

CLAIMS

- 5 1. An antigen recognizing construct which specifically and/or selectively binds to a
MAGEA1 antigenic peptide of SEQ ID NO: 133 when said antigen is presented by HLA,
wherein said antigen recognizing construct comprises the complementary determining
regions (CDRs) CDR1, CDR2 and CDR3 sequences having the amino acid sequence of
SEQ ID NO: 49, SEQ ID NO: 50 and SEQ ID NO: 51, respectively, and the CDR1,
10 CDR2 and CDR3 sequences having the amino acid sequence of SEQ ID NO: 55, SEQ ID
NO: 56 and SEQ ID NO: 57, respectively,
wherein said antigen recognizing construct comprises the respective CDR amino acid
sequences with not more than one modified amino acid, wherein said modified amino
acid is preferably the first or last amino acid of the respective CDR and the modification
15 is a conservative substitution, and wherein said antigen recognizing construct does not
selectively bind any of the peptides of SEQ ID NO: 143 to 152.
2. An antigen recognizing construct which specifically and/or selectively binds to a
MAGEA1 antigenic peptide of SEQ ID NO: 133 when said antigen is presented by HLA,
20 wherein said antigen recognizing construct is a T cell receptor (TCR) or fragment thereof
and comprises the complementary determining regions (CDRs) CDR1 and CDR3
sequences having the amino acid sequence of SEQ ID NO: 49 and SEQ ID NO: 51,
respectively, and the CDR1 and CDR3 sequences having the amino acid sequence of
SEQ ID NO: 55 and SEQ ID NO: 57, respectively,
25 wherein said antigen recognizing construct comprises the respective CDR amino acid
sequences with not more than one modified amino acid, wherein said modified amino
acid is preferably the first or last amino acid of the respective CDR and the modification
is a conservative substitution, and wherein said antigen recognizing construct does not
selectively bind any of the peptides of SEQ ID NO: 143 to 152.
3. The antigen recognizing construct according to claim 2,
30 wherein said antigen recognizing construct further comprises
the CDR2 having the amino acid sequence of SEQ ID NO: 50 and the CDR2 having the
amino acid sequence of SEQ ID NO: 56.

4. The antigen recognizing construct according to any of claim 1 to 3, wherein the antigen recognizing construct is an antibody, or derivative or fragment thereof, or an $\alpha\beta$ T cell receptor (TCR), or a derivative or fragment thereof or a $\gamma\delta$ TCR, or a derivative or fragment thereof.
5. The antigen recognizing construct according to claim 4, wherein said antibody is a bispecific antibody.
6. The antigen recognizing construct according to claim 2 or 4, wherein said TCR is a single chain TCR (scTCR) and/or a soluble TCR.
7. The antigen recognizing construct according to any of claims 1 to 6, comprising a TCR variable chain region having at least 90%, preferably 95%, sequence identity to an amino acid sequence selected from SEQ ID NOs. 52 and 58.
8. The antigen recognizing construct according to any of claims 1 to 7, wherein the antigen recognizing construct is a TCR, or a fragment thereof, comprising at least one TCR α and one TCR β chain sequence, wherein said TCR α chain sequence comprises a variable region sequence having the amino acid sequence of SEQ ID No. 52, and wherein said TCR β chain sequence comprises a variable region sequence having the amino acid sequence of SEQ ID No. 58.
9. A nucleic acid encoding for an antigen recognizing construct according to any one of claims 1 to 8.
10. A vector comprising a nucleic acid according to claim 9.
11. A host cell comprising an antigen recognizing construct according to any one of claims 1 to 8, or a nucleic acid according to claim 9, or a vector according to claim 10, optionally the host cell is a lymphocyte, preferably a T lymphocyte or T lymphocyte progenitor, more preferably a CD4 or CD8 positive T-cell.

12. A pharmaceutical composition comprising the antigen recognizing construct according to any of claims 1 to 8, or the nucleic acid according to claim 9, or the vector according to claim 10, or the host cell according to claim 11, and a pharmaceutical acceptable carrier, stabilizer and/or excipient.

5

13. The antigen recognizing construct according to any one of claims 1 to 8, or the nucleic acid according to claim 9, or the vector according to claim 10, or the host cell according to claim 11, or the pharmaceutical composition according to claim 12, for use in medicine, optionally for use in the diagnosis, prevention, and/or treatment of a proliferative disease.

10

14. Use of the antigen recognizing construct according to any one of claims 1 to 8, the nucleic acid according to claim 9, the vector according to claim 10, or the host cell according to claim 11, or the pharmaceutical composition according to claim 12, in the manufacture of a medicament for the treatment of a proliferative disease, wherein the proliferative disease is cancer, such as non-small cell lung cancer, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, head and neck cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer, esophageal cancer, or a combination thereof.

15

20

15. The antigen recognizing construct, the nucleic acid, the vector, or the host cell, or the pharmaceutical composition, for use according to claim 13 or the use according to claim 14, wherein the antigen recognizing construct according to any one of claims 1 to 8, or the nucleic acid according to claim 9, or the vector according to claim 10, or the host cell according to claim 11, or the pharmaceutical composition according to claim 12 is an immune therapeutic compound.

25

16. The antigen recognizing construct, the nucleic acid, the vector, or the host cell, or the pharmaceutical composition, for use according to claim 13 or claim 15, or the use of claim 14 or claim 15, wherein said use comprises an adoptive immune cell transfer to the patient in need of the treatment, such as a heterologous or autologous T cell transfer.

30

17. A method of manufacturing a MAGEA1 specific antigen recognizing construct, comprising
- a) providing a suitable host cell,
 - b) providing a genetic construct comprising a coding sequence encoding the antigen
5 recognizing construct according to any of claims 1 to 8,
 - c) introducing into said suitable host cell said genetic construct,
 - d) expressing said genetic construct by said suitable host cell.
18. The method according to claim 17, further comprising the isolation and purification of
10 the antigen recognizing construct from the suitable host cell and, optionally, reconstitution of the antigen recognizing construct in a T-cell.
19. An *in-vitro* method of detecting cancer in a biological sample comprising:
- e) contacting the biological sample with the antigen recognizing construct of any of
15 claims 1 to 8, and
 - f) detecting binding of the antigen recognizing construct to the biological sample.