

Claims

1. A T cell receptor that recognizes HLA-A11-restricted HBC₁₄₁₋₁₅₁ epitope peptide, which comprises an α chain and a β chain;

wherein the α chain comprises three complementarity determining regions with amino acid sequences shown in positions 48 to 53, positions 71 to 77 and positions 112 to 121 of SEQ ID NO. 2, respectively;

wherein the β chain comprises three complementarity determining regions with amino acid sequences shown in positions 46 to 50, positions 68 to 73 and positions 111 to 122 of SEQ ID NO. 4, respectively;

wherein the amino acid sequence of the α chain is shown in SEQ ID NO. 2;

the amino acid sequence of the β chain is shown in SEQ ID NO. 4;

the nucleotide sequence of the nucleic acid molecule coding for the α chain is shown in SEQ ID No. 1;

the nucleotide sequence of the nucleic acid molecule coding for the β chain is shown in SEQ ID No. 3.

2. The T cell receptor according to claim 1, wherein the amino acid sequence of the variable region of the α chain is shown in positions 22 to 112 of SEQ ID No. 2;

the amino acid sequence of the variable region of the β chain is shown in positions 20 to 113 of SEQ ID No. 4.

3. The T cell receptor according to claim 1, wherein the amino acid sequence of the constant region of the α chain is shown in positions 133 to 268 of SEQ ID No. 2;

the amino acid sequence of the constant region of the β chain is shown in positions 133 to 305 of SEQ ID NO. 4.

4. A nucleic acid molecule coding for the T cell receptor according to any one of claims 1 to 3.

5. The nucleic acid molecule according to claim 4, wherein the nucleic acid molecule coding for the T cell receptor comprises a nucleic acid molecule coding for the α chain of the T cell receptor and a nucleic acid molecule coding for the β chain of the T cell receptor;

the nucleotide sequences coding for the three complementarity determining regions in the α chain of the T cell receptor are shown in positions 142 to 159, positions 211 to 231 and positions 334 to 363 of SEQ ID No.1, respectively; or sequences having at least 99%, 95%, 90%, 85% or 80% identity thereto and encoding the same amino acid residues;

the nucleotide sequences coding for the three complementarity determining regions in the β chain of the T cell receptor are shown in positions 136 to 150, positions 202 to 219 and positions 331 to 366 of SEQ ID No.3, respectively; or sequences having at least 99%, 95%, 90%, 85% or 80% identity thereto and encoding the same amino acid residues.

6. The nucleic acid molecule according to claim 4, wherein the nucleotide sequence coding for the variable region of the α chain is shown in positions 64 to 336 of SEQ ID No. 1; or a sequence having at least 99%, 95%, 90%, 85% or 80% identity thereto and encoding the same amino acid residues;

the nucleotide sequence coding for the variable region of the β chain is shown in positions 58 to 339 of SEQ ID No. 3; or a sequence having at least 99%, 95%, 90%, 85% or 80% identity thereto and encoding the same amino acid residues.

7. The nucleic acid molecule according to claim 4, wherein the nucleotide sequence

coding for the constant region of the α chain is shown in positions 397 to 807 of SEQ ID No. 1;

the nucleotide sequence coding for the constant region of the β chain is shown in positions 397 to 918 of SEQ ID No.3.

8. The nucleic acid molecule according to claim 4, wherein the nucleotide sequence of the nucleic acid molecule coding for the α chain is shown in SEQ ID No. 1;

the nucleotide sequence of the nucleic acid molecule coding for the β chain is shown in SEQ ID No.3.

9. An expression cassette, a vector or a cell containing the nucleic acid molecule according to any one of claims 4 to 8.

10. The vector according to claim 9, wherein the vector is a retroviral vector or a lentiviral vector;

the retroviral vector is a recombinant plasmid obtained by inserting the nucleic acid molecule coding for the α chain of the T cell receptor and the nucleic acid molecule coding for the β chain of the T cell receptor between the multiple cloning sites of the retroviral vector MSCV-IRES-GFP;

the lentiviral vector is a recombinant plasmid obtained by inserting the nucleic acid molecule coding for the α chain of the T cell receptor and the nucleic acid molecule coding for the β chain of the T cell receptor between the multiple cloning sites of the lentiviral packaging vector pCDH-MSCV-MCS-IRES-GFP.

11. The cell according to claim 9, wherein the cell is a T cell or a Jurkat cell.

12. A T cell having the T cell receptor according to any one of claims 1 to 3.

13. A pharmaceutical composition comprising the vector or cell according to claim 9, or comprising the T cell according to claim 12.

14. Use of the cell according to any one of claims 9 to 11, or, the T cell having the T cell receptor according to claim 12 for preparing a medicament for preventing and/or treating diseases caused by HBV infection.

15. The use according to claim 14, wherein the disease caused by HBV infection is chronic hepatitis B or hepatocellular carcinoma.