

amino acid sequence of SEQ ID NO: 61, and a VL-CDR3 consisting of the amino acid sequence of SEQ ID NO: 67; a heavy chain variable region including a VH-CDR1 consisting of the amino acid sequence of SEQ ID NO: 38, a VH- CDR2 consisting of the amino acid sequence of SEQ ID NO: 44, and a VH-CDR3 consisting of the amino acid sequence of SEQ ID NO: 50, and a light chain variable region including a VL-CDR1 consisting of the amino acid sequence of SEQ ID NO: 56, a VL-CDR2 consisting of the amino acid sequence of SEQ ID NO: 62, and a VL-CDR3 consisting of the amino acid sequence of SEQ ID NO: 68; or a combination thereof.

[0019] The 6th and 7th Xaa in SEQ ID NO: 39 may be glycine (Gly) or alanine (Ala). The 2nd Xaa in SEQ ID NO: 35 may be tyrosine (Tyr) or histidine (His). The 8th Xaa in SEQ ID NO: 41 may be serine (Ser) or threonine (Thr). The 12th Xaa in SEQ ID NO: 47 may be tyrosine (Tyr) or histidine (His). The 3rd Xaa in SEQ ID NO: 53 may be methionine (Met) or isoleucine (Ile). The 2nd Xaa in SEQ ID NO: 59 may be Ala or Ser.

[0020] The antibody or antigen-binding fragment thereof may include a heavy chain variable region including an amino acid sequence of any one selected from SEQ ID NOS: 21 to 26; a light chain variable region including an amino acid sequence of any one selected from SEQ ID NOS: 27 to 32; or the heavy chain variable region and the light chain variable region.

[0021] The antibody or antigen-binding fragment thereof may include a heavy chain variable region of SEQ ID NO: 21 and a light chain variable region of SEQ ID NO: 27; a heavy chain variable region of SEQ ID NO: 22 and a light chain variable region of SEQ ID NO: 28; a heavy chain variable region of SEQ ID NO: 23 and a light chain variable region of SEQ ID NO: 29; a heavy chain variable region of SEQ ID NO: 24 and a light chain variable region of SEQ ID NO: 30; a heavy chain variable region of SEQ ID NO: 25 and a light chain variable region of SEQ ID NO: 31; or a heavy chain variable region of SEQ ID NO: 26 and a light chain variable region of SEQ ID NO: 32, or a combination thereof.

[0022] The 56th Xaa and 57th Xaa in SEQ ID NO: 21 may each be Gly or Ala. In SEQ ID NO: 23, the 1st Xaa may be glutamine (Gln) or glutamate (Glu), the 7th Xaa may be Ser or proline (Pro), the 12th Xaa may be valine (Val) or alanine (Ala), the 27th Xaa may be Tyr or His, the 58th Xaa may be Ser or Thr, the 61st Xaa may be asparagine (Asn) or Ser, the 74

th Xaa may be arginine (Arg) or lysine (Lys), the 83rd Xaa may be phenylalanine (Phe) or leucine (Leu), the 92nd Xaa may be Gly or Ala, and the 108th Xaa may be His or Tyr. The 53rd Xaa in SEQ ID NO: 27 may be Ile or Phe. In SEQ ID NO: 29, the 29th Xaa may be Met or Ile, the 51st Xaa may be Ala or Ser, and the 79th Xaa may be Glu or aspartic acid (Asp), and the 106th Xaa may be Met or Ile.

[0023] The antibody or antigen-binding fragments thereof include a plurality of antibodies or antigen-binding fragments thereof, and may be a combination of antibodies selected from one of No. 1 sets and one of No. 2 sets; one of No. 1 sets and one of No. 3 sets; and one of No. 2 sets and one of No. 3 sets. The No. 1 set may be an antibody or antigen-binding fragment thereof, binding to a middle region of a BAG2 protein, including VH of SEQ ID NO: 21 and VL of SEQ ID NO: 27, and VH of SEQ ID NO: 22 and VL of SEQ ID NO: 28. The No. 2 set may be an antibody or antigen-binding fragment thereof, binding to an N-terminus of a BAG2 protein, including VH of SEQ ID NO: 23 and VL of SEQ ID NO: 29, and VH of SEQ ID NO: 24 and VL of SEQ ID NO: 30. The No. 3 set may be an antibody or antigen-binding fragment thereof, binding to a C-terminus of a BAG2 protein, including VH of SEQ ID NO: 25 and VL of SEQ ID NO: 31, and VH of SEQ ID NO: 26 and VL of SEQ ID NO: 32.

[0024] The antibody or antigen-binding fragments thereof may be a monoclonal antibody.

[0025] The antibody or antigen-binding fragments thereof may be marked with a detectable label or a label capable of emitting a detectable signal. The label refers to a detectable compound or composition conjugated directly or indirectly to an antibody to produce a labeled antibody or antigen-binding fragment thereof. The label may be detectable by itself and catalyze the chemical modification of the detectable substrate compound or composition.

[0026] The label may be an immunofluorescent label, a chemiluminescent label, a phosphorescent label, a radiolabel, an epitope tag, avidin/biotin, colloidal gold particles, colored particles, magnetic particles, chromophore labels, an ECL label, an enzyme, or the like.

[0027] The antibody or antigen-binding fragment thereof may be produced by a hybridoma cell selected from hybridoma cells deposited with accession numbers KCTC 137378P, KCTC 137388P, KCTC 137398P, KCTC 137408P, KCTC 137418P, KCTC 137428P, KCTC 137438P, KCTC 137448P, KCTC 137458P and KCTC 137468P.

[00201] 2A11, 4C2, and 8C4 antibodies include a heavy chain variable region consisting of an amino acid sequence of SEQ ID NO: 21 and a light chain variable region consisting of an amino acid sequence of SEQ ID NO: 27. In the 2A11 antibody, the 56th and 57th Xaa of SEQ ID NO: 21 are each Gly and the 53rd Xaa of SEQ ID NO: 27 is lie. In the 4C2 antibody, 56th Xaa and 57th Xaa of SEQ ID NO: 21 are Gly and Ala, respectively, and 53rd Xaa of SEQ ID NO: 27 is Phe. In the 8C4 antibody, 56th Xaa and 57th Xaa of SEQ ID NO: 21 are Ala and Gly, respectively, and 53rd Xaa of SEQ ID NO: 27 is Phe.

[00202] VH-CDR1, -CDR2 and -CDR3 of 2A11, 4C2, and 8C4 antibodies consist of amino acid sequences of SEQ ID NOS: 33, 39 and 45, respectively, and VL-CDR1, - CDR2 and -CDR3 consist of amino acid sequences of SEQ ID NOS: 51, 57, and 63, respectively. In 2A11 antibody, 56th and 57th Xaa of SEQ ID NO: 21 each are Gly. Regarding 4C2 antibody, in SEQ ID NO: 21, 56th Xaa is Gly and 57th Xaa is Ala. Regarding 8C4 antibody, in SEQ ID NO: 21, 56th Xaa is Ala and 57th Xaa is Gly.

[00203] 9B3, 9B12 and 3B10 antibodies include a heavy chain variable region consisting of an amino acid sequence of SEQ ID NO: 23 and a light chain variable region consisting of an amino acid sequence of SEQ ID NO: 29. Regarding 9B3 antibody, in SEQ ID NO: 23, 1st Xaa is Glu, 7th Xaa is Ser, 12th Xaa is Val, 27th Xaa is Tyr, 58th Xaa is Ser, 61st Xaa is Asn, 74th Xaa is Lys, 83rd Xaa is Phe, 92nd Xaa is Ala, and 108th Xaa is Tyr. Regarding 9B3 antibody, in SEQ ID NO: 29, 29th Xaa is Ile, 51st Xaa is Ala, 79th Xaa is Glu, and 106th Xaa is Ile. Regarding 9B12 antibody, in SEQ ID NO:23 1st Xaa is Gin, 7th Xaa is Ser, 12th Xaa is Val, 27th Xaa is Tyr, 58th Xaa is Ser, 61st Xaa is Asn, 74th Xaa is Arg, 83rd Xaa is Phe, 92nd Xaa is Gly, and 108th Xaa is His. Regarding 9B12 antibody, in SEQ ID NO: 29, 29th Xaa is Met, 51st Xaa is Ala, 79th Xaa is Glu, and 106th Xaa is Met. Regarding 3B10 antibody, in SEQ ID NO: 23, 1st Xaa is Gln, 7th Xaa is Pro, 12th Xaa is Ala, 27th Xaa is His, 58th Xaa is Thr, 61st Xaa is Ser, 74th Xaa is Arg, 83rd Xaa is Leu, 92nd Xaa is Gly, and 108th Xaa is His. Regarding 3B10 antibody, in SEQ ID NO: 29, 29th Xaa is Met, 51st Xaa is Ser, 79th Xaa is Asp, and 106th Xaa is Ile.

[00204] Regarding 9B3, 9B12, and 3B10 antibodies, VH-CDR1, -CDR2, and -CDR3 consist of the amino acid sequences of SEQ ID NOS: 35, 41, and 47, respectively, and VL-CDR1, -CDR2, and -CDR3 consist of the amino acid sequences of SEQ ID NOS: 53, 59, and