

Claims

1. A chimeric antigen receptor, comprising an amino acid sequence shown in SEQ ID NO. 1.
2. An isolated nucleic acid molecule, encoding the chimeric antigen receptor according to claim 1.
- 5 3. An isolated nucleic acid molecule, encoding a chimeric antigen receptor, wherein the nucleic acid molecule comprises the nucleic acid sequence shown in SEQ ID NO. 2.
4. A vector, comprising the nucleic acid molecule according to either of claims 2-3.
5. An immune effector cell, comprising the chimeric antigen receptor according to claim 1, the nucleic acid molecule according to either of claims 2-3 and/or the vector according to claim 4.
- 10 6. The immune effector cell according to claim 5, wherein the immune effector cell is selected from the group consisting of a T lymphocyte and a natural killer cell.
7. The immune effector cell according to either of claims 5-6, wherein the chimeric antigen receptor according to claim 1 is expressed on the surface of the immune effector cell.
8. A method for preparing an immune effector cell, comprising the step of transducing the
15 vector according to claim 4 into an immune effector cell.
9. The method according to claim 8, wherein the immune effector cell is selected from the group consisting of a T lymphocyte and a natural killer cell.
10. A composition, comprising the immune effector cell according to any of claims 5-7.
11. Use of the chimeric antigen receptor according to claim 1, the nucleic acid molecule
20 according to either of claims 2-3, the vector according to claim 4 and/or the immune effector cell according to any of claims 5-7 in the manufacture of a medicament, wherein the medicament is useful for the treatment of a disease or disorder associated with CD19 expression.
12. Use according to claim 11, wherein the disease or disorder associated with CD19
25 expression comprises non-solid tumors.
13. Use according to claim 12, wherein the non-solid tumor comprises leukemia and/or lymphoma.
14. Use according to claim 11, wherein the disease or disorder associated with CD19 expression comprises acute lymphoblastic leukemia and/or B-cell lymphoma.

15. Use according to claim 14, wherein the acute lymphoblastic leukemia comprises acute lymphoblastic leukemia in adults and/or acute lymphoblastic leukemia in children.

16. Use according to claim 15, wherein the medicament is administered at a dose of 0.25×10^8 to 0.5×10^8 CAR-positive T cells.

5 17. Use according to claim 14, wherein the B-cell lymphoma comprises non-Hodgkin's lymphoma.

18. Use according to claim 17, wherein the medicament is administered at a dose of 1×10^8 to 2×10^8 CAR-positive T cells.

10 19. The chimeric antigen receptor according to claim 1, the nucleic acid molecule according to either of claims 2-3, the vector according to claim 4 and/or the immune effector cell according to any of claims 5-7, for use in the treatment of a disease or disorder associated with CD19 expression.

15 20. The chimeric antigen receptor, the nucleic acid molecule, the vector and/or the immune effector cell according to claim 19, wherein the disease or disorder associated with CD19 expression comprises non-solid tumors.

21. The chimeric antigen receptor, the nucleic acid molecule, the vector and/or the immune effector cell according to claim 20, wherein the non-solid tumor comprises leukemia and/or lymphoma.

20 22. The chimeric antigen receptor, the nucleic acid molecule, the vector and/or the immune effector cell according to claim 19, wherein the disease or disorder associated with CD19 expression comprises acute lymphoblastic leukemia and/or B-cell lymphoma.

23. The chimeric antigen receptor, the nucleic acid molecule, the vector and/or the immune effector cell according to claim 22, wherein the acute lymphoblastic leukemia comprises acute lymphoblastic leukemia in adults and/or acute lymphoblastic leukemia in children.

25 24. The chimeric antigen receptor, the nucleic acid molecule, the vector and/or the immune effector cell according to claim 23, wherein the administration is performed at a dose of 0.25×10^8 to 0.5×10^8 CAR-positive T cells.

30 25. The chimeric antigen receptor, the nucleic acid molecule, the vector and/or the immune effector cell according to claim 22, wherein the B-cell lymphoma comprises non-Hodgkin's lymphoma.

26. The chimeric antigen receptor, the nucleic acid molecule, the vector and/or the immune effector cell according to claim 25, wherein the administration is performed at a dose of 1×10^8 to 2×10^8 CAR-positive T cells.