

Claims:

1. A method for producing an antibody which is specific for a mutant p53 polypeptide over wildtype p53 polypeptide, comprising using as an immunogen a peptide or polypeptide comprising: (i) an antigen sequence, comprising an amino acid sequence of the mutant p53 polypeptide including the mutation and at least one amino acid immediately adjacent to the mutation, and (ii) a scaffold sequence for providing the antigen sequence in a solvent-accessible configuration.
2. The method according to claim 1, wherein the scaffold sequence is derived from a peptide or polypeptide comprising a solvent-accessible sequence, and wherein the antigen sequence is inserted in, or substituted for all or part of, the solvent-accessible sequence of the peptide or polypeptide.
3. The method according to claim 2, wherein the peptide or polypeptide comprising a solvent-accessible sequence is a thioredoxin, and wherein the solvent-accessible sequence is the active site sequence of the thioredoxin.
4. The method according to any one of claims 1 to 3, wherein the peptide or polypeptide used as an immunogen additionally comprises one or more linker sequences between the antigen sequence and the scaffold sequence.
5. The method according to any one of claims 1 to 4, wherein the peptide or polypeptide used as an immunogen comprises at least two amino acid sequences of the mutant p53 polypeptide.
6. The method according to claim 5, wherein the peptide or polypeptide used as an immunogen additionally comprises linker sequences between the at least two amino acid sequences of the mutant p53 polypeptide.
7. The method according to claim 5 or claim 6, wherein the at least two amino acid sequences of the mutant p53 polypeptide are non-identical.
8. The method according to any one of claims 1 to 7, wherein the amino acid sequence of the mutant p53 polypeptide comprises at least 5 amino acids.

9. The method according to any one of claims 1 to 8, wherein the mutant p53 polypeptide comprises a mutation in the DNA-binding domain (DBD).
10. The method according to any one of claims 1 to 9, wherein the mutant p53 polypeptide comprises a mutation selected from one of R175H, R248Q, R273H, R248W, G245S, R273C, R282W, R249S, G245D, C176F, H179Y, H179R, Y220C and R337H.
11. The method according to any one of claims 1 to 10, wherein the mutant p53 polypeptide comprises, or consists of, the amino acid sequence of one of SEQ ID NOs: 3 to 16.
12. An antibody, or antigen binding fragment, obtained or obtainable by a method according to any one of claims 1 to 11.
13. An antibody, or antigen binding fragment, which is specific for a mutant p53 polypeptide over wildtype p53 polypeptide.
14. The antibody, or antigen binding fragment, according to claim 13, wherein the mutant p53 polypeptide comprises a mutation in the DNA-binding domain (DBD).
15. The antibody, or antigen binding fragment, according to claim 13 or claim 14, wherein the mutant p53 polypeptide comprises a mutation selected from one of R175H, R248Q, R273H, R248W, G245S, R273C, R282W, R249S, G245D, C176F, H179Y, H179R, Y220C and R337H.
16. The antibody, or antigen binding fragment, according to any one of claims 13 to 15, wherein the mutant p53 polypeptide comprises, or consists of, the amino acid sequence of one of SEQ ID NOs: 3 to 16.
17. An antibody, or antigen binding fragment, which is capable of binding to R175H p53 polypeptide, optionally isolated, having the amino acid sequences i) to vi):
- i) LC-CDR1: QSLN₁SGNQK₁ (SEQ ID NO:31);
 - ii) LC-CDR2: GAS (SEQ ID NO:20);
 - iii) LC-CDR3: QNDHSYPLT (SEQ ID NO:21);
 - iv) HC-CDR1: GX₂TFTEYT (SEQ ID NO:32);
 - v) HC-CDR2: IX₃PX₄X₅GX₆T (SEQ ID NO:33);

vi) HC-CDR3: ARWGGDYV (SEQ ID NO:27);

or a variant thereof in which one or two or three amino acids in one or more of the sequences i) to vi) are replaced with another amino acid, where $X_1 = Y$ or N ; $X_2 = F$ or Y ; $X_3 = D$ or N ; $X_4 = N$ or Y ; $X_5 = N$ or S ; and $X_6 = V$ or G .

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18. The antibody, or antigen binding fragment, according to claim 17, wherein LC-CDR1 is one of QSLNLSGNQKSY (SEQ ID NO:19) or QSLNLSGNQKSN (SEQ ID NO:23).

19. The antibody, or antigen binding fragment, according to claim 17 or claim 18, wherein
10 HC-CDR1 is one of GFTFTEYT (SEQ ID NO:25) or GYTFTEYT (SEQ ID NO:29).

20. The antibody, or antigen binding fragment, according to any one of claims 17 to 19, wherein HC-CDR2 is one of IDPNNGVT (SEQ ID NO:26) or INPYSGGT (SEQ ID NO:30).

15 21. The antibody, or antigen binding fragment, according to any one of claims 17 to 20, having at least one light chain variable region incorporating the following CDRs:

LC-CDR1: QSLNLSGNQKSX₁ (SEQ ID NO:31);

LC-CDR2: GAS (SEQ ID NO:20);

LC-CDR3: QNDHSYPLT (SEQ ID NO:21);

20 where $X_1 = Y$ or N .

22. The antibody, or antigen binding fragment, according to claim 21, having at least one light chain variable region incorporating the following CDRs:

25 LC-CDR1: QSLNLSGNQKSY (SEQ ID NO:19);

LC-CDR2: GAS (SEQ ID NO:20);

LC-CDR3: QNDHSYPLT (SEQ ID NO:21).

23. The antibody, or antigen binding fragment, according to claim 21, having at least one light chain variable region incorporating the following CDRs:

30 LC-CDR1: QSLNLSGNQKSN (SEQ ID NO:23);

LC-CDR2: GAS (SEQ ID NO:20);

LC-CDR3: QNDHSYPLT (SEQ ID NO:21).

24. The antibody, or antigen binding fragment, according to any one of claims 17 to 23,
35 having at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: GX₂TFTEYT (SEQ ID NO:32);

HC-CDR2: IX₃PX₄X₅GX₆T (SEQ ID NO:33);

HC-CDR3: ARWGGDYV (SEQ ID NO:27);

where X₂ = F or Y; X₃ = D or N; X₄ = N or Y; X₅ = N or S; and X₆ = V or G.

- 5 25. The antibody, or antigen binding fragment, according to claim 24, having at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: GFTFTEYT (SEQ ID NO:25);

HC-CDR2: IDPNNGVT (SEQ ID NO:26);

HC-CDR3: ARWGGDYV (SEQ ID NO:27).

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26. The antibody, or antigen binding fragment, according to claim 24, having at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: GYTFTEYT (SEQ ID NO:29);

HC-CDR2: INPYSGGT (SEQ ID NO:30);

15 HC-CDR3: ARWGGDYV (SEQ ID NO:27).

27. An isolated light chain variable region polypeptide, comprising the following the following CDRs:

LC-CDR1: QSLLNSGNQKSX₁ (SEQ ID NO:31);

20 LC-CDR2: GAS (SEQ ID NO:20);

LC-CDR3: QNDHSYPLT (SEQ ID NO:21);

where X₁ = Y or N.

28. The isolated light chain variable region polypeptide according to claim 27, wherein
25 LC-CDR1 is one of QSLLNSGNQKSY (SEQ ID NO:19) or QSLLNSGNQKSN (SEQ ID NO:23).

29. An isolated heavy chain variable region polypeptide, comprising the following the following CDRs:

30 HC-CDR1: GX₂TFTEYT (SEQ ID NO:32);

HC-CDR2: IX₃PX₄X₅GX₆T (SEQ ID NO:33);

HC-CDR3: ARWGGDYV (SEQ ID NO:27);

where X₂ = F or Y; X₃ = D or N; X₄ = N or Y; X₅ = N or S; and X₆ = V or G.

30. The isolated heavy chain variable region polypeptide according to claim 29, wherein
35 HC-CDR1 is one of GFTFTEYT (SEQ ID NO:25) or GYTFTEYT (SEQ ID NO:29).

31. The isolated heavy chain variable region polypeptide according to claim 29 or claim 30, wherein HC-CDR2 is one of IDPNNGVT (SEQ ID NO:26) or INPYSGGT (SEQ ID NO:30).

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32. An isolated light chain variable region polypeptide according to claim 27 or claim 28 in combination with a heavy chain variable region polypeptide according to any one of claims 29 to 31.

10 33. An antibody, or antigen binding fragment, which is capable of binding to R175H p53 polypeptide, comprising a light chain and a heavy chain variable region sequence, wherein:
the light chain comprises a LC-CDR1, LC-CDR2, LC-CDR3, having at least 85% overall sequence identity to LC-CDR1: one of QSLNLSGNQKXS₁ (SEQ ID NO:31), QSLNLSGNQKSY (SEQ ID NO:19) or QSLNLSGNQKSN (SEQ ID NO:23); LC-
15 CDR2: GAS (SEQ ID NO:20); LC-CDR3: QNDHSYPLT (SEQ ID NO:21); and
the heavy chain comprises a HC-CDR1, HC-CDR2, HC-CDR3, having at least 85% overall sequence identity to HC-CDR1: one of GX₂TFTEYT (SEQ ID NO:32), GFTTFTEYT (SEQ ID NO:25) or GYTFTEYT (SEQ ID NO:29); HC-CDR2: one of
IX₃PX₄X₅GX₆T (SEQ ID NO:33), IDPNNGVT (SEQ ID NO:26) or INPYSGGT (SEQ
20 ID NO:30); HC-CDR3: ARWG GDYV (SEQ ID NO:27); where X₁ = Y or N; X₂ = F or Y; X₃ = D or N; X₄ = N or Y; X₅ = N or S; and X₆ = V or G.

34. An antibody, or antigen binding fragment, which is capable of binding to R175H p53 polypeptide, comprising a light chain and a heavy chain variable region sequence, wherein:
25 the light chain sequence has at least 85% sequence identity to the light chain sequence of SEQ ID NO:18 or 22 (Figure 24), or SEQ ID NO:237 or 94 (Figure 49), and;
the heavy chain sequence has at least 85% sequence identity to the heavy chain sequence of SEQ ID NO:24 or 28 (Figure 25), or SEQ ID NO:239, 240 or 241 (Figure 50).

30 35. An antibody, or antigen binding fragment, optionally isolated, which is capable of binding to R175H p53 polypeptide, which is a bispecific antibody or a bispecific antigen binding fragment comprising (i) an antigen binding fragment or polypeptide according to any one of claims 17 to 34, and (ii) an antigen binding fragment capable of binding to a polypeptide other than R175H p53 polypeptide.

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36. An *in vitro* complex, optionally isolated, comprising an antibody, antigen binding fragment, or polypeptide according to any one of claims 17 to 35 bound to R175H p53 polypeptide or a fragment thereof.

5 37. An antibody, or antigen binding fragment, which is capable of binding to R248Q p53 polypeptide, optionally isolated, having the amino acid sequences i) to vi):

- i) LC-CDR1: QSLLYSDGKTY (SEQ ID NO:41);
- ii) LC-CDR2: LVS (SEQ ID NO:42);
- iii) LC-CDR3: WQGTHFPLT (SEQ ID NO:43);
- 10 iv) HC-CDR1: GYTFTDYY (SEQ ID NO:46);
- v) HC-CDR2: IX₇PKNGGT (SEQ ID NO:52);
- vi) HC-CDR3: AKX₈GGX₉DDY (SEQ ID NO:53);

or a variant thereof in which one or two or three amino acids in one or more of the sequences i) to vi) are replaced with another amino acid, where X₇ = H or D; X₈ = M or Q;

15 and X₉ = Y or F.

38. The antibody, or antigen binding fragment, according to claim 37, wherein HC-CDR2 is one of IHPKNGGT (SEQ ID NO:47) or IDPKNGGT (SEQ ID NO:50).

20 39. The antibody, or antigen binding fragment, according to claim 37 or claim 38, wherein HC-CDR3 is one of AKMGGYDDY (SEQ ID NO:48) or AKQGGFDDY (SEQ ID NO:51).

40. The antibody, or antigen binding fragment, according to any one of claims 37 to 39, having at least one light chain variable region incorporating the following CDRs:

- 25 LC-CDR1: QSLLYSDGKTY (SEQ ID NO:41)
- LC-CDR2: LVS (SEQ ID NO:42)
- LC-CDR3: WQGTHFPLT (SEQ ID NO:43).

30 41. The antibody, or antigen binding fragment, according to any one of claims 37 to 40, having at least one heavy chain variable region incorporating the following CDRs:

- HC-CDR1: GYTFTDYY (SEQ ID NO:46);
- HC-CDR2: IX₇PKNGGT (SEQ ID NO:52);
- HC-CDR3: AKX₈GGX₉DDY (SEQ ID NO:53);

where X₇ = H or D; X₈ = M or Q; and X₉ = Y or F.

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42. The antibody, or antigen binding fragment, according to claim 41, having at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: GYTFTDYY (SEQ ID NO:46);

HC-CDR2: IHPKNGGT (SEQ ID NO:47);

5 HC-CDR3: AKMGGYDDY (SEQ ID NO:48).

43. The antibody, or antigen binding fragment, according to claim 41, having at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: GYTFTDYY (SEQ ID NO:46);

10 HC-CDR2: IDPKNGGT (SEQ ID NO:50);

HC-CDR3: AKQGGFDDY (SEQ ID NO:51).

44. An isolated light chain variable region polypeptide, comprising the following the following CDRs:

15 LC-CDR1: QSLLYSDGKTY (SEQ ID NO:41)

LC-CDR2: LVS (SEQ ID NO:42)

LC-CDR3: WQGTHFPLT (SEQ ID NO:43).

45. An isolated heavy chain variable region polypeptide, comprising the following the following CDRs:

HC-CDR1: GYTFTDYY (SEQ ID NO:46);

HC-CDR2: IX₇PKNGGT (SEQ ID NO:52);

HC-CDR3: AKX₈GGX₉DDY (SEQ ID NO:53);

where X₇ = H or D; X₈ = M or Q; and X₉ = Y or F.

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46. The isolated heavy chain variable region polypeptide according to claim 45, wherein HC-CDR2 is one of IHPKNGGT (SEQ ID NO:47) or IDPKNGGT (SEQ ID NO:50).

47. The isolated heavy chain variable region polypeptide according to claim 45 or claim 46, wherein HC-CDR3 is one of AKMGGYDDY (SEQ ID NO:48) or AKQGGFDDY (SEQ ID NO:51).

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48. An isolated light chain variable region polypeptide according to claim 44 in combination with a heavy chain variable region polypeptide according to any one of claims 45 to 47.

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49. An antibody, or antigen binding fragment, which is capable of binding to R248Q p53 polypeptide, comprising a light chain and a heavy chain variable region sequence, wherein:
the light chain comprises a LC-CDR1, LC-CDR2, LC-CDR3, having at least 85% overall sequence identity to LC-CDR1: QSLLYSDGKTY (SEQ ID NO:41); LC-CDR2:
5 LVS (SEQ ID NO:42); LC-CDR3: WQGTHFPLT (SEQ ID NO:43); and
the heavy chain comprises a HC-CDR1, HC-CDR2, HC-CDR3, having at least 85% overall sequence identity to HC-CDR1: GYTFTDYY (SEQ ID NO:46); HC-CDR2: one of IX₇PKNGGT (SEQ ID NO:52), IHPKNGGT (SEQ ID NO:47) or IDPKNGGT (SEQ ID NO:50); HC-CDR3: one of AKX₈GGX₉DDY (SEQ ID NO:53), AKMGGYDDY (SEQ ID NO:48) or AKQGGFDDY (SEQ ID NO:51); where X₇ = H or D; X₈ = M or Q; and X₉ = Y or F.
50. An antibody, or antigen binding fragment, which is capable of binding to R248Q p53 polypeptide, comprising a light chain and a heavy chain variable region sequence, wherein:
15 the light chain sequence has at least 85% sequence identity to the light chain sequence of SEQ ID NO:40 or 44 (Figure 28), or SEQ ID NO:251 or 252 (Figure 57), and;
the heavy chain sequence has at least 85% sequence identity to the heavy chain sequence of SEQ ID NO:45 or 49 (Figure 29), or SEQ ID NO:253 or 254 (Figure 58).
- 20 51. An antibody, or antigen binding fragment, optionally isolated, which is capable of binding to R248Q p53 polypeptide, which is a bispecific antibody or a bispecific antigen binding fragment comprising (i) an antigen binding fragment or polypeptide according to any one of claims 37 to 50, and (ii) an antigen binding fragment capable of binding to a polypeptide other than R248Q p53 polypeptide.
- 25 52. An *in vitro* complex, optionally isolated, comprising an antibody, antigen binding fragment, or polypeptide according to any one of claims 37 to 51 bound to R248Q p53 polypeptide or a fragment thereof.
- 30 53. An antibody, or antigen binding fragment, which is capable of binding to R273H p53 polypeptide, optionally isolated, having the amino acid sequences i) to vi):
i) LC-CDR1: QSIVHNNGDTY (SEQ ID NO:59);
ii) LC-CDR2: KVS (SEQ ID NO:60);
iii) LC-CDR3: FQGSHLPLT (SEQ ID NO:61);
35 iv) HC-CDR1: GFSFSDYY (SEQ ID NO:63);
v) HC-CDR2: ISVGTTYT (SEQ ID NO:64);

vi) HC-CDR3: VRDGNDGKFLG (SEQ ID NO:65);

or a variant thereof in which one or two or three amino acids in one or more of the sequences i) to vi) are replaced with another amino acid.

- 5 54. The antibody, or antigen binding fragment, according to claim 53, having at least one light chain variable region incorporating the following CDRs:

LC-CDR1: QSIVHNNGDTY (SEQ ID NO:59)

LC-CDR2: KVS (SEQ ID NO:60)

LC-CDR3: FQGSHLPLT (SEQ ID NO:61).

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55. The antibody, or antigen binding fragment, according to claim 53 or claim 54, having at least one heavy chain variable region incorporating the following CDRs:

HC-CDR1: GFSFSDYY (SEQ ID NO:63)

HC-CDR2: ISVGGTYT (SEQ ID NO:64)

15 HC-CDR3: VRDGNDGKFLG (SEQ ID NO:65).

56. An isolated light chain variable region polypeptide, comprising the following the following CDRs:

LC-CDR1: QSIVHNNGDTY (SEQ ID NO:59)

20 LC-CDR2: KVS (SEQ ID NO:60)

LC-CDR3: FQGSHLPLT (SEQ ID NO:61).

57. An isolated heavy chain variable region polypeptide, comprising the following the following CDRs:

25 HC-CDR1: GFSFSDYY (SEQ ID NO:63)

HC-CDR2: ISVGGTYT (SEQ ID NO:64)

HC-CDR3: VRDGNDGKFLG (SEQ ID NO:65).

58. An isolated light chain variable region polypeptide according to claim 56 in
30 combination with a heavy chain variable region polypeptide according to claim 57.

59. An antibody, or antigen binding fragment, which is capable of binding to R273H p53 polypeptide, comprising a light chain and a heavy chain variable region sequence, wherein:
the light chain comprises a LC-CDR1, LC-CDR2, LC-CDR3, having at least 85%
35 overall sequence identity to LC-CDR1: QSIVHNNGDTY (SEQ ID NO:59); LC-CDR2:
KVS (SEQ ID NO:60); LC-CDR3: FQGSHLPLT (SEQ ID NO:61); and

the heavy chain comprises a HC-CDR1, HC-CDR2, HC-CDR3, having at least 85% overall sequence identity to HC-CDR1: GFSFSDYY (SEQ ID NO:63); HC-CDR2: ISVGGTYT (SEQ ID NO:64); HC-CDR3: VRDGNKGKFLG (SEQ ID NO:65).

- 5 60. An antibody, or antigen binding fragment, which is capable of binding to R273H p53 polypeptide, comprising a light chain and a heavy chain variable region sequence, wherein:
the light chain sequence has at least 85% sequence identity to the light chain sequence of SEQ ID NO:58 (Figure 32) or SEQ ID NO:247 (Figure 53), and;
the heavy chain sequence has at least 85% sequence identity to the heavy chain
10 sequence of SEQ ID NO:62 (Figure 33) or SEQ ID NO:248 (Figure 54).

61. An antibody, or antigen binding fragment, optionally isolated, which is capable of binding to R273H p53 polypeptide, which is a bispecific antibody or a bispecific antigen binding fragment comprising (i) an antigen binding fragment or polypeptide according to any
15 one of claims 53 to 60, and (ii) an antigen binding fragment capable of binding to a polypeptide other than R273H p53 polypeptide.

62. An *in vitro* complex, optionally isolated, comprising an antibody, antigen binding fragment, or polypeptide according to any one of claims 53 to 61 bound to R273H p53
20 polypeptide or a fragment thereof.

63. An antibody, antigen binding fragment, or polypeptide of any one of claims 17 to 35, claims 37 to 51, or claims 53 to 61 conjugated to a drug moiety or a detectable moiety.

- 25 64. A chimeric antigen receptor (CAR) comprising an antigen binding fragment or polypeptide according to any one of claims 17 to 35, claims 37 to 51, or claims 53 to 61.

65. A cell comprising a chimeric antigen receptor (CAR) according to claim 64.

- 30 66. A composition comprising the antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61 or claims 63 to 65 and at least one pharmaceutically-acceptable carrier.

67. An isolated nucleic acid encoding the antibody, antigen binding fragment, polypeptide, conjugate, or chimeric antigen receptor (CAR) of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, claim 63 or claim 64.
- 5 68. A vector comprising the nucleic acid of claim 67.
69. A host cell comprising the vector of claim 68.
70. A method for making an antibody, antigen binding fragment, polypeptide, conjugate, or chimeric antigen receptor (CAR) of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, claim 63 or claim 64, comprising culturing the host cell of claim 69 under conditions suitable for the expression of a vector encoding the antibody, antigen binding fragment, polypeptide or conjugate, and recovering the antibody, antigen binding fragment, polypeptide or conjugate
- 10 71. An antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or claims 63 to 65 for use in therapy, or in a method of medical treatment.
- 15 72. An antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or claims 63 to 65 for use in the treatment of cancer.
- 20 73. Use of an antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or claims 63 to 65 in the manufacture of a medicament for use in the treatment of cancer.
- 25 74. A method of treating cancer comprising administering an antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or claims 63 to 65 to a patient suffering from a cancer.
- 30 75. A method comprising contacting a sample containing, or suspected to contain, a mutant p53 polypeptide with an antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or claims 63 to 65 and detecting the formation of a complex of the antibody,
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antigen binding fragment, polypeptide, conjugate, CAR or cell with the mutant p53 polypeptide.

76. A method of diagnosing a disease or condition in a subject, the method comprising
5 contacting, *in vitro*, a sample from the subject with an antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or claims 63 to 65 and detecting the formation of a complex of the antibody, antigen binding fragment, polypeptide, conjugate, CAR or cell with the mutant p53 polypeptide.

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77. A method of selecting or stratifying a subject for treatment with a mutant p53 polypeptide-targeted agent, the method comprising contacting, *in vitro*, a sample from the subject with antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or
15 claims 63 to 65 and detecting the formation of a complex of the antibody, antigen binding fragment, polypeptide, conjugate, CAR or cell with the mutant p53 polypeptide.

78. Use of an antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to
20 61, or claims 63 to 65 for the detection of a mutant p53 polypeptide *in vitro* or *in vivo*.

79. Use of an antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or claims 63 to 65 as an *in vitro* or *in vivo* diagnostic or prognostic agent.

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80. Use of an antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or claims 63 to 65 in a method for detecting, localizing or imaging a cancer *in vivo*.

30 81. A method for detecting, localizing or imaging a cancer *in vivo*, comprising administering an antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell of any one of claims 17 to 35, claims 37 to 51, claims 53 to 61, or claims 63 to 65 to a subject, and detecting the antibody, antigen binding fragment, polypeptide, conjugate, chimeric antigen receptor (CAR) or cell.

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82. A vaccine, comprising an immunogen as defined in any one of claims 1 to 11.

83. An immunogen as defined in any one of claims 1 to 11, for use in a method of vaccination against a cancer.
- 5 84. Use of an immunogen as defined in any one of claims 1 to 11, in the manufacture of a medicament for use in vaccination against a cancer.
85. A method for vaccinating a subject against a cancer, comprising administering to the subject an immunogen as defined in any one of claims 1 to 11, thereby vaccinating the
10 subject against a cancer.
86. The cancer vaccine, immunogen for use, the use, or the method of any one of claims 86 to 85, wherein the cancer is a cancer comprising a cell or cells expressing a mutant p53 polypeptide, or comprising nucleic acid encoding a mutant p53 polypeptide.