD27	CD3γ
TIM3	NKG2D	CD27	CD3ε
TIM3	NKG2D	CD27	FcγRI-γ
TIM3	NKG2D	CD27	FcγRIII-γ
TIM3	NKG2D	CD27	FcεRIβ
TIM3	NKG2D	CD27	FcεRIγ
TIM3	NKG2D	CD27	DAP10
TIM3	NKG2D	CD27	DAP12
TIM3	NKG2D	CD27	CD32
TIM3	NKG2D	CD27	CD79a
TIM3	NKG2D	CD27	CD79b
TIM3	NKG2D	CD28δ	CD8
TIM3	NKG2D	CD28δ	CD3ζ
TIM3	NKG2D	CD28δ	CD3δ
TIM3	NKG2D	CD28δ	CD3γ
TIM3	NKG2D	CD28δ	CD3ε
TIM3	NKG2D	CD28δ	FcγRI-γ
TIM3	NKG2D	CD28δ	FcγRIII-γ
TIM3	NKG2D	CD28δ	FcεRIβ
TIM3	NKG2D	CD28δ	FcεRIγ
TIM3	NKG2D	CD28δ	DAP10
TIM3	NKG2D	CD28δ	DAP12
TIM3	NKG2D	CD28δ	CD32
TIM3	NKG2D	CD28δ	CD79a
TIM3	NKG2D	CD28δ	CD79b
TIM3	NKG2D	CD80	CD8
TIM3	NKG2D	CD80	CD3ζ
TIM3	NKG2D	CD80	CD3δ
TIM3	NKG2D	CD80	CD3γ
TIM3	NKG2D	CD80	CD3ε
TIM3	NKG2D	CD80	FcγRI-γ
TIM3	NKG2D	CD80	FcγRIII-γ
TIM3	NKG2D	CD80	FcεRIβ
TIM3	NKG2D	CD80	FcεRIγ
TIM3	NKG2D	CD80	DAP10
TIM3	NKG2D	CD80	DAP12
TIM3	NKG2D	CD80	CD32

TIM3	NKG2D	CD80	CD79a
TIM3	NKG2D	CD80	CD79b
TIM3	NKG2D	CD86	CD8
TIM3	NKG2D	CD86	CD3ζ
TIM3	NKG2D	CD86	CD3δ
TIM3	NKG2D	CD86	CD3γ
TIM3	NKG2D	CD86	CD3ε
TIM3	NKG2D	CD86	FcγRI-γ
TIM3	NKG2D	CD86	FcγRIII-γ
TIM3	NKG2D	CD86	FcεRIβ
TIM3	NKG2D	CD86	FcεRIγ
TIM3	NKG2D	CD86	DAP10
TIM3	NKG2D	CD86	DAP12
TIM3	NKG2D	CD86	CD32
TIM3	NKG2D	CD86	CD79a
TIM3	NKG2D	CD86	CD79b
TIM3	NKG2D	OX40	CD8
TIM3	NKG2D	OX40	CD3ζ
TIM3	NKG2D	OX40	CD3δ
TIM3	NKG2D	OX40	CD3γ
TIM3	NKG2D	OX40	CD3ε
TIM3	NKG2D	OX40	FcγRI-γ
TIM3	NKG2D	OX40	FcγRIII-γ
TIM3	NKG2D	OX40	FcεRIβ
TIM3	NKG2D	OX40	FcεRIγ
TIM3	NKG2D	OX40	DAP10
TIM3	NKG2D	OX40	DAP12
TIM3	NKG2D	OX40	CD32
TIM3	NKG2D	OX40	CD79a
TIM3	NKG2D	OX40	CD79b
TIM3	NKG2D	DAP10	CD8
TIM3	NKG2D	DAP10	CD3ζ
TIM3	NKG2D	DAP10	CD3δ
TIM3	NKG2D	DAP10	CD3γ
TIM3	NKG2D	DAP10	CD3ε
TIM3	NKG2D	DAP10	FcγRI-γ
TIM3	NKG2D	DAP10	FcγRIII-γ
TIM3	NKG2D	DAP10	FcεRIβ
TIM3	NKG2D	DAP10	FcεRIγ
TIM3	NKG2D	DAP10	DAP10
TIM3	NKG2D	DAP10	DAP12
TIM3	NKG2D	DAP10	CD32
TIM3	NKG2D	DAP10	CD79a
TIM3	NKG2D	DAP10	CD79b
TIM3	NKG2D	DAP12	CD8
TIM3	NKG2D	DAP12	CD3ζ
TIM3	NKG2D	DAP12	CD3δ
TIM3	NKG2D	DAP12	CD3γ
TIM3	NKG2D	DAP12	CD3ε
TIM3	NKG2D	DAP12	FcγRI-γ
TIM3	NKG2D	DAP12	FcγRIII-γ
TIM3	NKG2D	DAP12	FcεRIβ

TIM3	NKG2D	DAP12	FcεRIγ
TIM3	NKG2D	DAP12	DAP10
TIM3	NKG2D	DAP12	DAP12
TIM3	NKG2D	DAP12	CD32
TIM3	NKG2D	DAP12	CD79a
TIM3	NKG2D	DAP12	CD79b
TIM3	NKG2D	MyD88	CD8
TIM3	NKG2D	MyD88	CD3ζ
TIM3	NKG2D	MyD88	CD3δ
TIM3	NKG2D	MyD88	CD3γ
TIM3	NKG2D	MyD88	CD3ε
TIM3	NKG2D	MyD88	FcγRI-γ
TIM3	NKG2D	MyD88	FcγRIII-γ
TIM3	NKG2D	MyD88	FcεRIβ
TIM3	NKG2D	MyD88	FcεRIγ
TIM3	NKG2D	MyD88	DAP10
TIM3	NKG2D	MyD88	DAP12
TIM3	NKG2D	MyD88	CD32
TIM3	NKG2D	MyD88	CD79a
TIM3	NKG2D	MyD88	CD79b
TIM3	NKG2D	CD7	CD8
TIM3	NKG2D	CD7	CD3ζ
TIM3	NKG2D	CD7	CD3δ
TIM3	NKG2D	CD7	CD3γ
TIM3	NKG2D	CD7	CD3ε
TIM3	NKG2D	CD7	FcγRI-γ
TIM3	NKG2D	CD7	FcγRIII-γ
TIM3	NKG2D	CD7	FcεRIβ
TIM3	NKG2D	CD7	FcεRIγ
TIM3	NKG2D	CD7	DAP10
TIM3	NKG2D	CD7	DAP12
TIM3	NKG2D	CD7	CD32
TIM3	NKG2D	CD7	CD79a
TIM3	NKG2D	CD7	CD79b
TIM3	NKG2D	BTNL3	CD8
TIM3	NKG2D	BTNL3	CD3ζ
TIM3	NKG2D	BTNL3	CD3δ
TIM3	NKG2D	BTNL3	CD3γ
TIM3	NKG2D	BTNL3	CD3ε
TIM3	NKG2D	BTNL3	FcγRI-γ
TIM3	NKG2D	BTNL3	FcγRIII-γ
TIM3	NKG2D	BTNL3	FcεRIβ
TIM3	NKG2D	BTNL3	FcεRIγ
TIM3	NKG2D	BTNL3	DAP10
TIM3	NKG2D	BTNL3	DAP12
TIM3	NKG2D	BTNL3	CD32
TIM3	NKG2D	BTNL3	CD79a
TIM3	NKG2D	BTNL3	CD79b
TIM3	NKG2D	NKG2D	CD8
TIM3	NKG2D	NKG2D	CD3ζ
TIM3	NKG2D	NKG2D	CD3δ
TIM3	NKG2D	NKG2D	CD3γ

TIM3	NKG2D	NKG2D	CD3ε
TIM3	NKG2D	NKG2D	FcγRI-γ
TIM3	NKG2D	NKG2D	FcγRIII-γ
TIM3	NKG2D	NKG2D	FcεRIβ
TIM3	NKG2D	NKG2D	FcεRIγ
TIM3	NKG2D	NKG2D	DAP10
TIM3	NKG2D	NKG2D	DAP12
TIM3	NKG2D	NKG2D	CD32
TIM3	NKG2D	NKG2D	CD79a
TIM3	NKG2D	NKG2D	CD79b

Table 4. CARs lacking Co-Simulatory Signal (for dual CAR approach)		
ScFv	Co-stimulatory Signal	Signal Domain
TIM3	none	CD8
TIM3	none	CD3ζ
TIM3	none	CD3δ
TIM3	none	CD3γ
TIM3	none	CD3ε
TIM3	none	FcγRI-γ
TIM3	none	FcγRIII-γ
TIM3	none	FcεRIβ
TIM3	none	FcεRIγ
TIM3	none	DAP10
TIM3	none	DAP12
TIM3	none	CD32
TIM3	none	CD79a
TIM3	none	CD8
TIM3	none	CD3ζ
TIM3	none	CD3δ
TIM3	none	CD3γ
TIM3	none	CD3ε
TIM3	none	FcγRI-γ

Table 5. CARs lacking Signal Domain (for dual CAR approach)		
ScFv	Co-stimulatory Signal	Signal Domain
TIM3	CD28	none
TIM3	CD8	none
TIM3	CD4	none
TIM3	b2c	none
TIM3	CD137/41BB	none
TIM3	ICOS	none
TIM3	CD27	none
TIM3	CD28δ	none
TIM3	CD80	none
TIM3	CD86	none
TIM3	OX40	none
TIM3	DAP10	none
TIM3	MyD88	none
TIM3	CD7	none
TIM3	DAP12	none

TIM3	MyD88	none
TIM3	CD7	none
TIM3	BTNL3	none
TIM3	NKG2D	none

Table 6. Third Generation CARs lacking Signal Domain (for dual CAR approach)

ScFv	Co-stimulatory Signal	Co-stimulatory Signal	Signal Domain
TIM3	CD28	CD28	none
TIM3	CD28	CD8	none
TIM3	CD28	CD4	none
TIM3	CD28	b2c	none
TIM3	CD28	CD137/41BB	none
TIM3	CD28	ICOS	none
TIM3	CD28	CD27	none
TIM3	CD28	CD28δ	none
TIM3	CD28	CD80	none
TIM3	CD28	CD86	none
TIM3	CD28	OX40	none
TIM3	CD28	DAP10	none
TIM3	CD28	MyD88	none
TIM3	CD28	CD7	none
TIM3	CD28	DAP12	none
TIM3	CD28	MyD88	none
TIM3	CD28	CD7	none
TIM3	CD8	CD28	none
TIM3	CD8	CD8	none
TIM3	CD8	CD4	none
TIM3	CD8	b2c	none
TIM3	CD8	CD137/41BB	none
TIM3	CD8	ICOS	none
TIM3	CD8	CD27	none
TIM3	CD8	CD28δ	none
TIM3	CD8	CD80	none
TIM3	CD8	CD86	none
TIM3	CD8	OX40	none
TIM3	CD8	DAP10	none
TIM3	CD8	MyD88	none
TIM3	CD8	CD7	none
TIM3	CD8	DAP12	none
TIM3	CD8	MyD88	none
TIM3	CD8	CD7	none
TIM3	CD4	CD28	none
TIM3	CD4	CD8	none
TIM3	CD4	CD4	none
TIM3	CD4	b2c	none
TIM3	CD4	CD137/41BB	none
TIM3	CD4	ICOS	none
TIM3	CD4	CD27	none
TIM3	CD4	CD28δ	none

TIM3	CD4	CD80	none
TIM3	CD4	CD86	none
TIM3	CD4	OX40	none
TIM3	CD4	DAP10	none
TIM3	CD4	MyD88	none
TIM3	CD4	CD7	none
TIM3	CD4	DAP12	none
TIM3	CD4	MyD88	none
TIM3	CD4	CD7	none
TIM3	b2c	CD28	none
TIM3	b2c	CD8	none
TIM3	b2c	CD4	none
TIM3	b2c	b2c	none
TIM3	b2c	CD137/41BB	none
TIM3	b2c	ICOS	none
TIM3	b2c	CD27	none
TIM3	b2c	CD28δ	none
TIM3	b2c	CD80	none
TIM3	b2c	CD86	none
TIM3	b2c	OX40	none
TIM3	b2c	DAP10	none
TIM3	b2c	MyD88	none
TIM3	b2c	CD7	none
TIM3	b2c	DAP12	none
TIM3	b2c	MyD88	none
TIM3	b2c	CD7	none
TIM3	CD137/41BB	CD28	none
TIM3	CD137/41BB	CD8	none
TIM3	CD137/41BB	CD4	none
TIM3	CD137/41BB	b2c	none
TIM3	CD137/41BB	CD137/41BB	none
TIM3	CD137/41BB	ICOS	none
TIM3	CD137/41BB	CD27	none
TIM3	CD137/41BB	CD28δ	none
TIM3	CD137/41BB	CD80	none
TIM3	CD137/41BB	CD86	none
TIM3	CD137/41BB	OX40	none
TIM3	CD137/41BB	DAP10	none
TIM3	CD137/41BB	MyD88	none
TIM3	CD137/41BB	CD7	none
TIM3	CD137/41BB	DAP12	none
TIM3	CD137/41BB	MyD88	none
TIM3	CD137/41BB	CD7	none
TIM3	ICOS	CD28	none
TIM3	ICOS	CD8	none
TIM3	ICOS	CD4	none
TIM3	ICOS	b2c	none
TIM3	ICOS	CD137/41BB	none
TIM3	ICOS	ICOS	none
TIM3	ICOS	CD27	none
TIM3	ICOS	CD28δ	none
TIM3	ICOS	CD80	none

TIM3	ICOS	CD86	none
TIM3	ICOS	OX40	none
TIM3	ICOS	DAP10	none
TIM3	ICOS	MyD88	none
TIM3	ICOS	CD7	none
TIM3	ICOS	DAP12	none
TIM3	ICOS	MyD88	none
TIM3	ICOS	CD7	none
TIM3	ICOS	CD28	none
TIM3	ICOS	CD8	none
TIM3	ICOS	CD4	none
TIM3	ICOS	b2c	none
TIM3	ICOS	CD137/41BB	none
TIM3	ICOS	ICOS	none
TIM3	ICOS	CD27	none
TIM3	ICOS	CD28δ	none
TIM3	ICOS	CD80	none
TIM3	ICOS	CD86	none
TIM3	ICOS	OX40	none
TIM3	ICOS	DAP10	none
TIM3	ICOS	MyD88	none
TIM3	ICOS	CD7	none
TIM3	ICOS	DAP12	none
TIM3	ICOS	MyD88	none
TIM3	ICOS	CD7	none
TIM3	CD27	CD28	none
TIM3	CD27	CD8	none
TIM3	CD27	CD4	none
TIM3	CD27	b2c	none
TIM3	CD27	CD137/41BB	none
TIM3	CD27	ICOS	none
TIM3	CD27	CD27	none
TIM3	CD27	CD28δ	none
TIM3	CD27	CD80	none
TIM3	CD27	CD86	none
TIM3	CD27	OX40	none
TIM3	CD27	DAP10	none
TIM3	CD27	MyD88	none
TIM3	CD27	CD7	none
TIM3	CD27	DAP12	none
TIM3	CD27	MyD88	none
TIM3	CD27	CD7	none
TIM3	CD28δ	CD28	none
TIM3	CD28δ	CD8	none
TIM3	CD28δ	CD4	none
TIM3	CD28δ	b2c	none
TIM3	CD28δ	CD137/41BB	none
TIM3	CD28δ	ICOS	none
TIM3	CD28δ	CD27	none
TIM3	CD28δ	CD28δ	none
TIM3	CD28δ	CD80	none
TIM3	CD28δ	CD86	none

TIM3	CD28δ	OX40	none
TIM3	CD28δ	DAP10	none
TIM3	CD28δ	MyD88	none
TIM3	CD28δ	CD7	none
TIM3	CD28δ	DAP12	none
TIM3	CD28δ	MyD88	none
TIM3	CD28δ	CD7	none
TIM3	CD80	CD28	none
TIM3	CD80	CD8	none
TIM3	CD80	CD4	none
TIM3	CD80	b2c	none
TIM3	CD80	CD137/41BB	none
TIM3	CD80	ICOS	none
TIM3	CD80	CD27	none
TIM3	CD80	CD28δ	none
TIM3	CD80	CD80	none
TIM3	CD80	CD86	none
TIM3	CD80	OX40	none
TIM3	CD80	DAP10	none
TIM3	CD80	MyD88	none
TIM3	CD80	CD7	none
TIM3	CD80	DAP12	none
TIM3	CD80	MyD88	none
TIM3	CD80	CD7	none
TIM3	CD86	CD28	none
TIM3	CD86	CD8	none
TIM3	CD86	CD4	none
TIM3	CD86	b2c	none
TIM3	CD86	CD137/41BB	none
TIM3	CD86	ICOS	none
TIM3	CD86	CD27	none
TIM3	CD86	CD28δ	none
TIM3	CD86	CD80	none
TIM3	CD86	CD86	none
TIM3	CD86	OX40	none
TIM3	CD86	DAP10	none
TIM3	CD86	MyD88	none
TIM3	CD86	CD7	none
TIM3	CD86	DAP12	none
TIM3	CD86	MyD88	none
TIM3	CD86	CD7	none
TIM3	OX40	CD28	none
TIM3	OX40	CD8	none
TIM3	OX40	CD4	none
TIM3	OX40	b2c	none
TIM3	OX40	CD137/41BB	none
TIM3	OX40	ICOS	none
TIM3	OX40	CD27	none
TIM3	OX40	CD28δ	none
TIM3	OX40	CD80	none
TIM3	OX40	CD86	none
TIM3	OX40	OX40	none

TIM3	OX40	DAP10	none
TIM3	OX40	MyD88	none
TIM3	OX40	CD7	none
TIM3	OX40	DAP12	none
TIM3	OX40	MyD88	none
TIM3	OX40	CD7	none
TIM3	DAP10	CD28	none
TIM3	DAP10	CD8	none
TIM3	DAP10	CD4	none
TIM3	DAP10	b2c	none
TIM3	DAP10	CD137/41BB	none
TIM3	DAP10	ICOS	none
TIM3	DAP10	CD27	none
TIM3	DAP10	CD28δ	none
TIM3	DAP10	CD80	none
TIM3	DAP10	CD86	none
TIM3	DAP10	OX40	none
TIM3	DAP10	DAP10	none
TIM3	DAP10	MyD88	none
TIM3	DAP10	CD7	none
TIM3	DAP10	DAP12	none
TIM3	DAP10	MyD88	none
TIM3	DAP10	CD7	none
TIM3	DAP12	CD28	none
TIM3	DAP12	CD8	none
TIM3	DAP12	CD4	none
TIM3	DAP12	b2c	none
TIM3	DAP12	CD137/41BB	none
TIM3	DAP12	ICOS	none
TIM3	DAP12	CD27	none
TIM3	DAP12	CD28δ	none
TIM3	DAP12	CD80	none
TIM3	DAP12	CD86	none
TIM3	DAP12	OX40	none
TIM3	DAP12	DAP10	none
TIM3	DAP12	MyD88	none
TIM3	DAP12	CD7	none
TIM3	DAP12	DAP12	none
TIM3	DAP12	MyD88	none
TIM3	DAP12	CD7	none
TIM3	MyD88	CD28	none
TIM3	MyD88	CD8	none
TIM3	MyD88	CD4	none
TIM3	MyD88	b2c	none
TIM3	MyD88	CD137/41BB	none
TIM3	MyD88	ICOS	none
TIM3	MyD88	CD27	none
TIM3	MyD88	CD28δ	none
TIM3	MyD88	CD80	none
TIM3	MyD88	CD86	none
TIM3	MyD88	OX40	none
TIM3	MyD88	DAP10	none

TIM3	MyD88	MyD88	none
TIM3	MyD88	CD7	none
TIM3	MyD88	DAP12	none
TIM3	MyD88	MyD88	none
TIM3	MyD88	CD7	none
TIM3	CD7	CD28	none
TIM3	CD7	CD8	none
TIM3	CD7	CD4	none
TIM3	CD7	b2c	none
TIM3	CD7	CD137/41BB	none
TIM3	CD7	ICOS	none
TIM3	CD7	CD27	none
TIM3	CD7	CD28δ	none
TIM3	CD7	CD80	none
TIM3	CD7	CD86	none
TIM3	CD7	OX40	none
TIM3	CD7	DAP10	none
TIM3	CD7	MyD88	none
TIM3	CD7	CD7	none
TIM3	CD7	DAP12	none
TIM3	CD7	MyD88	none
TIM3	CD7	CD7	none
TIM3	BTNL3	CD28	none
TIM3	BTNL3	CD8	none
TIM3	BTNL3	CD4	none
TIM3	BTNL3	b2c	none
TIM3	BTNL3	CD137/41BB	none
TIM3	BTNL3	ICOS	none
TIM3	BTNL3	CD27	none
TIM3	BTNL3	CD28δ	none
TIM3	BTNL3	CD80	none
TIM3	BTNL3	CD86	none
TIM3	BTNL3	OX40	none
TIM3	BTNL3	DAP10	none
TIM3	BTNL3	MyD88	none
TIM3	BTNL3	CD7	none
TIM3	BTNL3	DAP12	none
TIM3	BTNL3	MyD88	none
TIM3	BTNL3	CD7	none
TIM3	NKG2D	CD28	none
TIM3	NKG2D	CD8	none
TIM3	NKG2D	CD4	none
TIM3	NKG2D	b2c	none
TIM3	NKG2D	CD137/41BB	none
TIM3	NKG2D	ICOS	none
TIM3	NKG2D	CD27	none
TIM3	NKG2D	CD28δ	none
TIM3	NKG2D	CD80	none
TIM3	NKG2D	CD86	none
TIM3	NKG2D	OX40	none
TIM3	NKG2D	DAP10	none
TIM3	NKG2D	MyD88	none

TIM3	NKG2D	CD7	none
TIM3	NKG2D	DAP12	none
TIM3	NKG2D	MyD88	none
TIM3	NKG2D	CD7	none

In some embodiments, the anti-TIM3 binding agent is single chain variable fragment (scFv) antibody. The affinity/specificity of an anti-TIM3 scFv is driven in large part by specific sequences within complementarity determining regions (CDRs) in the heavy (V_H) and light (V_L) chain. Each V_H and V_L sequence will have three CDRs (CDR1, CDR2, CDR3).

In some cases, the anti-TIM3 V_H domain comprises the amino acid sequence QVTLKESGPGILQPSQTLSLTCSFSGFSLSTSNMAVSWIRQPSGKGLEWLALIYWD DDKRYNPSLKSRLTISKDTSRNQVFLKITSVDAADTATYYCVRSQLLRFAYWGQGTL VTVSA (SEQ ID NO:1), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_H domain comprises the amino acid sequence QVQLQQPGAELVKPGASVKLSCKASGYTGTSYYMYWVKQRPGQGLEWIGGINPS NGGTNFNEKFKSKATLTVDKSSSTAYMQLSSLTSEDSAVYYCTTAYFDYWGQGTTL TVSS (SEQ ID NO:2), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence DIQMTQSSSYLSVSLGGRVTITCKASDHINNWLAWYQQKPGNAPRLLISGATSLETG VPSRFSGRGSGKDYTLSITSLQTEDVATYYCQQYWSTPVTFGAGTKLELKAAA (SEQ ID NO:3), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence DIVMTQSPATLSVTPGDRVSLSCRASQSISDYLHWYQQKSHESPRLLIKYASQSISGI PSRFSGSGSGSDFTLSINSVEPEDVGVYYCQNGHSFPRTFGGGTKLEIKAAA (SEQ ID NO:4), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence EIVLTQSPAITAASLGQKVTITCSASSSVSYMHWYQQKSGTSPKPWIYEISKLASGVP ARFSGSGSGTSYSLTISSMEAEDAAIYYCQQWNYPLYTFGGGTKLEIKAAA (SEQ ID NO:5), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence QIVLTQSPAIMSASPGEKVTMSCSASPGEKVTMSCSASSSLTYMYWFQQKPGSSP KPWIYRTSNLASGVPARFSGSGSGTSYSLTISSMEAEDAATYTCQQYHSYPPTFGG GTKLEIKAAA (SEQ ID NO:6), or a fragment or variant thereof able to bind TIM3.

In some cases, the anti-TIM3 V_L domain comprises the amino acid sequence XIVXTQSPAXXSXSXGXXVTXXCXASXSXXXYXXWYQQKXGXSPXXXIXXXSXLXS GVPXRFSGSGSGXXYXLXIXSXEXEDXAXYYCQXXSXPXTFGGGTKLEIKAAA (SEQ ID NO:7), wherein “X” is any amino acid or no amino acid, or a fragment or

variant thereof able to bind TIM3. Also disclosed are other consensus sequences based on the alignments shown in Figures 9 and 10, e.g. based on conservative substitutions at variable residues.

In some embodiments, the disclosed CAR comprises a hinge and/or transmembrane domain derived from CD8. For example, the CAR can comprise the amino acid sequence FVPVFLPAKPTTTPAPRPPTPAPTIASQPLSLRPEACRPAAGGAVHTRGLDFACDIYI WAPLAGTCGVLLLSLVITLYCNHRNR (SEQ ID NO:8).

In some embodiments, the disclosed CAR comprises a hinge and/or transmembrane domain derived from CD28. For example, the CAR can comprise the amino acid sequence VMYPPPYLDNEKSNGTIIHVKGKHLCPSPLFPGPSKPFWVLVVVGGVLACYSLLVTV AFIIFWV (SEQ ID NO:9).

In some embodiments, the disclosed CAR comprises a costimulatory domain derived from CD28. For example, the CAR can comprise the amino acid sequence RSKRSRLLHSDYMNMTPRRPGPTRKHYQPYAPPRDFAAYRS (SEQ ID NO:10).

In some embodiments, the disclosed CAR comprises a costimulatory domain derived from 4-1BB. For example, the CAR can comprise the amino acid sequence RFSVVKRGRKKLLYIFKQPFMRPVQTTQEEDGCSCRFPEEEEGGCEL (SEQ ID NO:11).

In some embodiments, the disclosed CAR comprises an intracellular signaling domain derived from CD3 zeta (CD3ζ). For example, the CAR can comprise the amino acid sequence RVKFSRSADAPAYQQGQNQLYNELNLGRREEYDVLDKRRGRDPEMGGKPRRKNP QEGLYNELQKDKMAEAYSEIGMKGERRRGKGHDGLYQGLSTATKDTYDALHMQAL PPR (SEQ ID NO:12).

In some embodiments, the disclosed CAR comprises a linker between the V_H and V_L domains having the amino acid sequence GSTSGSGKPGSGEGSTKG (SEQ ID NO:13).

In some embodiments, the disclosed CAR comprises a signal peptide having the amino acid sequence MVLLVTSLLLCELPHPAFLLIP (SEQ ID NO:14).

In some embodiments, the anti-TIM3 binding agent is derived from natural antibodies, such as monoclonal antibodies. In some cases, the antibody is human. In some cases, the antibody has undergone an alteration to render it less immunogenic when administered to humans. For example, the alteration comprises one or more techniques selected from the group consisting of chimerization, humanization, CDR-

grafting, deimmunization, and mutation of framework amino acids to correspond to the closest human germline sequence.

Also disclosed are bi-specific CARs that target TIM3 and at least one additional tumor antigen. Also disclosed are CARs designed to work only in conjunction with another CAR that binds a different antigen, such as a tumor antigen. For example, in these embodiments, the endodomain of the disclosed CAR can contain only an signaling domain (SD) or a co-stimulatory signaling region (CSR), but not both. The second CAR (or endogenous T-cell) provides the missing signal if it is activated. For example, if the disclosed CAR contains an SD but not a CSR, then the immune effector cell containing this CAR is only activated if another CAR (or T-cell) containing a CSR binds its respective antigen. Likewise, if the disclosed CAR contains a CSR but not a SD, then the immune effector cell containing this CAR is only activated if another CAR (or T-cell) containing an SD binds its respective antigen.

Tumor antigens are proteins that are produced by tumor cells that elicit an immune response, particularly T-cell mediated immune responses. The additional antigen binding domain can be an antibody or a natural ligand of the tumor antigen. The selection of the additional antigen binding domain will depend on the particular type of cancer to be treated. Tumor antigens are well known in the art and include, for example, a glioma-associated antigen, carcinoembryonic antigen (CEA), EGFRvIII, IL-IIRa, IL-13Ra, EGFR, FAP, B7H3, Kit, CA LX, CS-1, MUC1, BCMA, bcr-abl, HER2, β-human chorionic gonadotropin, alphafetoprotein (AFP), ALK, CD19, CD123, cyclin Bl, lectin-reactive AFP, Fos-related antigen 1, ADRB3, thyroglobulin, EphA2, RAGE-1, RUI, RU2, SSX2, AKAP-4, LCK, OY-TESI, PAX5, SART3, CLL-1, fucosyl GM1, GloboH, MN-CA IX, EPCAM, EVT6-AML, TGS5, human telomerase reverse transcriptase, plysialic acid, PLAC1, RUI, RU2 (AS), intestinal carboxyl esterase, lewisY, sLe, LY6K, mut hsp70-2, M-CSF, MYCN, RhoC, TRP-2, CYPIBI, BORIS, prostase, prostate-specific antigen (PSA), PAX3, PAP, NY-ESO-1, LAGE-la, LMP2, NCAM, p53, p53 mutant, Ras mutant, gplOO, prostein, OR51E2, PANX3, PSMA, PSCA, Her2/neu, hTERT, HMWMAA, HAVCR1, VEGFR2, PDGFR-beta, survivin and telomerase, legumain, HPV E6,E7, sperm protein 17, SSEA-4, tyrosinase, TARP, WT1, prostate-carcinoma tumor antigen- 1 (PCTA-1), ML-IAP, MAGE, MAGE-A1, MAD-CT-1, MAD-CT-2, MelanA/MART 1, XAGE1 , ELF2M, ERG (TMPRSS2 ETS fusion gene), NA17, neutrophil elastase, sarcoma translocation breakpoints, NY-BR-1, ephnnB2, CD20, CD22, CD24, CD30, CD33, CD38, CD44v6, CD97, CD99, CD171, CD179a, androgen receptor, FAP, insulin growth factor (IGF)-I,

IGFII, IGF-I receptor, GD2, o-acetyl-GD2, GD3, GM3, GPRC5D, GPR20, CXORF61, folate receptor (FRa), folate receptor beta, ROR1, Flt3, TAG72, TN Ag, Tie 2, TEM1, TEM7R, CLDN6, TSHR, UPK2, and mesothelin. In a preferred embodiment, the tumor antigen is selected from the group consisting of folate receptor (FRa), mesothelin, EGFRvIII, IL-13Ra, CD123, CD19, CD33, BCMA, GD2, CLL-1, CA-IX, MUCI, HER2, CD99, and any combination thereof.

Non-limiting examples of tumor antigens include the following: Differentiation antigens such as tyrosinase, TRP-1, TRP-2 and tumor-specific multilineage antigens such as MAGE-1, MAGE-3, BAGE, GAGE-1, GAGE-2, pi 5; overexpressed embryonic antigens such as CEA; overexpressed oncogenes and mutated tumor-suppressor genes such as p53, Ras, HER-2/neu; unique tumor antigens resulting from chromosomal translocations; such as BCR-ABL, E2A-PRL, H4-RET, IGH-IGK, MYL-RAR; and viral antigens, such as the Epstein Barr virus antigens EBVA and the human papillomavirus (HPV) antigens E6 and E7. Other large, protein-based antigens include TSP- 180, MAGE-4, MAGE-5, MAGE-6, RAGE, NY-ESO, pl85erbB2, pl80erbB-3, c-met, nm- 23H1, PSA, TIM3, CA 19-9, CA 72-4, CAM 17.1, NuMa, K-ras, beta-Catenin, CDK4, Mum-1, p 15, p 16, 43-9F, 5T4, 791Tgp72, alpha-fetoprotein, beta-HCG, BCA225, BTAA, CA 125, CA 15-3\CA 27.29\BCAA, CA 195, CA 242, CA-50, CAM43, CD68\P1, CO-029, FGF-5, G250, Ga733\EpCAM, HTgp-175, M344, MA-50, MG7-Ag, MOV18, NB/70K, NY-CO-1, RCASI, SDCCAG1 6, TA-90\Mac-2 binding protein\cyclophilm C-associated protein, TAAL6, TAG72, TLP, TPS, GPC3, MUC16, LMP1, EBMA-1, BARF-1, CS1, CD319, HER1, B7H6, L1CAM, IL6, and MET.

Nucleic Acids and Vectors

Also disclosed are polynucleotides and polynucleotide vectors encoding the disclosed TIM3-specific CARs that allow expression of the TIM3-specific CARs in the disclosed immune effector cells.

Nucleic acid sequences encoding the disclosed CARs, and regions thereof, can be obtained using recombinant methods known in the art, such as, for example by screening libraries from cells expressing the gene, by deriving the gene from a vector known to include the same, or by isolating directly from cells and tissues containing the same, using standard techniques. Alternatively, the gene of interest can be produced synthetically, rather than cloned.

Expression of nucleic acids encoding CARs is typically achieved by operably linking a nucleic acid encoding the CAR polypeptide to a promoter, and incorporating the construct into an expression vector. Typical cloning vectors contain transcription

and translation terminators, initiation sequences, and promoters useful for regulation of the expression of the desired nucleic acid sequence.

The disclosed nucleic acid can be cloned into a number of types of vectors. For example, the nucleic acid can be cloned into a vector including, but not limited to a plasmid, a phagemid, a phage derivative, an animal virus, and a cosmid. Vectors of particular interest include expression vectors, replication vectors, probe generation vectors, and sequencing vectors.

Further, the expression vector may be provided to a cell in the form of a viral vector. Viral vector technology is well known in the art and is described, for example, in Sambrook et al. (2001, Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratory, New York), and in other virology and molecular biology manuals. Viruses, which are useful as vectors include, but are not limited to, retroviruses, adenoviruses, adeno-associated viruses, herpes viruses, and lentiviruses. In general, a suitable vector contains an origin of replication functional in at least one organism, a promoter sequence, convenient restriction endonuclease sites, and one or more selectable markers. In some embodimens, the polynucleotide vectors are lentiviral or retroviral vectors.

A number of viral based systems have been developed for gene transfer into mammalian cells. For example, retroviruses provide a convenient platform for gene delivery systems. A selected gene can be inserted into a vector and packaged in retroviral particles using techniques known in the art. The recombinant virus can then be isolated and delivered to cells of the subject either *in vivo* or *ex vivo*.

One example of a suitable promoter is the immediate early cytomegalovirus (CMV) promoter sequence. This promoter sequence is a strong constitutive promoter sequence capable of driving high levels of expression of any polynucleotide sequence operatively linked thereto. Another example of a suitable promoter is Elongation Growth Factor-1α (EF-1α). However, other constitutive promoter sequences may also be used, including, but not limited to the simian virus 40 (SV40) early promoter, MND (myeloproliferative sarcoma virus) promoter, mouse mammary tumor virus (MMTV), human immunodeficiency virus (HIV) long terminal repeat (LTR) promoter, MoMuLV promoter, an avian leukemia virus promoter, an Epstein-Barr virus immediate early promoter, a Rous sarcoma virus promoter, as well as human gene promoters such as, but not limited to, the actin promoter, the myosin promoter, the hemoglobin promoter, and the creatine kinase promoter. The promoter can alternatively be an inducible promoter. Examples of inducible promoters include, but

are not limited to a metallothionine promoter, a glucocorticoid promoter, a progesterone promoter, and a tetracycline promoter.

Additional promoter elements, e.g., enhancers, regulate the frequency of transcriptional initiation. Typically, these are located in the region 30-110 bp upstream of the start site, although a number of promoters have recently been shown to contain functional elements downstream of the start site as well. The spacing between promoter elements frequently is flexible, so that promoter function is preserved when elements are inverted or moved relative to one another.

In order to assess the expression of a CAR polypeptide or portions thereof, the expression vector to be introduced into a cell can also contain either a selectable marker gene or a reporter gene or both to facilitate identification and selection of expressing cells from the population of cells sought to be transfected or infected through viral vectors. In other aspects, the selectable marker may be carried on a separate piece of DNA and used in a co-transfection procedure. Both selectable markers and reporter genes may be flanked with appropriate regulatory sequences to enable expression in the host cells. Useful selectable markers include, for example, antibiotic-resistance genes.

Reporter genes are used for identifying potentially transfected cells and for evaluating the functionality of regulatory sequences. In general, a reporter gene is a gene that is not present in or expressed by the recipient organism or tissue and that encodes a polypeptide whose expression is manifested by some easily detectable property, e.g., enzymatic activity. Expression of the reporter gene is assayed at a suitable time after the DNA has been introduced into the recipient cells. Suitable reporter genes may include genes encoding luciferase, beta-galactosidase, chloramphenicol acetyl transferase, secreted alkaline phosphatase, or the green fluorescent protein gene. Suitable expression systems are well known and may be prepared using known techniques or obtained commercially. In general, the construct with the minimal 5′ flanking region showing the highest level of expression of reporter gene is identified as the promoter. Such promoter regions may be linked to a reporter gene and used to evaluate agents for the ability to modulate promoter-driven transcription.

Methods of introducing and expressing genes into a cell are known in the art. In the context of an expression vector, the vector can be readily introduced into a host cell, e.g., mammalian, bacterial, yeast, or insect cell by any method in the art. For example, the expression vector can be transferred into a host cell by physical, chemical, or biological means.

Physical methods for introducing a polynucleotide into a host cell include calcium phosphate precipitation, lipofection, particle bombardment, microinjection, electroporation, and the like. Methods for producing cells comprising vectors and/or exogenous nucleic acids are well-known in the art. See, for example, Sambrook et al. (2001, Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratory, New York).

Biological methods for introducing a polynucleotide of interest into a host cell include the use of DNA and RNA vectors. Viral vectors, and especially retroviral vectors, have become the most widely used method for inserting genes into mammalian, e.g., human cells.

Chemical means for introducing a polynucleotide into a host cell include colloidal dispersion systems, such as macromolecule complexes, nanocapsules, microspheres, beads, and lipid-based systems including oil-in-water emulsions, micelles, mixed micelles, and liposomes. An exemplary colloidal system for use as a delivery vehicle in vitro and in vivo is a liposome (e.g., an artificial membrane vesicle).

In the case where a non-viral delivery system is utilized, an exemplary delivery vehicle is a liposome. In another aspect, the nucleic acid may be associated with a lipid. The nucleic acid associated with a lipid may be encapsulated in the aqueous interior of a liposome, interspersed within the lipid bilayer of a liposome, attached to a liposome via a linking molecule that is associated with both the liposome and the oligonucleotide, entrapped in a liposome, complexed with a liposome, dispersed in a solution containing a lipid, mixed with a lipid, combined with a lipid, contained as a suspension in a lipid, contained or complexed with a micelle, or otherwise associated with a lipid. Lipid, lipid/DNA or lipid/expression vector associated compositions are not limited to any particular structure in solution. For example, they may be present in a bilayer structure, as micelles, or with a “collapsed” structure. They may also simply be interspersed in a solution, possibly forming aggregates that are not uniform in size or shape. Lipids are fatty substances which may be naturally occurring or synthetic lipids. For example, lipids include the fatty droplets that naturally occur in the cytoplasm as well as the class of compounds which contain long-chain aliphatic hydrocarbons and their derivatives, such as fatty acids, alcohols, amines, amino alcohols, and aldehydes. Lipids suitable for use can be obtained from commercial sources. For example, dimyristyl phosphatidylcholine (“DMPC”) can be obtained from Sigma, St. Louis, Mo.; dicetyl phosphate (“DCP”) can be obtained from K & K Laboratories (Plainview, N.Y.); cholesterol (“Choi”) can be

obtained from Calbiochem-Behring; dimyristyl phosphatidylglycerol ("DMPG") and other lipids may be obtained from Avanti Polar Lipids, Inc, (Birmingham, Ala.).

Immune effector cells

Also disclosed are immune effector cells that are engineered to express the disclosed CARs (also referred to herein as "CAR-T cells." These cells are preferably obtained from the subject to be treated (i.e. are autologous). However, in some embodiments, immune effector cell lines or donor effector cells (allogeneic) are used. Immune effector cells can be obtained from a number of sources, including peripheral blood mononuclear cells, bone marrow, lymph node tissue, cord blood, thymus tissue, tissue from a site of infection, ascites, pleural effusion, spleen tissue, and tumors. Immune effector cells can be obtained from blood collected from a subject using any number of techniques known to the skilled artisan, such as Ficoll™ separation. For example, cells from the circulating blood of an individual may be obtained by apheresis. In some embodiments, immune effector cells are isolated from peripheral blood lymphocytes by lysing the red blood cells and depleting the monocytes, for example, by centrifugation through a PERCOLL™ gradient or by counterflow centrifugal elutriation. A specific subpopulation of immune effector cells can be further isolated by positive or negative selection techniques. For example, immune effector cells can be isolated using a combination of antibodies directed to surface markers unique to the positively selected cells, e.g., by incubation with antibody-conjugated beads for a time period sufficient for positive selection of the desired immune effector cells. Alternatively, enrichment of immune effector cells population can be accomplished by negative selection using a combination of antibodies directed to surface markers unique to the negatively selected cells.

In some embodiments, the immune effector cells comprise any leukocyte involved in defending the body against infectious disease and foreign materials. For example, the immune effector cells can comprise lymphocytes, monocytes, macrophages, dentritic cells, mast cells, neutrophils, basophils, eosinophils, or any combinations thereof. For example, the immune effector cells can comprise T lymphocytes.

T cells or T lymphocytes can be distinguished from other lymphocytes, such as B cells and natural killer cells (NK cells), by the presence of a T-cell receptor (TCR) on the cell surface. They are called T cells because they mature in the thymus (although some also mature in the tonsils). There are several subsets of T cells, each with a distinct function.

T helper cells (T_H cells) assist other white blood cells in immunologic processes, including maturation of B cells into plasma cells and memory B cells, and activation of cytotoxic T cells and macrophages. These cells are also known as CD4+ T cells because they express the CD4 glycoprotein on their surface. Helper T cells become activated when they are presented with peptide antigens by MHC class II molecules, which are expressed on the surface of antigen-presenting cells (APCs). Once activated, they divide rapidly and secrete small proteins called cytokines that regulate or assist in the active immune response. These cells can differentiate into one of several subtypes, including T_H1, T_H2, T_H3, T_H17, T_H9, or T_{FH}, which secrete different cytokines to facilitate a different type of immune response.

Cytotoxic T cells (T_C cells, or CTLs) destroy virally infected cells and tumor cells, and are also implicated in transplant rejection. These cells are also known as $CD8^+$ T cells since they express the CD8 glycoprotein at their surface. These cells recognize their targets by binding to antigen associated with MHC class I molecules, which are present on the surface of all nucleated cells. Through IL-10, adenosine and other molecules secreted by regulatory T cells, the CD8+ cells can be inactivated to an anergic state, which prevents autoimmune diseases.

Memory T cells are a subset of antigen-specific T cells that persist long-term after an infection has resolved. They quickly expand to large numbers of effector T cells upon re-exposure to their cognate antigen, thus providing the immune system with “memory” against past infections. Memory cells may be either $CD4^+$ or $CD8^+$. Memory T cells typically express the cell surface protein CD45RO.

Regulatory T cells (T_{reg} cells), formerly known as suppressor T cells, are crucial for the maintenance of immunological tolerance. Their major role is to shut down T cell-mediated immunity toward the end of an immune reaction and to suppress auto-reactive T cells that escaped the process of negative selection in the thymus. Two major classes of $CD4^+$ T_{reg} cells have been described — naturally occurring T_{reg} cells and adaptive T_{reg} cells.

Natural killer T (NKT) cells (not to be confused with natural killer (NK) cells) bridge the adaptive immune system with the innate immune system. Unlike conventional T cells that recognize peptide antigens presented by major histocompatibility complex (MHC) molecules, NKT cells recognize glycolipid antigen presented by a molecule called CD1d.

In some embodiments, the T cells comprise a mixture of CD4+ cells. In other embodiments, the T cells are enriched for one or more subsets based on cell surface expression. For example, in some cases, the T comprise are cytotoxic $CD8^+$ T

lymphocytes. In some embodiments, the T cells comprise γδ T cells, which possess a distinct T-cell receptor (TCR) having one γ chain and one δ chain instead of α and β chains.

Natural-killer (NK) cells are $CD56^{+}CD3^{-}$ large granular lymphocytes that can kill virally infected and transformed cells, and constitute a critical cellular subset of the innate immune system (Godfrey J, et al. Leuk Lymphoma 2012 53:1666–1676). Unlike cytotoxic $CD8^{+}$ T lymphocytes, NK cells launch cytotoxicity against tumor cells without the requirement for prior sensitization, and can also eradicate MHC-I-negative cells (Narni-Mancinelli E, et al. Int Immunol 2011 23:427–431). NK cells are safer effector cells, as they may avoid the potentially lethal complications of cytokine storms (Morgan RA, et al. Mol Ther 2010 18:843–851), tumor lysis syndrome (Porter DL, et al. N Engl J Med 2011 365:725–733), and on-target, off-tumor effects. Although NK cells have a well-known role as killers of cancer cells, and NK cell impairment has been extensively documented as crucial for progression of MM (Godfrey J, et al. Leuk Lymphoma 2012 53:1666–1676; Fauriat C, et al. Leukemia 2006 20:732–733), the means by which one might enhance NK cell-mediated anti-MM activity has been largely unexplored prior to the disclosed CARs.

Therapeutic Methods

Immune effector cells expressing the disclosed CARs can elicit an anti-tumor immune response against TIM3-expressing cancer cells. The anti-tumor immune response elicited by the disclosed CAR-modified immune effector cells may be an active or a passive immune response. In addition, the CAR-mediated immune response may be part of an adoptive immunotherapy approach in which CAR-modified immune effector cells induce an immune response specific to TIM3.

Adoptive transfer of immune effector cells expressing chimeric antigen receptors is a promising anti-cancer therapeutic. Following the collection of a patient's immune effector cells, the cells may be genetically engineered to express the disclosed TIM3-specific CARs, then infused back into the patient.

The disclosed CAR-modified immune effector cells may be administered either alone, or as a pharmaceutical composition in combination with diluents and/or with other components such as IL-2, IL-15, or other cytokines or cell populations. Briefly, pharmaceutical compositions may comprise a target cell population as described herein, in combination with one or more pharmaceutically or physiologically acceptable carriers, diluents or excipients. Such compositions may comprise buffers such as neutral buffered saline, phosphate buffered saline and the like; carbohydrates such as glucose, mannose, sucrose or dextrans, mannitol;

proteins; polypeptides or amino acids such as glycine; antioxidants; chelating agents such as EDTA or glutathione; adjuvants (e.g., aluminum hydroxide); and preservatives. Compositions for use in the disclosed methods are in some embodimetns formulated for intravenous administration. Pharmaceutical compositions may be administered in any manner appropriate treat MM. The quantity and frequency of administration will be determined by such factors as the condition of the patient, and the severity of the patient's disease, although appropriate dosages may be determined by clinical trials.

When “an immunologically effective amount”, “an anti-tumor effective amount”, “an tumor-inhibiting effective amount”, or “therapeutic amount” is indicated, the precise amount of the compositions of the present invention to be administered can be determined by a physician with consideration of individual differences in age, weight, tumor size, extent of infection or metastasis, and condition of the patient (subject). It can generally be stated that a pharmaceutical composition comprising the T cells described herein may be administered at a dosage of 10^4 to 10^9 cells/kg body weight, such as 10^5 to 10^6 cells/kg body weight, including all integer values within those ranges. T cell compositions may also be administered multiple times at these dosages. The cells can be administered by using infusion techniques that are commonly known in immunotherapy (see, e.g., Rosenberg et al., New Eng. J. of Med. 319:1676, 1988). The optimal dosage and treatment regime for a particular patient can readily be determined by one skilled in the art of medicine by monitoring the patient for signs of disease and adjusting the treatment accordingly.

In certain embodiments, it may be desired to administer activated T cells to a subject and then subsequently re-draw blood (or have an apheresis performed), activate T cells therefrom according to the disclosed methods, and reinfuse the patient with these activated and expanded T cells. This process can be carried out multiple times every few weeks. In certain embodiments, T cells can be activated from blood draws of from 10 cc to 400 cc. In certain embodiments, T cells are activated from blood draws of 20 cc, 30 cc, 40 cc, 50 cc, 60 cc, 70 cc, 80 cc, 90 cc, or 100 cc. Using this multiple blood draw/multiple reinfusion protocol may serve to select out certain populations of T cells.

The administration of the disclosed compositions may be carried out in any convenient manner, including by injection, transfusion, or implantation. The compositions described herein may be administered to a patient subcutaneously, intradermally, intratumorally, intranodally, intramedullary, intramuscularly, by intravenous (i.v.) injection, or intraperitoneally. In some embodiments, the disclosed

compositions are administered to a patient by intradermal or subcutaneous injection. In some embodiments, the disclosed compositions are administered by i.v. injection. The compositions may also be injected directly into a tumor, lymph node, or site of infection.

In certain embodiments, the disclosed CAR-modified immune effector cells are administered to a patient in conjunction with (e.g., before, simultaneously or following) any number of relevant treatment modalities, including but not limited to thalidomide, dexamethasone, bortezomib, and lenalidomide. In further embodiments, the CAR-modified immune effector cells may be used in combination with chemotherapy, radiation, immunosuppressive agents, such as cyclosporin, azathioprine, methotrexate, mycophenolate, and FK506, antibodies, or other immunoablative agents such as CAM PATH, anti-CD3 antibodies or other antibody therapies, cytoxin, fludaribine, cyclosporin, FK506, rapamycin, mycophenolic acid, steroids, FR901228, cytokines, and irradiation. In some embodiments, the CAR-modified immune effector cells are administered to a patient in conjunction with (e.g., before, simultaneously or following) bone marrow transplantation, T cell ablative therapy using either chemotherapy agents such as, fludarabine, external-beam radiation therapy (XRT), cyclophosphamide, or antibodies such as OKT3 or CAMPATH. In another embodiment, the cell compositions of the present invention are administered following B-cell ablative therapy such as agents that react with CD20, e.g., Rituxan. For example, in some embodiments, subjects may undergo standard treatment with high dose chemotherapy followed by peripheral blood stem cell transplantation. In certain embodiments, following the transplant, subjects receive an infusion of the expanded immune cells of the present invention. In an additional embodiment, expanded cells are administered before or following surgery.

The cancer of the disclosed methods can be any TIM3-expressing cell in a subject undergoing unregulated growth, invasion, or metastasis. Cancers that express TIM3 include hematological cancers, such as acute myeloid leukemia (AML), myelodysplasia, cervical cancer, gastric cancer, melanoma, and lung cancer.

In some aspects, the cancer can be any neoplasm or tumor for which radiotherapy is currently used. Alternatively, the cancer can be a neoplasm or tumor that is not sufficiently sensitive to radiotherapy using standard methods. Thus, the cancer can be a sarcoma, lymphoma, leukemia, carcinoma, blastoma, or germ cell tumor. A representative but non-limiting list of cancers that the disclosed compositions can be used to treat include lymphoma, B cell lymphoma, T cell

lymphoma, mycosis fungoides, Hodgkin's Disease, myeloid leukemia, bladder cancer, brain cancer, nervous system cancer, head and neck cancer, squamous cell carcinoma of head and neck, kidney cancer, lung cancers such as small cell lung cancer and non-small cell lung cancer, neuroblastoma/glioblastoma, ovarian cancer, pancreatic cancer, prostate cancer, skin cancer, liver cancer, melanoma, squamous cell carcinomas of the mouth, throat, larynx, and lung, endometrial cancer, cervical cancer, cervical carcinoma, breast cancer, epithelial cancer, renal cancer, genitourinary cancer, pulmonary cancer, esophageal carcinoma, head and neck carcinoma, large bowel cancer, hematopoietic cancers; testicular cancer; colon and rectal cancers, prostatic cancer, and pancreatic cancer.

The disclosed CARs can be used in combination with any compound, moiety or group which has a cytotoxic or cytostatic effect. Drug moieties include chemotherapeutic agents, which may function as microtubulin inhibitors, mitosis inhibitors, topoisomerase inhibitors, or DNA intercalators, and particularly those which are used for cancer therapy.

The disclosed CARs can be used in combination with a checkpoint inhibitor. The two known inhibitory checkpoint pathways involve signaling through the cytotoxic T-lymphocyte antigen-4 (CTLA-4) and programmed-death 1 (PD-1) receptors. These proteins are members of the CD28-B7 family of cosignaling molecules that play important roles throughout all stages of T cell function. The PD-1 receptor (also known as CD279) is expressed on the surface of activated T cells. Its ligands, PD-L1 (B7-H1; CD274) and PD-L2 (B7-DC; CD273), are expressed on the surface of APCs such as dendritic cells or macrophages. PD-L1 is the predominant ligand, while PD-L2 has a much more restricted expression pattern. When the ligands bind to PD-1, an inhibitory signal is transmitted into the T cell, which reduces cytokine production and suppresses T-cell proliferation. Checkpoint inhibitors include, but are not limited to antibodies that block PD-1 (Nivolumab (BMS-936558 or MDX1106), CT-011, MK-3475), PD-L1 (MDX-1105 (BMS-936559), MPDL3280A, MSB0010718C), PD-L2 (rHIgM12B7), CTLA-4 (Ipilimumab (MDX-010), Tremelimumab (CP-675,206)), IDO, B7-H3 (MGA271), B7-H4, TIM3, LAG-3 (BMS-986016).

Human monoclonal antibodies to programmed death 1 (PD-1) and methods for treating cancer using anti-PD-1 antibodies alone or in combination with other immunotherapeutics are described in U.S. Patent No. 8,008,449, which is incorporated by reference for these antibodies. Anti-PD-L1 antibodies and uses therefor are described in U.S. Patent No. 8,552,154, which is incorporated by

reference for these antibodies. Anticancer agent comprising anti-PD-1 antibody or anti-PD-L1 antibody are described in U.S. Patent No. 8,617,546, which is incorporated by reference for these antibodies.

In some embodiments, the PDL1 inhibitor comprises an antibody that specifically binds PDL1, such as BMS-936559 (Bristol-Myers Squibb) or MPDL3280A (Roche). In some embodiments, the PD1 inhibitor comprises an antibody that specifically binds PD1, such as lambrolizumab (Merck), nivolumab (Bristol-Myers Squibb), or MEDI4736 (AstraZeneca). Human monoclonal antibodies to PD-1 and methods for treating cancer using anti-PD-1 antibodies alone or in combination with other immunotherapeutics are described in U.S. Patent No. 8,008,449, which is incorporated by reference for these antibodies. Anti-PD-L1 antibodies and uses therefor are described in U.S. Patent No. 8,552,154, which is incorporated by reference for these antibodies. Anticancer agent comprising anti-PD-1 antibody or anti-PD-L1 antibody are described in U.S. Patent No. 8,617,546, which is incorporated by reference for these antibodies.

The disclosed CARs can be used in combination with other cancer immunotherapies. There are two distinct types of immunotherapy: passive immunotherapy uses components of the immune system to direct targeted cytotoxic activity against cancer cells, without necessarily initiating an immune response in the patient, while active immunotherapy actively triggers an endogenous immune response. Passive strategies include the use of the monoclonal antibodies (mAbs) produced by B cells in response to a specific antigen. The development of hybridoma technology in the 1970s and the identification of tumor-specific antigens permitted the pharmaceutical development of mAbs that could specifically target tumor cells for destruction by the immune system. Thus far, mAbs have been the biggest success story for immunotherapy; the top three best-selling anticancer drugs in 2012 were mAbs. Among them is rituximab (Rituxan, Genentech), which binds to the CD20 protein that is highly expressed on the surface of B cell malignancies such as non-Hodgkin's lymphoma (NHL). Rituximab is approved by the FDA for the treatment of NHL and chronic lymphocytic leukemia (CLL) in combination with chemotherapy. Another important mAb is trastuzumab (Herceptin; Genentech), which revolutionized the treatment of HER2 (human epidermal growth factor receptor 2)-positive breast cancer by targeting the expression of HER2.

Generating optimal "killer" CD8 T cell responses also requires T cell receptor activation plus co-stimulation, which can be provided through ligation of tumor necrosis factor receptor family members, including OX40 (CD134) and 4-1BB

(CD137). OX40 is of particular interest as treatment with an activating (agonist) anti-OX40 mAb augments T cell differentiation and cytolytic function leading to enhanced anti-tumor immunity against a variety of tumors.

In some embodiments, such an additional therapeutic agent may be selected from an antimetabolite, such as methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, fludarabine, 5-fluorouracil, decarbazine, hydroxyurea, asparaginase, gemcitabine or cladribine.

In some embodiments, such an additional therapeutic agent may be selected from an alkylating agent, such as mechlorethamine, thioepa, chlorambucil, melphalan, carmustine (BSNU), lomustine (CCNU), cyclophosphamide, busulfan, dibromomannitol, streptozotocin, dacarbazine (DTIC), procarbazine, mitomycin C, cisplatin and other platinum derivatives, such as carboplatin .

In some embodiments, such an additional therapeutic agent may be selected from an anti-mitotic agent, such as taxanes, for instance docetaxel, and paclitaxel, and vinca alkaloids, for instance vindesine, vincristine, vinblastine, and vinorelbine.

In some embodiments, such an additional therapeutic agent may be selected from a topoisomerase inhibitor, such as topotecan or irinotecan, or a cytostatic drug, such as etoposide and teniposide.

In some embodiments, such an additional therapeutic agent may be selected from a growth factor inhibitor, such as an inhibitor of ErbBl (EGFR) (such as an EGFR antibody, e.g. zalutumumab, cetuximab, panitumumab or nimotuzumab or other EGFR inhibitors, such as gefitinib or erlotinib), another inhibitor of ErbB2 (HER2/neu) (such as a HER2 antibody, e.g. trastuzumab, trastuzumab-DM l or pertuzumab) or an inhibitor of both EGFR and HER2, such as lapatinib).

In some embodiments, such an additional therapeutic agent may be selected from a tyrosine kinase inhibitor, such as imatinib (Glivec, Gleevec STI571) or lapatinib.

Therefore, in some embodiments, a disclosed antibody is used in combination with ofatumumab, zanolimumab, daratumumab, ranibizumab, nimotuzumab, panitumumab, hu806, daclizumab (Zenapax), basiliximab (Simulect), infliximab (Remicade), adalimumab (Humira), natalizumab (Tysabri), omalizumab (Xolair), efalizumab (Raptiva), and/or rituximab.

In some embodiments, a therapeutic agent for use in combination with a CARs for treating the disorders as described above may be an anti-cancer cytokine,

chemokine, or combination thereof. Examples of suitable cytokines and growth factors include IFNy, IL-2, IL-4, IL-6, IL-7, IL-10, IL-12, IL-13, IL-15, IL-18, IL-23, IL-24, IL-27, IL-28a, IL-28b, IL-29, KGF, IFNa (e.g., INFa2b), IFN , GM-CSF, CD40L, Flt3 ligand, stem cell factor, ancestim, and TNFa. Suitable chemokines may include Glu-Leu-Arg (ELR)- negative chemokines such as IP-10, MCP-3, MIG, and SDF-la from the human CXC and C-C chemokine families. Suitable cytokines include cytokine derivatives, cytokine variants, cytokine fragments, and cytokine fusion proteins.

In some embodiments, a therapeutic agent for use in combination with a CARs for treating the disorders as described above may be a cell cycle control/apoptosis regulator (or "regulating agent"). A cell cycle control/apoptosis regulator may include molecules that target and modulate cell cycle control/apoptosis regulators such as (i) cdc-25 (such as NSC 663284), (ii) cyclin-dependent kinases that overstimulate the cell cycle (such as flavopiridol (L868275, HMR1275), 7-hydroxystaurosporine (UCN-01, KW-2401), and roscovitine (R-roscovitine, CYC202)), and (iii) telomerase modulators (such as BIBR1532, SOT-095, GRN163 and compositions described in for instance US 6,440,735 and US 6,713,055) . Non-limiting examples of molecules that interfere with apoptotic pathways include TNF-related apoptosis-inducing ligand (TRAIL)/apoptosis-2 ligand (Apo-2L), antibodies that activate TRAIL receptors, IFNs, and anti-sense Bcl-2.

In some embodiments, a therapeutic agent for use in combination with a CARs for treating the disorders as described above may be a hormonal regulating agent, such as agents useful for anti-androgen and anti-estrogen therapy. Examples of such hormonal regulating agents are tamoxifen, idoxifene, fulvestrant, droloxifene, toremifene, raloxifene, diethylstilbestrol, ethinyl estradiol/estinyl, an antiandrogene (such as flutaminde/eulexin), a progestin (such as such as hydroxyprogesterone caproate, medroxy- progesterone/provera, megestrol acepate/megace), an adrenocorticosteroid (such as hydrocortisone, prednisone), luteinizing hormone-releasing hormone (and analogs thereof and other LHRH agonists such as buserelin and goserelin), an aromatase inhibitor (such as anastrazole/arimidex, aminoglutethimide/cytraden, exemestane) or a hormone inhibitor (such as octreotide/sandostatin).

In some embodiments, a therapeutic agent for use in combination with an CARs for treating the disorders as described above may be an anti-cancer nucleic acid or an anti-cancer inhibitory RNA molecule.

Combined administration, as described above, may be simultaneous, separate, or sequential. For simultaneous administration the agents may be administered as one composition or as separate compositions, as appropriate.

In some embodiments, the disclosed CARs is administered in combination with radiotherapy. Radiotherapy may comprise radiation or associated administration of radiopharmaceuticals to a patient is provided. The source of radiation may be either external or internal to the patient being treated (radiation treatment may, for example, be in the form of external beam radiation therapy (EBRT) or brachytherapy (BT)). Radioactive elements that may be used in practicing such methods include, e.g., radium, cesium-137, iridium-192, americium-241, gold-198, cobalt-57, copper-67, technetium-99, iodide-123, iodide-131, and indium-111.

In some embodiments, the disclosed CARs is administered in combination with surgery.

CAR-T cells may be designed in several ways that enhance tumor cytotoxicity and specificity, evade tumor immunosuppression, avoid host rejection, and prolong their therapeutic half-life. TRUCK (T-cells Redirected for Universal Cytokine Killing) T cells for example, possess a CAR but are also engineered to release cytokines such as IL-12 that promote tumor killing. Because these cells are designed to release a molecular payload upon activation of the CAR once localized to the tumor environment, these CAR-T cells are sometimes also referred to as 'armored CARs'. Several cytokines as cancer therapies are being investigated both pre-clinically and clinically, and may also prove useful when similarly incorporated into a TRUCK form of CAR-T therapy. Among these include IL-2, IL-3. IL-4, IL-5, IL-6, IL-7, IL-10, IL-12, IL-13, IL-15, IL-18, M-CSF, GM-CSF, IFN-α, IFN-γ, TNF-α, TRAIL, FLT3 ligand, Lymphotactin, and TGF-β (Dranoff 2004). "Self-driving" or "homing" CAR-T cells are engineered to express a chemokine receptor in addition to their CAR. As certain chemokines can be upregulated in tumors, incorporation of a chemokine receptor aids in tumor trafficking to and infiltration by the adoptive T-cell, thereby enhancing both specificity and functionality of the CAR-T (Moon 2011). Universal CAR-T cells also possess a CAR, but are engineered such that they do not express endogenous TCR (T-cell receptor) or MHC (major histocompatibility complex) proteins. Removal of these two proteins from the signaling repertoire of the adoptive T-cell therapy

prevents graft-versus-host-disease and rejection, respectively. Armored CAR-T cells are additionally so named for their ability to evade tumor immunosuppression and tumor-induced CAR-T hypofunction. These particular CAR-Ts possess a CAR, and may be engineered to not express checkpoint inhibitors. Alternatively, these CAR-Ts can be co-administered with a monoclonal antibody (mAb) that blocks checkpoint signaling. Administration of an anti-PDL1 antibody significantly restored the killing ability of CAR TILs (tumor infiltrating lymphocytes). While PD1-PDL1 and CTLA-4-CD80/CD86 signaling pathways have been investigated, it is possible to target other immune checkpoint signaling molecules in the design of an armored CAR-T including LAG-3, Tim-3, IDO-1, 2B4, and KIR. Other intracellular inhibitors of TILs include phosphatases (SHP1), ubiquitin-ligases (i.e., cbl-b), and kinases (i.e., diacylglycerol kinase) . Armored CAR-Ts may also be engineered to express proteins or receptors that protect them against or make them resistant to the effects of tumor-secreted cytokines. For example, CTLs (cytotoxic T lymphocytes) transduced with the double negative form of the TGF-β receptor are resistant to the immunosuppression by lymphoma secreted TGF-β. These transduced cells showed notably increased antitumor activity in vivo when compared to their control counterparts.

Tandem and dual CAR-T cells are unique in that they possess two distinct antigen binding domains. A tandem CAR contains two sequential antigen binding domains facing the extracellular environment connected to the intracellular costimulatory and stimulatory domains. A dual CAR is engineered such that one extracellular antigen binding domain is connected to the intracellular costimulatory domain and a second, distinct extracellular antigen binding domain is connected to the intracellular stimulatory domain. Because the stimulatory and costimulatory domains are split between two separate antigen binding domains, dual CARs are also referred to as “split CARs”. In both tandem and dual CAR designs, binding of both antigen binding domains is necessary to allow signaling of the CAR circuit in the T-cell. Because these two CAR designs have binding affinities for different, distinct antigens, they are also referred to as “bi-specific” CARs.

One primary concern with CAR-T cells as a form of “living therapeutic” is their manipulability in vivo and their potential immune-stimulating side effects. To better control CAR-T therapy and prevent against unwanted side effects, a variety of features have been engineered including off-switches, safety mechanisms, and conditional control mechanisms. Both self-destruct and marked/tagged CAR-T cells for example, are engineered to have an “off-switch” that promotes clearance of the CAR-expressing T-cell. A self-destruct CAR-T contains a CAR, but is also

engineered to express a pro-apoptotic suicide gene or "elimination gene" inducible upon administration of an exogenous molecule. A variety of suicide genes may be employed for this purpose, including HSV-TK (herpes simplex virus thymidine kinase), Fas, iCasp9 (inducible caspase 9), CD20, MYC tag, and truncated EGFR (endothelial growth factor receptor). HSK for example, will convert the prodrug ganciclovir (GCV) into GCV-triphosphate that incorporates itself into replicating DNA, ultimately leading to cell death. iCasp9 is a chimeric protein containing components of FK506-binding protein that binds the small molecule AP1903, leading to caspase 9 dimerization and apoptosis. A marked/tagged CAR-T cell however, is one that possesses a CAR but also is engineered to express a selection marker. Administration of a mAb against this selection marker will promote clearance of the CAR-T cell. Truncated EGFR is one such targetable antigen by the anti-EGFR mAb, and administration of cetuximab works to promotes elimination of the CAR-T cell. CARs created to have these features are also referred to as sCARs for 'switchable CARs', and RCARs for 'regulatable CARs'. A "safety CAR", also known as an "inhibitory CAR" (iCAR), is engineered to express two antigen binding domains. One of these extracellular domains is directed against a tumor related antigen and bound to an intracellular costimulatory and stimulatory domain. The second extracellular antigen binding domain however is specific for normal tissue and bound to an intracellular checkpoint domain such as CTLA4, PD1, or CD45. Incorporation of multiple intracellular inhibitory domains to the iCAR is also possible. Some inhibitory molecules that may provide these inhibitory domains include B7-H1, B7-1, CD160, PIH, 2B4, CEACAM (CEACAM-1. CEACAM-3, and/or CEACAM-5), LAG-3, TIGIT, BTLA, LAIR1, and TGFβ-R. In the presence of normal tissue, stimulation of this second antigen binding domain will work to inhibit the CAR. It should be noted that due to this dual antigen specificity, iCARs are also a form of bi-specific CAR-T cells. The safety CAR-T engineering enhances specificity of the CAR-T cell for tumor tissue, and is advantageous in situations where certain normal tissues may express very low levels of a tumor associated antigen that would lead to off target effects with a standard CAR (Morgan 2010). A conditional CAR-T cell expresses an extracellular antigen binding domain connected to an intracellular costimulatory domain and a separate, intracellular costimulator. The costimulatory and stimulatory domain sequences are engineered in such a way that upon administration of an exogenous molecule the resultant proteins will come together intracellularly to complete the CAR circuit. In this way, CAR-T activation can be modulated, and possibly even 'fine-tuned' or personalized to a specific patient. Similar to a dual CAR

design, the stimulatory and costimulatory domains are physically separated when inactive in the conditional CAR; for this reason these too are also referred to as a "split CAR".

In some embodiments, two or more of these engineered features may be combined to create an enhanced, multifunctional CAR-T. For example, it is possible to create a CAR-T cell with either dual- or conditional- CAR design that also releases cytokines like a TRUCK. In some embodiments, a dual-conditional CAR-T cell could be made such that it expresses two CARs with two separate antigen binding domains against two distinct cancer antigens, each bound to their respective costimulatory domains. The costimulatory domain would only become functional with the stimulatory domain after the activating molecule is administered. For this CAR-T cell to be effective the cancer must express both cancer antigens and the activating molecule must be administered to the patient; this design thereby incorporating features of both dual and conditional CAR-T cells.

Typically, CAR-T cells are created using α-β T cells, however γ-δ T cells may also be used. In some embodiments, the described CAR constructs, domains, and engineered features used to generate CAR-T cells could similarly be employed in the generation of other types of CAR-expressing immune cells including NK (natural killer) cells, B cells, mast cells, myeloid-derived phagocytes, and NKT cells. Alternatively, a CAR-expressing cell may be created to have properties of both T-cell and NK cells. In an additional embodiment, the transduced with CARs may be autologous or allogeneic.

Several different methods for CAR expression may be used including retroviral transduction (including γ-retroviral), lentiviral transduction, transposon/transposases (Sleeping Beauty and PiggyBac systems), and messenger RNA transfer-mediated gene expression. Gene editing (gene insertion or gene deletion/disruption) has become of increasing importance with respect to the possibility for engineering CAR-T cells as well. CRISPR-Cas9, ZFN (zinc finger nuclease), and TALEN (transcription activator like effector nuclease) systems are three potential methods through which CAR-T cells may be generated.

Definitions

The term "amino acid sequence" refers to a list of abbreviations, letters, characters or words representing amino acid residues. The amino acid abbreviations used herein are conventional one letter codes for the amino acids and are expressed as follows: A, alanine; B, asparagine or aspartic acid; C, cysteine; D aspartic acid; E, glutamate, glutamic acid; F, phenylalanine; G, glycine; H histidine; I isoleucine; K,

lysine; L, leucine; M, methionine; N, asparagine; P, proline; Q, glutamine; R, arginine; S, serine; T, threonine; V, valine; W, tryptophan; Y, tyrosine; Z, glutamine or glutamic acid.

The term “antibody” refers to an immunoglobulin, derivatives thereof which maintain specific binding ability, and proteins having a binding domain which is homologous or largely homologous to an immunoglobulin binding domain. These proteins may be derived from natural sources, or partly or wholly synthetically produced. An antibody may be monoclonal or polyclonal. The antibody may be a member of any immunoglobulin class from any species, including any of the human classes: IgG, IgM, IgA, IgD, and IgE. In exemplary embodiments, antibodies used with the methods and compositions described herein are derivatives of the IgG class. In addition to intact immunoglobulin molecules, also included in the term “antibodies” are fragments or polymers of those immunoglobulin molecules, and human or humanized versions of immunoglobulin molecules that selectively bind the target antigen.

The term “aptamer” refers to oligonucleic acid or peptide molecules that bind to a specific target molecule. These molecules are generally selected from a random sequence pool. The selected aptamers are capable of adapting unique tertiary structures and recognizing target molecules with high affinity and specificity. A “nucleic acid aptamer” is a DNA or RNA oligonucleic acid that binds to a target molecule via its conformation, and thereby inhibits or suppresses functions of such molecule. A nucleic acid aptamer may be constituted by DNA, RNA, or a combination thereof. A “peptide aptamer” is a combinatorial protein molecule with a variable peptide sequence inserted within a constant scaffold protein. Identification of peptide aptamers is typically performed under stringent yeast dihybrid conditions, which enhances the probability for the selected peptide aptamers to be stably expressed and correctly folded in an intracellular context.

The term “carrier” means a compound, composition, substance, or structure that, when in combination with a compound or composition, aids or facilitates preparation, storage, administration, delivery, effectiveness, selectivity, or any other feature of the compound or composition for its intended use or purpose. For example, a carrier can be selected to minimize any degradation of the active ingredient and to minimize any adverse side effects in the subject.

The term “chimeric molecule” refers to a single molecule created by joining two or more molecules that exist separately in their native state. The single, chimeric

molecule has the desired functionality of all of its constituent molecules. One type of chimeric molecules is a fusion protein.

The term “fusion protein” refers to a polypeptide formed by the joining of two or more polypeptides through a peptide bond formed between the amino terminus of one polypeptide and the carboxyl terminus of another polypeptide. The fusion protein can be formed by the chemical coupling of the constituent polypeptides or it can be expressed as a single polypeptide from nucleic acid sequence encoding the single contiguous fusion protein. A single chain fusion protein is a fusion protein having a single contiguous polypeptide backbone. Fusion proteins can be prepared using conventional techniques in molecular biology to join the two genes in frame into a single nucleic acid, and then expressing the nucleic acid in an appropriate host cell under conditions in which the fusion protein is produced.

The term “identity” refers to sequence identity between two nucleic acid molecules or polypeptides. Identity can be determined by comparing a position in each sequence which may be aligned for purposes of comparison. When a position in the compared sequence is occupied by the same base, then the molecules are identical at that position. A degree of similarity or identity between nucleic acid or amino acid sequences is a function of the number of identical or matching nucleotides at positions shared by the nucleic acid sequences. Various alignment algorithms and/or programs may be used to calculate the identity between two sequences, including FASTA, or BLAST which are available as a part of the GCG sequence analysis package (University of Wisconsin, Madison, Wis.), and can be used with, e.g., default setting. For example, polypeptides having at least 70%, 85%, 90%, 95%, 98% or 99% identity to specific polypeptides described herein and preferably exhibiting substantially the same functions, as well as polynucleotide encoding such polypeptides, are contemplated. Unless otherwise indicated a similarity score will be based on use of BLOSUM62. When BLASTP is used, the percent similarity is based on the BLASTP positives score and the percent sequence identity is based on the BLASTP identities score. BLASTP “Identities” shows the number and fraction of total residues in the high scoring sequence pairs which are identical; and BLASTP “Positives” shows the number and fraction of residues for which the alignment scores have positive values and which are similar to each other. Amino acid sequences having these degrees of identity or similarity or any intermediate degree of identity of similarity to the amino acid sequences disclosed herein are contemplated and encompassed by this disclosure. The polynucleotide sequences of similar polypeptides are deduced using the genetic code and may be

obtained by conventional means, in particular by reverse translating its amino acid sequence using the genetic code.

The term “nucleic acid” refers to a natural or synthetic molecule comprising a single nucleotide or two or more nucleotides linked by a phosphate group at the 3’ position of one nucleotide to the 5’ end of another nucleotide. The nucleic acid is not limited by length, and thus the nucleic acid can include deoxyribonucleic acid (DNA) or ribonucleic acid (RNA).

The term “operably linked to” refers to the functional relationship of a nucleic acid with another nucleic acid sequence. Promoters, enhancers, transcriptional and translational stop sites, and other signal sequences are examples of nucleic acid sequences operably linked to other sequences. For example, operable linkage of DNA to a transcriptional control element refers to the physical and functional relationship between the DNA and promoter such that the transcription of such DNA is initiated from the promoter by an RNA polymerase that specifically recognizes, binds to and transcribes the DNA.

The terms “peptide,” “protein,” and “polypeptide” are used interchangeably to refer to a natural or synthetic molecule comprising two or more amino acids linked by the carboxyl group of one amino acid to the alpha amino group of another.

The term “pharmaceutically acceptable” refers to those compounds, materials, compositions, and/or dosage forms which are, within the scope of sound medical judgment, suitable for use in contact with the tissues of human beings and animals without excessive toxicity, irritation, allergic response, or other problems or complications commensurate with a reasonable benefit/risk ratio.

The term “protein domain” refers to a portion of a protein, portions of a protein, or an entire protein showing structural integrity; this determination may be based on amino acid composition of a portion of a protein, portions of a protein, or the entire protein.

A “spacer” as used herein refers to a peptide that joins the proteins comprising a fusion protein. Generally a spacer has no specific biological activity other than to join the proteins or to preserve some minimum distance or other spatial relationship between them. However, the constituent amino acids of a spacer may be selected to influence some property of the molecule such as the folding, net charge, or hydrophobicity of the molecule.

The term “specifically binds”, as used herein, when referring to a polypeptide (including antibodies) or receptor, refers to a binding reaction which is determinative of the presence of the protein or polypeptide or receptor in a heterogeneous

population of proteins and other biologics. Thus, under designated conditions (e.g. immunoassay conditions in the case of an antibody), a specified ligand or antibody "specifically binds" to its particular "target" (e.g. an antibody specifically binds to an endothelial antigen) when it does not bind in a significant amount to other proteins present in the sample or to other proteins to which the ligand or antibody may come in contact in an organism. Generally, a first molecule that "specifically binds" a second molecule has an affinity constant (Ka) greater than about 10^5 M^{-1} (e.g., 10^6 M^{-1}, 10^7 M^{-1}, 10^8 M^{-1}, 10^9 M^{-1}, 10^{10} M^{-1}, 10^{11} M^{-1}, and 10^{12} M^{-1} or more) with that second molecule.

The term "specifically deliver" as used herein refers to the preferential association of a molecule with a cell or tissue bearing a particular target molecule or marker and not to cells or tissues lacking that target molecule. It is, of course, recognized that a certain degree of non-specific interaction may occur between a molecule and a non- target cell or tissue. Nevertheless, specific delivery, may be distinguished as mediated through specific recognition of the target molecule. Typically specific delivery results in a much stronger association between the delivered molecule and cells bearing the target molecule than between the delivered molecule and cells lacking the target molecule.

The term "subject" refers to any individual who is the target of administration or treatment. The subject can be a vertebrate, for example, a mammal. Thus, the subject can be a human or veterinary patient. The term "patient" refers to a subject under the treatment of a clinician, e.g., physician.

The term "therapeutically effective" refers to the amount of the composition used is of sufficient quantity to ameliorate one or more causes or symptoms of a disease or disorder. Such amelioration only requires a reduction or alteration, not necessarily elimination.

The terms "transformation" and "transfection" mean the introduction of a nucleic acid, e.g., an expression vector, into a recipient cell including introduction of a nucleic acid to the chromosomal DNA of said cell.

The term "treatment" refers to the medical management of a patient with the intent to cure, ameliorate, stabilize, or prevent a disease, pathological condition, or disorder. This term includes active treatment, that is, treatment directed specifically toward the improvement of a disease, pathological condition, or disorder, and also includes causal treatment, that is, treatment directed toward removal of the cause of the associated disease, pathological condition, or disorder. In addition, this term includes palliative treatment, that is, treatment designed for the relief of symptoms

rather than the curing of the disease, pathological condition, or disorder; preventative treatment, that is, treatment directed to minimizing or partially or completely inhibiting the development of the associated disease, pathological condition, or disorder; and supportive treatment, that is, treatment employed to supplement another specific therapy directed toward the improvement of the associated disease, pathological condition, or disorder.

The term "variant" refers to an amino acid or peptide sequence having conservative amino acid substitutions, non-conservative amino acid subsitutions (i.e. a degenerate variant), substitutions within the wobble position of each codon (i.e. DNA and RNA) encoding an amino acid, amino acids added to the C-terminus of a peptide, or a peptide having 60%, 70%, 80%, 90%, 95%, 96%, 97%, 98%, 99% sequence identity to a reference sequence.

The term "vector" refers to a nucleic acid sequence capable of transporting into a cell another nucleic acid to which the vector sequence has been linked. The term "expression vector" includes any vector, (e.g., a plasmid, cosmid or phage chromosome) containing a gene construct in a form suitable for expression by a cell (e.g., linked to a transcriptional control element).

A number of embodiments of the invention have been described. Nevertheless, it will be understood that various modifications may be made without departing from the spirit and scope of the invention. Accordingly, other embodiments are within the scope of the following claims.

EXAMPLES

Example 1:

Mice were immunized, sacrificed, and spleens isolated. Splenocytes were prepared as single cell suspensions and used to isolate RNA. The RNA was submitted for Genewiz IgH and IgL sequencing. Bioinformatics was performed to determine the most frequenct rearrangements, which presumably would encode for anti-TIM3 reactivity. The sequences were then used to develop scFv and design CARs with different pairs of IgH scFv and IgL scFv. These scFv were cloned into a retroviral construct and used to make virus and transduce T cells for validation

Example 2:

Retrovirus was used to transduce T cells and used for a cytotoxicity assay (Real Time Cell Anlaysis) by incubating adherent targets and CAR T cells. A similar assay was used to detect secretion of Interferon-gamma. But after 4 hours of stimulation the cells were fixed and analyzed for intracellular IFNgamma. Cytokines were also analyzed by secretion assays. Targets were mixed with CAR T cells and after an overnight incubated the supernatant was collected and assayed by Luminx for the cytokines noted tin the figures. For the in vivo study immune-deficient NSG mice were injected with primary AML. After engraftment of the AML the mice were treated with anti-TIM3 CAR T cells and blood was monitored for CAR T cell expansion and AML killing.

Unless defined otherwise, all technical and scientific terms used herein have the same meanings as commonly understood by one of skill in the art to which the disclosed invention belongs. Publications cited herein and the materials for which they are cited are specifically incorporated by reference.

Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents to the specific embodiments of the invention described herein. Such equivalents are intended to be encompassed by the following claims.

WHAT IS CLAIMED IS:

1. A chimeric antigen receptor (CAR) polypeptide, comprising a TIM3 antigen binding domain, a transmembrane domain, a signaling domain, and a co-stimulatory signaling region.

2. The polypeptide of claim 1, wherein the TIM3 antigen binding domain is a single-chain variable fragment (scFv) of an antibody that specifically binds TIM3.

3. The polypeptide of claim 2, wherein the anti-TIM3 scFv V_H domain comprises the amino acid sequence SEQ ID NO:1 or 2.

4. The polypeptide of claim 2 or 3, wherein the anti-TIM3 scFv V_L domain comprises the amino acid sequence SEQ ID NO:3, 4, 5, or 6.

5. The polypeptide of any one of claims 1 to 4, wherein the costimulatory signaling region comprises the cytoplasmic domain of a costimulatory molecule selected from the group consisting of CD27, CD28, 4-1BB, OX40, CD30, CD40, PD-1, ICOS, lymphocyte function-associated antigen-1 (LFA-1), CD2, CD7, LIGHT, NKG2C, B7-H3, a ligand that specifically binds with CD83, and any combination thereof

6. The polypeptide of any one of claims 1 to 5, wherein the CAR polypeptide is defined by the formula:

SP–TIM3–HG–TM–CSR–SD; or

SP–TIM3–HG–TM–SD–CSR

wherein “SP” represents a signal peptide,

wherein “TIM3” represents a TIM3-binding region,

wherein “HG” represents and optional hinge domain,

wherein “TM” represents a transmembrane domain,

wherein “CSR” represents a co-stimulatory signaling region,

wherein “SD” represents a signaling domain, and

wherein “–” represents a bivalent linker.

7. The polypeptide of any one of claims 1 to 6, wherein the signaling domain comprises a CD3 zeta (CD3ζ) signaling domain.

8. An isolated nucleic acid sequence encoding the recombinant polypeptide of any one of claims 1 to 7.

9. A vector comprising the isolated nucleic acid sequence of claim 8.

10. A cell comprising the vector of claim 9.

11. The cell of claim 10, wherein the cell is selected from the group consisting of an αβT cell, γδT cell, a Natural Killer (NK) cells, a Natural Killer T (NKT) cell, a B cell, an innate lymphoid cell (ILC), a cytokine induced killer (CIK) cell, a cytotoxic T

lymphocyte (CTL), a lymphokine activated killer (LAK) cell, a regulatory T cell, or any combination thereof.

12. The cell of claim 11, wherein the cell exhibits an anti-tumor immunity when the antigen binding domain of the CAR binds to TIM3.

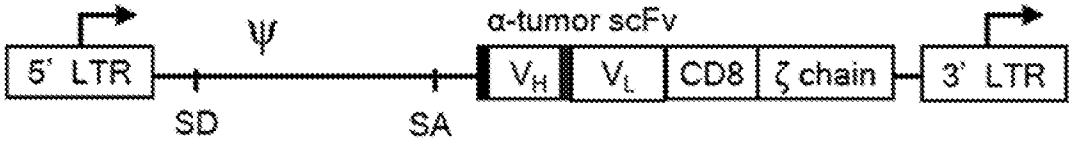
13. A method of providing an anti-cancer immunity in a subject with a TIM3-expressing cancer, the method comprising administering to the subject an effective amount of an immune effector cell genetically modified to express the CAR polypeptide of any one of claims 1 to 7, thereby providing an anti-tumor immunity in the mammal.

14. The method of claim 13, wherein the immune effector cell is selected from the group consisting of a T cell, a Natural Killer (NK) cell, a cytotoxic T lymphocyte (CTL), and a regulatory T cell.

15. The method of claim 13 or 14, further comprising administering to the subject a checkpoint inhibitor.

16. The method of claim 15, wherein the checkpoint inhibitor comprises an anti-PD-1 antibody, anti-PD-L1 antibody, anti-CTLA-4 antibody, or a combination thereof.

17. The method of any one of claims 14 to 16, wherein the cancer comprises an acute myeloid leukemia (AML).



CAR retroviral vector

FIG. 1

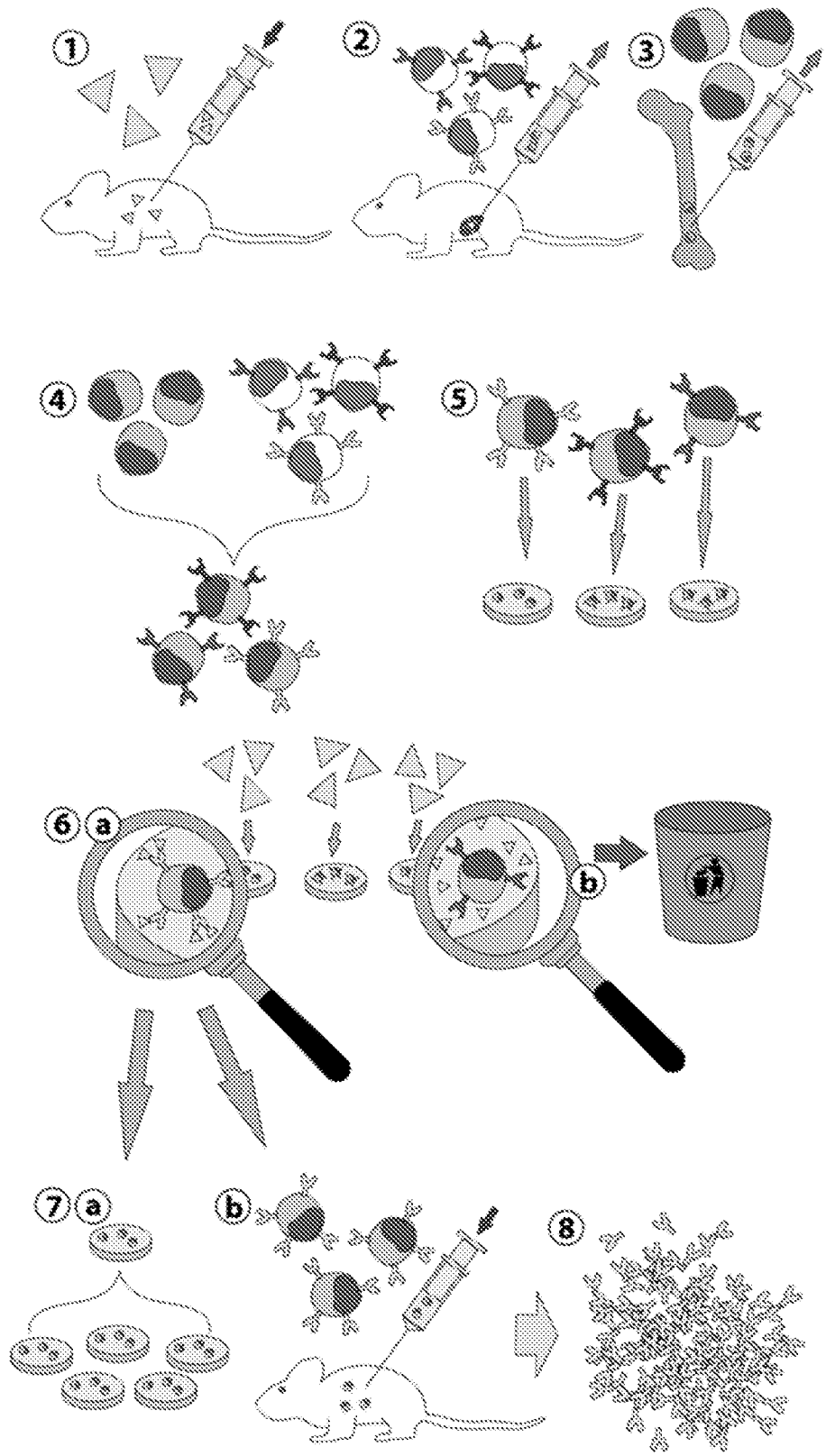


FIG. 2

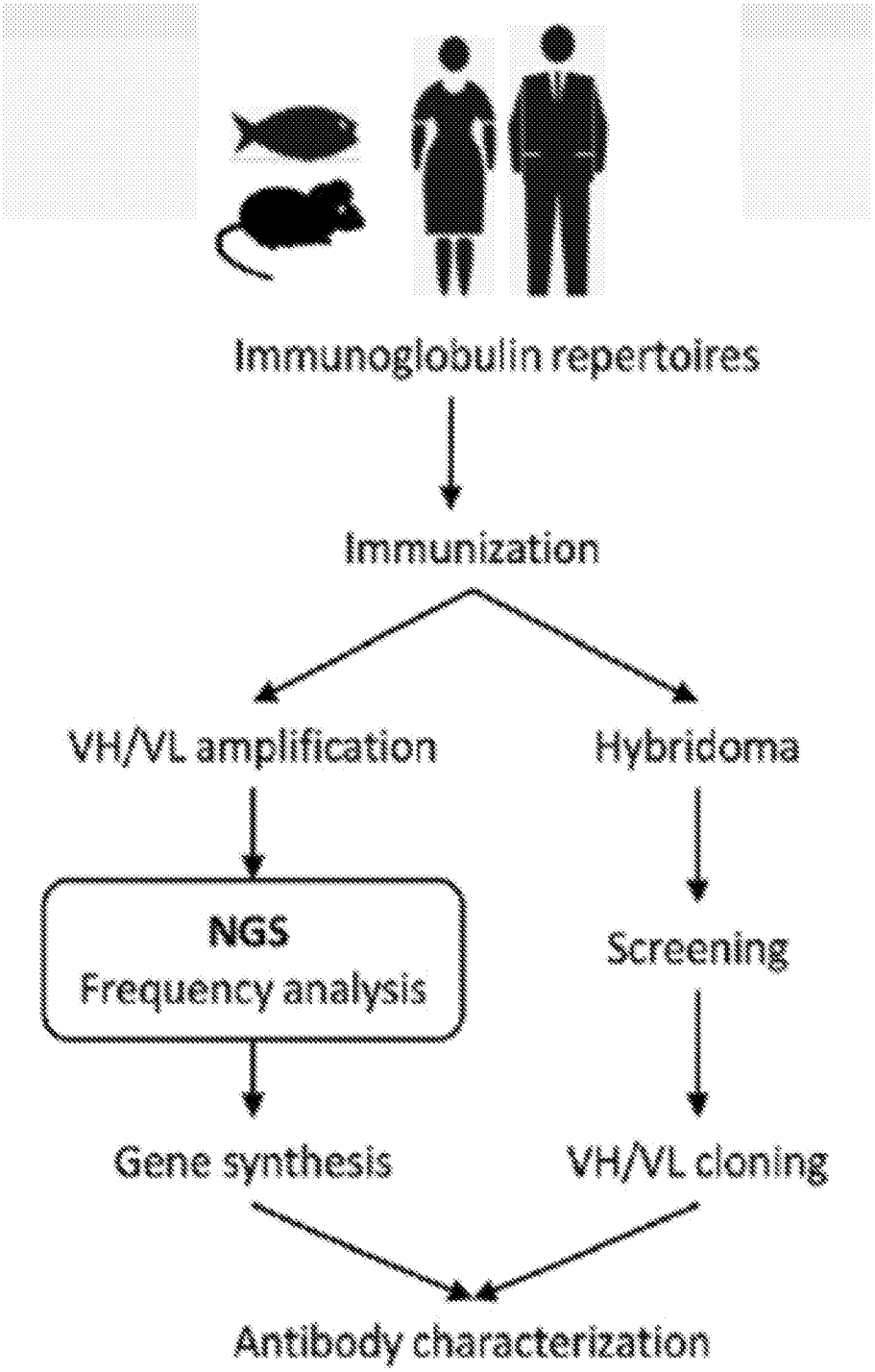

Immunoglobulin repertoires
Immunization
VH/VL amplification
Hybridoma
NGS
Frequency analysis
Screening
Gene synthesis
VH/VL cloning
Antibody characterization

FIG. 3

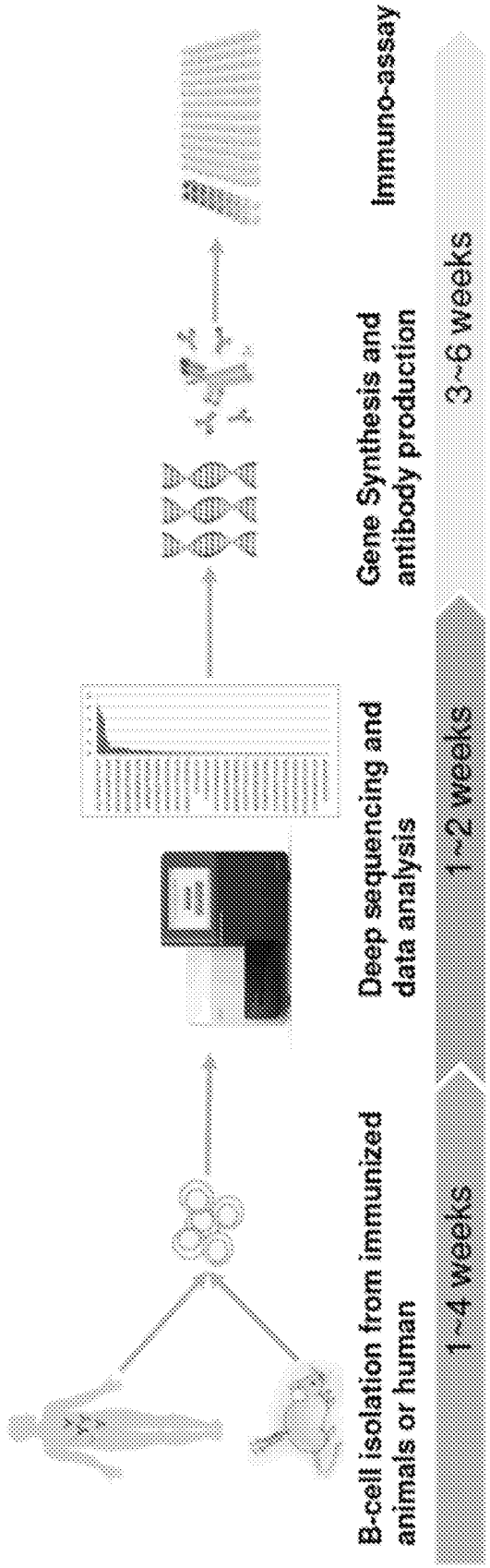

B-cell isolation from immunized animals or human
Deep sequencing and data analysis
Gene Synthesis and antibody production
Immuno-assay
1~4 weeks
1~2 weeks
3~6 weeks

FIG. 4

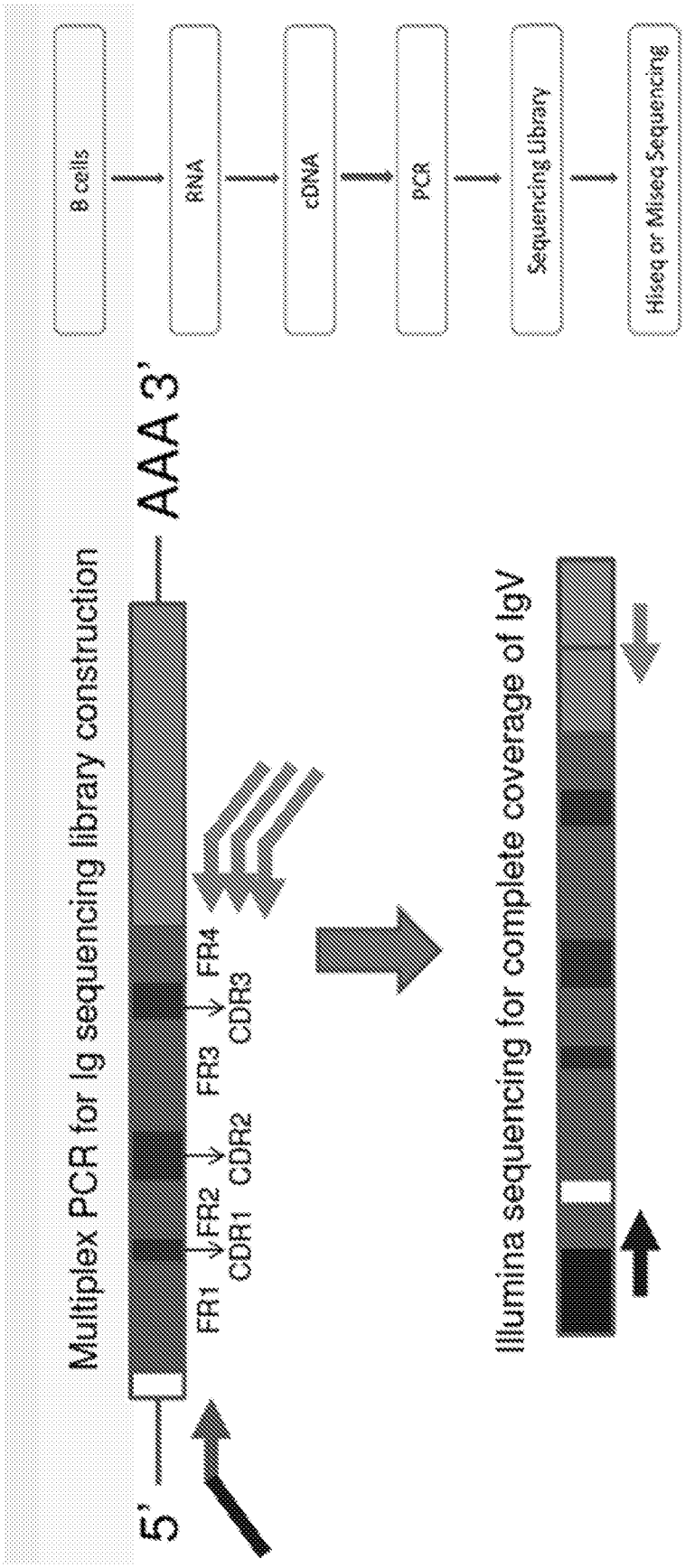

B cells
RNA
cDNA
PCR
Sequencing Library
Hiseq or Miseq Sequencing
Multiplex PCR for Ig sequencing library construction
5'
AAA 3'
FR1
CDR1
FR2
CDR2
FR3
CDR3
FR4
Illumina sequencing for complete coverage of IgV

FIG. 5

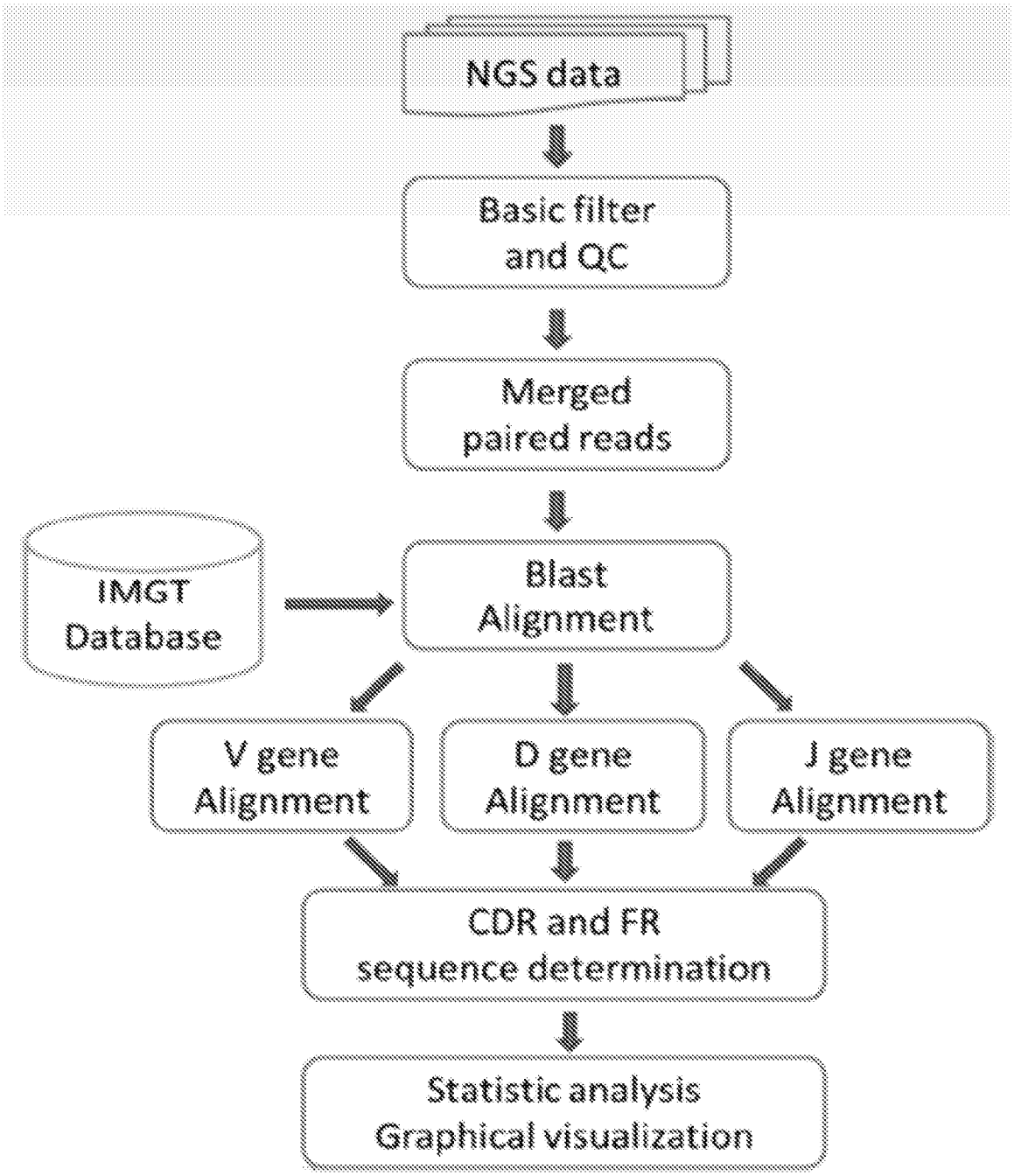
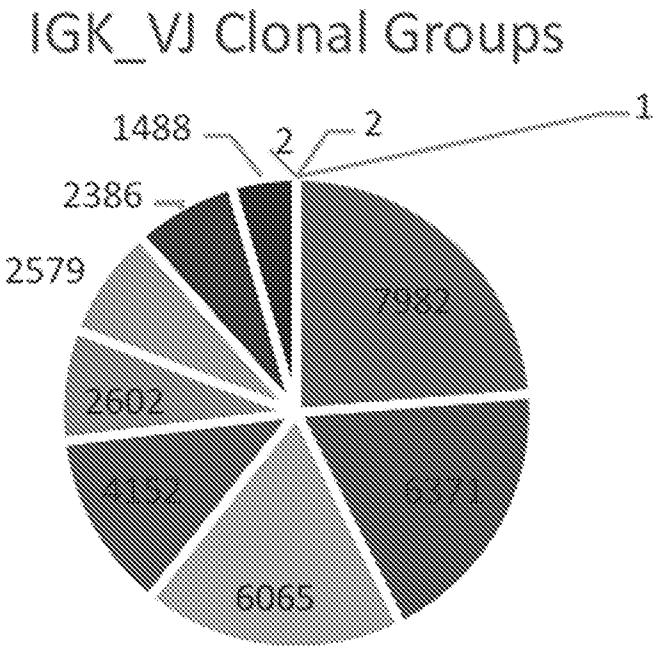
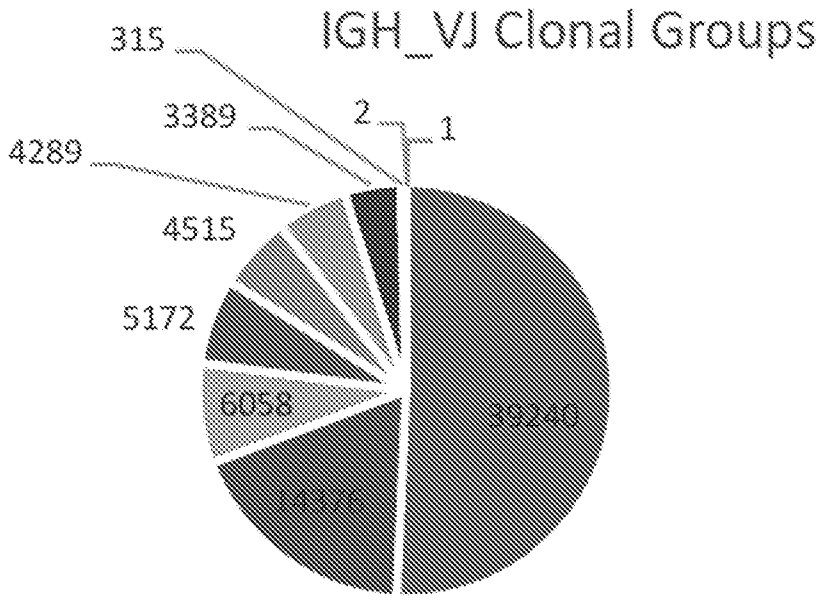

NGS data
Basic filter and QC
Merged paired reads
IMGT Database
Blast Alignment
V gene Alignment
D gene Alignment
J gene Alignment
CDR and FR sequence determination
Statistic analysis Graphical visualization

FIG. 6



Frequency Count	Group ID	IGK_VJ Clone
7982	1	IGKV4-61*01IGKJ1*01
6371	2	IGKV4-86*01IGKJ2*01
6065	3	IGKV5-39*01IGKJ1*01
4152	4	IGKV9-123*01IGKJ5*01
2602	5	IGKV4-61*01IGKJ1*02
2579	6	IGKV5-39*01IGKJ5*01
2386	7	IGKV6-32*01IGKJ4*01
1488	8	IGKV4-69*01IGKJ5*01
2	9	IGKV4-69*01IGKJ2*01
2	10	IGKV8-19*01IGKJ2*03
1	11	IGKV19-93*01IGKJ2*03

FIG. 7A



Frequency Count	Group ID	IGH_VJ Clone
39240	1	IGHV8-12*01IGHJ3*01
14376	2	IGHV1S81*02IGHJ2*01
6058	3	IGHV9-2-1*01IGHJ4*01
5172	4	IGHV5-17*02IGHJ1*01
4515	5	IGHV2-9*02IGHJ4*01
4289	6	IGHV1-47*01IGHJ3*01
3389	7	IGHV1-26*01IGHJ4*01
315	8	IGHV1-22*01IGHJ4*01
2	9	IGHV5-6-3*01IGHJ1*01
1	10	IGHV1S34*01IGHJ2*03

FIG. 7B

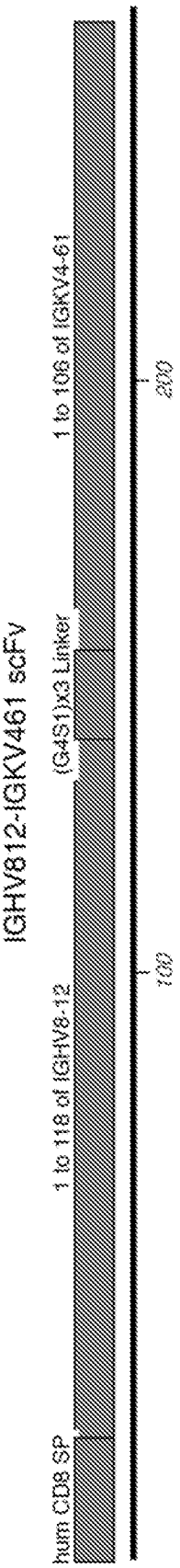

IGHV812-IGKV461 scFv
hum CD8 SP
1 to 118 of IGHV8-12
(G4S1)x3 Linker
1 to 106 of IGKV4-61
100
200

FIG. 8

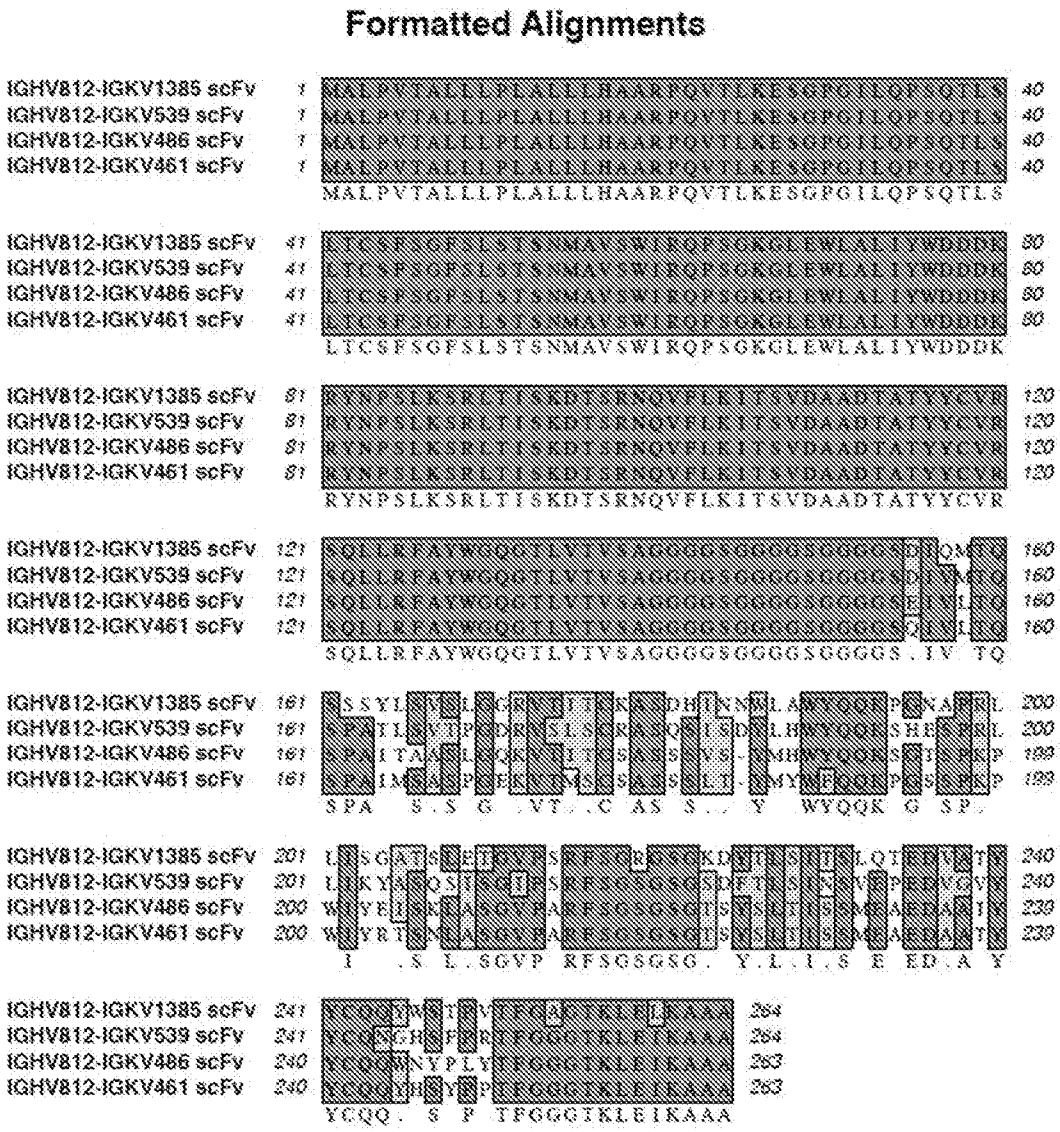

Formatted Alignments
IGHV812-IGKV1385 scFv
IGHV812-IGKV539 scFv
IGHV812-IGKV486 scFv
IGHV812-IGKV461 scFv

FIG. 9

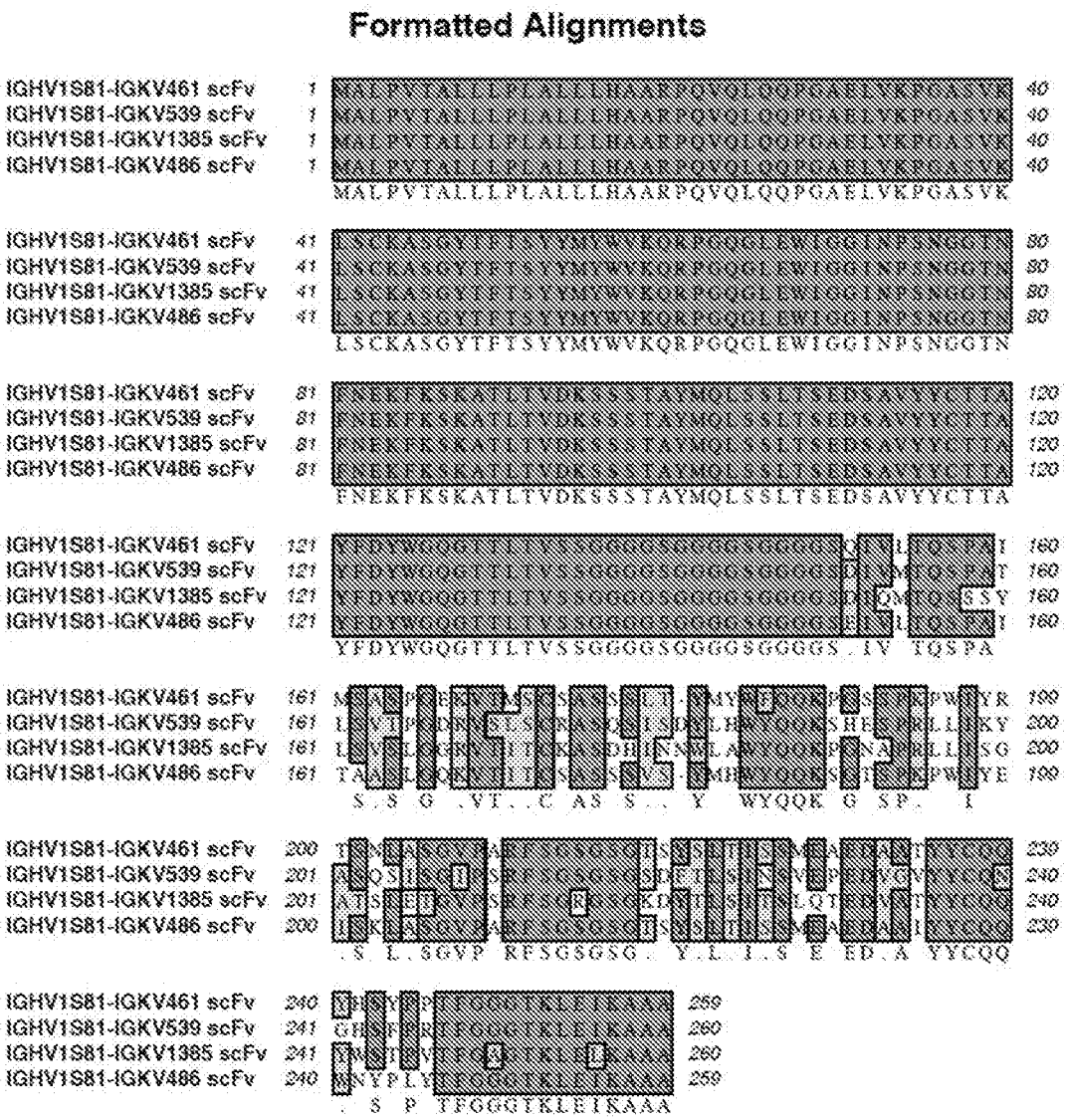

Formatted Alignments
IGHV1S81-IGKV461 scFv
IGHV1S81-IGKV539 scFv
IGHV1S81-IGKV1385 scFv
IGHV1S81-IGKV486 scFv
MALPVTALLLPLALLLHAARPQVQLQQPGAELVKPGASVK
LSCKASGYTFTSYYMYWVKQRPGQGLEWIGGINPSNGGTN
FNEKFKSKATLTVDKSSSTAYMQLSSLTSEDSAVYYCTTA
YFDYWGQGTTLTVSSGGGGSGGGGSGGGGS.IV TQSPA

FIG. 10

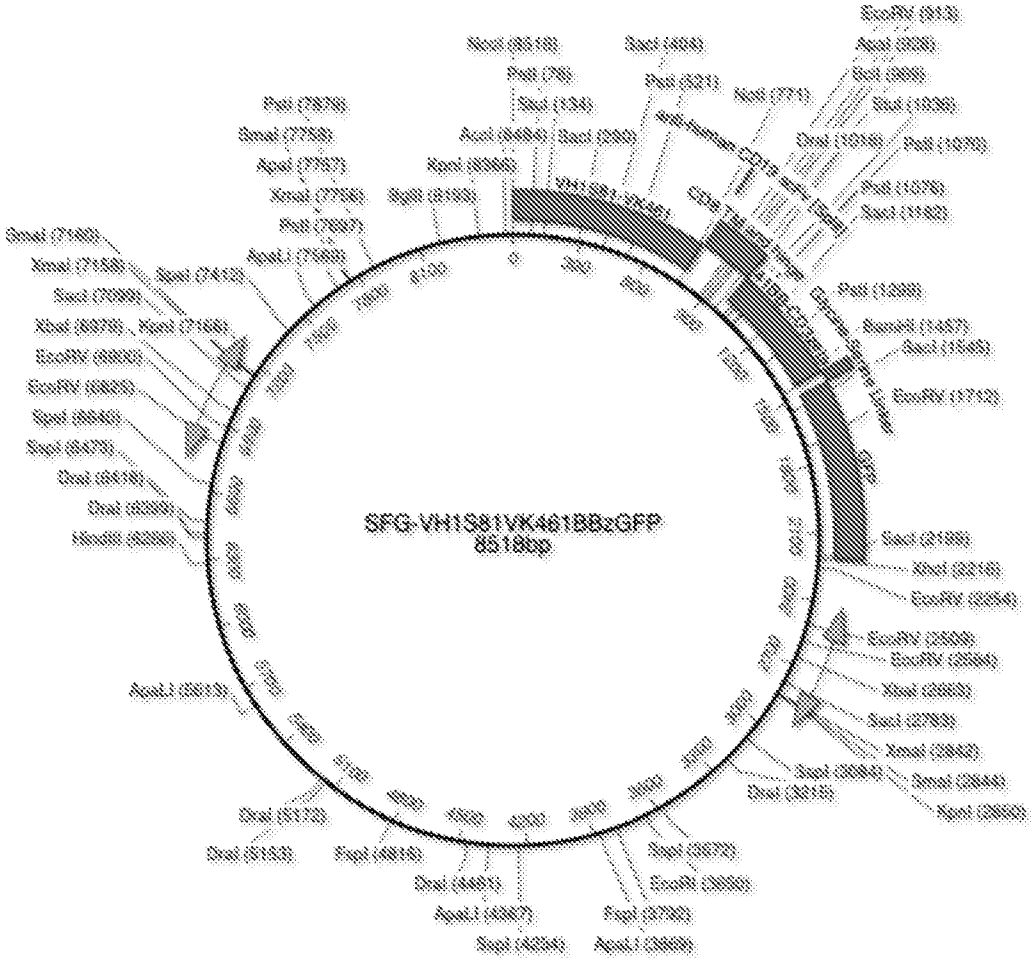


FIG. 11

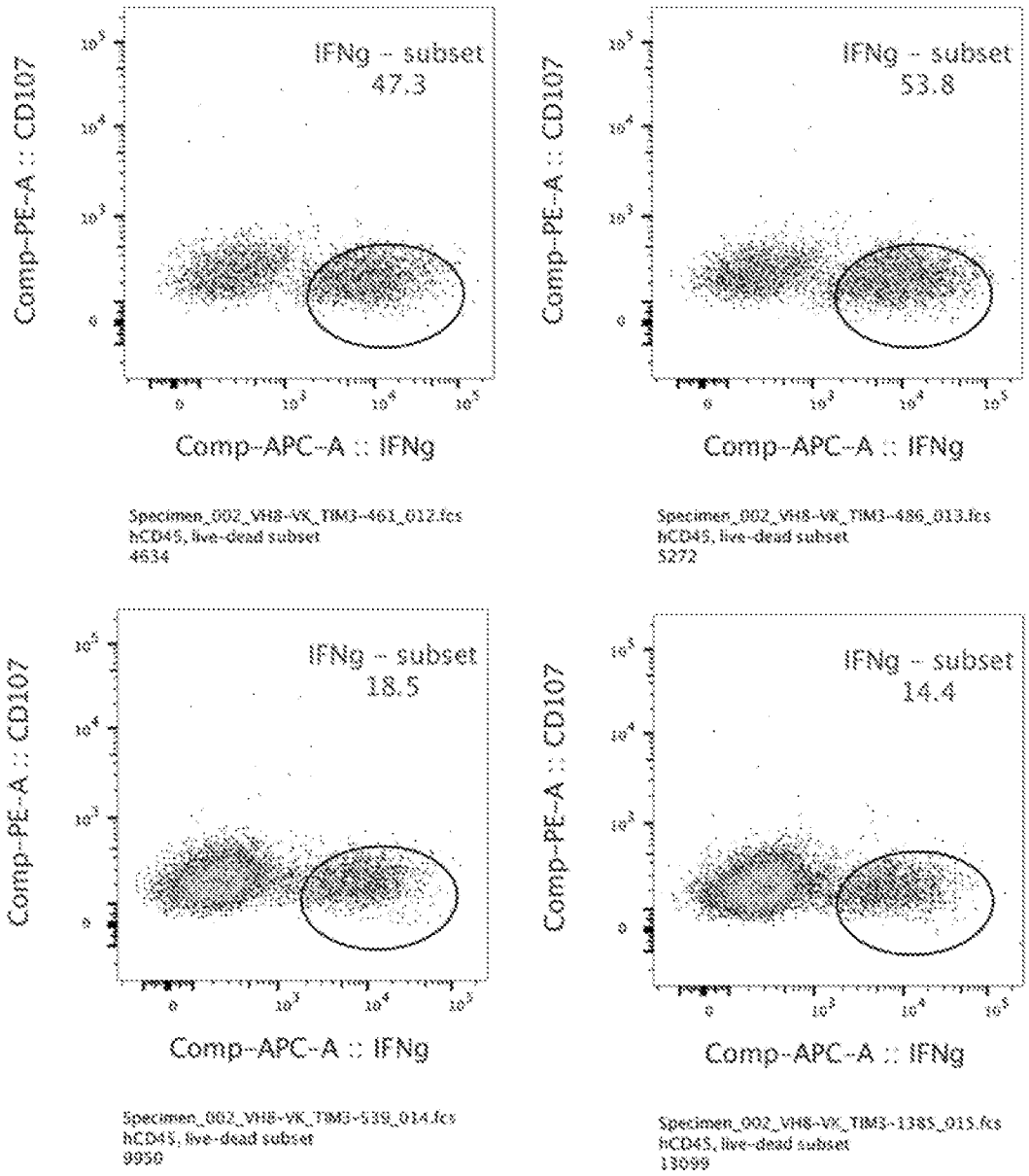

IFNg – subset
47.3
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH8-VK_TIM3-461_012.fcs
hCD45, live-dead subset
4634
IFNg – subset
53.8
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH8-VK_TIM3-486_013.fcs
hCD45, live-dead subset
5272
IFNg – subset
18.5
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH8-VK_TIM3-538_014.fcs
hCD45, live-dead subset
9950
IFNg – subset
14.4
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH8-VK_TIM3-1385_015.fcs
hCD45, live-dead subset
13099

FIG. 12A

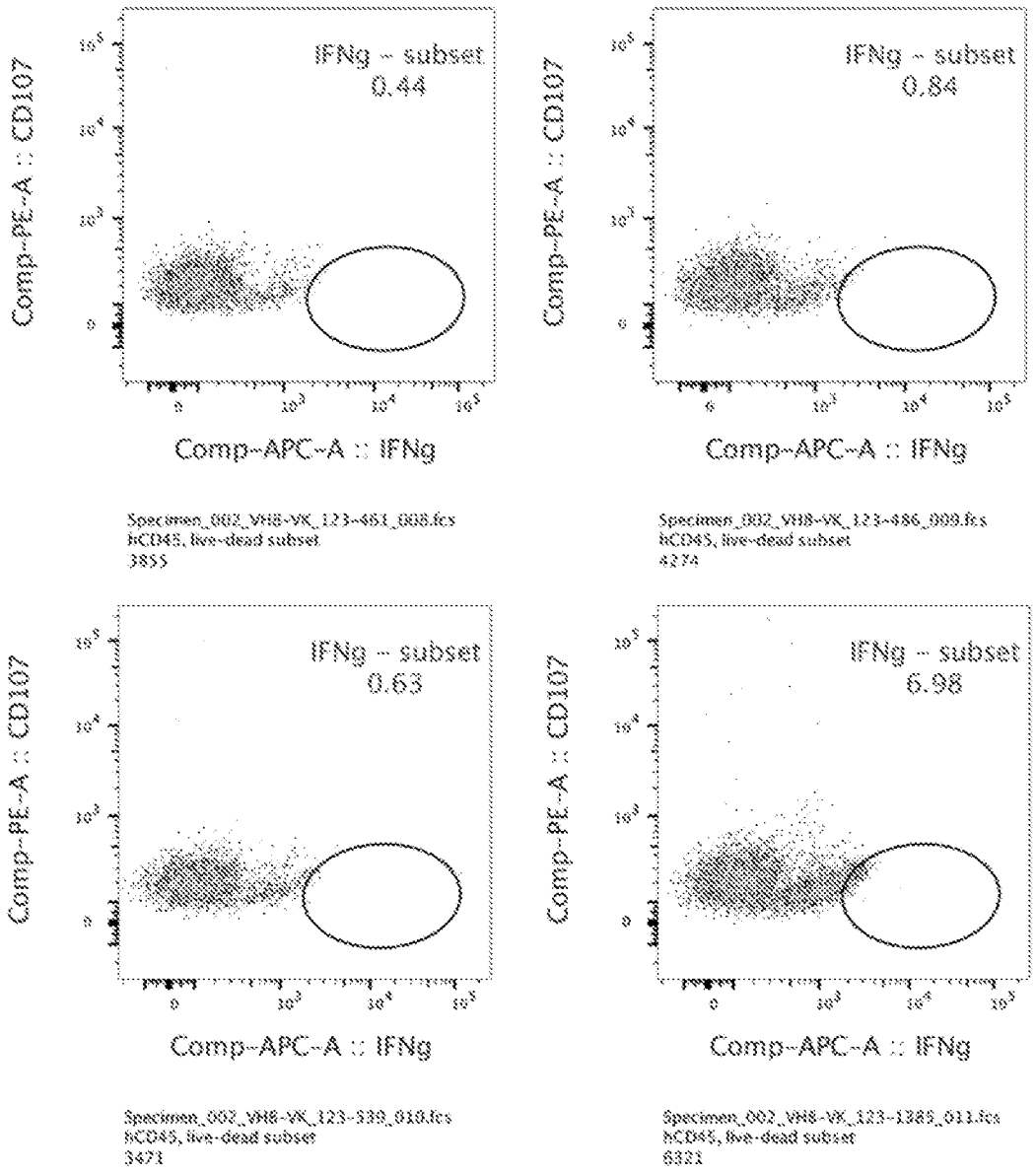

IFNg - subset
0.44
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH8-VK_123-463_008.fcs
hCD45, live-dead subset
3855
IFNg - subset
0.84
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH8-VK_123-486_009.fcs
hCD45, live-dead subset
4274
IFNg - subset
0.63
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH8-VK_123-539_010.fcs
hCD45, live-dead subset
3471
IFNg - subset
6.98
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH8-VK_123-1385_011.fcs
hCD45, live-dead subset
6321

FIG. 12B

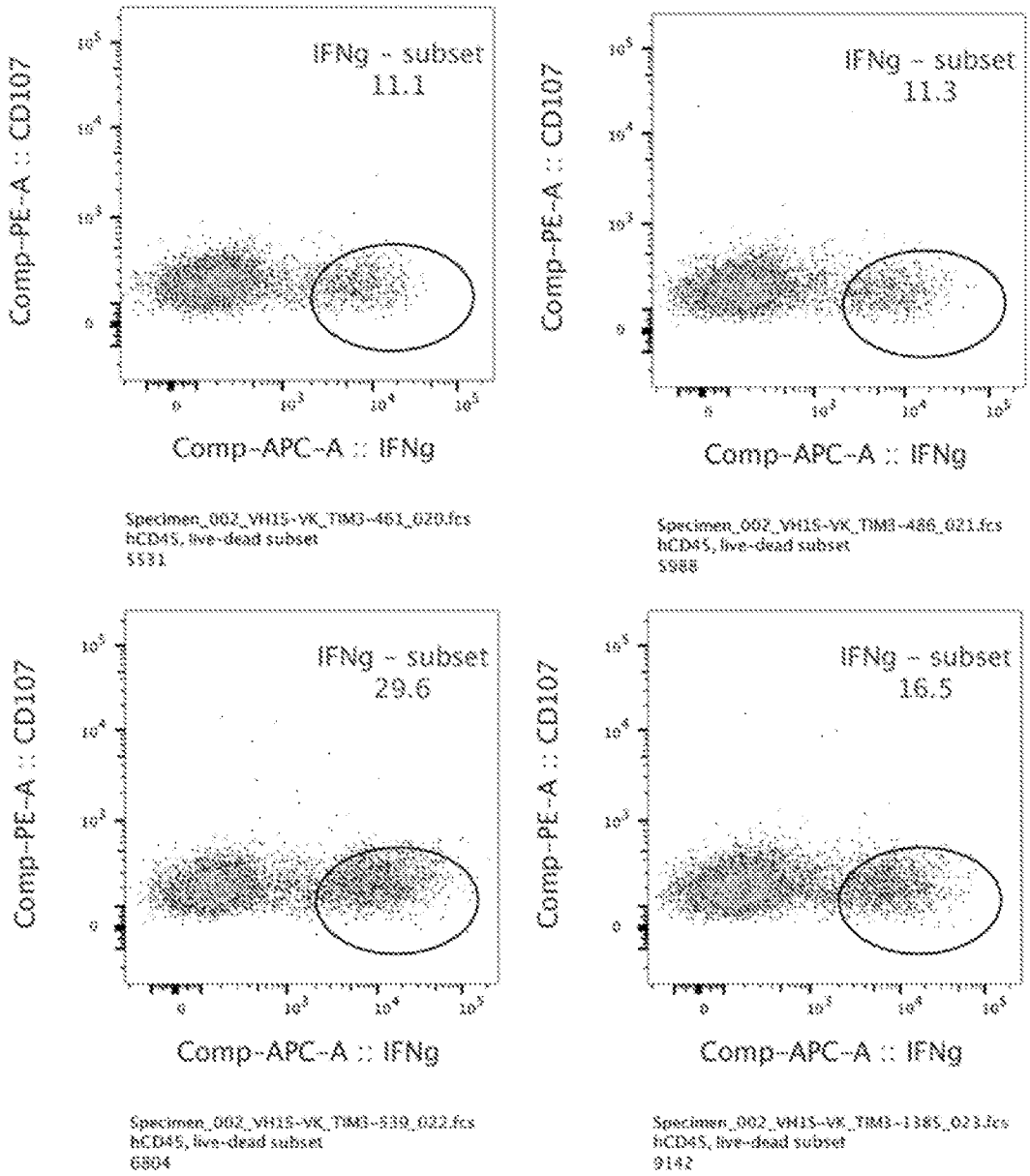

IFNg ~ subset
11.1
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH1S-VK_TIM3-461_020.fcs
hCD45, live-dead subset
5531
IFNg ~ subset
11.3
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH1S-VK_TIM3-486_021.fcs
hCD45, live-dead subset
5988
IFNg ~ subset
29.6
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH1S-VK_TIM3-830_022.fcs
hCD45, live-dead subset
6804
IFNg ~ subset
16.5
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH1S-VK_TIM3-1385_023.fcs
hCD45, live-dead subset
9142

FIG. 13A

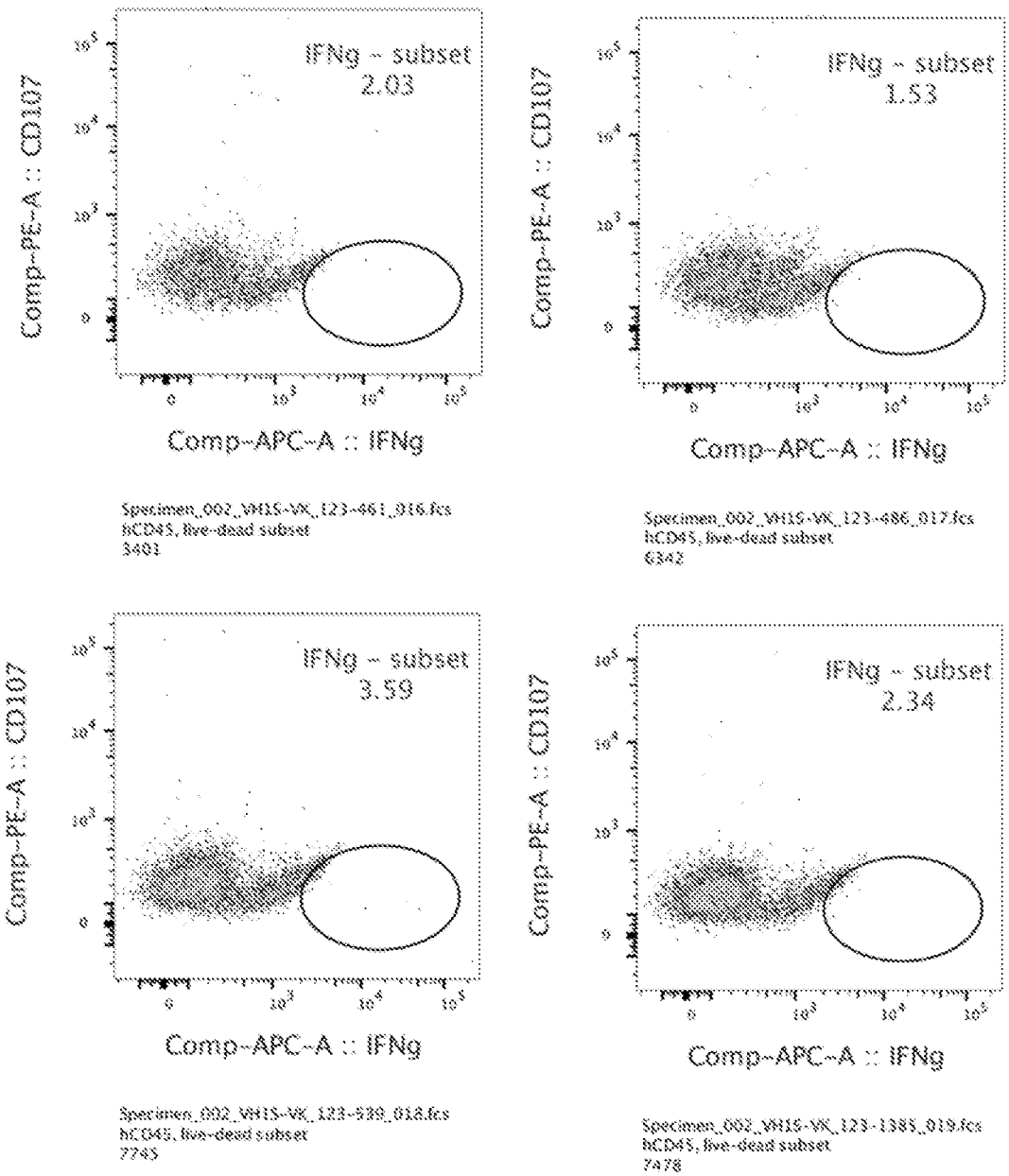

IFNg ~ subset
2.03
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH1S-VK_123-461_016.fcs
hCD45, live-dead subset
3401
IFNg ~ subset
1.53
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH1S-VK_123-486_017.fcs
hCD45, live-dead subset
6342
IFNg ~ subset
3.59
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH1S-VK_123-939_018.fcs
hCD45, live-dead subset
7745
IFNg ~ subset
2.34
Comp-PE-A :: CD107
Comp-APC-A :: IFNg
Specimen_002_VH1S-VK_123-1385_019.fcs
hCD45, live-dead subset
7478

FIG. 13B

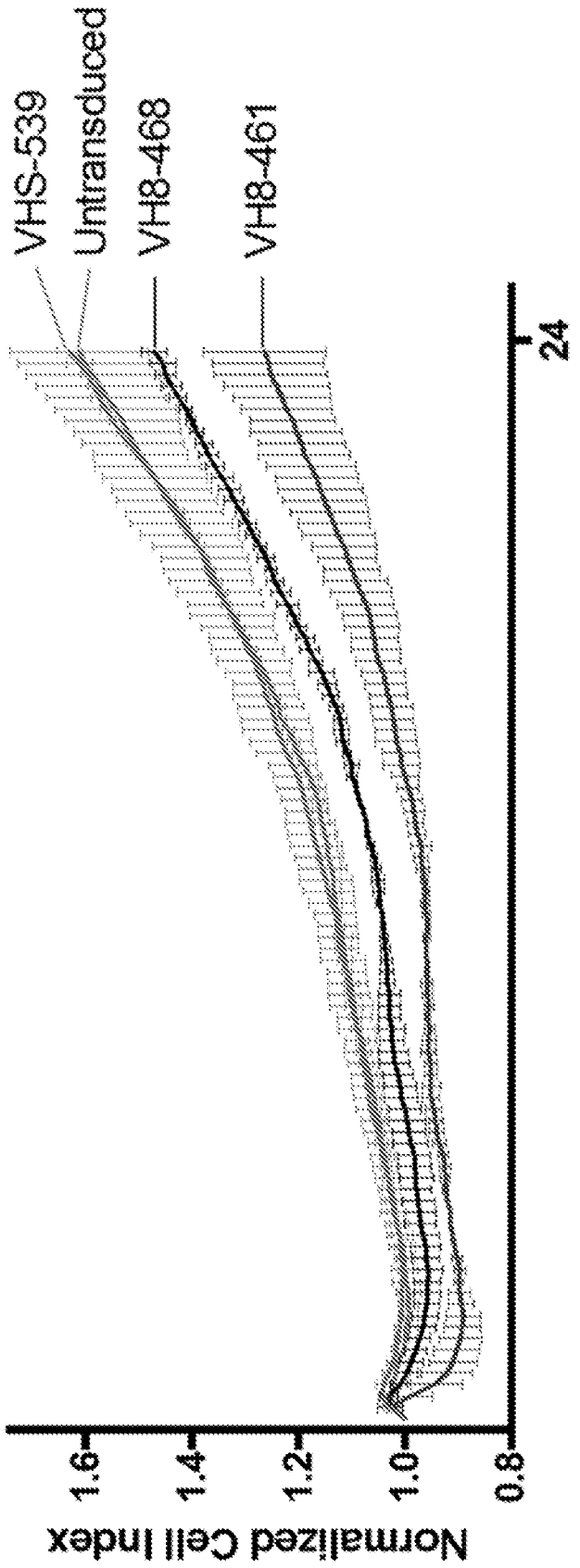

All CHO-TIM3
VHS-539
Untransduced
VH8-468
VH8-461
Normalized Cell Index
1.6
1.4
1.2
1.0
0.8
24
Time (Hrs)

FIG. 14A

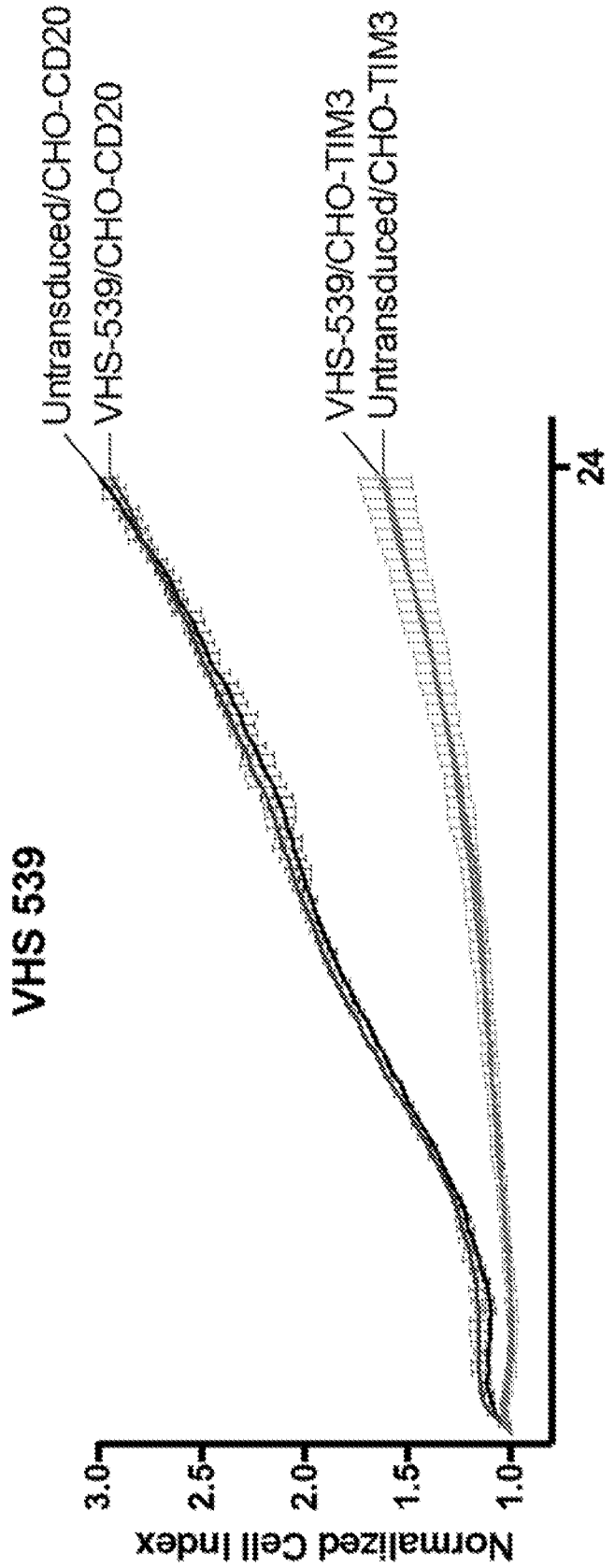

VHS 539
Untransduced/CHO-CD20
VHS-539/CHO-CD20
VHS-539/CHO-TIM3
Untransduced/CHO-TIM3
Normalized Cell Index
3.0
2.5
2.0
1.5
1.0
24
Time (Hrs)

FIG. 14B

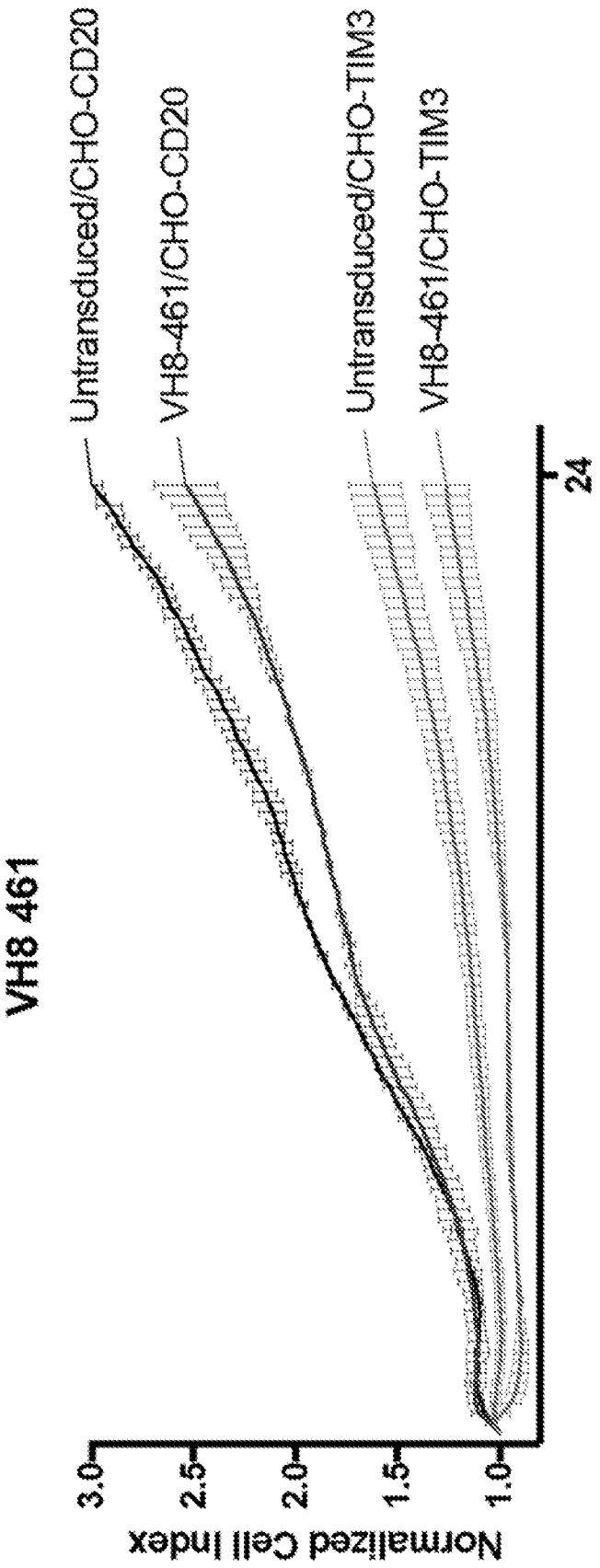

VH8 461
Untransduced/CHO-CD20
VH8-461/CHO-CD20
Untransduced/CHO-TIM3
VH8-461/CHO-TIM3
Normalized Cell Index
3.0
2.5
2.0
1.5
1.0
24
Time (Hrs)

FIG. 14C

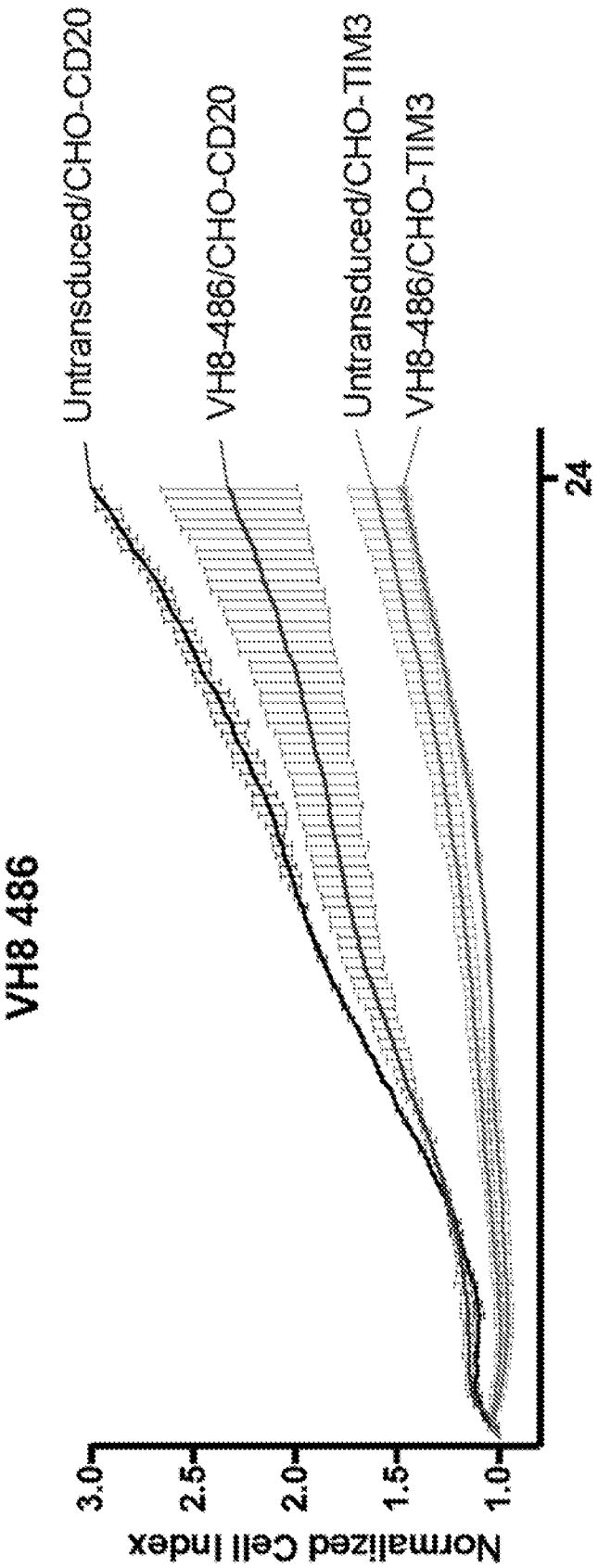

VH8 486
Untransduced/CHO-CD20
VH8-486/CHO-CD20
Untransduced/CHO-TIM3
VH8-486/CHO-TIM3
Normalized Cell Index
3.0
2.5
2.0
1.5
1.0
24
Time (Hrs)

FIG. 14D

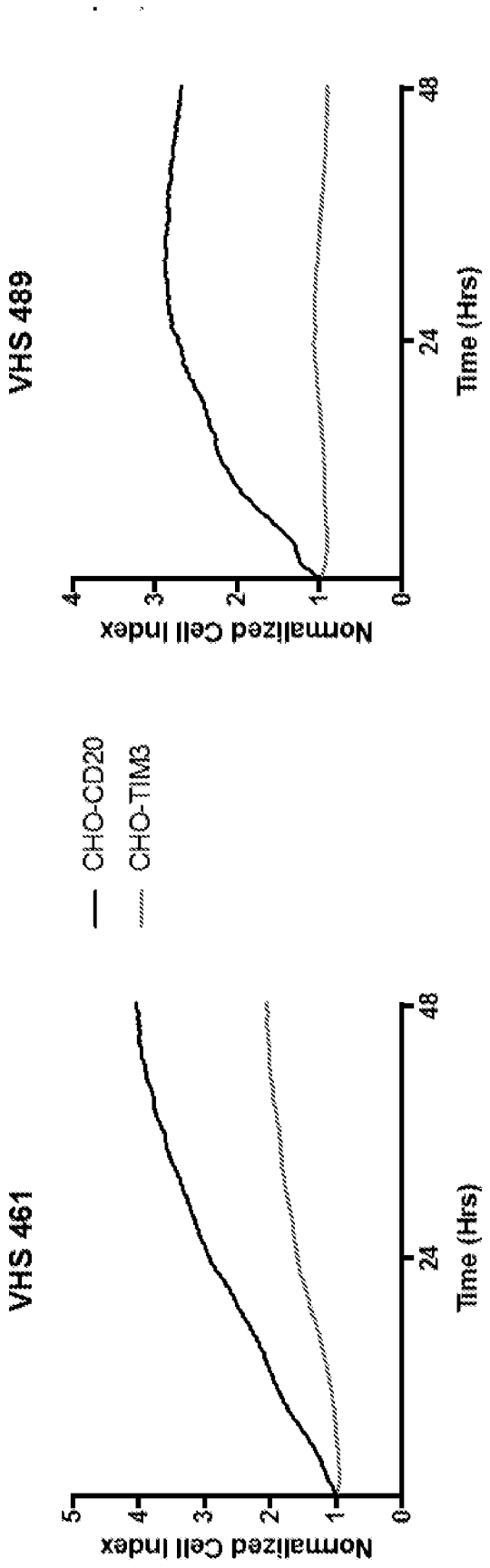


FIG. 15A

FIG. 15B

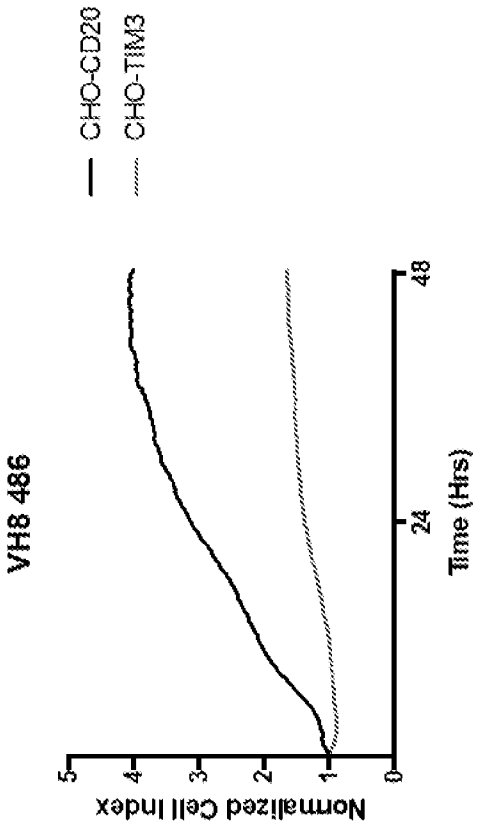


FIG. 15D

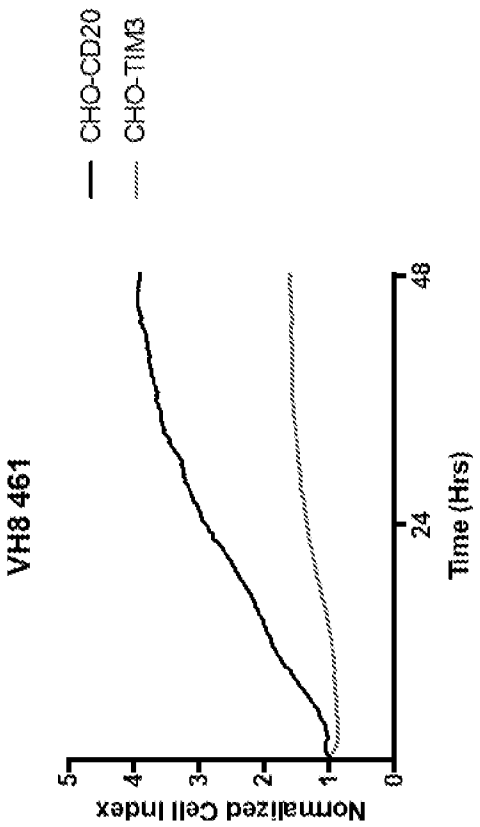


FIG. 15C

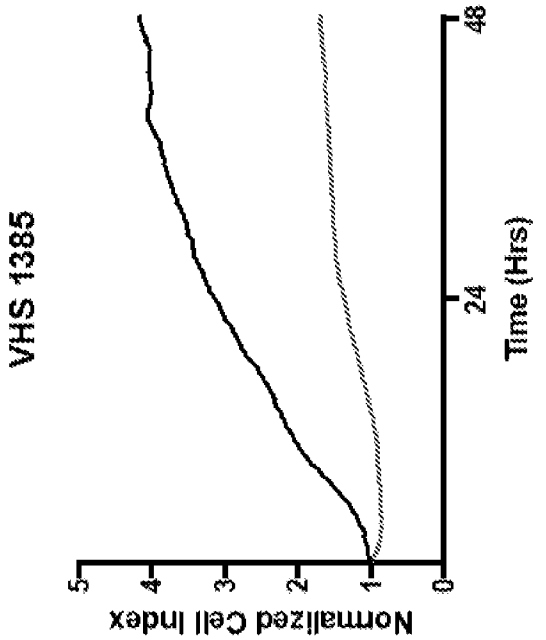


FIG. 15F

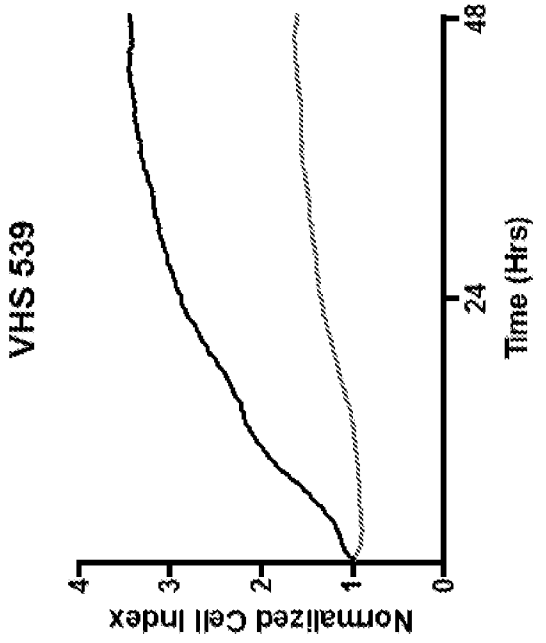


FIG. 15E

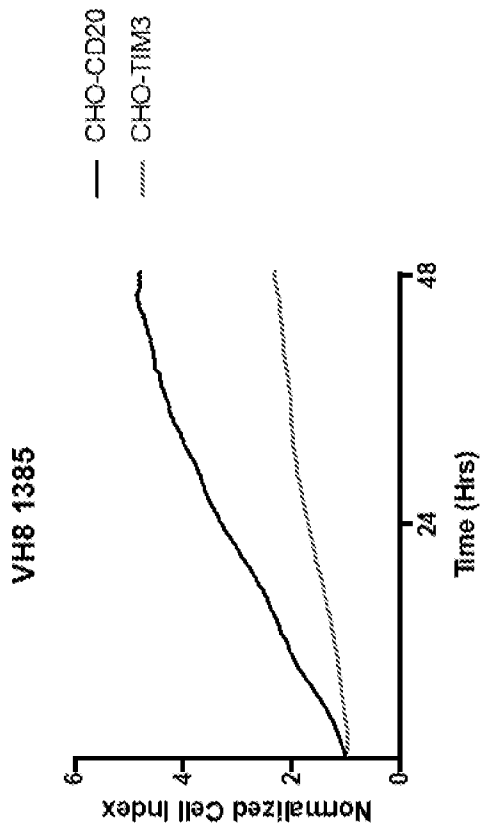


FIG. 15H

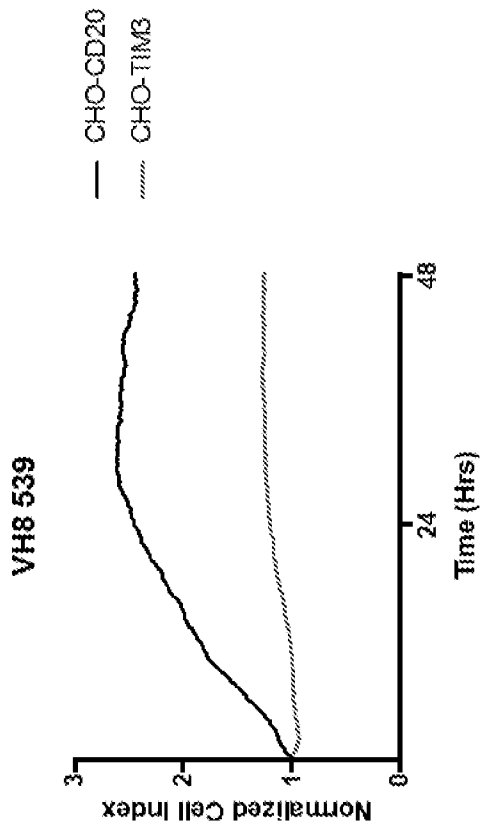


FIG. 15G

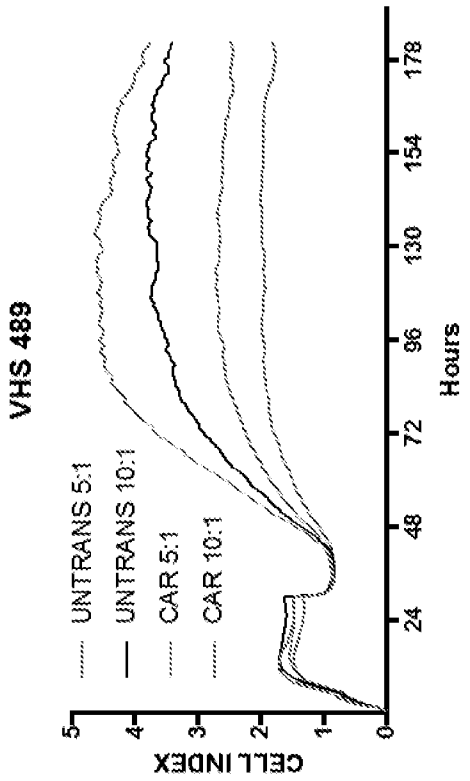


FIG. 16B

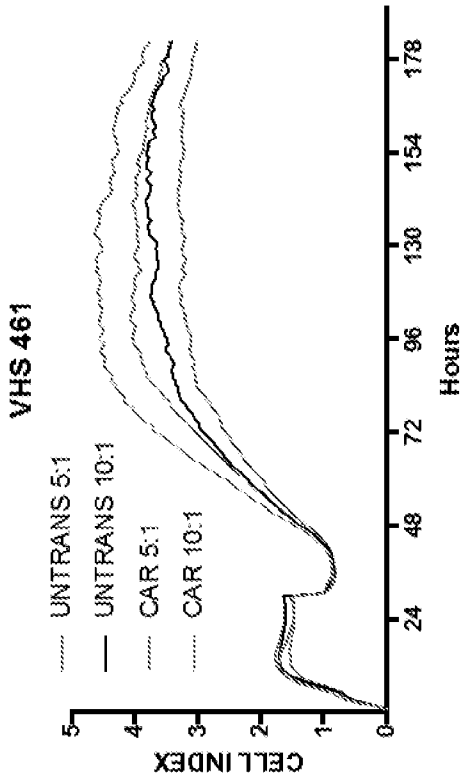


FIG. 16A

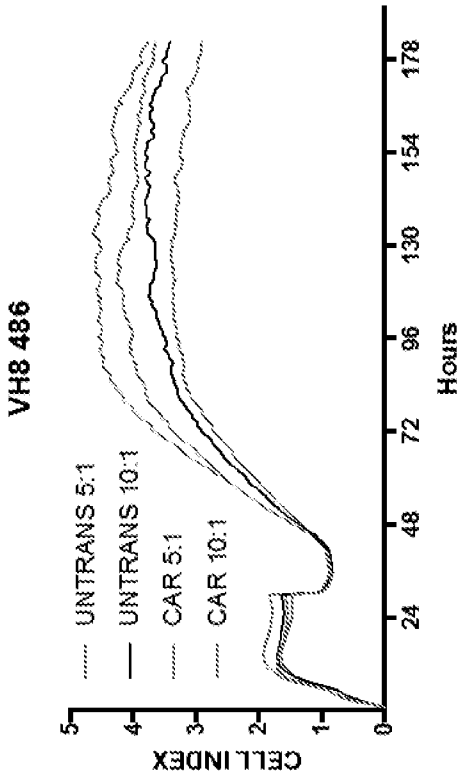


FIG. 16D

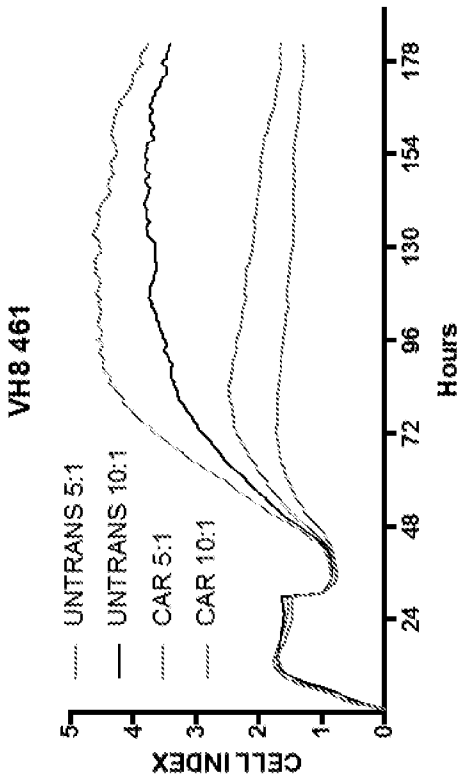


FIG. 16C

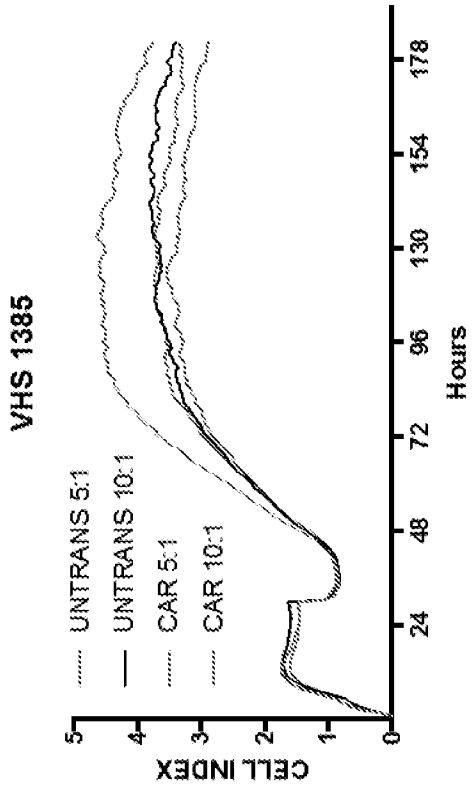


FIG. 16F

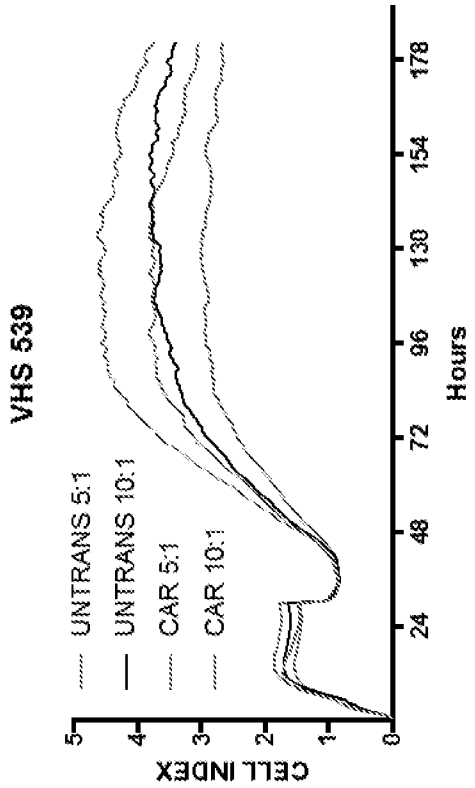


FIG. 16E

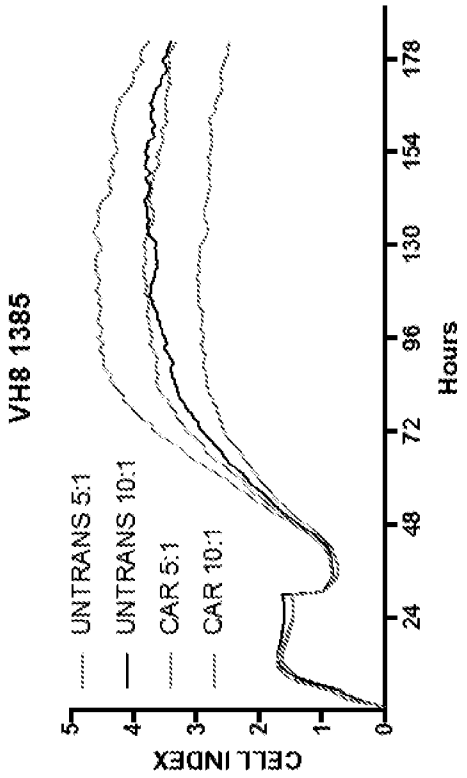


FIG. 16H

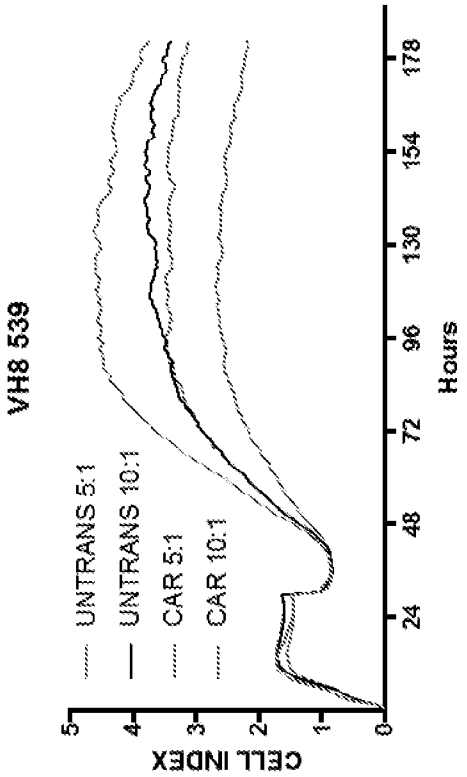


FIG. 16G

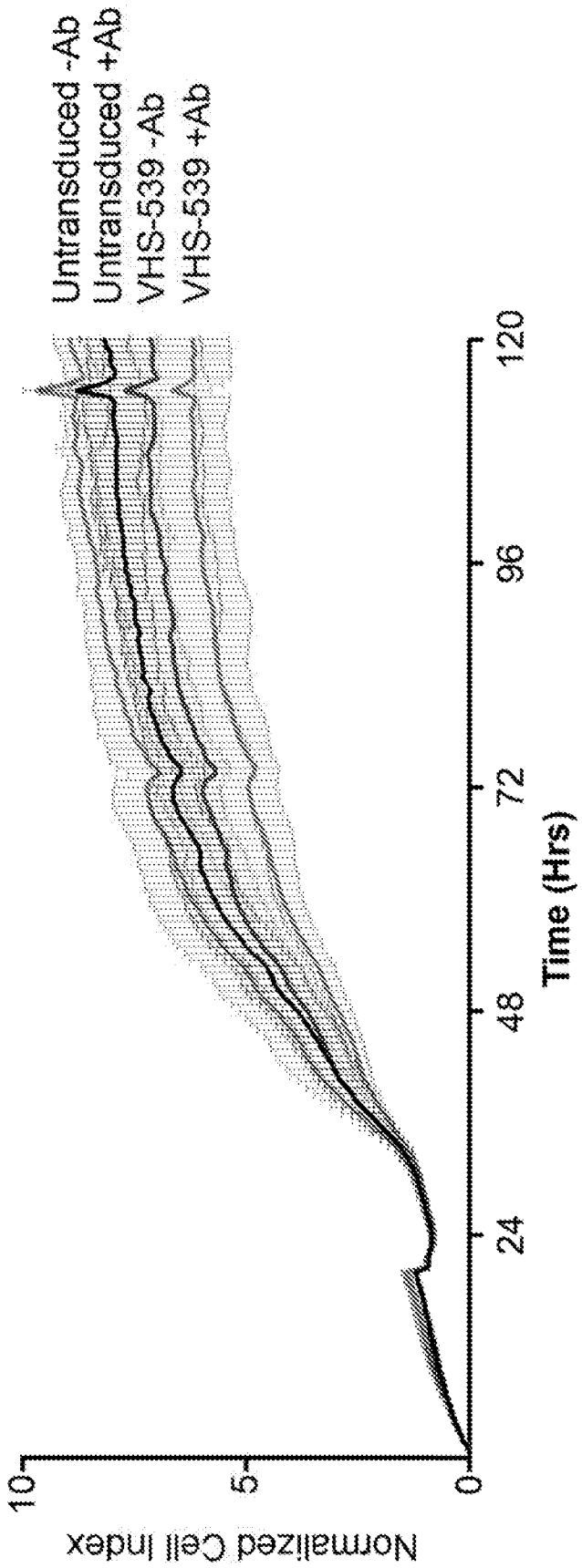

Untransduced -Ab
Untransduced +Ab
VHS-539 -Ab
VHS-539 +Ab
Normalized Cell Index
0
5
10
Time (Hrs)
24
48
72
96
120

FIG. 17A

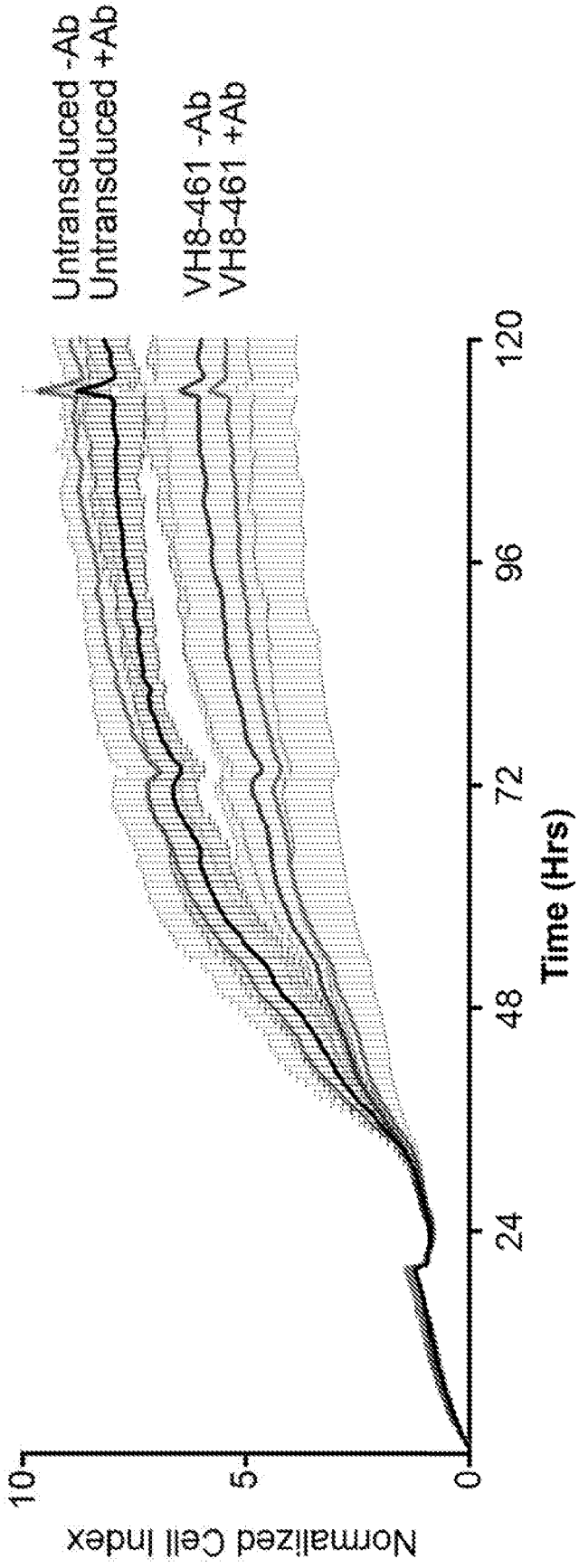

Untransduced -Ab
Untransduced +Ab
VH8-461 -Ab
VH8-461 +Ab
Normalized Cell Index
0
5
10
Time (Hrs)
24
48
72
96
120

FIG. 17B

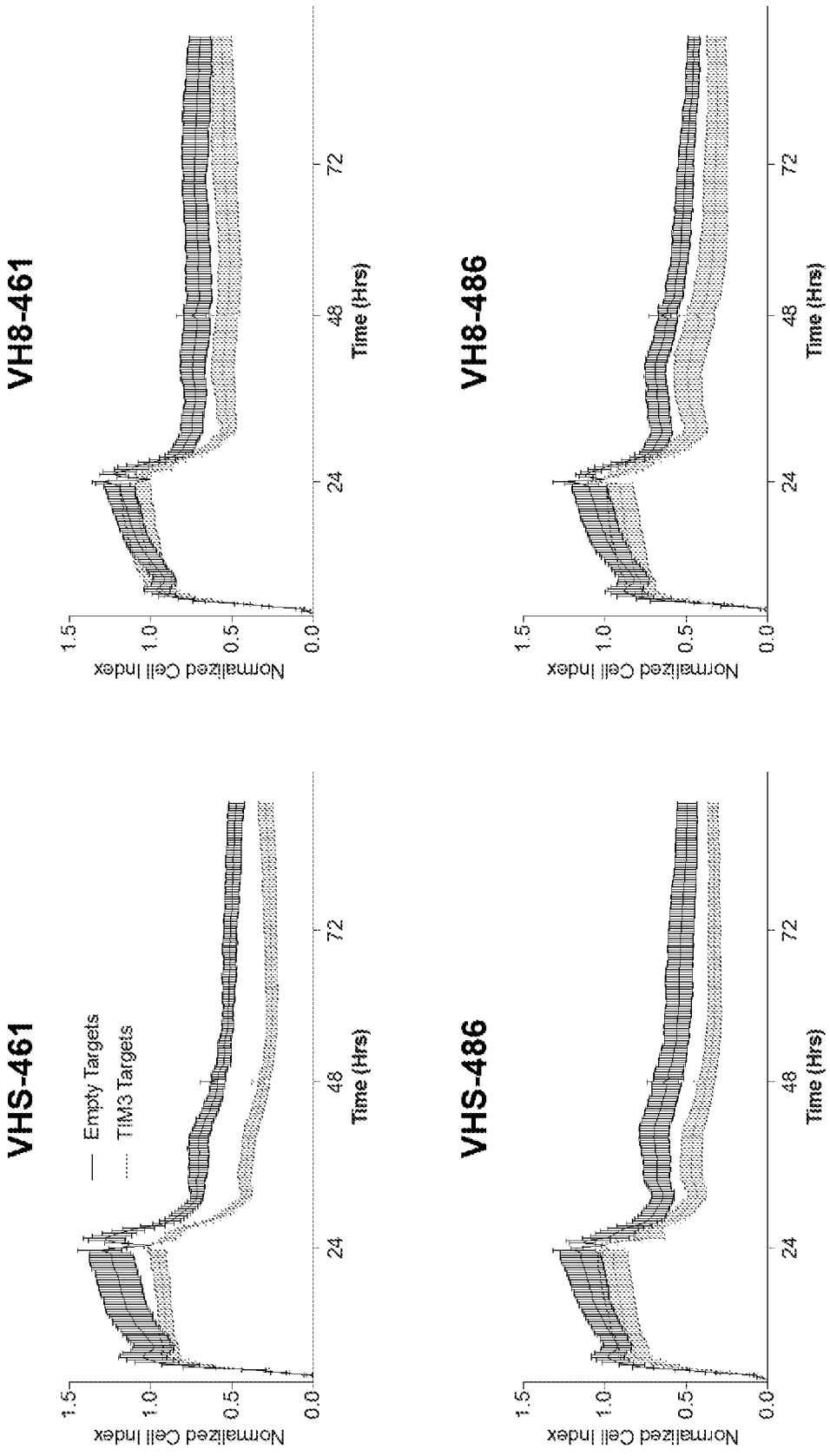

VH8-461
VH8-486
VHS-461
VHS-486
Empty Targets
TIM3 Targets
Normalized Cell Index
Time (Hrs)
0.0
0.5
1.0
1.5
24
48
72

FIG. 18A

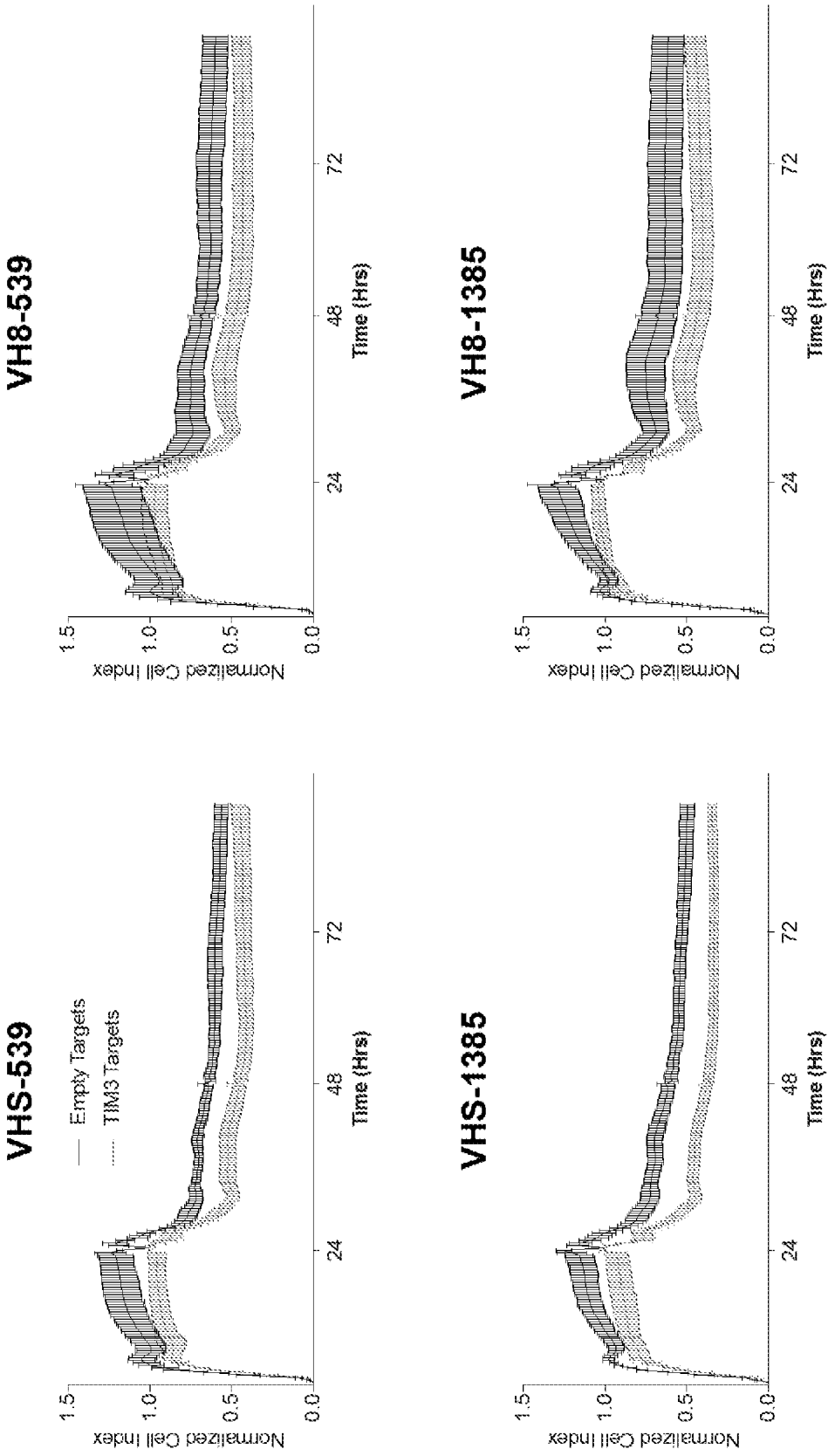

VH8-539
VHS-539
VH8-1385
VHS-1385
Empty Targets
TIM3 Targets
Normalized Cell Index
Time (Hrs)
0.0
0.5
1.0
1.5
24
48
72

FIG. 18B

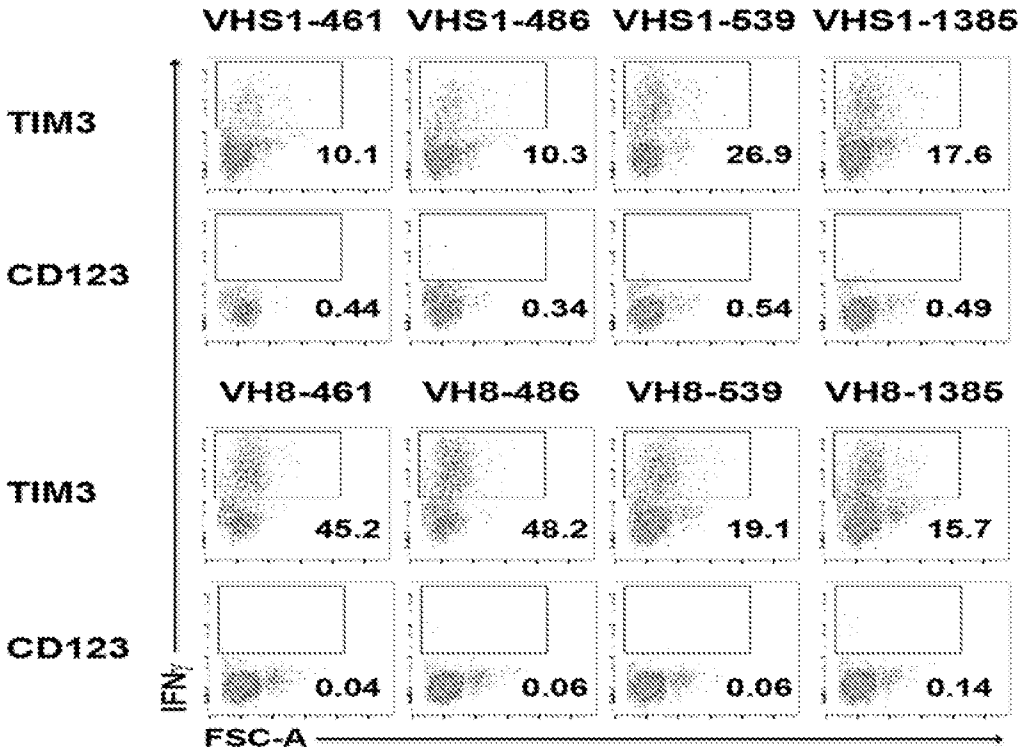

VHS1-461
VHS1-486
VHS1-539
VHS1-1385
TIM3
CD123
10.1
10.3
26.9
17.6
0.44
0.34
0.54
0.49
VH8-461
VH8-486
VH8-539
VH8-1385
TIM3
CD123
45.2
48.2
19.1
15.7
0.04
0.06
0.06
0.14
IFN
FSC-A

FIG. 19A

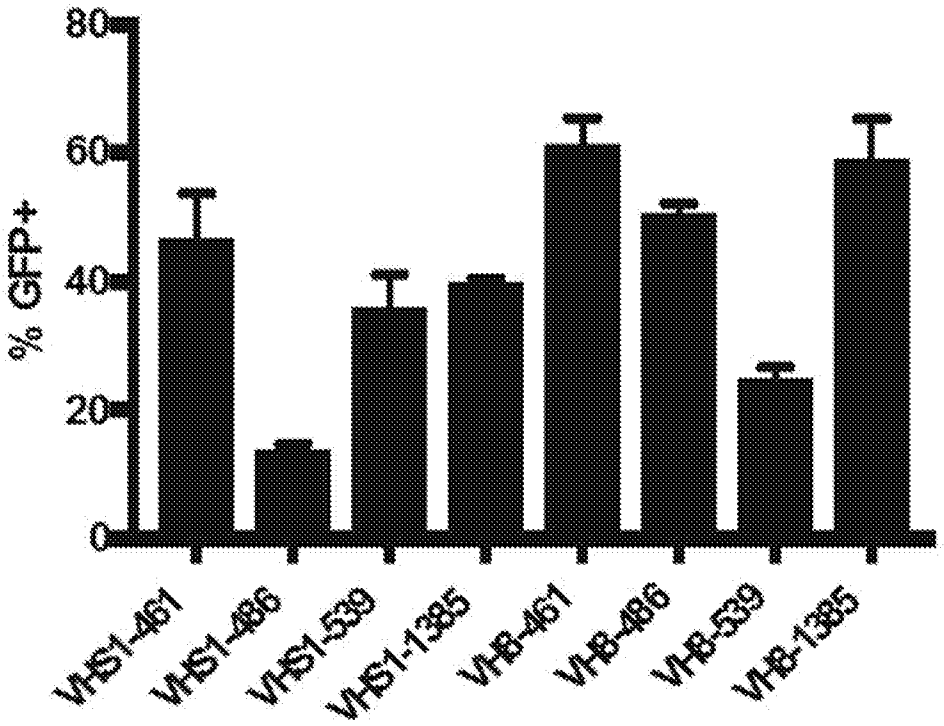


FIG. 19B

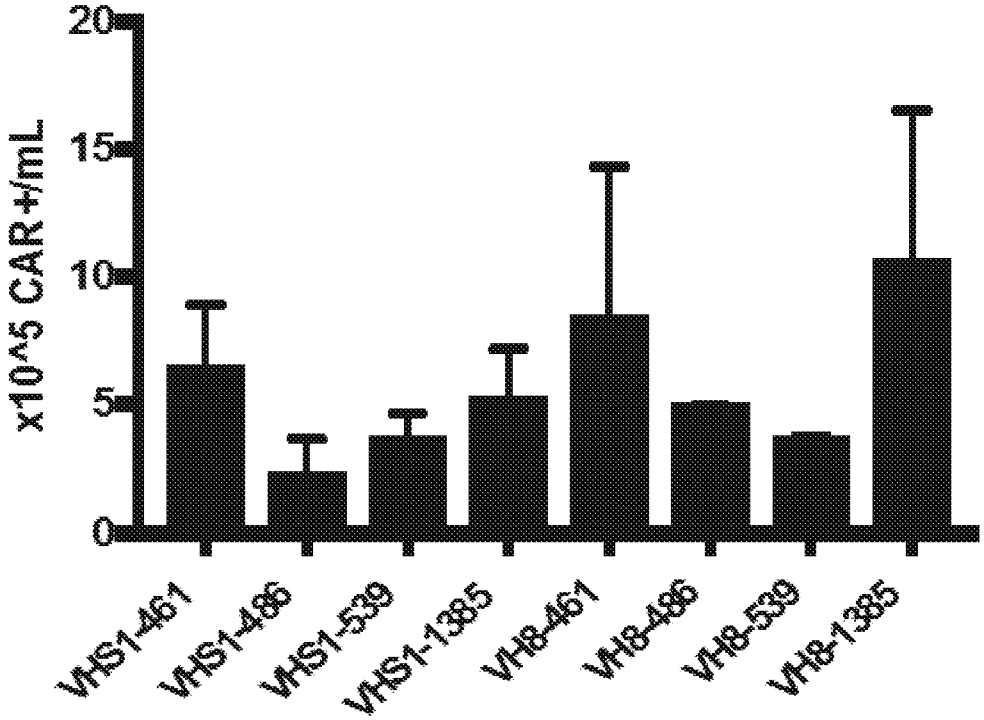


FIG. 19C

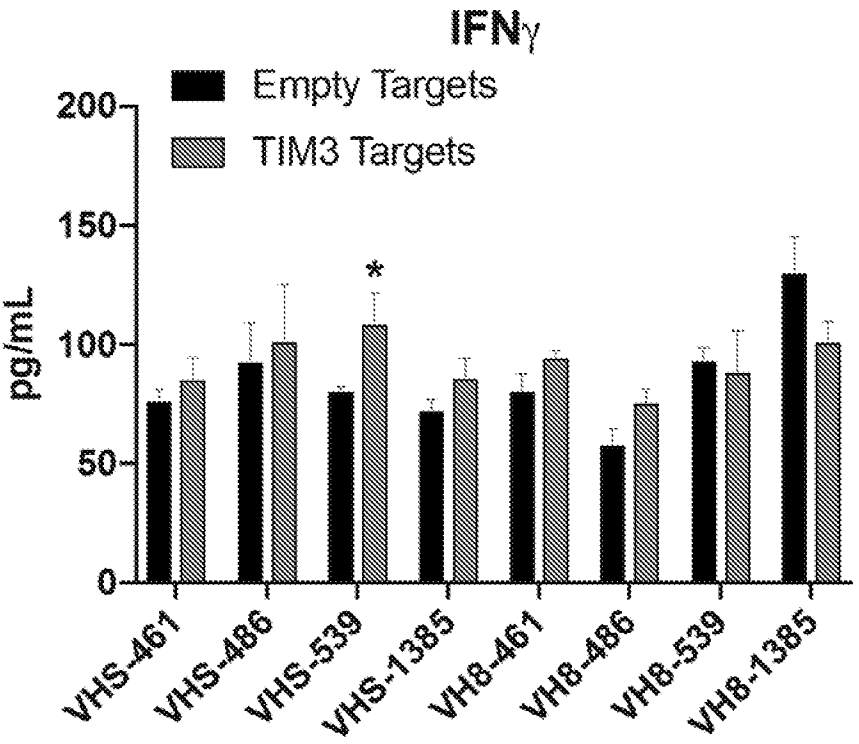


FIG. 20A

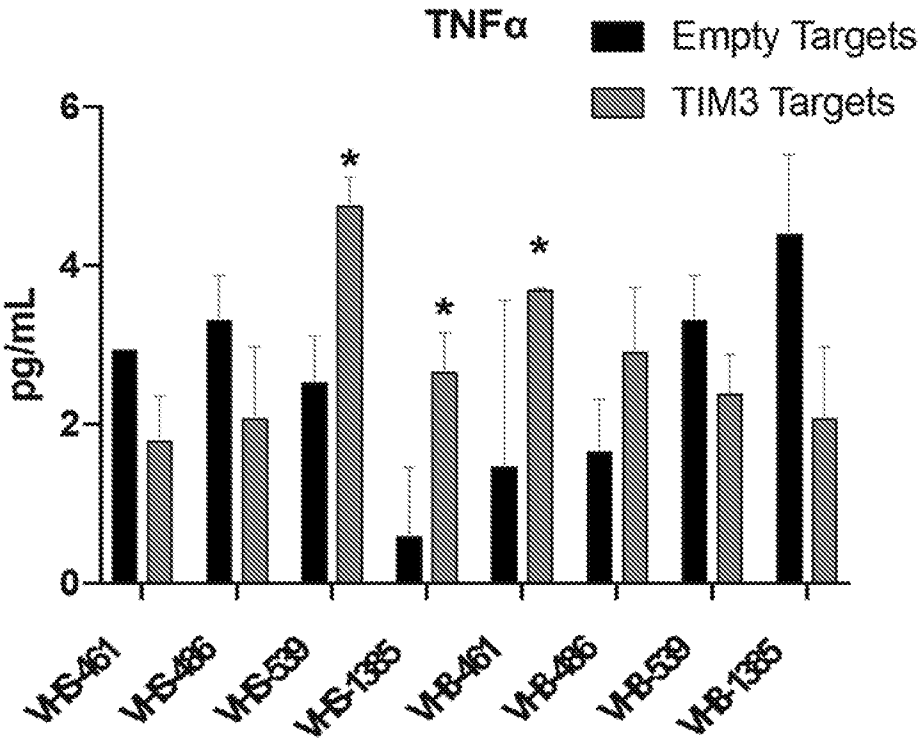


FIG. 20B

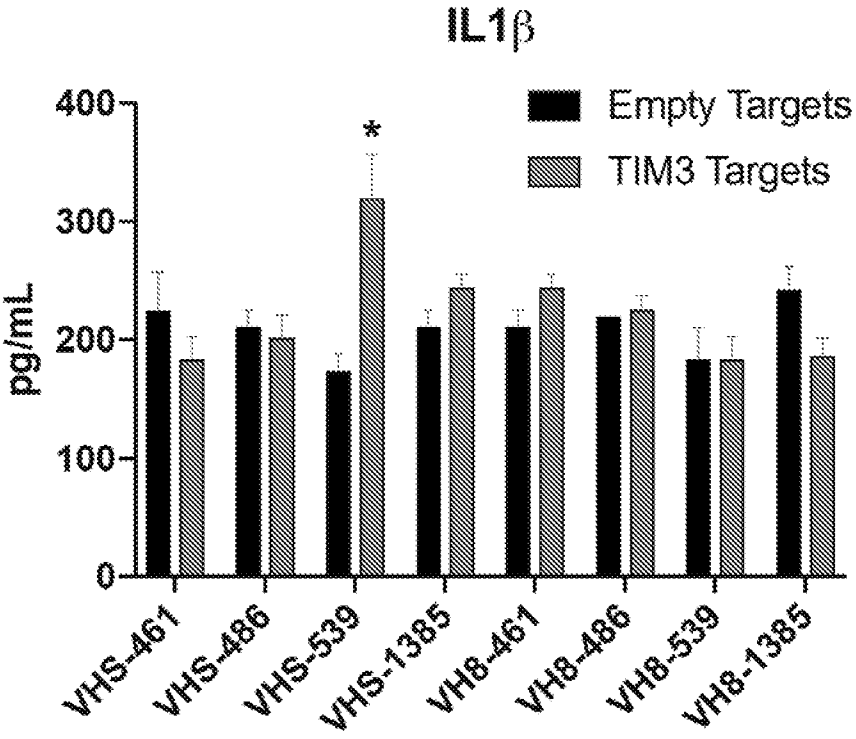


FIG. 20C

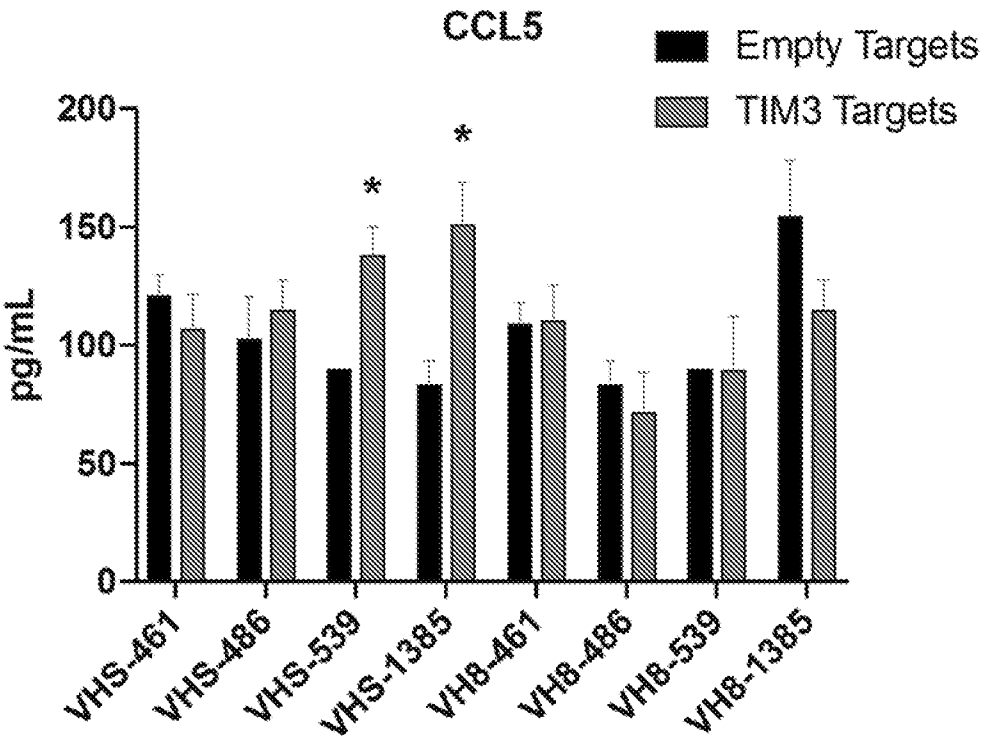


FIG. 20D

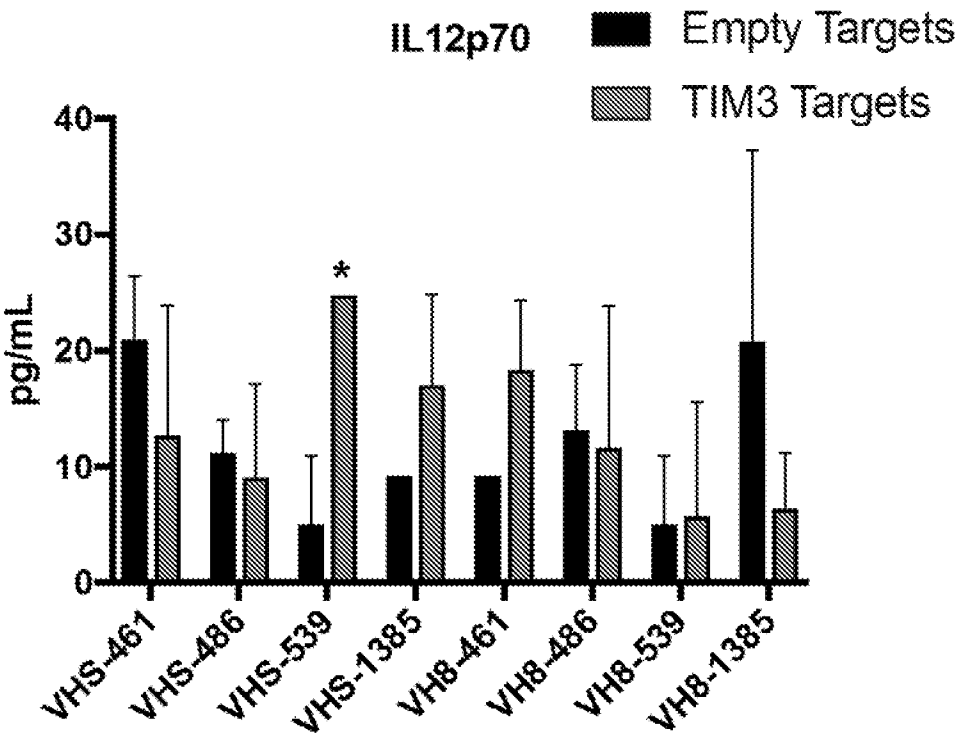


FIG. 20E

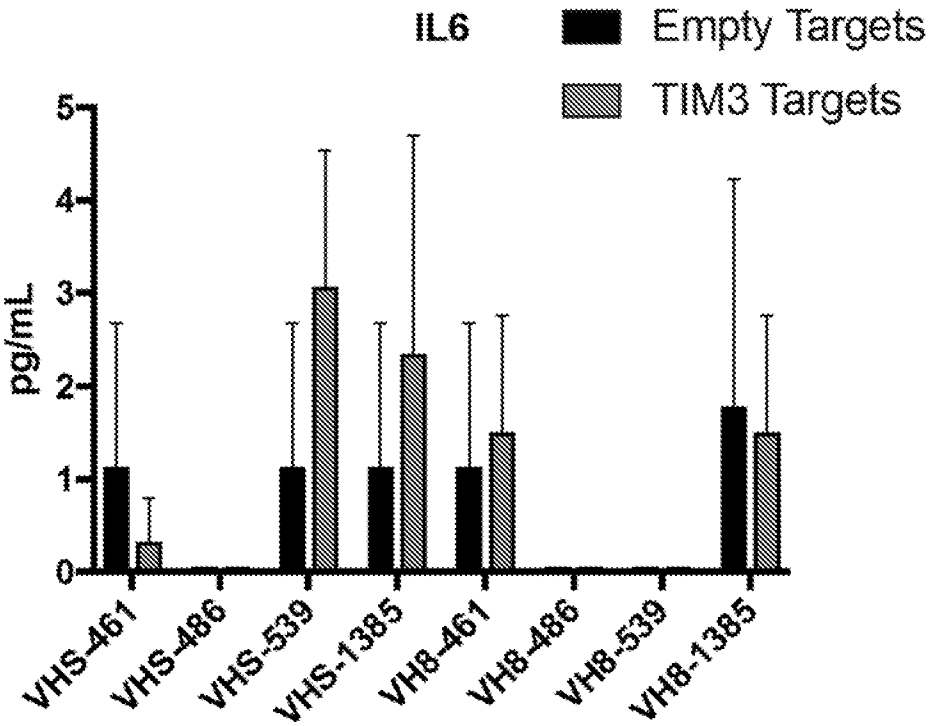


FIG. 20F

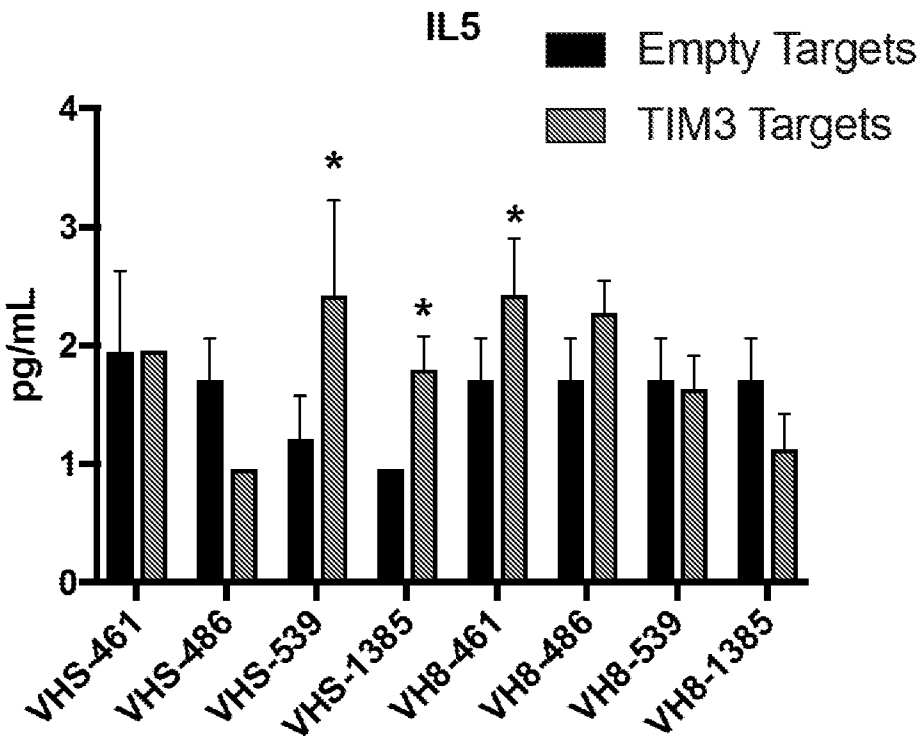


FIG. 20G

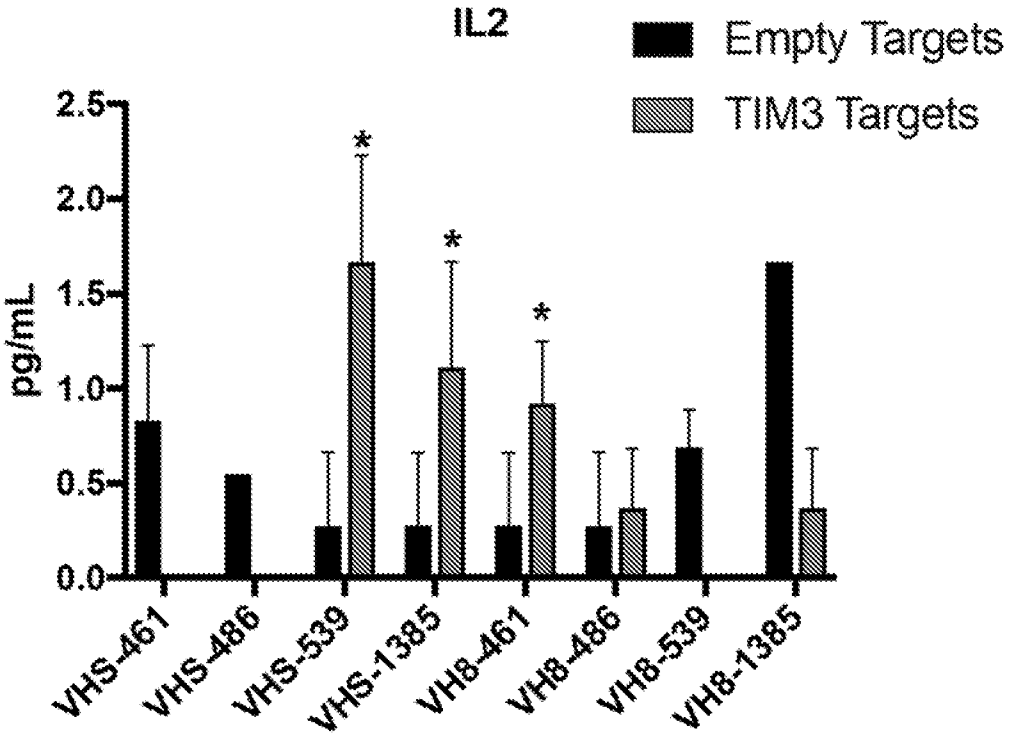


FIG. 20H

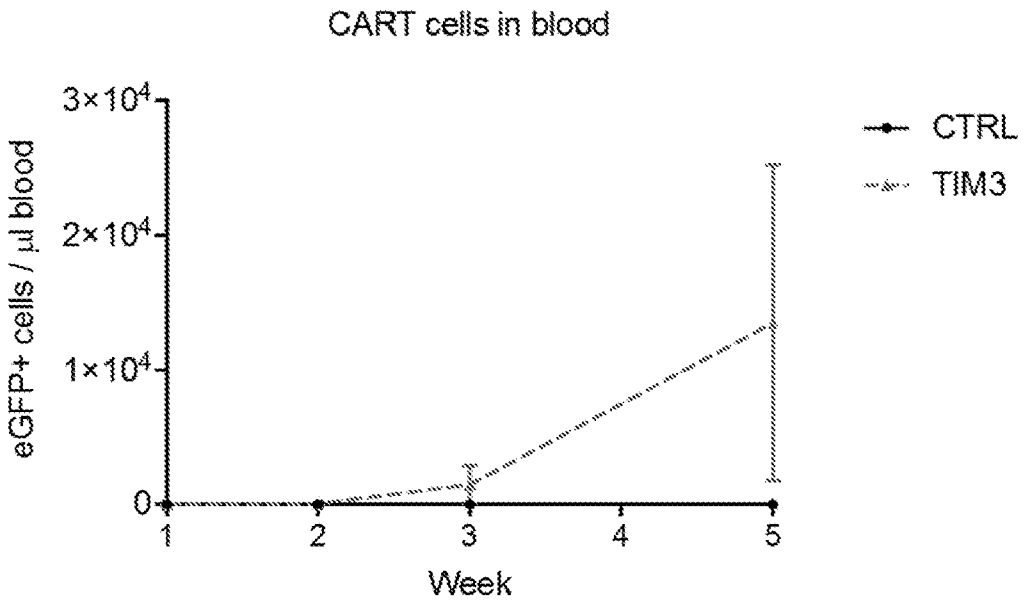


FIG. 21A

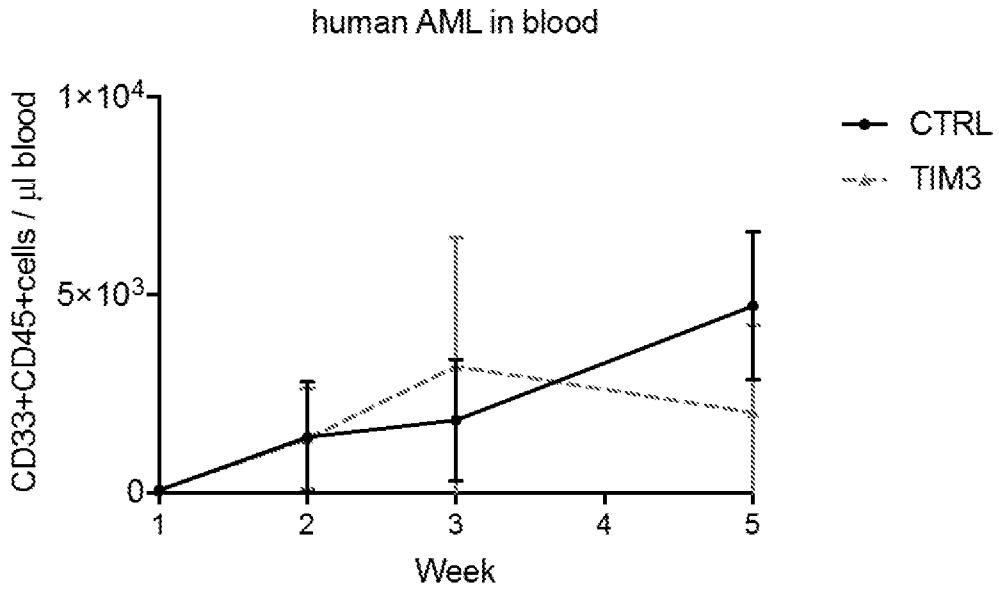


FIG. 21B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 18/18555

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - IPC(8):A61K 35/17, C07K 16/00 (2018.01)

CPC - A61K 35/12, C07K 2317/622, A61K 47/6863, C12N 5/0646, C12N 5/0636, C07K 2317/00

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)

See Search History Document

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

See Search History Document

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

See Search History Document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2016/0361360 A1 (Immunomedics, Inc.) 15 December 2016 (15.12.2016) abstract, para [0004], [0020], [0081]	1-4
A	US 2012/0177664 A1 (Yokoseki et al.) 12 July 2012 (12.07.2012) para [0016], [0018] [0185, SEQ ID NO: 2618	1-4
A	US 2013/0224191 A1 (Stull et al.) 29 August 2013 (29.09.2013) para [0039], Fig. 8F, SEQ ID NO: 26	1-4

☐ 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

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 April 2018	25 JUN 2018
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 18/18555

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:

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.: 5-17
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 extra sheet ----------

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.:
1-4 limited to SEQ ID NOs: 1 and 3

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.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 18/18555

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I+: Claims 1-4, directed to a chimeric antigen receptor (CAR) polypeptide comprising a TIM3 antigen binding domain. The CAR will be searched to the extent that the TIM3 antigen binding domain scFV encompasses VH SEQ ID NO:1 and VL SEQ ID NO:3. It is believed that claims 1-4 encompass this first named invention, and thus these claims will be searched without fee to the extent that the TIM3 antigen binding domain scFv encompass SEQ ID NOs: 1 and 3. Additional TIM3 antigen binding domain scFv(s) will be searched upon the payment of additional fees. Applicants must specify the claims that encompass any additionally elected TIM3 antigen binding domain scFv(s). Applicants must further indicate, if applicable, the claims which encompass the first named invention, if different than what was indicated above for this group. Failure to clearly identify how any paid additional invention fees are to be applied to the "+" group(s) will result in only the first claimed invention to be searched. An exemplary election would be a CAR polypeptide comprising a TIM3 antigen binding domain scFv encompassing VH SEQ ID NO: 2 and VL SEQ ID NO: 4 (claims 1-4).

The inventions listed as Groups I+ do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

No technical features are shared between the VH and VL amino acid sequences of the TIM3 antigen binding domain scFv of Groups I+ accordingly, these groups lack unity a priori.

Additionally, even if Groups I+ were considered to share the technical features of a chimeric antigen receptor (CAR) polypeptide comprising an scFv anti-TIM3 antigen binding domain, a transmembrane domain, a signaling domain, and a co-stimulatory signaling region; these shared technical features are previously disclosed by US 2016/0361360 A1 to Immunomedics, Inc. (hereinafter 'Immunomedics') (abstract "The present invention concerns CAR, CAR-T and CAR-NK constructs, preferably comprising a scFv antibody fragment against a disease-associated antigen", para [0004] "In preferred embodiments, the CAR may comprise a scFv or Fab antibody fragment, a CD8 hinge, the CD28 transmembrane domain, the co-stimulatory signaling domain of CD28, the co-stimulatory signaling domain of 4-1BB (CD137) and/or the cytoplasmic signaling domain of CD3.zeta.", para [0020] "Although any targeting antibody that binds to a cell associated with a disease may be utilized in a CAR-T or CAR-NK construct, in preferred embodiments the antibody is an anti-tumor-associated antigen (TAA) antibody" para [0081] "antibodies against CTLA4, PD1 and PD-L1 are the most clinically advanced, other potential checkpoint antigens are known and may be used as the target of therapeutic antibodies, such as ... TIM3").

As the technical feature was known in the art at the time of the invention, this cannot be considered a special technical feature that would otherwise unify the inventions.

Group I+ therefore lack unity under PCT Rule 13 because they do not share the same or corresponding special technical feature.