CLAIMS

1. A human or humanized antibody or functional fragment thereof comprising an antigen-binding region that is specific for a partial peptide of MST1R, having an amino acid sequence of SEQ ID NO: 17, wherein one of the following requirements applies:

1) said antibody or functional fragment thereof inhibits ligand -dependent and/or -independent phosphorylation of MST1R;

2) said antibody or functional fragment thereof has an affinity against said partial peptide of MST1R as a K_D of less than 10 nM, less than 5 nM, less than 1 nM, less than 0.5 nM or less than 0.1 nM as determined by surface plasmon resonance or by Solution Equilibrium Titration;

3) said antibody or functional fragment thereof suppresses MSP-promoted cell proliferation or migration of tumor cells that express MST1R;

4) said antibody or functional fragment thereof internalizes MST1R; or

5) said antibody or functional fragment thereof is cross-reactive with humans and at least one other species and

wherein said antigen-binding region comprises: an H-CDR3 region having (i) the amino acid sequence of SEQ ID NO: 1 or 4, or (ii) an amino acid sequence having at least 80% sequence identity with SEQ ID NO: 1 or 4; an H-CDR2 region having (i) the amino acid sequence of SEQ ID NO: 2 or 5, or (ii) an amino acid sequence having at least 80% sequence identity with SEQ ID NO: 2 or 5; an H-CDR1 region having (i) the amino acid sequence of SEQ ID NO: 3 or 6, or (ii) an amino acid sequence having at least 80% sequence identity with SEQ ID NO: 3 or 6; an L-CDR3 region having (i) the amino acid sequence of SEQ ID NO: 7, 8, 9, 10, 11 or 12, or (ii) an amino acid sequence having at least 80% sequence identity with the amino acid sequence of SEQ ID NO: 7, 8, 9, 10, 11 or 12; an L-CDR1 region having (i) the amino acid sequence of SEQ ID NO: 13 or 15, or (ii) an amino acid sequence having at least 80% sequence identity with SEQ ID NO: 13 or 15; and an L-CDR2 region having (i) the amino acid sequence of SEQ ID NO: 14 or 16, or (ii) an amino acid sequence having at least 80% sequence identity with SEQ ID NO: 14 or 16.

2. The human or humanized antibody or functional fragment thereof according to claim 1, comprising (i) the H-CDR3 region having the amino acid sequence of SEQ ID NO: 1, the H-CDR2 region having the amino acid sequence of SEQ ID NO: 2 and the H-CDR1 region having the amino acid sequence of SEQ ID NO: 3; or (ii) the H-CDR3 region having the amino acid sequence of SEQ ID NO: 4, the H-CDR2 region having the amino acid sequence of SEQ ID NO: 5 and the H-CDR1 region having the amino acid sequence of SEQ ID NO: 6.

3. The human or humanized antibody or functional fragment thereof according to claim 1, comprising (i) the L-CDR3 region having the amino acid sequence of SEQ ID NO: 7, the L-CDR1 region having the amino acid sequence of SEQ ID NO: 13 and the L-CDR2 region having the amino acid sequence of SEQ ID NO: 14; (ii) the L-CDR3 region having the amino acid sequence of SEQ ID NO: 8, the L-CDR1 region having the amino acid sequence of SEQ ID NO: 15 and the L-CDR2 region having the amino acid sequence of SEQ ID NO: 16; (iii) the L-CDR3 region having the amino acid sequence of SEQ ID NO: 9, the L-CDR1 region having the amino acid sequence of SEQ ID NO: 13 and the L-CDR2 region having the amino acid sequence of SEQ ID NO: 14; (iv) the L-CDR3 region having the amino acid sequence of SEQ ID NO: 10, the L-CDR1 region having the amino acid sequence of SEQ ID NO: 13 and the L-CDR2 region having the amino acid sequence of SEQ ID NO: 14; (v) the L-CDR3 region having the amino acid sequence of SEQ ID NO: 11, the L-CDR1 region having the amino acid sequence of SEQ ID NO: 13 and the L-CDR2 region having the amino acid sequence of SEQ ID NO: 14; or (vi) the L-CDR3 region having the amino acid sequence of SEQ ID NO: 12, the L-CDR1 region having the amino acid sequence of SEQ ID NO: 13 and the L-CDR2 region having the amino acid sequence of SEQ ID NO: 14.

4. The human or humanized antibody or functional fragment thereof according to claim 1, wherein requirement 1) applies and said antibody or functional fragment thereof inhibits ligand -dependent and -independent phosphorylation of MST1R.

5. The human or humanized antibody or functional fragment thereof according to claim 1 or 4, wherein requirement 1) applies and said antibody or functional fragment thereof in addition inhibits phosphorylation of ERK and/or Akt.

6. The human or humanized antibody or functional fragment thereof according to claim 1, wherein said antibody or functional fragment thereof is cross-reactive with humans and at least one other species and said other species is a mouse or a monkey.

7. The antibody to according to any one of claims 1 to 6, wherein the isolated antibody is an IgG, preferably IgG1.

8. The antibody or functional fragment thereof according to any one of claims 1 to 6, wherein the isolated antibody or functional fragment thereof comprises a variable heavy chain of SEQ ID NO: 19 or 21.

9. The antibody or functional fragment thereof according to any one of claims 1 to 6, wherein the isolated antibody or functional fragment thereof comprises a variable light chain having the amino acid sequence of SEQ ID NO: 23, 25, 27, 29, 31 or 33.

10. The antibody or functional fragment thereof according to any one of claims 1 to 6, comprising a heavy chain amino acid sequence selected from the group consisting of (i) SEQ ID NO: 49 and 51; and (ii) a sequence having at least 80 percent sequence identity in the CDR regions with the CDR regions of SEQ ID NOs: 49 and 51.

11. The antibody or functional fragment thereof according to any one of claims 1 to 6, which comprises a light chain amino acid sequence selected from the group consisting of (i) SEQ ID NOs: 53, 55, 57, 59, 61 and 63; and (ii) a sequence having at least 80 percent sequence identity in the CDR regions with the CDR regions of SEQ ID NOs: 53, 55, 57, 59, 61 and 63.

12. An antibody having a heavy chain having an amino acid sequence of SEQ ID NO: 49 and a light chain having an amino acid sequence of SEQ ID NO: 53.

13. An antibody having a heavy chain having an amino acid sequence of SEQ ID NO: 51 and a light chain having an amino acid sequence of SEQ ID NO: 55, 57, 59, 61 or 63.

14. The functional fragment according to any one of claims 1 to 6, which is a Fab or scFv antibody fragment.

15. A variable heavy chain of an isolated antibody or functional fragment thereof that is encoded by (i) a nucleic acid sequence comprising SEQ ID NO: 18 or 20, or (ii) a nucleic

acid sequence that hybridizes under high stringency conditions to the complementary strand of SEQ ID NO: 18 or 20, wherein said antibody or functional fragment thereof is specific for an epitope of MST1R.

16. A variable light chain of an isolated antibody or functional fragment thereof that is encoded by (i) a nucleic acid sequence selected from the group consisting of SEQ ID NOs: 22, 24, 26, 28, 30 and 32, or (ii) a nucleic acid sequence that hybridizes under high stringency conditions to the complementary strand of a sequence selected from the group consisting of SEQ ID NOs: 22, 24, 26, 28, 30 and 32, wherein said antibody or functional fragment thereof is specific for an epitope of MST1R.

17. A nucleic acid that encodes the antibody or a functional fragment thereof according to any one of claims 1 to 14.

18. A nucleic acid encoding a variable heavy chain of an isolated antibody or functional fragment thereof, comprising (i) a sequence of SEQ ID NO: 18 or 20 or (ii) a nucleic acid that hybridizes under high stringency conditions to the complementary strand of SEQ ID NO: 18 or 20, wherein said antibody or functional fragment thereof is specific for a partial peptide of MST1R, having an amino acid sequence of SEQ ID NO: 17.

19. A nucleic acid encoding a variable light chain of an isolated antibody or functional fragment thereof, comprising (i) a sequence selected from the group consisting of SEQ ID NOs: 22, 24, 26, 28, 30 and 32 or (ii) a nucleic acid that hybridizes under high stringency conditions to the complementary strand of a sequence selected from the group consisting of SEQ ID NOs: 22, 24, 26, 28, 30 and 32, wherein said antibody or functional fragment thereof is specific for a partial peptide of MST1R, having an amino acid sequence of SEQ ID NO: 17.

20. A vector comprising the nucleic acid according to any one of claims 17 to 19.

21. An isolated cell comprising the vector according to claim 20, preferably wherein said cell is bacterial or mammalian.

22. A pharmaceutical composition comprising an antibody or functional fragment thereof according to any one of claims 1 to 14, and a pharmaceutically acceptable carrier or excipient thereof.

23. A pharmaceutical composition according to claim 22 for use in treating a disorder or condition associated with the undesired presence of MST1R, wherein the disorder or condition is a malignant tumor and/or neoplasm caused by MST1R phosphorylation.

24. A pharmaceutical composition for use according to claim 23, wherein said disorder or condition is breast cancer, lung cancer, colon cancer, bladder cancer, skin cancer, pancreatic cancer, glioma, lymphoma, prostate cancer, thyroid cancer, ovary cancer, gastric cancer, liver cancer or stomach cancer.

25. A method for targeting MST1R+ cells in a cell sample, comprising the step of contacting said MST1R+ cells and an antibody or functional fragment thereof according to any one of claims 1 to 14.

26. The antibody or functional fragment thereof according to any one of claims 1 to 14 for use in therapy, wherein the antibody or functional fragment thereof targets MST1R+ cells in a subject, comprising contacting said MST1R+ cells and said antibody or functional fragment thereof.

27. The human antibody according to any one of claims 1 to 14, wherein the human antibody is a synthetic human antibody.

28. An *in vitro* method for producing an antibody by using the vector of claim 20.

29. A method for producing an antibody by culturing the isolated cell of claim 21.