a nucleotide sequence that encodes the bispecific antibody or the antibody fragment thereof according to any one of (1) to (12).

(14) A recombinant vector, comprising:

the nucleic acid according to (13).

(15) A transformant, comprising:

the recombinant vector according to (14).

(16) A method for producing the bispecific antibody or the antibody fragment thereof according to any one of (1) to (12), comprising:

culturing the transformant according to (15) in a medium and collecting the bispecific antibody or the antibody fragment thereof from a culture supernatant.

(17) A reagent for detecting or measuring at least one of TRAILR2 and PSMA, comprising:

the bispecific antibody or the antibody fragment thereof according to any one of (1) to (12).

(18) Use of the bispecific antibody or the antibody fragment thereof according to the present invention *in vitro* for diagnosis of a disease related to a TRAILR2- and PSMA-expressing cell.

(19) The use according to (18), wherein the disease related to a TRAILR2- and PSMA-expressing cell is a malignant tumor and a cancer.

(20) Use of the bispecific antibody or the antibody fragment thereof according to the present invention in the manufacture of a medicament for treating a malignant tumor or cancer.

(21) A bispecific antibody or the antibody fragment thereof according to the present invention for use in therapy.

(22) Also described herein is a method for detecting or measuring at least one of TRAILR2 and PSMA,

by using the bispecific antibody or the antibody fragment thereof according to any one of (1) to (12).

(23) Also described herein is a diagnostic method for a disease related to a TRAILR2- and PSMA-expressing cell, comprising:

[Claim 14] A recombinant vector, comprising:

the nucleic acid according to Claim 13.

[Claim 15] A transformant, comprising:

the recombinant vector according to Claim 14.

[Claim 16] A method for producing the bispecific antibody or the antibody fragment thereof according to any one of Claims 1 to 12, comprising:

culturing the transformant according to Claim 15 in a medium and collecting the bispecific antibody or the antibody fragment thereof from a culture supernatant.

[Claim 17] A reagent for detecting or measuring at least one of TRAILR2 and PSMA, comprising:

the bispecific antibody or the antibody fragment thereof according to any one of Claims 1 to 12.

[Claim 18] Use of the bispecific antibody or the antibody fragment thereof according to any one of Claims 1 to 12 *in vitro* for diagnosis of a disease related to a TRAILR2- and PSMA-expressing cell.

[Claim 19] The use according to Claim 18,

wherein the disease related to a TRAILR2- and PSMA-expressing cell is a malignant tumor and a cancer.

[Claim 20] Use of the bispecific antibody or the antibody fragment thereof according to any one of Claims 1 to 12 in the manufacture of a medicament for treating a malignant tumor or cancer.

[Claim 21] A bispecific antibody or the antibody fragment thereof according to any one of Claims 1 to 12 for use in therapy.

Abstract

The present invention is related to a bispecific antibody or an antibody fragment thereof comprising an antigen binding domain that binds to a TRAILR2, and an antigen binding domain that binds to a PSMA; a nucleic acid comprising a nucleotide sequence that encodes the antibody or the antibody fragment thereof; a recombinant vector comprising the nucleic acid; a transformant comprising the recombinant vector; a method for producing the bispecific antibody or the antibody fragment thereof by using the transformant; and a reagent for detection or measurement, a diagnostic agent, and a therapeutic agent, each of which comprises the bispecific antibody or the antibody fragment thereof.