

CLAIMS

1. An isolated antibody or antigen-binding fragment thereof that binds to EBOV, wherein the antibody or antigen-binding fragment thereof comprises a light chain CDR1, CDR2, and CDR3 consisting of an amino acid sequence according to SEQ ID NOs: 39, 40, and 41, respectively; and a heavy chain CDR1, CDR2, and CDR3 consisting of an amino acid sequence according to SEQ ID NOs: 51, 52, and 53, respectively.
2. An isolated antibody or antigen-binding fragment thereof that binds to EBOV GP, wherein the antibody or antigen-binding fragment comprises a heavy chain variable region according to SEQ ID NO: 47 and a light chain variable region according to SEQ ID NO: 35.
3. The isolated antibody or antigen-binding fragment thereof of claim 1 or 2, wherein the antibody or antigen-binding fragment thereof is selected from the group consisting: (i) of whole immunoglobulin molecule; (ii) an scFv; (iii) a Fab fragment; (iv) an Fab' fragment; (v) a F(ab')₂; and a disulfide linked Fv.
4. The isolated antibody of any of claims 1-3, wherein the antibody comprises an immunoglobulin constant region selected from the group consisting of IgG1, IgG2, IgG3, IgG4, IgA1, IgA2, IgD, IgE and IgM.
5. The isolated antibody or antigen-binding fragment thereof of any one of claims 1-4, wherein the antibody or antigen-binding fragment binds to EBOV GP.
6. A nucleic acid sequence encoding the antibody or antigen-binding fragment thereof of any one of claims 1-5.
7. An isolated nucleic acid molecule encoding (a) the immunoglobulin light chain variable region, (b) the immunoglobulin heavy chain variable region, or (c) the

immunoglobulin light chain and heavy chain variable regions of the antibody or antigen-binding fragment thereof of any one of claims 1-5.

8. The isolated nucleic acid molecule of claim 6 or 7, wherein the nucleic acid molecule comprises one or more nucleotide sequences selected from the group consisting of SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:49, and SEQ ID NO:50.

9. An expression vector comprising a nucleic acid segment encoding (a) the immunoglobulin light chain variable region, (b) the immunoglobulin heavy chain variable region, or (c) the immunoglobulin light chain and heavy chain variable regions of the antibody or antigen-binding fragment thereof of any one of claims 1-5, wherein the nucleic acid segment is operatively linked to at least one regulatory sequence suitable for expression of the nucleic acid segment in a host cell.

10. The expression vector of claim 9, wherein the nucleic acid segment comprises one or more nucleotide sequence selected from the group consisting of SEQ ID NO:34, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:46, SEQ ID NO:48, SEQ ID NO:49, and SEQ ID NO:50.

11. A host cell comprising the expression vector according to claim 9 or 10.

12. The host cell of claim 11, wherein the cell is bacterial, eukaryotic, or mammalian.

13. The host cell of claim 11 or 12, wherein the cell is a COS-1, COS-7, HEK293, BHK21, CHO, BSC-1, HepG2, SP2/0, HeLa, myeloma, or lymphoma cell.

14. A method for producing a filovirus-binding antibody or antigen-binding fragment thereof comprising: culturing a host cell comprising the expression vector of claim 11 or 12 under conditions whereby the nucleic acid segment is expressed, thereby producing filovirus-binding antibody or antigen-binding fragment thereof.

15. The method of claim 14, further comprising recovering the filovirus-binding antibody or antigen-binding fragment thereof.

16. The antibody or antigen-binding fragment thereof of any one of claims 1-5 for use in ameliorating, treating, or preventing an Ebola virus infection in a subject in need thereof.

17. The antibody or antigen-binding fragment thereof of any one of claims 1-5 for use in ameliorating, treating, or preventing a filovirus infection in a subject in need thereof, wherein the antibody or antigen-binding fragment thereof specifically binds to a filovirus.

18. The antibody or antigen-binding fragment thereof of any one of claims 1-5 for use in ameliorating, treating or preventing a filovirus infection in a subject in need thereof, wherein the antibody or antigen-binding fragment thereof specifically binds to an EBOV.

19. The antibody or antigen-binding fragment thereof for use in any one of claims 16-18, wherein the subject is a human.

20. A pharmaceutical composition comprising the isolated antibody or antigen-binding fragment thereof of any one of claims 1-5 and at least one pharmaceutically acceptable adjuvant.

21. A pharmaceutical composition comprising the isolated antibody or antigen-binding fragment thereof of any one of claims 1-5 and at least one pharmaceutically acceptable carrier.

22. The pharmaceutical composition of claim 20 or 21, further comprising a second agent.

23. The pharmaceutical composition of claim 22, wherein the second agent is an isolated antibody or antigen-binding fragment thereof different from the antibody or

antigen-binding fragment thereof of any one of claims 1-5.

24. The pharmaceutical composition of any one of claims 20-23, wherein the pharmaceutical composition further comprises at least one other Ebola virus-binding antibody or antigen-binding fragment thereof, and at least one other Marburg virus-binding antibody or antigen-binding fragment thereof.

25. The pharmaceutical composition of any one of claims 20-24 for use in ameliorating, treating, or preventing an Ebola virus infection in a subject in need thereof.

26. The pharmaceutical composition of any one of claims 20-24 for use in ameliorating, treating, or preventing a filovirus infection in a subject in need thereof, wherein the antibody or antigen-binding fragment thereof specifically binds to a filovirus.

27. The pharmaceutical composition of any one of claims 20-24 for use in ameliorating, treating, or preventing a filovirus infection in a subject in need thereof, wherein the antibody or antigen-binding fragment thereof specifically binds to an EBOV.

28. The pharmaceutical composition for use of any one of claims 25-27, wherein the subject is a human.

29. Use of the isolated antibody or antigen-binding fragment of any one of claims 1-5 or the pharmaceutical composition of any one of claims 20-24 in the preparation of a medicament for ameliorating, preventing or treating a filovirus infection a subject in need thereof.

30. Use of the isolated antibody or antigen-binding fragment of any one of claims 1-5 or the pharmaceutical composition of any one of claims 20-24 in the preparation of a medicament for ameliorating, preventing or treating an Ebola virus infection a subject in need thereof.

31. A method for detecting ebolavirus GP in a sample, the method comprising contacting the sample with the antibody or antigen-binding fragment thereof of any one of claims 1-5.

32. The method of claim 31, wherein the sample is a cell, tissue, or biological fluid from a subject suspected of having or at risk of a filovirus infection.

33. The isolated antibody or antigen-binding fragment thereof of any one of claims 1-5 for use in diagnosing an EBOV infection in a subject, wherein said diagnosis comprises the steps of:

(a) obtaining a biological sample from the subject;

(b) quantifying in the sample the level of EBOV GP protein using the isolated antibody or antigen-binding fragment thereof of any one of claims 1-5.

34. The isolated antibody or antigen-binding fragment thereof for use of claim 33 , wherein the biological sample is plasma, tissues, cells, biofluids, or combinations thereof.

35. The isolated antibody or antigen-binding fragment thereof for use of claim 34, wherein the biological sample is saliva or blood.

36. The isolated antibody or antigen-binding fragment of any one of claims 1-5 or the pharmaceutical composition of any one of claims 20-24 for use in therapy.