CLAIMS

1. A peptide consisting of or essentially consisting of an amino acid sequence selected from SEQ ID No. 1 to SEQ ID No. 18 for use in the treatment of cancer in a patient, or a combination comprising at least one peptide consisting of or essentially consisting of an amino acid sequence selected from SEQ ID No. 1 to SEQ ID No. 18 for use in the treatment of cancer in a patient.

2. The peptide or combination according to claim 1, wherein said peptide is selected from SEQ ID No. 1, SEQ ID No. 4, and/or SEQ ID No. 18.

3. The peptide or combination according to claim 1 or 2, wherein said cancer is selected from the group of lung cancer, head and neck cancer, breast cancer, pancreatic cancer, prostate cancer, renal cancer, esophageal cancer, bone cancer, testicular cancer, cervical cancer, gastrointestinal cancer, glioblastoma, leukemia, lymphomas, mantle cell lymphoma, pre-neoplastic lesions in the lung, colon cancer, melanoma, bladder cancer and any other neoplastic diseases.

4. The peptide or combination according to any of claims 1 to 3, wherein said peptide or combination is administered in the form of an anti-cancer vaccine, optionally further comprising at least one adjuvant, such as, for example, GM-CSF.

5. The peptide or combination according to any of claims 1 to 4, further comprising the administration of at least one additional tumor associated peptide which is not derived from cyclin D1, such as, for example, a peptide selected from any of SEQ ID No. 19 to SEQ ID No. 26.

6. The combination according to claim 5, wherein said at least one additional tumor associated peptide is chosen based on its ability to bind to a different HLA-molecule, compared to the other peptide(s) as present in said combination.

7. The peptide or combination according to any of claims 1 to 6, wherein said peptide or combination is administered repeatedly, such as, for example, monthly, weekly, or twice a week.

8. The peptide or combination according to any of claims 1 to 7, further comprising a treatment with at least one chemotherapeutic agent, such as, for example, an agent inactivating and/or eliminating immunoregulatory cell populations in said patient, such as, for example, CD4+ CD25+ regulatory T cells, such as, for example, cyclophosphamide.

9. The peptide or combination according to claim 8, wherein said treatment with said least one chemotherapeutic agent takes place before the administration of said peptide or combination, and is preferably given as a single dosage, such as, for example, cyclophosphamide in a dosage of 300 mg/m^2, preferably as a single infusion.

10. The peptide or combination according to any of claims 1 to 9, wherein said treatment is an adjuvant treatment following a prior TKI therapy, such as, for example, with sunitinib or sorafenib, and/or a prior cytokine therapy, such as, for example, with interferon or interleukin.

11. The peptide or combination according to any of claims 1 to 10, wherein said treatment comprises a cytokine therapy, followed by a single-dose cyclophosphamide therapy, followed by the administration of the vaccine for priming for about daily for a week, and then administration of the vaccine every two weeks for at least 6 months.

12. Use of the peptide or combination according to any of claims 1 to 6 for producing activated cytotoxic T lymphocytes (CTL) in vitro, comprising contacting CTL with peptide or combination 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.

13. Use of the peptide or combination according to any of claims 1 to 6 as a diagnostic tool in order to detect and/or monitor an activation or modulation of the immune system of a patient.

14. Use of the peptide or combination according to any of claims 1 to 6 as a diagnostic tool in the diagnosis of cancer.

15. A tumor associated peptide consisting of or essentially consisting of an amino acid sequence selected from SEQ ID No. 5 or SEQ ID No. 6.

CLAIMS

1. A method for producing activated cytotoxic T lymphocytes (CTL) in vitro, the method comprising contacting a CTL with a peptide consisting of the amino acid sequence of SEQ ID NO. 6loaded on 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.

2. The method of claim 1 wherein the CTL are obtained from a cancer patient.

3. The method of claim 1 wherein the CTL are obtained from healthy donors.

4. The method of claim 1 further comprising contacting the CTL with at least one additional tumor associated peptide which is not derived from cyclin D1.