Claims

1. A binding agent comprising at least two binding domains, wherein a first binding domain binds to a first receptor of the tumor necrosis factor (TNF) superfamily and a second binding domain binds to a second receptor of the TNF superfamily, wherein the first receptor and the second receptor are different.

2. The binding agent according to claim 1, wherein the binding agent is an agonistic binding agent.

3. The binding agent according to claim 1 or 2, wherein the binding agent is a bispecific molecule, preferably a bispecific antibody.

4. The binding agent according to any one of claims 1 to 3, wherein the binding agent is in the format of a full-length antibody or an antibody fragment.

5. The binding agent according to any one of claims 1 to 4, wherein the first receptor and the second receptor are selected from the group consisting of CD40, CD27, OX40 (CD134) and 4-1BB (CD137).

6. The binding agent according to any one of claims 1 to 5, wherein the first binding domain or the second binding domain binds to CD27, wherein the binding agent comprises

(a) the heavy chain complementarity determining region(s) HCDR1, HCDR2 and/or HCDR3, and/or
the light chain complementarity determining region(s) LCDR1, LCDR2 and/or LCDR3
of an antibody selected from the group consisting of AB27_1 to AB27_186 as shown in Table 7; and/or

(b) the heavy chain variable domain (VH) or a variant or fragment thereof and/or the light chain variable domain (VL) or a variant or fragment thereof
of an antibody selected from the group consisting of AB27_1 to AB27_186 as shown in Table 7.

7. The binding agent according to any one of claims 1 to 6, wherein the first binding domain or the second binding domain binds to OX40 (CD134), wherein the binding agent comprises

(a) the heavy chain complementarity determining region(s) HCDR1, HCDR2 and/or HCDR3, and/or
the light chain complementarity determining region(s) LCDR1, LCDR2 and/or LCDR3
of an antibody selected from the group consisting of AB134_1 to AB134_92 as shown in Table 8; and/or

(b) the heavy chain variable domain (VH) or a variant or fragment thereof and/or the light chain variable domain (VL) or a variant or fragment thereof
of an antibody selected from the group consisting of AB134_1 to AB134_92 as shown in Table 8.

8. The binding agent according to any one of claims 1 to 7, wherein the first binding domain or the second binding domain binds to 4-1BB (CD137), wherein the binding agent comprises

(a) the heavy chain complementarity determining region(s) HCDR1, HCDR2 and/or HCDR3, and/or
the light chain complementarity determining region(s) LCDR1, LCDR2 and/or LCDR3
of an antibody selected from the group consisting of AB137_1 to AB137_12 as shown in Table 9; and/or

(b) the heavy chain variable domain (VH) or a variant or fragment thereof and/or the light chain variable domain (VL) or a variant or fragment thereof
of an antibody selected from the group consisting of AB137_1 to AB137_12 as shown in Table 9.

9. The binding agent according to any one of claims 1 to 8, wherein the first binding domain or the second binding domain binds to CD40, wherein the binding agent comprises

(a) heavy chain complementarity determining region(s) HCDR1 having the amino acid sequence of SEQ ID NO: 2323, HCDR2 having the amino acid sequence of SEQ ID NO: 2324 and/or HCDR3 having the amino acid sequence of SEQ ID NO: 2325, and/or

light chain complementarity determining region(s) LCDR1 having the amino acid sequence of SEQ ID NO: 2326, LCDR2 having the amino acid sequence of SEQ ID NO: 2327 and/or LCDR3 having the amino acid sequence of SEQ ID NO: 2328; and/or

(b) heavy chain variable domain (VH) having the amino acid sequence of SEQ ID NO: 2321 or a variant or fragment thereof and/or light chain variable domain (VL) having the amino acid sequence of SEQ ID NO: 2322 or a variant or fragment thereof.

10. The binding agent according to any one of claims 1 to 9, wherein

(a) the first binding domain binds to CD40 and the second binding domain binds to CD27;

(b) the first binding domain binds to CD40 and the second binding domain binds to OX40 (CD134);

(c) the first binding domain binds to CD40 and the second binding domain binds to 4-1BB (CD137);

(d) the first binding domain binds to 4-1BB (CD137) and the second binding domain binds to CD27;

(e) the first binding domain binds to 4-1BB (CD137) and the second binding domain binds to OX40 (CD134); or

(f) the first binding domain binds to OX40 (CD134) and the second binding domain binds to CD27.

11. The binding agent according to any one of claims 1 to 10, comprising one or more heavy chain constant domains of an immunoglobulin and/or light chain constant domains of an immunoglobulin.

12. A binding agent that binds to CD27, comprising

(a) the heavy chain complementarity determining region(s) HCDR1, HCDR2 and/or HCDR3, and/or

the light chain complementarity determining region(s) LCDR1, LCDR2 and/or LCDR3

of an antibody selected from the group consisting of AB27_1 to AB27_186 as shown in Table 7; and/or

~~(b) the heavy chain variable domain (VH) or a variant or fragment thereof and/or the light chain variable domain (VL) or a variant or fragment thereof of an antibody selected from the group consisting of AB27_1 to AB27_186 as shown in Table 7.~~

~~131~~1. A binding agent comprising a binding domain that binds to OX40 (CD134), ~~comprising~~

~~(a) the heavy chain complementarity determining region(s) HCDR1, HCDR2 and/or HCDR3, and/or~~

~~the light chain complementarity determining region(s) LCDR1, LCDR2 and/or LCDR3 of an antibody selected from the group consisting of AB134_1 to AB134_92 as shown in Table 8; and/or~~

~~(b) the heavy chain variable domain (VH) or a variant or fragment thereof and/or the light chain variable domain (VL) or a variant or fragment thereof of an antibody selected from the group consisting of AB134_1 to AB134_92 as shown in Table 8~~wherein the binding agent is selected from the group consisting of:

(a) a binding agent comprising a binding domain comprising

(a1) the heavy chain complementarity determining region HCDR1 having the amino acid sequence of SEQ ID NO: 1703, the HCDR2 having the amino acid sequence of SEQ ID NO: 1704 and the HCDR3 having the amino acid sequence of SEQ ID NO: 1705, and

the light chain complementarity determining region LCDR1 having the amino acid sequence of SEQ ID NO: 1706, the LCDR2 having the amino acid sequence of SEQ ID NO: 1707 and the LCDR3 having the amino acid sequence of SEQ ID NO: 1708; or

(a2) the VH having the amino acid sequence of SEQ ID NO: 1499 and the VL having the amino acid sequence of SEQ ID NO: 1500;

(b) a binding agent comprising a binding domain comprising

(b1) the heavy chain complementarity determining region HCDR1 having the amino acid sequence of SEQ ID NO: 1709, the HCDR2 having the amino acid sequence of SEQ ID NO: 1710 and the HCDR3 having the amino acid sequence of SEQ ID NO: 1711, and

the light chain complementarity determining region LCDR1 having the amino acid sequence of SEQ ID NO: 1712, the LCDR2 having the

amino acid sequence of SEQ ID NO: 1713 and the LCDR3 having the amino acid sequence of SEQ ID NO: 1714; or

(b2) the VH having the amino acid sequence of SEQ ID NO: 1501 and the VL having the amino acid sequence of SEQ ID NO: 1502;

(c) a binding agent comprising a binding domain comprising

(c1) the heavy chain complementarity determining region HCDR1 having the amino acid sequence of SEQ ID NO: 1847, the HCDR2 having the amino acid sequence of SEQ ID NO: 1848 and the HCDR3 having the amino acid sequence of SEQ ID NO: 1849, and

the light chain complementarity determining region LCDR1 having the amino acid sequence of SEQ ID NO: 1850, the LCDR2 having the amino acid sequence of SEQ ID NO: 1851 and the LCDR3 having the amino acid sequence of SEQ ID NO: 1852; or

(c2) the VH having the amino acid sequence of SEQ ID NO: 1547 and the VL having the amino acid sequence of SEQ ID NO: 1548; and

(d) a binding agent comprising a binding domain comprising

(d1) the heavy chain complementarity determining region HCDR1 having the amino acid sequence of SEQ ID NO: 2015, the HCDR2 having the amino acid sequence of SEQ ID NO: 2016 and the HCDR3 having the amino acid sequence of SEQ ID NO: 2017, and

the light chain complementarity determining region LCDR1 having the amino acid sequence of SEQ ID NO: 2018, the LCDR2 having the amino acid sequence of SEQ ID NO: 2019 and the LCDR3 having the amino acid sequence of SEQ ID NO: 2020; or

(d2) the VH having the amino acid sequence of SEQ ID NO: 1603 and the VL having the amino acid sequence of SEQ ID NO: 1604.

~~14. A binding agent that binds to 4-1BB (CD137), comprising~~

~~(a) the heavy chain complementarity determining region(s) HCDR1, HCDR2 and/or HCDR3, and/or~~

~~the light chain complementarity determining region(s) LCDR1, LCDR2 and/or LCDR3~~

~~of an antibody selected from the group consisting of AB137_1 to AB137_12 as shown in Table 9; and/or~~

~~(b) the heavy chain variable domain (VH) or a variant or fragment thereof and/or the light chain variable domain (VL) or a variant or fragment thereof of an antibody selected from the group consisting of AB137_1 to AB137_12 as shown in Table 9.~~

~~15~~2. The binding agent according to ~~any one of~~ claim~~s~~ 1~~2 to 14~~, wherein the binding agent is an agonistic binding agent.

~~16~~3. The binding agent according to ~~any one of~~ claim~~s~~ 1~~2 to 15~~ or 2, wherein the binding agent is in the format of a full-length antibody~~antibody or an antibody fragment~~.

~~17. The binding agent according to any one of claims 12 to 16, comprising one or more heavy chain constant domains of an immunoglobulin and/or light chain constant domains of an immunoglobulin.~~

4. The binding agent according to any one of claims 1 to 3, wherein the binding agent is in the format of a full-length IgG antibody.

5. The binding agent according to any one of claims 1 to 4, wherein the binding agent is a monoclonal antibody.

~~18~~6. A binding agent binding to the same epitope(s) as a binding agent according to any one of claims 1 to ~~17~~5.

~~19~~7. A nucleic acid molecule encoding a binding agent according to any one of claims 1 to ~~18~~6, wherein~~, preferably,~~ the nucleic acid molecule is contained in a vector.

~~20~~8. A cell comprising ~~a~~ nucleic acids encoding the binding agent of any one of claims 1 to 6 or comprising the nucleic acid molecule according to claim ~~19~~7.

~~21~~9. A pharmaceutical composition comprising, as an active agent, a binding agent according to any one of claims 1 to ~~18~~6, ~~a~~nucleic acids encoding the binding agent of any one of claims 1 to 6, the nucleic acid molecule according to claim ~~19~~7, or a cell according to claim ~~20~~8.

~~22~~10. The pharmaceutical composition according to claim ~~21~~9, further comprising a pharmaceutically acceptable carrier and/or excipient.

~~23~~11. A kit comprising a binding agent according to any one of claims 1 to ~~18~~6, ~~a~~ nucleic acids encoding the binding agent of any one of claims 1 to 6, the nucleic acid molecule according to claim ~~19~~7, a cell according to claim ~~20~~8, or a pharmaceutical composition according to claim ~~21~~9 or ~~22~~10.

~~24~~12. A binding agent according to any one of claims 1 to ~~18~~6, a nucleic acid molecule according to claim ~~19~~7, a cell according to claim ~~20~~8, or a pharmaceutical composition according to claim ~~21~~9 or ~~22~~10 for use as a medicament.

~~25~~13. A binding agent according to any one of claims 1 to ~~18~~6, a nucleic acid molecule according to claim ~~19~~7, a cell according to claim ~~20~~8, or a pharmaceutical composition according to claim ~~21~~9 or ~~22~~10 for use in the treatment of a disease selected from the group consisting of cancer, infectious diseases, inflammatory diseases, metabolic diseases, autoimmune disorders, degenerative diseases, apoptosis-associated diseases and transplant rejections.

14. Use of a binding agent according to any one of claims 1 to 6, a nucleic acid molecule according to claim 7, a cell according to claim 8, or a pharmaceutical composition according to claim 9 or 10 in the preparation of a medicament for the treatment of a disease selected from the group consisting of cancer, infectious diseases, inflammatory diseases, metabolic diseases, autoimmune disorders, degenerative diseases, apoptosis-associated diseases and transplant rejections.