Claims

[Claim 1] A self-assembling peptide, formed of the following amino acid sequence:

Amino acid sequence: $a_1b_1c_1b_2a_2b_3db_4a_3b_5c_2b_6a_4$

where: a_1 to a_4 each represent a basic amino acid residue; b_1 to b_6 each represent ~~an uncharged polar amino acid residue and/or~~ a hydrophobic amino acid residue~~, provided that at least five thereof each represent a hydrophobic amino acid residue~~; c_1 and c_2 each represent an acidic amino acid residue; and d represents a hydrophobic amino acid residue; wherein b_3 and b_4; and/or b_3 and d; and/or b_4 and d each represent a leucine residue.

~~[Claim 2] A self-assembling peptide according to claim 1, wherein b_3 and b_4 in the amino acid sequence each represent a hydrophobic amino acid residue.~~

~~[Claim 3] A self-assembling peptide according to claim 1 or 2, wherein all of b_1 to b_6 in the amino acid sequence each represent a hydrophobic amino acid residue.~~

~~[Claim 4]~~ [Claim 2] A self-assembling peptide according to ~~any one of~~ claims ~~1 to 3~~, wherein b_1 to b_6 in the amino acid sequence each independently represent an alanine residue, a valine residue, a leucine residue, or an isoleucine residue.

~~[Claim 5]~~ [Claim 3] A self-assembling peptide according to any one of claims

1 to ~~4~~2, wherein d in the amino acid sequence represents an alanine residue, a valine residue, a leucine residue, or an isoleucine residue.

~~[Claim 6]~~ [Claim 4] A self-assembling peptide according to any one of claims 1 to ~~5~~3, wherein the self-assembling peptide comprises a peptide formed of an amino acid sequence of RLDLRLALRLDLR (SEQ ID NO: 1), RLDLRLLLRLDLR (SEQ ID NO: 2), RADLRLALRLDLR (SEQ ID NO: 6), RLDLRLALRLDAR (SEQ ID NO: 7), RADLRLLLRLDLR (SEQ ID NO: 8), RADLRLLLRLDAR (SEQ ID NO: 9), RLDLRALLRLDLR (SEQ ID NO: 10), or RLDLRLLARLDLR (SEQ ID NO: 11).

~~[Claim 7]~~ [Claim 5] A self-assembling peptide according to any one of claims 1 to ~~6~~4, wherein the self-assembling peptide comprises a peptide formed of an amino acid sequence of RLDLRLALRLDLR(SEQ ID NO: 1) or RLDLRLLLRLDLR(SEQ ID NO: 2).

~~[Claim 8]~~ [Claim 6] A modified peptide having a self-assembling ability, wherein the modified peptide comprises the self-assembling peptide according to any one of claims 1 to ~~7~~5 whose N-terminal amino group and/or C-terminal carboxyl group are/is modified.

~~[Claim 9]~~ [Claim 7] A modified peptide having a self-assembling ability according to claim ~~8~~6, wherein the N-terminal amino group and/or the C-terminal carboxyl group have/has added thereto an amino acid

sequence including RGD.

~~[Claim 10]~~ [Claim 8] A peptide gel, which is formed from an aqueous solution including the self-assembling peptide according to any one of claims 1 to ~~7~~ 5 and/or the modified peptide according to claim ~~8~~ 6 or ~~9~~ 7.

~~[Claim 11]~~ [Claim 9] A peptide gel according to claim ~~10~~ 8, wherein the aqueous solution further comprises an additive.

~~[Claim 12]~~ [Claim 10] A peptide gel according to claim 9 ~~11~~, wherein the additive comprises at least one selected from the group consisting of a pH adjuster, an amino acid, a vitamin, a saccharide, a polysaccharide, an alcohol, a polyalcohol, a pigment, a bioactive substance, an enzyme, an antibody, DNA, and RNA.

~~[Claim 13]~~ [Claim 11] A peptide gel according to any one of claims ~~10~~ 8 to ~~12~~ 10, wherein the peptide gel has an absolute value L (g/s) of an amount of change in load per unit time of 0.03 g/s or more in an approximate straight line of values measured from the start of compression to between 8 and 10 seconds in a compression test carried out at a compression speed of 0.05 mm/s using a jig whose tip has a spherical shape with a diameter of 3.2 mm and a curvature radius of 1.6 mm under a temperature condition of 22°C.

~~[Claim 14]~~ [Claim 12] A substrate for cell culture, comprising at least one

selected from the group consisting of the self-assembling peptide according to any one of claims 1 to ~~7~~5, the modified peptide according to claim ~~8~~6 or ~~9~~7, and the peptide gel according to any one of claims ~~10~~8 to ~~13~~11.

~~[Claim 15]~~ [Claim 13] A manufacturing method for a sterile peptide, comprising the step of sterilizing the self-assembling peptide according to any one of claims 1 to ~~7~~5 and/or the modified peptide according to claim ~~8~~6 or ~~9~~7 under a pressurized condition at 100°C or more.

~~[Claim 16]~~ [Claim 14] A manufacturing method for an article coated with a peptide gel, comprising the steps of:

freezing the peptide gel according to any one of claims ~~10~~8 to ~~13~~11;

melting the frozen peptide gel to provide a peptide sol;

coating at least part of a surface of an article to be coated with the peptide sol; and

reconstructing a peptide gel from the peptide sol.