Claims

1. A modified NK cell, wherein said cell expresses the CD3 chains CD3γ, CD3δ, CD3ε and CD3ζ, and a TcR;

and the CD3 chains and the TcR form a functional CD3-TcR complex located at the surface of the NK cell.

2. The cell of claim 1, wherein said TcR is CD8 and/or CD4 independent.

3. The cell of claim 1 or 2, wherein said cell is an NK-92 cell.

4. The cell of claim 1 or 2, wherein said cell is a primary NK cell.

5. The cell of any one of claims 1 to 4, wherein said cell is modified to be non-immunogenic.

6. The cell of claim 5, wherein said cell is modified to be universally non-immunogenic.

7. The cell of any one of claims 1 to 6, wherein said cell is:

i) human and HLA-negative;

ii) modified to disrupt or prevent expression of β_2 microglobulin; or

iii) irradiated.

8. A modified NK cell as defined in any one of claims 1 to 7 for use in therapy.

9. Use of a modified NK cell as defined in any one of claims 1 to 7 in the manufacture of a medicament for use in adoptive cell transfer therapy for the treatment of cancer in a subject.

10. Use of a modified NK cell as defined in any one of claims 1 to 7 in the manufacture of a medicament for use in adoptive cell transfer therapy for the treatment of an infection in a subject.

11. The use of claim 9 or 10, wherein the TcR is specific for both an antigen expressed by a target cell in the subject to be treated and for the MHC type of the subject.

12. A therapeutic composition comprising a modified NK cell as defined in any one of claims 1 to 7, and at least one pharmaceutically-acceptable carrier or excipient.

13. A method for preparing a modified NK cell for therapeutic use, said method comprising:

(a) providing an NK cell which expresses the CD3 chains CD3γ, CD3δ, CD3ε and CD3ζ;

(b) determining the MHC type of a subject to be treated;

(c) identifying a target antigen in the subject, which antigen is expressed or presented by cells in the subject;

(d) modifying the cell of step (a) to express a TcR having specificity for the target antigen and matching the MHC type of the subject, such that a functional CD3-TcR complex is located at the surface of the cell;.

14. The method of claim 13, wherein the TcR is specific for a cancer antigen.

15. The method of claim 13 or 14, wherein the NK cell is a primary NK cell.

16. A kit for use in adoptive cell transfer therapy, said kit comprising:

(a) an NK cell which expresses the CD3 chains CD3γ, CD3δ, CD3ε and CD3ζ; and

(b) a panel of nucleic acid molecules each encoding a TcR, wherein the TcRs have different antigen specificity and/or different MHC specificity.

17. The kit for use according to claim 16, wherein said nucleic acid molecules are contained in vectors.

18. The kit for use according to claim 17, wherein said vectors are viral vectors.

19. The kit for use according to any one of claims 16 to 18, wherein the NK cell is a primary NK cell.

20. The kit for use according to any one of claims 16 to 19, wherein said NK cell is universally non-immunogenic.

21. The kit for use according to claim 20, wherein said NK cell is:

i) human and HLA-negative;

ii) modified to disrupt or prevent expression of β_2 microglobulin; or

iii) irradiated.