

What is claimed is:

1. An isolated recombinant antibody or antigen-binding fragment thereof that specifically binds to Ebola virus (EBOV) and/or an Ebola virus glycoprotein (EBOV-GP), wherein the antibody:

5 comprises three heavy chain complementarity determining regions (CDRs) (HCDR1, HCDR2 and HCDR3) and three light chain CDRs (LCDR1, LCDR2 and LCDR3) contained within any one of the heavy chain variable region (HCVR) and light chain variable region (LCVR) amino acid sequence pairs selected from the group consisting of SEQ ID NOs: 18/26, 66/74, and 146/154.

10 2. The isolated antibody or antigen-binding fragment thereof claim 1, wherein the antibody further comprises one or more of the following characteristics:

(a) is a fully human monoclonal antibody;

(b) binds to EBOV, or a virus like particle (VLP) expressing an EBOV-GP with a dissociation constant (K_D) of less than 10^{-7} M, as measured in a surface plasmon
15 resonance assay; and

(c) demonstrates at least a 3 fold increase in dissociative half-life ($t_{1/2}$) at pH 5 or pH 6 relative to pH 7.4.

3. The isolated antibody or antigen-binding fragment thereof of claim 1, comprising a HCVR having an amino acid sequence selected from the group consisting
20 of SEQ ID NOs: 18, 66, and 146.

4. The isolated antibody or antigen-binding fragment thereof of claim 1, comprising a LCVR having an amino acid sequence selected from the group consisting of SEQ ID NOs: 26, 74, and 154.

5. The isolated antibody or antigen-binding fragment thereof of claim 1,
25 comprising a HCVR/LCVR amino acid sequence pair selected from the group consisting of SEQ ID NOs: 18/26, 66/74, and 146/154.

6. The isolated antibody or antigen-binding fragment thereof of claim 1, comprising an HCDR1 amino acid sequence of SEQ ID NO: 20; an HCDR2 amino acid sequence of SEQ ID NO: 22; an HCDR3 amino acid sequence of SEQ ID NO: 24; an LCDR1 amino acid sequence of SEQ ID NO: 28; an LCDR2 amino acid sequence of SEQ ID NO: 30 and an LCDR3 amino acid sequence of SEQ ID NO: 32.

7. The isolated antibody or antigen-binding fragment thereof of claim 1, comprising an HCDR1 amino acid sequence of SEQ ID NO: 68; an HCDR2 amino acid sequence of SEQ ID NO: 70; an HCDR3 amino acid sequence of SEQ ID NO: 72; an LCDR1 amino acid sequence of SEQ ID NO: 76; an LCDR2 amino acid sequence of SEQ ID NO: 78 and an LCDR3 amino acid sequence of SEQ ID NO: 80.

8. The isolated antibody or antigen-binding fragment thereof of claim 1, comprising an HCDR1 amino acid sequence of SEQ ID NO: 148; an HCDR2 amino acid sequence of SEQ ID NO: 150; an HCDR3 amino acid sequence of SEQ ID NO: 152; an LCDR1 amino acid sequence of SEQ ID NO: 156; an LCDR2 amino acid sequence of SEQ ID NO: 158 and an LCDR3 amino acid sequence of SEQ ID NO: 160.

9. The isolated antibody of claim 1, wherein the antibody inhibits entry of Ebola virus into a host cell.

10. A pharmaceutical composition comprising one or more isolated monoclonal antibodies or antigen-binding fragments thereof that bind specifically to EBOV according to claim 1, and a pharmaceutically acceptable carrier or diluent.

11. The pharmaceutical composition of claim 10, wherein the antibody comprises the six CDRs within the HCVR/LCVR amino acid sequence pair of SEQ ID NOs: 18/26.

12. The pharmaceutical composition of claim 11, comprising one or more further antibodies comprising the six CDRs within an HCVR/LCVR amino acid sequence pair selected from SEQ ID NOs: 66/74 and 146/154.

13. A pharmaceutical composition comprising (a) a first anti-EBOV antibody or an antigen-binding fragment thereof according to claim 1; (b) a second anti-EBOV antibody or antigen-binding fragment thereof; and (c) a third anti-EBOV antibody or antigen-binding fragment thereof, wherein the first antibody binds to, or interacts with, a first epitope on EBOV and the second and/or third antibody binds to, or interact(s) with a different epitope on EBOV, and (d) a pharmaceutically acceptable carrier or diluent.

14. The pharmaceutical composition of claim 13, wherein the second and third anti-EBOV antibodies comprise an HCVR/LCVR amino acid sequence pair selected from the group consisting of the HCVR and LCVR sequences listed in Table 1.

15. The pharmaceutical composition of claim 13, wherein the epitopes that bind to, or interact with, the first, second and/or third anti-EBOV antibodies or antigen-binding fragments thereof, are distinct and non-overlapping.

16. The pharmaceutical composition of claim 13, wherein the first anti-EBOV antibody or an antigen-binding fragment thereof binds to, or interacts with one epitope on one strain of EBOV and the second and/or third anti-EBOV antibody or an antigen-binding fragment thereof binds to, or interacts with a second and/or a third epitope on the same strain or on a different strain of EBOV.

17. The pharmaceutical composition of claim 16, wherein each of the second and third anti-EBOV antibody or antigen-binding fragment thereof independently binds to an EBOV strain selected from the group consisting of the Zaire.2014, Zaire.1995, Sudan, Bundibugyo, and Cote d'Ivoire strains.

18. The pharmaceutical composition of claim 10, comprising a first isolated monoclonal antibody or an antigen-binding fragment thereof that binds specifically to EBOV, wherein the first isolated monoclonal antibody or an antigen-binding fragment thereof comprises an HCDR1 amino acid sequence of SEQ ID NO: 20; an HCDR2 amino acid sequence of SEQ ID NO: 22; an HCDR3 amino acid sequence of SEQ ID NO: 24; an LCDR1 amino acid sequence of SEQ ID NO: 28; an LCDR2 amino acid

sequence of SEQ ID NO: 30 and an LCDR3 amino acid sequence of SEQ ID NO: 32, and a pharmaceutically acceptable carrier or diluent.

19. The pharmaceutical composition of claim 18, further comprising a second isolated monoclonal antibody or an antigen-binding fragment thereof that binds specifically to EBOV, wherein the second isolated monoclonal antibody or an antigen-binding fragment thereof comprises an HCDR1 amino acid sequence of SEQ ID NO: 68; an HCDR2 amino acid sequence of SEQ ID NO: 70; an HCDR3 amino acid sequence of SEQ ID NO: 72; an LCDR1 amino acid sequence of SEQ ID NO: 76; an LCDR2 amino acid sequence of SEQ ID NO: 78 and an LCDR3 amino acid sequence of SEQ ID NO: 80.

20. The pharmaceutical composition of claim 19, further comprising a third isolated monoclonal antibody or an antigen-binding fragment thereof that binds specifically to EBOV, wherein the third isolated monoclonal antibody or an antigen-binding fragment thereof comprises an HCDR1 amino acid sequence of SEQ ID NO: 148; an HCDR2 amino acid sequence of SEQ ID NO: 150; an HCDR3 amino acid sequence of SEQ ID NO: 152; an LCDR1 amino acid sequence of SEQ ID NO: 156; an LCDR2 amino acid sequence of SEQ ID NO: 158 and an LCDR3 amino acid sequence of SEQ ID NO: 160.

21. An isolated polynucleotide molecule comprising a polynucleotide sequence that encodes an HCVR, and/or an LCVR of an antibody as set forth in claim 1.

22. A vector comprising the polynucleotide sequence of claim 21.

23. An isolated cell expressing the vector of claim 22.

24. The pharmaceutical composition of claim 11, wherein the antibody comprises the HCVR/LCVR amino acid sequence pair of SEQ ID NOs: 18/26.

25. The pharmaceutical composition of claim 12, wherein the one or more further antibodies comprise an HCVR/LCVR amino acid sequence pair selected from SEQ ID NOs: 66/74 and 146/154.

5 26. The isolated antibody or antigen-binding fragment thereof of claim 1, wherein the antibody comprises the HCVR/LCVR amino acid sequence pair of SEQ ID NOs: 66/74 and demonstrates neutralization of Zaire Ebola virus with an IC₅₀ ranging from about 10⁻¹¹ M to about 10⁻⁹ M.

10 27. The isolated antibody or antigen-binding fragment thereof of claim 1, wherein the antibody comprises the HCVR/LCVR amino acid sequence pair of SEQ ID NOs: 18/26 or 146/154 and demonstrates binding to cells expressing the EBOV-GP triggering antibody-dependent cellular cytotoxicity.

28. The isolated antibody or antigen-binding fragment thereof of claim 1, wherein the antibody comprises the HCVR/LCVR amino acid sequence pair of SEQ ID NOs: 18/26 and cross reacts with EBOV strains Zaire.2014 and Zaire.1995.

15 29. The isolated antibody or antigen-binding fragment thereof of claim 1, wherein the antibody comprises the HCVR/LCVR amino acid sequence pair of SEQ ID NOs: 66/74 and cross reacts with one or more strains of EBOV selected from the group consisting of Zaire.2014, Zaire.1995, Sudan, and Bundibugyo.

20 30. The isolated antibody or antigen-binding fragment thereof of claim 1, wherein the antibody comprises the HCVR/LCVR amino acid sequence pair of SEQ ID NOs: 146/154 and cross reacts with EBOV strains Zire.2014 and Zaire.1995.

31. The isolated antibody or antigen-binding fragment thereof of claim 1, wherein the antibody comprises the HCVR/LCVR amino acid sequence pair of SEQ ID NOs: 18/26 and binds to soluble GP (sGP).

25 32. A pharmaceutical composition of claim 10, wherein the composition comprises three isolated monoclonal antibodies or antigen-binding fragments thereof

comprising the HCVR/LCVR amino acid sequence pairs of SEQ ID NOS: 18/26, 66/74, and 146/154, and a pharmaceutically acceptable carrier or diluent.