CLAIMS

[Claim 1]

A molecule comprising a moiety [a], a moiety [b], and a moiety [c] indicated below and binding to a target antigen:

a moiety [a]: a moiety binding to the target antigen;

a moiety [b]: a first peptide recognizing a target antigen-binding site included in the moiety [a]; and

a moiety [c]: a second peptide comprising an amino acid sequence cleaved by a protease localized in the cytoplasm.

[Claim 2]

The molecule according to claim 1, wherein the second peptide has higher binding affinity to the target antigen after it is cleaved by a protease localized in the cytoplasm than that before it is cleaved.

[Claim 3]

The molecule according to claim 1 or 2, wherein the second peptide in the moiety [c] further comprises an amino acid sequence cleaved by an extracellular protease.

[Claim 4]

The molecule according to any one of claims 1 to 3, wherein the first peptide, the second peptide, and the moiety binding to the target antigen are connected in that order.

[Claim 5]

The molecule according to any one of claims 1 to 4, wherein the moiety binding to the target antigen is a polypeptide consisting of an amino acid sequence that is not comprised in the first peptide or the second peptide.

[Claim 6]

The molecule according to any one of claims 1 to 5, which consists of a polypeptide.

[Claim 7]

The molecule according to claim 6, which comprises the first peptide, the second peptide, and the moiety binding to the target antigen or the moiety binding to the target antigen,

the second peptide, and the first peptide are connected in that order from the amino terminus toward the carboxyl terminus.

[Claim 8]

The molecule according to any one of claims 1 to 7, wherein a moiety selected from the group consisting of the first peptide, the second peptide, and the moiety binding to the target antigen is connected to either or both of the other two moieties via linker (or linkers).

[Claim 9]

The molecule according to any one of claims 1 to 8, wherein the protease localized in the cytoplasm leaks extracellularly upon cell death or a damage imposed on cell membrane.

[Claim 10]

The molecule according to any one of claims 1 to 9, wherein the protease localized in the cytoplasm is selected from among calpain, caspase, and tripeptidyl peptidase and it is preferable that calpain be calpain 1 or calpain 2, caspase be caspase 1, caspase 8, caspase 3, or caspase 7, and tripeptidyl peptidase be tripeptidyl peptidase 1 or tripeptidyl peptidase 2.

[Claim 11]

The molecule according to any one of claims 1 to 10, wherein the protease localized in the cytoplasm is a calcium-dependent or calcium-requiring protease.

[Claim 12]

The molecule according to any one of claims 1 to 11, wherein the protease localized in the cytoplasm is calpain 1 or calpain 2.

[Claim 13]

The molecule according to any one of claims 3 to 12, wherein the extracellular protease is expressed at a higher level, exists in a larger amount, or has higher catalytic activity in diseased tissue than in healthy tissue.

[Claim 14]

The molecule according to claim 13, wherein the diseased tissue is tumor tissue and/or stromal tissue.

[Claim 15]

The molecule according to any one of claims 3 to 14, wherein the extracellular protease is selected from the group consisting of matrix metalloproteinase, urokinase type plasminogen

activator, matriptase, legumain, and cathepsin and it is preferable that the matrix metalloproteinase be at least one substance selected from among MMP1, MMP2, MMP3, MMP7, MMP9, MMP12, and MMP14 and that the cathepsin be at least one substance selected from among cathepsin B, cathepsin D, cathepsin S, and cathepsin L.

[Claim 16]

The molecule according to any one of claims 1 to 15, wherein the second peptide comprises an amino acid sequence cleaved by the extracellular protease and the amino acid sequence cleaved by the protease localized in the cytoplasm or an amino acid sequence cleaved by a protease localized in the cytoplasm and an amino acid sequence cleaved by the extracellular protease located in that order from the amino terminus toward the carboxyl terminus, preferably, an amino acid sequence cleaved by the extracellular protease and an amino acid sequence cleaved by the protease localized in the cytoplasm located in that order from the amino terminus toward the carboxyl terminus.

[Claim 17]

The molecule according to any one of claims 1 to 16, wherein the amino acid sequence cleaved by the protease localized in the cytoplasm comprises at least one sequence selected from among SEQ ID NOs: 12 and 44 to 53.

[Claim 18]

The molecule according to any one of claims 1 to 17, wherein the target antigen is a tumor antigen.

[Claim 19]

The molecule according to any one of claims 1 to 18, which comprises another moiety [d] that binds to a moiety binding to the target antigen and the moiety [d] does not comprise the first peptide or the second peptide.

[Claim 20]

The molecule according to claim 19, wherein the moiety [d] is at least one substance selected from the group consisting of an antibody that is not a moiety binding to the target antigen or an antigen-binding fragment thereof, a peptide comprising an amino acid sequence that is not comprised in the first peptide or the second peptide, a cytokine, a toxin, a radioactive

isotope, a label molecule, a photosensitive substance, an immunostimulant, an antitumor compound, a drug, a payload, and a polymer.

[Claim 21]

The molecule according to claim 20, wherein the antitumor compound is a camptothecin derivative or a pyrrolobenzodiazepine derivative, preferably, the camptothecin derivative be N-[(1S,9S)-9-ethyl-5-fluoro-9-hydroxy-4-methyl-10,13-dioxo-2,3,9,10,13,15-hexahydro-1H,12H-benzo[de]pyrano[3',4':6,7]indolizino[1,2-b]quinolin-1-yl]-2-hydroxyacetamide.

[Claim 22]

The molecule according to claim 20, wherein the immunostimulant is a cyclic dinucleotide derivative.

[Claim 23]

The molecule according to any one of claims 19 to 22, which consists of a polypeptide, or the moiety [d] and a polypeptide.

[Claim 24]

A method for identifying a peptide binding to a complementarity determining region (CDR) comprised in an antibody or an antigen-binding fragment of an antibody comprising a step (i) and a step (ii):

(i) a step of bringing a peptide library comprising a repeat sequence of aromatic amino acid and Pro into contact with the CDR; and

(ii) a step of collecting a peptide which binds to the CDR.

[Claim 25]

The method according to claim 24, wherein the repeat sequence of aromatic amino acid and Pro is a ZPZP motif (wherein Z represents any aromatic amino acid selected from among histidine (His), phenylalanine (Phe), tyrosine (Tyr), and tryptophan (Trp); and P represents proline).

[Claim 26]

The method according to claim 24 or 25, which further comprises a step of preparing the peptide by recombination, *in vitro* translation, chemical synthesis, or peptide synthesis.

[Claim 27]

A molecule binding to a target antigen, wherein the CDR is comprised in the moiety that binds to the target antigen as defined in claim 1 and the first peptide is obtained by the method according to claim 26.

[Claim 28]

A method for producing the molecule according to any one of claims 1 to 23, which comprises a step of preparing a peptide comprising an amino acid sequence comprised in the first peptide and/or an amino acid sequence comprised in the second peptide by recombination, *in vitro* translation, chemical synthesis, or peptide synthesis.

[Claim 29]

A molecule binding to a target antigen, which is obtained by the method according to claim 28.

[Claim 30]

A method for producing the molecule according to claim 6, 7, or 23, which comprises a step (iii):

(iii) a step of introducing a polynucleotide comprising a nucleotide sequence encoding an amino acid sequence comprised in a moiety that binds to the target antigen and optionally an amino acid sequence comprised in the first peptide, and/or an amino acid sequence comprised in the second peptide into a cell, culturing the cell, and collecting a polypeptide binding to the target antigen from the culture product.

[Claim 31]

A molecule binding to the target antigen, which is obtained by the method according to claim 30.

[Claim 32]

A pharmaceutical composition comprising the molecule according to any one of claims 1 to 23, 27, 29, and 31, a salt thereof, or a hydrate of the molecule or salt.

[Claim 33]

The pharmaceutical composition according to claim 32, which is an anti-cancer agent.

[Claim 34]

A peptide library comprising a repeat sequence of aromatic amino acid and Pro.

[Claim 35]

The peptide library according to claim 34, wherein the repeat sequence of aromatic amino acid and Pro is a ZPZP motif (wherein Z represents any aromatic amino acid selected from among histidine (His), phenylalanine (Phe), tyrosine (Tyr), and tryptophan (Trp); and P represents proline).