Claims

1. A peptide comprising a sequence that is selected from the group of SEQ ID No. 1 to SEQ ID No. 95 or a variant thereof which is at least 80%, preferably 90 and more preferred 95% homolog to SEQ ID No. 1 to SEQ ID No. 95 or a variant thereof that induces T cells cross-reacting with said peptide, wherein said peptide is not a full-length polypeptide.

2. The peptide according to Claim 1, wherein said peptide or variant has an overall length of between 8 and 100, preferably between 8 and 30, and most preferred between 8 and 14 amino acids.

3. The peptide according to any of Claims 1 to 2, having the ability to bind to a molecule of the human major histocompatibility complex (MHC) class-I or -II.

4. The peptide according to any one of Claims 1 to 3, wherein the peptide consists or consists essentially of an amino acid sequence according to SEQ ID No. 1 to SEQ ID No. 95.

5. The peptide according to any of Claims 1 to 5, wherein the peptide is modified and/or includes non-peptide bonds.

6. The peptide according to any of Claims 1 to 5, wherein the peptide is a fusion protein, in particular comprising N-terminal amino acids of the HLA-DR antigen-associated invariant chain (Ii).

7. A nucleic acid, encoding a peptide according to any one of Claims 1 to 6, provided, that the peptide is not the full human protein.

8. The nucleic acid according to Claim 7 which is DNA, cDNA, PNA, CNA, RNA or combinations thereof.

9. An expression vector capable of expressing a nucleic acid according to Claim 7 or 8.

10. A peptide according to any one of Claims 1 to 6, a nucleic acid according to Claim 7 or 8 or an expression vector according to Claim 9 for use in medicine.

11. A host cell comprising a nucleic acid according to Claim 7 or 8 or an expression vector according to Claim 9.

12. The host cell according to Claim 11 that is an antigen presenting cell.

13. The host cell according to claim 12, wherein the antigen presenting cell is a dentritic cell.

14. A method of producing a peptide according to any one of Claims 1 to 6, the method comprising culturing the host cell according to Claim 11 and isolating the peptide from the host cell or its culture medium.

15. An in vitro method for producing activated cytotoxic T lymphocytes (CTL), the method comprising contacting in vitro CTL with antigen loaded human class I or II MHC molecules expressed on the surface of a suitable antigen-presenting cell for a period of time sufficient to activate said CTL in an antigen specific manner, wherein said antigen is a peptide according to any one of claims 1 to 6.

16. The method according to Claim 15, wherein the antigen is loaded onto class I or II MHC molecules expressed on the surface of a suitable antigen-presenting cell by contacting a sufficient amount of the antigen with an antigen-presenting cell.

17. The method according to Claim 15, wherein the antigen-presenting cell comprises an expression vector capable of expressing said peptide containing SEQ ID NO 1 to SEQ ID NO 95 or said variant amino acid sequence.

18. Activated cytotoxic T lymphocytes (CTL), produced by the method according to any one of Claims 15 to 17, which selectively recognise a cell which aberrantly expresses a polypeptide comprising an amino acid sequence given in any one of Claims 1 to 4.

19. A method of killing target cells in a patient which target cells aberrantly express a polypeptide comprising an amino acid sequence given in any one of Claims 1 to 4, the method comprising administering to the patient an effective number of cytotoxic T lymphocytes (CTL) as defined in Claim 15.

20. Use of a peptide according to any one of claims 1 to 6, a nucleic acid according to claim 7 or 8, an expression vector according to claim 9, a cell according to claim 11 to 13, or an activated cytotoxic T lymphocyte according to claim 18 as a medicament or in the manufacture of a medicament.

21. Use according to claim 20, wherein the medicament is a vaccine.

22. Use according to claim 20 or 21, wherein the medicament is active against cancer.

23. Use according to claim 22, wherein said cancer cells are gastric cancer cells, gastrointestinal, colorectal, pancreatic, lung or renal.

Claims

1. An isolated peptide comprising a sequence according to SEQ ID No. 1, or a variant thereof comprising SEQ ID No. 1 wherein Y^2 is replaced by F, and/or F^{10} is replaced by L or I, that induces T cells cross-reacting with said peptide, wherein said peptide has an overall length of between 8 and 14 amino acids.

2. The peptide according to Claim 1, having the ability to bind to a molecule of the human major histocompatibility complex (MHC) class-I.

3. The peptide according to any one of Claims 1 or 2, wherein the peptide consists of the amino acid sequence according to SEQ ID No. 1.

4. The peptide according to any of Claims 1 to 3, wherein the peptide is modified and/or includes non-peptide bonds.

5. A nucleic acid, encoding a peptide according to any one of Claims 1 to 3.

6. The nucleic acid according to Claim 5 which is DNA, cDNA, PNA, RNA or combinations thereof.

7. An expression vector expressing a nucleic acid according to Claim 5 or 6.

8. The peptide according to any one of Claims 1 to 3, the nucleic acid according to Claim 5 or 6 or the expression vector according to Claim 7 for use in medicine.

9. A host cell comprising the nucleic acid according to Claim 5 or 6 or the expression vector according to Claim 7.

10. The host cell according to Claim 9 that is an antigen presenting cell, for example a dentritic cell.

11. A method for producing the peptide according to any one of Claims 1 to 4, the method comprising culturing the host cell according to Claim 10, and isolating the peptide from said host cell or its culture medium.

12. An in vitro method for producing activated cytotoxic T lymphocytes (CTL), the method comprising contacting in vitro CTL with antigen loaded human class I MHC molecules expressed on the surface of a suitable antigen-presenting cell for a period of time sufficient to activate said CTL in an antigen specific manner, wherein said antigen is the peptide according to any one of claims 1 to 3.

13. The method according to Claim 12, wherein said antigen is loaded onto class I MHC molecules expressed on the surface of a suitable antigen-presenting cell by contacting a sufficient amount of the antigen with said antigen-presenting cell.

14. The method according to Claim 13, wherein the antigen-presenting cell comprises an expression vector expressing said peptide according to any one of claims 1 to 3.

15. An isolated activated cytotoxic T lymphocyte (CTL), produced by the method according to any one of Claims 12 to 14, which selectively recognise a cell which aberrantly expresses a polypeptide comprising the amino acid sequence given in any one of Claims 1 to 3.

16. Use of the peptide according to any one of claims 1 to 4, a nucleic acid according to claim 5 or 6, the expression vector according to claim 7, the cell according to claim 10, or the activated cytotoxic T lymphocyte according to claim 15 in the manufacture of a medicament for the treatment of cancer cells.

17. The use according to claim 20, wherein said medicament is a vaccine.

18. The use according to claim 16, wherein said cancer cells are gastric cancer cells, or gastrointestinal, colorectal, pancreatic, lung or renal cells.