

CLAIMS

What is claimed is:

1. A multi-specific antibody-like protein having a N-terminus and a C-terminus, comprising, a first monomer, comprising, from the N-terminus to the C-terminus, a first binding monomer, a CH1 domain, a first hinge, a first CH2 domain, and a first CH3 domain, wherein the first monomer comprises a first binding domain (D1) linked to the N-terminus, a fourth binding domain (D4) linked to the C-terminus, or both,

a second monomer, comprising, from the N-terminus to the C-terminus, a second binding monomer, a CL domain, a second hinge, a second CH2 domain, and a second CH3 domain, wherein the second monomer comprises a second binding domain (D2) linked to the N-terminus, a fifth binding domain (D5) linked to the C-terminus, or both,

wherein the first binding monomer and a second binding monomer are configured to form a dimer (D3),

wherein the first monomer and the second monomer are covalently paired through at least one disulfide bond between the CH1 domain and the CL domain and at least one disulfide bond between the first hinge and the second hinge, and

wherein the multi-specific antibody-like protein is at least tetra-specific.

2. The multi-specific antibody-like protein of claim 1, wherein the first binding monomer comprises a VH domain, a second binding monomer comprises a VL domain, and wherein the VH, CH1, VL, CL domains form a Fab region as the third binding domain (D3).

3. The multi-specific antibody-like protein of claim 1 or 2, wherein the first CH3 domain is configured to form a hole structure, wherein the second CH3 domain is configured to form a knob structure, and wherein the first CH2 and CH3 domains and the second CH2 and CH3 domains are configured to heterodimerize to form a complementary Fc domain.

4. The multi-specific antibody-like protein of any one of claim 1 to 3, wherein the Fc domain comprises a human IgG Fc domain.

5. The multi-specific antibody-like protein of any one of claims 1 to 4, wherein the D1, D2, D4, and D5 is independently a scFv domain, a VHH domain, a receptor, or a ligand.

6. The multi-specific antibody-like protein of claim 5, wherein at least one of D1, D2, D4, and D5 is an scFv domain comprising a disulfide bond between the VH and VL.

7. The multi-specific antibody-like protein of any one of claim 1 to 6, wherein the D1, D2, D3, D4, and D5 each independently has a binding specificity against an antigen selected, EGFR, HER2, HER3, EGFRvIII, ROR1, CD3, CD28, CEA, LMP1, LMP2A, Mesothelin, PSMA, EpCAM, glypican-3, gpA33, GD2, TROP2, NKG2D, NKG2D ligand, BCMA, CD19, CD20, CD33, CD123, CD22, CD30, PD-L1, PD1, OX40, 4-1BB, GITR, TIGIT, TIM-3, LAG-3, CTLA4, CD40, CD40L, VISTA, ICOS, BTLA, LIGHT, HVEM, CSF1R, CD73, CD39, CLDN18.2, DLL3, HLA-G, FcRH5, GPRC5D, LIV-1, MUC1, CD138, CD70, CD16, uPAR, Siglec-15, CD47, CD38, , NKp46, PD-L2, CD160, LOX-1, SIRP α , CD27.
8. The multi-specific antibody-like protein of any one of claims 1 to 7, wherein D1 has a binding specificity to CD3, CD20, CEA, HER2, EGFR, or NKG2D ligand.
9. The multi-specific antibody-like protein of any one of claims 1 to 8, wherein D2 has a binding specificity to HER3, EGFR, CD3, or CD19.
10. The multi-specific antibody-like protein of any one of claims 1 to 9, wherein D3 has a binding specificity to HER3, EGFR, CD3, or NKG2D ligand.
11. The multi-specific antibody-like protein of any one of claims 1 to 10, wherein D4 has a binding specificity to 4-1BB, or EGFR.
12. The multi-specific antibody-like protein of any one of claims 1 to 11, wherein D5 has a binding specificity to PD-L1 or HER3.
13. The multi-specific antibody-like protein of any one of claims 1 to 12, wherein the protein is a tetra-specific antibody having:
 - a) binding specificity to EGFR, HER3, CD3, and 4-1BB; or
 - b) binding specificity to EGFR, HER3, CD3, and PD-L1; or
 - c) binding specificity to CD3, CD19, NKG2D ligand and PD-L1.
14. The multi-specific antibody-like protein of any one of claims 1 to 12, wherein the protein is a penta-specific antibody having:
 - a) binding specificity to EGFR, HER3, CD3, 4-1BB and PD-L1; or
 - b) binding specificity to EGFR, CD19, CD3, 4-1BB and PD-L1; or
 - c) binding specificity to CD20, CD19, CD3, 4-1BB and PD-L1; or
 - d) binding specificity to CD3, CD19, NKG2D ligand, 4-1BB and PD-L1.

15. The multi-specific antibody-like protein of any one of claims 1 to 14, wherein the first binding monomer and the second binding monomer form a NKG2D receptor as the third binding domain (D3), or D1 is a NKG2D receptor.

16. The multi-specific antibody-like protein of any one of claims 1 to 6, wherein the protein is a tetra-specific antibody, comprising:

a) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 255, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 257,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249;

b) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 255, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 257,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- c) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 211, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 213,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 275, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 277,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 271, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 273;

- d) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 211, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 213,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 275, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 277,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 267, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 269; or

- e) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an NKG2D receptor, comprising the amino acid sequence of SEQ ID NO: 253,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245.

- 17. The multi-specific antibody-like protein of any one of claims 1 to 6, wherein the protein is a tetra-specific antibody, comprising:

- a) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 255, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 257,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249;

- b) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,
- D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 255, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 257,
- D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,
- D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;
- c) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 211, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 213,
- D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 275, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 277,
- D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,
- D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 271, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 273;
- d) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 211, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 213,
- D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 275, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 277,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 267, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 269; or

- e) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,

D3 which is an NKG2D receptor, comprising the amino acid sequence of SEQ ID NO: 253,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245.

18. The multi-specific antibody-like protein of any one of claims 1 to 6, wherein the protein is a penta-specific antibody, comprising:

- a) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 255, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 257,

D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and

a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- b) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 207, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 209,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 255, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 257,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D4 which is 4-1BB ligand comprising the amino acid sequence of SEQ ID NO: 251,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245.

- c) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 255, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 257,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and

a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- d) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D2 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D3 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 255, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 257,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- e) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and

a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- f) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and

a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- g) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 231, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 233,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- h) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 235, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 237,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and

a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- i) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 239, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 241,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and

a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- j) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 291, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 293,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- k) D1 which is a VHH domain having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 263,

D2 which is a VHH domain having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 365,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- l) D1 which is a VHH domain having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 263,

D2 which is a VHH domain having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 365,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 227, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 229,

D4 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 203, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 205,

D5 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 255, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 257;

- m) D1 which is an scFv having binding specificity to CD20, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 259, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 261,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and

a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- n) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 211, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 213,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 275, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 277,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 271, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 273,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 267, and

a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 269;

- o) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an NKG2D receptor, comprising the amino acid sequence of SEQ ID NO: 253,

D4 which is a scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245;

- p) D1 which is an NKG2D receptor, comprising the amino acid sequence of SEQ ID NO: 253,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D4 which is a scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 247, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245; or

- q) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 219, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 221,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 215, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 217,

D3 which is an NKG2D receptor, comprising the amino acid sequence of SEQ ID NO: 253,

D4 which is 4-1BB ligand comprising the amino acid sequence of SEQ ID NO: 251,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising 3 complementarity determining regions (CDRs) of SEQ ID NO: 243, and a light chain variable region comprising 3 complementarity determining regions of SEQ ID NO: 245.

19. The multi-specific antibody-like protein of any one of claims 1 to 6, wherein the protein is a penta-specific antibody, comprising:

- a) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 255, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 257,

D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;

- b) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 207, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 209,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 255, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 257,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D4 which is 4-1BB ligand comprising the amino acid sequence of SEQ ID NO: 251,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245.

- c) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 255, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 257,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;

- d) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,
- D2 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,
- D3 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 255, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 257,
- D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,
- D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;
- e) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,
- D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,
- D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,
- D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,
- D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;

- f) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,
- D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,
- D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,
- D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,
- D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;
- g) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 231, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 233,
- D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,
- D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,
- D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,
- D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;

- h) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 235, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 237,
- D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,
- D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,
- D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,
- D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;
- i) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 239, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 241,
- D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,
- D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,
- D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,
- D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;

- j) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 291, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 293,
 D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,
 D3 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,
 D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,
 D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;
- k) D1 which is a VHH domain having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 263,
 D2 which is a VHH domain having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 365,
 D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,
 D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,
 D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;
- l) D1 which is a VHH domain having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 263,

D2 which is a VHH domain having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 365,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 227, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 229,

D4 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 203, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 205,

D5 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 255, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 257;

m) D1 which is an scFv having binding specificity to CD20, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 259, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 261,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;

n) D1 which is an scFv having binding specificity to CD20, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 259, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 261,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 223, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 235,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245

- o) D1 which is an scFv having binding specificity to EGFR, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 211, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 213,

D2 which is an scFv having binding specificity to HER3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 275, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 277,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D4 which is an scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 271, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 273,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 267, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 269;

- p) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,

D3 which is an NKG2D receptor, comprising the amino acid sequence of SEQ ID NO: 253,

D4 which is a scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245;

q) D1 which is an NKG2D receptor, comprising the amino acid sequence of SEQ ID NO: 253,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,

D3 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D4 which is a scFv having binding specificity to 4-1BB, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 247, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 249,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245; or

r) D1 which is an scFv having binding specificity to CD3, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 219, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 221,

D2 which is an scFv having binding specificity to CD19, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 215, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 217,

D3 which is an NKG2D receptor, comprising the amino acid sequence of SEQ ID NO: 253,

D4 which is 4-1BB ligand comprising the amino acid sequence of SEQ ID NO: 251,

D5 which is an scFv having binding specificity to PD-L1, comprising a heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 243, and a light chain variable region comprising the amino acid sequence of SEQ ID NO: 245.

20. An isolated nucleic acid encoding the multi-specific antibody-like protein of any one of claims 1 to 19.
21. An expression vector comprising the isolated nucleic acid of claim 20.
22. A host cell comprising the isolated nucleic acid sequence of claim 20.
23. An immunoconjugate comprising the multi-specific antibody-like protein of any one of claims 1 to 19 and a cytotoxic agent.
24. A pharmaceutical composition, comprising the multi-specific antibody-like protein of any one of claims 1 to 19 and a pharmaceutically acceptable carrier.
25. A pharmaceutical composition, comprising the immunoconjugate of claim 23 and a pharmaceutically acceptable carrier.
26. Use of the multi-specific antibody-like protein of any one of claims 1 to 19 in the manufacture of a medicament for treating a cancer, an autoimmune disease, or an infectious disease in a subject, wherein the disease comprises cells which expresses a T cell activating receptor, an immune checkpoint molecule or tumour associated antigen which the multi-specific-like protein is capable of binding.
27. A method for producing the multi-specific antibody-like protein of any one of claims 1 to 19, comprising
 - culturing a host cell such that the DNA sequence encoding the multi-specific antibody-like protein is expressed, and
 - purifying said multi-specific antibody-like protein.
28. A solution comprising an effective concentration of the multi-specific antibody-like protein of any one of claims 1 to 19, wherein the solution is blood plasma obtained from a subject.