

(12) STANDARD PATENT
(19) AUSTRALIAN PATENT OFFICE

(11) Application No. **AU 2021239225 B2**

(54) Title
Interleukin-2 mutant and use thereof

(51) International Patent Classification(s)
C07K 14/55 (2006.01) **C12N 5/10** (2006.01)
A61K 38/20 (2006.01) **C12N 15/26** (2006.01)
A61P 35/00 (2006.01) **C12N 15/62** (2006.01)
A61P 37/00 (2006.01) **C12N 15/63** (2006.01)
C07K 19/00 (2006.01)

(21) Application No: **2021239225** (22) Date of Filing: **2021.03.19**

(87) WIPO No: **WO21/185361**

(30) Priority Data

(31) Number	(32) Date	(33) Country
202010197740.4	2020.03.19	CN
202110266549.5	2021.03.11	CN

(43) Publication Date: **2021.09.23**

(44) Accepted Journal Date: **2024.08.15**

(71) Applicant(s)
Fortvita Biologics (Singapore) Pte.Ltd.

(72) Inventor(s)
HE, Kaijie;FU, Fenggen;ZHOU, Shuaixiang;WU, Weiwei

(74) Agent / Attorney
James & Wells Intellectual Property, GPO Box 1301, CANBERRA, ACT, 2601, AU

(56) Related Art
WO 2019/246404 A1
WO 91/02000 A1
CN 103492411 A
EP 3854805 A1

(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织
国际局

(43) 国际公布日
2021年9月23日 (23.09.2021)



(10) 国际公布号
WO 2021/185361 A1

(51) 国际专利分类号:

C07K 14/55 (2006.01) *C12N 5/10* (2006.01)
C07K 19/00 (2006.01) *A61K 38/20* (2006.01)
C12N 15/26 (2006.01) *A61P 35/00* (2006.01)
C12N 15/62 (2006.01) *A61P 37/00* (2006.01)
C12N 15/63 (2006.01)

LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW。

(21) 国际申请号: PCT/CN2021/081840

(22) 国际申请日: 2021年3月19日 (19.03.2021)

(25) 申请语言: 中文

(26) 公布语言: 中文

(30) 优先权:

202010197740.4 2020年3月19日 (19.03.2020) CN
202110266549.5 2021年3月11日 (11.03.2021) CN

(84) 指定国(除另有指明, 要求每一种可提供的地区保护): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), 欧亚 (AM, AZ, BY, KG, KZ, RU, TJ, TM), 欧洲 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG)。

(71) 申请人: 信达生物制药(苏州)有限公司 (INNOVENT BIOLOGICS (SUZHOU) CO., LTD.) [CN/CN]; 中国江苏省苏州市苏州工业园区东平街168号, Jiangsu 215123 (CN)。

本国际公布:

- 包括国际检索报告(条约第21条(3))。
- 包括说明书序列表部分(细则5.2(a))。

(72) 发明人: 何开杰(HE, Kaijie); 中国江苏省苏州市苏州工业园区东平街168号, Jiangsu 215123 (CN)。付凤根(FU, Fenggen); 中国江苏省苏州市苏州工业园区东平街168号, Jiangsu 215123 (CN)。周帅祥(ZHOU, Shuaixiang); 中国江苏省苏州市苏州工业园区东平街168号, Jiangsu 215123 (CN)。伍伟伟(WU, Weiwei); 中国江苏省苏州市苏州工业园区东平街168号, Jiangsu 215123 (CN)。

(74) 代理人: 北京市中咨律师事务所(ZHONGZI LAW OFFICE); 中国北京市西城区平安里西大街26号新时代大厦7层, Beijing 100034 (CN)。

(81) 指定国(除另有指明, 要求每一种可提供的国家保护): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK,

(54) Title: INTERLEUKIN-2 MUTANT AND USE THEREOF

(54) 发明名称: 白介素2突变体及其用途

(57) Abstract: The present invention provides an interleukin-2 (IL-2) mutant protein. Also provided are a fusion protein, dimer molecule, and immunoconjugate containing the IL-2 mutant protein, a nucleic acid encoding same, a vector and host cell containing the nucleic acid, as well as a pharmaceutical composition containing same and therapeutic use. The present invention further provides a method for preparing the IL-2 mutant protein, fusion protein, dimer molecule, and immunoconjugate.

(57) 摘要: 本发明提供了白介素2(IL-2)突变蛋白。还提供包含该IL-2突变蛋白的融合蛋白、二聚体分子、免疫缀合物, 以及编码其的核酸、包含该核酸的载体和宿主细胞, 以及包含其的药物组合物和治疗用途。本发明进一步提供制备该IL-2突变蛋白、融合蛋白、二聚体分子、免疫缀合物的方法。



WO 2021/185361 A1

INTERLEUKIN-2 MUTANT AND USE THEREOF

TECHNICAL FIELD

The present invention relates to a novel interleukin-2 (IL-2) mutant protein and use thereof. In particular, the present invention relates to an IL-2 mutant protein that has improved properties, such as an improved binding property to an IL-2 receptor and improved druggability, compared to a wild-type IL-2. The present invention further provides a fusion protein, a dimer and an immunoconjugate comprising the IL-2 mutant protein, a nucleic acid encoding the IL-2 mutant protein, the dimer and the immunoconjugate, and a vector and a host cell comprising the nucleic acid. The present invention further provides a method for preparing the IL-2 mutant protein, the fusion protein, the dimer and the immunoconjugate, a pharmaceutical composition comprising same, and therapeutic use.

BACKGROUND

Interleukin-2 (IL-2), also known as T-cell growth factor (TCGF), is a multifunctional cytokine produced mainly by activated T cells, particularly by CD4⁺T helper cells. In eukaryotic cells, human IL-2 (UniProt: P60568) is synthesized as a precursor polypeptide of 153 amino acids, and mature secretory IL-2 is produced after removal of 20 N-terminus amino acids. The sequences of IL-2 from other species have also been disclosed. See NCBI Ref Seq No. NP032392 (mice), NP446288 (rats) or NP517425 (chimpanzees).

Interleukin-2 has 4 antiparallel and amphipathic α helices, which form a quaternary structure essential for its function (Smith, *Science* 240,1169-76 (1988); Bazan, *Science* 257,410-413 (1992)). In most cases, IL-2 acts through three different receptors: interleukin-2 receptor α (IL-2R α ; CD25), interleukin-2 receptor β (IL-2R β ; CD122), and interleukin-2 receptor γ (IL-2R γ ; CD132). IL-2R β and IL-2R γ are critical for IL-2 signaling, while IL-2R α (CD25) is not essential for signaling but can enable IL-2 to bind to a receptor with high affinity (Krieg et al., *Proc Natl Acad Sci* 107,11906-11 (2010)). The trimeric receptor (IL-2 $\alpha\beta\gamma$) formed by the combination of IL-2R α , IL-2R β , and IL-2R γ is an IL-2 high-affinity receptor (with a K_D of about 10 pM), the dimeric receptor (IL-2 $\beta\gamma$) consisting of IL-2R β and IL-2R γ is an intermediate affinity receptor (with a K_D of about 1 nM), and the IL-2 receptor formed solely by subunit α is a low affinity receptor.

Immune cells express dimeric or trimeric IL-2 receptors. The dimeric receptor is expressed on cytotoxic CD8⁺ T cells and natural killer (NK) cells, whereas the trimeric receptor is expressed predominantly on activated lymphocytes and CD4⁺ CD25⁺ FoxP3⁺ suppressive regulatory T cells (Treg) (Byman, O. and Sprent. *J. Nat. Rev. Immunol.* 12, 180-190 (2012)). Effector T cells and NK cells in a resting state are relatively insensitive to IL-2 because they do not have CD25 on the cell surface. However, Treg cells consistently express the highest level of CD25 *in vivo*, and therefore normally IL-2 would preferentially stimulate Treg cell proliferation.

IL-2 mediates multiple actions in an immune response by binding to IL-2 receptors on different cells. In one aspect, IL-2 has a stimulatory effect on the immune system, stimulating the proliferation and differentiation of T cells and natural killer (NK) cells. Therefore, IL-2 has been approved as an immunotherapeutic agent for the treatment of cancer and chronic viral infections. In another aspect, IL-2 also contributes to the maintenance of immunosuppressive CD4⁺ CD25⁺ regulatory T cells (i.e., Treg cells) (Fontenot et al., *Nature Immunol* 6,1142-51 (2005); D'Cruz and Klein, *Nature Immunol* 6,1152-59 (2005); Maloy and Powrie, *Nature Immunol* 6,1171-72

(2005)), causing immunosuppression due to activated Treg cells in patients.

In addition, from years of clinical practical experience, it has been found that although high doses of IL-2 can provide significant clinical efficacy in the treatment of cancer such as melanoma and kidney cancer, they can also cause drug-related serious toxic side effects including cardiovascular toxicities such as vascular leak syndrome and hypotension. Studies have shown that these toxicities most likely result from the over-activation of lymphocytes (especially T cells and NK cells) by IL-2, which stimulates the release of inflammatory factors. For example, this can cause vascular endothelial cells to contract, increasing intercellular gaps, causing the extravasation of tissue fluid and thus causing the vascular leak side effect.

Another limiting problem with the clinical use of IL-2 is that it is difficult to administer due to its extremely short half-life. As an IL-2 molecule weighs only 15 kDa, it will be eliminated primarily by glomerular filtration, having a half-life of only about 1 hour in the human body. In order to achieve a sufficiently high exposure in the human body, a large dose of IL-2 is clinically required to be infused every 8 hours. However, frequent dosing places a heavy burden on patients, and more importantly, infusion of large doses of IL-2 can cause high peak plasma concentrations (C_{max}), which is probably another critical factor contributing to drug toxicity. Rodrigo Vazquez-Lombardi et al. (*Nature Communications*, 8:15373, DOI: 10.1038/ncomms15373) have proposed preparing an interleukin-2-Fc fusion to improve the pharmacodynamic properties of interleukins. However, the expression yield of the fusion protein is low, and it easily forms aggregates.

In the production of IL-2, native IL-2 molecules are very hard to express in mammalian cells (CHO or HEK293) due to the characteristics of its amino acid sequence, and the stability of the molecules is poor. Therefore, Proleukin, the currently approved IL-2 molecule on the market, is produced in prokaryotic bacterial expression systems. However, IL2-Fc fusion proteins cannot be expressed in bacterial systems. Therefore, there is a need in the art to improve the expression of IL-2 molecules and IL-2-Fc molecules in mammalian cells.

Several schemes for engineering IL-2 molecules have been proposed in the art. For example, Helen R. Mott et al. disclosed a mutant protein of human IL-2, F42A, which has an eliminated ability to bind to IL-2R α . Rodrigo Vazquez-Lombardi et al. (*Nature Communications*, 8:15373, DOI: 10.1038/ncomms15373) have also proposed a triple mutant human IL-2 mutant protein IL-2^{3X} with an eliminated ability to bind to IL-2R α , which has residue mutations R38D+K43E+E61R at amino acid residue positions 38, 43 and 61, respectively. CN1309705A discloses mutations at positions D20, N88 and Q126 that result in reduced binding of IL-2 to IL-2R $\beta\gamma$. These mutant proteins are still deficient in their pharmacokinetic and/or pharmacodynamic properties and also confronted with low expression yields and/or poor molecular stability when expressed in mammalian cells.

In view of the above-mentioned problems associated with IL-2 immunotherapy and production, there remains a need in the art to further develop new IL-2 molecules with improved properties, particularly IL-2 molecules that are advantageous to production and purification and have improved pharmacokinetic and pharmacodynamic properties.

BRIEF SUMMARY

The present invention satisfies the above needs by providing a long-acting IL-2 mutant protein molecule with improved druggability and/or an improved IL-2 receptor binding property.

Thus, in one aspect, the present invention provides a novel IL-2 mutant protein. In some embodiments, the IL-2

mutant protein disclosed herein has one or more of the following properties, preferably at least properties (i) and (ii):

(i) improved druggability, particularly improved expression yield and/or purification performance when expressed in mammalian cells;

(ii) weakened binding to IL-2R $\beta\gamma$; and

(iii) reduced or eliminated binding to IL-2R α .

In some embodiments, the IL-2 mutant protein disclosed herein has properties (i) and (ii) and maintains binding to IL-2R α relative to the wild-type IL-2 protein. In other embodiments, the IL-2 mutant protein disclosed herein has properties (i) to (iii).

In some embodiments, the present invention provides an IL-2 mutant protein comprising an IL-2R $\beta\gamma$ binding interface mutation and further comprising an IL-2R α binding interface mutation and/or a shortened B'C' loop region. In some preferred embodiments, the present invention provides an IL-2 mutant protein comprising an IL-2R $\beta\gamma$ binding interface mutation and a shortened B'C' loop region but not comprising an IL-2R α binding interface mutation.

In addition, the present invention provides a fusion protein, a dimer protein and an immunoconjugate comprising the IL-2 mutant protein, a pharmaceutical composition, and a combination product; a nucleic acid encoding same, and a vector and a host cell comprising the nucleic acid; and a method for producing the IL-2 mutant protein, the fusion protein, the dimer protein and the immunoconjugate disclosed herein.

Furthermore, the present invention further provides a method for treating diseases, and a method and use for stimulating the immune system in a subject using the IL-2 mutant protein, the fusion protein, the dimer protein and the immunoconjugate disclosed herein.

The present invention is further illustrated in the following drawings and specific embodiments. However, these drawings and specific embodiments should not be construed as limiting the scope of the present invention, and modifications easily conceived by those skilled in the art will be included in the spirit of the present invention and the protection scope of the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows the crystal structure of a complex of IL-2 and IL-2R α (PDB: 1Z92).

FIG. 2 shows (A) the crystal structure of IL-2 (PBD: 2ERJ) and (B) the B'C' loop structure superpose of human IL-2 and human IL-15.

FIG. 3 shows IL-2 mutant proteins screened from the mutant library IBYDL029 and sequences thereof.

FIG. 4 shows the crystal structures of IL-2 and IL-2R $\beta\gamma$ (PBD: 2ERJ) and a contact interface thereof.

FIG. 5 shows molecular formats of an IL-2-Fc dimer protein.

FIG. 6 shows the structures of some exemplary IL-2 weakened molecules of the present invention.

FIG. 7 shows signal curves of activation of p-STAT5 by selected and constructed IL-2^{mutant}-Fc dimer proteins on (A–E) non-activated normal T lymphocytes CD4⁺ T cells and CD8⁺ T cells, as well as on (F) activated T lymphocytes CD4⁺ CD25⁺ T cells.

FIG. 8 shows signal curves of activation of p-STAT5 by weakened IL-2^{mutant}-Fc dimer proteins on different

lymphocyte subpopulations, relative to a control rhIL-2 protein.

FIG. 9 shows the effects of IL-2-Fc dimer proteins constructed from weakened IL-2^{mutant} molecules with reduced binding affinity for CD25, when administered in tumor-bearing C57 mice, on (A) the tumor volume; and (B and C) the body weight and changes in the body weight of the animals.

FIG. 10 shows the effects of IL-2-Fc dimer proteins constructed from weakened IL-2^{mutant} molecules that maintain binding affinity for CD25, when administered in tumor-bearing C57 mice, on (A) the tumor volume; and (B and C) the body weight and changes in the body weight of the animals.

FIG. 11 shows (A and B) the measurement results of the body weight and changes in the body weight of mice and (C–F) the results of Treg, NK, CD4⁺ and CD8⁺ T cell assays in blood, before and on days 3 and 7 after the administration of IL-2^{mutant}-Fc dimer proteins.

FIG. 12 shows the amino acid sequence of the wild-type IL-2 protein IL-2^{WT} (SEQ ID NO: 1) and the numbering of amino acid residues thereof, and shows the sequence alignment with the mutant protein IL-2^{3X}.

DETAILED DESCRIPTION

Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by those of ordinary skill in the art. For the purposes of the present invention, the following terms are defined below.

The term "about" used in combination with a numerical value is intended to encompass the numerical values in a range from a lower limit less than the specified numerical value by 5% to an upper limit greater than the specified numerical value by 5%.

The term "and/or" should be understood to refer to any one of the options or any two or more of the options.

As used herein, the term "comprise" or "include" is intended to include the described elements, integers or steps, but not to exclude any other elements, integers or steps. As used herein, the term "comprise" or "include", unless indicated otherwise, also encompasses the situation where the entirety consists of the described elements, integers or steps. For example, when an IL-2 mutant protein "comprising" or "including" a mutation or a combination of mutations is mentioned, it is also intended to encompass IL-2 mutant proteins having the mutation or combination of mutations only.

As used herein, wild-type "interleukin-2" or "IL-2" refers to a parent IL-2 protein, preferably a naturally-occurring IL-2 protein, e.g., a native IL-2 protein derived from a human, mouse, rat, or non-human primate, serving as a template to which a mutation or a combination of mutations disclosed herein is introduced, including both unprocessed (e.g., without the removal of the signal peptide) and processed (e.g., with the removal of the signal peptide) forms. A full-length native human IL-2 sequence comprising a signal peptide is set forth in SEQ ID NO: 2 and the sequence of its mature protein is set forth in SEQ ID NO: 3. In addition, this term also includes naturally-occurring allelic and splice variants, isotypes, homologs, and species homologs of IL-2. This term also includes variants of native IL-2, which may, for example, have at least 95%–99% or more identity to the native IL-2 or have no more than 1–10 or 1–5 amino acid mutations (e.g., conservative substitutions) and preferably have substantially the same binding affinity for IL-2R α and/or IL2R β as the native IL-2 protein. Therefore, in some embodiments, compared to the native IL-2 protein, the wild-type IL-2 protein may comprise amino acid mutations that do not affect its binding to the IL-2 receptor. For example, a native human IL-2 protein (UniProt: P60568)

with a mutation C125S introduced at position 125 is a wild-type IL-2 protein disclosed herein. An example of a wild-type human IL-2 protein comprising the C125S mutation is set forth in SEQ ID NO: 1. In some embodiments, the wild-type IL-2 sequence may have at least more than 85% or 95%, or even at least 96%, 97%, 98%, or 99% amino acid sequence identity to the amino acid sequence set forth in SEQ ID NO: 1, 2, or 3.

As used herein, the amino acid mutation may be an amino acid substitution, deletion, insertion, and addition. Any combination of substitution, deletion, insertion and addition may be made to obtain a final mutant protein construct with the desired properties, such as reduced binding affinity for IL-2R α and/or improved druggability and/or weakened IL-2R β . Amino acid deletions and insertions include amino- and/or carboxyl-terminal deletions and insertions of a polypeptide sequence, as well as deletions and insertions within the polypeptide sequence. For example, an alanine residue can be deleted at position 1 of a full-length human IL-2, or one or more amino acids can be deleted from a B'C' loop region to shorten the length of the loop region. In some embodiments, the preferred amino acid mutations are amino acid substitutions, e.g., the combination of single amino acid substitutions or the replacement of segments of an amino acid sequence. For example, the entirety or a part of the B'C' loop region sequence of the wild-type IL-2 can be replaced with a different sequence, preferably to obtain a shortened B'C' loop region sequence.

In the present invention, when the amino acid position in the IL-2 protein or IL-2 sequence segments is mentioned, it is determined by referring to the amino acid sequence of the wild-type human IL-2 protein (also referred to as IL-2^{WT}) set forth in SEQ ID NO: 1 (as shown in FIG. 8). The corresponding amino acid position in other IL-2 proteins or polypeptides (including full-length sequences or truncated fragments) can be identified by amino acid sequence alignment with SEQ ID NO: 1. Therefore, in the present invention, unless otherwise stated, an amino acid position in an IL-2 protein or polypeptide is an amino acid position numbered according to SEQ ID NO: 1. For example, when "F42" is mentioned, it refers to a phenylalanine residue F at position 42 of SEQ ID NO: 1, or an amino acid residue at corresponding positions in other IL-2 polypeptide sequences by alignment. To perform a sequence alignment for determining an amino acid position, Basic Local Alignment Search Tool available at <https://blast.ncbi.nlm.nih.gov/Blast.cgi> can be used with default parameters.

When an IL-2 mutant protein is mentioned herein, a single amino acid substitution is described as [original amino acid residue/position/amino acid residue for substitution]. For example, the substitution of lysine at position 35 with glutamate can be indicated as K35E. When there are multiple optional amino acid substitutions (e.g., D and E) at a given position (e.g., K35), the amino acid substitutions can be indicated as K35D/E. Correspondingly, single amino acid substitutions can be linked together by "+" or "-" to indicate a combinatorial mutation at multiple given positions. For example, the combinatorial mutation of positions K35E, T37E, R38E and F42A can be indicated as K35E+T37E+R38E+F42A or K35E-T37E-R38E-F42A.

As used herein, the "percent sequence identity" can be determined by comparing two optimally aligned sequences over a comparison window. Preferably, the sequence identity is determined over the full length of a reference sequence (e.g., SEQ ID NO: 1). Methods of sequence alignment for comparison are well known in the art. Algorithms suitable for determining the percent sequence identity include, for example, BLAST and BLAST 2.0 algorithms (see Altschul et al., *Nuc. Acids Res.*25: 3389-402, 1977 and Altschul et al., *J.mol. Biol.* 215: 403-10, 1990). Software for performing BLAST analysis is publicly available from the National Center for Biotechnology

Information. For the purpose of the present application, the percent identity can be determined by using Basic Local Alignment Search Tool available at <https://blast.ncbi.nlm.nih.gov/Blast.cgi> with default parameters.

As used herein, the term "conservative substitution" means an amino acid substitution that does not adversely affect or alter the biological function of a protein/polypeptide comprising an amino acid sequence. For example, a conservative substitution may be introduced by standard techniques known in the art, such as site-directed mutagenesis and PCR-mediated mutagenesis. A typical conservative amino acid substitution involves a substitution of an amino acid by another amino acid having similar chemical properties (e.g., charge or hydrophobicity). Conservative replacement tables of functionally similar amino acids are well known in the art. In the present invention, residues for conservative substitutions are from the conservative substitution table X below, particularly from the preferred residues for conservative amino acid substitutions in Table X.

Table X

Original residues	Exemplary substitution	Preferred conservative amino acid substitution
Ala (A)	Val; Leu; Ile	Val
Arg (R)	Lys; Gln; Asn	Lys
Asn (N)	Gln; His; Asp; Lys; Arg	Gln
Asp (D)	Glu; Asn	Glu
Cys (C)	Ser; Ala	Ser
Gln (Q)	Asn; Glu	Asn
Glu (E)	Asp; Gln	Asp
Gly (G)	Ala	Ala
His (H)	Asn; Gln; Lys; Arg	Arg
Ile (I)	Leu; Val; Met; Ala; Phe; Nle	Leu
Leu (L)	Nle; Ile; Val; Met; Ala; Phe	Ile
Lys (K)	Arg; Gln; Asn	Arg
Met (M)	Leu; Phe; Ile	Leu
Phe (F)	Trp; Leu; Val; Ile; Ala; Tyr	Tyr
Pro (P)	Ala	Ala
Ser (S)	Thr	Thr
Thr (T)	Val; Ser	Ser
Trp (W)	Tyr; Phe	Tyr
Tyr (Y)	Trp; Phe; Thr; Ser	Phe
Val (V)	Ile; Leu; Met; Phe; Ala; Nle	Leu

For example, relative to one of SEQ ID NOs: 1–3, the wild-type IL-2 protein may have conservative amino acid substitutions, or only have conservative amino acid substitutions; and in one preferred embodiment, the conservative substitutions involve no more than 10 amino acid residues, e.g., 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 residues. As another example, relative to the IL-2 mutant protein sequences specifically given herein (e.g., any one of SEQ ID NOs: 37–638), the IL-2 mutant protein disclosed herein may have conservative amino acid substitutions, or

only have conservative amino acid substitutions; and in one preferred embodiment, the conservative substitutions involve no more than 10 amino acid residues, e.g., 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 residues.

"Affinity" or "binding affinity" refers to the inherent binding ability that reflects the interaction between members of a binding pair. The affinity of a molecule X for its binding partner Y can be represented by an equilibrium dissociation constant (K_D), which is the ratio of a dissociation rate constant (k_{dis}) to an association rate constant (k_{on}). The binding affinity can be measured by common methods known in the art. One particular method for measuring the affinity is the ForteBio affinity assay technique described herein.

As used herein, an antigen-binding molecule is a polypeptide molecule that can specifically bind to an antigen, e.g., an immunoglobulin molecule, an antibody, or an antibody fragment (e.g., an Fab fragment and an scFv fragment).

As used herein, an antibody Fc fragment refers to a C-terminus region of an immunoglobulin heavy chain that contains at least a portion of the constant region, and may include Fc fragments of native sequences and variant Fc fragments. Fc fragments of native sequences include various naturally-occurring Fc sequences of immunoglobulins, such as various Ig subclasses or the Fc regions of allotypes thereof (Gestur Vidarsson et al., IgG subclasses and allotypes: from structure to effector functions, 20 October 2014, doi: 10.3389/fimmu.2014.00520.). In one embodiment, the heavy chain Fc fragment of human IgG extends from Cys226 or Pro230 of the heavy chain to the carboxy-terminus. In another embodiment, the C-terminal lysine (Lys447) of the Fc fragment may or may not be present. In other embodiments, the Fc fragment is a variant Fc fragment comprising a mutation, for example, a L234A-L235A mutation. Unless otherwise indicated herein, amino acid residues in the Fc fragment are numbered according to the EU numbering system, also called the EU index, as described in Kabat, E.A. et al., *Sequences of Proteins of Immunological Interest*, 5th edition, Public Health Service, National Institutes of Health, Bethesda, MD (1991), NIH Publication 91-3242. In some embodiments, the antibody Fc fragment may bear an IgG1 hinge sequence or a part of the IgG1 hinge sequence at the N-terminus, e.g., the sequence of E216 to T225 or the sequence of D221 to T225 according to the EU numbering. Mutations may be comprised in the hinge sequence.

The IL-2 protein is a member of the short chain type I cytokine family with four α -helical bundles (A, B, C, and D). As used herein, the terms "B'C' loop", "B'C' loop region" and "B'C' loop sequence" are used interchangeably, referring to a linker sequence between the B and C helices of the IL-2 protein. The B'C' loop sequence of an IL-2 protein can be determined by performing analysis of the IL-2 crystal structure (e.g., PDB: 2ERJ). For the purpose of the present invention, according to the numbering of SEQ ID NO: 1, the B'C' loop sequence refers to a sequence linking the residue at position 72 to the residue at position 84 in the IL-2 polypeptide. In the wild-type IL-2 proteins set forth in SEQ ID NOs: 1, 2 and 3, the linker sequence comprises 11 amino acids, namely A73–R83. Accordingly, as used herein, the term "shortened loop region" or "shortened B'C' loop region" means that a mutant protein has a B'C' loop sequence with a reduced length relative to the wild-type IL-2 protein, i.e., the linker sequence between the amino acid residues aa72 and aa84 is shortened according to the numbering of SEQ ID NO: 1. A "shortened loop region" can be achieved by replacement or truncation of the loop sequence. The replacement or truncation may occur in any region or portion of the B'C' loop sequence. For example, the replacement or truncation may be the replacement of the sequence A73–R83 in the loop region or the truncation of the sequence

by one or more amino acid residues at the C-terminus. As another example, the replacement or truncation may be the replacement of the sequence Q74–R83 in the loop region or the truncation of the sequence by one or more amino acid residues at the C-terminus. After the replacement or truncation, if necessary, a single amino acid substitution, e.g., an amino acid substitution for eliminating glycosylation and/or a reverse mutation, can be further introduced into the loop region sequence to further improve the performance of the mutant protein, e.g., the druggability. Therefore, herein, the mutated shortened B'C' loop region can be described through a sequence linking the residue at position 72 to the residue at position 84 after a mutation is introduced.

As used herein, an "IL-2R α binding interface" mutation refers to a mutation occurred at amino acid sites where IL-2 interacts with IL-2R α (i.e., CD25). These interaction sites can be determined by analyzing the crystal structure of the complex of IL-2 and its receptor (e.g., PDB: 1Z92). In some embodiments, the mutation refers particularly to mutations in the region of amino acid residues 35–72 of IL-2, particularly to mutations at the following amino acid sites: 35, 37, 38, 41, 42, 43, 45, 61, 62, 68 and 72. Preferably, an IL-2 protein comprising the mutation has reduced or eliminated binding to IL-2R α compared to the corresponding protein before introduction of the mutation.

As used herein, an "IL-2R $\beta\gamma$ binding interface" mutation refers to a mutation occurred at amino acid sites where IL-2 interacts with IL-2R $\beta\gamma$ (i.e., CD122 and CD132). These interaction amino acid sites can be determined by analyzing the crystal structure of the complex of IL-2 and its receptor (e.g., PDB: 2ERJ). In some embodiments, the mutation refers particularly to mutations in the regions of amino acid residues 12–20, 84–95 and 126 of IL-2, particularly to mutations at the following amino acid sites: 12, 15, 16, 19, 20, 84, 87, 88, 91, 92, 95 and 126. Preferably, an IL-2 protein comprising the mutation has weakened binding to IL-2R $\beta\gamma$ compared to the corresponding protein before introduction of the mutation.

As used herein, with respect to binding to an IL-2R $\beta\gamma$ receptor, a "weakened" IL-2 protein molecule means introducing a mutation into a binding interface to IL-2R $\beta\gamma$ that leads to reduced binding affinity for the IL-2R $\beta\gamma$ receptor relative to the corresponding IL-2 protein before the introduction of the mutation. Further preferably, the weakened molecule has reduced activation activity for T cells (e.g., CD25⁻ T cells or CD25⁺ T cells) and/or NK cells relative to the corresponding protein. For example by measuring the ratio of EC₅₀ values of activation of pSTAT5 signals in T cells by the weakened molecule and the corresponding protein, the activation activity may be reduced by 5 times or more, e.g., 10 times or more, or 50 times or more, or 100 times or more, or even 1000 times or more. For example, the activation activity of the weakened molecule for T cells can be reduced by 10–50 times, or 50–100 times, or 100–1000 times, or more, relative to the corresponding protein. Thus, in the present invention, in some embodiments, the weakened molecule of the present invention has "weakened" binding affinity for the IL-2R $\beta\gamma$ receptor and "weakened" activation activity for T cells.

All aspects of the present invention are further detailed in the following sections.

1. IL-2 Mutant Protein Disclosed Herein

Advantageous biological properties of the IL-2 mutant protein disclosed herein

The inventors have found through long-term research that the following molecular mutations and engineering can be combined and implemented to improve the efficacy of IL-2, reduce the toxic side effects of IL-2 and achieve a good production performance at the same time:

(i) introducing a certain residue mutation into the binding interface of IL-2 to the IL-2R $\beta\gamma$ receptor to weaken the binding to the IL-2R $\beta\gamma$ receptor and to down-regulate the activity of IL-2 to some extent. By including such mutations that weaken the binding to the IL-2R $\beta\gamma$ receptor, the IL-2 mutant protein disclosed herein can activate lymphocytes to kill tumors, while avoiding the release of a large amount of inflammatory factors, and thus drug-related toxicity, caused by over-activation of lymphocytes. In addition, by reducing the binding affinity of the IL-2 mutant protein disclosed herein for the IL-2 receptors extensively occurred on lymphocytes, the weakening mutations can also reduce the clearance of the IL-2 mutant protein mediated by the IL-2 receptors and prolong the period of action of the IL-2 mutant protein;

(ii) constructing the IL-2 mutant protein disclosed herein into an IL-2-Fc dimer. The formation of this dimer can increase the molecular weight of the IL-2 mutant protein disclosed herein, greatly reducing renal clearance and further extending the half-life of the IL-2-Fc fusion protein by FcRn-mediated *in vivo* recycling. Thus, the high peak plasma concentration problem caused by the short half-life and high-frequency large-dose administration of IL-2 is overcome;

(iii) engineering the B'C' loop structure of IL-2, for example, by replacing with the loop of the IL-15 molecule or by truncating the B'C' loop of the IL-2 molecule. The B'C' loop mutation can significantly enhance the stability of the B'C' loop structure in the IL-2 mutant protein disclosed herein, and significantly improve the production performance of the IL-2 mutant protein and the IL-2-Fc dimeric molecule constructed thereof, e.g., significantly improving the expression yield and purity.

Furthermore, the inventors have found that in the mutant protein disclosed herein, the binding activity of the IL-2 mutant protein to IL-2R α can be regulated as needed, while the excellent properties described above are kept, to meet different drug-forming requirements of IL-2 in multiple aspects such as in anti-tumor therapy or in the treatment of autoimmune diseases, and thus to further impart excellent pharmacodynamic properties to the mutant protein disclosed herein.

For example, the mutant protein disclosed herein can maintain substantially comparable binding activity to IL-2R α as the wild-type IL-2; or can combine the following mutations: (iv) one or more specific mutations at the binding interface of IL-2 to the IL-2R α receptor, to change the binding performance of the IL-2 mutant protein to IL-2R α .

Thus, through the engineering of the sequence, the IL-2-Fc molecules disclosed herein, in one aspect, have weakened binding affinity for the IL-2R $\beta\gamma$ receptor and achieve more excellent pharmacokinetic experimental results and pharmacodynamic results, and, in another aspect, have significantly improved druggability such as the protein expression yield and purity.

Thus, the present invention provides an IL-2 mutant protein with improved druggability and improved IL-2 receptor binding properties. IL-2-Fc molecules comprising the IL-2 mutant protein disclosed herein can effectively avoid excessive release of inflammatory factors caused by strong agonizing of lymphocytes, and has more stable and long-acting pharmacokinetic properties. Thus, a sufficiently high drug exposure can be achieved in the human body with a lower single dose, which avoids drug-related toxicity resulting from high C_{max} . Furthermore, it is more significant that, although the long-acting IL-2-Fc molecule of the present invention has

weakened immunostimulatory activity for lymphocytes relative to native IL-2, the *in vivo* effective drug concentration of the molecule of the present invention is more lasting due to the significant improvements to the pharmacokinetic properties and it can achieve a long period of constant stimulation of lymphocytes, a comparable pharmacodynamic effect to or even a better pharmacodynamic effect than native IL-2 molecules, and better anti-tumor efficacy and tolerance in animals.

Improved druggability

In some embodiments, the IL-2 mutant protein disclosed herein has improved druggability. For example, when expressed in mammalian cells such as HEK293 cells or CHO cells, particularly in the form of an Fc fusion protein, the IL-2 mutant protein has one or more properties selected from the following: (i) a superior expression yield to the wild-type IL-2 protein; and (ii) ease of purification to a higher protein purity.

In some embodiments disclosed herein, the IL-2 mutant protein disclosed herein shows an increased expression level compared to the wild-type IL-2. In some embodiments disclosed herein, the increased expression occurs in a mammalian cell expression system. The expression level can be determined by any suitable method that allows for quantitative or semi-quantitative analysis of the amount of recombinant IL-2 protein in cell culture supernatant, preferably the supernatant purified by one-step affinity chromatography. For example, the amount of recombinant IL-2 protein in a sample can be assessed by Western blotting or ELISA. In some embodiments, the expression yield of the IL-2 mutant protein disclosed herein in mammalian cells is increased by at least 1.1 times, or at least 1.5 times, or at least 2 times, 3 times or 4 times or more, or at least 5, 6, 7, 8 or 9 times, or even 10 times or more, e.g., about 10, 15, 20, 25, 30 or 35 times, compared to that of the wild-type IL-2.

In some embodiments, as shown by determining the purity of the protein purified by protein A affinity chromatography, the IL-2 mutant protein-Fc fusion disclosed herein has higher purity, relative to the wild-type IL-2 protein fusion. In some embodiments, the purity of the protein is determined by SEC-HPLC. In some preferred embodiments, the IL-2 mutant protein-Fc fusion disclosed herein can have a purity of up to 70%, or 80%, or 90% or higher, preferably 92%, 93%, 94%, 95%, 98% or 99% or higher, after being purified by one-step protein A affinity chromatography.

In some embodiments, as shown by determining the purity of the protein purified by protein A affinity chromatography, the IL-2-Fc dimer protein disclosed herein has higher purity, relative to the corresponding IL-2-Fc dimer protein formed of the wild-type IL-2 protein. In some embodiments, the purity of the protein is determined by SEC-HPLC. In some preferred embodiments, the IL-2-Fc dimer protein disclosed herein can have a purity of up to 70%, or 80%, or 90% or higher, preferably 92%, 93%, 94%, 95%, 98% or 99% or higher, after being purified by one-step protein A affinity chromatography.

Weakened binding to IL-2 $\beta\gamma$ receptor

By introducing a mutation into the binding interface to IL-2R $\beta\gamma$, in some embodiments, the IL-2 mutant protein disclosed herein has weakened binding affinity for IL-2 $\beta\gamma$ relative to the corresponding protein before the introduction of the mutation.

In some embodiments, the IL-2 mutant protein disclosed herein has reduced binding affinity for the IL-2R β and/or IL-2R $\beta\gamma$ receptor relative to that before weakening by introducing an IL-2R $\beta\gamma$ binding interface mutation. In some embodiments, the IL-2 mutant protein disclosed herein has reduced binding affinity for the IL-2R β receptor

relative to that before weakening; for example, the binding affinity is reduced by 1–20 times or more. In some embodiments, binding to the IL-2R β receptor is eliminated. In some embodiments, the IL-2 mutant protein disclosed herein has reduced binding affinity for the IL-2R $\beta\gamma$ receptor relative to that before weakening; for example, the binding affinity is reduced by 1–100 times or more. In some embodiments, the IL-2 mutant protein disclosed herein does not bind to the IL-2R β receptor, but is still capable of binding to the IL-2R $\beta\gamma$ receptor. Preferably, the binding to the IL-2R $\beta\gamma$ receptor is reduced by 1–100 times, e.g., about 20–80 times, compared to that before weakening. The binding affinity can be determined by measuring the equilibrium dissociation constant (K_D) of the binding of the IL-2 mutant protein disclosed herein, such as the IL-2 mutant protein disclosed herein fused to an Fc fragment or the dimeric molecule thereof, to the IL-2R β or IL-2R $\beta\gamma$ receptor using the ForteBio affinity assay technique.

By introducing mutations into the binding interface to IL-2R $\beta\gamma$, in some embodiments, the IL-2 mutant protein disclosed herein, relative to the corresponding protein before the introduction of the mutations, has weakened IL-2 activity, e.g., at least one IL-2 activity selected from the following:

- reduced activation of T cells (e.g. CD4⁺ and CD8⁺ T cells, e.g. CD4⁺/CD8⁺ CD25⁻ T cells, or CD4⁺ CD25⁺ T cells), compared to that before weakening;
- reduced activation of NK cells, compared to that before weakening; and
- reduced IL-2-stimulated release of inflammatory factors from T cells/NK cells, compared to that before weakening.

In one embodiment, the IL-2 mutant protein disclosed herein leads to reduced IL-2-mediated activation and/or proliferation of lymphocytes (e.g., T cells and/or NK cells) relative to that before weakening. In one embodiment, the lymphocytes are CD4⁺ and CD8⁺ T cells, such as CD25⁻ T cells. In one embodiment, in the STAT5 phosphorylation assay, the ability of the IL-2 mutant protein to activate CD4⁺ and CD8⁺ T cells is identified by measuring the activation of STAT5 phosphorylation signals by the IL-2 mutant protein in lymphocytes such as T cells or NK cells. For example, as described in the examples of this application, STAT5 phosphorylation in cells can be analyzed by flow cytometry to determine the half maximum effective concentration (EC_{50}). For example, by measuring the ratio of EC_{50} values of activation of STAT5 phosphorylation signals by the IL-2 weakened molecule disclosed herein and the corresponding protein, the IL-2 mutant molecule disclosed herein has "weakened" activation activity for T cells. According to the ratio, the activation activity of the IL-2 mutant molecule disclosed herein for T cells can be reduced by, e.g., 5 times or more, e.g., 10 times or more, or 50 times or more, or 100 times or more, or even 1000 times or more. For example, the activation activity of the IL-2 mutant molecule disclosed herein for T cells can be reduced by 10–50 times, or 50–100 times, or 100–1000 times, or more, relative to the corresponding protein. In some preferred embodiments, the IL-2 mutant protein disclosed herein has reduced cell surface IL-2 receptor-mediated clearance of IL-2 and an increased *in vivo* half-life, relative to the wild-type IL-2.

In some preferred embodiments, the IL-2 mutant protein disclosed herein has reduced *in vivo* toxicity mediated by IL-2 and its receptors relative to the wild-type IL-2.

Maintained or altered binding to IL-2R α receptor

The IL-2 protein triggers signaling and functions by interacting with IL-2 receptors. Wild-type IL-2 exhibits

different affinities for different IL-2 receptors. IL-2 β and IL-2 γ receptors having a low affinity for wild-type IL-2 are expressed on resting effector cells, including CD8⁺ T cells and NK cells. IL-2R α receptors having a high affinity for wild-type IL-2 are expressed on regulatory T cell (Treg) cells and activated effector cells. Due to high affinity, the wild-type IL-2 will preferentially bind to IL-2R α on the cell surface and then recruit IL-2R $\beta\gamma$. Treg cells and activated effector cells are stimulated by downstream p-STAT5 signals released through the IL-2R $\beta\gamma$. Without being bound by theory, altering the affinity of IL-2 for the IL-2R α receptor will alter the preference of IL-2 for preferentially activating CD25⁺ cells and the IL-2-mediated immune downregulation of Treg cells.

In some embodiments, the IL-2 mutant protein disclosed herein has a maintained or an altered ability to bind to the IL-2R α receptor relative to the wild-type IL-2.

In some embodiments, the IL-2 mutant protein disclosed herein maintains binding to the IL-2R α receptor relative to the wild-type IL-2. As used herein, the expression "maintain binding to the IL-2R α receptor" means that the IL-2 mutant protein has a comparable binding activity to the IL-2R α receptor relative to the wild-type IL-2 protein. Preferably, "comparable binding activity" means that when measured in the same manner, the binding activity values (e.g., binding affinity K_D) of the IL-2 mutant protein and the wild-type IL-2 protein are in a ratio between 1:20 and 20:1, preferably between 1:10 and 10:1. Preferably, the IL-2 mutant protein does not have an IL-2R α binding interface mutation relative to the wild-type IL-2.

In some embodiments, the IL-2 mutant protein disclosed herein is a weakened IL-2 mutant molecule which maintains binding to the IL-2R α receptor. In still other embodiments, the weakened IL-2 mutant protein disclosed herein does not have an IL-2R α binding interface mutation relative to the wild-type IL-2. Preferably, the weakened IL-2 mutant molecule has improved selectivity for Treg and/or improved selectivity for NK cells (e.g., CD3⁻ CD56⁺ NK cells). In one embodiment, in the STAT5 phosphorylation assay, the selectivity of the IL-2 mutant protein for lymphocytes is identified by measuring the activation of STAT5 phosphorylation signals by the IL-2 mutant protein in different lymphocytes such as Treg cells, NK cells and CD4⁺ and CD8⁺ effector T cells. In one embodiment, in the STAT5 phosphorylation assay, the selectivity of the IL-2 mutant protein can be reflected by a dose window of the IL-2 mutant protein that selectively activates specific (one or more types of) lymphocytes without substantially activating other lymphocytes. For example, in some embodiments, the weakened IL-2 mutant protein disclosed herein may exhibit improved selectivity for Treg and/or improved selectivity for NK cells (CD3⁻ CD56⁺ NK cells) relative to that for effector T cells, such as CD25^{-/low} CD4⁺ and/or CD8⁺ effector T lymphocytes. In still other embodiments, the improved selectivity may be reflected by low drug-related toxicity of the IL-2 mutant protein.

In other embodiments, the IL-2 mutant protein disclosed herein has a mutation introduced into the binding interface to IL-2R α relative to the wild-type IL-2, the mutation causing the IL-2 mutant protein to have reduced or eliminated binding to the IL-2R α receptor.

In still other embodiments, the IL-2 mutant protein disclosed herein reduces the preference of IL-2 for preferentially activating CD25⁺ cells relative to the wild-type IL-2. In still other embodiments, the IL-2 mutant protein disclosed herein reduces IL-2-mediated immune downregulation of Treg cells relative to the wild-type IL-2.

In other embodiments, the IL-2 mutant protein disclosed herein has an immune downregulation effect. In still

other embodiments, the IL-2 mutant protein disclosed herein can be used to treat autoimmune diseases.

Therefore, in some embodiments, the IL-2 mutant protein disclosed herein has one or more improved properties selected from the following:

- maintained or altered (e.g. reduced or increased) binding affinity for a high affinity IL-2R receptor (IL-2R $\alpha\beta\gamma$), compared to the wild-type IL-2;
- maintained or altered (e.g. reduced or increased) activation of CD25⁺ cells (e.g., CD8⁺ T cells and Treg cells), compared to the wild-type IL-2;
- maintained or altered (e.g. eliminated or reduced, or increased) preference of IL-2 for preferentially activating CD25⁺ cells (e.g. Treg cells), compared to wild-type IL-2; and
- maintained or altered (e.g. reduced or increased) IL-2-induced downregulation of the immune response by Treg cells, compared to wild-type IL-2.

In some embodiments, the binding affinity of the IL-2 mutant protein disclosed herein for the IL-2R α receptor is reduced by at least 5 times, at least 10 times, or at least 25 times, particularly at least 30 times, 50 times or 100 times or more, relative to the wild-type IL-2 (e.g., IL-2^{WT} set forth in SEQ ID NO: 1). In a preferred embodiment, the mutant protein disclosed herein does not bind to the IL-2R α receptor. The binding affinity can be determined by measuring the equilibrium dissociation constant (K_D) of the binding of the IL-2 mutant protein disclosed herein, such as the IL-2 mutant protein disclosed herein fused to an Fc fragment or the dimeric molecule thereof, to the IL-2R α receptor using the ForteBio affinity assay technique.

In one embodiment, the IL-2 mutant protein disclosed herein reduces IL-2-mediated activation and/or proliferation of CD25⁺ cells relative to the wild-type IL-2. In one embodiment, the CD25⁺ cells are CD25⁺ CD8⁺ T cells. In another embodiment, the CD25⁺ cells are Treg cells. In one embodiment, in the STAT5 phosphorylation assay, the ability of the IL-2 mutant protein to activate CD25⁺ cells is identified by measuring the activation of STAT5 phosphorylation signals by the IL-2 mutant protein in CD25⁺ cells. For example, as described in the examples of this application, STAT5 phosphorylation in cells can be analyzed by flow cytometry to determine the half maximum effective concentration (EC_{50}).

In one embodiment, the IL-2 mutant protein disclosed herein eliminates or reduces the preference of IL-2 for preferentially activating CD25⁺ cells relative to the wild-type IL-2. In one embodiment, the CD25⁺ cells are CD25⁺ CD8⁺ T cells. In another embodiment, the CD25⁺ cells are Treg cells. In one embodiment, in the STAT5 phosphorylation assay, the ability of the IL-2 mutant protein to activate CD25⁺ cells is identified by measuring the EC_{50} values of the IL-2 mutant protein in activating STAT5 phosphorylation signals in CD25⁻ cells and in CD25⁺ cells, respectively. For example, the activation preference of the IL-2 mutant protein for CD25⁺ cells is determined by calculating the ratio of EC_{50} values of the IL-2 mutant protein in activating STAT5 phosphorylation signals in CD25⁻ and in CD25⁺ T cells. Preferably, the preference of the mutant protein for CD25⁺ cells is reduced by at least 10 times, preferably at least 100 times, 150 times, 200 times, or 300 times or more, relative to the wild-type protein.

The mutant protein disclosed herein

In one aspect, the present invention provides an IL-2 mutant protein, which, compared to a wild-type IL-2 (preferably a human IL-2, and more preferably an IL-2 comprising the sequence of SEQ ID NO: 1), comprises mutations:

(i) a mutation that eliminates or reduces binding affinity for an IL-2R α receptor, at a binding interface of IL-2 to IL-2R α , particularly at at least one position selected from positions 35, 37, 38, 41, 42, 43, 45, 61, 68 and 72;

and/or

(ii) a shortened B'C' loop region (i.e., a sequence linking amino acid residues aa72 and aa84), wherein preferably, the shortened loop region has less than 10, 9, 8, 7, 6 or 5 amino acids in length, and more preferably has 7 amino acids in length; preferably, the shortened B'C' loop region leads to an improved protein expression yield and/or purity;

and comprises a mutation:

(iii) a mutation that weakens binding to an IL-2R $\beta\gamma$ receptor, at a binding interface of IL-2 to IL-2R $\beta\gamma$, particularly at at least one position selected from positions 12, 15, 16, 19, 20, 84, 87, 88, 91, 92, 95 and 126;

wherein, the amino acid positions are numbered according to SEQ ID NO: 1;

preferably, the mutant protein comprises the mutations (i) and (iii), or comprises the mutations (ii) and (iii), or comprises the mutations (i), (ii) and (iii).

IL-2R $\beta\gamma$ binding interface mutation

An IL-2R $\beta\gamma$ binding interface mutation suitable for the mutant protein disclosed herein may be any mutation that can be combined with the other mutations of the present invention and leads to weakened binding affinity for IL-2R $\beta\gamma$ and/or weakened activation activity for lymphocytes (e.g., T cells/NK cells).

Examples of such mutations include, but are not limited to: mutations that leads to weakened binding to the IL-2R $\beta\gamma$ receptor, at the binding interface of IL-2 to IL-2R $\beta\gamma$, particularly at at least one position selected from positions 12, 15, 16, 19, 20, 84, 87, 88, 91, 92, 95 and 126.

In some embodiments, the IL-2R $\beta\gamma$ binding interface mutation includes mutations selected from the following:

L12R, L12K, L12E, L12Q, E15Q, E15R, E15A, E15S, H16N, H16T, H16Y, H16A, H16E, H16D, H16R, L19D, L19E, L19R, L19S, D20N, D20Q, D20E, D20A, D20R, D20S, D84N, D84E, D84Q, D84T, D84S, D84R, D84G, D84M, D84F, D84L, D84K, D84H, S87T, S87R, S87K, S87L, S87M, S87H, N88D, N88T, N88Q, N88R, N88E, N88K, N88H, N88M, N88S, N88L, V91I, V91L, V91D, V91E, V91N, V91Q, V91S, V91H, I92E, I92T, I92K, I92R, I92L, E95Q, E95G, E95D, E95N, Q126E, Q126D, Q126A, Q126S, D84N+E95Q, D84E+E95Q, D84T+E95Q, D84Q+E95Q, D84T+H16T, D84N+V91I, D84T+Q126E, D84N+Q126E, H16T+D84Q and H16T+V91I.

In some preferred embodiments, the IL-2R $\beta\gamma$ binding interface mutation includes mutations selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88R, N88D, N88Q, N88T, Q126E and V91I.

In still other preferred embodiments, the IL-2R $\beta\gamma$ binding interface mutation includes

- a mutation selected from the following: D84N, E95Q and H16N; or
- a mutation selected from the following: D84Q and H16T+V91I; or
- a mutation selected from the following: D84T, Q126E, D84N+V91I and D84N+E95Q; or
- a mutation selected from the following: N88D, N88R, D20N, D84N+E95Q, D84T+H16T, D84T+Q126E, D84N+Q126E and H16T+D84Q.

In still other preferred embodiments, the IL-2R β binding interface mutation includes mutations selected from the following: D20N, N88D and N88R.

B'C' loop region mutations

In one aspect, the IL-2 mutant protein disclosed herein, relative to the wild-type IL-2, comprises a B'C' loop region mutation; preferably, the mutation leads to a B'C' loop region with increased stability; more preferably, the mutation leads to improved druggability of the IL-2 mutant protein disclosed herein, e.g., an increased expression yield and/or purity.

In some embodiments, due to the mutation introduced, the mutant protein comprises a shortened B'C' loop region (i.e., a shortened linker sequence between the amino acid residues aa72 and aa84) compared to the wild-type IL-2 (preferably the human IL-2, and more preferably the IL-2 comprising the sequence of SEQ ID NO: 1).

Preferably, the shortened loop region has less than 10, 9, 8, 7, 6 or 5 amino acids in length, and more preferably has 7 amino acids in length, wherein the amino acid residues are numbered according to SEQ ID NO: 1.

Herein, B'C' loop region mutations suitable for the present invention include truncations and replacements of the B'C' loop region. In one embodiment, the mutations include truncations or replacements of the amino acid residues aa73 to aa83 in the B'C' loop region, e.g., a truncation to form A(Q/G)SKN(F/I)H, or a replacement with SGDASIH. In another embodiment, the mutations include truncations or replacements of the amino acid residues aa74 to aa83 in the B'C' loop region, e.g., a truncation to form (Q/G)SKN(F/I)H, or a replacement with GDASIH.

In some embodiments, the IL-2 mutant protein disclosed herein comprises a B'C' loop chimeric mutation. The mutant protein, relative to the wild-type IL-2, comprises a substitution of the entirety or a part of the sequence linking aa72 to aa84, for example, with a short B'C' loop sequence from other four-helical short-chain cytokine family members. The short B'C' loop suitable for the substitution of the wild-type IL-2 can be identified from other four-helical short-chain cytokine IL family members, such as IL-15, IL-4, IL-21, or IL family members from non-human species such as mice, by the superpose of a crystal structure. In one embodiment, the sequence used for substitution is a B'C' loop sequence from interleukin IL-15, particularly human IL-15. In one embodiment, the substitution includes substitutions of the amino acid residues aa73 to aa83 in the B'C' loop region. In another embodiment, the substitution includes substitutions of the amino acid residues aa74 to aa83 in the B'C' loop region. Preferably, the IL-2 mutant protein disclosed herein, after the substitutions, has a B'C' loop sequence (i.e., a sequence linking aa72 to aa84) selected from the following: SGDASIH and AGDASIH.

In some embodiments, the IL-2 mutant protein disclosed herein comprises a B'C' loop truncation mutation. The mutant protein, relative to the wild-type IL-2, comprises a truncation of the sequence linking aa72 to aa84. In one embodiment, the truncation includes truncations of the amino acid residues aa73 to aa83 in the B'C' loop region. In another embodiment, the truncation includes truncations of the amino acid residues aa74 to aa83 in the B'C' loop region. For example, the sequence may be truncated by 1, 2, 3 or 4 amino acids at the C-terminus. Preferably,

after the truncation, the IL-2 mutant protein disclosed herein has a B'C' loop region having a sequence of A(Q/G)SKN(F/I)H. Preferably, after the truncation, the IL-2 mutant protein disclosed herein has a B'C' loop sequence (i.e., a sequence linking aa72 to aa84) selected from the following:

B'C' loop sequence
AQSKNFH
AGSKNFH
AQSANFH
AQSANIH

In one preferred embodiment, the IL-2 mutant protein disclosed herein comprises a B'C' loop region sequence (i.e., a sequence linking aa72 to aa84) selected from the following: AQSKNFH, SGDASIH and AGDASIH.

For B'C' loop mutations suitable for the present invention, see also the applicant's co-pending application PCT/CN2019/107054, which is incorporated herein by reference in its entirety.

IL-2R α binding interface mutation

In one aspect, the IL-2 mutant protein disclosed herein, relative to the wild-type IL-2, comprises one or more mutations at the binding interface to IL-2R α , preferably at positions 35, 37, 38, 41, 42, 43, 45, 61, 68 and 72. Preferably, the mutation eliminates or reduces binding affinity for the IL-2R α receptor.

In some embodiments, the IL-2R α binding interface mutation of the present invention includes a combination of mutations selected from one of the following combinations (1)-(9):

Combinations	Mutations
1	K35D/ E +T37E/ D +R38Y/ W +F42N/ Q +Y45R/ K +E61R/ K +E68K/ R , preferably K35D/ E +T37E/ D +R38 W +F42 Q +Y45R/ K +E61R/ K +E68K/ R , and more preferably K35D/ E +T37E/ D +R38 W +F42 Q +Y45 K +E61 K +E68 R
2	K35D/ E +T37D/ E +R38D/ E +F42V/ L /I/ A , preferably K35D/ E +T37D/ E +R38D/ E +F42V/ A , and more preferably K35D/ E +T37D/ E +R38D/ E +F42 A
3	K35E/ D +R38D/ E +T41D/ E +K43D/ E , preferably K35E/ D +R38D/ E +T41 E +K43 E
4	K35E/ D +T37D/ E +R38E/ D +K43F/ Y +Y45R/ K +L72Y/ F , more preferably K35E/ D +T37D/ E +R38E/ D +K43 Y +Y45 K +L72 F
5	K35D/ E +R38D/ E +T41D/ E +K43F/ Y +Y45R/ K +L72Y/ F , more preferably K35D/ E +R38D/ E +T41D/ E +K43 Y +Y45 K +L72 F
6	K35E/ D +T37D/ E +R38E/ D +T41D/ E +K43D/ E +L72Y/ F , more preferably K35E/ D +T37D/ E +R38E/ D +T41D/ E +K43D/ E +L72 F
7	K35E/ D +T37D/ E +R38E/ D +K43D/ E +L72Y/ F , more preferably K35E/ D +T37D/ E +R38E/ D +K43D/ E +L72 F
8	K35D/ E +T37E/ D +R38E/ D +K43D/ E +L72Y/ F , more preferably K35D/ E +T37E/ D +R38E/ D +K43D/ E +L72 F
9	K35D/ E +R38E/ D +T41D/ E +K43D/ E +E61R/ K +L72Y/ F , more preferably K35D/ E +R38E/ D +T41D/ E +K43D/ E +E61 K +L72 F

In some preferred embodiments, the IL-2R α binding interface mutation of the present invention includes or consists of the combination of mutations K35E+T37E+R38E+F42A.

In other preferred embodiments, the IL-2R α binding interface mutation of the present invention includes or consists of the combination of mutations K35E+T37E+R38E.

In other preferred embodiments, the IL-2R α binding interface mutation of the present invention includes or consists of the mutation F42A.

In other embodiments, the IL-2 mutant protein disclosed herein comprising the IL-2R α binding interface mutation of the present invention has altered binding to IL-2R α , as determined, e.g., by a ForteBio affinity assay.

For IL-2R α binding interface mutations suitable for the present invention, see also the applicant's co-pending application PCT/CN2019/107055, which is incorporated herein by reference in its entirety.

Preferred exemplary combinations of mutations

In some preferred embodiments, the IL-2 mutant protein disclosed herein has weakened binding to IL-2R $\beta\gamma$ and has improved properties selected from one or both of: (i) reduced (or eliminated) binding to IL-2R α ; and (ii) improved expression level and purity.

In some embodiments, the present invention provides an IL-2 mutant protein, which comprises, relative to the wild-type IL-2:

(a) a combination of mutations K35E+T37E+R38E+F42A;

(b) an IL-2R $\beta\gamma$ binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A.

In some embodiments, the present invention provides an IL-2 mutant protein, which comprises, relative to the wild-type IL-2:

(a) a combination of mutations K35E+T37E+R38E;

(b) an IL-2R $\beta\gamma$ binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A.

In some embodiments, the present invention provides an IL-2 mutant protein, which comprises, relative to the wild-type IL-2:

(a) a mutation F42A;

(b) an IL-2R $\beta\gamma$ binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A.

In some embodiments, the present invention provides an IL-2 mutant protein, which comprises, relative to the wild-type IL-2:

(a) a B'C' loop region sequence AQSKNFH;

(b) an IL-2R β binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A. Preferably, the IL-2 mutant protein maintains an ability to bind to the IL-2R α receptor relative to the wild-type IL-2 protein.

In some embodiments, the present invention provides an IL-2 mutant protein, which comprises, relative to the wild-type IL-2:

(a) a B'C' loop region sequence SGDASIH or AGDASIH;

(b) an IL-2R β binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A. Preferably, the IL-2 mutant protein maintains binding to the IL-2R α receptor relative to the wild-type IL-2 protein.

In some embodiments, the IL-2 mutant protein disclosed herein comprises, relative to the wild-type IL-2:

(i) a combination of mutations **K35E+T37E+R38E+F42A**, or a combination of mutations **K35E+T37E+R38E**, or a mutation **F42A**;

(ii) a B'C' loop region sequence: AQSKNFH; or SGDASIH or AGDASIH;

(iii) an IL-2R β binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A.

In some embodiments, the IL-2 mutant protein disclosed herein comprises, relative to the wild-type IL-2:

(i) a combination of mutations **K35E+T37E+R38E+F42A**;

(ii) a B'C' loop region sequence: AQSKNFH;

(iii) an IL-2R β binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A.

In some embodiments, the IL-2 mutant protein disclosed herein comprises, relative to the wild-type IL-2:

(i) a combination of mutations **K35E+T37E+R38E+F42A**;

(ii) a B'C' loop region sequence: SGDASIH or AGDASIH;

(iii) an IL-2R β binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A.

In some embodiments, the IL-2 mutant protein disclosed herein comprises, relative to the wild-type IL-2:

(i) **a combination of mutations K35E+T37E+R38E;**

(ii) a B'C' loop region sequence: AQSKNFH;

(iii) an IL-2R β binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A.

In some embodiments, the IL-2 mutant protein disclosed herein comprises, relative to the wild-type IL-2:

(i) **a combination of mutations K35E+T37E+R38E;**

(ii) a B'C' loop region sequence SGDASIH or AGDASIH;

(iii) an IL-2R β binding interface mutation, selected from the following:

D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I;

and optionally, (iv) a mutation T3A.

In some preferred embodiments, the IL-2 mutant protein disclosed herein comprises, relative to the wild-type IL-2:

(i) **a combination of mutations K35E+T37E+R38E+F42A;**

(ii) a B'C' loop region sequence SGDASIH or AGDASIH;

(iii) IL-2R β binding interface mutations: D84N or D84N+E95Q;

and optionally, (iv) a mutation T3A. More preferably, the IL-2 mutant protein disclosed herein comprises, relative to the wild-type IL-2: (i) **a combination of mutations K35E+T37E+R38E+F42A;** (ii) a B'C' loop region sequence AGDASIH; (iii) IL-2R β binding interface mutations: D84N+E95Q.

In still other preferred embodiments, the IL-2 mutant protein disclosed herein, relative to the wild-type IL-2 protein, maintains binding to the IL-2R α receptor and comprises:

(i) a B'C' loop region sequence AQSKNFH; SGDASIH or AGDASIH;

(ii) an IL-2R β binding interface mutation, selected from the following: D20N, N88R and N88D;

and optionally (iii) a mutation T3A. Preferably, the IL-2 mutant protein does not have an IL-2R α binding interface mutation relative to the wild-type IL-2.

In other preferred embodiments, the IL-2 mutant protein disclosed herein, relative to the wild-type IL-2 protein, maintains binding to the IL-2R α receptor and comprises:

(i) a B'C' loop region sequence SGDASIH or AGDASIH;

(ii) an IL-2R $\beta\gamma$ binding interface mutation: D20N, or N88R, or N88D;

and optionally (iii) a mutation T3A. Preferably, the IL-2 mutant protein does not have an IL-2R α binding interface mutation relative to the wild-type IL-2.

In other preferred embodiments, the IL-2 mutant protein disclosed herein, relative to the wild-type IL-2 protein, maintains binding to the IL-2R α receptor and comprises:

(i) a B'C' loop region sequence AGDASIH;

(ii) an IL-2R $\beta\gamma$ binding interface mutation: D20N, or N88R, or N88D;

and optionally (iii) a mutation T3A. Preferably, the IL-2 mutant protein does not have an IL-2R α binding interface mutation relative to the wild-type IL-2.

In still other preferred embodiments, the IL-2 mutant protein disclosed herein, relative to the wild-type IL-2 (e.g., SEQ ID NO: 1), maintains binding to the IL-2R α receptor and comprises:

(i) a B'C' loop region sequence AGDASIH;

(ii) an IL-2R $\beta\gamma$ binding interface mutation: N88R;

and (iii) a mutation T3A. Preferably, the IL-2 mutant protein does not have an IL-2R α binding interface mutation relative to the wild-type IL-2. In one embodiment, the IL-2 mutant protein disclosed herein has a mature region having at least 85% or 90% identity in the amino acid sequence to that of the wild-type IL-2 protein set forth in one of SEQ ID NOs: 1–3.

In some preferred embodiments, the IL-2 mutant protein disclosed herein comprises an amino acid sequence having at least 90%, 92%, 93%, 94%, 95%, 96%, 97%, 98% or 99% identity to an amino acid sequence selected from one of SEQ ID NOs: 37–638 (particularly SEQ ID NOs: 469–553 or 554–638, preferably SEQ ID NOs: 148 and 197, more preferably SEQ ID NOs: 489, 513 and 516). In some embodiments, the mutant protein comprises or consists of an amino acid sequence selected from SEQ ID NOs: 37–638. In some preferred embodiments, the mutant protein comprises or consists of an amino acid sequence selected from SEQ ID NOs: 469–553 or 554–638, preferably SEQ ID NOs: 148 and 197, and more preferably SEQ ID NOs: 489, 513 and 516.

Other mutations

In addition to the "IL-2R $\beta\gamma$ binding interface mutations", "B'C' loop region mutations" and "IL-2R α binding interface mutations" described above, the IL-2 mutant protein disclosed herein can also have one or more mutations in other regions or positions, as long as it retains one or more beneficial properties described above. For example, the IL-2 mutant protein disclosed herein may also comprise a substitution at position 125, such as C125S, C125A, C125T, or C125V, so as to provide additional advantages, such as improved expression or homogeneity or stability (see, e.g., U.S. Patent No. 4,518,584). As another example, the IL-2 mutant protein disclosed herein can also comprise a substitution at position 3, e.g., T3A, to remove the O-glycosylation at the N-terminus of IL2. Those skilled in the art know how to determine additional mutations that can be incorporated into the IL-2 mutant protein disclosed herein.

The sequence difference between the IL-2 mutant protein and the wild-type protein can be expressed in terms of

sequence identity or in terms of the number of different amino acids between the two. In one embodiment, the IL-2 mutant protein has at least 85%, 86%, 87%, 88%, or 89% identity, preferably more than 90% (preferably 95%) but preferably no more than 97%, and more preferably no more than 96% identity to the wild-type protein. In another embodiment, in addition to the three types of mutations described above in the present invention, the IL-2 mutant protein may also have no more than 15, e.g., 1–10, or 1–5, e.g., 0, 1, 2, 3 or 4, mutations relative to the wild-type protein. In one embodiment, the additional mutations may be conservative substitutions.

2. Fusion Protein and IL-2-Fc Dimer Protein

In one aspect, the present invention also provides a fusion protein comprising the IL-2 mutant protein disclosed herein. In one preferred embodiment, the IL-2 mutant protein disclosed herein is fused to another polypeptide, such as albumin, and preferably an antibody Fc fragment, which can provide improved pharmacokinetic properties.

In one embodiment, the present invention provides an IL-2 mutant protein fusion protein, which comprises the IL-2 mutant protein disclosed herein fused to an antibody Fc fragment.

The Fc fragment for use in the present invention may comprise a mutation that reduces or eliminates effector functions. In one preferred embodiment, the Fc fragment has reduced Fc-mediated effector functions, such as reduced or eliminated ADCC or ADCP or CDC effector functions. For example, in some particular embodiments, the Fc fragment for use in the present invention has mutations L234A/L235A or L234A/L235E/G237A that reduce binding to the Fcγ receptor.

In yet another preferred embodiment, the Fc fragment may have a mutation that leads to an increased serum half-life, e.g., a mutation that improves binding of the Fc fragment to FcRn.

In some embodiments, the Fc fragment fused to the IL-2 mutant protein is a human IgG Fc, e.g., human IgG1 Fc, human IgG2 Fc or human IgG4 Fc. In one embodiment, the Fc fragment comprises the amino acid sequence of SEQ ID NO: 12, or has at least 90% identity, e.g., 95%, 96%, 97%, 99% or higher identity, thereto.

In some embodiments, the IL-2 mutant protein is fused to the Fc via a linker. In some embodiments, the linker may be selected to enhance the activation of the Fc fusion protein on CD25⁺ T cells. In one embodiment, the linker is GSGS, preferably (G4S)₂.

In a further aspect, the present invention also provides a dimeric molecule comprising the IL-2 mutant protein disclosed herein fused to an Fc fragment. With such a dimeric molecule, the molecular weight can be increased to 60–80 kDa, and the renal clearance is greatly reduced. In addition, the half-life of the IL2-Fc fusion protein can be further extended by FcRn-mediated *in vivo* recycling. Preferably, the dimeric molecule, compared to a corresponding dimeric molecule comprising a wild-type IL-2-Fc fusion protein, has one or more of the following properties:

- an increased expression yield and/or purity, when expressed in mammalian cells (e.g., CHO or HEK293 cells);
- reducing or avoiding over-activation of lymphocytes and/or release of inflammatory factors caused by IL-2;
- more excellent pharmacokinetic properties, such as a delayed *in vivo* half-life; and
- low toxicity when administered *in vivo*, e.g., low cardiovascular toxicity (e.g., a low vascular leak side effect).

Preferably, the dimeric molecule of the IL-2 mutant protein disclosed herein shows a good anti-tumor effect and tolerance when administered in animals. The anti-tumor effect can be determined by measuring the tumor

inhibition rate in a tumor-bearing animal experiment as described in the examples. The tolerance can be determined by measuring the body weight and changes in the body weight of an animal model after administration as described in the examples.

In some embodiments, the present invention provides an IL-2-Fc dimer protein, which is a homodimer, wherein a first monomer and a second monomer comprise, from N-terminus to C-terminus, i) an IL-2 mutant protein; ii) a linker; and iii) an Fc fragment.

In other embodiments, the present invention provides an IL-2-Fc dimer protein, which is a heterodimer and comprises:

a) a first monomer, comprising, from N-terminus to C-terminus, i) an IL-2 mutant protein; ii) a linker; and iii) a first Fc fragment; and

b) a second monomer, comprising a second Fc fragment.

In some embodiments, the first Fc fragment and the second Fc fragment comprise a first heterodimerization mutation and a second heterodimerization mutation that promote the formation of the heterodimer from the first monomer and the second monomer, respectively. In some preferred embodiments, the first and second heterodimerization mutations comprise a combination of Knob:Hole mutations, such as the combination of mutations T366W/S354C:Y349C/T366S/L368A/Y407V.

In some preferred embodiments, the first heterodimerization mutation in the first Fc fragment includes a Knob mutation and the second heterodimerization mutation in the second Fc fragment includes a Hole mutation; alternatively, the first heterodimerization mutation in the first Fc fragment includes a Hole mutation and the second heterodimerization mutation in the second Fc fragment includes a Knob mutation.

As understood by those skilled in the art, Fc fragments suitable for the fusion protein and the dimeric molecule disclosed herein may be any antibody Fc fragment. In one embodiment, the Fc fragment of the present invention is effector function-silenced.

In one embodiment, the Fc fragment is modified in one or more properties selected from: the effector function of the Fc region and the complement activation function of the Fc region. In one embodiment, the effector function or complement activation function has been reduced or eliminated relative to a wild-type Fc region of the same isotype. In one embodiment, the effector function is reduced or eliminated by using a method selected from: reducing glycosylation of the Fc region, using an Fc isotype that naturally has a reduced or an eliminated effector function, and Fc region modification.

In one embodiment, the effector function is reduced or eliminated by reducing glycosylation of the Fc region. In one embodiment, the glycosylation of the Fc region is reduced by using a method selected from: producing the fusion protein or the dimeric molecule disclosed herein in an environment that does not allow wild-type glycosylation; removing carbohydrate groups already present in the Fc region; and modifying the Fc region so that wild-type glycosylation does not occur. In one embodiment, the glycosylation of the Fc region is reduced by using the method of modifying the Fc region so that wild-type glycosylation does not occur, e.g., including a mutation at position 297 in the Fc region so that the wild-type asparagine residue at that position is replaced with another amino acid that interferes with glycosylation at that position, e.g., an N297A mutation.

In one embodiment, the effector function is reduced or eliminated by at least one Fc region modification. In one embodiment, the at least one Fc region modification is selected from: an Fc region point mutation that impairs binding to one or more Fc receptors, selected from the following positions: 238, 239, 248, 249, 252, 254, 265, 268, 269, 270, 272, 278, 289, 292, 293, 294, 295, 296, 297, 298, 301, 303, 322, 324, 327, 329, 333, 335, 338, 340, 373, 376, 382, 388, 389, 414, 416, 419, 434, 435, 437, 438 and 439; an Fc region point mutation that impairs binding to C1q, selected from the following positions: 270, 322, 329 and 321; and an Fc region point mutation at position 132 of a CH1 domain. In one embodiment, the modification is an Fc region point mutation that impairs binding to C1q selected from the following positions: 270, 322, 329 and 321. In another embodiment, the modification is the elimination of some Fc regions.

As understood by those skilled in the art, to facilitate the formation of the heterodimer of the present invention, the Fc fragment of the dimeric molecule disclosed herein may comprise mutations that favor the dimerization of the first monomer and the second monomer. Preferably, corresponding Knob and Hole mutations are introduced into the first and second monomers based on the Knob-in-Hole technique.

Thus, in one embodiment, the dimeric molecule disclosed herein comprises:

- i) a homodimeric Fc-region of the human IgG1 subclass, optionally with mutations P329G, L234A and L235A, or
 - ii) a homodimeric Fc-region of the human IgG4 subclass, optionally with mutations P329G, S228P and L235E, or
 - iii) a heterodimeric Fc-region, wherein
 - a) one Fc-region polypeptide comprises a mutation T366W, and the other Fc-region polypeptide comprises mutations T366S, L368A and Y407V, or
 - b) one Fc-region polypeptide comprises mutations T366W and Y349C, and the other Fc-region polypeptide comprises mutations T366S, L368A, Y407V and S354C, or
 - c) one Fc-region polypeptide comprises mutations T366W and S354C, and the other Fc-region polypeptide comprises mutations T366S, L368A, Y407V and Y349C,
- or
- iv) a heterodimeric Fc-region of the human IgG4 subclass, wherein both Fc-region polypeptides comprise mutations P329G, L234A and L235A, and
 - a) one Fc-region polypeptide comprises a mutation T366W, and the other Fc-region polypeptide comprises mutations T366S, L368A and Y407V, or
 - b) one Fc-region polypeptide comprises mutations T366W and Y349C, and the other Fc-region polypeptide comprises mutations T366S, L368A, Y407V and S354C, or
 - c) one Fc-region polypeptide comprises mutations T366W and S354C, and the other Fc-region polypeptide comprises mutations T366S, L368A, Y407V and Y349C,
- or
- v) a heterodimeric Fc-region of the human IgG4 subclass, wherein both Fc-region polypeptides comprise mutations P329G, S228P and L235E, and
 - a) one Fc-region polypeptide comprises a mutation T366W, and the other Fc-region polypeptide comprises

mutations T366S, L368A and Y407V, or

- b) one Fc-region polypeptide comprises mutations T366W and Y349C, and the other Fc-region polypeptide comprises mutations T366S, L368A, Y407V and S354C, or
- c) one Fc-region polypeptide comprises mutations T366W and S354C, and the other Fc-region polypeptide comprises mutations T366S, L368A, Y407V and Y349C.

In some embodiments, the Fc region further comprises additional mutations that favor the purification of the heterodimer. For example, an H435R mutation (Eric J. Smith, *Scientific Reports* | 5:17943 | DOI: 10.1038/srep17943) can be introduced into one of the Fc regions of the heterodimer (e.g., an Fc region with Hole mutations) to facilitate the purification of the heterodimer using protein A. In other embodiments, for heterodimeric monomers comprising a hinge region, mutations such as C220S may also be introduced into the hinge region to facilitate the formation of the heterodimer.

As will be appreciated by those skilled in the art, linkers suitable for linking the IL-2 mutant protein and the Fc fragment in the fusion protein and dimeric molecule disclosed herein may be any linker known in the art. In some embodiments, the linker may comprise an IgG1 hinge, or may comprise a linker sequence selected from the following: (GS)_n, (GSGGS)_n, (GGGGS)_n and (GGGS)_n, wherein n is an integer of at least 1. Preferably, the linker comprises (G4S)₂, i.e., GGGGSGGGGS.

Thus, in one preferred embodiment, each monomer in the dimer of the present invention comprises an IL-2 mutant protein selected from SEQ ID NOs: 37–638 (particularly SEQ ID NOs: 469–553 or 554–638, preferably SEQ ID NOs: 489, 513 and 516) linked at the C-terminus to the amino acid sequence of SEQ ID NO: 12 by a linker (G4S)₂. In some preferred embodiments, the first monomer of the dimeric molecule comprises an IL-2 mutant protein selected from SEQ ID NOs: 37–638 (particularly SEQ ID NOs: 469–553 or 554–638, preferably SEQ ID NOs: 489, 513 and 516) linked at the C-terminus to the amino acid sequence of SEQ ID NO: 9 by a linker (G4S)₂; and the second monomer comprises an amino acid sequence of SEQ ID NO: 10.

3. Immunoconjugate

The present invention also provides an immunoconjugate comprising the IL2 mutant protein disclosed herein and an antigen-binding molecule. Preferably, the antigen-binding molecule is an immunoglobulin molecule, particularly an IgG molecule, an antibody, or an antibody fragment, and more particularly an Fab molecule or an scFv molecule. In some embodiments, the antigen-binding molecule specifically binds to an antigen present on a tumor cell or in tumor environment, such as an antigen selected from: fibroblast activation protein (FAP), A1 domain of tenascin-C (TNC A1), A2 domain of tenascin-C (TNC A2), extra domain B (EDB) of fibronectin, carcinoembryonic antigen (CEA), and melanoma-associated chondroitin sulfate proteoglycan (MCSP). Thus, the immunoconjugate disclosed herein can target the tumor cell or the tumor environment after being administered to a subject, thereby providing further therapeutic benefits, such as the feasibility of treatment at lower doses and the consequent low side effects, and enhanced anti-tumor effects.

In the immunoconjugate disclosed herein, the IL-2 mutant protein disclosed herein can be linked, either directly or through a linker, to another molecule or antigen-binding molecule, and in some embodiments, a proteolytic cleavage site is provided therebetween.

4. Polynucleotide, Vector, and Host

The present invention provides a nucleic acid encoding any of the IL-2 mutant proteins, fusion proteins, dimeric molecules or conjugates above. The polynucleotide sequence encoding the mutant protein disclosed herein can be generated by *de novo* solid phase DNA synthesis or by PCR mutagenesis of an existing sequence encoding the wild-type IL-2 using methods well known in the art. In addition, the polynucleotide and the nucleic acid disclosed herein may comprise a segment encoding a secretion signal peptide and are operably linked to a segment encoding the mutant protein disclosed herein so that secretory expression of the mutant protein disclosed herein can be directed.

The present invention also provides a vector comprising the nucleic acid disclosed herein. In one embodiment, the vector is an expression vector, such as a eukaryotic expression vector. The vector includes, but is not limited to, a virus, a plasmid, a cosmid, a λ phage, or a yeast artificial chromosome (YAC). In a preferred embodiment, the expression vector disclosed herein is a pYDO_017 expression vector.

In addition, the present invention also provides a host cell comprising the nucleic acid or the vector. Host cells suitable for replicating and supporting the expression of the IL-2 mutant protein, the fusion, the dimer or the immunoconjugate are well known in the art. Such cells can be transfected or transduced with a particular expression vector, and a large number of cells comprising vectors can be cultivated for inoculation in large-scale fermenters, so as to obtain sufficient IL-2 mutants, fusions, dimers or immunoconjugates for clinical application. In one embodiment, the host cell is eukaryotic. In another embodiment, the host cell is selected from a yeast cell and a mammalian cell (e.g., a CHO cell or a 293 cell). Examples of available mammalian host cell lines include SV40 transformed monkey kidney CV1 lines (COS-7), human embryonic kidney lines (293 or 293T cells, as described, for example, in Graham et al., *JGenVirol* 36,59 (1977)), baby hamster kidney cells (BHK), mouse Sertoli cells (TM4 cells, as described, for example, in Mather, *BiolReprod* 23,243-251 (1980)), monkey kidney cells (CV1), African green monkey kidney cells (VERO-76), human cervical cancer cells (HELA), canine kidney cells (MDCK), buffalo rat liver cells (BRL3A), human lung cells (W138), human liver cells (HepG2), mouse mammary tumor cells (MMT060562), TRI cells (as described, for example, in Mather et al., *AnnalsN.Y.AcadSci* 383,44-68 (1982)), MRC5 cells, and FS4 cells. Other available mammalian host cell lines include Chinese hamster ovary (CHO) cells, including dhfr-CHO cells (Urlaub et al., *Proc. Natl. Acad. Sci. USA* 77,4216 (1980)), and myeloma cell lines such as YO, NS0, P3X63, and Sp2/0. In one embodiment, the host cell is a eukaryotic cell, preferably a mammalian cell such as a Chinese hamster ovary (CHO) cell, a human embryonic kidney (HEK) cell, or a lymphocyte (e.g., YO, NS0, and Sp20 cells).

5. Preparation Method

In a further aspect, the present invention provides a method for preparing the IL-2 mutant protein, the fusion, the dimer or the conjugate disclosed herein, wherein the method comprises culturing a host cell comprising a nucleic acid encoding the protein, the fusion, the dimer or the conjugate under conditions suitable for expression of the IL-2 mutant protein, the fusion, the dimer or the conjugate, as provided above, and optionally isolating the protein, the fusion, the dimer or the conjugate from the host cell (or the host cell culture medium).

6. Assay

The IL-2 mutant protein provided herein can be identified, screened, or characterized for its physical/chemical properties and/or biological activities through a variety of assays known in the art.

In one aspect, the IL-2 mutant protein disclosed herein can be tested for its binding activity to an IL-2 receptor. For example, the binding to a human IL-2R α or β protein, IL-2R $\beta\gamma$ or IL-2R $\alpha\beta\gamma$ can be determined by methods known in the art, such as ELISA and Western blotting, or by the exemplary methods disclosed in the examples herein. For example, the flow cytometry can be used, wherein cells such as yeast display cells that are transfected to express the mutant protein on the cell surface react with a labeled (e.g., biotin-labeled) IL-2R α or β protein, IL-2R $\beta\gamma$ or IL-2R $\alpha\beta\gamma$ complex. Alternatively, the binding of the mutant protein to the receptor, including the binding kinetics (e.g., the K_D value), can be determined by a ForteBio assay in IL-2-Fc fusion or dimeric molecule form.

In a further aspect, the ability of the IL-2 mutant protein to bind to the IL-2 receptor can be measured indirectly by measuring the signaling and/or immune activation at the downstream of receptor binding.

Thus, in some embodiments, an assay for identifying the IL-2 mutant protein having a biological activity is provided. The biological activities may include, for example, the ability to induce proliferation of T cells and/or NK cells and/or Treg cells with IL-2 receptors, the ability to induce IL-2 signaling in T cells and/or NK cells and/or Treg cells with IL-2 receptors, reduced ability to induce apoptosis in T cells, the ability to induce tumor regression and/or to improve survival, and reduced *in vivo* toxicity properties, such as reduced vascular permeability. The present invention also provides an IL-2 mutant protein having such biological activities *in vivo* and/or *in vitro*, an Fc fusion thereof and a dimeric molecule comprising same.

Various methods known in the art can be used for determining the biological activities of the IL-2. For example, an assay suitable for testing the ability of the IL-2 mutant protein disclosed herein (e.g., in dimeric molecule form) to stimulate IFN- γ production by NK cells may comprise the steps of: incubating the cultured NK cells with the IL-2 mutant protein disclosed herein, and measuring the IFN- γ concentration in the culture medium by ELISA. IL-2 signaling induces several signaling pathways and involves JAK (Janus kinase) and STAT (signal transducers and activators of transcription) signaling molecules.

The interaction of the IL-2 with the β and γ subunits of the receptor results in phosphorylation of the receptor and JAK1 and JAK3 (which bind to the β and γ subunits, respectively). STAT5 then binds to the phosphorylated receptor and is phosphorylated on a very important tyrosine residue. This results in dissociation of STAT5 from the receptor, dimerization of STAT5, and translocation of STAT5 dimers to the nucleus where they facilitate the transcription of target genes. Thus, the ability of the mutant IL-2 polypeptide to induce signaling via the IL-2 receptor can be assessed, for example, by measuring the phosphorylation of STAT5. Details of this method have been disclosed in the examples. For example, PBMCs can be treated with the mutant IL-2 polypeptide, the fusion, the dimer or the immunoconjugate disclosed herein, and the level of phosphorylated STAT5 is determined by flow cytometry.

Furthermore, the effect of the mutant IL-2 on tumor growth and survival can be assessed in a variety of animal tumor models known in the art. For example, heterografts of cancer cell lines can be implanted into immunodeficient mice and treated with the mutant IL-2 polypeptide, the fusion, the dimer or the immunoconjugate disclosed herein. The *in vivo* anti-tumor effects of the mutant IL-2 polypeptide, the fusion, the dimeric molecule and the immunoconjugate disclosed herein can be determined based on tumor growth inhibition (e.g., calculated relative to an isotype control antibody). In addition, the *in vivo* toxicity of the mutant IL-2

polypeptide, the fusion, the dimeric molecule and the immunoconjugate disclosed herein can be determined based on changes in the body weight of animals (e.g., changes in the absolute body weight or percent changes in the body weight relative to the body weight before administration). The *in vivo* toxicity can also be determined based on mortality, life-time observations (visible symptoms of adverse effects, e.g., behavior, body weight, and body temperature), and clinical and anatomical pathology (e.g., measurement of blood chemistry values and/or histopathological analysis).

In a further aspect, the druggability (e.g., expression yield and product purity) of the mutant protein disclosed herein can be characterized by using methods known in the art. For the determination of the expression yield, when the mutant protein is secreted from the cultured cells and expressed in the culture supernatant, the cell culture fluid collected by centrifugation can be assayed for the protein content. Alternatively, the assay may be performed after one-step purification of the collected cell culture fluid, for example, after one-step affinity chromatography purification. For the determination of the purity of the product, the purity can be determined after one-step affinity chromatography purification of the collected culture supernatant of the production cells to determine the purification performance of the mutant protein. Preferably, the mutant protein disclosed herein, after being purified by this one-step affinity chromatography, has significantly higher purity than the wild-type protein, indicating that the mutant protein disclosed herein has a better purification performance. The purity determination method can be any conventional method known in the art, including, but not limited to, the SEC-HPLC method.

In a further aspect, the pharmacokinetic properties, e.g., half-life, of the mutant proteins, fusions, and dimeric molecules disclosed herein can be characterized by using methods known in the art.

7. Method for Engineering IL-2 Proteins

In one aspect, the present invention provides a method for obtaining an IL-2 mutant protein with improved properties and the IL-2 mutant protein obtained by using this method.

In one embodiment, the method disclosed herein comprises the following steps:

- (1) shortening a sequence of a B'C' loop region of IL-2 by mutation, and optionally introducing one or more mutations into a binding interface of IL-2 to IL-2R $\beta\gamma$ and/or introducing one or more mutations into a binding interface of IL-2 to IL-2R α ; and
- (2) expressing the IL-2 mutant protein in a mammalian cell (e.g., an HEK293 or CHO cell), for example, in the form of an Fc fusion (e.g., an FcLALA fusion).

In yet another embodiment, the method disclosed herein comprises the following steps:

- (1) introducing one or more mutations into a binding interface of IL-2 to IL-2R $\beta\gamma$, and optionally shortening a sequence of a B'C' loop region of IL-2 by mutation and/or introducing one or more mutations into a binding interface of IL-2 to IL-2R α ; preferably in one embodiment, not introducing a mutation into the binding interface of IL-2 to IL-2R α ; and
- (2) expressing the IL-2 mutant protein in a mammalian cell (e.g., an HEK293 or CHO cell), for example, in the form of an Fc fusion (e.g., an FcLALA fusion).

In any of the above embodiments, preferably, the shortened loop region has less than 10, 9, 8, 7, 6 or 5 amino

acids in length, and more preferably has 7 amino acids in length;

more preferably, the B'C' loop region mutation includes:

(a) a substitution of aa74 to aa83 in a B'C' loop region, for example, with a short B'C' loop sequence from four-helical short-chain cytokine IL family members, such as a B'C' loop sequence from IL-15, preferably, with a sequence GDASIH; or

(b) a truncation of aa74 to aa83 in the B'C' loop region, for example, by 1, 2, 3 or 4 amino acids at the C-terminus; preferably a truncation to form a sequence (Q/G)SKN(F/I)H, and more preferably a truncation to form a sequence selected from the following:

B'C' loop sequence
QSKNFH
GSKNFH
QSANFH
QSANIH

preferably, the IL-2R β γ binding interface mutation includes the IL-2R β γ binding interface mutation described above;

preferably, the IL-2R α binding interface mutation includes the IL-2R α binding interface mutation described above;

preferably, the mutant protein has the following improved properties: (i) improved expression yield and/or protein purity (e.g., purity after one-step affinity chromatography as determined by SEC-HPLC); and optionally (ii) weakened binding to IL2R β and/or (iii) altered binding to IL-2R α .

In one embodiment, the method of the present invention further comprises the following steps: after steps (1) and (2), identifying the following properties of the mutant protein: (i) the expression yield and/or protein purity after purification (e.g., purity after one-step affinity chromatography as determined by SEC-HPLC); and optionally (ii) the weakened binding to IL2R β , and/or (iii) the altered binding to IL-2R α . In yet another embodiment, the method of the present invention further comprises the following steps: after steps (1) and (2), identifying the following properties of the mutant protein: (i) the expression yield and/or protein purity after purification (e.g., purity after one-step affinity chromatography as determined by SEC-HPLC); and (ii) the weakened binding to IL2R β , and optionally the maintained binding to IL-2R α .

In one embodiment, the method comprises: identifying the IL-2 mutation that improves druggability (e.g., expression yield and/or product stability and/or homogeneity, such as one-step Fc affinity chromatography purity) before the combination of mutations in step (1) is performed. In one preferred embodiment, the druggability of the mutant protein is improved by substituting the B'C' loop with a shortened B'C' loop or truncating the B'C' loop to form a shortened B'C' loop.

In one embodiment, the method comprises: identifying the IL-2R β γ binding interface mutation and/or IL-2R α binding interface mutation that impart weakened binding to IL2R β and/or an altered ability to bind to IL-2R α relative to the wild-type IL-2 before the combination of mutations in step (1) is performed.

As will be appreciated by those skilled in the art, these mutations can be combined with mutations imparting further improved druggability or other improved properties to obtain an IL-2 mutant protein with multiple improved properties.

In one embodiment, the combination of an (e.g., known) IL-2R β binding interface mutation that results in weakened binding to IL-2R β and a (e.g., known) B'C' loop region mutation that improves the druggability is introduced into the IL-2 protein, and the properties are identified. In one preferred embodiment, the identification includes weakened binding to IL-2R β and improved druggability (e.g., improved expression and/or purity, and/or product stability and/or homogeneity), and optionally substantially unchanged or weakened or enhanced binding affinity for IL-2R α , relative to the wild-type IL-2.

In some embodiments, the parental wild-type IL-2 protein used as a mutation template preferably has at least 85%, or at least 90% or 95% identity to SEQ ID NO: 1, and more preferably is an IL-2 protein derived from human.

8. Pharmaceutical Composition and Pharmaceutical Preparation

The present invention also comprises a composition (including a pharmaceutical composition or a pharmaceutical preparation) comprising the IL-2 mutant protein or the fusion, dimeric molecule or immunoconjugate thereof, and a composition comprising the polynucleotide encoding the IL-2 mutant protein or the fusion, dimeric molecule or immunoconjugate thereof. Such compositions can further optionally comprise suitable pharmaceutical adjuvants, such as a pharmaceutical carrier and a pharmaceutical excipient known in the art, including buffers.

9. Combination Product

In one aspect, the present invention further provides a combination product comprising the mutant protein or the fusion, dimeric molecule or immunoconjugate thereof disclosed herein, and one or more other therapeutic agents (e.g., a chemotherapeutic agent, other antibodies, a cytotoxic agent, a vaccine, and an anti-infective active agent). The combination product disclosed herein can be used in a therapeutic method disclosed herein.

In some embodiments, the present invention provides a combination product, wherein the aforementioned other therapeutic agents refer to, for example, a therapeutic agent, such as an antibody, which is effective to stimulate an immune response and thus further enhance, stimulate or upregulate the immune response in a subject.

In some embodiments, the combination product is used for preventing or treating cancer. In some embodiments, the cancer is, e.g., a gastrointestinal cancer, e.g., rectal cancer, colon cancer, or colorectal cancer. In some embodiments, the combination product is used for preventing or treating an infection, such as bacterial infection, viral infection, fungal infection, and protozoal infection.

10. Therapeutic Method and Use

As used herein, the terms "individual" and "subject" are used interchangeably and refer to a mammal. Mammals include, but are not limited to, domesticated animals (e.g., cows, sheep, cats, dogs, and horses), primates (e.g., humans and non-human primates such as monkeys), rabbits, and rodents (e.g., mice and rats). In particular, a subject is a human.

As used herein, the term "treating" refers to a clinical intervention intending to alter the natural progress of a disease in an individual being treated. Desired therapeutic effects include, but are not limited to, preventing the occurrence or recurrence of diseases, alleviating symptoms, reducing any direct or indirect pathological outcomes

of diseases, preventing metastasis, delaying disease progression, improving or alleviating conditions, and alleviating or improving prognosis.

In one aspect, the present invention provides a method for stimulating the immune system of a subject, comprising administering to the subject an effective amount of a pharmaceutical composition comprising the IL-2 mutant protein, the fusion, the dimeric molecule or the immunoconjugate disclosed herein.

The weakened IL-2-Fc molecule of the present invention can effectively avoid excessive release of inflammatory factors caused by strong agonizing of lymphocytes, and has more stable and long-acting pharmacokinetic properties. Thus, in one embodiment, a sufficiently high drug exposure can be achieved in the human body with a lower single dose to avoid drug-related toxicity resulting from high C_{max} .

Thus, in some embodiments, the present invention relates to a method for enhancing the immune response of the body of a subject, comprising administering to the subject an effective amount of any of the IL-2 mutant proteins or the fusions or immunoconjugates thereof described herein. In some embodiments, the IL-2 mutant protein or the fusion or immunoconjugate thereof disclosed herein is administered to a subject with a tumor to stimulate an anti-tumor immune response. In other embodiments, the antibodies or the antigen-binding fragments thereof disclosed herein are administered to a subject with an infection to stimulate an anti-infection immune response.

In another aspect, the present invention relates to a method for treating a disease, such as cancer, in a subject, wherein the method comprises administering to the subject an effective amount of any of the IL-2 mutant proteins or the fusions or immunoconjugates thereof described herein. The cancer may be at an early, intermediate or advanced stage, or may be a metastatic cancer. In some embodiments, the cancer may be, e.g., a gastrointestinal cancer, e.g., rectal cancer, colon cancer, or colorectal cancer.

In another aspect, the present invention relates to a method for treating an infectious disease, e.g., chronic infection, in a subject, wherein the method comprises administering to the subject an effective amount of any of the IL-2 mutant proteins or the fragments thereof, or an immunoconjugate, a multispecific antibody, or a pharmaceutical composition comprising the antibodies or the fragments described herein. In one embodiment, the infection is virus infection.

In another aspect, the present invention relates to a method for treating a disease associated with Treg regulation in a subject, wherein the method comprises administering to the subject an effective amount of any of the IL-2 mutant proteins or the fragments thereof, or an immunoconjugate, a multispecific antibody, or a pharmaceutical composition comprising the antibodies or the fragments described herein. In one embodiment, the disease is associated with IL-2-mediated immune downregulation via Treg cells. In one embodiment, the disease is an autoimmune disease.

The mutant protein disclosed herein (or the pharmaceutical composition comprising the same, or the fusion, dimeric molecule or immunoconjugate thereof, and optionally an additional therapeutic agent) can be administered by any suitable method, including parenteral administration, intrapulmonary administration, intranasal administration, and, if required by locoregional treatment, intralesional administration. Parenteral infusion includes intramuscular, intravenous, intra-arterial, intraperitoneal or subcutaneous administration. The administration is carried out by any suitable means, such as injection, e.g., intravenous or subcutaneous injection, to some extent depending on whether the treatment is short-term or long-term. Various administration schedules

are encompassed herein, including, but not limited to, single administration or multiple administrations at multiple time points, bolus injection, and pulse infusion.

In order to prevent or treat a disease, the appropriate dosage of the mutant protein disclosed herein (used alone or in combination with one or more additional therapeutic agents) will depend on the type of the disease to be treated, the type of the antibody, severity and progression of the disease, the purpose for which the antibody is administered (prevention or treatment), previous treatments, clinical history of a patient, responses to the antibody, and the discretion of an attending physician. The antibody is suitably administered to a patient through a single treatment or through a series of treatments.

In a further aspect, the present invention also provides use of the IL-2 mutant protein, composition, immunoconjugate, fusion and dimeric molecule disclosed herein in preparation of a drug for use in the aforementioned method (e.g., for treatment).

The following examples are described to assist in understanding the present invention. The examples are not intended to be and should not be interpreted in any way as limiting the protection scope of the present invention.

Examples

Example 1: Design and Construction of IL-2R α Binding Interface Mutant of Interleukin-2

Design and construction of an interleukin-2 mutant library

Design of a mutant library

According to the crystal structure (PDB: 1Z92) (as shown in FIG. 1) of the complex of interleukin-2 (referred to as IL-2) and its alpha receptor CD25 (referred to as IL-2R α), the listed IL-2 residues at interaction sites were mutated as per Table 1. The wild-type IL-2 (UniProt: P60568, aa21-153, C125S, referred to as IL-2^{WT}) was used as a template for mutant library construction. According to the 50% original amino acids contained in each site, the remaining 50% was evenly shared by the "mutant amino acids" in Table 1. A yeast-based IL-2^{mutant} display library was designed and produced for the binding site of IL-2 to IL-2R α and designated IBYDL029 (Innoventbio Yeast Display Library). The library was screened for IL-2 mutants that did not bind to IL-2R α by flow cytometry FACS.

Table 1. Mutation sites for the IBYDL029 library

Sites	Amino acid residues	Mutant amino acids	Diversity
35	Lys(K)	D,E	3
37	Thr(T)	D,E,R,K,F,Y,W	8
38	Arg(R)	D,E,F,Y,W,A,V	8
41	Thr(T)	K,R,M,F,Y,W,Q,E	9
42	Phe(F)	K,R,A,E,Q	6
43	Lys(K)	E,D,F,Y,W	6
45	Tyr(Y)	R,K	3
61	Glu(E)	R,K,W,Y,L	6
62	Glu(E)	R,K,W,Y,L	6
68	Glu(E)	R,K,W,Y	5

72	Leu(L)	R,K,F,Y,W	6
----	--------	-----------	---

The sequence of IL-2^{WT} was set forth in SEQ ID NO: 1 in the present application. A C125S mutation was introduced at position 125 of the sequence to avoid the formation of a disulfide-bridged IL-2 dimer.

According to existing literature, the IL-2 mutant IL-2^{3X} does not bind to IL-2R α , and has unchanged binding to IL-2R β (Rodrigo Vazquez-Lombardi et al., *Nature Communications*, 8:15373, DOI: 10.1038/ncomms15373). IL-2^{3X} was displayed on the surface of yeasts and used as a control. The sequence of IL-2^{3X} was set forth in SEQ ID NO: 4. Similar to IL-2^{WT}, the protein also comprised a C125S mutation.

Identification of IL-2R α binding interface mutants

Expression and purification of IL-2 receptors

Vector construction

An avi tag (GLNDIFEAQKIEWHE, the tag peptide can be biotinylated under BirA enzyme catalysis) and 6 histidine tags (HHHHHH) were linked to the C-terminus of the sequences of the IL-2 receptors IL-2R α (UniProt: P01589, aa22-217) and IL-2R β (UniProt: P14784, aa27-240), which were constructed separately into pTT5 vectors (Addgene). The sequences of the receptors constructed were set forth in SEQ ID NOs: 5 and 6.

The IL-2 receptor $\beta\gamma$ complex was an Fc heterodimer based on Knobs in holes. The sequence of IL-2R β was constructed into the N-terminus of Fc-Knob (SEQ ID NO: 7), and the sequence of IL-2R γ was constructed into the N-terminus of Fc-Hole (SEQ ID NO: 8). They were constructed separately into pcDNA3.1 vectors, then co-transfected into Expi293 cells and expressed.

Plasmid transfection

Expi293 cells (Invitrogen) were passaged according to a desired transfection volume. The cell density was adjusted to 1.5×10^6 cells/mL the day before transfection. The cell density on the day of transfection was approximately 3×10^6 cells/mL. 1/10 (v/v) of the final volume of Opti-MEM medium (Gibco, Catalog No. 31985-070) was taken as a transfection buffer, added with expression plasmids constructed as described above, mixed well, and filtered with a 0.22 μ m filter for later use. An appropriate amount of polyethylenimine (PEI) (Polysciences, 23966) was added to the plasmids from the previous step (the mass ratio of plasmids to PEI was 1:3), mixed and incubated at room temperature for 10 min to give a DNA/PEI mixture. The DNA/PEI mixture was gently poured into HEK293 cells, mixed well, and cultured at 37 °C, 8% CO₂ for 24 h, followed by the addition of VPA (Sigma, Catalog No. P4543-100G) to reach a final concentration of 2 mM. Then 2% (v/v) Feed (1 g/L Phytone Peptone + 1 g/L Difco Select Phytone) was added and the resulting mixture was cultivated for another 6 days.

Purification of IL-2R α -His and IL-2R β -His proteins

Before purification, the collected cultures were centrifuged at 4500 rpm for 30 min, and the cells were discarded. The supernatant was filtered through a 0.22 μ m filter. A nickel column (5 mL HisTrap excel, GE, 17-3712-06) used for purification was soaked with 0.1 M NaOH for 2 h, and then washed with 5–10 column volumes of

ultra-pure water to remove alkali liquor. The column was equilibrated with 5 column volumes of binding buffer (20 mM Tris pH 7.4, 300 mM NaCl) before purification. The cell supernatant was passed through the equilibrated column and then 10 column volumes of wash buffer (20 mM Tris 7.4, 300 mM NaCl, 10 mM imidazole) was loaded on the column to remove non-specific binding impurity proteins. The target protein was then eluted with 3–5 column volumes of eluent (20 mM Tris 7.4, 300 mM NaCl, 100 mM imidazole). The collected protein was buffer-exchanged into PBS (Gibco, 70011-044) by ultrafiltration concentration, and further separated and purified using superdex200 increase (GE, 10/300GL, 10245605). The elution peak of the monomer was collected, and the equilibration buffer and elution buffer for the column were PBS (Gibco, 70011-044). 100 µg of the purified protein sample was taken and the protein purity was determined using a gel filtration column SW3000 (TOSOH Catalog No. 18675).

Purification of IL-2 receptor βγ protein

After culture, the mixture was centrifuged at 13000 rpm for 20 min, and the supernatant was collected and purified by a pre-packed column Hitrap Mabselect Sure (GE, 11-0034-95). The procedures were as follows: the packing column was equilibrated with 5 column volumes of equilibration buffer (0.2 M Tris, 1.5 M NaCl, pH 7.2) before purification; the collected supernatant was passed through the column, and then the column was washed with 10 column volumes of equilibration buffer to remove non-specific binding proteins; the packing was washed with 5 column volumes of elution buffer (1 M sodium citrate, pH 3.5), and the eluent was collected. The collected protein was buffer-exchanged into PBS (Gibco, 70011-044) by ultrafiltration concentration, and further separated and purified using superdex200 increase (GE, 10/300GL, 10245605). The elution peak of the monomer was collected, and the equilibration buffer and elution buffer for the column were PBS (Gibco, 70011-044). 100 µg of the purified protein sample was taken and the protein purity was determined using a gel filtration column SW3000 (TOSOH Catalog No. 18675).

Biotin labeling of IL-2Rα, IL-2Rβ and IL-2Rβγ proteins

Biotin labeling was performed using an enzymatic method, of which the procedures were as follows: an appropriate amount of each of the solutions of the IL-2Rα, IL-2Rβ and IL-2Rβγ proteins expressed and purified above was added with 1/10 (m/m) mass of His-BirA protein (UniProt: P06709), followed by ATP (Sigma, Catalog No. A2383-10G) with a final concentration of 2 mM, MgCl₂ with a final concentration of 5 mM, and D-biotin (AVIDITY, Catalog No. K0717) with a final concentration of 0.5 mM; the mixtures were incubated at 30 °C for 1 h, and purified by Superdex200 increase (GE, 10/300GL, 10245605) to remove excess biotin and His-BirA; the purified samples were verified by Streptavidin (SA) sensor (PALL, 18-5019) from Fortebio to confirm the successful biotin labeling.

Expression, purification and identification of IL-2^{mutant}-FC fusion protein

Construction of expression plasmids

The yeast-based IL-2^{mutant} display library IBYDL029 was screened by flow cytometry FACS for an IL-2^{mutant} that did not bind to IL-2Rα. The IL-2^{mutant} sequence obtained from the library screening was linked to FcLALA via two

GGGGS and constructed into a vector of pCDNA3.1 (Addgene) to express the IL-2^{mutant}-Fc fusion protein. In addition, as controls, IL-2^{WT} and IL-2^{3X} gene sequences were linked to FcLALA via two GGGGS and constructed into pCDNA3.1 to express the IL-2^{WT}-Fc and IL-2^{3X}-Fc fusion proteins. The Fc used in this example was the Fc of human IgG1 with the mutations L234A and L235A (referred to as FcLALA, SEQ ID NO: 12).

Expression and purification of fusion proteins of IL-2 and Fc

A vector containing the gene encoding the fusion protein was transferred into HEK293 cells using a chemical transfection method. The cultured HEK293 cells were transiently transfected using chemical transfection reagent PEI according to a scheme provided by the manufacturer. First, the plasmid DNA and the transfection reagent were prepared in a superclean bench. 3 mL of Opti-MEM medium (Gibco, Catalog No. 31985-070) was added to a 50 mL centrifuge tube, followed by 30 µg of the corresponding plasmid DNA. The Opti-MEM medium containing the plasmid was filtered with a 0.22 µm filter, and then added with 90 µg of PEI (1 g/L), and the mixture was let stand for 20 min. The DNA/PEI mixture was gently poured into 27 mL of HEK293 cells, mixed well, and cultured at 37 °C with 8% CO₂ for 20 h, followed by the addition of VPA to reach a final concentration of 2 mM. Then 2% (v/v) of Feed was added, and the resulting mixture was cultured for another 6 days.

After culture, the mixture was centrifuged at 13000 rpm for 20 min, and the supernatant was collected, and purified by pre-packed column Hitrap Mabselect Sure. The procedures were as follows: the packing column was equilibrated with 5 column volumes of equilibration buffer (0.2 M Tris, 1.5 M NaCl, pH 7.2) before purification; the collected supernatant was passed through the column, and then the column was washed with 10 column volumes of equilibration buffer to remove non-specific binding proteins; the packing was washed with 5 column volumes of elution buffer (1 M sodium citrate, pH 3.5), and the eluent was collected; 80 µL of Tris (2 M Tris) was added per 1 mL of eluent, and the mixture was buffer-exchanged into PBS using an ultrafiltration concentration tube, and then the concentration was determined. 100 µg of purified protein was taken with its concentration adjusted to 1 mg/mL. The purity of IL-2-Fc dimer protein was determined by gel filtration chromatography. The results are shown in Table 2. The sequences of the IL-2 mutants of the present invention listed in Table 2 are shown in FIG. 3.

Table 2. Expression yield and purity of IL-2-Fc in 293 cells

IL-2	Expression yield (mg/L)	Purity (SEC-HPLC)
IL-2 ^{WT}	18	45%
Mutant IL-2 ^{3X}	34	70%
Mutant Y29A2	37	79%
Mutant Y29A5	12	73%
Mutant Y29A6	1	37%
Mutant Y29B2	77	88%
Mutant Y29C5	10	60%
Mutant Y29D2	17	80%
Mutant Y29D6	23	60%
Mutant Y30B1	20	70%

Mutant Y30E1	60	78%
--------------	----	-----

Determination of affinity of IL-2^{mutant}-FC fusion proteins for their receptors

The equilibrium dissociation constants (K_D) for binding of the IL-2^{mutant}-FC fusion proteins of the present invention to their receptors were measured by bio-layer interferometry (ForteBio).

The ForteBio affinity assay was conducted according to the method (Estep, P et al., High throughput solution Based measurement of antibody-antigen affinity and epitope binding. *mAbs*, 2013.5(2): p. 270-8) known in the art. Briefly, the affinity of candidate IL-2^{mutant}-FC for each of IL-2R α and IL-2R β was measured as follows: a sensor was equilibrated offline in an assay buffer for 20 min and equilibrated online for 120 s to establish a baseline; the human biotin-labeled IL-2R α or IL-2R β was loaded onto an SA sensor (PALL, 18-5019) for ForteBio affinity assay; the sensor loaded with the biotin-labeled IL-2R α or IL-2R β was placed into a solution containing 100 nM IL-2^{mutant}-FC until to a plateau, and then transferred to an assay buffer for dissociation for at least 2 min to measure the association and dissociation rates. The kinetic analysis was performed using a 1:1 binding model.

In the assay described above, the affinity K_D values of IL-2^{mutant}-FC fusion proteins expressed by HEK293-F cells for their receptors are shown in Table 3. As a control, the affinity K_D values of the IL-2^{WT}-FC and IL-2^{3X}-FC fusion proteins measured using the same method are also shown in Table 3.

Table 3. Affinity K_D values of IL-2^{mutant}-FC fusion proteins for their receptors

IL-2	IL-2R α avidity	IL-2R β avidity
IL-2 ^{WT}	1.0E-08	4.1E-08
IL-2 ^{3X}	N.B	1.6E-08
Y29A2	Very weak	4.8E-10
Y29A5	N.B	3.4E-10
Y29A6	N.B	1.8E-09
Y29B2	N.B	3.4E-10
Y29C5	N.B	4.2E-10
Y29D2	Very weak	8.5E-11
Y29D6	N.B	1.9E-10
Y30B1	N.B	1.9E-10
Y30E1	N.B	5.9E-09

N.B: none binding

It can be seen from the affinity data, the binding of all of the above mutants obtained from the library IBYDL029 to IL-2R α was blocked.

Example 2: Construction, Screening and Identification of IL-2 Chimeric and Truncated Mutants

Design of an IL-2 B'C' loop chimera and an IL-2 B'C' loop truncate

B'C' loop: The linker sequence (FIG. 2A) of the B helix and C helix of the IL-2, comprising 11 amino acids, namely A73–R83.

By comparing the crystal structure of an IL-2 monomer (PDB: 1M47) with that of a complex (PDB: 2ERJ), it was found that the B'C' loop was absent from the crystal structure of the IL-2 monomer since it was very active in a

solution and could not form a relatively stable conformation.

By genetically engineering the B'C' loop, the stability of the B'C' loop, and thus that of the IL-2, was increased. We therefore observed the crystal structure of the human IL-15 (PDB: 2Z3Q) and found that its B'C' loop was relatively short and stable (FIG. 2B). Therefore, we designed an IL-2 chimeric molecule (L017) and 4 truncated molecules (L057–L060) (see Table 4).

Table 4. Optimized sequences of IL-2 B'C' loop

Name	B'C' loop sequence
L 001(IL-2 ^{WT})	AQSKNFHLRPR
L 017(IL-2 ^{hyb15BCL})	SGDASIH
L 057(IL-2 ^{truncate1})	AQSKNFH
L 058(IL-2 ^{truncate2})	AGSKNFH
L 059(IL-2 ^{truncate3})	AQSANFH
L 060(IL-2 ^{truncate4})	AQSANIH

Construction of expression plasmids

The wild-type IL-2 (UniProt: P60568, aa21-153, C125S, IL-2^{WT} for short), the IL-2 mutant IL-2^{3X} (R38D, K43E, E61R), and the B'C' loop chimeras and truncates were linked to the Fc of human IgG1 (L234A, L235A, FcLALA for short, SEQ ID NO: 12) via a GSGS linker sequence and constructed into pTT5 vectors to express the following proteins:

Protein	Structure	SEQ ID NOs
Y001	IL-2 ^{WT} -GSGS-FcLALA	SEQ ID NO: 13
Y002	IL-2 ^{3X} -GSGS-FcLALA	SEQ ID NO: 14
Y017	IL-2 ^{hyb15BCL} -GSGS-FcLALA	SEQ ID NO: 15
Y057	IL-2 ^{truncate1} -GSGS-FcLALA	SEQ ID NO: 16
Y058	IL-2 ^{truncate2} -GSGS-FcLALA	SEQ ID NO: 17
Y059	IL-2 ^{truncate3} -GSGS-FcLALA	SEQ ID NO: 18
Y060	IL-2 ^{truncate4} -GSGS-FcLALA	SEQ ID NO: 19

The B'C' loop chimera (Y017) or truncate (Y057), combined with the mutant Y30E1 (K35E, T37E, R38E, F42A) obtained by library screening, was linked to FcLALA via two GGGGS and constructed into pCDNA3.1 vectors to express the following proteins. Among them, Y092 had a chimeric B'C' loop sequence AGDASIH; Y144 had an additional T3A amino acid substitution on the basis of Y092, which was intended to remove the O-glycosylation at the N-terminus of IL-2.

Protein	Structure	SEQ ID NOs
Y089	IL-2. ^{Y30E1.truncate1} -2*(G4S)-FcLALA	SEQ ID NO: 20
Y092	IL-2. ^{Y30E1.15BCL} -2*(G4S)-FcLALA	SEQ ID NO: 21
Y144	IL-2. ^{Y30E1.15BCL.T3A} -2*(G4S)-FcLALA	SEQ ID NO: 22

Moreover, the IL-2^{WT} and the IL-2^{3X} were linked to FcLALA via two GGGGS and constructed into pCDNA3.1 vectors to express the following proteins:

Protein	Structure	SEQ ID NOs
Y040	IL-2 ^{3X} -2*(G4S)-FcLALA	SEQ ID NO: 23
Y045	IL-2 ^{WT} -2*(G4S)-FcLALA	SEQ ID NO: 24

The specific sequence information of the above protein molecules is shown in the sequence listing.

Expression and purification of fusion proteins

The above protein molecules were expressed in 293 cells and CHO cells, respectively. The expression in HEK293 cells was performed by using the method for expressing IL-2-Fc fusion proteins in Example 1. The expression in CHO cells was performed as follows.

ExpiCHO cells (Invitrogen) were passaged according to a desired cell volume. The cell density was adjusted to 3.5×10^6 cells/mL the day before transfection. The cell density (about $8-10 \times 10^6$ cells/mL) was measured on the day of transfection. The viability reached 95% or more. The cell density was adjusted to 6×10^6 cells/mL using ExpiCHO™ Expression Medium (Gibco, Catalog No. A29100-01). OptiPRO™ SFM (Gibco, Catalog No. 12309-019) at a final volume of 8% (v/v) was taken as a transfection buffer. A corresponding amount (0.8 µg/mL cell) of plasmid was added, and the mixture was well mixed and filtered through a 0.22 µm filter membrane to remove the bacteria. The reagent in ExpiFectamine™ CHO Transfection Kit (Gibco, Catalog No. A29130) was added in a cell ratio of 3.2 µL/mL. The complex formed with transfection reagent and the plasmid DNA was incubated at room temperature for 1–5 min, and slowly added to the cells. The cells were cultured at 37 °C with 8% CO₂ for 18 h, and then 0.6% (v/v) Enhancer and 30% (v/v) Feed were added. The cells were cultured for another 6 days.

After culture, the cell culture fluid was centrifuged at 13000 rpm for 20 min, and the supernatant was collected and purified by a pre-packed column Hitrap Mabsselect Sure (GE, 11-0034-95). The procedures were as follows: the packing column was equilibrated with 5 column volumes of equilibration buffer (20 mM Tris, 150 mM NaCl, pH 7.2) before purification; the collected supernatant was passed through the column, and then the column was washed with 10 column volumes of equilibration buffer to remove non-specific binding proteins; the packing was washed with 5 column volumes of elution buffer (100 mM sodium citrate, pH 3.5), and the eluent was collected. 80 µL of Tris (2 M Tris) was added per 1 mL of eluent, and the mixture was buffer-exchanged into PBS (Gibco, Catalog No. 70011-044) using an ultrafiltration concentration tube (MILLIPORE, Catalog No. UFC901096), and then the concentration was determined. 100 µg of purified protein was taken with its concentration adjusted to 1 mg/mL. The protein purity was determined by gel filtration column SW3000 (TOSOH Catalog No. 18675).

The fusion proteins of the B'C' loop chimera (Y017) and truncate (Y057/058/059) had greatly improved expression yields and one-step affinity chromatography purity in HEK293 cells compared to the wild-type IL-2 fusion protein (Y001). The results are shown below in Table 5.

Table 5. Expression yield and purity of IL-2 mutants in HEK293

Protein	Expression yield (mg/L)	Purity (SEC-HPLC)

Y001	16.35	44.74%
Y002	23.92	69.85%
Y017	54.47	93.45%
Y057	52.36	92.77%
Y058	49.86	99.09%
Y059	36.52	86.95%
Y060	21.20	66.33%

The fusion proteins comprising the B'C' loop chimeras (Y092 and Y144), truncate (Y089) and further mutant Y30E1 also had greatly improved expression yields and one-step affinity chromatography purity in CHO cells compared to the wild-type IL-2 fusion protein (Y045). The results are shown below in Table 6.

Table 6. Expression yield and purity of IL-2 mutants in CHO

Protein	Expression yield (mg/L)	Purity (SEC-HPLC)
Y040	20.28	40.75%
Y045	2.44	50.85%
Y089	249.6	99.11%
Y092	118.8	99.07%
Y144	114	97.78%

According to the above data, it can be seen that: 1) the point mutation molecules such as Y30E1 obtained by yeast library screening could block the binding to IL-2R α ; 2) the B'C' loop chimeric molecule and truncate molecule improved the molecule expression yield and purity; 3) the combination molecules of Y30E1 and the B'C' loop mutant achieved the blocking of IL-2R α and also the improved molecule expression yield and purity.

In vitro functional assays of mutants

The activation effect of each mutant on CD25⁺ cells and CD25⁻ cells was tested by detecting the activation effect of each IL-2^{mutant}-FC on p-STAT5 signals of primary human CD8⁺ T cells. The specific steps are as follows:

1. Thawing PBMC cells:

- a) PBMC cells (Allcells, Catalog No. PB005F, 100M package) were taken out from liquid nitrogen, and then rapidly placed in a 37 °C water bath for thawing;
- b) the cells were added to 10 mL of preheated X-VIVO15 (Lonza, Catalog No. 04-418Q) culture medium containing 5% human AB serum (GemCell, Catalog No. 100-512) and 1 % DNase (STRMCELL, Catalog No. 07900), centrifuged at 400 G and 25 °C for 10 min (the subsequent centrifugation was under the same condition) and washed once;
- c) 20 mL of culture medium was added to resuspend the cells, and the cells were cultured overnight in a 37 °C carbon dioxide incubator.

2. Purifying human CD8⁺ T cells:

- a) the cell suspension obtained in step 1 was pipetted, and after centrifugation, the supernatant was discarded;

- b) a mixture of 1 mL of Robosep buffer (STEMCELL, Catalog No. 20104), 100 μ L of human AB serum, and 100 μ L of negative screening antibody in human CD8⁺ T cell purification kit (Invitrogen, Catalog No. 11348D) was added to resuspend the cells;
 - c) after mixing well, the cells were incubated for 20 min at 4 °C and shaken every 5 min;
 - d) after incubation, 10 mL of Robosep buffer was added, and the cells were centrifuged and washed twice;
 - e) meanwhile, 1 mL of magnetic microspheres (human CD8⁺ T cell purification kit) was taken, and 7 mL of Robosep buffer was added; the mixture was placed on a magnetic frame for 1 min to discard the supernatant, and the magnetic microspheres were pre-washed;
 - f) the microspheres and the cells were resuspended with 1 mL of Robosep buffer, and after mixing well, the mixture was subjected to rotary incubation for 30 min at room temperature;
 - g) after incubation, 6 mL of Robosep buffer was added and the mixture was placed on a magnetic frame for 1 min, followed by the collection of the supernatant;
 - h) the collected liquid was placed on the magnetic frame for 1 min, and the supernatant was collected;
 - i) centrifugation was performed to discard the supernatant, the cells were resuspended using a preheated T culture medium, and the cell density was adjusted to 1×10^6 /mL;
 - j) 1/3 of the cells were taken to stimulate the expression of CD25 later, and the remaining cells were placed in a 37 °C carbon dioxide incubator for static culture overnight.
3. Stimulating CD8⁺ T cells to express CD25:
- a) 1/3 of the CD8⁺ T cells purified in step 2 were taken, into which magnetic microspheres of an anti-human CD3/CD28 antibody (GIBCO, Catalog No. 11131D) were added (the ratio of cells to microspheres was 3:1);
 - b) the mixture was placed in a 37 °C carbon dioxide incubator for static culture for three days;
 - c) 10 mL of culture medium was added to wash the cells twice;
 - d) the culture medium was added to adjust the cell density to 1×10^6 /mL, and the cells were placed in a 37 °C carbon dioxide incubator for static culture for 2 days.
4. Detecting the purity and expression level of the cells:
- a) an anti-human CD8-PE antibody (Invitrogen, Catalog No. 12-0086-42), an anti-human CD25-PE antibody (eBioscience, Catalog No. 12-0259-42), and an isotype control antibody (BD, Catalog No. 556653) were adopted to detect CD8 and CD25 of the cells;
 - b) the cells in step 2 were CD8⁺ CD25⁻ T cells, and the cells in step 3 were CD8⁺ CD25⁺ T cells.
5. Detecting the EC₅₀ value of each IL-2^{mutant}-FC in activating p-STAT5 signals in CD8⁺ CD25⁻ T cells:
- a) CD8⁺ CD25⁻ T cells were added to 96-well U-bottom plates (Costar, Catalog No. CLS3799-50EA) at 1×10^5 cells per well;
 - b) the IL-2^{mutant}-FC, the commercialized IL-2 (R&D, Catalog No. 202-IL-500), the IL-2^{WT}-FC, and the IL-2^{3X}-FC, each of 100 μ L, were added and 4-fold diluted in gradient from a maximum concentration of 266.7 nM, for a total of 12 dilution gradients, and the cells were incubated in a 37 °C incubator for 20 min;
 - c) 55.5 μ L of 4.2% formaldehyde solution was added to immobilize the above cells at room temperature for 10 min;

- d) centrifugation was performed to discard the supernatant, and 200 μ L of ice methanol (Fisher, Catalog No. A452-4) was added to resuspend the cells, which were then incubated in a 4 °C refrigerator for 30 min;
- e) centrifugation was performed to discard the supernatant, and the residue was washed 3 times with 200 μ L of staining buffer (BD, Catalog No. 554657);
- f) 200 μ L of permeabilization/fixation buffer (BD, Catalog No. 51-2091KZ) containing anti-p-STAT5-AlexFlour647 (BD, Catalog No. 562076, 1:200 dilution) was added, and the cells were incubated in the dark for 3 h at room temperature;
- g) the cells were washed with staining buffer for three times, resuspended with 100 μ L of staining buffer, and detected using a flow cytometer;
- h) the EC₅₀ values to activate p-STAT5 signals were plotted using the IL-2 molecule concentration as the abscissa and the AlexFlour647 median fluorescence value as the ordinate, and the results are shown below in Table 7.
6. Detecting the EC₅₀ value of each IL-2^{mutant}-FC in activating p-STAT5 signals in CD8⁺ CD25⁺ T cells:
- a) CD8⁺ CD25⁺ T cells were added to 96-well U-bottom plates at 1×10^5 cells per well;
- b) the EC₅₀ values to activate p-STAT5 signals were plotted through steps same as b-h in step 5, and the results are shown in Table 7.

Table 7. EC₅₀ of IL-2 mutants activating p-STAT5 signals in CD25^{+/−} T cells and ratios thereof

	R&D IL2	Y045	Y040	Y30E1	Y089	Y092
CD25-pSTAT5 EC ₅₀	0.4697	3.793	8.399	3.768	2.196	0.6644
CD25+pSTAT5 EC ₅₀	0.0009973	0.001919	3.717	2.186	0.3696	0.3729
Ratio of CD25 [−] EC ₅₀ /CD25 ⁺ EC ₅₀	470.9716	1976.5503	2.2596	1.7237	5.9416	1.7817

Example 3: Design of IL-2 Weakened Mutants

Design of IL-2 weakened molecules

This example was intended to further improve the pharmacokinetics (PK) of IL-2 mutants and to extend the half-lives of the molecules while reducing the toxicity of the molecules. Based on the analysis of the crystal structure of the IL-2 complex (FIG. 4) (PDB: 2ERJ), the amino acids at the interface where IL-2 contacted IL-2R β were selected and mutated to reduce the affinity between them.

Verification was performed based on IL-2R α binding interface amino acid mutations, IL-2 B'C' loop optimization and IL-2R $\beta\gamma$ binding interface amino acid mutations, as well as two format forms. The design of molecules is shown in Table 8. Optionally, these molecules may further comprise a T3A mutation to remove the O-glycosylation at the N-terminus of IL2.

Table 8. Design of IL-2 mutants

IL-2R $\beta\gamma$ binding	IL-2R α binding	B'C' Loop engineering	Molecular sequence
-----------------------------	------------------------	-----------------------	--------------------

interface	interface		
L12, E15, H16, L19, D20, D84, S87, N88, V91, I92, E95, Q126 (single or multiple point mutations)	Y30E1(K35E, T37E, R38E, F42A)	WT (wild-type)	See the sequence listing and the description thereof for specific exemplary molecules.
		Replacement with human IL-15 B'C' loop	
		Truncation of human IL-2 B'C' loop	
	K35E, T37E, R38E	WT (wild-type)	
		Replacement with human IL-15 B'C' loop	
		Truncation of human IL-2 B'C' loop	
	F42A	Replacement with human IL-15 B'C' loop	
		Truncation of human IL-2 B'C' loop	
	WT (wild-type)	Replacement with human IL-15 B'C' loop	
		Truncation of human IL-2 B'C' loop	

According to the above design, IL-2^{mutant} with the following sequence structure (from N-terminus to C-terminus) was specifically constructed for expression to produce format 1 molecules:

- an IL-2 mutant sequences with amino acid sequences of SEQ ID NOs: 37–638;
- a linker sequence GGGGSGGGGS; and
- an Fc sequence of SEQ ID NO: 12.

According to the above design, IL-2^{mutant}-Fc.Knob and Fc.Hole with the following sequence structure (from N-terminus to C-terminus) was specifically constructed for expression to produce format 2 molecules:

(1) IL-2^{mutant}-Fc.Knob

- an IL-2 mutant sequences with amino acid sequences of SEQ ID NOs: 37–638;
- a linker sequence GGGGSGGGGS; and
- an Fc.Knob sequence of SEQ ID NO: 9; and

(2) Fc.Hole

- an Fc.Hole sequence of SEQ ID NO: 10.

Expression and purification of IL-2 weakened mutants and determination of their affinity for receptors

In the case of format 1, bivalent IL-2 mutant molecules were constructed by linking IL-2 mutants to the N-terminus of IgG1FcLALA via two G4S. Format 2 was a Knob-in-hole-based heterodimer of IgG1FcLALA, wherein monovalent IL-2 mutant molecules were constructed by linking IL-2 mutant molecules to the N-terminus of IgG1FcLALA-Knob via two G4S. All sequences were constructed into pcDNA3.1 vectors.

Expression and purification of proteins: the experimental procedure was the same as in Example 2.

The equilibrium dissociation constants (K_D) for binding of the IL-2 mutants described above in the present

invention to their receptors were measured by biological optical interferometry (ForteBio).

The ForteBio affinity assay was conducted according to the method (Estep, P et al., High throughput solution Based measurement of antibody-antigen affinity and epitope binding. *mAbs*, 2013.5(2): p. 270-8) known in the art. The affinity of a candidate molecule for each of IL-2R α , IL-2R β and IL-2R $\beta\gamma$ was measured: a sensor was equilibrated offline in an assay buffer for 20 min and equilibrated online for 120 s to establish a baseline; the human biotin-labeled IL-2R α , IL-2R β or IL-2R $\beta\gamma$ was loaded onto an SA sensor (PALL, 18-5019) for ForteBio affinity assay; the sensor loaded with the IL-2 receptor was placed into a solution containing 100 nM IL-2 mutant molecules to a plateau, and then transferred to an assay buffer for dissociation for at least 2 min to measure the association and dissociation rates. The kinetic analysis was performed using a 1:1 binding model.

The experimental results are shown in Table 9. The expression yields and purity of the IL-2 mutants were improved relative to the wild-type (Y045), and meanwhile, the introduction of the IL-2R $\beta\gamma$ binding interface amino acid mutations led to different levels of reductions in the affinity for IL-2R β and IL-2R $\beta\gamma$. The structures of the molecules in the table below are shown in FIG. 6.

Table 9. Expression of IL-2 mutants in HEK293 and their affinity for IL-2 receptors

Molecule name	Expression yield (mg/L)	Purity (SEC-HPLC)	K _D (M) for IL-2R α	K _D (M) for IL-2R β	K _D (M) for IL-2R $\beta\gamma$
Y045	11.9	50.85%	1.05E-09	2.45E-08	-
Y144	114	97.78%	N.B.	2.95E-09	8.67E-11
2688	156	84.38%	-	7.90E-09	1.50E-10
2113	295	97.36%	-	1.36E-08	2.47E-10
2131	281	97.20%	-	1.19E-08	4.67E-10
2154	273	97.22%	-	6.08E-09	-
2162	167.3	96.96%	-	3.71E-08	3.13E-10
2714	158.2	85.16%	-	3.03E-08	4.38E-10
2732	166.5	84.67%	-	N.B.	3.18E-09
2755	168.7	85.02%	-	6.32E-09	5.37E-10
2763	147.4	85.53%	-	1.71E-08	1.60E-09
2114	244.4	97.77%	-	1.13E-08	1.72E-10
2115	256.5	-	-	1.61E-08	4.59E-10
2116	239.4	92.05%	-	1.76E-08	3.74E-10
2132	230.1	95.23%	-	N.B.	1.99E-09
2133	240.5	97.22%	-	N.B.	7.68E-09
2141	250.6	96.15%	-	7.56E-09	1.12E-10
2092	346.8	95.57%	-	2.31E-09	1.53E-10
2158	225	96.61%	-	6.77E-09	3.58E-10
2107	307.7	91.97%	-	N.B.	2.63E-09

2096	294.6	96.33%	-	1.39E-08	1.12E-10
2097	220.5	96.37%	-	1.35E-08	1.18E-10
2172	121.9	96.60%	-	2.78E-09	-
2257	131.4	88.47%	-	7.14E-10	-
2258	145.6	77.64%	-	1.39E-09	-
2259	145.9	86.68%	-	-	-
2260	124.2	83.24%	-	-	-
2262	63.9	96.89%	-	1.05E-08	-
2263	100.4	70.62%	-	2.77E-08	-
2166	221.7	97.02%	-	3.30E-07	1.72E-09
2167	144.3	96.24%	-	2.85E-08	2.87E-10
2168	129.7	96.59%	-	2.33E-08	6.97E-09
2169	105.2	96.64%	-	2.47E-08	6.68E-09
2170	128.8	96.57%	-	4.96E-08	8.61E-10
2171	125.7	95.44%	-	1.53E-08	1.58E-10
2478	90.7	98.56%	-	N.B.	-
2454	100	90.47%	-	N.B.	-
2481	60	97.97%	-	N.B.	-
3079	100	93.34%	7.29E-09	N.B.	3.79E-08
3055	130	85.74%	8.06E-09	N.B.	3.61E-08
3082	100	94.43%	8.17E-09	N.B.	2.65E-08

Note: "-" indicates no detection was performed; "N.B." represents non-bound.

Example 4: *In Vitro* Functional Assays of IL-2 Mutants

Detection of pSTAT5 signals caused by IL-2 mutants in human T lymphocytes

The binding of IL-2 to an IL-2 receptor on the surface of a T cell will activate the JAK-STAT signaling pathway of the human T lymphocyte. The phosphorylation level of STAT5 is an important measure for the activation level of the signaling pathway. Normal T lymphocytes do not substantially express IL-2R α . The activation activity of different IL-2 mutant molecules for human T cells was assessed by detecting the pSTAT5 signal caused by the IL-2 mutant molecule in T lymphocytes.

Experimental materials and methods:

Experimental method:

1. Thawing of PBMC cells

(1) PBMCs (All Cells, Catalog No. PB004F-C, No. LP191011A/LP190529) cryopreserved in liquid nitrogen were thawed by rapidly shaking at 37 °C.

(2) The cells were slowly added to 10 mL of CTS medium (Gibco, Catalog No. A3021002, Lot No. 1989823, preheated at 37 °C and containing 100 μ L of DNase).

(3) The medium was centrifuged at 300 g for 8 min, and the supernatant was removed.

(4) The residue was resuspended in 10 mL of CTS. The suspension was transferred to a T75 culture flask (NUNC, Catalog No. 156499) and stabilized in a 5% incubator at 37 °C overnight.

2. pSTAT5 test

(1) The suspended PBMCs cultured overnight were plated on to a 96-well U-plate (Corning, Catalog No. CLS3799-50EA) at 5×10^5 cells/well.

(2) Different diluted test antibodies were added to the 96-well U-plate, and the cells were incubated with the test antibodies at 37 °C for 30 min.

(3) The mixtures were centrifuged at 400 g for 5 min, and the supernatants were removed.

(4) A 4% tissue cell fixation solution (Solarbio, Catalog No. P1110) was added at 200 μ L/well, and the mixtures were centrifuged at 400 g at room temperature for 30 min.

(5) A perm buffer (BD, Catalog No. 558050) was added at 200 μ L/well, and the plate was let stand at 4 °C for 30 min and centrifuged at 400 g for 10 min.

(6) A perm/wash Buffer (BD, Catalog No. 558050, Lot No. 7271605) was added at 200 μ L/well. The cells were washed twice.

(7) Antibody stain solutions were prepared. The amount of pSTAT5 antibody (BD, Catalog No. 562076, Lot No. 9141872) was 3 μ L/100 μ L perm/wash Buffer/well. The amounts of the BV421 anti-human CD3 antibody (Biolegend, Catalog No. 300434, Lot No. B271302), FTIC anti-human CD4 antibody (Biolegend, Catalog No. 300506, Lot No. B283935) and AF700 anti-human CD8a (Biolegend, Catalog No. 300924, Lot No. B253967) were 1 μ L/100 μ L perm/wash Buffer/well. Incubation was performed at room temperature for 1.5 h, followed by 2 washings with perm/wash Buffer.

(8) Resuspension was performed in 150 μ L perm/wash Buffer/well, followed by a flow cytometry assay.

Experimental results:

The pSTAT5 effect assay results of IL-2 mutant molecules in normal T lymphocytes (CD4⁺ T cells and CD8⁺ T cells) are shown in FIGs. 7A, 7B, 7C, 7D and 7E.

The phosphorylation levels of CD4⁺ and CD8⁺ T cells represent the proliferation capacity of the cells and the activity of the cells. It can be seen from FIG. 7 and Table 10 that the phosphorylation levels of T cells caused by the IL-2 mutants were reduced to different degrees by mutating one or more amino acids at the IL-2R β binding interface, relative to the molecules Y-144 (format 1) and 2688 (format 2) without mutations at the IL-2R β binding interface.

Table 10. Ratios of reductions in the activation activity of IL-2 mutants for CD4⁺ or CD8⁺ T cells

Ratio of reduction	10–50 times	50–100 times	100–1000 times	>1000 times
IL-2 mutant EC ₅₀ (CD4 ⁺ or CD8 ⁺)/Y-144 EC ₅₀	2154, 2096, 2257	2115, 2171	2113, 2116, 2158, 2258, 2167	2131, 2162, 2107, 2166, 2168, 2169, 2170
IL-2 mutant EC ₅₀ (CD4 ⁺ or CD8 ⁺)/2688 EC ₅₀	2714		2763	2732

Detection of pSTAT5 signals caused by IL-2 mutants in activated T lymphocytes

The binding of IL-2 to an IL-2 receptor on the surface of a T cell will activate the JAK-STAT signaling pathway of the T lymphocyte. The phosphorylation level of STAT5 is an important measure for the activation level of the signaling pathway. After the T lymphocyte is activated, the abundance of IL-2R α (CD25) on the surface of the T cell is significantly increased.

Experimental method:

1. Thawing of PBMC cells

(1) PBMCs (All Cells, Catalog No. PB004F-C, No. LP191011A) cryopreserved in liquid nitrogen were thawed by rapidly shaking at 37 °C.

(2) The cells were slowly added to 10 mL of CTS medium (Gibco, Catalog No. A3021002, Lot No. 1989823, preheated at 37 °C and containing 100 μ L of DNase).

(3) The medium was centrifuged at 300 g for 8 min, and the supernatant was removed.

(4) The residue was resuspended in 10 mL of CTS. The suspension was transferred to a T75 culture flask (NUNC, Catalog No. 156499) and stabilized in a 5% incubator (Thermo, Catalog No. 3111) at 37 °C overnight.

2. Activation and resting of T lymphocytes

(1) The suspended PBMCs cultured overnight were counted, and activated and stimulated for 48 h by adding an equal number of CD3/CD28 Beads (Invitrogen, Catalog No. 11131D, Lot No. 00783216).

(2) The beads and medium were removed and the activated cells were washed.

(3) The activated cells were transferred to a T75 culture flask and rested at 37 °C/5% for 48 h.

3. pSTAT5 test

(1) The cells were plated on to a 96-well U-plate (Corning, Catalog No. CLS3799-50EA) at 5×10^5 cells/well.

(2) Different diluted test antibodies were added to the 96-well U-plate, and the cells were incubated with the test antibodies at 37 °C for 30 min.

(3) The mixtures were centrifuged at 400 g for 5 min, and the supernatants were removed.

(4) A 4% tissue cell fixation solution (Solarbio, Catalog No. P1110) was added at 200 μ L/well, and the mixtures were centrifuged at 400 g at room temperature for 30 min.

(5) A perm buffer (BD, Catalog No. 558050) was added at 200 μ L/well, and the plate was let stand at 4 °C for 30 min and centrifuged at 400 g for 10 min.

(6) A perm/wash Buffer (BD, Catalog No. 558050, Lot No. 7271605) was added at 200 μ L/well. The cells were washed twice.

(7) Antibody stain solutions were prepared. The amount of pSTAT5 antibody (BD, Catalog No. 562076, Lot No. 9141872) was 3 μ L/100 μ L perm/wash Buffer/well. The amounts of the BV421 anti-human CD3 antibody (Biolegend, Catalog No. 300434, Lot No. B271302), FTIC anti-human CD4 antibody (Biolegend, Catalog No. 300506, Lot No. B283935) and AF700 anti-human CD8a (Biolegend, Catalog No. 300924, Lot No. B253967) were 1 μ L/100 μ L perm/wash Buffer/well. Incubation was performed at room temperature for 1.5 h, followed by 2 washings with perm/wash Buffer.

(8) Resuspension was performed in 150 μ L perm/wash Buffer/well, followed by a flow cytometry assay.

Experimental results

The pSTAT5 effect assay results of the IL-2 mutant molecules in CD8⁺T cells, CD4⁺ CD25⁻T cells, NK cells (CD3⁻ CD56⁺) and Treg cells (CD3⁺ CD4⁺ CD25⁺) are shown in FIGs. 8A–G and Tables 11–12. It can be seen from the results that the IL-2 mutant molecules of this study had weaker pSTAT5 activity on lymphocytes than human wild-type IL-2 (rhIL-2, R&D systems, Catalog No. 202-IL) while showing great selectivity for Treg cells relative to other lymphocytes.

Table 11. EC₅₀ of pSTAT5 of rhIL-2 and IL-2 mutants on different lymphocytes

EC ₅₀ (nM)	CD8 ⁺ T	CD4 ⁺ CD25 ⁻ T	NK	Treg
rhIL-2	1.685	0.1024	0.02422	0.0003881
2478	21740	1475	22.08	0.06178
2454	~ 34240531	636.5	147.6	0.1146
2481	~ 34240531	636.5	147.6	0.1146
3079	275.4	63.16	2.298	0.08149
3055	~ 28361571	578.4	83.79	1.165
3082	~ 33933462	319.6	82.27	9.002

Table 12. Ratios of selectivity of IL-2 mutants for Treg cells to that for other lymphocytes

Ratio (other lymphocytes EC ₅₀ /Treg cells)	CD8 ⁺ T	CD4 ⁺ CD25 ⁻ T	NK	Treg
2478	351893.8168	23875.04047	357.3972159	1
2454	298782993	5554.101222	1287.958115	1
2481	28232534.83	1632.687734	1290.859667	1
3079	3379.555774	775.0644251	28.19977911	1
3055	24344696.14	496.4806867	71.92274678	1
3082	3769546.99	35.50322151	9.139080204	1

Example 5: *In Vivo* Anti-tumor Efficacy of IL-2 Mutant Molecule

To demonstrate the *in vivo* anti-tumor efficacy of the IL-2 mutant molecules, C57 mice were inoculated with MC38 cells to determine the anti-tumor efficacy of the IL-2 mutant molecules (Y144, 2113 and 2162) of the present invention (the structures of the molecules 2113 and 2162 are shown in FIG. 6). SPF female C57 mice (14–17 g, purchased from Beijing Vital River Laboratory Animal Technology Co., Ltd.) with certificate No. 110011201109499961 were used in the experiment.

The MC38 cells were subcultured conventionally for subsequent *in vivo* study. The MC38 cells were collected by centrifugation and dispersed in PBS (1×) to form a cell suspension with a cell concentration of 5×10⁶ cells/mL.

On day 0, 0.2 mL of the cell suspension was subcutaneously inoculated into the right abdominal region of the C57 mice to establish MC38 tumor-bearing mouse models.

7 days after the tumor cell inoculation, the tumor volume in each mouse was measured. The mice were divided into groups of 6. The dosages and routes of administration are shown in Tables 13 and 14. Administration was performed on days 7, 14 and 21 after the inoculation. The tumor volume and body weight of the mice were monitored twice a week for 25 days, as shown in FIGs. 9A and 9B. On day 25 after inoculation, the relative tumor growth inhibition (TGI%) was calculated by the following formula: $TGI\% = 100\% \times (\text{control group tumor volume} - \text{treatment group tumor volume}) / (\text{control group tumor volume} - \text{control group tumor volume before administration})$. Tumor volume measurement: The maximum length of major axis (L) and maximum length of minor axis (W) of tumors were measured with a vernier caliper, and tumor volume was calculated using the following formula: $V = L \times W^2/2$. The mice were weighted using an electronic balance.

Table 13. Experimental design (note: administration was performed every 7 days, 3 times in total)

Groups	Dosage of administration	Number of administration	Route of administration
h-IgG*	3 mg/kg	Q7Dx3	Intraperitoneal
Y144	1 mg/kg	Q7Dx3	Intraperitoneal
Y144	3 mg/kg	Q7Dx3	Intraperitoneal
2113	1 mg/kg	Q7Dx3	Intraperitoneal
2113	3 mg/kg	Q7Dx3	Intraperitoneal
2162	1 mg/kg	Q7Dx3	Intraperitoneal
2162	3 mg/kg	Q7Dx3	Intraperitoneal

* h-IgG: purchased from Equitech-Bio, Lot No. 161206-0656, 1 g/vial, prepared at 10 mg/mL with PBS.

The tumor volume measurements are shown in FIG. 9A. On day 25 after inoculation, compared to h-IgG, the weakened IL-2 molecules 2113 (3 mg/kg) and 2162 (3 mg/kg) had single-drug inhibition rates of 71.4% and 33.8%, respectively. The results show that the engineered IL2 molecules (2113 and 2162) had an anti-tumor effect and achieved a dose-dependent response. Meanwhile, the body weight of the mice was measured. As shown in FIGs. 9B and 9C, there was no significant difference in body weight of mice in the molecule 2113 (1 mg/kg), 2162 (1 mg/kg) and 2162 (3 mg/kg) groups. In contrast, in the group where the molecule Y144 not weakened was administered, the mice were intolerant and died before the end of the 25-day monitoring period.

The anti-tumor *in vivo* efficacy of several additional IL-2 mutant molecules (Y045, 2478 and 2454) was demonstrated in another MC38 tumor model (see FIG. 6 for the structures of molecules 2478 and 2454). SPF female C57 mice (14–17 g, purchased from Beijing Vital River Laboratory Animal Technology Co., Ltd.) with certificate No. 110011201109499826 were used to prepare MC38 tumor-bearing mice in the experiment. The experiment was conducted substantially as described above.

7 days after the tumor cell inoculation, the tumor volume in each mouse was measured. The mice were divided into groups of 7. The dosages and routes of administration are shown in Table 14. Administration was performed

on days 7, 14 and 21 after the inoculation. The tumor volume and body weight of the mice were monitored 2–3 times a week for 25 days, as shown in FIGs. 10A and 10B. On day 25 after inoculation, the relative tumor growth inhibition (TGI%) was calculated by the following formula: $TGI\% = 100\% \times (\text{control group tumor volume} - \text{treatment group tumor volume}) / (\text{control group tumor volume} - \text{control group tumor volume before administration})$. Tumor volume measurement: The maximum length of major axis (L) and maximum length of minor axis (W) of tumors were measured with a vernier caliper, and tumor volume was calculated using the following formula: $V = L \times W^2/2$. The mice were weighted using an electronic balance.

Table 14. Experimental design (note: administration was performed every 7 days, 3 times in total)

Groups	Dosage of administration	Number of administration	Route of administration
h-IgG	3 mg/kg	Q7Dx3	Intraperitoneal
Y045	1 mg/kg	Q7Dx3	Intraperitoneal
Y045	3 mg/kg	Q7Dx3	Intraperitoneal
2478	1 mg/kg	Q7Dx3	Intraperitoneal
2478	3 mg/kg	Q7Dx3	Intraperitoneal
2454	1 mg/kg	Q7Dx3	Intraperitoneal
2454	3 mg/kg	Q7Dx3	Intraperitoneal

* h-IgG: purchased from Equitech-Bio, Lot No. 161206-0656, 1 g/vial, prepared at 10 mg/mL with PBS.

The tumor growth inhibition results are shown in Table 15: on day 25 after inoculation, compared to h-IgG, the molecules Y045 (1 mg/kg), 2478 (1 mg/kg), 2454 (1 mg/kg), Y045 (3 mg/kg), 2478 (3 mg/kg) and 2454 (3 mg/kg) had single-drug inhibition rates of 5.3%, 39.1%, 15.6%, 19.8%, 52.6% and 23.0%, respectively. The results show that the IL2 molecule not engineered (Y045) had an anti-tumor effect and achieved a dose-dependent response; the weakened IL2 molecules obtained by engineering (2478, 2454) had anti-tumor effects and achieved dose-dependent responses, and the efficacy was better than that of the IL2 molecule not engineered (Y045). Meanwhile, the body weight of the mice was measured. As shown in FIGs. 10B and 10C, there was no significant difference in body weight of mice.

Table 15. Tumor growth inhibition on day 25

Groups	Tumor volume (mm ³)	Tumor growth inhibition (%)
h-IgG, 3 mg/kg	2473	N/A
Y045, 1 mg/kg	2377	5.3
2478, 1 mg/kg	1772	39.1
2454, 1 mg/kg	2323	15.6
Y045, 3 mg/kg	2131	19.8
2478, 3 mg/kg	1478	52.6
2454, 3 mg/kg	2354	23.0

Example 6: *In Vivo* Study of IL-2 Mutant Molecules in Autoimmunity

To demonstrate the potential of IL-2 weakened molecules in autoimmunity, the effects of the IL-2 weakened molecules of the present invention on immune cells were determined using the blood collected from C57 mice before administration and on days 3 and 7 after administration. SPF female C57 mice (14–17 g, purchased from Beijing Vital River Laboratory Animal Technology Co., Ltd.) with certificate No. 110011201109500076 were used in the experiment.

30 C57 mice were randomized into groups of 6. The dosages and routes of administration are shown in Table 16. A single dose was administered. The body weight of the mice was monitored twice a week for 7 days, as shown in FIGs. 11A and 11B. Blood was collected from the mice before administration and on days 3 and 7 after administration and tested for changes in the percentages of Treg, NK, CD4 T conv (CD4⁺ Foxp3⁻) and CD8⁺ T cells in the total number of CD45⁺ T lymphocytes, as shown in FIGs. 11C, 11D, 11E and 11F.

The tested molecule 2602 is an IL-2-Fc dimeric molecule of format 2 comprising the wild-type IL-2^{WT} sequence SEQ ID NO: 1; the structures of the weakened molecules 3079, 3055 and 3082 are shown in FIG. 6, and they are all IL-2-Fc dimeric molecules of format 2 as well.

It can be concluded from the results that the IL-2 mutant molecules of this study has weakened binding to IL-2R β , so that the IL-2 mutant molecules had weaker stimulatory effects on the proliferation of pro-inflammatory NK cells than the wild-type IL-2 molecule 2602 (IL-2^{WT}), but maintained the expansion of the immunosuppression cells Treg cells; the IL-2 mutant molecules showed similar Treg proliferation levels. In addition, the IL-2 mutant molecules had no significant proliferation effect on CD4 T conv and CD8 T cells, which suggests that its selectivity for Treg and other immune cells can be greatly improved by mutating the binding sites of IL-2 to IL-2R β .

Table 16. Experimental design (note: SD: Single dose)

Groups	Dosage of administration	Number of administration	Route of administration
h-IgG	0.5 mg/kg	SD	Intraperitoneal
2602	0.5 mg/kg	SD	Intraperitoneal
3079	0.5 mg/kg	SD	Intraperitoneal
3055	0.5 mg/kg	SD	Intraperitoneal
3082	0.5 mg/kg	SD	Intraperitoneal

* h-IgG: purchased from Equitech-Bio, Lot No. 161206-0656, 1 g/vial, prepared at 10 mg/mL with PBS.

Sequence listing description

SEQ ID NO	Name	Description
1	Wild-type IL-2	IL-2 ^{wt} with mutation C125S
2	Full-length human IL-2	A native hIL-2
3	Mature human IL-2	A native hIL-2 with signal peptides removed

4	IL-2 mutant	IL-2 ^{3X} with mutations C125S, R38D, K43E and E61R
5	IL-2R α receptor	An IL-2R α receptor with an avi tag and an His6 tag at the C-terminus
6	IL-2R β receptor	An IL-2R β receptor with an avi tag and an His6 tag at the C-terminus
7	IL-2R β -Fc.Knob	An IL-2R β with Fc-Knob connected at the C-terminus
8	IL-2R γ -Fc.Hole	An IL-2R γ with Fc-Hole connected at the C-terminus
9	Fc.Knob	A human IgG1 Fc region with mutation LALA and Knob mutations T366W and S354C, for format 2
10	Fc.Hole	A human IgG1 Fc region with mutation LALA and hole mutations Y349C, T366S, L368A and Y407V, as well as a hinge region, for format 2
11	Fc.Hole	A human IgG1 Fc region with mutation LALA and hole mutations Y349C, T366S, L368A and Y407V, as well as mutation H435R, for IL-2 $\beta\gamma$ complex
12	Mutant Fc region	A human IgG1 Fc with mutation LALA, for format 1
13	Y001	IL-2 ^{wt} -GSGS-FcLALA
14	Y002	IL-2 ^{3X} -GSGS-FcLALA
15	Y017	IL-2 ^{hyb15BCL} -GSGS-FcLALA
16	Y057	IL-2 ^{truncate1} -GSGS-FcLALA
17	Y058	IL-2 ^{truncate2} -GSGS-FcLALA
18	Y059	IL-2 ^{truncate3} -GSGS-FcLALA
19	Y060	IL-2 ^{truncate4} -GSGS-FcLALA
20	Y089	IL-2 ^{Y30E1.truncate1} -2*(G4S)-FcLALA
21	Y092	IL-2 ^{Y30E1.15BCL} -2*(G4S)-FcLALA
22	Y144	IL-2 ^{Y30E1.15BCL.T3A} -2*(G4S)-FcLALA
23	Y040	IL-2 ^{3X} -2*(G4S)-FcLALA
24	Y045	IL-2 ^{WT} -2*(G4S)-FcLALA
25	IL-2 ^{15BCL}	An IL-2 mutant with a chimeric loop sequence AGDASIH
26	IL-2 ^{truncate1}	An IL-2 mutant with a truncated loop sequence AQSKNFH
27	IL-2 ^{Y30E1}	An IL-2 mutant with K35E, T37E, R38E and F42A
28	IL-2 ^{Y30E1.T3A}	An IL-2 mutant with K35E, T37E, R38E, F42A and T3A
29	IL-2 ^{Y30E1.15BCL.T3A}	An IL-2 mutant with K35E, T37E, R38E, F42A and T3A, as well as a chimeric loop sequence AGDASIH
30	IL-2 ^{Y30E1.truncate1.T3A}	An IL-2 mutant sequence with K35E, T37E, R38E, F42A and T3A, as well as a truncated loop sequence AQSKNFH
31	IL-2 ^{K35E.T37E.R38E.T3A}	An IL-2 mutant sequence with K35E, T37E, R38E and T3A

32	IL-2 ^{K35E.T37E.R38E.T3A.15BCL}	An IL-2 mutant sequence with K35E, T37E, R38E and T3A, as well as a chimeric loop sequence AGDASIH
33	IL-2 ^{K35E.T37E.R38E.T3A.truncate1}	An IL-2 mutant sequence with K35E, T37E, R38E and T3A, as well as a truncated loop sequence AQSKNFH
34	IL-2 ^{15BCL.T3A}	An IL-2 mutant sequence with T3A and a chimeric loop sequence AGDASIH
35	IL-2 ^{truncate1.T3A}	An IL-2 mutant sequence with T3A and a truncated loop sequence AQSKNFH
36-638	-	An IL-2 sequence for forming a dimeric molecule

The IL-2 dimeric molecules constructed in the present invention are described in detail in the table below. The "IL-2 sequence SEQ ID NO" column shows the amino acid sequences of the IL-2 portions of the molecules. The "annotations for IL-2 portions" column describes, through the amino acid sequences in the "SEQ ID NO:" column and the mutations in the "mutations" column, that the IL-2 amino acid sequences of the molecules consist of the SEQ ID NO: amino acid sequences with the mutations. "Format 1" indicates that the molecules are homodimers, and each monomer (from N-terminus to C-terminus) is formed by linking the IL-2 amino acid sequence, the linker sequence (G4S)₂ and SEQ ID NO: 12 in order. "Format 2" indicates that the molecules are heterodimers, in which one monomer (from N-terminus to C-terminus) is formed by linking the IL-2 amino acid sequence, the linker sequence (G4S)₂ and SEQ ID NO: 9 in order, and the other monomer consists of SEQ ID NO: 10.

Molecule_ID		Annotations for IL-2 portions		IL-2 sequence	Molecule_ID		Annotations for IL-2 portions		IL-2 sequence
Format 1	Format 2	SEQ ID NO:	Mutations	SEQ ID NO	Format 1	Format 2	SEQ ID NO:	Mutations	SEQ ID NO
Y045	2602	SEQ ID NO:1	-	36					
Y30E1	2603	SEQ ID NO:27	-	37	Y144	2688	SEQ ID NO:29	-	122
2003	2604	SEQ ID NO:28	L12R	38	2088	2689	SEQ ID NO:29	L12R	123
2004	2605	SEQ ID NO:28	L12K	39	2089	2690	SEQ ID NO:29	L12K	124
2005	2606	SEQ ID NO:28	L12E	40	2090	2691	SEQ ID NO:29	L12E	125
2006	2607	SEQ ID NO:28	L12Q	41	2091	2692	SEQ ID NO:29	L12Q	126
2007	2608	SEQ ID NO:28	E15Q	42	2092	2693	SEQ ID NO:29	E15Q	127
2008	2609	SEQ ID NO:28	E15R	43	2093	2694	SEQ ID NO:29	E15R	128
2009	2610	SEQ ID NO:28	E15A	44	2094	2695	SEQ ID NO:29	E15A	129
2010	2611	SEQ ID NO:28	E15S	45	2095	2696	SEQ ID NO:29	E15S	130
2011	2612	SEQ ID NO:28	H16N	46	2096	2697	SEQ ID NO:29	H16N	131
2012	2613	SEQ ID NO:28	H16T	47	2097	2698	SEQ ID NO:29	H16T	132
2013	2614	SEQ ID NO:28	H16Y	48	2098	2699	SEQ ID NO:29	H16Y	133
2014	2615	SEQ ID NO:28	H16A	49	2099	2700	SEQ ID NO:29	H16A	134
2015	2616	SEQ ID NO:28	H16E	50	2100	2701	SEQ ID NO:29	H16E	135
2016	2617	SEQ ID NO:28	H16D	51	2101	2702	SEQ ID NO:29	H16D	136

2017	2618	SEQ ID NO:28	H16R	52	2102	2703	SEQ ID NO:29	H16R	137
2018	2619	SEQ ID NO:28	L19D	53	2103	2704	SEQ ID NO:29	L19D	138
2019	2620	SEQ ID NO:28	L19E	54	2104	2705	SEQ ID NO:29	L19E	139
2020	2621	SEQ ID NO:28	L19R	55	2105	2706	SEQ ID NO:29	L19R	140
2021	2622	SEQ ID NO:28	L19S	56	2106	2707	SEQ ID NO:29	L19S	141
2022	2623	SEQ ID NO:28	D20N	57	2107	2708	SEQ ID NO:29	D20N	142
2023	2624	SEQ ID NO:28	D20Q	58	2108	2709	SEQ ID NO:29	D20Q	143
2024	2625	SEQ ID NO:28	D20E	59	2109	2710	SEQ ID NO:29	D20E	144
2025	2626	SEQ ID NO:28	D20A	60	2110	2711	SEQ ID NO:29	D20A	145
2026	2627	SEQ ID NO:28	D20R	61	2111	2712	SEQ ID NO:29	D20R	146
2027	2628	SEQ ID NO:28	D20S	62	2112	2713	SEQ ID NO:29	D20S	147
2028	2629	SEQ ID NO:28	D84N	63	2113	2714	SEQ ID NO:29	D84N	148
2029	2630	SEQ ID NO:28	D84E	64	2114	2715	SEQ ID NO:29	D84E	149
2030	2631	SEQ ID NO:28	D84Q	65	2115	2716	SEQ ID NO:29	D84Q	150
2031	2632	SEQ ID NO:28	D84T	66	2116	2717	SEQ ID NO:29	D84T	151
2032	2633	SEQ ID NO:28	D84S	67	2117	2718	SEQ ID NO:29	D84S	152
2033	2634	SEQ ID NO:28	D84R	68	2118	2719	SEQ ID NO:29	D84R	153
2034	2635	SEQ ID NO:28	D84G	69	2119	2720	SEQ ID NO:29	D84G	154
2035	2636	SEQ ID NO:28	D84M	70	2120	2721	SEQ ID NO:29	D84M	155
2036	2637	SEQ ID NO:28	D84F	71	2121	2722	SEQ ID NO:29	D84F	156
2037	2638	SEQ ID NO:28	D84L	72	2122	2723	SEQ ID NO:29	D84L	157
2038	2639	SEQ ID NO:28	D84K	73	2123	2724	SEQ ID NO:29	D84K	158
2039	2640	SEQ ID NO:28	D84H	74	2124	2725	SEQ ID NO:29	D84H	159
2040	2641	SEQ ID NO:28	S87T	75	2125	2726	SEQ ID NO:29	S87T	160
2041	2642	SEQ ID NO:28	S87R	76	2126	2727	SEQ ID NO:29	S87R	161
2042	2643	SEQ ID NO:28	S87K	77	2127	2728	SEQ ID NO:29	S87K	162
2043	2644	SEQ ID NO:28	S87L	78	2128	2729	SEQ ID NO:29	S87L	163
2044	2645	SEQ ID NO:28	S87M	79	2129	2730	SEQ ID NO:29	S87M	164
2045	2646	SEQ ID NO:28	S87H	80	2130	2731	SEQ ID NO:29	S87H	165
2046	2647	SEQ ID NO:28	N88D	81	2131	2732	SEQ ID NO:29	N88D	166
2047	2648	SEQ ID NO:28	N88T	82	2132	2733	SEQ ID NO:29	N88T	167
2048	2649	SEQ ID NO:28	N88Q	83	2133	2734	SEQ ID NO:29	N88Q	168
2049	2650	SEQ ID NO:28	N88R	84	2134	2735	SEQ ID NO:29	N88R	169
2050	2651	SEQ ID NO:28	N88E	85	2135	2736	SEQ ID NO:29	N88E	170
2051	2652	SEQ ID NO:28	N88K	86	2136	2737	SEQ ID NO:29	N88K	171
2052	2653	SEQ ID NO:28	N88H	87	2137	2738	SEQ ID NO:29	N88H	172
2053	2654	SEQ ID NO:28	N88M	88	2138	2739	SEQ ID NO:29	N88M	173
2054	2655	SEQ ID NO:28	N88S	89	2139	2740	SEQ ID NO:29	N88S	174
2055	2656	SEQ ID NO:28	N88L	90	2140	2741	SEQ ID NO:29	N88L	175
2056	2657	SEQ ID NO:28	V91I	91	2141	2742	SEQ ID NO:29	V91I	176
2057	2658	SEQ ID NO:28	V91L	92	2142	2743	SEQ ID NO:29	V91L	177

2058	2659	SEQ ID NO:28	V91D	93	2143	2744	SEQ ID NO:29	V91D	178
2059	2660	SEQ ID NO:28	V91E	94	2144	2745	SEQ ID NO:29	V91E	179
2060	2661	SEQ ID NO:28	V91N	95	2145	2746	SEQ ID NO:29	V91N	180
2061	2662	SEQ ID NO:28	V91Q	96	2146	2747	SEQ ID NO:29	V91Q	181
2062	2663	SEQ ID NO:28	V91S	97	2147	2748	SEQ ID NO:29	V91S	182
2063	2664	SEQ ID NO:28	V91H	98	2148	2749	SEQ ID NO:29	V91H	183
2064	2665	SEQ ID NO:28	I92E	99	2149	2750	SEQ ID NO:29	I92E	184
2065	2666	SEQ ID NO:28	I92T	100	2150	2751	SEQ ID NO:29	I92T	185
2066	2667	SEQ ID NO:28	I92K	101	2151	2752	SEQ ID NO:29	I92K	186
2067	2668	SEQ ID NO:28	I92R	102	2152	2753	SEQ ID NO:29	I92R	187
2068	2669	SEQ ID NO:28	I92L	103	2153	2754	SEQ ID NO:29	I92L	188
2069	2670	SEQ ID NO:28	E95Q	104	2154	2755	SEQ ID NO:29	E95Q	189
2070	2671	SEQ ID NO:28	E95G	105	2155	2756	SEQ ID NO:29	E95G	190
2071	2672	SEQ ID NO:28	E95D	106	2156	2757	SEQ ID NO:29	E95D	191
2072	2673	SEQ ID NO:28	E95N	107	2157	2758	SEQ ID NO:29	E95N	192
2073	2674	SEQ ID NO:28	Q126E	108	2158	2759	SEQ ID NO:29	Q126E	193
2074	2675	SEQ ID NO:28	Q126D	109	2159	2760	SEQ ID NO:29	Q126D	194
2075	2676	SEQ ID NO:28	Q126A	110	2160	2761	SEQ ID NO:29	Q126A	195
2076	2677	SEQ ID NO:28	Q126S	111	2161	2762	SEQ ID NO:29	Q126S	196
2077	2678	SEQ ID NO:28	D84N+E95Q	112	2162	2763	SEQ ID NO:29	D84N+ E95Q	197
2078	2679	SEQ ID NO:28	D84E+E95Q	113	2163	2764	SEQ ID NO:29	D84E+ E95Q	198
2079	2680	SEQ ID NO:28	D84T+E95Q	114	2164	2765	SEQ ID NO:29	D84T+ E95Q	199
2080	2681	SEQ ID NO:28	D84Q+E95Q	115	2165	2766	SEQ ID NO:29	D84Q+ E95Q	200
2081	2682	SEQ ID NO:28	D84T+H16T	116	2166	2767	SEQ ID NO:29	D84T+ H16T	201
2082	2683	SEQ ID NO:28	D84N+ V91I	117	2167	2768	SEQ ID NO:29	D84N + V91I	202
2083	2684	SEQ ID NO:28	D84T+Q126E	118	2168	2769	SEQ ID NO:29	D84T+ Q126E	203
2084	2685	SEQ ID NO:28	D84N+Q126E	119	2169	2770	SEQ ID NO:29	D84N + Q126E	204
2085	2686	SEQ ID NO:28	H16T+D84Q	120	2170	2771	SEQ ID NO:29	H16T + D84Q	205
2086	2687	SEQ ID NO:28	H16T+V91I	121	2171	2772	SEQ ID NO:29	H16T + V91I	206

Molecule_ID		Annotations for IL-2 portions		IL-2 sequence SEQ ID NO	Molecule_ID		Annotations for IL-2 portions		IL-2 sequence SEQ ID NO
Format 1	Format 2	SEQ ID NO:	Mutations		Format 1	Format 2	SEQ ID NO:	Mutations	
2172	2773	SEQ ID NO: 30		207	2264	2865	SEQ ID NO: 32		299
2173	2774	SEQ ID NO: 30	L12R	208	2265	2866	SEQ ID NO: 32	L12R	300
2174	2775	SEQ ID NO: 30	L12K	209	2266	2867	SEQ ID NO: 32	L12K	301
2175	2776	SEQ ID NO: 30	L12E	210	2267	2868	SEQ ID NO: 32	L12E	302
2176	2777	SEQ ID NO: 30	L12Q	211	2268	2869	SEQ ID NO: 32	L12Q	303
2177	2778	SEQ ID NO: 30	E15Q	212	2269	2870	SEQ ID NO: 32	E15Q	304
2178	2779	SEQ ID NO: 30	E15R	213	2270	2871	SEQ ID NO: 32	E15R	305

2179	2780	SEQ ID NO: 30	E15A	214	2271	2872	SEQ ID NO: 32	E15A	306
2180	2781	SEQ ID NO: 30	E15S	215	2272	2873	SEQ ID NO: 32	E15S	307
2181	2782	SEQ ID NO: 30	H16N	216	2273	2874	SEQ ID NO: 32	H16N	308
2182	2783	SEQ ID NO: 30	H16T	217	2274	2875	SEQ ID NO: 32	H16T	309
2183	2784	SEQ ID NO: 30	H16Y	218	2275	2876	SEQ ID NO: 32	H16Y	310
2184	2785	SEQ ID NO: 30	H16A	219	2276	2877	SEQ ID NO: 32	H16A	311
2185	2786	SEQ ID NO: 30	H16E	220	2277	2878	SEQ ID NO: 32	H16E	312
2186	2787	SEQ ID NO: 30	H16D	221	2278	2879	SEQ ID NO: 32	H16D	313
2187	2788	SEQ ID NO: 30	H16R	222	2279	2880	SEQ ID NO: 32	H16R	314
2188	2789	SEQ ID NO: 30	L19D	223	2280	2881	SEQ ID NO: 32	L19D	315
2189	2790	SEQ ID NO: 30	L19E	224	2281	2882	SEQ ID NO: 32	L19E	316
2190	2791	SEQ ID NO: 30	L19R	225	2282	2883	SEQ ID NO: 32	L19R	317
2191	2792	SEQ ID NO: 30	L19S	226	2283	2884	SEQ ID NO: 32	L19S	318
2192	2793	SEQ ID NO: 30	D20N	227	2284	2885	SEQ ID NO: 32	D20N	319
2193	2794	SEQ ID NO: 30	D20Q	228	2285	2886	SEQ ID NO: 32	D20Q	320
2194	2795	SEQ ID NO: 30	D20E	229	2286	2887	SEQ ID NO: 32	D20E	321
2195	2796	SEQ ID NO: 30	D20A	230	2287	2888	SEQ ID NO: 32	D20A	322
2196	2797	SEQ ID NO: 30	D20R	231	2288	2889	SEQ ID NO: 32	D20R	323
2197	2798	SEQ ID NO: 30	D20S	232	2289	2890	SEQ ID NO: 32	D20S	324
2198	2799	SEQ ID NO: 30	D84N	233	2290	2891	SEQ ID NO: 32	D84N	325
2199	2800	SEQ ID NO: 30	D84E	234	2291	2892	SEQ ID NO: 32	D84E	326
2200	2801	SEQ ID NO: 30	D84Q	235	2292	2893	SEQ ID NO: 32	D84Q	327
2201	2802	SEQ ID NO: 30	D84T	236	2293	2894	SEQ ID NO: 32	D84T	328
2202	2803	SEQ ID NO: 30	D84S	237	2294	2895	SEQ ID NO: 32	D84S	329
2203	2804	SEQ ID NO: 30	D84R	238	2295	2896	SEQ ID NO: 32	D84R	330
2204	2805	SEQ ID NO: 30	D84G	239	2296	2897	SEQ ID NO: 32	D84G	331
2205	2806	SEQ ID NO: 30	D84M	240	2297	2898	SEQ ID NO: 32	D84M	332
2206	2807	SEQ ID NO: 30	D84F	241	2298	2899	SEQ ID NO: 32	D84F	333
2207	2808	SEQ ID NO: 30	D84L	242	2299	2900	SEQ ID NO: 32	D84L	334
2208	2809	SEQ ID NO: 30	D84K	243	2300	2901	SEQ ID NO: 32	D84K	335
2209	2810	SEQ ID NO: 30	D84H	244	2301	2902	SEQ ID NO: 32	D84H	336
2210	2811	SEQ ID NO: 30	S87T	245	2302	2903	SEQ ID NO: 32	S87T	337
2211	2812	SEQ ID NO: 30	S87R	246	2303	2904	SEQ ID NO: 32	S87R	338
2212	2813	SEQ ID NO: 30	S87K	247	2304	2905	SEQ ID NO: 32	S87K	339
2213	2814	SEQ ID NO: 30	S87L	248	2305	2906	SEQ ID NO: 32	S87L	340
2214	2815	SEQ ID NO: 30	S87M	249	2306	2907	SEQ ID NO: 32	S87M	341
2215	2816	SEQ ID NO: 30	S87H	250	2307	2908	SEQ ID NO: 32	S87H	342
2216	2817	SEQ ID NO: 30	N88D	251	2308	2909	SEQ ID NO: 32	N88D	343
2217	2818	SEQ ID NO: 30	N88T	252	2309	2910	SEQ ID NO: 32	N88T	344
2218	2819	SEQ ID NO: 30	N88Q	253	2310	2911	SEQ ID NO: 32	N88Q	345
2219	2820	SEQ ID NO: 30	N88R	254	2311	2912	SEQ ID NO: 32	N88R	346
2220	2821	SEQ ID NO: 30	N88E	255	2312	2913	SEQ ID NO: 32	N88E	347
2221	2822	SEQ ID NO: 30	N88K	256	2313	2914	SEQ ID NO: 32	N88K	348
2222	2823	SEQ ID NO: 30	N88H	257	2314	2915	SEQ ID NO: 32	N88H	349

2223	2824	SEQ ID NO: 30	N88M	258	2315	2916	SEQ ID NO: 32	N88M	350
2224	2825	SEQ ID NO: 30	N88S	259	2316	2917	SEQ ID NO: 32	N88S	351
2225	2826	SEQ ID NO: 30	N88L	260	2317	2918	SEQ ID NO: 32	N88L	352
2226	2827	SEQ ID NO: 30	V91I	261	2318	2919	SEQ ID NO: 32	V91I	353
2227	2828	SEQ ID NO: 30	V91L	262	2319	2920	SEQ ID NO: 32	V91L	354
2228	2829	SEQ ID NO: 30	V91D	263	2320	2921	SEQ ID NO: 32	V91D	355
2229	2830	SEQ ID NO: 30	V91E	264	2321	2922	SEQ ID NO: 32	V91E	356
2230	2831	SEQ ID NO: 30	V91N	265	2322	2923	SEQ ID NO: 32	V91N	357
2231	2832	SEQ ID NO: 30	V91Q	266	2323	2924	SEQ ID NO: 32	V91Q	358
2232	2833	SEQ ID NO: 30	V91S	267	2324	2925	SEQ ID NO: 32	V91S	359
2233	2834	SEQ ID NO: 30	V91H	268	2325	2926	SEQ ID NO: 32	V91H	360
2234	2835	SEQ ID NO: 30	I92E	269	2326	2927	SEQ ID NO: 32	I92E	361
2235	2836	SEQ ID NO: 30	I92T	270	2327	2928	SEQ ID NO: 32	I92T	362
2236	2837	SEQ ID NO: 30	I92K	271	2328	2929	SEQ ID NO: 32	I92K	363
2237	2838	SEQ ID NO: 30	I92R	272	2329	2930	SEQ ID NO: 32	I92R	364
2238	2839	SEQ ID NO: 30	I92L	273	2330	2931	SEQ ID NO: 32	I92L	365
2239	2840	SEQ ID NO: 30	E95Q	274	2331	2932	SEQ ID NO: 32	E95Q	366
2240	2841	SEQ ID NO: 30	E95G	275	2332	2933	SEQ ID NO: 32	E95G	367
2241	2842	SEQ ID NO: 30	E95D	276	2333	2934	SEQ ID NO: 32	E95D	368
2242	2843	SEQ ID NO: 30	E95N	277	2334	2935	SEQ ID NO: 32	E95N	369
2243	2844	SEQ ID NO: 30	Q126E	278	2335	2936	SEQ ID NO: 32	Q126E	370
2244	2845	SEQ ID NO: 30	Q126D	279	2336	2937	SEQ ID NO: 32	Q126D	371
2245	2846	SEQ ID NO: 30	Q126A	280	2337	2938	SEQ ID NO: 32	Q126A	372
2246	2847	SEQ ID NO: 30	Q126S	281	2338	2939	SEQ ID NO: 32	Q126S	373
2247	2848	SEQ ID NO: 30	D84N+E95Q	282	2339	2940	SEQ ID NO: 32	D84N+E95Q	374
2248	2849	SEQ ID NO: 30	D84E+E95Q	283	2340	2941	SEQ ID NO: 32	D84E+E95Q	375
2249	2850	SEQ ID NO: 30	D84T+E95Q	284	2341	2942	SEQ ID NO: 32	D84T+E95Q	376
2250	2851	SEQ ID NO: 30	D84Q+E95Q	285	2342	2943	SEQ ID NO: 32	D84Q+E95Q	377
2251	2852	SEQ ID NO: 30	D84T+H16T	286	2343	2944	SEQ ID NO: 32	D84T+H16T	378
2252	2853	SEQ ID NO: 30	D84N+V91I	287	2344	2945	SEQ ID NO: 32	D84N+V91I	379
2253	2854	SEQ ID NO: 30	D84T+Q126E	288	2345	2946	SEQ ID NO: 32	D84T+Q126E	380
2254	2855	SEQ ID NO: 30	D84N+Q126E	289	2346	2947	SEQ ID NO: 32	D84N+Q126E	381
2255	2856	SEQ ID NO: 30	H16T+D84Q	290	2347	2948	SEQ ID NO: 32	H16T+D84Q	382
2256	2857	SEQ ID NO: 30	H16T+V91I	291	2348	2949	SEQ ID NO: 32	H16T+V91I	383
2257	2858	SEQ ID NO: 31		292					
2258	2859	SEQ ID NO: 31	D84N	293					
2259	2860	SEQ ID NO: 31	D84Q	294					
2260	2861	SEQ ID NO: 31	E95N	295					
2261	2862	SEQ ID NO: 31	D84N+ E95N	296					
2262	2863	SEQ ID NO: 31	H16N	297					
2263	2864	SEQ ID NO: 31	H16N+D84N	298					

Molecule_ID	Annotations for IL-2 portions	IL-2 sequence SEQ ID	Molecule_ID	Annotations for IL-2 portions	IL-2 sequence SEQ ID
-------------	-------------------------------	----------------------------	-------------	-------------------------------	----------------------------

				NO					NO
Format 1	Format 2	SEQ ID NO:	Mutations		Format 1	Format 2	SEQ ID NO:	Mutations	
2349	2950	SEQ ID NO: 33		384	2434	3035	SEQ ID NO:34		469
2350	2951	SEQ ID NO: 33	L12R	385	2435	3036	SEQ ID NO:34	L12R	470
2351	2952	SEQ ID NO: 33	L12K	386	2436	3037	SEQ ID NO:34	L12K	471
2352	2953	SEQ ID NO: 33	L12E	387	2437	3038	SEQ ID NO:34	L12E	472
2353	2954	SEQ ID NO: 33	L12Q	388	2438	3039	SEQ ID NO:34	L12Q	473
2354	2955	SEQ ID NO: 33	E15Q	389	2439	3040	SEQ ID NO:34	E15Q	474
2355	2956	SEQ ID NO: 33	E15R	390	2440	3041	SEQ ID NO:34	E15R	475
2356	2957	SEQ ID NO: 33	E15A	391	2441	3042	SEQ ID NO:34	E15A	476
2357	2958	SEQ ID NO: 33	E15S	392	2442	3043	SEQ ID NO:34	E15S	477
2358	2959	SEQ ID NO: 33	H16N	393	2443	3044	SEQ ID NO:34	H16N	478
2359	2960	SEQ ID NO: 33	H16T	394	2444	3045	SEQ ID NO:34	H16T	479
2360	2961	SEQ ID NO: 33	H16Y	395	2445	3046	SEQ ID NO:34	H16Y	480
2361	2962	SEQ ID NO: 33	H16A	396	2446	3047	SEQ ID NO:34	H16A	481
2362	2963	SEQ ID NO: 33	H16E	397	2447	3048	SEQ ID NO:34	H16E	482
2363	2964	SEQ ID NO: 33	H16D	398	2448	3049	SEQ ID NO:34	H16D	483
2364	2965	SEQ ID NO: 33	H16R	399	2449	3050	SEQ ID NO:34	H16R	484
2365	2966	SEQ ID NO: 33	L19D	400	2450	3051	SEQ ID NO:34	L19D	485
2366	2967	SEQ ID NO: 33	L19E	401	2451	3052	SEQ ID NO:34	L19E	486
2367	2968	SEQ ID NO: 33	L19R	402	2452	3053	SEQ ID NO:34	L19R	487
2368	2969	SEQ ID NO: 33	L19S	403	2453	3054	SEQ ID NO:34	L19S	488
2369	2970	SEQ ID NO: 33	D20N	404	2454	3055	SEQ ID NO:34	D20N	489
2370	2971	SEQ ID NO: 33	D20Q	405	2455	3056	SEQ ID NO:34	D20Q	490
2371	2972	SEQ ID NO: 33	D20E	406	2456	3057	SEQ ID NO:34	D20E	491
2372	2973	SEQ ID NO: 33	D20A	407	2457	3058	SEQ ID NO:34	D20A	492
2373	2974	SEQ ID NO: 33	D20R	408	2458	3059	SEQ ID NO:34	D20R	493
2374	2975	SEQ ID NO: 33	D20S	409	2459	3060	SEQ ID NO:34	D20S	494
2375	2976	SEQ ID NO: 33	D84N	410	2460	3061	SEQ ID NO:34	D84N	495
2376	2977	SEQ ID NO: 33	D84E	411	2461	3062	SEQ ID NO:34	D84E	496
2377	2978	SEQ ID NO: 33	D84Q	412	2462	3063	SEQ ID NO:34	D84Q	497
2378	2979	SEQ ID NO: 33	D84T	413	2463	3064	SEQ ID NO:34	D84T	498
2379	2980	SEQ ID NO: 33	D84S	414	2464	3065	SEQ ID NO:34	D84S	499
2380	2981	SEQ ID NO: 33	D84R	415	2465	3066	SEQ ID NO:34	D84R	500
2381	2982	SEQ ID NO: 33	D84G	416	2466	3067	SEQ ID NO:34	D84G	501
2382	2983	SEQ ID NO: 33	D84M	417	2467	3068	SEQ ID NO:34	D84M	502
2383	2984	SEQ ID NO: 33	D84F	418	2468	3069	SEQ ID NO:34	D84F	503
2384	2985	SEQ ID NO: 33	D84L	419	2469	3070	SEQ ID NO:34	D84L	504
2385	2986	SEQ ID NO: 33	D84K	420	2470	3071	SEQ ID NO:34	D84K	505
2386	2987	SEQ ID NO: 33	D84H	421	2471	3072	SEQ ID NO:34	D84H	506
2387	2988	SEQ ID NO: 33	S87T	422	2472	3073	SEQ ID NO:34	S87T	507
2388	2989	SEQ ID NO: 33	S87R	423	2473	3074	SEQ ID NO:34	S87R	508
2389	2990	SEQ ID NO: 33	S87K	424	2474	3075	SEQ ID NO:34	S87K	509

2390	2991	SEQ ID NO: 33	S87L	425	2475	3076	SEQ ID NO:34	S87L	510
2391	2992	SEQ ID NO: 33	S87M	426	2476	3077	SEQ ID NO:34	S87M	511
2392	2993	SEQ ID NO: 33	S87H	427	2477	3078	SEQ ID NO:34	S87H	512
2393	2994	SEQ ID NO: 33	N88D	428	2478	3079	SEQ ID NO:34	N88D	513
2394	2995	SEQ ID NO: 33	N88T	429	2479	3080	SEQ ID NO:34	N88T	514
2395	2996	SEQ ID NO: 33	N88Q	430	2480	3081	SEQ ID NO:34	N88Q	515
2396	2997	SEQ ID NO: 33	N88R	431	2481	3082	SEQ ID NO:34	N88R	516
2397	2998	SEQ ID NO: 33	N88E	432	2482	3083	SEQ ID NO:34	N88E	517
2398	2999	SEQ ID NO: 33	N88K	433	2483	3084	SEQ ID NO:34	N88K	518
2399	3000	SEQ ID NO: 33	N88H	434	2484	3085	SEQ ID NO:34	N88H	519
2400	3001	SEQ ID NO: 33	N88M	435	2485	3086	SEQ ID NO:34	N88M	520
2401	3002	SEQ ID NO: 33	N88S	436	2486	3087	SEQ ID NO:34	N88S	521
2402	3003	SEQ ID NO: 33	N88L	437	2487	3088	SEQ ID NO:34	N88L	522
2403	3004	SEQ ID NO: 33	V91I	438	2488	3089	SEQ ID NO:34	V91I	523
2404	3005	SEQ ID NO: 33	V91L	439	2489	3090	SEQ ID NO:34	V91L	524
2405	3006	SEQ ID NO: 33	V91D	440	2490	3091	SEQ ID NO:34	V91D	525
2406	3007	SEQ ID NO: 33	V91E	441	2491	3092	SEQ ID NO:34	V91E	526
2407	3008	SEQ ID NO: 33	V91N	442	2492	3093	SEQ ID NO:34	V91N	527
2408	3009	SEQ ID NO: 33	V91Q	443	2493	3094	SEQ ID NO:34	V91Q	528
2409	3010	SEQ ID NO: 33	V91S	444	2494	3095	SEQ ID NO:34	V91S	529
2410	3011	SEQ ID NO: 33	V91H	445	2495	3096	SEQ ID NO:34	V91H	530
2411	3012	SEQ ID NO: 33	I92E	446	2496	3097	SEQ ID NO:34	I92E	531
2412	3013	SEQ ID NO: 33	I92T	447	2497	3098	SEQ ID NO:34	I92T	532
2413	3014	SEQ ID NO: 33	I92K	448	2498	3099	SEQ ID NO:34	I92K	533
2414	3015	SEQ ID NO: 33	I92R	449	2499	3100	SEQ ID NO:34	I92R	534
2415	3016	SEQ ID NO: 33	I92L	450	2500	3101	SEQ ID NO:34	I92L	535
2416	3017	SEQ ID NO: 33	E95Q	451	2501	3102	SEQ ID NO:34	E95Q	536
2417	3018	SEQ ID NO: 33	E95G	452	2502	3103	SEQ ID NO:34	E95G	537
2418	3019	SEQ ID NO: 33	E95D	453	2503	3104	SEQ ID NO:34	E95D	538
2419	3020	SEQ ID NO: 33	E95N	454	2504	3105	SEQ ID NO:34	E95N	539
2420	3021	SEQ ID NO: 33	Q126E	455	2505	3106	SEQ ID NO:34	Q126E	540
2421	3022	SEQ ID NO: 33	Q126D	456	2506	3107	SEQ ID NO:34	Q126D	541
2422	3023	SEQ ID NO: 33	Q126A	457	2507	3108	SEQ ID NO:34	Q126A	542
2423	3024	SEQ ID NO: 33	Q126S	458	2508	3109	SEQ ID NO:34	Q126S	543
2424	3025	SEQ ID NO: 33	D84N+E95Q	459	2509	3110	SEQ ID NO:34	D84N+E95Q	544
2425	3026	SEQ ID NO: 33	D84E+E95Q	460	2510	3111	SEQ ID NO:34	D84E+E95Q	545
2426	3027	SEQ ID NO: 33	D84T+E95Q	461	2511	3112	SEQ ID NO:34	D84T+E95Q	546
2427	3028	SEQ ID NO: 33	D84Q+E95Q	462	2512	3113	SEQ ID NO:34	D84Q+E95Q	547
2428	3029	SEQ ID NO: 33	D84T+H16T	463	2513	3114	SEQ ID NO:34	D84T+H16T	548
2429	3030	SEQ ID NO: 33	D84N+V91I	464	2514	3115	SEQ ID NO:34	D84N+V91I	549
2430	3031	SEQ ID NO: 33	D84T+Q126E	465	2515	3116	SEQ ID NO:34	D84T+Q126E	550
2431	3032	SEQ ID NO: 33	D84N+Q126E	466	2516	3117	SEQ ID NO:34	D84N+Q126E	551
2432	3033	SEQ ID NO: 33	H16T+D84Q	467	2517	3118	SEQ ID NO:34	H16T+D84Q	552
2433	3034	SEQ ID NO: 33	H16T+V91I	468	2518	3119	SEQ ID NO:34	H16T+V91I	553

Molecule_ID		Annotations for IL-2 portions		IL-2 sequence SEQ ID NO	Molecule_ID		Annotations for IL-2 portions		IL-2 sequence SEQ ID NO
Format 1	Format 2	SEQ ID NO:	Mutations		Format 1	Format 2	SEQ ID NO:	Mutations	
2519	3120	SEQ ID NO:35		554	2561	3164	SEQ ID NO:35	N88D	598
2518	3121	SEQ ID NO:35	L12R	555	2562	3165	SEQ ID NO:35	N88T	599
2519	3122	SEQ ID NO:35	L12K	556	2563	3166	SEQ ID NO:35	N88Q	600
2520	3123	SEQ ID NO:35	L12E	557	2564	3167	SEQ ID NO:35	N88R	601
2521	3124	SEQ ID NO:35	L12Q	558	2565	3168	SEQ ID NO:35	N88E	602
2522	3125	SEQ ID NO:35	E15Q	559	2566	3169	SEQ ID NO:35	N88K	603
2523	3126	SEQ ID NO:35	E15R	560	2567	3170	SEQ ID NO:35	N88H	604
2524	3127	SEQ ID NO:35	E15A	561	2568	3171	SEQ ID NO:35	N88M	605
2525	3128	SEQ ID NO:35	E15S	562	2569	3172	SEQ ID NO:35	N88S	606
2526	3129	SEQ ID NO:35	H16N	563	2570	3173	SEQ ID NO:35	N88L	607
2527	3130	SEQ ID NO:35	H16T	564	2571	3174	SEQ ID NO:35	V91I	608
2528	3131	SEQ ID NO:35	H16Y	565	2572	3175	SEQ ID NO:35	V91L	609
2529	3132	SEQ ID NO:35	H16A	566	2573	3176	SEQ ID NO:35	V91D	610
2530	3133	SEQ ID NO:35	H16E	567	2574	3177	SEQ ID NO:35	V91E	611
2531	3134	SEQ ID NO:35	H16D	568	2575	3178	SEQ ID NO:35	V91N	612
2532	3135	SEQ ID NO:35	H16R	569	2576	3179	SEQ ID NO:35	V91Q	613
2533	3136	SEQ ID NO:35	L19D	570	2577	3180	SEQ ID NO:35	V91S	614
2534	3137	SEQ ID NO:35	L19E	571	2578	3181	SEQ ID NO:35	V91H	615
2535	3138	SEQ ID NO:35	L19R	572	2579	3182	SEQ ID NO:35	I92E	616
2536	3139	SEQ ID NO:35	L19S	573	2580	3183	SEQ ID NO:35	I92T	617
2537	3140	SEQ ID NO:35	D20N	574	2581	3184	SEQ ID NO:35	I92K	618
2538	3141	SEQ ID NO:35	D20Q	575	2582	3185	SEQ ID NO:35	I92R	619
2539	3142	SEQ ID NO:35	D20E	576	2583	3186	SEQ ID NO:35	I92L	620
2540	3143	SEQ ID NO:35	D20A	577	2584	3187	SEQ ID NO:35	E95Q	621
2541	3144	SEQ ID NO:35	D20R	578	2585	3188	SEQ ID NO:35	E95G	622
2542	3145	SEQ ID NO:35	D20S	579	2586	3189	SEQ ID NO:35	E95D	623
2543	3146	SEQ ID NO:35	D84N	580	2587	3190	SEQ ID NO:35	E95N	624
2544	3147	SEQ ID NO:35	D84E	581	2588	3191	SEQ ID NO:35	Q126E	625
2545	3148	SEQ ID NO:35	D84Q	582	2589	3192	SEQ ID NO:35	Q126D	626
2546	3149	SEQ ID NO:35	D84T	583	2590	3193	SEQ ID NO:35	Q126A	627
2547	3150	SEQ ID NO:35	D84S	584	2591	3194	SEQ ID NO:35	Q126S	628
2548	3151	SEQ ID NO:35	D84R	585	2592	3195	SEQ ID NO:35	D84N+E95Q	629
2549	3152	SEQ ID NO:35	D84G	586	2593	3196	SEQ ID NO:35	D84E+E95Q	630
2550	3153	SEQ ID NO:35	D84M	587	2594	3197	SEQ ID NO:35	D84T+E95Q	631
2551	3154	SEQ ID NO:35	D84F	588	2595	3198	SEQ ID NO:35	D84Q+E95Q	632
2552	3155	SEQ ID NO:35	D84L	589	2596	3199	SEQ ID NO:35	D84T+H16T	633
2553	3156	SEQ ID NO:35	D84K	590	2597	3200	SEQ ID NO:35	D84N+V91I	634
2554	3157	SEQ ID NO:35	D84H	591	2598	3201	SEQ ID NO:35	D84T+Q126E	635
2555	3158	SEQ ID NO:35	S87T	592	2599	3202	SEQ ID NO:35	D84N+Q126E	636

2556	3159	SEQ ID NO:35	S87R	593	2600	3203	SEQ ID NO:35	H16T +D84Q	637
2557	3160	SEQ ID NO:35	S87K	594	2601	3204	SEQ ID NO:35	H16T +V9II	638
2558	3161	SEQ ID NO:35	S87L	595					
2559	3162	SEQ ID NO:35	S87M	596					
2560	3163	SEQ ID NO:35	S87H	597					

The reference to any prior art in this specification is not, and should not be taken as, an acknowledgement or any form of suggestion that the prior art forms part of the common general knowledge in Australia.

CLAIMS

1. An IL-2 mutant protein, which compared to a wild-type human IL-2, comprises:

- (a) a shortened B'C' loop region and a mutation at the binding interface of IL-2 to IL-2R $\beta\gamma$;
- (b) a mutation at the binding interface of IL-2 to IL-2R $\beta\gamma$ and a mutant at the binding interface of IL-2 to IL-2R α ; or
- (c) a shortened B'C' loop region, a mutation at the binding interface of IL-2 to IL-2R $\beta\gamma$ and a mutant at the binding interface of IL-2 to IL-2R α ;

wherein the shortened B'C' loop region has a sequence positioned between amino acid residues aa72 and aa84 having less than 10 amino acids in length,

and comprises:

- (i) a sequence of (Q/G)S(K/A/D)N(F/I)H or GDASIH at positions aa74 to aa83;
- (ii) a substitution of a sequence at positions aa74 to aa83 with a B'C' loop sequence from human IL-15; or
- (iii) a C-terminal truncation of a sequence at positions aa74 to aa83, wherein 1, 2, 3 or 4 amino acids are truncated from the C terminus

wherein the mutation at the IL-2R $\beta\gamma$ binding interface comprises a mutation selected from the group consisting of: D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E, and V91I;

wherein the mutation at the IL-2R α binding interface comprises a combination of K35E+T37E+R38E+F42A, or a combination of K35E+T37E+R38E;

wherein, the amino acid positions are numbered according to SEQ ID NO: 1; and

wherein the IL-2 mutant protein has at least 85%, 86%, 87%, 88%, 89%, 90%, or 95% identity to the wild-type human IL-2.

2. The IL-2 mutant protein according to claim 1, wherein the IL-2 mutant protein comprises:

- a mutation selected from the group consisting of: N88D, D20N and N88R; or
- a mutation selected from the group consisting of: D84N, E95Q and H16N; or
- a mutation selected from the group consisting of: D84Q and H16T+V91I; or
- a mutation selected from the group consisting of: D84T, Q126E, D84N+V91I and D84N+E95Q; or
- a mutation selected from the group consisting of: N88D, N88R, D20N, D84N, D84N+E95Q, D84T+H16T, D84T+Q126E, D84N+Q126E and H16T+D84Q; or
- a mutation selected from the group consisting of: D84N and D84N+E95Q.

3. The mutant protein according to claim 1 or claim 2, wherein the IL-2 mutant protein comprises a loop region having a sequence at positions aa74 to aa83 selected from the group consisting of: GDASIH, QSKNFH, GSKNFH, QSANFH, QSANIH.

4. The IL-2 mutant protein according to claim 1, wherein the IL-2 mutant protein, comprises:
 - (i) a combination of mutations **K35E+T37E+R38E+F42A**;
 - (ii) a B'C' loop region sequence positioned between amino acid residues aa72 and aa84: AQSKNFH; or AGDASIH or SGDASIH; and
 - (iii) an IL-2R β binding interface mutation, selected from the group consisting of: D20N, D84E, D84N, D84N+E95Q, D84N+Q126E, D84N+V91I, D84Q, D84T, D84T+H16T, D84T+Q126E, E15Q, E95N, E95Q, H16N, H16N+D84N, H16T, H16T+D84Q, H16T+V91I, N88D, N88R, N88Q, N88T, Q126E and V91I.

5. The IL-2 mutant protein according to claim 1, wherein the IL-2 mutant protein comprises:
 - (i) a combination of mutations **K35E+T37E+R38E+F42A**; and
 - (ii) an IL-2R β binding interface mutation, selected from the group consisting of: D84N, D84Q, E95N, H16N, and H16N+D84N.

6. The mutant protein according to claim 1, wherein the IL-2 mutant protein comprises:
 - (i) a B'C' loop region sequence positioned between amino acid residues aa72 and aa84: AQSKNFH, AGDASIH, or SGDASIH;
 - (ii) an IL-2R β binding interface mutation, selected from the group consisting of: D20N, N88D and N88R.

7. The IL-2 mutant protein according to any one of claims 1 to 6, wherein the IL-2 mutant protein further comprises a mutation T3A.

8. The IL-2 mutant protein according to any one of claims 1 to 7, wherein the IL-2 mutant protein further comprises a mutation C125S or C125A.

9. The IL-2 mutant protein according to any one of claims 1 to 8, wherein the wild-type IL-2 comprises a sequence of SEQ ID NO: 1, 2 or 3, or a sequence having at least 95%, 96%, 97%, 98% or 99% identity thereto.

10. The IL-2 mutant protein according to claim 1, comprising: an amino acid sequence selected from the group consisting of SEQ ID NOs: 148, 197, 489, 513, and 516, or an amino acid sequence having at least 90%, 92%, 93%, 94%, 95%, 96%, 97% or 98% identity thereto.

11. The IL-2 mutant protein according to any one of claims 1 to 10, compared to the wild-type IL-2, having reduced binding affinity for the IL-2R β receptor, and having improved expression yield, purity or both when expressed in the form of an Fc fusion protein.

12. A fusion protein, comprising the IL-2 mutant protein according to any one of claims 1 to 11.

13. The fusion protein according to claim 12, wherein the IL-2 mutant protein is fused to an Fc antibody fragment via a linker.
14. The fusion protein according to claim 13, wherein:
- (a) the linker is GSGS or (G4S)₂;
 - (b) the Fc fragment is a human IgG1 Fc, or comprises a mutation that reduces or eliminates the binding of the Fc to FcγR;
 - (c) the Fc fragment comprises a mutation of L234A+L235A;
 - (d) the Fc fragment has an amino acid sequence having at least 85%, at least 95%, at least 96% or 100% identity to SEQ ID NO: 12; and/or
 - (e) the Fc fragment comprises a Knob mutation or mutations T366W and S354C; or the Fc fragment comprises a Hole mutation, or mutations Y349C, T366S, L368A and Y407V.
15. An IL-2-Fc dimer protein, comprising the fusion protein according to claim 13 or claim 14.
16. The IL-2-Fc dimer protein according to claim 15, being a homodimer comprising a first monomer and a second monomer, wherein each of the monomers comprise, from N-terminus to C-terminus, i) the IL-2 mutant protein; ii) the linker; and iii) the Fc fragment.
17. The IL-2-Fc dimer protein according to claim 16, wherein the linker is (G4S)₂ and the Fc fragment has an amino acid sequence of SEQ ID NO: 12.
18. The IL-2-Fc dimer protein according to claim 16, wherein each of the monomers comprise an IL-2 mutant protein selected from SEQ ID NOS: 148, 197, 489, 513 and 516 linked at the C-terminus to an amino acid sequence of SEQ ID NO: 12 by a linker (G4S)₂.
19. The IL-2-Fc dimer protein according to claim 15, being a heterodimer comprising a first monomer and a second monomer, wherein the first monomer comprising, from N-terminus to C-terminus, i) the IL-2 mutant protein; ii) the linker; and iii) a first Fc fragment; and the second monomer comprising a second Fc fragment.;
20. The IL-2-Fc dimer protein according to claim 19, wherein the first Fc fragment and the second Fc fragment comprise a first heterodimerization mutation and a second heterodimerization mutation that promote the formation of the heterodimer from the first monomer and the second monomer, respectively.
21. The IL-2-Fc dimer protein according to claim 20, wherein the first heterodimerization mutation in the first Fc fragment includes a Knob mutation and the second heterodimerization mutation in the second Fc fragment includes

a Hole mutation; alternatively, the first heterodimerization mutation in the first Fc fragment includes a Hole mutation and the second heterodimerization mutation in the second Fc fragment includes a Knob mutation.

22. The IL-2-Fc dimer protein according to claim 21, wherein the Knob mutation is T366W/S354C, and the Hole mutation is Y349C/T366S/L368A/Y407V.

23. The IL-2-Fc dimer protein according to any one of claims 19 to 22, wherein the linker is (G4S)₂ and the first Fc fragment comprises an amino acid sequence of SEQ ID NO: 9, and wherein the second monomer comprises an amino acid sequence of SEQ ID NO: 10.

24. The IL-2-Fc dimer protein according to any one of claims 19 to 23, wherein the first monomer comprises an IL-2 mutant protein selected from SEQ ID NOs: 148, 197, 489, 513 and 516 linked at the C-terminus to an amino acid sequence of SEQ ID NO: 9 by a linker (G4S)₂; and the second monomer comprises an amino acid sequence of SEQ ID NO: 10.

25. An isolated polynucleotide, encoding the IL2 mutant protein according to any one of claims 1 to 11, or the fusion protein according to any one of claims 12 to 14, or the IL-2-Fc dimer protein according to any one of claims 15 to 24.

26. An expression vector, comprising the polynucleotide according to claim 25.

27. A host cell, comprising the polynucleotide according to claim 25 or the vector according to claim 26.

28. A pharmaceutical composition, comprising the IL-2 mutant protein according to any one of claims 1 to 11, or the fusion protein according to any one of claims 12 to 14, or the IL-2-Fc dimer protein according to any one of claims 15 to 24, and a pharmaceutically acceptable carrier.

29. A method for treating a cancer or an autoimmune disease, or for stimulating the immune system in a subject, comprising administering to the subject the IL-2 mutant protein according to any one of claims 1 to 11, or the fusion protein according to any one of claims 12 to 14, or the IL-2-Fc dimer protein according to any one of claims 15 to 24, or the pharmaceutical composition according to claim 28.

Crystal structure of IL-2/IL-2R α complex

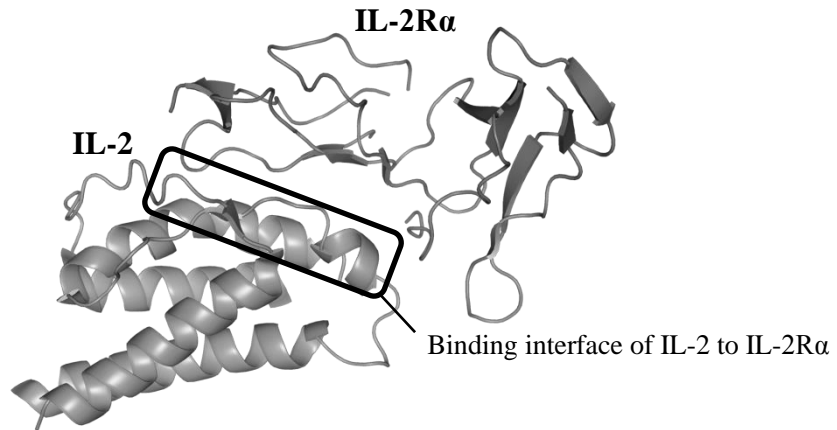


FIG. 1

Crystal structure of IL-2 (PBD: 2ERJ)

B'C' loop structure superpose of human IL-2 and human IL-15

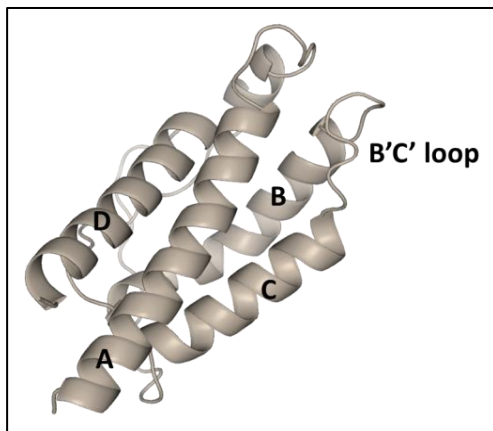


FIG. 2A

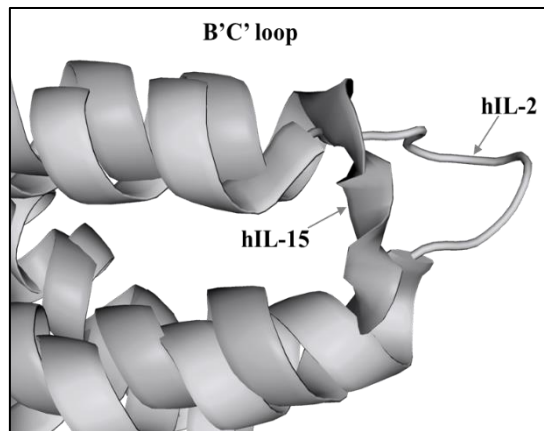


FIG. 2B

IL-2 mutants comprising CD25 binding interface mutations

Clone No.	35	37	38	41	42	43	45	61	62	68	72
IL-2 ^{WT}	K	T	R	T	F	K	Y	E	E	E	L
Y29A2	D	T	E	E	F	E	Y	E	E	E	L
Y29A5	D	E	D	T	F	E	Y	E	E	E	F
Y29A6	E	T	D	E	F	E	Y	K	E	E	F
Y29B2	E	D	W	T	Q	K	K	K	E	R	L
Y29C5	E	D	D	T	F	E	Y	E	E	E	F
Y29D2	D	E	D	E	F	E	Y	E	E	E	F
Y29D6	D	E	D	T	F	Y	K	E	E	E	F
Y30B1	E	T	E	E	F	Y	K	E	E	E	F
Y30E1	E	E	E	T	A	K	Y	E	E	E	L

FIG. 3

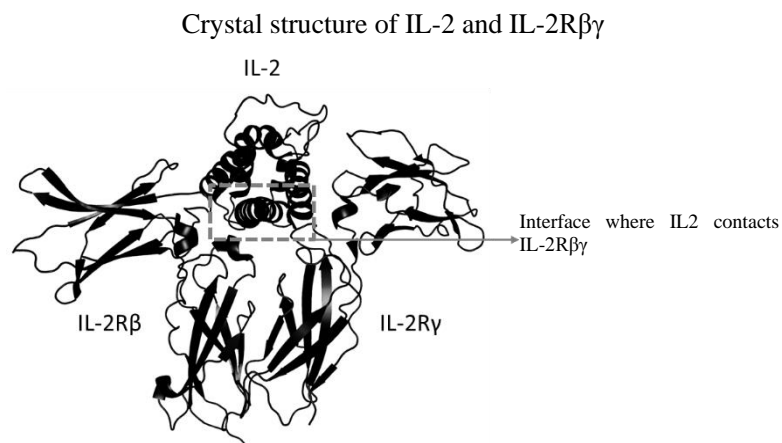


FIG. 4.

IL-2-Fc dimeric molecule formats

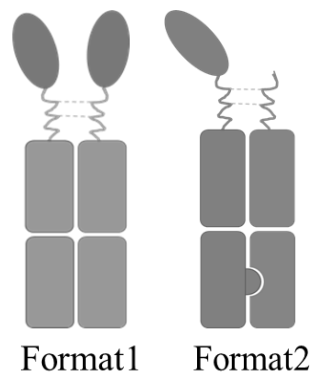


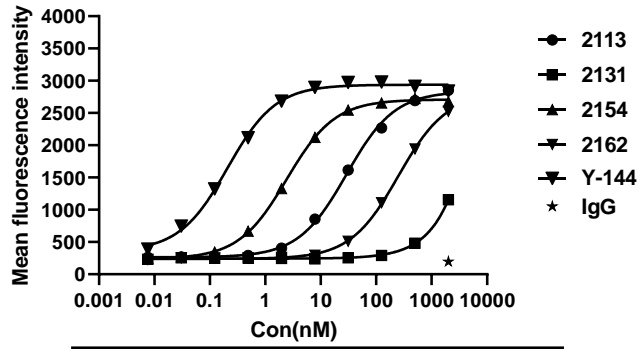
FIG. 5

Structures of IL-2 weakened molecules

Molecule ID	Molecular annotation	Molecular format	Mutations relative to IL-2 ^{WT}			
			IL-2R β binding interface	IL-2R α binding interface	B'C' loop sequence	Other mutations
Y045	IL-2 ^{WT}	Format 1	-	-	-	-
Y144	Y30E1+IL-15 BCL	format1	-	K35E, T37E, R38E, F42A	AGDASIH	T3A
2688	Y30E1+IL-15 BCL	format2	-	K35E, T37E, R38E, F42A	AGDASIH	T3A
2113	D84N	format1	D84N	K35E, T37E, R38E, F42A	AGDASIH	T3A
2714	D84N	format2	D84N	K35E, T37E, R38E, F42A	AGDASIH	T3A
2131	N88D	format1	N88D	K35E, T37E, R38E, F42A	AGDASIH	T3A
2732	N88D	format2	N88D	K35E, T37E, R38E, F42A	AGDASIH	T3A
2154	E95Q	format1	E95Q	K35E, T37E, R38E, F42A	AGDASIH	T3A
2755	E95Q	format2	E95Q	K35E, T37E, R38E, F42A	AGDASIH	T3A
2162	D84N, E95Q	format1	D84N, E95Q	K35E, T37E, R38E, F42A	AGDASIH	T3A
2763	D84N, E95Q	format2	D84N, E95Q	K35E, T37E, R38E, F42A	AGDASIH	T3A
2114	D84E	format1	D84E	K35E, T37E, R38E, F42A	AGDASIH	T3A
2115	D84Q	format1	D84Q	K35E, T37E, R38E, F42A	AGDASIH	T3A
2116	D84T	format1	D84T	K35E, T37E, R38E, F42A	AGDASIH	T3A
2132	N88T	format1	N88T	K35E, T37E, R38E, F42A	AGDASIH	T3A
2133	N88Q	format1	N88Q	K35E, T37E, R38E, F42A	AGDASIH	T3A
2141	V91I	format1	V91I	K35E, T37E, R38E, F42A	AGDASIH	T3A
2092	E15Q	format1	E15Q	K35E, T37E, R38E, F42A	AGDASIH	T3A
2158	Q126E	format1	Q126E	K35E, T37E, R38E, F42A	AGDASIH	T3A
2107	D20N	format1	D20N	K35E, T37E, R38E, F42A	AGDASIH	T3A
2096	H16N	format1	H16N	K35E, T37E, R38E, F42A	AGDASIH	T3A
2097	H16T	format1	H16T	K35E, T37E, R38E, F42A	AGDASIH	T3A
2166	D84T, H16T	format1	D84T, H16T	K35E, T37E, R38E, F42A	AGDASIH	T3A
2167	D84N, V91I	format1	D84N, V91I	K35E, T37E, R38E, F42A	AGDASIH	T3A
2168	D84T, Q126E	format1	D84T, Q126E	K35E, T37E, R38E, F42A	AGDASIH	T3A
2169	D84N, Q126E	format1	D84N, Q126E	K35E, T37E, R38E, F42A	AGDASIH	T3A
2170	H16T, D84Q	format1	H16T, D84Q	K35E, T37E, R38E, F42A	AGDASIH	T3A
2171	H16T, V91I	format1	H16T, V91I	K35E, T37E, R38E, F42A	AGDASIH	T3A
2172	Y30E1+BCL truncate	format1	-	K35E, T37E, R38E, F42A	AQSKNFH	T3A
2257	3 mutations	format1	-	K35E, T37E, R38E	-	T3A
2258	D84N	format1	D84N	K35E, T37E, R38E	-	T3A
2259	D84Q	format1	D84Q	K35E, T37E, R38E	-	T3A
2260	E95N	format1	E95N	K35E, T37E, R38E	-	T3A
2262	H16N	format1	H16N	K35E, T37E, R38E	-	T3A
2263	H16N, D84N	format1	H16N, D84N	K35E, T37E, R38E	-	T3A
2478	N88D	format1	N88D	-	AGDASIH	T3A
3079	N88D	format2	N88D	-	AGDASIH	T3A
2454	D20N	format1	D20N	-	AGDASIH	T3A
3055	D20N	format2	D20N	-	AGDASIH	T3A
2481	N88R	format1	N88R	-	AGDASIH	T3A
3082	N88R	format2	N88R	-	AGDASIH	T3A

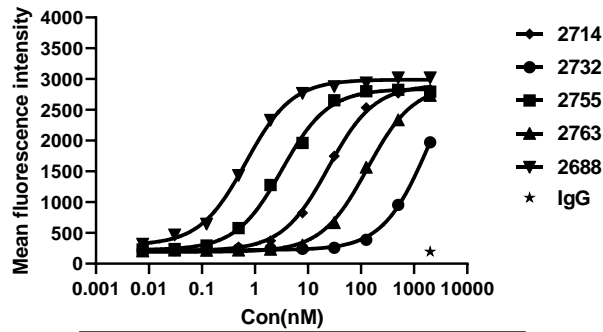
FIG. 6

CD4+T cells pSTAT5



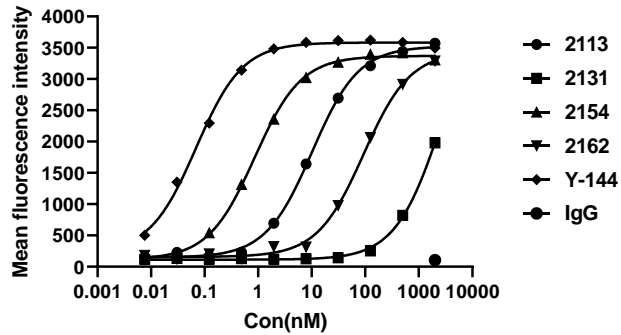
	2113	2131	2154	2162	Y-144
EC50	29.19	~ 46021	2.429	251.0	0.2081

CD4+T cells pSTAT5



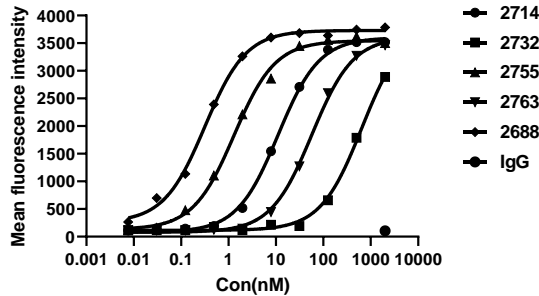
	2714	2732	2755	2763	2688
EC50	23.98	1893	3.233	131.1	0.6720

CD8+T cells pSTAT5



	2113	2131	2154	2162	Y-144
EC50	10.16	2716	0.8579	92.94	0.06936

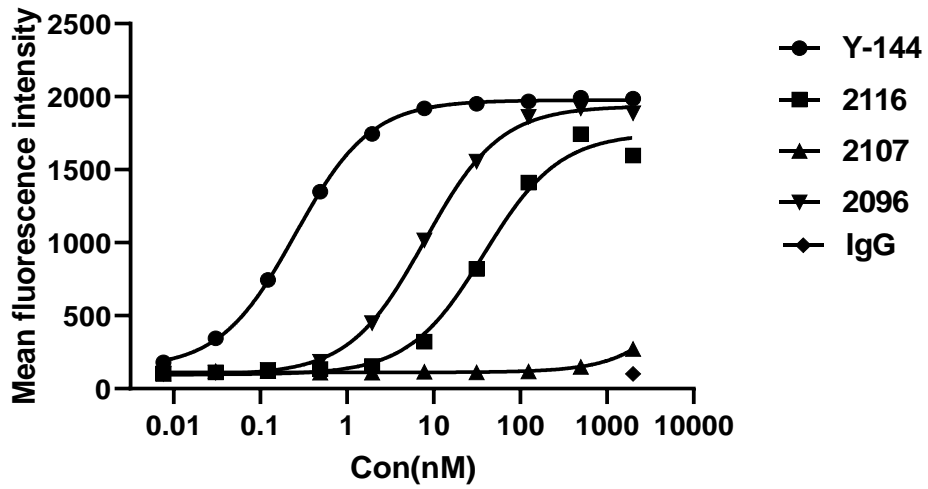
CD8+T cells pSTAT5



	2714	2732	2755	2763	2688
EC50	11.09	640.1	1.311	57.34	0.3169

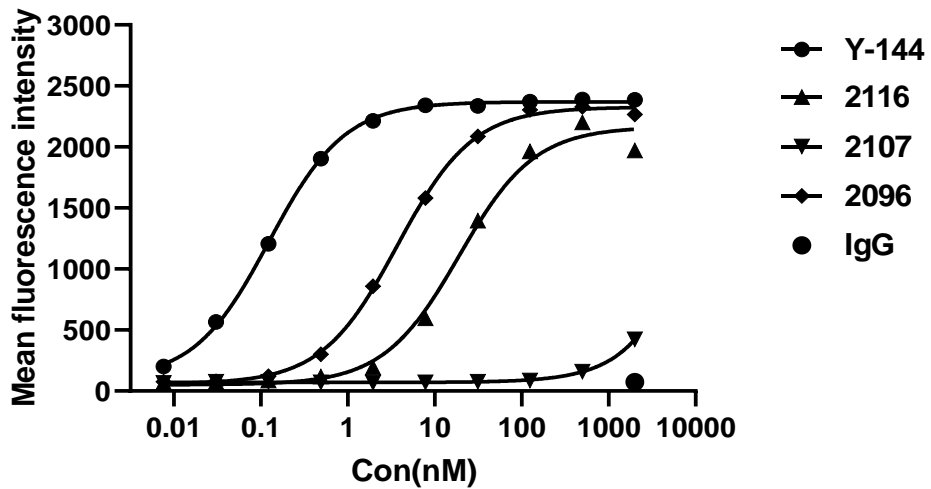
FIG. 7A

CD4+T cells pSTAT5



	Y-144	2116	2107	2096
EC50	0.2526	38.15	~ 6939503	7.900

CD8+T cells pSTAT5



	Y-144	2116	2107	2096
EC50	0.1250	19.06	~ 5411647	3.712

FIG. 7B

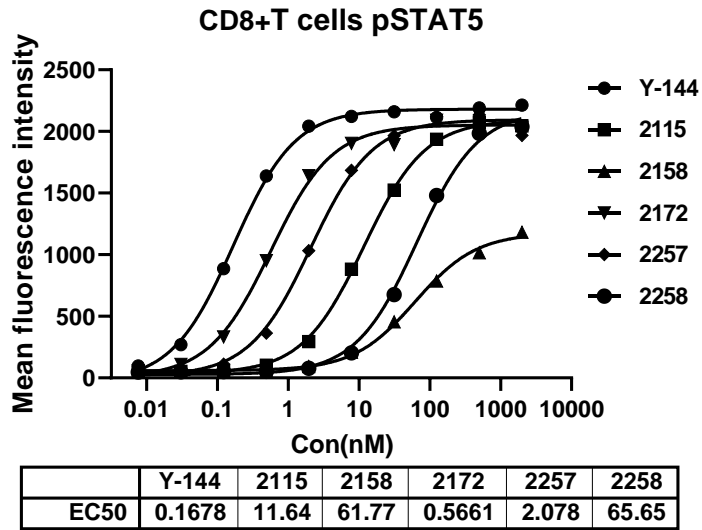
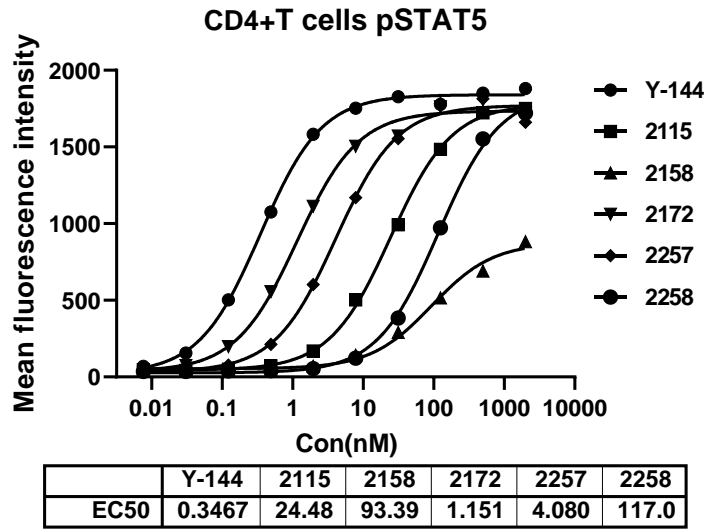
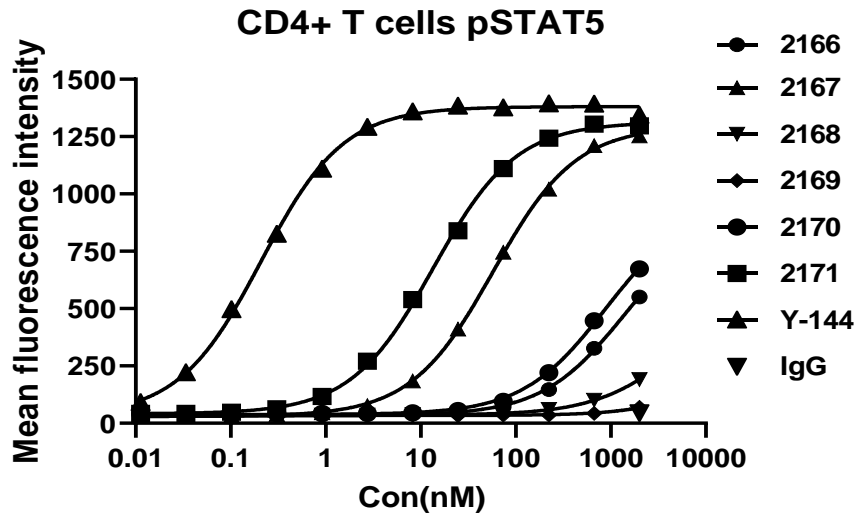
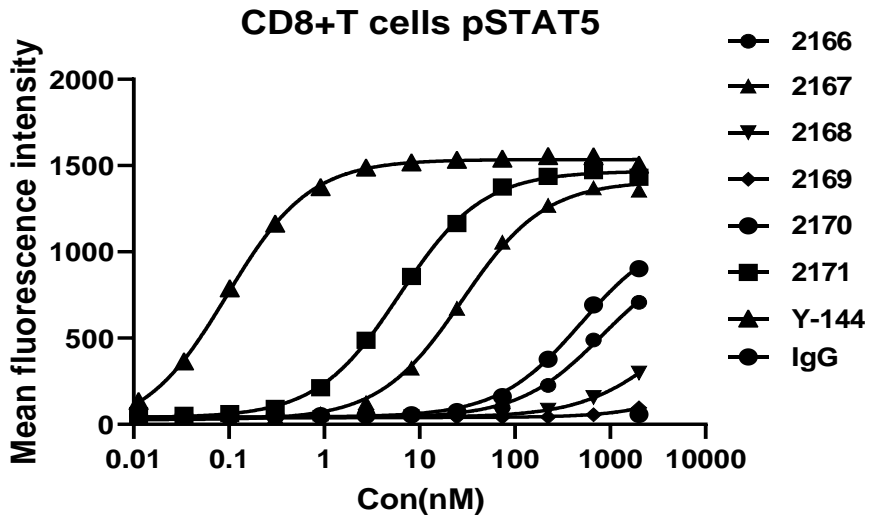


FIG. 7C



	2166	2167	2168	2169	2170	2171	Y-144
EC50	1388	58.05	4885	~ 28883181	869.0	13.56	0.2087



	2166	2167	2168	2169	2170	2171	Y-144
EC50	819.9	27.99	3545	~ 32738306	494.9	6.202	0.09532

FIG. 7D

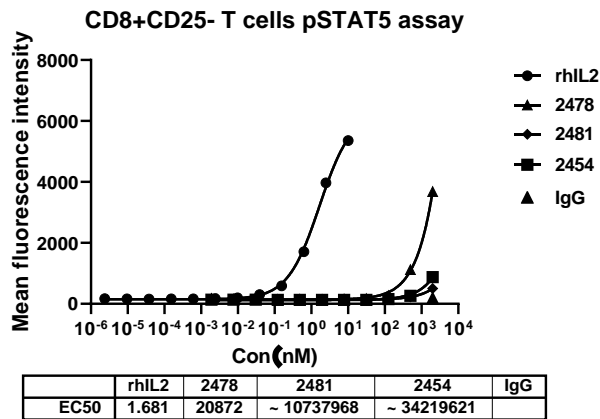
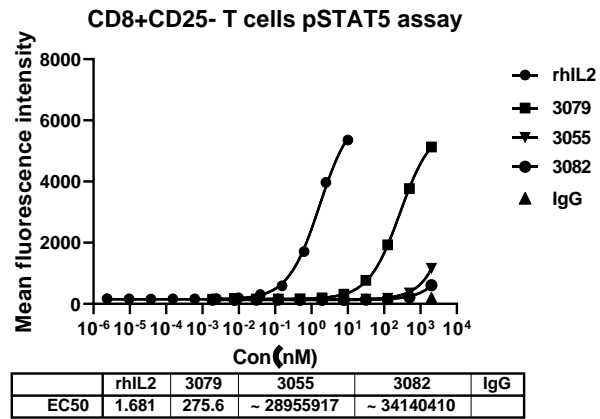
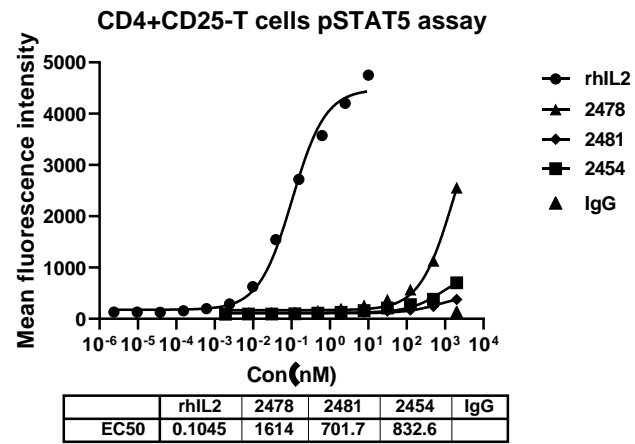
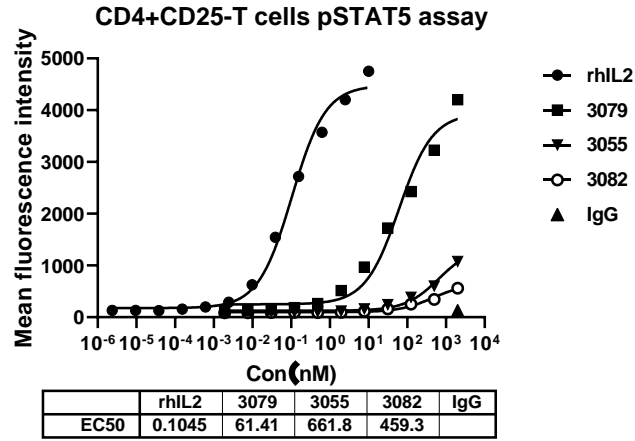


FIG. 7E

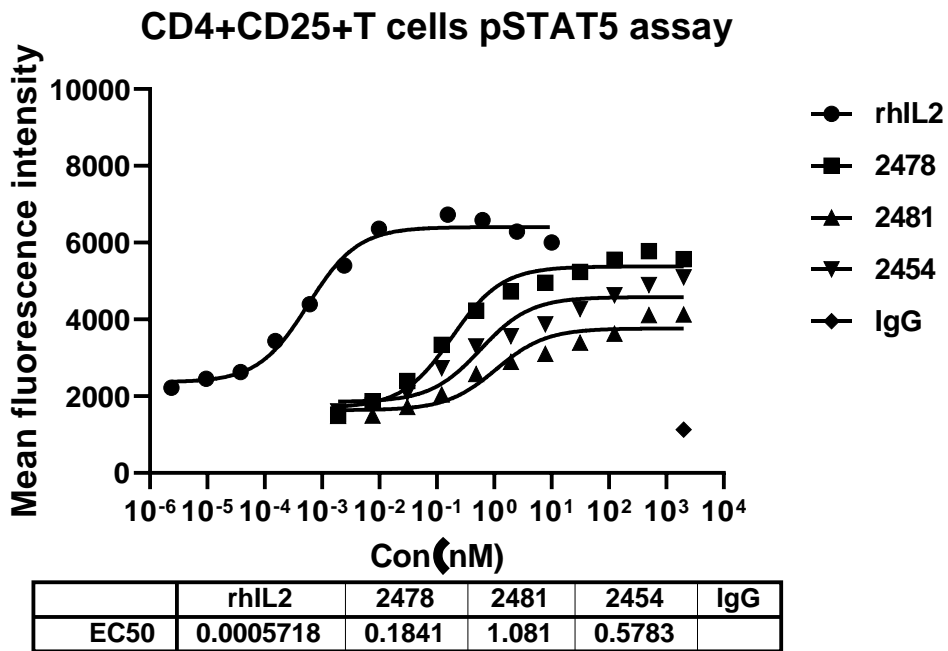
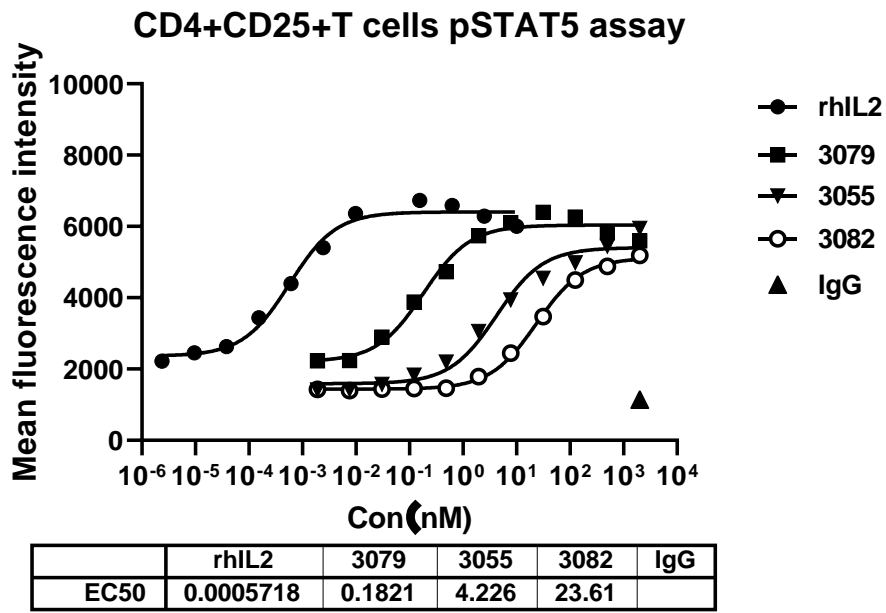


FIG. 7F

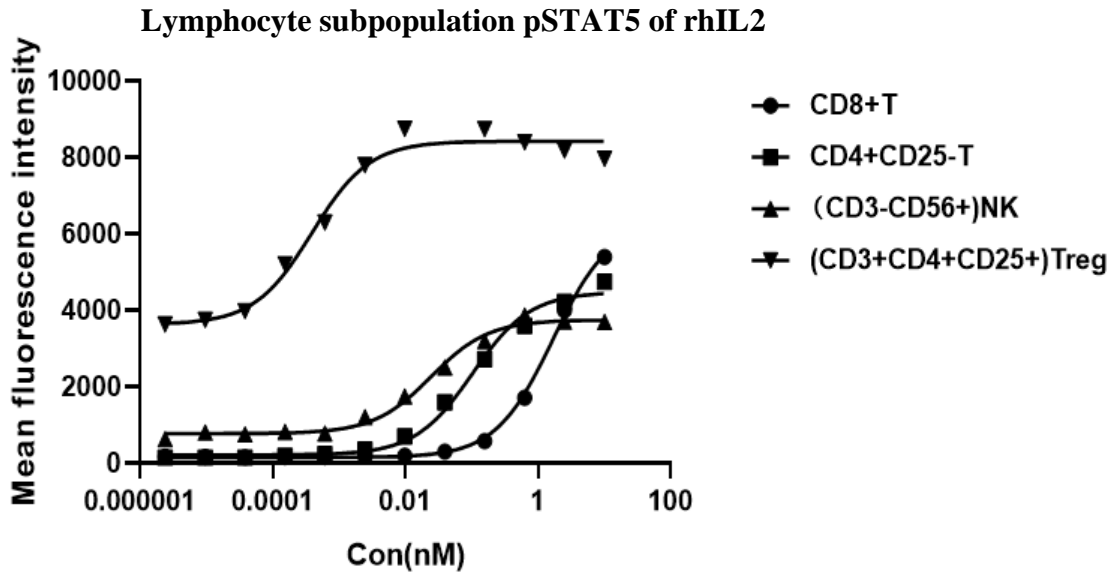


FIG. 8A

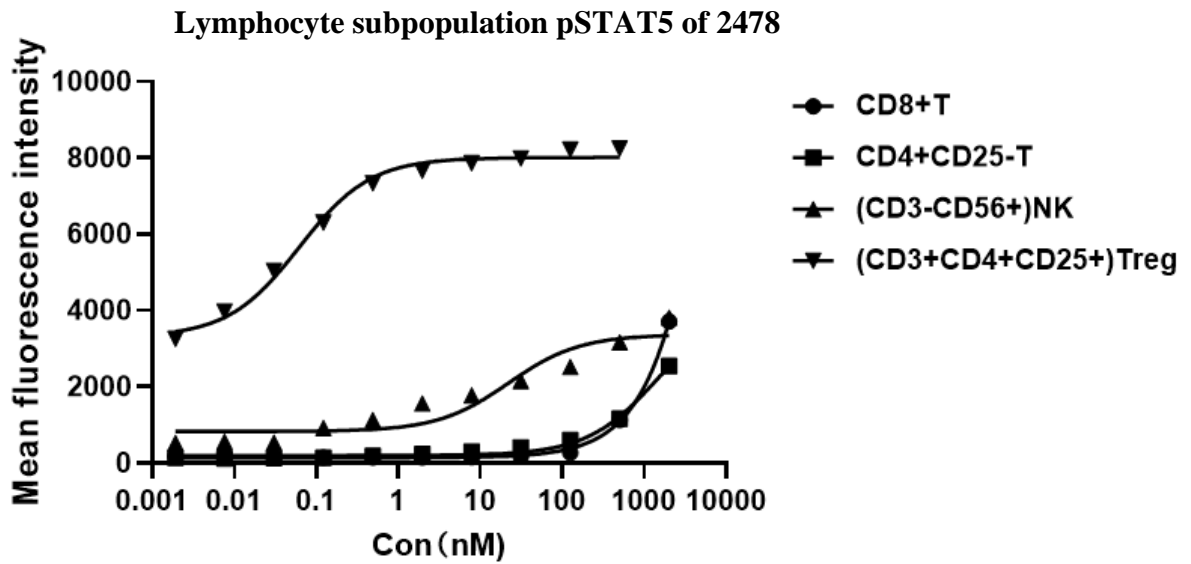


FIG. 8B

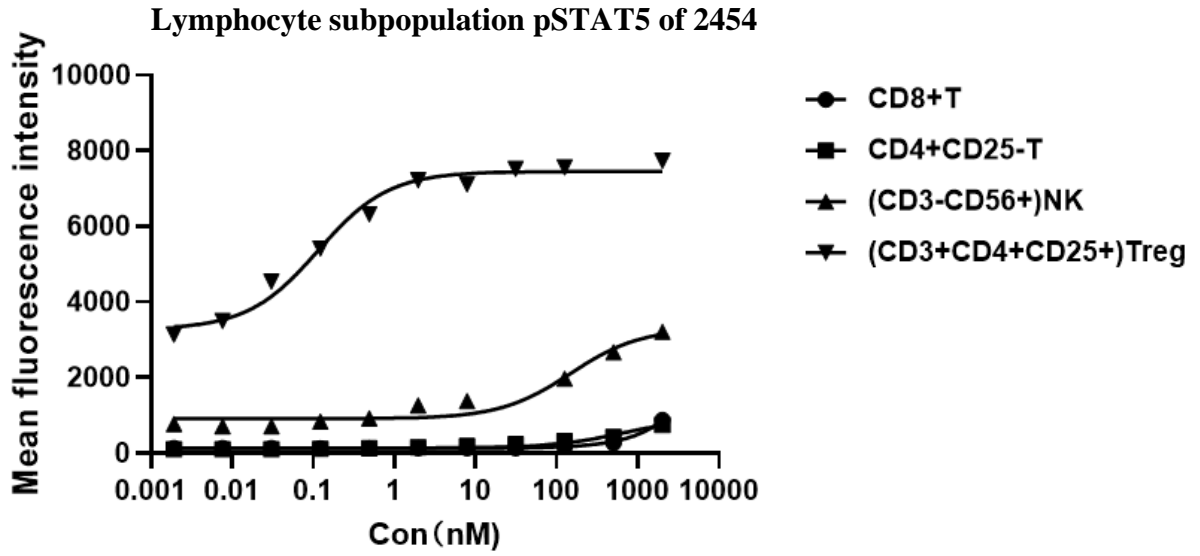


FIG. 8C

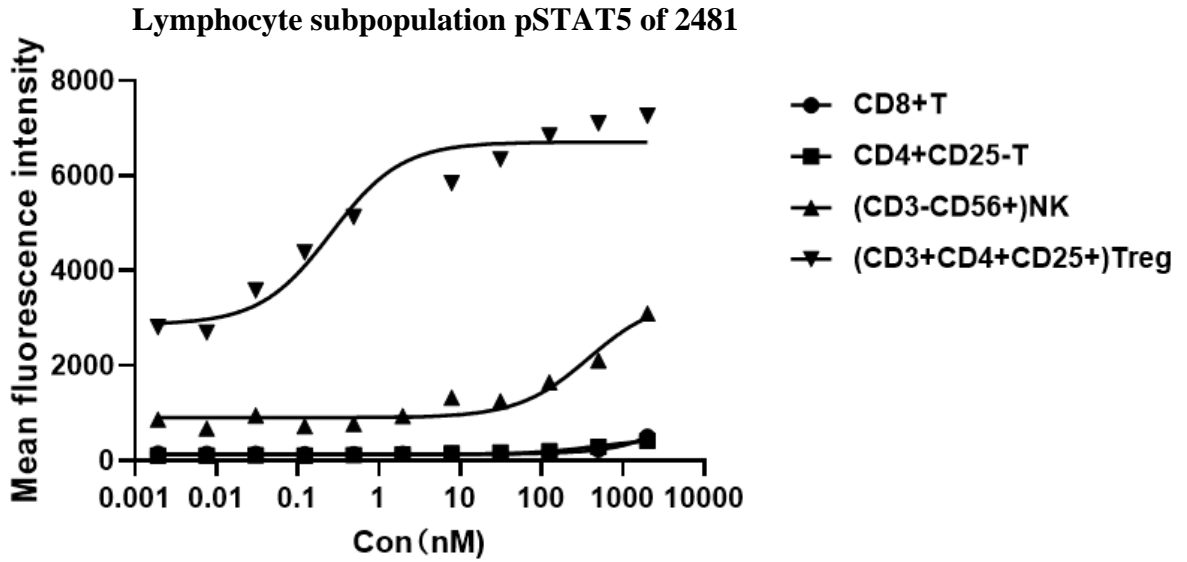


FIG. 8D

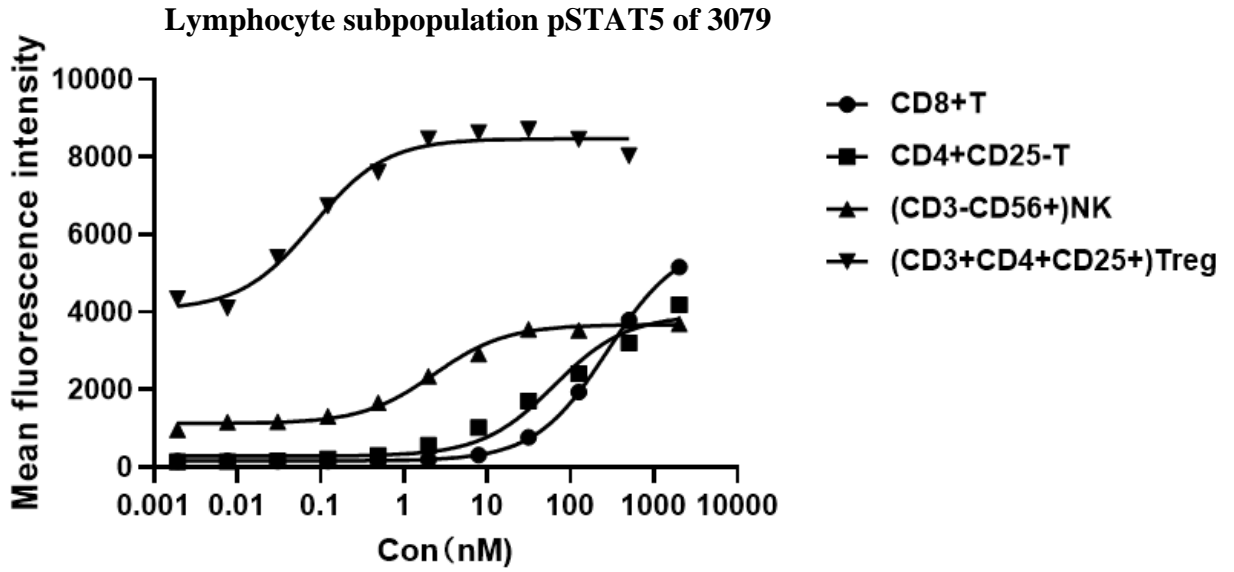


FIG. 8E

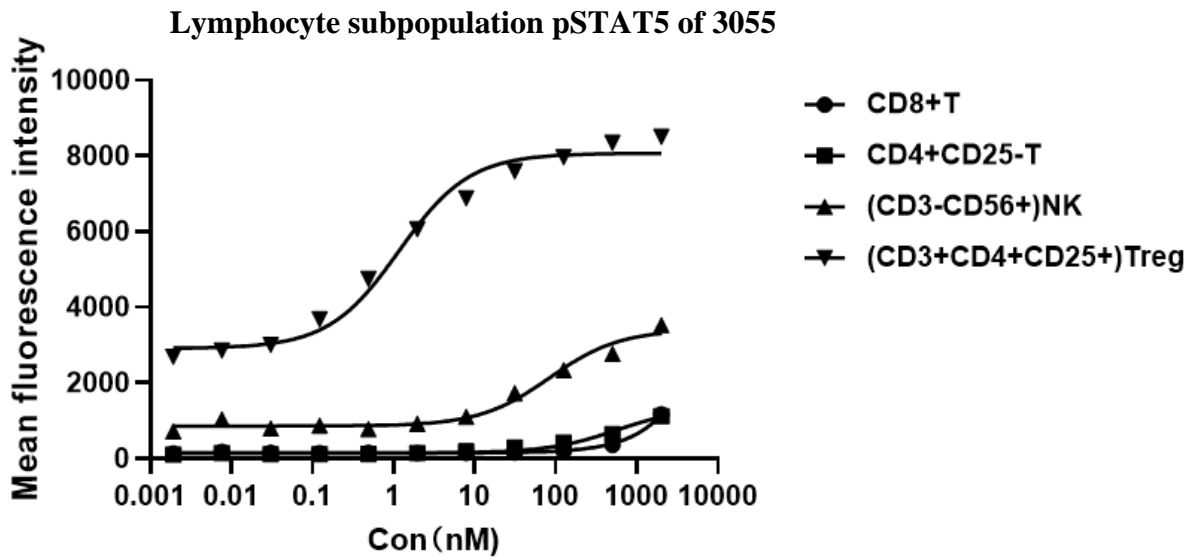


FIG. 8F

Lymphocyte subpopulation pSTAT5 of 3082

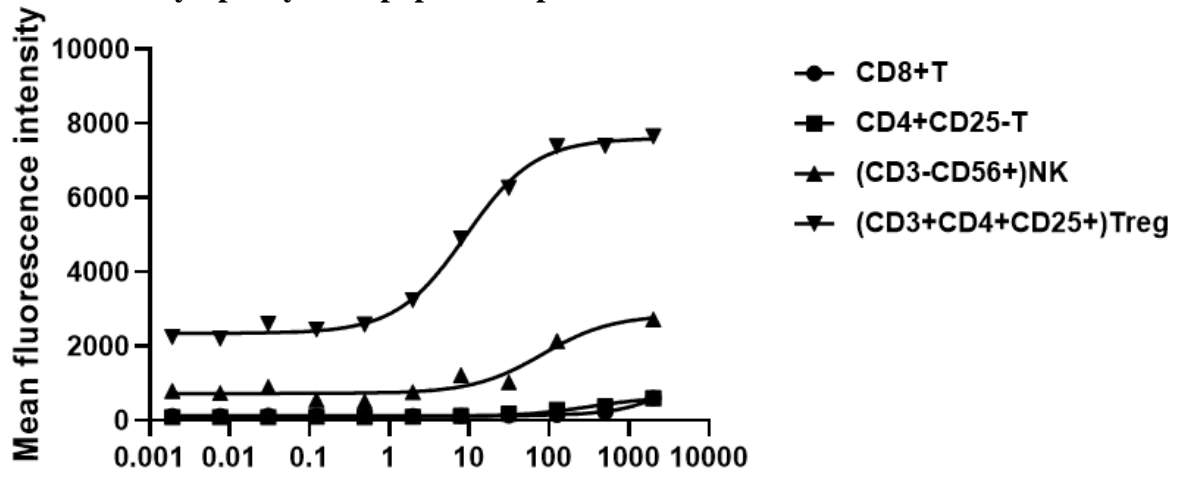


FIG. 8G

Measurement of tumor volume in C57 mice

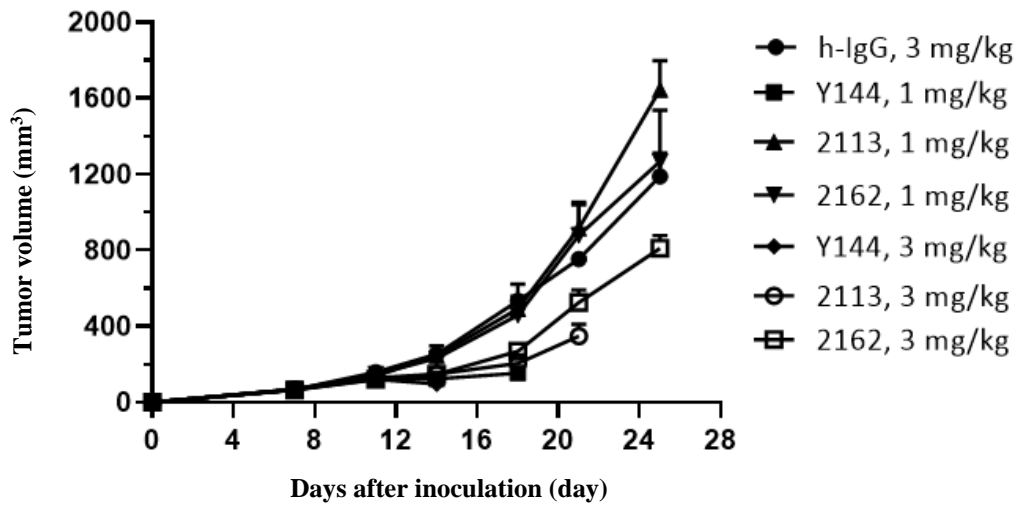


FIG. 9A

Measurement of body weight of C57 mice

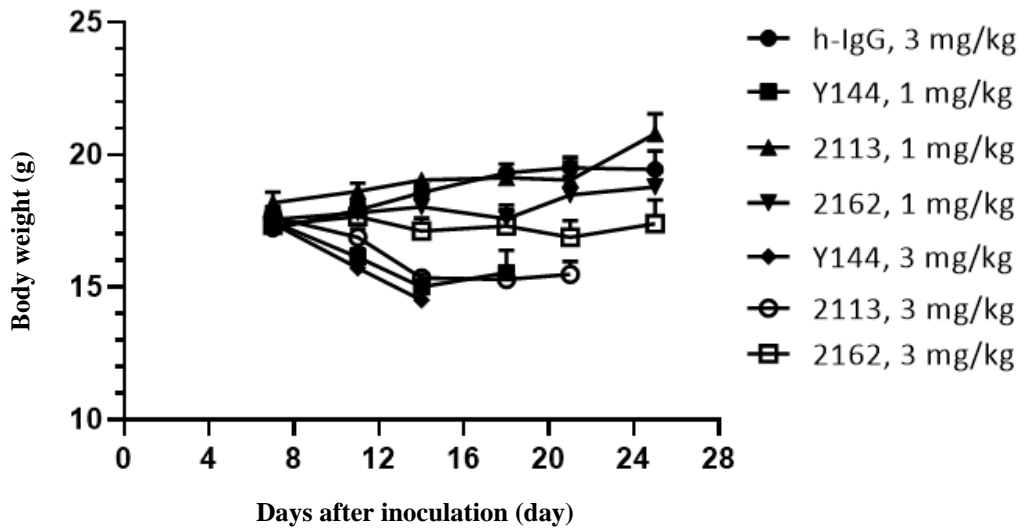


FIG. 9B

Changes in body weight of C57 mice

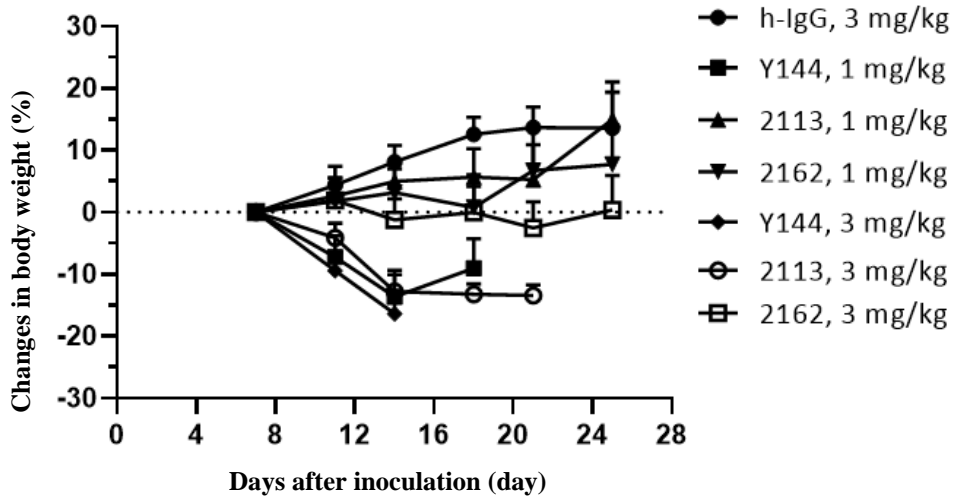


FIG. 9C

Measurement of tumor volume in C57 mice

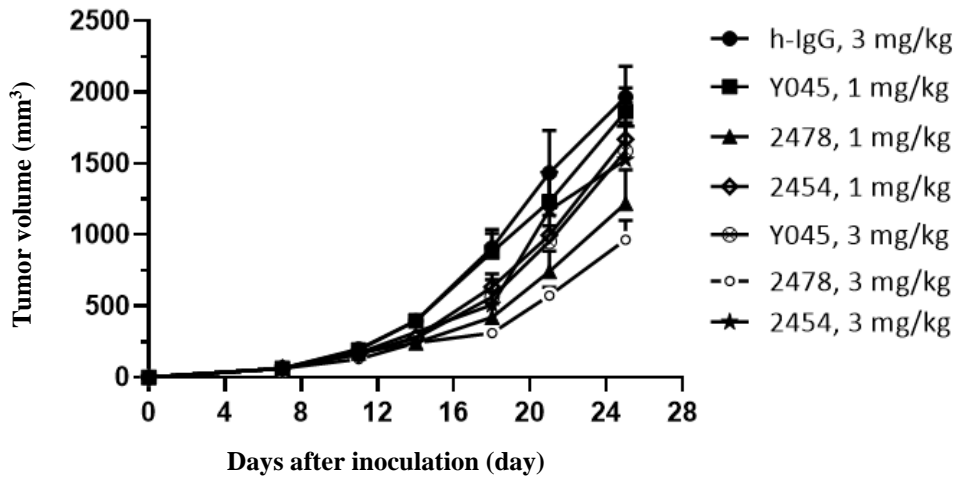


FIG. 10A

Measurement of body weight of C57 mice

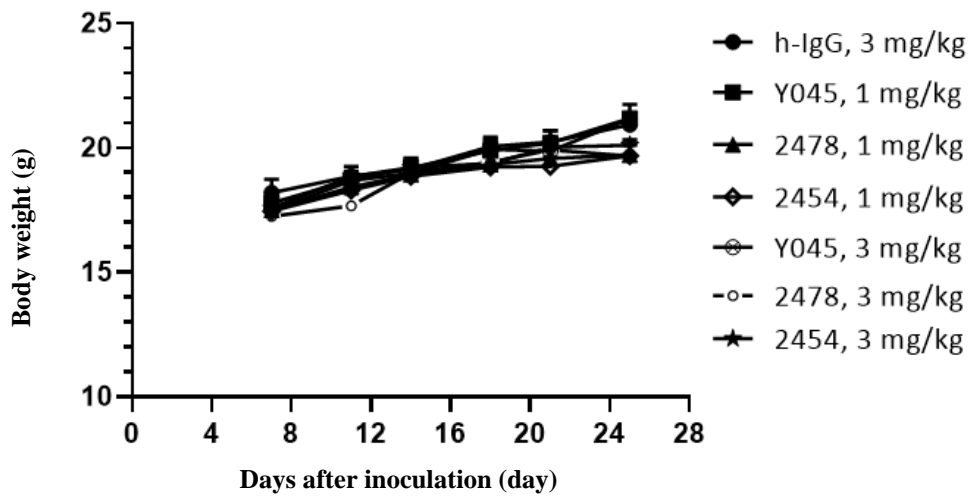


FIG. 10B

Changes in body weight of C57 mice

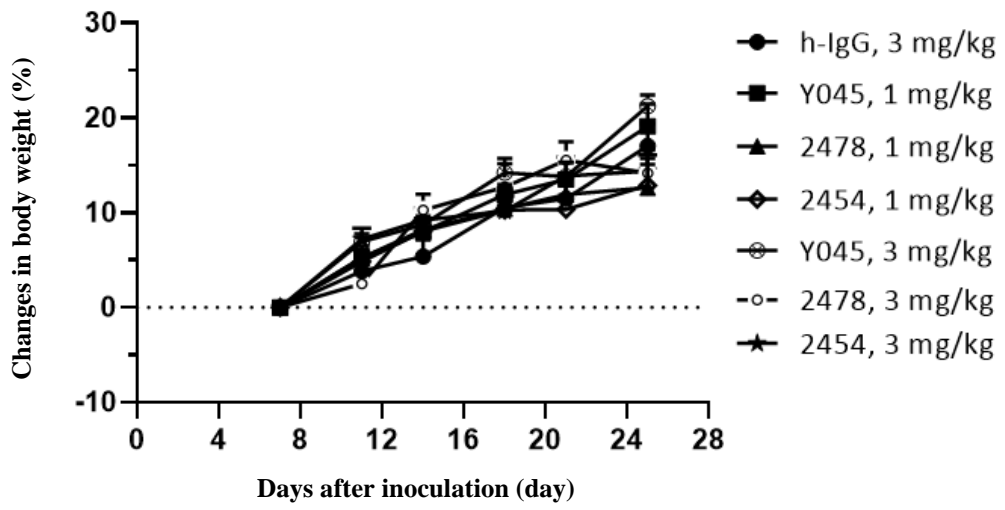


FIG. 10C

Measurement of body weight of C57 mice

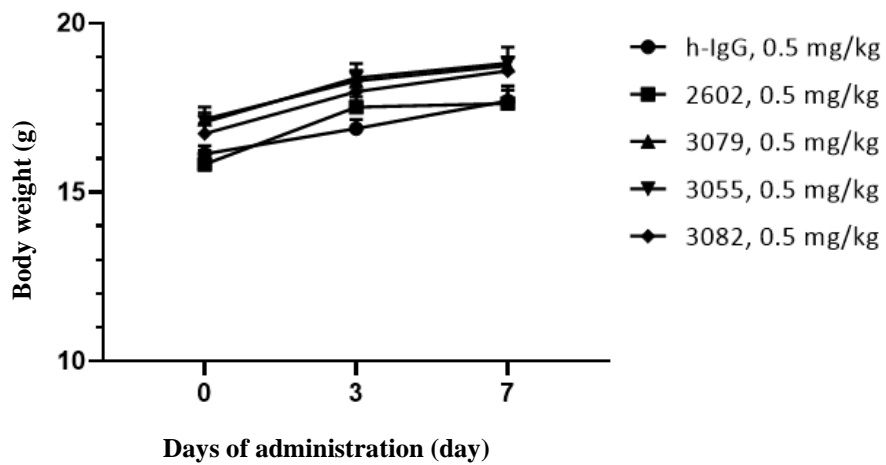


FIG. 11A

Changes in body weight of C57 mice

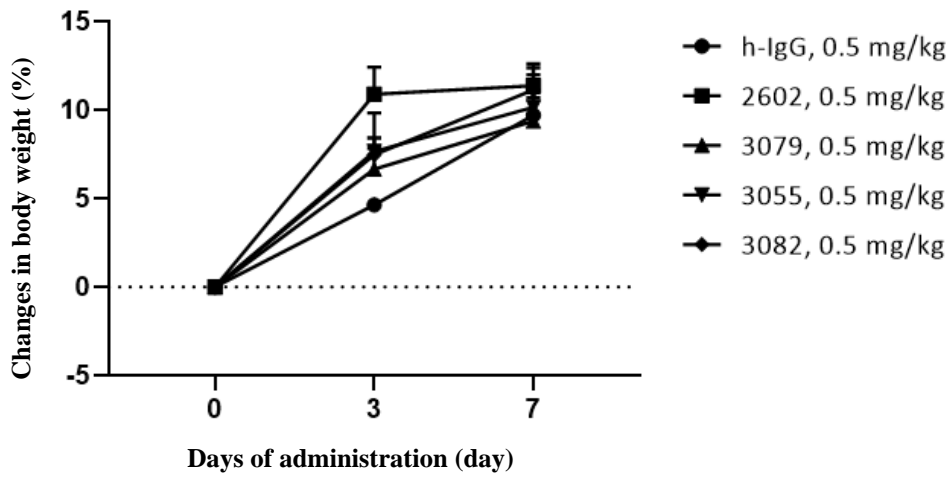


FIG. 11B

Blood-Treg/CD45

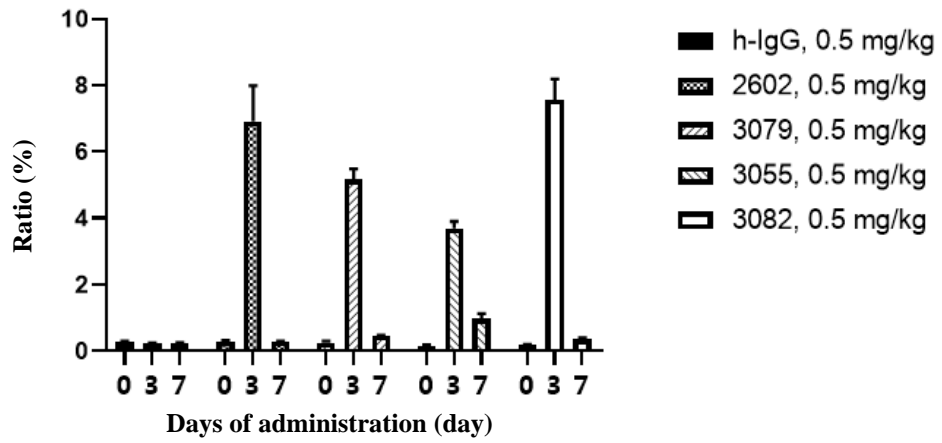


FIG. 11C

Blood-NK/CD45

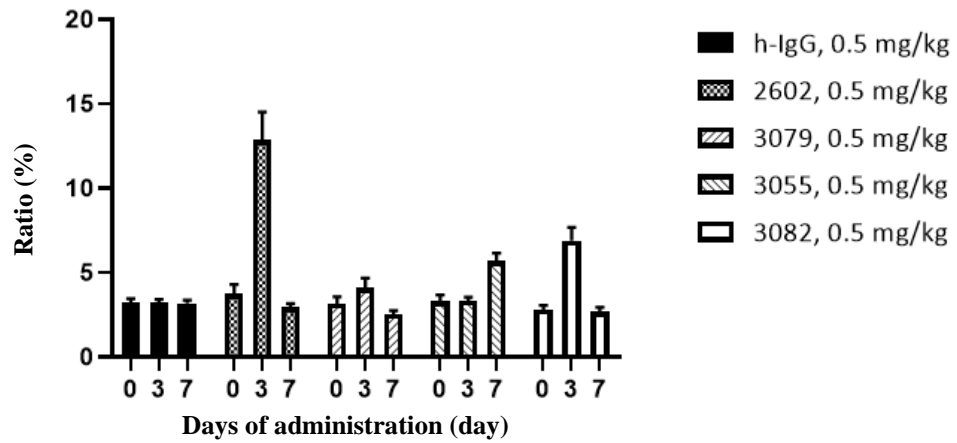


FIG. 11D

Blood-CD4 T conv/CD45

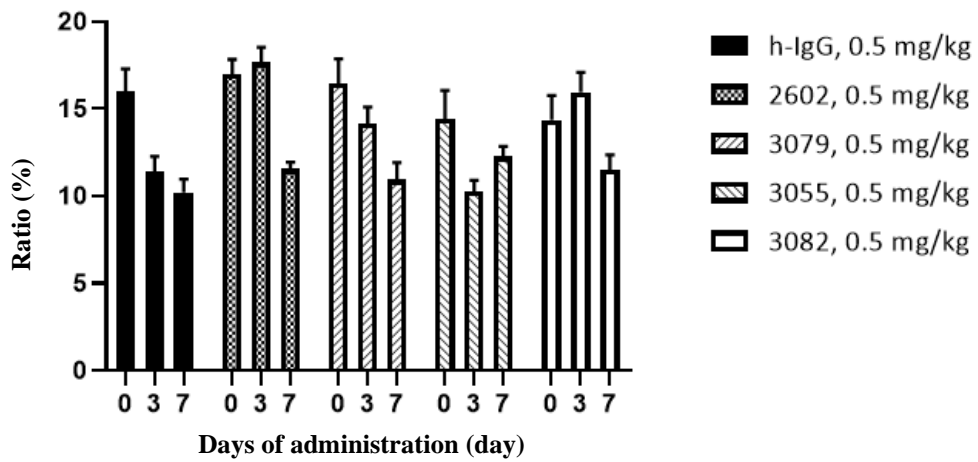


FIG. 11E

Blood-CD8/CD45

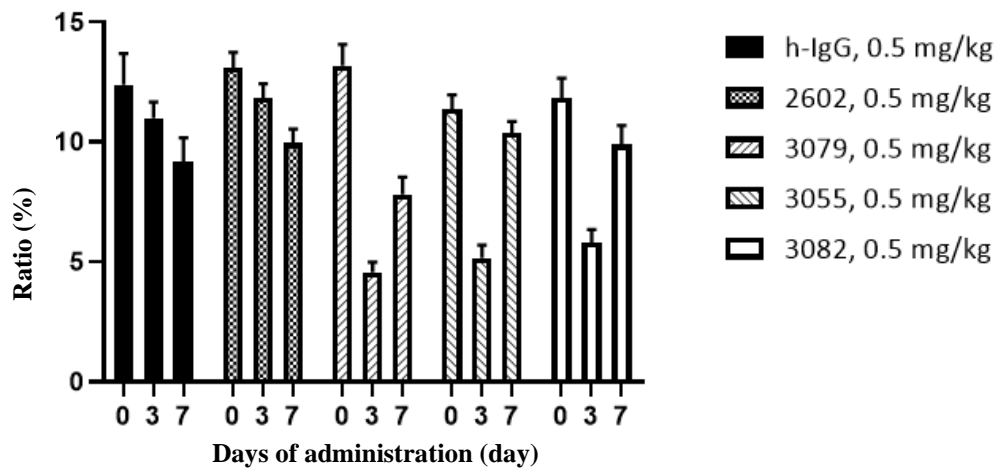


FIG. 11F

Position No.	1-34	35	36	37	38	39-40	41
IL-2 ^{WT}	APTSSSTKKTQLQLEHLLLDLQMILNGINNYKNP	K	L	T	R	ML	T
IL-2 ^{3X}	APTSSSTKKTQLQLEHLLLDLQMILNGINNYKNP	K	L	T	D	ML	T

Position No.	42	43	44	45	46-60	61	62	63-67	68	69-71
IL-2 ^{WT}	F	K	F	Y	MPKKATELKHLCLE	E	E	LKPLE	E	VLN
IL-2 ^{3X}	F	E	F	Y	MPKKATELKHLCLE	R	E	LKPLE	E	VLN

Position No.	72	73-75	76	77-83	84	85-87	88	89-90	91
IL-2 ^{WT}	L	AQS	K	NFHLRPR	D	LIS	N	IN	V
IL-2 ^{3X}	L	AQS	K	NFHLRPR	D	LIS	N	IN	V

Position No.	92	93-133
IL-2 ^{WT}	I	VLELKGSETTFMCEYADETATIVEFLNRWITFSQSIISTLT
IL-2 ^{3X}	I	VLELKGSETTFMCEYADETATIVEFLNRWITFSQSIISTLT

FIG. 12

[P36304W0024]PF210089PCT_Sequence listing-EN
Sequence listing

<110> Innovent Biologics (Suzhou) Co., Ltd.

<120> INTERLEUKIN-2 MUTANT AND USE THEREOF

<130> PF 210089PCT

<160> 638

<170> PatentIn version 3.3

<210> 1

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 1

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Ile Ser Thr Leu Thr
130

<210> 2
<211> 153
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 2

Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ser Leu Ala Leu
1 5 10 15

Val Thr Asn Ser Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu
20 25 30

Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile
35 40 45

Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe
50 55 60

Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu
65 70 75 80

Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys
85 90 95

Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile
100 105 110

Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala
115 120 125

Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe
130 135 140

[P36304W0024]PF210089PCT_Sequence listing-EN

Cys Gln Ser Ile Ile Ser Thr Leu Thr
145 150

<210> 3
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 3

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 4
<211> 133

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 4

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Asp Met Leu Thr Phe Glu Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Arg Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 5

<211> 217

<212> PRT

<213> artificial sequence

<220>

<223> IL-2 receptor sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 5

Glu Leu Cys Asp Asp Asp Pro Pro Glu Ile Pro His Ala Thr Phe Lys
 1 5 10 15

Ala Met Ala Tyr Lys Glu Gly Thr Met Leu Asn Cys Glu Cys Lys Arg
 20 25 30

Gly Phe Arg Arg Ile Lys Ser Gly Ser Leu Tyr Met Leu Cys Thr Gly
 35 40 45

Asn Ser Ser His Ser Ser Trp Asp Asn Gln Cys Gln Cys Thr Ser Ser
 50 55 60

Ala Thr Arg Asn Thr Thr Lys Gln Val Thr Pro Gln Pro Glu Glu Gln
 65 70 75 80

Lys Glu Arg Lys Thr Thr Glu Met Gln Ser Pro Met Gln Pro Val Asp
 85 90 95

Gln Ala Ser Leu Pro Gly His Cys Arg Glu Pro Pro Pro Trp Glu Asn
 100 105 110

Glu Ala Thr Glu Arg Ile Tyr His Phe Val Val Gly Gln Met Val Tyr
 115 120 125

Tyr Gln Cys Val Gln Gly Tyr Arg Ala Leu His Arg Gly Pro Ala Glu
 130 135 140

Ser Val Cys Lys Met Thr His Gly Lys Thr Arg Trp Thr Gln Pro Gln
 145 150 155 160

Leu Ile Cys Thr Gly Glu Met Glu Thr Ser Gln Phe Pro Gly Glu Glu
 165 170 175

Lys Pro Gln Ala Ser Pro Glu Gly Arg Pro Glu Ser Glu Thr Ser Cys
 180 185 190

Leu Val Thr Thr Gly Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu
 195 200 205

[P36304W0024]PF210089PCT_Sequence listing-EN

Trp His Glu His His His His His His
210 215

<210> 6
<211> 235
<212> PRT
<213> artificial sequence

<220>
<223> IL-2 receptor sequence

<400> 6

Ala Val Asn Gly Thr Ser Gln Phe Thr Cys Phe Tyr Asn Ser Arg Ala
1 5 10 15

Asn Ile Ser Cys Val Trp Ser Gln Asp Gly Ala Leu Gln Asp Thr Ser
20 25 30

Cys Gln Val His Ala Trp Pro Asp Arg Arg Arg Trp Asn Gln Thr Cys
35 40 45

Glu Leu Leu Pro Val Ser Gln Ala Ser Trp Ala Cys Asn Leu Ile Leu
50 55 60

Gly Ala Pro Asp Ser Gln Lys Leu Thr Thr Val Asp Ile Val Thr Leu
65 70 75 80

Arg Val Leu Cys Arg Glu Gly Val Arg Trp Arg Val Met Ala Ile Gln
85 90 95

Asp Phe Lys Pro Phe Glu Asn Leu Arg Leu Met Ala Pro Ile Ser Leu
100 105 110

Gln Val Val His Val Glu Thr His Arg Cys Asn Ile Ser Trp Glu Ile
115 120 125

Ser Gln Ala Ser His Tyr Phe Glu Arg His Leu Glu Phe Glu Ala Arg
130 135 140

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Leu Ser Pro Gly His Thr Trp Glu Glu Ala Pro Leu Leu Thr Leu
 145 150 155 160

Lys Gln Lys Gln Glu Trp Ile Cys Leu Glu Thr Leu Thr Pro Asp Thr
 165 170 175

Gln Tyr Glu Phe Gln Val Arg Val Lys Pro Leu Gln Gly Glu Phe Thr
 180 185 190

Thr Trp Ser Pro Trp Ser Gln Pro Leu Ala Phe Arg Thr Lys Pro Ala
 195 200 205

Ala Leu Gly Lys Asp Thr Gly Leu Asn Asp Ile Phe Glu Ala Gln Lys
 210 215 220

Ile Glu Trp His Glu His His His His His His
 225 230 235

<210> 7
 <211> 456
 <212> PRT
 <213> artificial sequence

<220>
 <223> IL-2Rβ-Fc.Knob sequence

<400> 7

Ala Val Asn Gly Thr Ser Gln Phe Thr Cys Phe Tyr Asn Ser Arg Ala
 1 5 10 15

Asn Ile Ser Cys Val Trp Ser Gln Asp Gly Ala Leu Gln Asp Thr Ser
 20 25 30

Cys Gln Val His Ala Trp Pro Asp Arg Arg Arg Trp Asn Gln Thr Cys
 35 40 45

Glu Leu Leu Pro Val Ser Gln Ala Ser Trp Ala Cys Asn Leu Ile Leu
 50 55 60

Gly Ala Pro Asp Ser Gln Lys Leu Thr Thr Val Asp Ile Val Thr Leu
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Val Leu Cys Arg Glu Gly Val Arg Trp Arg Val Met Ala Ile Gln
 85 90 95

Asp Phe Lys Pro Phe Glu Asn Leu Arg Leu Met Ala Pro Ile Ser Leu
 100 105 110

Gln Val Val His Val Glu Thr His Arg Cys Asn Ile Ser Trp Glu Ile
 115 120 125

Ser Gln Ala Ser His Tyr Phe Glu Arg His Leu Glu Phe Glu Ala Arg
 130 135 140

Thr Leu Ser Pro Gly His Thr Trp Glu Glu Ala Pro Leu Leu Thr Leu
 145 150 155 160

Lys Gln Lys Gln Glu Trp Ile Cys Leu Glu Thr Leu Thr Pro Asp Thr
 165 170 175

Gln Tyr Glu Phe Gln Val Arg Val Lys Pro Leu Gln Gly Glu Phe Thr
 180 185 190

Thr Trp Ser Pro Trp Ser Gln Pro Leu Ala Phe Arg Thr Lys Pro Ala
 195 200 205

Ala Leu Gly Lys Asp Thr Gly Leu Asn Asp Ile Phe Glu Ala Gln Lys
 210 215 220

Ile Glu Trp His Glu Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
 225 230 235 240

Pro Glu Ala Ala Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
 245 250 255

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
 260 265 270

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
 275 280 285

[P36304W0024]PF210089PCT_Sequence listing-EN

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
 290 295 300

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
 305 310 315 320

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
 325 330 335

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
 340 345 350

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Cys Arg Asp Glu Leu Thr
 355 360 365

Lys Asn Gln Val Ser Leu Trp Cys Leu Val Lys Gly Phe Tyr Pro Ser
 370 375 380

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
 385 390 395 400

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
 405 410 415

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
 420 425 430

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
 435 440 445

Ser Leu Ser Leu Ser Pro Gly Lys
 450 455

- <210> 8
- <211> 481
- <212> PRT
- <213> artificial sequence

<220>

<223> IL-2Ry-Fc.Hole sequence

<400> 8

Leu Asn Thr Thr Ile Leu Thr Pro Asn Gly Asn Glu Asp Thr Thr Ala
1 5 10 15

Asp Phe Phe Leu Thr Thr Met Pro Thr Asp Ser Leu Ser Val Ser Thr
20 25 30

Leu Pro Leu Pro Glu Val Gln Cys Phe Val Phe Asn Val Glu Tyr Met
35 40 45

Asn Cys Thr Trp Asn Ser Ser Ser Glu Pro Gln Pro Thr Asn Leu Thr
50 55 60

Leu His Tyr Trp Tyr Lys Asn Ser Asp Asn Asp Lys Val Gln Lys Cys
65 70 75 80

Ser His Tyr Leu Phe Ser Glu Glu Ile Thr Ser Gly Cys Gln Leu Gln
85 90 95

Lys Lys Glu Ile His Leu Tyr Gln Thr Phe Val Val Gln Leu Gln Asp
100 105 110

Pro Arg Glu Pro Arg Arg Gln Ala Thr Gln Met Leu Lys Leu Gln Asn
115 120 125

Leu Val Ile Pro Trp Ala Pro Glu Asn Leu Thr Leu His Lys Leu Ser
130 135 140

Glu Ser Gln Leu Glu Leu Asn Trp Asn Asn Arg Phe Leu Asn His Cys
145 150 155 160

Leu Glu His Leu Val Gln Tyr Arg Thr Asp Trp Asp His Ser Trp Thr
165 170 175

Glu Gln Ser Val Asp Tyr Arg His Lys Phe Ser Leu Pro Ser Val Asp
180 185 190

[P36304W0024]PF210089PCT_Sequence listing-EN

Gly Gln Lys Arg Tyr Thr Phe Arg Val Arg Ser Arg Phe Asn Pro Leu
 195 200 205

Cys Gly Ser Ala Gln His Trp Ser Glu Trp Ser His Pro Ile His Trp
 210 215 220

Gly Ser Asn Thr Ser Lys Glu Asn Gly Leu Asn Asp Ile Phe Glu Ala
 225 230 235 240

Gln Lys Ile Glu Trp His Glu His His His His His His His Asp Lys
 245 250 255

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro
 260 265 270

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
 275 280 285

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
 290 295 300

Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
 305 310 315 320

Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
 325 330 335

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
 340 345 350

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys
 355 360 365

Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Cys Thr
 370 375 380

Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Ser
 385 390 395 400

[P36304W0024]PF210089PCT_Sequence listing-EN

Cys Ala Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
 405 410 415

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
 420 425 430

Asp Ser Asp Gly Ser Phe Phe Leu Val Ser Lys Leu Thr Val Asp Lys
 435 440 445

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
 450 455 460

Ala Leu His Asn Arg Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
 465 470 475 480

Lys

- <210> 9
- <211> 227
- <212> PRT
- <213> artificial sequence

- <220>
- <223> Fc sequence

<400> 9

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly
 1 5 10 15

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
 20 25 30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
 35 40 45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
 50 55 60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
 85 90 95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
 100 105 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
 115 120 125

Tyr Thr Leu Pro Pro Cys Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
 130 135 140

Leu Trp Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
 145 150 155 160

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
 165 170 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
 180 185 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
 195 200 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
 210 215 220

Pro Gly Lys
 225

<210> 10
 <211> 232
 <212> PRT
 <213> artificial sequence

<220>
 <223> Fc sequence

<400> 10

[P36304W0024]PF210089PCT_Sequence listing-EN

Glu Pro Lys Ala Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
 1 5 10 15

Pro Glu Ala Ala Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
 20 25 30

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
 35 40 45

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
 50 55 60

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
 65 70 75 80

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
 85 90 95

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
 100 105 110

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
 115 120 125

Arg Glu Pro Gln Val Cys Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr
 130 135 140

Lys Asn Gln Val Ser Leu Ser Cys Ala Val Lys Gly Phe Tyr Pro Ser
 145 150 155 160

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
 165 170 175

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Val
 180 185 190

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
 195 200 205

[P36304W0024]PF210089PCT_Sequence listing-EN

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
 210 215 220

Ser Leu Ser Leu Ser Pro Gly Lys
 225 230

<210> 11
 <211> 227
 <212> PRT
 <213> artificial sequence

<220>
 <223> Fc sequence

<400> 11

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly
 1 5 10 15

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
 20 25 30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
 35 40 45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
 50 55 60

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
 65 70 75 80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
 85 90 95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
 100 105 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
 115 120 125

Cys Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser
 130 135 140

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ser Cys Ala Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
 145 150 155 160

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
 165 170 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Val Ser Lys Leu Thr Val
 180 185 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
 195 200 205

His Glu Ala Leu His Asn Arg Tyr Thr Gln Lys Ser Leu Ser Leu Ser
 210 215 220

Pro Gly Lys
 225

<210> 12
 <211> 227
 <212> PRT
 <213> artificial sequence

<220>
 <223> Fc sequence

<400> 12

Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly
 1 5 10 15

Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met
 20 25 30

Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His
 35 40 45

Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr
 65 70 75 80

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly
 85 90 95

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile
 100 105 110

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val
 115 120 125

Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser
 130 135 140

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu
 145 150 155 160

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro
 165 170 175

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
 180 185 190

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met
 195 200 205

His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
 210 215 220

Pro Gly Lys
 225

- <210> 13
- <211> 364
- <212> PRT
- <213> artificial sequence
- <220>
- <223> IL-2-Fc sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 13

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr Gly Ser Gly Ser Asp Lys Thr His Thr Cys Pro
130 135 140

Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro Ser Val Phe Leu Phe
145 150 155 160

Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val
165 170 175

Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe
180 185 190

Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro
195 200 205

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr
 210 215 220

Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val
 225 230 235 240

Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala
 245 250 255

Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg
 260 265 270

Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly
 275 280 285

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro
 290 295 300

Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser
 305 310 315 320

Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln
 325 330 335

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His
 340 345 350

Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 355 360

- <210> 14
- <211> 364
- <212> PRT
- <213> artificial sequence
- <220>
- <223> IL-2-Fc sequence
- <400> 14

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Asp Met Leu Thr Phe Glu Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Arg Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr Gly Ser Gly Ser Asp Lys Thr His Thr Cys Pro
 130 135 140

Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro Ser Val Phe Leu Phe
 145 150 155 160

Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val
 165 170 175

Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe
 180 185 190

Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro
 195 200 205

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr
 210 215 220

Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val
 225 230 235 240

Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala
 245 250 255

Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg
 260 265 270

Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly
 275 280 285

Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro
 290 295 300

Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser
 305 310 315 320

Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln
 325 330 335

Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His
 340 345 350

Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 355 360

<210> 15
 <211> 360
 <212> PRT
 <213> artificial sequence

<220>
 <223> IL-2-Fc sequence

<400> 15

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ser Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr Gly Ser Gly Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
 130 135 140

Pro Glu Ala Ala Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
 145 150 155 160

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
 165 170 175

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
 180 185 190

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
 195 200 205

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
 210 215 220

[P36304W0024]PF210089PCT_Sequence listing-EN

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
 225 230 235 240

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
 245 250 255

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
 260 265 270

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
 275 280 285

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
 290 295 300

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
 305 310 315 320

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
 325 330 335

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
 340 345 350

Ser Leu Ser Leu Ser Pro Gly Lys
 355 360

<210> 16
 <211> 360
 <212> PRT
 <213> artificial sequence

<220>
 <223> IL-2-Fc sequence

<400> 16

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr Gly Ser Gly Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
 130 135 140

Pro Glu Ala Ala Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
 145 150 155 160

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
 165 170 175

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
 180 185 190

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
 195 200 205

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
 210 215 220

[P36304W0024]PF210089PCT_Sequence listing-EN

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
 225 230 235 240

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
 245 250 255

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
 260 265 270

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
 275 280 285

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
 290 295 300

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
 305 310 315 320

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
 325 330 335

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
 340 345 350

Ser Leu Ser Leu Ser Pro Gly Lys
 355 360

<210> 17
 <211> 360
 <212> PRT
 <213> artificial sequence

<220>
 <223> IL-2-Fc sequence

<400> 17

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr Gly Ser Gly Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
 130 135 140

Pro Glu Ala Ala Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
 145 150 155 160

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
 165 170 175

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
 180 185 190

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
 195 200 205

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
 210 215 220

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
 225 230 235 240

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
245 250 255

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
260 265 270

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
275 280 285

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
290 295 300

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
305 310 315 320

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
325 330 335

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
340 345 350

Ser Leu Ser Leu Ser Pro Gly Lys
355 360

<210> 18
<211> 360
<212> PRT
<213> artificial sequence

<220>
<223> IL-2-Fc sequence

<400> 18

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Ala Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr Gly Ser Gly Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
 130 135 140

Pro Glu Ala Ala Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
 145 150 155 160

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
 165 170 175

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
 180 185 190

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
 195 200 205

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
 210 215 220

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
 225 230 235 240

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
 245 250 255

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
 260 265 270

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
 275 280 285

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
 290 295 300

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
 305 310 315 320

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
 325 330 335

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
 340 345 350

Ser Leu Ser Leu Ser Pro Gly Lys
 355 360

- <210> 19
- <211> 360
- <212> PRT
- <213> artificial sequence

- <220>
- <223> IL-2-Fc sequence

<400> 19

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Ala Asn Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr Gly Ser Gly Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala
 130 135 140

Pro Glu Ala Ala Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
 145 150 155 160

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val
 165 170 175

Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
 180 185 190

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln
 195 200 205

Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln
 210 215 220

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala
 225 230 235 240

Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro
 245 250 255

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr
 260 265 270

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser
 275 280 285

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr
 290 295 300

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr
 305 310 315 320

Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe
 325 330 335

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys
 340 345 350

Ser Leu Ser Leu Ser Pro Gly Lys
 355 360

<210> 20
 <211> 366
 <212> PRT
 <213> artificial sequence

<220>
 <223> IL-2-Fc sequence

<400> 20

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Lys Thr His Thr
 130 135 140

Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro Ser Val Phe
 145 150 155 160

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
 165 170 175

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
 180 185 190

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
 195 200 205

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
 210 215 220

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
 225 230 235 240

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
 245 250 255

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
 260 265 270

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
 275 280 285

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
 290 295 300

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
 305 310 315 320

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
 325 330 335

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
 340 345 350

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 355 360 365

<210> 21
 <211> 366
 <212> PRT
 <213> artificial sequence

<220>
 <223> IL-2-Fc sequence

<400> 21

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Lys Thr His Thr
130 135 140

Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro Ser Val Phe
145 150 155 160

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
165 170 175

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
180 185 190

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
195 200 205

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
210 215 220

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
225 230 235 240

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
245 250 255

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
260 265 270

[P36304W0024]PF210089PCT_Sequence listing-EN

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
275 280 285

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
290 295 300

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
305 310 315 320

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
325 330 335

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
340 345 350

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
355 360 365

<210> 22

<211> 366

<212> PRT

<213> artificial sequence

<220>

<223> IL-2-Fc sequence

<400> 22

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Lys Thr His Thr
130 135 140

Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly Pro Ser Val Phe
145 150 155 160

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
165 170 175

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
180 185 190

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
195 200 205

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
210 215 220

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
225 230 235 240

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
245 250 255

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
260 265 270

[P36304W0024]PF210089PCT_Sequence listing-EN

Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
 275 280 285

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
 290 295 300

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
 305 310 315 320

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
 325 330 335

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
 340 345 350

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 355 360 365

<210> 23
 <211> 370
 <212> PRT
 <213> artificial sequence

<220>
 <223> IL-2-Fc sequence

<400> 23

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Asp Met Leu Thr Phe Glu Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Arg Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp
 130 135 140

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly
 145 150 155 160

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
 165 170 175

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
 180 185 190

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
 195 200 205

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
 210 215 220

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
 225 230 235 240

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
 245 250 255

Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
 260 265 270

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
 275 280 285

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
 290 295 300

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
 305 310 315 320

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
 325 330 335

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
 340 345 350

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
 355 360 365

Gly Lys
 370

<210> 24
 <211> 370
 <212> PRT
 <213> artificial sequence

<220>
 <223> IL-2-Fc sequence

<400> 24

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp
130 135 140

Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala Gly Gly
145 150 155 160

Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
165 170 175

Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
180 185 190

Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
195 200 205

Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
210 215 220

Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
225 230 235 240

Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
245 250 255

Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
260 265 270

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu
 275 280 285

Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
 290 295 300

Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
 305 310 315 320

Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
 325 330 335

Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
 340 345 350

Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
 355 360 365

Gly Lys
 370

<210> 25
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 25

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 26
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 26

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 27
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 27

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 28
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 28

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Ile Ser Thr Leu Thr
130

<210> 29
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 29

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 30
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 30

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 31

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 31

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 32

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 32

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 33
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 33

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 34
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 34

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 35
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 35

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 36
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 36

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 37
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 37

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 38
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 38

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Arg Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 39
<211> 133
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 39

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Lys Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 40

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 40

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Glu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 41
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 41

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Gln Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 42
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 42

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Gln His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 43
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 43

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Arg His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 44

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 44

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ala His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 45
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 45

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ser His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Ile Ser Thr Leu Thr
130

<210> 46
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 46

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asn
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 47
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 47

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 48
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 48

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Tyr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 49

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 49

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Ala
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 50
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 50

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Glu
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 51
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 51

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asp
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 52
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 52

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Arg
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 53
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 53

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Asp Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Asp Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 54
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 54

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Glu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Glu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Ile Ser Thr Leu Thr
130

<210> 55
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 55

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Arg Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Arg Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 56
<211> 133

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 56

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Ser Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Ser Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 57

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 57

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asn Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 58

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 58

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Gln Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 59
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 59

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Glu Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 60

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 60

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ala Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 61
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 61

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Arg Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 62

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 62

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ser Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 63
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 63

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asn Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 64
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 64

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Glu Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 65
<211> 133
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 65

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Gln Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 66

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 66

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Thr Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 67
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 67

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Ser Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 68
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 68

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Arg Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 69
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 69

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Pro Arg Gly Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 70

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 70

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Met Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 71
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 71

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Phe Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Ile Ser Thr Leu Thr
130

<210> 72
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 72

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Leu Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 73
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 73

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Lys Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 74
<211> 133
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 74

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg His Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 75

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 75

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Thr Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 76
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 76

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Arg Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 77
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 77

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Lys Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 78
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 78

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Pro Arg Asp Leu Ile Leu Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 79
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 79

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Met Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 80
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 80

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile His Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Ile Ser Thr Leu Thr
130

<210> 81
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 81

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asp Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 82
<211> 133

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 82

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Thr Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 83

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 83

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Gln Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 84

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 84

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Arg Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 85
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 85

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Glu Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 86

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 86

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Lys Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 87
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 87

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser His Ile Asn Val Ile Val Leu Glu Leu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 88

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 88

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Met Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 89
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 89

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Ser Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 90
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 90

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Leu Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 91
<211> 133
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 91

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 92

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 92

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Leu Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 93
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 93

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Asp Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 94
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 94

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Glu Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 95
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 95

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Asn Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 96

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 96

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Gln Ile Val Leu Glu Leu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 97
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 97

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Ser Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Ile Ser Thr Leu Thr
130

<210> 98
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 98

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn His Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 99
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 99

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Glu Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 100
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 100

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Thr Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 101

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 101

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Lys Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 102
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 102

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Arg Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 103
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 103

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Leu Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 104
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 104

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 105
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 105

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gly Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 106
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 106

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asp Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Ile Ser Thr Leu Thr
130

<210> 107
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 107

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asn Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 108
<211> 133

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 108

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 109

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 109

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Asp Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 110

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 110

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Ala Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 111
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 111

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Ser Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 112
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 112

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asn Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 113
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 113

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Glu Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 114
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 114

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Thr Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 115
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 115

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Gln Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 116
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 116

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Thr Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 117
<211> 133
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 117

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asn Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 118

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 118

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
 65 70 75 80

Arg Pro Arg Thr Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
 85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
 100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile
 115 120 125

Ile Ser Thr Leu Thr
 130

<210> 119
 <211> 133
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 119

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asn Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 120
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 120

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Gln Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 121
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 121

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 122
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 122

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 123
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 123

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Arg Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 124
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 124

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Lys Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 125
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 125

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Glu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 126
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 126

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Gln Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 127

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 127

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Gln His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 128
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 128

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Arg His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 129
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 129

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ala His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 130
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 130

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ser His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 131
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 131

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asn
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 132
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 132

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 133
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 133

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Tyr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 134
 <211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 134

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Ala
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 135

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 135

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Glu
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 136

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 136

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asp
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

- <210> 137
- <211> 129
- <212> PRT
- <213> artificial sequence

- <220>
- <223> synthetic sequence

<400> 137

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Arg
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 138
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 138

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Asp Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Asp Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 139
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 139

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Glu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Glu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 140
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 140

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Arg Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Arg Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 141
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 141

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Ser Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Ser Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 142
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 142

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asn Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 143
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 143

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Gln Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 144

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 144

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Glu Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 145
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 145

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Ala Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 146
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 146

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Arg Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 147
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 147

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Ser Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 148
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 148

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 149
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 149

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Glu
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 150
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 150

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 151
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 151

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 152
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 152

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Ser
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 153

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 153

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Arg
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 154
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 154

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gly
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 155
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 155

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Met
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 156
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 156

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Phe
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 157
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 157

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Leu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 158
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 158

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Lys
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 159
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 159

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His His
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 160
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 160

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Thr Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 161

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 161

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Arg Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 162

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 162

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Lys Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 163
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 163

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Leu Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 164
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 164

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Met Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 165
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 165

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile His Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 166
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 166

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asp Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 167
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 167

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Thr Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 168
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 168

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Gln Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 169
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 169

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Arg Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 170

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 170

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Glu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 171
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 171

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Lys Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 172
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 172

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser His Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 173
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 173

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Met Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 174
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 174

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Ser Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 175
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 175

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Leu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 176
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 176

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 177
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 177

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Leu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 178
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 178

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Asp Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 179

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 179

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Glu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 180
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 180

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Asn Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 181
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 181

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Gln Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 182
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 182

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Ser Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 183
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 183

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn His Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 184
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 184

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Glu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 185
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 185

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Thr Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 186
 <211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 186

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Lys Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 187

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 187

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Arg Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 188

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 188

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Leu Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

- <210> 189
- <211> 129
- <212> PRT
- <213> artificial sequence

- <220>
- <223> synthetic sequence

<400> 189

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 190
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 190

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gly Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 191
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 191

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asp Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 192
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 192

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asn Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 193
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 193

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 194
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 194

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Asp Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 195
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 195

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ala Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 196

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 196

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ser Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 197
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 197

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 198
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 198

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Glu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 199
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 199

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 200
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 200

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 201
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 201

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 202
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 202

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 203
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 203

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 204
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 204

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 205

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 205

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 206
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 206

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 207
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 207

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 208
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 208

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Arg Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 209
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 209

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Lys Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 210
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 210

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Glu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 211
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 211

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Gln Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 212
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 212

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Gln His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 213

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 213

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Arg His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 214

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 214

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ala His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 215
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 215

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ser His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 216
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 216

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asn
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 217
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 217

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 218
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 218

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Tyr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 219
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 219

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Ala
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 220
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 220

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Glu
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 221
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 221

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asp
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 222

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 222

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Arg
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 223
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 223

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Asp Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Asp Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 224
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 224

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Glu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Glu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 225
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 225

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Arg Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Arg Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 226
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 226

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Ser Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Ser Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 227
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 227

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asn Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 228
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 228

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Gln Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 229
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 229

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Glu Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 230
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 230

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ala Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 231

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 231

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Arg Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 232
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 232

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ser Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 233
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 233

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 234
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 234

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Glu
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 235
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 235

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 236
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 236

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 237
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 237

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Ser
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 238
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 238

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Arg
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 239

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 239

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gly
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 240

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 240

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Met
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 241
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 241

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Phe
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 242
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 242

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 243
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 243

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Lys
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 244
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 244

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His His
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 245
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 245

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Thr Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 246
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 246

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Arg Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 247
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 247

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Lys Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 248

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 248

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Leu Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 249
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 249

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Met Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 250
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 250

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile His Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 251
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 251

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asp Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 252
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 252

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Thr Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 253
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 253

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Gln Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 254
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 254

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Arg Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 255
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 255

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Glu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 256
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 256

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Lys Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 257

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 257

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser His Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 258
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 258

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Met Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 259
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 259

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Ser Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 260
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 260

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Leu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 261
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 261

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 262
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 262

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Leu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 263
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 263

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Asp Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 264
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 264

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Glu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 265

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 265

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Asn Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 266

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 266

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Gln Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

- <210> 267
- <211> 129
- <212> PRT
- <213> artificial sequence

- <220>
- <223> synthetic sequence

<400> 267

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ser Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 268
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 268

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn His Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 269
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 269

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Glu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 270
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 270

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Thr Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 271
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 271

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Lys Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 272
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 272

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Arg Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 273
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 273

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Leu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 274

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 274

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 275
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 275

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gly Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 276
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 276

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asp Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 277
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 277

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asn Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 278
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 278

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 279
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 279

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Asp Ser Ile Ile Ser Thr Leu
 115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 280
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 280

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ala Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 281
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 281

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ser Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 282
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 282

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 283

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 283

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Glu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 284
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 284

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 285
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 285

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 286
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 286

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 287
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 287

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
 65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 288
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 288

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 289
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 289

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 290
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 290

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 291

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 291

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Ala Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 292

<211> 133

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 292

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 293
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 293

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asn Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 294
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 294

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Gln Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 295
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 295

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asn Leu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 296
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 296

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asn Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asn Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 297
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 297

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asn
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 298
<211> 133
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 298

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asn
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Arg Pro Arg Asn Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu
85 90 95

Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala
100 105 110

Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile
115 120 125

Ile Ser Thr Leu Thr
130

<210> 299
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 299

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 300

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 300

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Arg Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 301
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 301

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Lys Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 302
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 302

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Glu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 303
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 303

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Gln Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 304
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 304

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Gln His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 305
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 305

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Arg His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 306
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 306

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ala His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 307
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 307

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ser His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 308
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 308

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asn
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 309

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 309

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 310
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 310

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Tyr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 311
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 311

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Ala
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 312
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 312

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Glu
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 313
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 313

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asp
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 314
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 314

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Arg
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 315
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 315

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Asp Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Asp Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 316
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 316

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Glu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Glu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 317

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 317

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Arg Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Arg Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 318

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 318

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Ser Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Ser Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 319
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 319

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asn Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 320
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 320

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Gln Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 321
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 321

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Glu Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 322
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 322

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ala Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 323
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 323

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Arg Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 324
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 324

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ser Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 325
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 325

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 326

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 326

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Glu
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 327
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 327

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 328
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 328

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 329
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 329

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Ser
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 330
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 330

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Arg
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 331
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 331

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gly
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 332
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 332

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Met
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 333
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 333

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Phe
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 334
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 334

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Leu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 335

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 335

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Lys
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 336
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 336

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His His
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 337
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 337

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Thr Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 338
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 338

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Arg Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 339
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 339

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Lys Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 340
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 340

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Leu Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 341
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 341

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Met Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 342
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 342

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile His Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 343

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 343

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asp Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 344

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 344

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Thr Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 345
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 345

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Gln Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 346
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 346

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Arg Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 347
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 347

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Glu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 348
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 348

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Lys Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 349
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 349

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser His Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 350
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 350

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Met Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 351
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 351

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Ser Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 352

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 352

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Leu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 353
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 353

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 354
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 354

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Leu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 355
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 355

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Asp Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 356
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 356

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Glu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 357
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 357

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Asn Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 358
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 358

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Gln Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 359
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 359

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Ser Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 360
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 360

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn His Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 361

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 361

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Glu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 362
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 362

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Thr Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 363
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 363

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Lys Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 364
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 364

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Arg Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 365
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 365

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Leu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 366
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 366

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 367
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 367

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gly Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 368
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 368

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asp Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 369

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 369

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asn Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 370

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 370

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

- <210> 371
- <211> 129
- <212> PRT
- <213> artificial sequence

- <220>
- <223> synthetic sequence

<400> 371

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Asp Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 372
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 372

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ala Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 373
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 373

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ser Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 374
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 374

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 375
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 375

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Glu
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 376
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 376

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 377
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 377

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 378

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 378

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 379
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 379

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 380
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 380

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 381
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 381

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 382
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 382

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 383
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 383

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 384
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 384

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 385
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 385

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Arg Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 386
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 386

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Lys Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 387

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 387

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Glu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 388
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 388

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Gln Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 389
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 389

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Gln His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 390
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 390

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Arg His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 391
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 391

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ala His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 392
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 392

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ser His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 393
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 393

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asn
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 394
 <211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 394

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 395

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 395

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Tyr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 396

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 396

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Ala
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 397
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 397

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Glu
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 398
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 398

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asp
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 399
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 399

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Arg
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 400
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 400

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Asp Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Asp Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 401
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 401

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Glu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Glu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 402
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 402

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Arg Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Arg Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 403
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 403

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Ser Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Ser Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 404

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 404

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asn Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 405
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 405

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Gln Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 406
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 406

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Glu Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 407
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 407

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Ala Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 408
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 408

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Arg Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 409
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 409

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Ser Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 410
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 410

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 411
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 411

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Glu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 412
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 412

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 413

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 413

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 414
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 414

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Ser
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 415
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 415

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Arg
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 416
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 416

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gly
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 417
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 417

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Met
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 418
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 418

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Phe
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 419
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 419

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 420
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 420

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Lys
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 421

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 421

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His His
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 422

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 422

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Thr Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 423
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 423

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Arg Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 424
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 424

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Lys Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 425
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 425

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Leu Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 426
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 426

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Met Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 427
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 427

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile His Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 428
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 428

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asp Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 429
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 429

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Thr Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 430

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 430

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Gln Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 431
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 431

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Arg Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 432
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 432

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Glu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 433
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 433

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Lys Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 434
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 434

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser His Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 435
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 435

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Met Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 436
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 436

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Ser Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 437
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 437

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Leu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 438
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 438

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 439

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 439

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Leu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 440
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 440

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Asp Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 441
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 441

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Glu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 442
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 442

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Asn Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 443
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 443

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Gln Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 444
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 444

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ser Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 445
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 445

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn His Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 446
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 446

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Glu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 447

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 447

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Thr Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 448

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 448

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Lys Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

- <210> 449
- <211> 129
- <212> PRT
- <213> artificial sequence

- <220>
- <223> synthetic sequence

<400> 449

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Arg Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 450
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 450

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Leu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 451
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 451

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 452
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 452

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gly Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 453
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 453

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asp Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 454
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 454

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asn Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 455
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 455

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 456

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 456

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Asp Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 457
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 457

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ala Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 458
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 458

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ser Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 459
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 459

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 460
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 460

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Glu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 461
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 461

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 462
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 462

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 463
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 463

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 464
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 464

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 465

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 465

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 466
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 466

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 467
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 467

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 468
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 468

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Glu Leu Glu Glu Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 469
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 469

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 470
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 470

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Arg Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 471
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 471

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Lys Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 472
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 472

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Glu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 473

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 473

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Gln Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 474

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 474

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Gln His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 475
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 475

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Arg His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 476
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 476

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ala His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 477
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 477

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ser His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 478
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 478

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asn
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 479
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 479

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 480
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 480

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Tyr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 481
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 481

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Ala
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 482

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 482

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Glu
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 483
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 483

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asp
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 484
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 484

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Arg
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 485
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 485

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Asp Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Asp Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 486
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 486

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Glu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Glu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 487
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 487

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Arg Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Arg Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 488
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 488

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Ser Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Ser Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 489
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 489

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asn Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 490
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>

<223> synthetic sequence

<400> 490

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Gln Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 491

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 491

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Glu Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 492
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 492

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ala Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 493
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 493

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Arg Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 494
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 494

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ser Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 495
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 495

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 496
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 496

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Glu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 497
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 497

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 498
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 498

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 499

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 499

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Ser
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 500

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 500

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Arg
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 501
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 501

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gly
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 502
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 502

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Met
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 503
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 503

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Phe
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 504
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 504

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Leu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 505
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 505

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Lys
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 506
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 506

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His His
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 507
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 507

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Thr Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 508

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 508

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Arg Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 509
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 509

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Lys Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 510
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 510

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Leu Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 511
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 511

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Met Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 512
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 512

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile His Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 513
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 513

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asp Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 514
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 514

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Thr Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 515
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 515

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Gln Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 516
<211> 129
<212> PRT
<213> artificial sequence

<220>

<223> synthetic sequence

<400> 516

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Arg Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 517

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 517

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Glu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 518
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 518

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Lys Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

- <210> 519
- <211> 129
- <212> PRT
- <213> artificial sequence

- <220>
- <223> synthetic sequence

<400> 519

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser His Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 520
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 520

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Met Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 521
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 521

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Ser Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 522
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 522

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Leu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 523
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 523

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 524
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 524

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Leu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 525

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 525

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Asp Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 526

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 526

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Glu Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

- <210> 527
- <211> 129
- <212> PRT
- <213> artificial sequence

- <220>
- <223> synthetic sequence

<400> 527

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Asn Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 528
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 528

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Gln Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 529
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 529

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ser Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 530
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 530

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn His Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 531
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 531

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Glu Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 532
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 532

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Thr Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 533
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 533

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Lys Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 534

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 534

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Arg Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 535
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 535

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Leu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 536
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 536

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 537
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 537

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gly Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 538
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 538

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asp Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 539
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 539

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asn Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 540
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 540

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 541
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 541

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Asp Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 542
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 542

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ala Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 543

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 543

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ser Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 544
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 544

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 545
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 545

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Glu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 546
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 546

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 547
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 547

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 548
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 548

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 549
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 549

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 550
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 550

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 551

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 551

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asn
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 552

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 552

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 553
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 553

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gly Asp Ala Ser Ile His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 554
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 554

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 555
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 555

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Arg Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 556
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 556

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Lys Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 557
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 557

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Glu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 558
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 558

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Gln Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 559
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 559

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Gln His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 560

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 560

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Arg His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 561
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 561

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ala His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 562
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 562

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Ser His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 563
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 563

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asn
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 564
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 564

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 565
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 565

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Tyr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 566
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 566

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Ala
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 567
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 567

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Glu
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 568
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 568

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Asp
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 569

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 569

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Arg
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 570
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 570

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Asp Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Asp Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 571
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 571

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Glu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Glu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 572
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 572

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Arg Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Arg Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 573
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 573

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Ser Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Ser Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 574
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 574

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asn Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 575
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 575

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Gln Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 576
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 576

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Glu Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 577

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 577

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ala Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 578

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 578

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Arg Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 579
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 579

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Ser Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 580
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 580

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 581
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 581

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Glu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 582
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 582

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 583
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 583

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 584
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 584

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Ser
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 585
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 585

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Arg
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 586

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 586

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gly
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 587
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 587

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Met
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 588
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 588

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Phe
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 589
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 589

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Leu
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 590
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 590

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Lys
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 591
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 591

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His His
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 592
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 592

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Thr Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 593
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 593

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Arg Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 594
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 594

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Lys Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 595

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 595

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Leu Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 596
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 596

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Met Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 597
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 597

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile His Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 598
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 598

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asp Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

- <210> 599
- <211> 129
- <212> PRT
- <213> artificial sequence

- <220>
- <223> synthetic sequence

<400> 599

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Thr Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 600
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 600

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Gln Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 601
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 601

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Arg Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 602
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 602

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Glu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 603

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 603

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Lys Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 604

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 604

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser His Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

- <210> 605
- <211> 129
- <212> PRT
- <213> artificial sequence

- <220>
- <223> synthetic sequence

<400> 605

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Met Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 606
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 606

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Ser Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 607
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 607

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Leu Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 608
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 608

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 609
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 609

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Leu Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 610
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 610

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Asp Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 611
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 611

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Glu Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 612

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 612

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Asn Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 613
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 613

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Gln Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 614
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 614

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Ser Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 615
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 615

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn His Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 616
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 616

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Glu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 617
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 617

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Thr Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 618
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 618

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Lys Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 619
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 619

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Arg Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 620
<211> 129
<212> PRT
<213> artificial sequence

<220>

[P36304W0024]PF210089PCT_Sequence listing-EN

<223> synthetic sequence

<400> 620

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Leu Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 621

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 621

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 622
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 622

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

[P36304W0024]PF210089PCT_Sequence listing-EN

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gly Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 623
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 623

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asp Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 624
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 624

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Asn Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 625
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 625

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 626
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 626

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Asp Ser Ile Ile Ser Thr Leu
 115 120 125

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr

<210> 627
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 627

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ala Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 628
<211> 129

[P36304W0024]PF210089PCT_Sequence listing-EN

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 628

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Ser Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 629

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<400> 629

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 630

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 630

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

[P36304W0024]PF210089PCT_Sequence listing-EN

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Glu
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 631
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 631

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

[P36304W0024]PF210089PCT_Sequence listing-EN

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 632
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 632

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

[P36304W0024]PF210089PCT_Sequence listing-EN

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Gln Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 633
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 633

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

[P36304W0024]PF210089PCT_Sequence listing-EN

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 634
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 634

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

[P36304W0024]PF210089PCT_Sequence listing-EN

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

<210> 635
 <211> 129
 <212> PRT
 <213> artificial sequence

<220>
 <223> synthetic sequence

<400> 635

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Thr
 65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
 115 120 125

Thr

[P36304W0024]PF210089PCT_Sequence listing-EN

<210> 636
<211> 129
<212> PRT
<213> artificial sequence

<220>
<223> synthetic sequence

<400> 636

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu His
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asn
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Glu Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 637
<211> 129
<212> PRT
<213> artificial sequence

[P36304W0024]PF210089PCT_Sequence listing-EN

<220>

<223> synthetic sequence

<400> 637

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Gln
65 70 75 80

Leu Ile Ser Asn Ile Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu
85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
115 120 125

Thr

<210> 638

<211> 129

<212> PRT

<213> artificial sequence

<220>

<223> synthetic sequence

<400> 638

[P36304W0024]PF210089PCT_Sequence listing-EN

Ala Pro Ala Ser Ser Ser Thr Lys Lys Thr Gln Leu Gln Leu Glu Thr
 1 5 10 15

Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile Asn Asn Tyr Lys
 20 25 30

Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe Tyr Met Pro Lys
 35 40 45

Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu Glu Glu Leu Lys
 50 55 60

Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys Asn Phe His Asp
 65 70 75 80

Leu Ile Ser Asn Ile Asn Ile Ile Val Leu Glu Leu Lys Gly Ser Glu
 85 90 95

Thr Thr Phe Met Cys Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu
 100 105 110

Phe Leu Asn Arg Trp Ile Thr Phe Ser Gln Ser Ile Ile Ser Thr Leu
 115 120 125

Thr