Claims

1. A peptide consisting of an amino acid sequence according to SEQ ID No. 42, wherein said peptide can be elongated by one additional amino acid on either end or both ends of the peptide, or a pharmaceutically acceptable salt thereof, for use in the treatment of cancer.

2. A peptide consisting of an amino acid sequence according to SEQ ID No. 42, wherein said peptide can be elongated by one additional amino acid on either end or both ends of the peptide, as a pharmaceutically acceptable salt.

3. A synthetic peptide consisting of an amino acid sequence according to SEQ ID No. 42, wherein said peptide can be elongated by one additional amino acid on either end or both ends of the peptide, or a pharmaceutically acceptable salt thereof.

4. The peptide according to any of claims 1 to 3, wherein said peptide has the ability to bind to an MHC class-I molecule, and wherein said peptide, when bound to said MHC, is capable of being recognized by T cells.

5. The peptide according to any of claims 1 to 4, wherein said peptide is modified and/or includes non-peptide bonds.

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

7. An expression vector comprising a nucleic acid encoding a peptide according to any one of claims 1 to 4.

8. A recombinant host cell comprising the peptide according to any one of claims 1 to 4, or the expression vector according to claim 7, wherein said host cell preferably is an antigen presenting cell such as a dendritic cell.

9. 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 8 that presents the pep-

tide according to any one of claims 1 to 4, or comprises the expression vector according to claim 7, and isolating the peptide from the host cell or its culture medium.

10. An *in vitro* method for producing activated T lymphocytes, the method comprising contacting *in vitro* T cells with antigen loaded human class I or II MHC molecules expressed on the surface of a suitable antigen-presenting cell or an artificial construct mimicking an antigen-presenting cell for a period of time sufficient to activate said T cells in an antigen specific manner, wherein said antigen is a peptide according to any one of claims 1 to 4.

11. An activated T lymphocyte, produced by the method according to claim 10, that selectively recognizes a cell which presents a polypeptide comprising an amino acid sequence given in any one of claims 1 to 4.

12. Use of an effective number of activated T cells as defined in claim 11 in the manufacture of a medicament for the treatment of cancer by killing target cells in a patient, wherein the target cells present a polypeptide comprising an amino acid sequence given in any one of claims 1 to 4.

13. An antibody, in particular a soluble or membrane-bound antibody, that specifically recognizes the peptide according to any of claims 1 to 4, preferably the peptide according to any of claims 1 to 4 when bound to an MHC molecule.

14. Use of a peptide according to any one of claims 1 to 6, the activated T lymphocyte according to claim 11 or the antibody according to claim 13 in the manufacture of a medicament for treating cancer.

15. The use according to claim 14, wherein said cancer is selected from the group of acute myelogenous leukemia, bile duct cancer, brain cancer, chronic lymphocytic leukemia, colorectal carcinoma, esophageal cancer, gallbladder cancer, gastric cancer, hepatocellular cancer, Merkel cell carcinoma, melanoma, non-Hodgkin lymphoma, non-small cell lung cancer, ovarian cancer, pancreatic cancer, prostate cancer, renal cell cancer, small cell lung cancer, urinary bladder cancer and uterine cancer and other tumors that show an overexpression of a protein from which a peptide SEQ ID No. 42 is derived from.

16. A kit comprising:

(a) a container comprising a pharmaceutical composition containing the peptide according to any one of claims 1 to 6, the expression vector according to claim 7, the cell according to claim 8, the activated T lymphocyte according to claim 11 or the antibody according to claim 13, in solution or in lyophilized form;
(b) optionally, a second container containing a diluent or reconstituting solution for the lyophilized formulation;
(c) optionally, at least one more peptide selected from the group consisting of SEQ ID No. 1 to SEQ ID No. 41, and SEQ ID No. 43, and
(d) optionally, instructions for (i) use of the solution or (ii) reconstitution and/or use of the lyophilized formulation and
(e) optionally, one or more of (iii) a buffer, (iv) a diluent, (v) a filter, (vi) a needle, or (v) a syringe.

17. A T-cell receptor, preferably soluble or membrane-bound, that is reactive with an HLA ligand, wherein said ligand has an amino acid sequence according to SEQ ID No. 42, wherein said ligand can be elongated by one additional amino acid on either end or both ends of the peptide, preferably wherein said amino acid sequence consists of SEQ ID No. 42.

18. The T-cell receptor according to claim 17, wherein said T-cell receptor is provided as a soluble molecule and optionally carries a further effector function such as an immune stimulating domain or toxin.

19. An expression vector comprising a nucleic acid encoding for a TCR according to any one of claims 17 to 18.

20. A host cell comprising the expression vector according to claim 19 or an expression vector comprising a nucleic acid encoding for an antibody according to claim 13, wherein said host cell preferably is a T cell or NK cell.

21. A method for producing the T cell receptor according to any one of claims 17 to 18, said method comprising culturing a host cell, wherein the host cell comprises the expression vector according to claim 19, according to claim 20, and isolating said T cell receptor from said host cell and/or its culture medium.

22. A pharmaceutical composition comprising at least one active ingredient selected from the group consisting of

a) a peptide consisting of SEQ ID No. 42;

b) a T-cell receptor reactive with a peptide according to a), and/or the peptide-MHC-I complex;

c) a fusion protein comprising a peptide according to a), and the N-terminal amino acids 1 to 80 of the HLA-DR antigen-associated invariant chain (Ii);

d) a nucleic acid encoding for any of a) to c) or an expression vector comprising said nucleic acid,

e) a host cell comprising the expression vector of d,

f) an activated T-lymphocyte, obtained by a method comprising contacting in vitro T cells with a peptide according to a) expressed on the surface of a suitable antigen presenting cell for a period of time sufficient to activate said T cell in an antigen specific manner;

g) an antibody, potentially modified by fusion with for example immune-activating domains or toxins, or a soluble T-cell receptor, reactive to a peptide according to a) and/or the peptide – MHC-I complex and potentially modified by fusion with for example immune-activating domains or toxins, and/or a cell presenting a peptide according to a),

and a pharmaceutically acceptable carrier, and optionally, pharmaceutically acceptable excipients and/or stabilizers.