antibody is a monoclonal, chimeric, human or humanized antibody, an antibody produced by combinatory techniques, a fragment of an antibody, or a synthetic antibody.

The invention furthermore relates to a conjugate between an agent of the invention which binds to a peptide comprising the amino acid sequence of a tumor antigen identified according to the invention or of a tumor antigen peptide derived from said tumor antigen, or a derivative of said peptide and a therapeutic effector moiety or a detectable label.

Detailed description of the invention

Some aspects of the present invention envision the immunotherapy of tumor diseases, in particular cancer diseases, utilizing the tumor nucleic acids and tumor antigens identified according to the invention by means of active or passive immunotherapeutioc approaches which can be summarized as follows:

Immunotherapy

I. Active immunotherapy („Cancer vaccines")
Immunisation with:
i) antigen or peptide (native or modified)
ii) nucleic acid encoding the antigen or peptide
iii) recombinant cells encoding the antigen or peptide
iv) recombinant viruses encoding the antigen or peptide
v) antigen presenting cells pulsed with antigen or peptide (native or modified) or transfected with nucleic acids encoding the antigen or peptide

II. Passive immunotherapy („Adoptive immunotherapy")
vi) Transfer of antibodies or T cell receptors that recognise antigen
vii) Transfer of cells sensitized in vitro to antigen (bulk or cloned populations)
viii) Transfer of effector cells (or stem cells) transduced with nucleic acids encoding T cell receptors that recognise antigen and preferably are responsive to tumor-specific class I MHC presented peptides

Claims

1. Use of a ligand of a tumor antigen or a ligand of a nucleic acid encoding a tumor antigen for the preparation of a pharmaceutical composition for treating or preventing a tumor disease characterized by increased expression of a tumor antigen, wherein said tumor antigen comprises an amino acid sequence encoded by a nucleic acid which comprises the nucleic acid sequence according to SEQ ID NO: 1 of the sequence listing or a variant of said nucleic acid sequence, and wherein said ligand of a tumor antigen or ligand of a nucleic acid encoding a tumor antigen is attached to one or more therapeutic effector moieties, said therapeutic effector molecule preferably being a radiolabel, cytotoxin or cytotoxic enzyme.

2. The use as claimed in claim 1, wherein the ligand of a tumor antigen comprises an antibody specifically binding to said tumor antigen.

3. Use of one or more agents for the preparation of a pharmaceutical composition for treating or preventing a tumor disease characterized by increased expression of a tumor antigen, wherein said one or more agents are selected from the group consisting of:

(i) a peptide comprising the amino acid sequence of a tumor antigen or of a tumor antigen peptide derived from said tumor antigen, or a derivative of said peptide,

(ii) a nucleic acid which codes for a peptide comprising the amino acid sequence of a tumor antigen or of a tumor antigen peptide derived from said tumor antigen, or a derivative of said nucleic acid,

(iii) a host cell which codes for a peptide comprising the amino acid sequence of a tumor antigen or of a tumor antigen peptide derived from said tumor antigen,

(iv) a virus which codes for a peptide comprising the amino acid sequence of a tumor antigen or of a tumor antigen peptide derived from said tumor antigen,

(v) a cell presenting a peptide comprising the amino acid sequence of a tumor antigen peptide derived from a tumor antigen, or a derivative of said peptide,

(vi) an antibody or T cell receptor which binds to a peptide comprising the amino acid sequence of a tumor antigen or of a tumor antigen peptide derived from said tumor antigen,

(vii) an immunoreactive cell sensitized in vitro to recognize a peptide comprising the amino acid sequence of a tumor antigen or of a tumor antigen peptide derived from said tumor antigen, and

(viii) an effector cell or stem cell transduced with a nucleic acid encoding a T cell receptor that recognizes a peptide comprising the amino acid sequence of a tumor antigen or of a tumor antigen peptide derived from said tumor antigen,

wherein said tumor antigen comprises an amino acid sequence encoded by a nucleic acid which comprises the nucleic acid sequence according to SEQ ID NO: 1 of the sequence listing or a variant of said nucleic acid sequence and said tumor antigen peptide comprises an amino acid sequence substantially corresponding to the amino acid sequence of a fragment of said tumor antigen.

4. The use as claimed in claim 3, wherein the peptide is a MHC class I or class II presented peptide or can be processed to produce an MHC class I or class II presented peptide.

5. The use as claimed in claim 3, wherein the host cell expresses an MHC molecule which binds to the encoded peptide or a procession product thereof.

6. The use as claimed in claim 3, wherein the antibody is a monoclonal, chimeric, human or humanized antibody, or is a fragment of an antibody or a synthetic antibody.

7. The use as claimed in any of claims 3 to 6, wherein the pharmaceutical composition is in the form of a therapeutic or prophylactic tumor vaccine.

8. The use of any one of claims 1 to 7, wherein treating or preventing comprises administering the pharmaceutical composition of any one of claims 1 to 7 to a patient affected from a tumor disease or at risk of developing a tumor disease, said administering preferably inducing or promoting CTL activity against a tumor characterized by presentation of a tumor antigen comprising an amino acid sequence encoded by a nucleic acid which comprises the nucleic acid sequence according to SEQ ID NO: 1 of the sequence listing or a variant of said nucleic acid sequence with class I MHC.

9. The use of any one of claims 1 to 8, wherein the tumor antigen comprises the amino acid sequence according to SEQ ID NO: 2 of the sequence listing or a variant of said amino acid sequence.

10. The use of any one of claims 1 to 8, wherein the tumor disease is selected from the group consisting of ovarian cancer, in particular ovarian adenocarcinoma and ovarian teratocarcinoma, lung cancer, including small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC), in particular squamous cell lung carcinoma and adenocarcinoma, gastric cancer, breast cancer, hepatic cancer, pancreatic cancer, skin cancer, in particular basal cell carcinoma and squamous cell carcinoma, malignant melanoma, head and neck cancer, in particular malignant pleomorphic adenoma, sarcoma, in particular synovial sarcoma and carcinosarcoma, bile duct cancer, cancer of the urinary bladder, in particular transitional cell carcinoma and papillary carcinoma, kidney cancer, in particular renal cell carcinoma including clear cell renal cell carcinoma and papillary renal cell carcinoma, colon cancer, small bowel cancer, including cancer of the ileum, in particular small bowel adenocarcinoma and adenocarcinoma of the ileum, testicular embryonal carcinoma, placental choriocarcinoma, cervical cancer, testicular cancer, in particular testicular seminoma, testicular teratoma and embryonic testicular cancer, and uterine cancer, and the metastatic forms thereof, preferably ovarian cancer, lung cancer, metastatic ovarian cancer and metastatic lung cancer.