【Claims】

1. An artificially engineered immune cell having at least one artificially engineered immune regulatory gene selected from Dgkα gene and Dgkζ gene,

wherein the artificially engineered immune regulatory gene includes one or more indels,

wherein the indels are located in a proto-spacer-adjacent Motif (PAM) sequence or are located within the range of continuous 1bp to 30bp adjacent to the 5' end or the 3' end of a PAM sequence,

and the indels are located in an exon region of Dgkα gene, or Dgkζ gene.

2. The artificially engineered immune cell according to claim 1,

wherein the immune cell comprises artificially engineered Dgkα gene and Dgkζ gene.

3. The artificially engineered immune cell according to claim 1, wherein at least one of the indels is located in at least one of exon regions of Dgkα gene selected from exon 6, exon 7 and exon 8 of Dgkα gene.

4. The artificially engineered immune cell according to claim 1, wherein at least one of the indels is located in a target sequence in at least one of exon regions of Dgkζ gene selected from exon 3, exon 5, exon 6, exon 8, exon 10, exon 11and exon 12of Dgkζ gene.

5. The artificially engineered immune cell according to claim 1, wherein the immune cell is at least one cell selected from the group consisting of T cell, NK cell, NKT cell, and an immune cell differentiated from a stem cell.

6. The artificially engineered immune cell according to claim 1, wherein the immune cell further comprises a chimeric antigen receptor or an engineered T cell receptor.

7. A composition for the production of an artificially engineered immune cell having one or more indels located in an exon region of Dgkα gene and/or Dgkζ gene, comprising:

(i) one or more guide nucleic acids independently capable of forming a complementary bond to a target sequence located in an exon region of Dgkα gene, or Dgkζ gene, or nucleic acids encoding the same; and

(ii) an editor protein or nucleic acid encoding the same;

wherein the complementary bond that the guide nucleic acid forms comprises 0 to 5 mismatches.

8. The composition for the production of an artificially engineered immune cell according to claim 7,

wherein the guide nucleic acids and the editor protein are in the form of ribonucleoprotein.

9. The composition for the production of an artificially engineered immune cell according to claim 7,

wherein the guide nucleic acids are independently capable of forming a complementary bond to a target sequence selected from SEQ ID NO: 13 to 24, in the exon region of Dgkα gene, or to a target sequence selected from SEQ ID NO: 109 to 125 in the exon region of Dgkζ gene, or are nucleic acids encoding the same.

10. The composition for the production of an artificially engineered immune cell according to claim 9,

wherein the guide nucleic acids are independently capable of forming a complementary bond to a target sequence selected from SEQ ID NO: 19, 20, 21, and 23, in the exon region of Dgkα gene, or to a target sequence selected from SEQ ID NO: 109, 110, 111, 112 and 113 in the exon region of Dgkζ gene, or are nucleic acids encoding the same.

11. The composition for the production of an artificially engineered immune cell according to claim 7,

wherein the composition comprises:

a guide nucleic acid capable of forming a complementary bond to the target sequence located in the exon region of Dgkα gene; and

a guide nucleic acid capable of forming a complementary bond to the target sequence located in the exon region of Dgkζ gene.

12. A guide nucleic acid, comprising a guide domain, a first complementary domain, a linker domain, and a second complementary domain,

wherein the guide domain is capable of forming a complementary bond to a target sequence selected from SEQ ID NOs: 13 to 24 in an exon region of Dgkα gene or to a target sequence selected from SEQ ID NOs: 109 to 125 in an exon region of Dgkζ gene, or is a nucleic acid encoding the same.

13. The guide nucleic acid according to claim 12, wherein the guide domain is capable of forming a complementary bond to a target sequence selected from SEQ ID NO: 19, 20, 21, and 23, in the the exon region of Dgkα gene, or to a target sequence selected from SEQ ID NO: 109, 110, 111, 112 and 113 in the exon region of Dgkζ gene.

14. A method for producing an artificially engineered immune cell having one or more indels located in an exon region of Dgkα gene and/or Dgkζ gene, comprising:

contacting an immune cell isolated from the human body to:

(a) one or more guide nucleic acids independently capable of forming a complementary bond to a target sequence located in an exon region of Dgkα gene, or Dgkζ gene, or nucleic acids encoding the same; and

(b) an editor protein which is at least one selected from the group consisting of *Streptococcus pyogenes*-derived Cas9 protein, a *Campylobacter jejuni*-derived Cas9 protein, a *Streptococcus thermophilus*-derived Cas9 protein, a *Streptococcus aureus*-derived Cas9 protein, a *Neisseria meningitidis*-derived Cas9 protein, and Cpf1 protein, or a nucleic acid encoding the same;

and inducing one or more indels in the nucleic acid sequence of any one or more of Dgkα and Dgkζ genes of the immune cell;

wherein the indels are located in a proto-spacer-adjacent Motif (PAM) sequence or are located within the range of 1bp to 30bp adjacent to the 5' end or the 3' end of a PAM sequence,

and the indels are located in an exon region of Dgkα gene, and/or Dgkζ gene.

15. The method according to claim 14,

wherein the guide nucleic acids are independently capable of forming a complementary bond to a target sequence selected from SEQ ID NO: 19, 20, 21, and 23, in the exon region of Dgkα gene, or to a target sequence selected from SEQ ID NO: 109, 110, 111, 112 and 113 in the exon region of Dgkζ gene, or are nucleic acids encoding the same.

16. The method according to claim 14, wherein the step of contacting is carried out by one or more methods selected from electroporation, liposome, plasmid, viral vectors, nanoparticle and protein translocation domain fusion protein method.

17. The method according to claim 16, wherein the viral vector is at least one selected from the group of a retrovirus, a lentivirus, an adenovirus, an adeno-associated virus, a vaccinia virus, a poxvirus, and a herpes simplex virus.

18. A gene manipulation kit comprising:

(a) a guide nucleic acid according to claim 12; and

(b) an editor protein which includes one or more proteins selected from the group consisting of a *Streptococcus pyogenes*-derived Cas9 protein, a *Campylobacter jejuni*-derived Cas9 protein, a *Streptococcus thermophilus*-derived Cas9 protein, a *Streptococcus aureus*-derived Cas9 protein, a *Neisseria meningitidis*-derived Cas9 protein, and a Cpf1 protein.