Claims

1. A pharmaceutical composition, comprising at least two peptides containing an amino acid sequence selected from the group consisting of SEQ ID NO 1 to SEQ ID NO 10, SEQ ID NO 20 and SEQ ID NO 24, and/or containing a variant amino acid sequence that is at least 85 % identical to that of SEQ ID NO 1 to SEQ ID NO 10, SEQ ID NO 20 and SEQ ID NO 24, and/or a polynucleotide containing a nucleic acid encoding SEQ ID NO 1 to SEQ ID NO 10, SEQ ID NO 20 and SEQ ID NO 24or the variant amino acid sequence, and a pharmaceutically acceptable carrier.

2. The pharmaceutical composition according to claim 1, further comprising at least one additional peptide containing an amino acid sequence selected from the group consisting of SEQ ID NO 11 to SEQ ID NO 22, or containing a variant amino acid sequence that is at least 85 % identical to that of SEQ ID NO 11 to SEQ ID NO 22, or polynucleotide containing a nucleic acid encoding SEQ ID NO 9 to SEQ ID NO 22 or the variant amino acid sequence.

3. The pharmaceutical composition according to claim 1 or 2, wherein the peptides have an overall length of between 8 and 100, preferably between 8 and 30, and most preferred between 8 and 17 amino acids.

4. The pharmaceutical composition according to any of claims 1 to 3, wherein at least one peptide includes non-peptide bonds.

5. The pharmaceutical composition according to any of claims 1 to 4, comprising at least two peptides consisting of amino acid sequences according to SEQ ID NO 1 to SEQ ID NO 22 and SEQ ID NO 24.

6. The pharmaceutical composition according to any of claims 1 to 5, comprising at least two MHC class I peptides one of these two containing an amino acid sequence according to SEQ ID NO 1 and an amino acid sequence according to SEQ ID NO 11, or

one of these two MHC class I peptides containing an amino acid sequence according to SEQ ID NO 2 and an amino acid sequence according to SEQ ID NO 11, or one of these two MHC class I peptides containing an amino acid sequence according to SEQ ID NO 3 and an amino acid sequence according to SEQ ID NO 11.

7. The pharmaceutical composition according to any of claims 1 to 6, wherein the selection, number and/or amount of peptides present in the composition is/are tissue-, cancer-, and/or patient-specific.

8. The pharmaceutical composition according to any of claims 1 to 7, further comprising at least one suitable adjuvant, selected from the group comprising 1018 ISS, aluminium salts, Amplivax, AS15, BCG, CP-870,893, CpG7909, CyaA, dSLIM, GM-CSF, IC30, IC31, Imiquimod, ImuFact IMP321, IS Patch, ISCOMATRIX, JuvImmune, LipoVac, MF59, monophosphoryl lipid A, Montanide IMS 1312, Montanide ISA 206, Montanide ISA 50V, Montanide ISA-51, OK-432, OM-174, OM-197-MP-EC, ONTAK, PepTel vector system, PLG microparticles, resiquimod, SRL172, Virosomes and other Virus-like particles, YF-17DBCG, Aquila's QS21 stimulon, Ribi's Detox. Quil, Superfos, Freund's, GM-CSF, cholera toxin, immunological adjuvants, MF59, and cytokines.

9. The pharmaceutical composition according to claim 8, wherein the adjuvant is selected from the group consisting of colony-stimulating factors, such as Granulocyte Macrophage Colony Stimulating Factor (GM-CSF), or imiquimod or resimiquimod.

10. The pharmaceutical composition according to any one of claims 1 to 9, additionally containing at least one antigen presenting cell.

11. The pharmaceutical composition according to claim 10, wherein the antigen presenting cell is a dendritic cell.

12. The pharmaceutical composition according to claim 10 or 11, wherein the at least one antigen presenting cell is

a) pulsed or loaded with the peptide or

b) comprises an expression construct encoding the peptide.

13. The pharmaceutical composition of any one of the preceding claims, wherein the vaccine is administered intravenously, intra-arterially, intra-peritoneally, intramuscularly, intradermally, intratumorally, orally, dermally, nasally, buccally, rectally, vaginally, by inhalation, or by topical administration.

14. A method for treating or preventing a cancer in a patient comprising administering to the patient a therapeutically effective amount of the pharmaceutical composition of any one of the preceding claims.

15. The method according to claim 14, wherein the pharmaceutical composition is an anti-cancer vaccine.

16. The method of claim 15, wherein the cancer is prostate carcinoma, oral cavity carcinoma, oral squamous carcinoma (OSCC), acute myeloid leukemia (AML), H. pylori-induced MALT lymphoma, colon carcinoma/colorectal cancer , glioblastoma, non-small-cell lung cancer (NSCLC), cervical carcinoma, human breast cancer, prostate cancer, colon cancer, pancreatic cancers, pancreatic ductal adenocarcinoma, ovarian cancer, hepatocellular carcinoma, liver cancer, brain tumors of different phenotypes, leukemias such as acute lymphoblastic leukemia, ALL, lung cancer, Ewing's sarcoma, endometrial cancer, head and neck squamous cell carcinoma, epithelial cancer of the larynx, oesophageal carcinoma, oral carcinoma, carcinoma of the urinary bladder, ovarian carcinomas, renal cell carcinoma, atypical meningioma, papillary thyroid carcinoma, brain tumors, salivary duct carcinoma, extranodal T/NK-cell lymphomas, Non-Hodgkins Lymphoma and malignant solid tumors of the lung and breast, preferably the cancer is gastric cancer.

17. The method according to claim 16, wherein the cancer is gastric cancer.

Claims

1. A pharmaceutical composition, comprising at least two peptides containing an amino acid sequence selected from the group consisting of SEQ ID NO 1 to SEQ ID NO 10, SEQ ID NO 20 and SEQ ID NO 24, and/or containing a variant amino acid sequence that is at least 85 % identical to that of SEQ ID NO 1 to SEQ ID NO 10, SEQ ID NO 20 and SEQ ID NO 24, and/or a polynucleotide containing a nucleic acid encoding SEQ ID NO 1 to SEQ ID NO 10, SEQ ID NO 20 and SEQ ID NO 24or the variant amino acid sequence, and a pharmaceutically acceptable carrier.

2. The pharmaceutical composition according to claim 1, further comprising at least one additional peptide containing an amino acid sequence selected from the group consisting of SEQ ID NO 11 to SEQ ID NO 22, or containing a variant amino acid sequence that is at least 85 % identical to that of SEQ ID NO 11 to SEQ ID NO 22, or polynucleotide containing a nucleic acid encoding SEQ ID NO 9 to SEQ ID NO 22 or the variant amino acid sequence.

3. The pharmaceutical composition according to claim 1 or 2, wherein the peptides have an overall length of between 8 and 100, preferably between 8 and 30, and most preferred between 8 and 17 amino acids.

4. The pharmaceutical composition according to any of claims 1 to 3, wherein at least one peptide includes non-peptide bonds.

5. The pharmaceutical composition according to any of claims 1 to 4, comprising at least two peptides consisting of amino acid sequences according to SEQ ID NO 1 to SEQ ID NO 22 and SEQ ID NO 24.

6. The pharmaceutical composition according to any of claims 1 to 5, comprising at least two MHC class I peptides one of these two containing an amino acid sequence according to SEQ ID NO 1 and an amino acid sequence according to SEQ ID NO 11 , or one of these two MHC class I peptides containing an amino acid sequence according to SEQ ID NO 2 and an amino acid sequence according to SEQ ID NO 11, or one of these two MHC class I

peptides containing an amino acid sequence according to SEQ ID NO 3 and an amino acid sequence according to SEQ ID NO 11.

7. The pharmaceutical composition according to any of claims 1 to 6, wherein the selection, number and/or amount of peptides present in the composition is/are tissue-, cancer-, and/or patient-specific.

8. The pharmaceutical composition according to any of claims 1 to 7, further comprising at least one suitable adjuvant, including an adjuvant selected from the group comprising 1018 ISS, aluminium salts, AS15, BCG, CP-870,893, CpG7909, CyaA, dSLIM, GM-CSF, IC30, IC31, Imiquimod, MF59, monophosphoryl lipid A, Montanide IMS 1312, Montanide ISA 206, Montanide ISA 50V, Montanide ISA-51, OK-432, OM-174, OM-197-MP-EC, PepTel vector system, PLG microparticles, resiquimod, SRL172, Virosomes and other Virus- like particles, YF-17DBCG, GM-CSF, cholera toxin, immunological adjuvants, MF59, and cytokines.

9. The pharmaceutical composition according to claim 8, wherein the adjuvant is selected from the group consisting of colony- stimulating factors, such as Granulocyte Macrophage Colony Stimulating Factor (GM-CSF), or imiquimod or resimiquimod.

10. The pharmaceutical composition according to any one of claims 1 to 9, additionally containing at least one antigen presenting cell.

11. The pharmaceutical composition according to claim 10, wherein the antigen presenting cell is a dendritic cell.

12. The pharmaceutical composition according to claim 10 or 11, wherein the at least one antigen presenting cell is
a) pulsed or loaded with the peptide or
b) comprises an expression construct encoding the peptide.

13. The pharmaceutical composition of any one of the preceding claims, wherein the vaccine is administered intravenously, intra-arterially, intra-peritoneally, intramuscularly,

intradermally, intratumorally, orally, dermally, nasally, buccally, rectally, vaginally, by inhalation, or by topical administration.