

[CLAIMS]

[Claim 1] An interleukin-2 analog having an increased binding affinity for interleukin-2 beta receptors compared to aldesleukin, wherein the interleukin-2 analog comprises any one sequence selected from the group consisting of amino acid sequences of SEQ ID NOS: 10, 13, 14, 15, 17, 20, 21, 22, 32, 35, 36, 53, 54, 56, 58, 59, 60, 62, 71, 72, 74, 75, 76, 77, 78, 85, 87, 89, 91, 92, 93, 94, 97, 98, 99, 100, 101, 102, 103, 104, 105, and 106.

[Claim 2] The interleukin-2 analog of claim 1, wherein the interleukin-2 analog has an altered binding affinity for interleukin-2 alpha receptors compared to aldesleukin.

[Claim 3] The interleukin-2 analog of claim 1, wherein one or more amino acids are added to the amino acid corresponding to position 133.

[Claim 4] The interleukin-2 analog of claim 1, wherein the interleukin-2 analog is native interleukin-2, in which the amino acid at position 1 is removed and the amino acid at position 125 is substituted with a different amino acid.

[Claim 5] The interleukin-2 analog of claim 4, wherein the interleukin-2 analog further comprises 1 to 10 amino acid substitutions.

[Claim 6] An isolated nucleic acid encoding the interleukin-2 analog according to any one of claims 1 to 5.

[Claim 7] A recombinant expression vector comprising the nucleic acid according to claim 6.

[Claim 8] A transformant comprising the recombinant expression vector according to claim 7, excluding humans.

[Claim 9] An interleukin-2 analog comprising an amino acid sequence represented by General Formula 2 below:

[General Formula 2]

X1-P-T-S-S-S-T-K-K-T-Q-L-Q-L-E-H-L-X18-L-D-L-X22-M-I-L-N-G-I-N-N-Y-K-N-P-K-L-T-X38-M-L-T-X42-K-F-Y-M-P-K-K-A-T-E-L-K-H-L-Q-C-L-E-X61-E-L-K-P-L-E-X68-V-L-N-L-A-Q-S-K-N-F-H-F-X81-P-R-D-X85-X86-S-N-I-N-V-F-V-L-E-L-K-G-S-

E-T-T-F-M-C-E-Y-A-D-E-T-A-T-I-V-E-F-L-N-R-W-I-T-F-S-Q-S-I-I-S-T-L-T (General Formula 2, SEQ ID NO: 213)

wherein in General Formula 2 above,
X1 is a deletion;
X18 is leucine (L) or arginine (R);
X22 is glutamic acid (E) or glutamine (Q);
X38 is alanine (A) or arginine (R);
X42 is phenylalanine (F) or lysine (K);
X61 is aspartic acid (D) or glutamic acid (E);
X68 is aspartic acid (D) or glutamic acid (E);
X81 is aspartic acid (D) or glutamic acid (E);
X85 is leucine (L) or valine (V); and
X86 is isoleucine (I) or valine (V).

[Claim 10] The interleukin-2 analog of claim 9, wherein the interleukin-2 analog comprises any one sequence selected from the group consisting of amino acid sequences of SEQ ID NOS: 22, 42, 53, 87, 105, and 106.

[Claim 11] The interleukin-2 analog of claim 9, wherein the interleukin-2 analog further comprises one or more amino acids at the C-terminus thereof.