Claims

1. An IL-2 mutant, wherein ~~the IL-2 mutant has amino acid residue mutations at one or more of the following positions corresponding to wild-type IL-2: 39, 49, 73, and 109; and preferably, the IL-2 mutant has an amino acid residue mutation only at position 39~~the IL-2 mutant has a single amino acid residue mutation in wild-type human IL-2: M39D.

2. An IL-2 mutant, wherein the IL-2 mutant has ~~a single~~an amino acid residue mutation in wild-type human IL-2: M39D~~the IL-2 mutant has amino acid residue mutations at position 39~~ and has amino acid residue mutations optionally at one or more of the following positions corresponding to wild-type human IL-2: 49, 73 and 109.

~~3. The IL-2 mutant of claim 1 or 2, wherein the IL-2 mutant has one or more of the following amino acid residue mutations in wild-type IL-2: M39D, M39E, M39Q, M39N, M39A, K49N, A73T, A73S and D109N.~~

~~4. The IL-2 mutant of claim 3, wherein the IL-2 mutant has the following single amino acid residue mutation in wild-type IL-2: M39D, M39E, M39Q, M39N or M39A; preferably M39D, M39E, M39Q or M39N; more preferably M39D, M39E or M39Q; more preferably M39D or M39E; and most preferably M39D.~~

3~~5~~. A fusion protein or conjugate, comprising the IL-2 mutant of ~~any one of~~ claim~~s~~ 1~~-4~~ or 2 and a non-IL-2 functional moiety.

4~~6~~. A polynucleotide, encoding the IL-2 mutant of ~~any one of~~ claim~~s~~ 1~~-4~~ or 2 or the fusion protein or conjugate of claim 3~~5~~.

5~~7~~. An expression vector, comprising the polynucleotide of claim 4~~6~~.

6~~8~~. A host cell, comprising the expression vector of claim 5~~7~~, or having the polynucleotide of claim 4~~6~~ integrated into the genome of the host cell.

7~~9~~. A pharmaceutical composition, comprising the IL-2 mutant protein of ~~any one of~~ claim~~s~~ 1~~-4~~ or 2 or the fusion protein or conjugate of claim 3~~5~~ and a pharmaceutically acceptable excipient.

8~~10~~. Use of the IL-2 mutant of ~~any one of~~ claim~~s~~ 1~~-4~~ or 2 or the fusion protein of claim 3~~5~~, for preparing a medicament for the treatment of a disease in which IL-2 is used for immunotherapy in an individual.