

CLAIMS:

1. A peptide comprising a fragment of SEQ ID NO: 8, wherein the fragment comprises at least 8 consecutive amino acids of SEQ ID NO: 8, including at least one of positions 121 and 135 of SEQ ID NO: 8, wherein the peptide is capable of inducing an immune response against a TGFβR2 -1a frameshift mutant protein.

2. A peptide according to claim 1, wherein the fragment comprises at least 9, preferably at least 12, consecutive amino acids of SEQ ID NO: 8, including at least one of positions 121 and 135 of SEQ ID NO: 8.

3. A peptide according to claim 1 or 2, wherein the fragment comprises only one of positions 121 and 135 of SEQ ID NO: 8.

4. A peptide according to any one of the preceding claims, wherein the fragment comprises positions 121 to 132 of SEQ ID NO: 8, positions 129 to 137 of SEQ ID NO: 8 or positions 135 to 146 of SEQ ID NO: 8.

5. A peptide according to any one of the preceding claims, wherein the amino acid corresponding to position 121 or 135 of SEQ ID NO: 8 is glycine.

6. A peptide according to any one of the preceding claims, wherein the peptide comprises the amino acid sequence of SEQ ID NO: 5, SEQ ID NO: 7, SEQ ID NO: 28 or SEQ ID NO: 30, preferably wherein the peptide consists of SEQ ID NO: 5, SEQ ID NO: 7, SEQ ID NO: 28 or SEQ ID NO: 30.

7. A peptide according to any one of the preceding claims, wherein the peptide comprises no more than 33 amino acids, preferably no more than 24 amino acids, preferably no more than 20 amino acids, preferably no more than 17 amino acids or preferably no more than 9 amino acids.

8. A peptide comprising a fragment of SEQ ID NO: 2, wherein the fragment comprises:

i) positions 6 to 13 of SEQ ID NO: 3, and the peptide comprises no more than 21 amino acids;

ii) positions 7 to 22 of SEQ ID NO: 3 and the peptide comprises no more than 40 amino acids; or

iii) positions 18 to 33 of SEQ ID NO: 3, and the peptide comprises no more than 33 amino acids;

wherein the peptide is capable of inducing an immune response against a TGF β R2 - 1a frameshift mutant.

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9. A peptide according to claim 8, wherein the fragment comprises positions 6 to 15 of SEQ ID NO: 3, positions 2 to 22 of SEQ ID NO: 3 or positions 16 to 33 of SEQ ID NO: 3, preferably wherein the peptide comprises the sequence of SEQ ID NO: 3.

10. A peptide according to claim 8 or 9, wherein the peptide comprises the sequence of SEQ ID NO: 4, SEQ ID NO: 6 or SEQ ID NO: 26, preferably wherein the peptide consists of SEQ ID NO: 4, SEQ ID NO: 6 or SEQ ID NO: 26.

11. A peptide according to any one of claims 8 to 10, wherein the peptide:

i) comprises positions 6 to 13 of SEQ ID NO: 3 and comprises no more than 20 amino acids or, preferably, no more than 17 amino acids; or

ii) comprises positions 7 to 22 of SEQ ID NO: 3 and comprises no more than 33 amino acids, preferably no more than 24 amino acids, preferably no more than 20 amino acids or preferably no more than 17 amino acids; or

iii) comprises positions 18 to 33 of SEQ ID NO: 3 and comprises no more than 24 amino acids, or preferably no more than 20 amino acids.

12. Use of a peptide comprising a fragment of SEQ ID NO: 2 for the manufacture of a medicament for the treatment and/or prophylaxis of cancer, wherein the fragment comprises the amino acid sequence of SEQ ID NO: 29, the peptide comprises no more than 21 amino acids, and the peptide is capable of inducing an immune response against a TGF β R2 -1a frameshift mutant, preferably wherein the cancer is colorectal cancer or stomach cancer.

13. Use of a peptide according to claim 12, wherein the peptide comprises no more than 17 amino acids.

14. A nucleic acid molecule encoding the peptide as defined in any one of claims 1 to 13.

15. A peptide mixture comprising a first and a second peptide, wherein the first and second peptides are, independently, peptides as defined in any one of claims 1 to 13, and wherein the first peptide is different from the second peptide.

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16. A vector comprising a nucleic acid molecule comprising a nucleotide sequence which encodes a peptide as defined in any one of claims 1-13 or a peptide mixture as defined in claim 15.

5 17. A host cell comprising a vector as defined in claim 16.

18. A non-transfected T-cell specific for a peptide as defined in any one of claims 1 to 13.

10 19. A T-cell mixture comprising non-transfected T-cells specific for a peptide mixture as defined in claim 15.

15 20. A pharmaceutical composition comprising a peptide as defined in any one of claims 1 to 13, a nucleic acid molecule as defined in claim 14, a peptide mixture as defined in claim 15, a vector as defined in claim 16, a host cell as defined in claim 17, a non-transfected T-cell as defined in claim 18 or a T-cell mixture as defined in claim 19, and pharmaceutically-acceptable carrier, diluent or excipient.

20 21. Use of a peptide as defined in any one of claims 1 to 11, a nucleic acid molecule as defined in claim 14, a peptide mixture as defined in claim 15, a vector as defined in claim 16, a host cell as defined in claim 17, a T-cell as defined in claim 18, a T-cell mixture as defined in claim 19 or a pharmaceutical composition as defined in claim 20, for the manufacture of a medicament for the treatment and/or prophylaxis of cancer, preferably wherein the cancer is colorectal cancer or stomach cancer.

25 22. A method of selecting a peptide, nucleic acid molecule, vector, host cell, peptide mixture, T-cell, T-cell mixture or a pharmaceutical composition for administration to a patient, comprising:

i) identifying whether a cancer patient has a frameshift mutation in the TGF β R2 protein and, if so,

30 ii) selecting a peptide as defined in any one of claims 1 to 13, a nucleic acid molecule as defined in claim 14, a peptide mixture as defined in claim 15, a vector as defined in claim 16, a host cell as defined in claim 17, a T-cell as defined in claim 18, a T-cell mixture as defined in claim 19 or a pharmaceutical composition as defined in claim 20.