WHAT IS CLAIMED:

1. A recombinant antigen-binding protein that binds a human IgG1-Fc domain, a human IgG2-Fc domain, or a human IgG4-Fc domain.

2. The recombinant antigen-binding protein of claim 1, wherein the antigen-binding protein binds a polypeptide comprising an amino acid sequence of SEQ ID NO:26.

3. The recombinant antigen-binding protein of claim 1 or claim 2, wherein the antigen-binding protein binds the polypeptide with a K_D of less than about 40 nM as measured in a surface plasmon resonance assay.

4. The recombinant antigen-binding protein of any one of claims 1-3, wherein the antigen-binding protein comprises one or more complementarity determining regions (CDRs) of a heavy chain variable region (HCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:15, or of a light chain variable region (LCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:16.

5. The recombinant antigen-binding protein of any one of claims 1-4, wherein the antigen-binding protein comprises a heavy chain CDR-1 (HCDR-1) having the amino acid sequence of SEQ ID NO:27, an HCDR-2 having the amino acid sequence of SEQ ID NO:28, an HCDR-3 having the amino acid sequence of SEQ ID NO:29, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:30, and an LCDR-2 having the amino acid sequence of SEQ ID NO:31.

6. The recombinant antigen-binding protein of any one of claims 1-5, wherein the antigen-binding protein comprises an HCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:15 and an LCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:16.

7. The recombinant antigen-binding protein of any one of claims 1-6, wherein the antigen-binding protein comprises an HCVR having the amino acid sequence of SEQ ID NO:15 and an LCVR having the amino acid sequence of SEQ ID NO:16.

8. The recombinant antigen-binding protein of any one of claims 1-7, wherein the antigen-binding protein is an ScFv fusion protein comprising (a) a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:15, (b) a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:16, and (c) a membrane anchor domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:17 or SEQ ID NO:21.

9. The recombinant antigen-binding protein of any one of claims 1-8, wherein the antigen-binding protein is an ScFv fusion protein comprising a heavy chain variable domain that has an amino acid sequence identical to SEQ ID NO:15 and a light chain variable domain that has an amino acid sequence identical to SEQ ID NO:16.

10. The recombinant antigen-binding protein of any one of claims 1-9, wherein the antigen-binding protein is an ScFv fusion protein comprising the amino acid sequence of SEQ ID NO:19.

11. A recombinant antigen-binding protein that binds to the same epitope on the substituted CH3 polypeptide as an antibody which comprises a heavy chain CDR-1 (HCDR1) having the amino acid sequence of SEQ ID NO:27, an HCDR-2 having the amino acid sequence of SEQ ID NO:28, an HCDR-3 having the amino acid sequence of SEQ ID NO:29, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:30, and an LCDR-2 having the amino acid sequence of SEQ ID NO:31.

12. An isolated polynucleotide comprising a nucleic acid sequence that encodes the antigen binding protein of any one of claims 1-11.

13. The isolated polynucleotide of claim 12, wherein the nucleic acid encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:19.

14. A nucleic acid vector comprising:

(a) a polynucleotide according to claim 12 or 13;

(b) a promoter, which is operably linked to the polynucleotide; and

(c) a polyadenylation sequence.

15. The nucleic acid vector of claim 14, wherein the promoter is a CMV promoter.

16. The nucleic acid vector of claim 14 or 15 comprising a nucleic acid encoding a selectable marker.

17. The nucleic acid vector of claim 16, wherein the selectable marker provides neomycin resistance.

18. The nucleic acid vector of any one of claims 14-17 comprising a nucleic acid encoding an energy transfer protein.

19. The nucleic acid vector of claim 18, wherein the energy transfer protein is a derivative of green fluorescence protein.

20. The nucleic acid vector of claim 19, wherein the derivative of green fluorescence protein is yellow fluorescence protein ("YFP").

21. The nucleic acid vector of any one of claims 14-20, wherein the vector is circular.

22. The nucleic acid vector of any one of claims 14-20, wherein the vector is linear.

23. The nucleic acid vector of claim 22, wherein the vector is integrated into the genome of a host cell.

24. The nucleic acid vector of any one of claims 14-23, wherein the host cell is a CHO cell.

25. A host cell expressing an antigen-binding protein of any one of claims 1-11.

26. The host cell of claim 25, wherein the cell is a CHO cell.

27. A recombinant antigen-binding protein that specifically binds a substituted CH3 polypeptide comprising one or more amino acid substitutions selected from the group consisting of (a) 95R, and (b) 95R and 96F according to the IMGT exon numbering system, or (a') 435R, and (b') 435R and 436F according to the EU numbering system.

28. The recombinant antigen-binding protein of claim 27, wherein the antigen-binding protein binds a polypeptide comprising an amino acid sequence of SEQ ID NO:42.

29. The recombinant antigen-binding protein of claim 27 or 28, wherein the antigen-binding protein binds the polypeptide with a K_D of less than about 60 nM as measured in a surface plasmon resonance assay.

30. The recombinant antigen-binding protein of any one of claims 27-29, wherein the antigen-binding protein comprises one or more complementarity determining regions (CDRs) of a heavy chain variable region (HCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:38, or of a light chain variable region (LCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:39.

31. The recombinant antigen-binding protein of any one of claims 27- 30, wherein the antigen-binding protein comprises a heavy chain CDR-1 (HCDR-1) having the amino acid sequence of SEQ ID NO:32, an HCDR-2 having the amino acid sequence of SEQ ID NO:33, an HCDR-3 having the amino acid sequence of SEQ ID NO:34, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:35, an LCDR-2 having the amino acid sequence of SEQ ID NO:36, and an LCDR-3 having the amino acid sequence of SEQ ID NO:37.

32. The recombinant antigen-binding protein of any one of claims 27- 31, wherein the antigen-binding protein comprises an HCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:38 and an LCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:39.

33. The recombinant antigen-binding protein of any one of claims 27- 32, wherein the antigen-binding protein comprises an HCVR having an amino acid sequence of SEQ ID NO:38 and an LCVR having an amino acid sequence of SEQ ID NO:39.

34. The recombinant antigen-binding protein of any one of claims 27-33, wherein the antigen-binding protein is an antibody comprising a heavy chain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:40 and a light chain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:41.

35. The recombinant antigen-binding protein of any one of claims 27- 34, wherein the antibody comprises a heavy chain that has an amino acid sequence identical to SEQ ID NO:40 and a light chain that has an amino acid sequence identical to SEQ ID NO:41.

36. The recombinant antigen-binding protein of any one of claims 27-33, wherein the antigen-binding protein is an ScFv fusion protein comprising (a) a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:38, (b) a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:39, and (c) a membrane anchor domain.

37. The recombinant antigen-binding protein of any one of claims 27-33 and 36, wherein the antigen-binding protein is an ScFv fusion protein comprising a heavy chain variable domain that has an amino acid sequence identical to SEQ ID NO:38 and a light chain variable domain that has an amino acid sequence identical to SEQ ID NO:39.

38. The recombinant antigen-binding protein of any one of claims 27-33, 36 and 37, wherein the antigen-binding protein is an ScFv fusion protein comprising the amino acid sequence of SEQ ID NO:43.

39. A recombinant antigen-binding protein that binds to the same epitope on the substituted CH3 polypeptide as an antibody which comprises a heavy chain CDR-1 (HCDR1) having the amino acid sequence of SEQ ID NO:32, an HCDR-2 having the amino acid sequence of SEQ ID NO:33, an HCDR-3 having the amino acid sequence of SEQ ID NO:34, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:35, an LCDR-2 having the amino acid sequence of SEQ ID NO:36, and an LCDR-3 having the amino acid sequence of SEQ ID NO:37.

40. An isolated polynucleotide comprising a nucleic acid sequence that encodes the antigen binding protein of any one of claims 27-39.

41. The isolated polynucleotide of claim 40, wherein the nucleic acid encodes a polypeptide comprising an amino acid sequence of SEQ ID NO:40.

42. The isolated polynucleotide of claim 40, wherein the nucleic acid encodes a polypeptide comprising an amino acid sequence of SEQ ID NO:41.

43. The isolated polynucleotide of claim 40, wherein the nucleic acid encodes a polypeptide comprising an amino acid sequence of SEQ ID NO:43.

44. A nucleic acid vector comprising:

(a) a polynucleotide according to any one of claims 40-43;

(b) a promoter, which is operably linked to the polynucleotide; and

(c) a polyadenylation sequence.

45. The nucleic acid vector of claim 44, wherein the promoter is a CMV promoter.

46. The nucleic acid vector of claim 44 or 45comprising a nucleic acid encoding a selectable marker.

47. The nucleic acid vector of claim 46, wherein the selectable marker provides neomycin resistance.

48. The nucleic acid vector of any one of claims 44-47 comprising a nucleic acid encoding an energy transfer protein.

49. The nucleic acid vector of claim 48, wherein the energy transfer protein is a derivative of green fluorescence protein.

50. The nucleic acid vector of claim 49, wherein the derivative of green fluorescence protein is yellow fluorescence protein (“YFP”).

51. The nucleic acid vector of any one of claims 44-50, wherein the vector is circular.

52. The nucleic acid vector of any one of claims 44-50, wherein the vector is linear.

53. The nucleic acid vector of claim 52, wherein the vector is integrated into the genome of a host cell.

54. The nucleic acid vector of claim 53any one of claims 44-53, wherein the host cell is a CHO cell.

55. A host cell expressing an antigen-binding protein of any one of claims 27-39.

56. The host cell of claim 55, wherein the cell is a CHO cell.

57. A method of detecting or isolating a cell that stably expresses a heterodimeric protein comprising the steps of:
(a) expressing in a host cell a cell surface capture protein (CSCP) and a heterodimeric protein, wherein (i) the CSCP binds to a first site on the heterodimeric protein to form a CSCP- heterodimeric protein complex inside the host cell, (ii) the CSCP- heterodimeric protein complex is transported through the host cell, and (iii) then displayed on the surface of the host cell;
(b) contacting the host cell with a detection molecule, wherein the detection molecule binds to a second site on the heterodimeric protein; and
(c) selecting the host cell which binds the detection molecule.

58. The method of claim 57, comprising the step of contacting the cell with a blocking molecule prior to selecting the host cell at step (c), wherein the blocking molecule binds to CSCP that is not bound to the heterodimeric protein, but does not bind to the CSCP-heterodimeric protein complex.

59. The method of claims 57 or 58, wherein the selecting step (c) is performed by fluorescence activated cell sorting.

60. The method of any one of claims 57-59, wherein the heterodimeric protein comprises multiple subunits and the first site on the heterodimeric protein resides on a first subunit, and the second site on the heterodimeric protein resides on a second subunit.

61. The method of claim 60, wherein the heterodimeric protein comprises an antibody.

62. The method of claim 61, wherein the first site on the antibody resides on a heavy chain comprising a wild type CH3 domain.

63. The method of any one of claims 57-62, wherein the first site on the antibody resides on a heavy chain comprising a CH3 domain that comprises a histidine residue at position 95 according to the IMGT exon numbering system and a tyrosine residue at position 96 according to the IMGT exon numbering system.

64. The method of any one of claims 57-63, wherein the CSCP comprises a recombinant antigen-binding protein that binds a human IgG1-Fc domain, a human IgG2-Fc domain, or a human IgG4-Fc domain.

65. The method of any one of claims 57-64, wherein the antigen-binding protein binds a polypeptide comprising an amino acid sequence of SEQ ID NO:26.

66. The method of claim any one of claims 57-65, wherein the antigen-binding protein comprises Protein A or a functional fragment of Protein A.

67. The method of claim 66, wherein the antigen-binding protein is a chimeric protein comprising the Fc binding domain of Protein A.

68. The method of claim 67, wherein the chimeric protein comprises the Fc binding domain of Protein A and a membrane anchor.

69. The method of claim 68, wherein the chimeric protein comprises the Fc binding domain of Protein A and a transmembrane domain of an Fc receptor.

70. The method of any one of claims 57-64, wherein the antigen-binding protein binds the polypeptide with a K_D of less than about 40 nM as measured in a surface plasmon resonance assay.

71. The method of any one of claims 57-70, wherein the CSCP comprises an ScFv fusion protein comprising (a) a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:15, (b) a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:16, and (c) a membrane anchor domain.

72. The method of claim 71, wherein the detection molecule (DM) comprises an antigen-binding protein protein comprising a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:38, and a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:39.

73. The method of claim any one of claims 57-59, wherein the CSCP comprises an antigen-binding protein comprises an ScFv fusion protein comprising (a) a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:38, (b) a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:39, and (c) a membrane anchor domain..

74. The method of claim 73, wherein the detection molecule (DM) comprises an antigen-binding protein comprising a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:15, and a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:16.

75. The method of claim any one of claims 57-74, wherein the blocking molecule is a non-human IgG or a human Fc molecule.

76. A method of detecting and isolating cells that produce high levels of a heterodimeric protein, comprising:

(a) transfecting cells with a nucleic acid that encodes a cell surface capture protein (CSCP), which is a fusion protein comprising a membrane anchor domain and is capable of binding a first subunit of the heterodimeric protein, wherein the cell expresses the heterodimeric protein;

(b) detecting a cell of (a) that expresses the CSCP in high yield;

(c) isolating and culturing the cell that expresses the CSCP in high yield;

(d) detecting the heterodimeric protein on the surface of the isolated and cultured cell of step (c) with a detection molecule that binds a second subunit of the heterodimeric protein; and

(e) isolating the cell detected in step (d) that bears the detected heterodimeric protein on its surface.

77. The method of claim 76, wherein the heterodimeric protein comprises an antibody.

78. The method of claim 76 or 77, wherein the first subunit of the heterodimeric protein comprises a heavy chain domain comprising a wild type CH3 domain.

79. The method of any one of claims 76-78, wherein the first subunit of the heterodimeric protein comprises a heavy chain comprising a CH3 domain having a histidine residue at position 95 according to the IMGT exon numbering system and a tyrosine residue at position 96 according to the IMGT exon numbering system.

80. The method of any one of claims 76-79, wherein the CSCP comprises a recombinant antigen-binding protein that binds a human IgG1-Fc domain, a human IgG2-Fc domain, or a human IgG4-Fc domain.

81. The method of any one of claims 76-80, wherein the recombinant antigen-binding protein binds a polypeptide comprising an amino acid sequence of SEQ ID NO:26.

82. The method of any one of claims 76-81, wherein the recombinant antigen-binding protein comprises Protein A or a functional fragment of Protein A.

83. The method of claim 82, wherein the recombinant antigen-binding protein is a fusion protein comprising the Fc binding domain of Protein A.

84. The method of claim 82 or 83, wherein the fusion protein comprises the Fc binding domain of Protein A and a membrane anchor.

85. The method of any one of claims 82-84, wherein the fusion protein comprises the Fc binding domain of Protein A and a transmembrane domain of an Fc receptor.

86. The method of any one of claims 76-81, wherein the recombinant antigen-binding protein binds the polypeptide with a K_D of less than about 40 nM as measured in a surface plasmon resonance assay.

87. The method of any one of claims 76-81, wherein the recombinant antigen-binding protein comprises one or more complementarity determining regions (CDRs) of a heavy

chain variable region (HCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:15, or of a light chain variable region (LCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:16.

88. The method of any one of claims 76-81 or 87, wherein the recombinant antigen-binding protein comprises a heavy chain CDR-1 (HCDR-1) having the amino acid sequence of SEQ ID NO:27, an HCDR-2 having the amino acid sequence of SEQ ID NO:28, an HCDR-3 having the amino acid sequence of SEQ ID NO:29, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:30, and an LCDR-2 having the amino acid sequence of SEQ ID NO:31.

89. The method of any one of claims 76-81, 87 or 88, wherein the recombinant antigen-binding protein binds to the same epitope on the CH3 domain as an antibody which comprises a heavy chain CDR-1 (HCDR1) having the amino acid sequence of SEQ ID NO:27, an HCDR-2 having the amino acid sequence of SEQ ID NO:28, an HCDR-3 having the amino acid sequence of SEQ ID NO:29, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:30, and an LCDR-2 having the amino acid sequence of SEQ ID NO:31.

90. The method of any one of claims 76-81 or 87-89, wherein the antigen-binding protein comprises an HCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:15 and an LCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:16.

91. The method of any one of claims 76-81 or 87-90, wherein the antigen-binding protein comprises an HCVR having the amino acid sequence of SEQ ID NO:15 and an LCVR having the amino acid sequence of SEQ ID NO:16.

92. The method of any one of claims 76-81, wherein the CSCP is an ScFv fusion protein comprising (a) a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:15, (b) a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:16, and (c) a membrane anchor domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:17 or SEQ ID NO:21.

93. The method of any one of claims 76-81 or 92, wherein the CSCP is an ScFv fusion protein comprising a heavy chain variable domain that has an amino acid sequence identical to SEQ ID NO:15 and a light chain variable domain that has an amino acid sequence identical to SEQ ID NO:16.

94. The method of any one of claims 76-81, 92, or 93, wherein the CSCP is an ScFv fusion protein comprising the amino acid sequence of SEQ ID NO:19.

95. The method of any one of claims 76-94, wherein the second subunit of the heterodimeric protein comprises a heavy chain comprising a CH3 domain that comprises an arginine residue at position 95 according to the IMGT exon numbering system and a phenylalanine residue at position 96 according to the IMGT exon numbering system.

96. The method of claim 95, wherein the detection molecule (DM) comprises a labeled recombinant antigen-binding protein that binds a human IgG1-Fc domain, a human IgG2-Fc domain, or a human IgG4-Fc domain wherein the Fc domain comprises an arginine residue at position 95 according to the IMGT exon numbering system and a phenylalanine residue at position 96 according to the IMGT exon numbering system.

97. The method of claim 95 or 96, wherein the detection molecule comprises a labeled anti-human IgG F(ab')2.

98. The method of claim 96 or 97, wherein the labeled recombinant antigen-binding protein binds a polypeptide comprising an amino acid sequence of SEQ ID NO:43.

99. The method any one of claims 96-98, wherein labeled recombinant antigen-binding protein binds the polypeptide with a K_D of less than about 60 nM as measured in a surface plasmon resonance assay.

100. The method of any one of claims 96-99, wherein the labeled recombinant antigen-binding protein comprises one or more complementarity determining regions (CDRs) of a heavy chain variable region (HCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:38, or of a light chain variable region (LCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:39.

101. The method of any one of claims 96-100, wherein the labeled recombinant antigen-binding protein comprises a heavy chain CDR-1 (HCDR-1) having the amino acid sequence of SEQ ID NO:32, an HCDR-2 having the amino acid sequence of SEQ ID NO:33, an HCDR-3 having the amino acid sequence of SEQ ID NO:34, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:35, an LCDR-2 having the amino acid sequence of SEQ ID NO:36, and an LCDR-3 having the amino acid sequence of SEQ ID NO:37.

102. The method of any one of claims 96-101, wherein the labeled recombinant antigen-binding protein comprises an HCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:38 and an LCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:39.

103. The method of any one of claims 96-102, wherein the labeled recombinant antigen-binding protein comprises an HCVR having an amino acid sequence of SEQ ID NO:38 and an LCVR having an amino acid sequence of SEQ ID NO:39.

104. The method of any one of claims 96-103, wherein the labeled recombinant antigen-binding protein is a labeled antibody comprising a heavy chain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:40 and a light chain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:41.

105. The method of claim 104, wherein the labeled antibody comprises a heavy chain that has an amino acid sequence identical to SEQ ID NO:40 and a light chain that has an amino acid sequence identical to SEQ ID NO:41.

106. The method of any one of claims 76-78, wherein the first subunit of the heterodimeric protein comprises a heavy chain domain comprising a CH3 domain having an arginine residue at position 95 according to the IMGT exon numbering system and a phenylalanine residue at position 96 according to the IMGT exon numbering system, and the second subunit of the heterodimeric protein comprises a heavy chain domain comprising a CH3 domain having a histidine residue at position 95 according to the IMGT exon numbering system and a tyrosine residue at position 96 according to the IMGT exon numbering system.

107. The method of claim 106, wherein the CSCP comprises an ScFv fusion protein comprising (a) a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:38, (b) a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:39, and (c) a membrane anchor domain.

108. The method of claim 107, wherein the ScFv fusion protein comprises a heavy chain variable domain that has an amino acid sequence identical to SEQ ID NO:38 and a light chain variable domain that has an amino acid sequence identical to SEQ ID NO:39.

109. The method of claim 107 or 108, wherein the ScFv fusion protein comprises the amino acid sequence of SEQ ID NO:43.

110. The method of any one of claims 106-109, wherein the detection molecule (DM) comprises a labeled recombinant antigen-binding protein comprising one or more complementarity determining regions (CDRs) of a heavy chain variable region (HCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:15, or of a light chain variable region (LCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:16.

111. The method of claim 110, wherein the labeled recombinant antigen-binding protein comprises a heavy chain CDR-1 (HCDR-1) having the amino acid sequence of SEQ ID NO:27, an HCDR-2 having the amino acid sequence of SEQ ID NO:28, an HCDR-3 having the amino acid sequence of SEQ ID NO:29, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:30, and an LCDR-2 having the amino acid sequence of SEQ ID NO:31.

112. The method of claim 106, wherein the detection molecule (DM) comprises a labeled recombinant antigen-binding protein that binds to the same epitope on the CH3 domain as an antibody which comprises a heavy chain CDR-1 (HCDR1) having the amino acid sequence of SEQ ID NO:27, an HCDR-2 having the amino acid sequence of SEQ ID NO:28, an HCDR-3 having the amino acid sequence of SEQ ID NO:29, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:30, and an LCDR-2 having the amino acid sequence of SEQ ID NO:31.

113. The method of claim 112, wherein the labeled antigen-binding protein comprises an HCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:15 and an LCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:16.

114. The method of claim 112 or 113, wherein the labeled antigen-binding protein comprises an HCVR having the amino acid sequence of SEQ ID NO:15 and an LCVR having the amino acid sequence of SEQ ID NO:16.

115. The method of any one of claims 76-114, wherein the blocking molecule is a non-human IgG or a human Fc molecule.

CLAIMS

1. A recombinant antigen-binding protein that binds a human IgG1-Fc domain, a human IgG2-Fc domain, or a human IgG4-Fc domain, wherein the recombinant antigen-binding protein comprises:

an antibody or ScFv that binds to the same epitope on the Fc domain as an antibody or ScFv which comprises a heavy chain CDR-1 (HCDR1) having the amino acid sequence of SEQ ID NO:27, an HCDR-2 having the amino acid sequence of SEQ ID NO:28, an HCDR-3 having the amino acid sequence of SEQ ID NO:29, a light chain CDR-1 (LCDR-1) having the amino acid sequence of SEQ ID NO:30, and an LCDR-2 having the amino acid sequence of SEQ ID NO:31.

2. The recombinant antigen-binding protein of claim 1, wherein:

a. the antigen-binding protein comprises one or more complementarity determining regions (CDRs) of a heavy chain variable region (HCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:15, or of a light chain variable region (LCVR) having an amino acid sequence that is at least 95% identical to SEQ ID NO:16;
b. the antigen-binding protein comprises an HCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:15 and an LCVR having an amino acid sequence that is at least 95% identical to SEQ ID NO:16; or
c. the antigen-binding protein comprises an HCVR having the amino acid sequence of SEQ ID NO:15 and an LCVR having the amino acid sequence of SEQ ID NO:16.

3. The recombinant antigen-binding protein of claim 1 or claim 2, wherein the antigen-binding protein is an ScFv fusion protein comprising:

a. (i) a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:15, (ii) a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID

NO:16; and (iii) a membrane anchor domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:17 or SEQ ID NO:21;

b. (i) a heavy chain variable domain that has an amino acid sequence identical to SEQ ID NO:15, (ii) a light chain variable domain that has an amino acid sequence identical to SEQ ID NO:16; and (iii) a membrane anchor domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:17 or SEQ ID NO:21; or

c. the amino acid sequence of SEQ ID NO:19.

4. An isolated polynucleotide comprising a nucleic acid sequence that encodes:

a. the antigen binding protein of any one of claims 1-3; or

b. a polypeptide comprising the amino acid sequence of SEQ ID NO:19.

5. A nucleic acid vector comprising:

a. a polynucleotide according to claim 4;

b. a promoter, which is operably linked to the polynucleotide; and

c. a polyadenylation sequence.

6. The nucleic acid vector of claim 5 further comprising a nucleic acid encoding:

a. a selectable marker, or

b. an energy transfer protein.

7. The nucleic acid vector of claims 5 or 6, wherein:

a. the promoter is a CMV promoter;

b. the selectable marker provides neomycin resistance; or

c. the energy transfer protein is a derivative of green fluorescence protein such as yellow fluorescence protein (“YFP”).

8. The nucleic acid vector of any one of claims 5-7, wherein the vector is circular or linear.

9. The nucleic acid vector of any one of claims 5-8, wherein the vector is integrated into the genome of a host cell and/or the host cell is a CHO cell.

10. A host cell expressing an antigen-binding protein of any one of claims 1-4.

11. The host cell of claim 10, wherein the cell is a CHO cell.

12. A method of detecting or isolating a cell that stably expresses a heterodimeric protein comprising the steps of:

a. expressing in a host cell a cell surface capture protein (CSCP) comprising an antigen-binding protein of any one of claims 1 to 3 and a heterodimeric protein, wherein (i) the CSCP binds to a first site on the heterodimeric protein to form a CSCP-heterodimeric protein complex inside the host cell, (ii) the CSCP- heterodimeric protein complex is transported through the host cell, and (iii) then displayed on the surface of the host cell;

b. contacting the host cell with a detection molecule, wherein the detection molecule binds to a second site on the heterodimeric protein; and

c. selecting the host cell which binds the detection molecule,

wherein in the heterodimeric protein:

(i) the first site resides on a heavy chain that has a CH3 domain containing a histidine residue at position 95 according to the IMGT exon numbering system and a tyrosine residue at position 96 according to the IMGT exon numbering system (Fc); and

(ii) the second site resides on a heavy chain that has a CH3 domain containing an arginine residue at position 95 according to the IMGT exon numbering system and a phenylalanine residue at position 96 according to the IMGT exon numbering system (Fc*).

13. The method of claim 12 or 13, comprising the step of contacting the cell with a blocking molecule prior to selecting the host cell at step (c), wherein the blocking

molecule binds to CSCP that is not bound to the heterodimeric protein, but does not bind to the CSCP- heterodimeric protein complex.

14. The method of claims 12 or 13, wherein the selecting step (c) is performed by fluorescence activated cell sorting.

15. A method detecting and isolating cells that produce high levels of a heterodimeric protein, comprising:

a. transfecting cells with a nucleic acid that encodes a cell surface capture protein (CSCP) which is an antigen-binding-protein of any one of claims 1 to 3, wherein the CSCP is capable of binding a first site on a subunit of the heterodimeric protein, wherein the cell expresses the heterodimeric protein;

b. detecting a cell of (a) that expresses the CSCP in high yield;

c. isolating and culturing the cell that expresses the CSCP in high yield;

d. detecting the heterodimeric protein on the surface of the isolated and cultured cell of step c. with a detection molecule that binds a second site on a second subunit of the heterodimeric protein; and

e. isolating the cell detected in step (d) that bears the detected heterodimeric protein on its surface,

wherein in the heterodimeric protein:

(i) the first site resides on a heavy chain that has a CH3 domain containing a histidine residue at position 95 according to the IMGT exon numbering system and a tyrosine residue at position 96 according to the IMGT exon numbering system (Fc); and

(ii) the second site resides on a heavy chain that has a CH3 domain containing an arginine residue at position 95 according to the IMGT exon numbering system and a phenylalanine residue at position 96 according to the IMGT exon numbering system (Fc*).

16. The method of claim 15, wherein the selecting step (d) is performed by fluorescence activated cell sorting.

17. The method of any one of claims 12-16, wherein the heterodimeric protein comprises an antibody and the first site on the antibody resides on a heavy chain comprising a wild type CH3 domain.

18. The method of any one of claims 12 to 17, wherein the detection molecule (DM) comprises:

a. an antigen-binding protein comprising a heavy chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:38, and a light chain variable domain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:39; or

b. an antigen-binding protein comprising a heavy chain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO: 40, and a light chain comprising an amino acid sequence that is at least 95% identical to SEQ ID NO:41.

19. The method of claim any one of claims 12-16, wherein the cell is contacted with a blocking molecule prior to the detection molecule, where the blocking molecule is a non-human IgG or a human Fc molecule.