CLAIMS

1. An isolated antibody or antigen-binding fragment thereof that can specifically bind to CD100, comprising a heavy chain variable region polypeptide (VH) and a light chain variable region polypeptide (VL), wherein

the VH comprises VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively and the VL comprises VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively; or

the antibody or fragment thereof is a monoclonal antibody that comprises a VH encoded by the polynucleotide deposited as ATCC PTA-10004 and a VL encoded by the polynucleotide deposited as ATCC PTA-10005.

2. The antibody or fragment thereof according to claim 1, further comprising a human constant region.

3. The antibody or fragment thereof according to claim 1 or claim 2, which is selected from the group consisting of a single chain antibody, an Fab fragment, an $F(ab)_2$ fragment, and an Fv fragment.

4. The antibody or fragment thereof according to any one of claims 1 to 3, wherein the VH comprises an amino acid sequence at least 90% identical to SEQ ID NO: 9 or SEQ ID NO: 10 and the VL comprises an amino acid sequence at least 90% identical to SEQ ID NO: 17 or SEQ ID NO: 18.

5. The antibody or fragment thereof according to any one of claims 1 to 4, which is humanized, primatized or chimeric.

6. The antibody or fragment thereof according to any one of claims 1 to 5, further comprising a heterologous polypeptide fused thereto.

7. A composition comprising the antibody or fragment thereof according to any one of claims 1 to 6, and a carrier.

8. An isolated polynucleotide comprising

(a) a nucleic acid that encodes an antibody VH, wherein the VH comprises VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively; and wherein an antibody or antigen-binding fragment thereof comprising the VH specifically binds to CD100,

(b) a nucleic acid which encodes an antibody VH, wherein the amino acid sequence of the VH is at least 90% identical to SEQ ID NO: 9; and wherein an antibody or antigen-binding fragment thereof comprising the VH specifically binds to CD100,

(c) a nucleic acid sequence comprising SEQ ID NO: 19,

(d) a nucleic acid that encodes an antibody VL, wherein the VL comprises VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively; and wherein an antibody or antigen-binding fragment thereof comprising the VL specifically binds to CD100,

(e) a nucleic acid which encodes an antibody VL, wherein the amino acid sequence of the VL is at least 90% identical to SEQ ID NO: 17; and wherein an antibody or antigen-binding fragment thereof comprising the VL specifically binds to CD100, or

(f) a nucleic acid sequence comprising SEQ ID NO: 21.

9. A composition comprising an isolated VH-encoding polynucleotide and an isolated VL-encoding polynucleotide, wherein the VH-encoding polynucleotide encodes a VH comprising VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively; wherein the VL-encoding polynucleotide encodes a VL comprising VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively; and wherein an antibody or antigen-binding fragment thereof comprising the VH and VL specifically binds CD100.

10. The composition according to claim 9, wherein the VH-encoding polynucleotide and the VL-encoding polynucleotide are contained on a single vector or on separate vectors.

11. A host cell comprising the polynucleotide of claim 8 or the composition of claim 9 or claim 10.

12. A method of producing an antibody or antigen-binding fragment thereof that specifically binds CD100, comprising culturing a host cell comprising the polynucleotide of claim 8 or the composition of claim 10, and recovering the antibody, or fragment thereof.

13. The antibody or antigen-binding fragment thereof of any one of claims 1 to 6, or the composition of claim 7 for use in

(a) neutralizing CD100 in an animal,

(b) the treatment of an autoimmune disease or an inflammatory disease in an animal in need thereof,

(c) the treatment of a cancer in an animal in need thereof, or

(d) inhibiting angiogenesis in an animal in need of cancer treatment.

14. The antibody or antigen-binding fragment, or composition for the use according to claim 13, wherein the autoimmune disease or the inflammatory disease is multiple sclerosis or arthritis.

15. The use of an antibody or antigen-binding fragment thereof of any one of claims 1 to 6, or the use of a composition of claim 7, in the manufacture/preparation of a composition/medicament for the treatment of an autoimmune disease, an inflammatory disease, or cancer.

16. The use according to claim 15, wherein the autoimmune disease or the inflammatory disease is multiple sclerosis or arthritis.

Claims

1. An isolated antibody or antigen-binding fragment thereof that can specifically bind to CD100, comprising a heavy chain variable region polypeptide (VH) and a light chain variable region polypeptide (VL), wherein the VH comprises VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively and the VL comprises VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively; or the antibody or fragment thereof is a monoclonal antibody that comprises a VH encoded by the polynucleotide deposited as ATCC PTA-10004 and a VL encoded by the polynucleotide deposited as ATCC PTA-10005.

2. The antibody or fragment thereof according to claim 1, further comprising a human constant region.

3. The antibody or fragment thereof according to claim 1 or claim 2, which is selected from the group consisting of a single chain antibody, an Fab fragment, an $F(ab)_2$ fragment, and an Fv fragment.

4. The antibody or fragment thereof according to any one of claims 1 to 3, wherein the VH comprises an amino acid sequence at least 90% identical to SEQ ID NO: 9 or SEQ ID NO: 10 and the VL comprises an amino acid sequence at least 90% identical to SEQ ID NO: 17 or SEQ ID NO: 18.

5. The antibody or fragment thereof according to any one of claims 1 to 4, which is humanized, primatized or chimeric.

6. The antibody or fragment thereof according to any one of claims 1 to 5, further comprising a heterologous polypeptide fused thereto.

7. A composition comprising the antibody or fragment thereof according to any one of claims 1 to 6, and a carrier.

8. An isolated polynucleotide comprising

(a) a nucleic acid that encodes an antibody VH, wherein the VH comprises VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively and a nucleic acid that encodes an antibody VL, wherein the VL comprises VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively; and wherein an antibody or antigen-binding fragment thereof comprising the VH and the VL specifically binds to CD100,

(b) a nucleic acid which encodes an antibody VH, wherein the amino acid sequence of the VH is at least 90% identical to SEQ ID NO: 9 and a nucleic acid which encodes an antibody VL, wherein the amino acid sequence of the VL is at least 90% identical to SEQ ID NO: 17; and wherein an antibody or antigen-binding fragment thereof comprising the VH and VL specifically binds to CD100, or

(c) a nucleic acid sequence comprising SEQ ID NO: 19 and a nucleic acid comprising SEQ ID NO: 21.

9. A composition comprising an isolated VH-encoding polynucleotide and an isolated VL-encoding polynucleotide, wherein the VH-encoding polynucleotide encodes a VH comprising VH-CDR1, VH-CDR2, and VH-CDR3 amino acid sequences comprising SEQ ID NOs: 6, 7, and 8, respectively; wherein the VL-encoding polynucleotide encodes a VL comprising VL-CDR1, VL-CDR2, and VL-CDR3 amino acid sequences comprising SEQ ID NOs: 14, 15, and 16, respectively; and wherein an antibody or antigen-binding fragment thereof comprising the VH and VL specifically binds CD100.

10. The composition according to claim 9, wherein the VH-encoding polynucleotide and the VL-encoding polynucleotide are contained on a single vector or on separate vectors.

11. A host cell comprising the polynucleotide of claim 8 or the composition of claim 9 or claim 10.

12. A method of producing an antibody or antigen-binding fragment thereof that specifically binds CD100, comprising culturing a host cell comprising the polynucleotide of claim 8 or the composition of claim 10, and recovering the antibody, or fragment thereof.

13. The antibody or antigen-binding fragment thereof of any one of claims 1 to 6, or the composition of claim 7 for use in

(a) neutralizing CD100 in an animal,

(b) the treatment of an autoimmune disease or an inflammatory disease in an animal in need thereof,

(c) the treatment of a cancer in an animal in need thereof, or

(d) inhibiting angiogenesis in an animal in need of cancer treatment.

14. The antibody or antigen-binding fragment, or composition for the use according to claim 13, wherein the autoimmune disease or the inflammatory disease is multiple sclerosis or arthritis.

15. The use of an antibody or antigen-binding fragment thereof of any one of claims 1 to 6, or the composition of claim 7 for the manufacture/preparation of a composition/medicament for the treatment of an autoimmune disease, an inflammatory disease, or cancer.

16. The use according to claim 15, wherein the autoimmune disease or the inflammatory disease is multiple sclerosis or arthritis.