【Claims】

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

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

wherein, based on a wild-type nucleotide sequence of the immune regulatory gene, the indels are located in a proto-spacer-adjacent Motif (PAM) sequence or the indels 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 a sequence selected from SEQ ID NOs: 19, 20, 21 and 23 in an exon region of Dgkα gene, and SEQ ID NOs: 109 to 113 in an exon region of Dgkζ gene,

wherein the engineered Dgkα gene does not comprise the same nucleotide sequence selected from SEQ ID NOs: 19, 20, 21 and 23 on an exon region of the engineered Dgkα gene, and

wherein the engineered Dgkζ gene does not comprises the same nucleotide sequence selected from SEQ ID NOs: 109 to 113 on an exon region of the engineered Dgkζ gene.

2. The artificially engineered immune cell according to claim 1, wherein the indels are located in a sequence selected from SEQ ID NOs: 19, 20, 21 and 23 in an exon of Dgkα gene, and a sequence from selected from SEQ ID NOs: 109 to 113 in an exon region of Dgkζ gene.

3. The artificially engineered immune cell according to claim 1 or claim 2, wherein the engineered Dgkα gene does not comprise the same nucleotide sequence as SEQ ID NO: 19 on exon 7 of the Dgkα gene, or the engineered Dgkα gene does not comprise the same nucleotide sequence as at least one selected from SEQ ID NOs: 20, 21, and 23 on exon 8 of the Dgkα gene.

4. The artificially engineered immune cell according to any one of claims 1 to 3, wherein the engineered Dgkζ gene does not comprise the same nucleotide sequence as at least one selected from SEQ ID NOs: 109 to 113 on exon 3 of the Dgkζ gene.

5. The artificially engineered immune cell according to any one of claims 1 to 4, wherein the immune cell is a T cell, NK cell, NKT cell, macrophage or an immune cell differentiated from a stem cell.

6. The artificially engineered immune cell according to any one of claims 1 to 5, wherein the immune cell further comprises a chimeric antigen receptor or an engineered T cell receptor, wherein the immune cell is a T cell, NK cell, NKT cell, or macrophage.