WHAT IS CLAIMED:

1. An antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the antibody or antigen-binding fragment thereof comprises the VH-CDR1, VH-CDR2, VH-CDR3, VL-CDR1, VL-CDR2, and VL-CDR3 of SEQ ID NOs:31, 32, 37, 34, 35, and 36, respectively.

2. The antibody or antigen-binding fragment of claim 1 comprising a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:63 and a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:61.

3. The antibody or antigen-binding fragment of claim 1 or 2, wherein the antibody or antigen-binding fragment neutralizes SARS-CoV-2 virus.

4. The antibody or antigen-binding fragment of any one of claims 1-4, wherein the antibody or antigen-binding fragment neutralizes SARS-CoV-2 D614G, SARS-CoV-2 alpha, SARS-CoV-2 delta+T51I+T95I, SARS-CoV-2 BA.1, SARS-CoV-2 BA.1.1, SARS-CoV-2 BA.2, SARS-CoV-2 BA.2.12.1, and/or SARS-CoV-2 BA.5 virus.

5. The antibody or antigen-binding fragment of any one of claims 1-4, wherein the antibody or antigen-binding fragment is fully human.

6. The antibody or antigen-binding fragment of any one of claims 1-5, wherein the antibody or antigen-binding fragment comprises a human IgGλ light chain constant region.

7. The antibody or antigen-binding fragment of any one of claims 1-6, wherein the antibody or antigen-binding fragment comprises a human immunoglobulin IgG1 heavy chain constant region.

8. The antibody or antigen-binding fragment of any one of claims 1-7, wherein the antibody or antigen-binding fragment comprises a heavy chain constant region comprising a YTE mutation.

9. The antibody or antigen-binding fragment of any one of claims 1-8, wherein the antibody or antigen-binding fragment comprises a heavy chain constant region comprising a TM mutation.

10. The antibody or antigen-binding fragment of any one of claims 1-9, wherein the antibody or antigen-binding fragment comprises a heavy chain constant region comprising the amino acid sequence of SEQ ID NO:66.

11. The antibody or antigen-binding fragment of any one of claims 1-10, wherein the antibody or antigen-binding fragment is a full-length antibody.

12. An antibody that specifically binds to the spike protein of SARS-CoV-2, wherein the antibody is a human IgG1 antibody that comprises a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:63, a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:61, a heavy chain constant region comprising a YTE mutation and a TM mutation, and a IgGλ light chain constant region.

13. The antibody of claim 12, wherein the heavy chain constant region comprises the amino acid sequence of SEQ ID NO:66.

14. A composition comprising the antibody or antigen-binding fragment of any one of claims 1-13, wherein the composition is a pharmaceutical composition further comprising a pharmaceutically acceptable carrier.

15. The composition of claim 14, further comprising an antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2 and comprises the VH-CDR1, VH-CDR2, VH-CDR3, VL-CDR1, VL-CDR2, and VL-CDR3 of SEQ ID NOs:69, 70, 71, 73, 74, and 75, respectively.

16. The composition of claim 14, further comprising an antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2 and comprises a VH comprising the amino acid sequence of SEQ ID NO:68 and a VL comprising the amino acid sequence of SEQ ID NO:72.

17. An antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the antibody or antigen-binding fragment comprises the VH-CDR1, VH-CDR2, VH-CDR3, VL-CDR1, VL-CDR2, and VL-CDR3 of: (i) SEQ ID NOs:25, 26, 30, 28, 67, and 29, respectively; or (ii) SEQ ID NOs:13, 14, 19, 16, 17, and 18, respectively.

18. An antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the antibody or antigen-binding fragment comprises:

(a) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:40 and/or a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:41;
(b) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:44 and/or a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:45;
(c) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:48 and and/or variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:47;
(d) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:49 and/or a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:47;
(e) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:52 and and/or variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:53;
(f) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:56 and and/or variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:57;
(g) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:58 and/or a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:57;
(h) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:59 and/or a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:55;
(i) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:62 and and/or variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:61;
(j) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:60 and/or a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:64;
(k) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:62 and and/or variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:64; or

(l) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:63 and/or a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:64.

19. An isolated polynucleotide comprising a nucleic acid molecule encoding the heavy chain variable region and/or a nucleic acid molecule encoding the light chain variable region of the antibody or antigen-binding fragment thereof of any one of claims 1-13.

20. An isolated vector comprising the polynucleotide of claim 19.

21. A host cell comprising the polynucleotide of claim 19, the vector of claim 20, or a first vector comprising a nucleic acid molecule encoding the heavy chain variable region and a second vector comprising a nucleic acid molecule encoding the light chain variable region of the antibody or antigen-binding fragment thereof of any one of claims 1-13.

22. A method of producing an antibody or antigen-binding fragment thereof that binds to the spike protein of SARS-CoV-2 comprising culturing the host cell of claim 21 so that the nucleic acid molecule is expressed and the antibody or antigen-binding fragment thereof is produced, optionally wherein the method further comprises isolating the antibody or antigen-binding fragment.

23. An antibody or antigen-binding fragment thereof produced by the method of claim 22.

24. A composition or combination comprising:

(a) a first antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the first antibody or antigen-binding fragment thereof competitively inhibits binding to the spike protein of SARS-CoV-2 of an antibody comprising a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:46 and a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:47 and

a second antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the second antibody or antigen-binding fragment thereof competitively inhibits binding to the spike protein of SARS-CoV-2 of an antibody comprising (i) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:63 and a variable light chain (VL) comprising the amino acid

sequence of SEQ ID NO:61 or (ii) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:52 and a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:53;

(b) a first antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the first antibody or antigen-binding fragment thereof binds to the same epitope of the spike protein of SARS-CoV-2 as an antibody comprising a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:46 and a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:47 and

a second antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the second antibody or antigen-binding fragment thereof binds to the same epitope of the spike protein of SARS-CoV-2 as an antibody comprising (i) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:63 and a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:61 or (ii) a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:52 and a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:53;

(c) a first antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the first antibody or antigen-binding fragment thereof comprises the VH-CDR1, VH-CDR2, VH-CDR3, VL-CDR1, VL-CDR2, and VL-CDR3 of SEQ ID NOs:13, 14, 15, 16, 17, and 18, respectively; and

a second antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the second antibody or antigen-binding fragment thereof comprises (i) the VH-CDR1, VH-CDR2, VH-CDR3, VL-CDR1, VL-CDR2, and VL-CDR3 of SEQ ID NOs:31, 32, 37, 34, 35, and 36, respectively or (ii) the VH-CDR1, VH-CDR2, VH-CDR3, VL-CDR1, VL-CDR2, and VL-CDR3 of SEQ ID NOs:20, 21, 22, 23, 67, and 24, respectively;

(d) a first human IgG1 antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the first antibody or antigen-binding fragment comprises a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:46, a variable light chain (VL) comprising the amino acid sequence of

SEQ ID NO:47, a heavy chain constant region comprising a YTE mutation and a TM mutation, and a light chain constant region; and

a second human IgG1 antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the second antibody or antigen-binding fragment comprises a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:63, a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:61, a heavy chain constant region comprising a YTE mutation and a TM mutation, and a light chain constant region;

(e) a first human IgG1 antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the first antibody or antigen-binding fragment comprises a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:46, a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:47, a heavy chain constant region comprising a YTE mutation and a TM mutation, and a light chain constant region; and

a second human IgG1 antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the second antibody or antigen-binding fragment comprises a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:52, a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:53, a heavy chain constant region comprising a YTE mutation and a TM mutation, and a light chain constant region; or

(f) a first human IgG1 antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the first antibody or antigen-binding fragment comprises a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:46, a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:47, a heavy chain constant region comprising a YTE mutation and a TM mutation, and a light chain constant region; and

a second human IgG1 antibody or antigen-binding fragment thereof that specifically binds to the spike protein of SARS-CoV-2, wherein the second antibody or antigen-binding fragment comprises a variable heavy chain (VH) comprising the amino acid sequence of SEQ ID NO:50, a variable light chain (VL) comprising the amino acid sequence of SEQ ID NO:51, a heavy chain constant region comprising a YTE mutation and a TM mutation, and a light chain constant region.

25. An *in vitro* method for neutralizing SARS-CoV-2 comprising contacting the SARS-CoV-2 with the antibody or antigen-binding fragment thereof of any one of claims 1-13 and 23 or the composition of any one of claims 14-16.

26. Use of the antibody or antigen-binding fragment thereof of any one of claims 1-13 and 23 or the composition of any one of claims 14-16 in the manufacture of a medicament for neutralizing SARS-CoV-2, wherein the antibody or antigen-binding fragment thereof of any one of claims 1-13 and 23 or the composition of any one of claims 14-16 is to be contacted with the SARS-CoV-2, wherein the contacting is in a subject.

27. Use of the antibody or antigen-binding fragment thereof according to any one of claims 1-13 and 23 in the manufacture of a medicament for providing pre-exposure prophylaxis of COVID-19 in a subject, wherein an effective amount of the antibody or antigen-binding fragment thereof is to be administered to the subject.

28. The use of claim 27, wherein the subject has a moderate to severe immune compromise.

29. The use of claim 28, wherein the moderate to severe immune compromise is due to a medical condition or receipt of immunosuppressive medications or treatments.

30. The use of any one of claims 27-29, wherein the subject may not mount an adequate immune response to COVID-19 vaccination.

31. The use of any one of claims 27-30, wherein COVID-19 vaccination is not recommended for the subject.

32. Use of the antibody or antigen-binding fragment thereof according to any one of claims 1-13 and 23 in the manufacture of a medicament for treating or preventing a SARS-CoV-2 infection in a subject, wherein an effective amount of the antibody or antigen-binding fragment thereof is to be administered to the subject.

33. The use of any one of claims 27-32, wherein the administration is intramuscular.

34. The use of any one of claims 27-33, wherein the subject is human.

35. The use of any one of claims 32-34, wherein the SARS-CoV-2 is SARS-CoV-2 BA.1, SARS-CoV-2 BA1.1, SARS-CoV-2 BA.2, SARS-CoV-2 Beta, SARS-CoV-2 Delta, and/or SARS-CoV-2 D614G.

36. The use of any one of claims 32-34, wherein the SARS-CoV-2 is SARS-CoV-2 BA.2.12.1.

37. A method for detecting SARS-CoV-2 in a sample comprising contacting the sample with the antibody or antigen-binding fragment thereof of any one of claims 1-13 and 23.

38. The antibody or antigen-binding fragment thereof according to any one of claims 1-13 and 23 or the composition according to any one of claims 14-16 for use in therapy or pre-exposure prophylaxis.