Claims

[Claim 1] A T cell with enhanced glucose uptake ability.

[Claim 2] The T cell according to claim 1,
wherein the T cell comprises a chimeric antigen receptor (CAR);
and/or wherein the T cell has an effector function;
and/or wherein the T cell is a precursor cell of an effector T cell ($T_{eff}$);
wherein, preferably, when the T cell comprises a CAR, the CAR is expressed in the T cell;
and/or wherein the glucose transporter comprises GLUT1, GLUT2, GLUT3, and GLUT4;
wherein, preferably, the glucose transporter is GLUT3;
and/or wherein the T cell is a human T cell.

[Claim 3] An effector T cell comprising a chimeric antigen receptor (CAR), the effector T cell being modified to express a glucose transporter and/or having enhanced expression of a glucose transporter, wherein the T cell exhibits an effector function under low-glucose conditions (0.5 mM) that is at least equivalent to that under normal-glucose conditions (10 mM).

[Claim 4] The T cell according to claim 3, wherein the CAR is expressed in the T cell.

[Claim 5] The T cell according to claim 3 or 4, wherein the glucose transporter comprises GLUT1, GLUT2, GLUT3, and GLUT4.

[Claim 6] An effector T cell into which a GLUT3 gene is introduced.

[Claim 7] The T cell according to any one of claims 3 to 6, wherein the T cell is a human T cell.

[Claim 8] A cell population comprising T cells with enhanced glucose uptake ability,

wherein the T cells comprise cells having a property of exhibiting an effector function when introduced into a body;

wherein, preferably, the T cells are modified to express a glucose transporter and/or have enhanced expression of a glucose transporter;

wherein, preferably, the T cells have an effector function;

wherein, preferably, the T cell comprises a chimeric antigen receptor (CAR);

wherein, preferably, the cell population comprises $T_{eff}$;

wherein, preferably, the cell population comprises precursor cells of $T_{eff}$;

wherein, preferably, when the T cell comprises a CAR, the CAR is expressed in the T cells;

wherein, preferably, the glucose transporter comprises GLUT1, GLUT2, GLUT3, and GLUT4;

wherein, preferably, the glucose transporter is GLUT3;

wherein, preferably, the T cells are human T cells.

[Claim 9] A cell population comprising effector T cells that comprise a chimeric antigen receptor (CAR) and are modified to express a glucose transporter and/or have enhanced expression of a glucose transporter, wherein the T cells exhibit an effector function under low-glucose conditions (0.5 mM) that is at least equivalent to that under normal-glucose conditions (10 mM).

[Claim 10] The cell population according to claim 9,

wherein the CAR is expressed in the T cells;

and/or wherein the glucose transporter comprises GLUT1, GLUT2, GLUT3, and GLUT4;

wherein, preferably, the glucose transporter is GLUT3.

[Claim 11] A cell population comprising effector T cells into which a GLUT3 gene is introduced.

[Claim 12] The cell population according to any one of claims 9 to 11, wherein the T cells are human T cells.

[Claim 13] A pharmaceutical composition comprising the T cell according to any one of claims 1 to 7 or the cell population according to any one of claims 8 to 12.

[Claim 14] The pharmaceutical composition according to claim 13,

wherein the pharmaceutical composition is for treating or preventing cancer;

wherein, preferably, the pharmaceutical composition is for curing cancer;

wherein, preferably, curing of the cancer is confirmed by tumor eradication.

[Claim 15] The pharmaceutical composition according to claim 13 or 14,

wherein the pharmaceutical composition is for exerting a long-term effect against cancer;

wherein, preferably, the pharmaceutical composition is for prevention of cancer metastasis or prevention of cancer recurrence;

wherein, preferably, the pharmaceutical composition is for preventing recurrence of cancer.