~~Claims~~**CLAIMS**

1. Use of a peptide having ~~an overall~~a length ~~from 8~~up to 30 amino acids~~,~~ and comprising ~~an~~the amino acid sequence ~~according to~~of SEQ ID No. 1

, or ~~of~~ a pharmaceutical acceptable salt thereof,

in the manufacture of a medicament for the treatment of a cancer~~, wherein said cancer is~~ selected from the group of non-small cell lung cancer ~~and~~, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder, bile duct cancer and esophageal cancer, with the proviso that said cancer expresses a protein comprising an amino acid sequence of SEQ ID No. 1.

2. ~~The use~~ Use of the peptide according to claim 1, wherein said peptide has the ability to bind to an MHC class-I or –II molecule, and wherein said peptide, when bound to said MHC, is capable of being recognized by CD4 and/or CD8 T cells.

3. Use of the peptide according to any one of claims 1 or 2, wherein said peptide is modified and/or includes non-peptide bonds~~.~~, and/or non-peptide bonds selected from the group consisting of -CH2-NH, -CH2S-, -CH2CH2-, -CH=CH-, -COCH2-, -CH(OH)CH2-, and -CH2SO-.

~~3. The use~~4. Use of the peptide according to any of claims 1 to ~~2~~3, wherein said peptide is part of a fusion protein, in particular comprising N-terminal amino acids of the HLA-DR antigen-associated invariant chain (Ii).

~~4~~5. Use of ~~an antibody that specifically recognizes~~ a recombinant host cell comprising the peptide according to any one of claims 1 to ~~2, preferably the peptide according to any of claims 1 to 4 when bound to an MHC molecule~~4, in the manufacture of a medicament for the treatment of a cancer~~, wherein said cancer is~~ selected from the group of non-small cell lung cancer ~~and~~, small cell lung cancer~~.~~

~~5. Use of a T cell receptor (TCR) that is reactive with an HLA ligand which comprises~~, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer and esophageal cancer, with the proviso that said cancer expresses a protein comprising an amino acid sequence ~~according to~~of SEQ ID No. ~~1, in the manufacture of a medicament for the treatment of cancer, wherein said cancer is selected from non-small cell lung cancer and small cell lung cancer~~1.

6. The use ~~according to~~of claim 5, wherein ~~the TCR~~ said host cell is an antigen presenting cell or a dendritic cell.

7. ~~alpha/beta heterodimeric TCR comprising alpha and beta chain constant domain sequences~~An *in* ~~which the constant domain sequences are linked by a native disulfide bond.~~

~~7. Use of an activated T lymphocyte in the manufacture of a medicament for the treatment of cancer, wherein said cancer is selected from non-small cell lung cancer and small cell lung cancer, the T lymphocyte produced by a~~*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 ~~used in any one of claims 1 or 3, that selectively recognizes a cell which presents a polypeptide comprising an amino acid sequence according to SEQ ID No. 1~~according to any one of claims 1 to 4.

~~8. A kit comprising:~~

~~a container comprising a pharmaceutical composition containing the peptide used in any one of claims 1 to 3, the antibody used in claim 4, the TCR used in claim 5 or 6, or the activated T lymphocytes according to claim 7, in solution or in lyophilized form.~~

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8. Use of an activated T lymphocyte, produced by the method according to claim 7, that selectively recognizes a cell which presents a peptide comprising an amino acid sequence of SEQ ID No: 1 in the manufacture of a medicament for the treatment of a cancer selected from the group of non-small cell lung cancer, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer and esophageal cancer, with the proviso that said cancer expresses a protein comprising an amino acid sequence of SEQ ID No. 1.

9. Use of an antibody that specifically recognizes the peptide according to any of claims 1 to 4 in the manufacture of a medicament for the treatment of a cancer selected from the group of non-small cell lung cancer, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer and esophageal cancer, with the proviso that said cancer expresses a protein comprising an amino acid sequence of SEQ ID No. 1.

10. Use of the antibody according to claim 9, wherein the antibody is a soluble antibody or a membrane-bound antibody.

11. Use of the antibody of claim 9 or claim 10, that specifically binds to the peptide according to any one of claims 1 to 4 when bound to an MHC molecule.

12. Use of a T-cell receptor (TCR), or functional fragment thereof, that is reactive with an HLA ligand, wherein said ligand consisting of a peptide according to any one of claims 1 to 4, in the manufacture of a medicament for the treatment of a cancer selected from the group of non-small cell lung cancer, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer and esophageal cancer, with the proviso that said cancer expresses a protein comprising an amino acid sequence of SEQ ID No. 1.

13. Use of the T-cell receptor, or the functional fragment thereof, according to claim 12, wherein said T-cell receptor, or the functional fragment thereof, is a membrane-bound T-cell receptor.

14. Use of the T-cell receptor, or the functional fragment thereof, according to claim 12, wherein said T-cell receptor, or the functional fragment thereof, is provided as a soluble molecule.

15. Use of the T-cell receptor or the functional fragment thereof, according to claim 14 which carries a further effector function.

16. Use of the T-cell receptor, or the functional fragment thereof, according to claim 14 which carries an antibody fragment, an immune stimulating domain and/or a toxin.

17. Use of the T-cell receptor (TCR) according to any one of claims 12 to 16, wherein the TCR is an alpha/beta heterodimeric TCR comprising alpha and beta chain constant domain sequences in which the constant domain sequences are linked by a native disulfide bond, e.g. between Cys4 of exon 2 either of TRAC and Cys2 of exon 2 of either TRBC1 or TRBC2.

18. Use of the T-cell receptor according to claim 15, wherein the further effector function is an anti-CD3 antibody covalently linked to the C- or N-terminus of an alpha or beta chain of the TCR.

19. Use of a pharmaceutical composition comprising at least one active ingredient selected from the group consisting of

a) a peptide ~~comprising SEQ ID No.~~according to any one of claims 1~~,~~ to 4;

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

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 ~~b~~c) or an expression vector comprising said nucleic acid,

e) a host cell comprising the expression vector of ~~c),~~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, as well as a method to transfer these activated T cells into the autologous or other patients;

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

~~and/or a cell presenting~~h) an aptamer recognizing a peptide according to a~~),~~) and/or a complex of a peptide according to a),

i)a conjugated or labelled peptide or scaffold according to any of a) to h) and a pharmaceutically acceptable carrier, and optionally, pharmaceutically acceptable excipients and/or stabilizers,

in the manufacture of a medicament for the treatment of a cancer~~, or in the manufacture of a medicament against cancer, wherein said cancer is~~ selected from the group of non-small cell lung cancer~~and~~, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer and esophageal cancer, with the proviso that said cancer expresses a protein comprising an amino acid sequence of SEQ ID No. 1.

20. A method of diagnosing in a subject a cancer selected from the group consisting of non-small cell lung cancer, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder

and bile duct cancer and esophageal cancer, with the proviso that said cancer expresses a protein comprising an amino acid sequence of SEQ ID No. 1,

wherein a subject or a sample from a subject having been administered an isolated binding molecule, wherein the binding molecule is labelled with a probe or with a radionucleotide, the method comprising detecting binding of the binding molecule to cells of the subject, and

wherein the binding molecule specifically recognizes (i) a peptide comprising the amino acid sequence according to SEQ ID NO: 1, the peptide having an overall length of up to 16 amino acids, or (ii) said peptide comprising the amino acid sequence according to SEQ ID NO: 1, having an overall length of up to 16 amino acids, when bound to an MHC molecule.

21. The method according to claim 20, wherein the binding molecule is one or more of:

(a) an antibody, a soluble antibody, a membrane-bound antibody, or a binding fragment thereof; or

(b) a T-cell receptor (TCR), a soluble TCR, a membrane-bound TCR, or a binding fragment thereof,

wherein the binding molecule is reactive with an HLA ligand comprising: (i) the peptide comprising the amino acid sequence according to SEQ ID NO: 1, the peptide having an overall length of up to 16 amino acids, or (ii) said peptide comprising the amino acid sequence according to SEQ ID NO: 1, the peptide having an overall length of up to 16 amino acids, when bound to an MHC molecule.

22. The method according to claim 21, wherein the antibody is a monoclonal antibody, a humanized antibody, a bi-specific antibody and/or a chimeric antibody, or binding fragments thereof.

23. The method according to claim 21 or 22 wherein the binding molecule is an antibody or a binding fragment thereof or a soluble TCR or a binding fragment thereof, carrying (i) a further effector function, (ii) an immune stimulating domain or (iii) a toxin.