CLAIMS

What is claimed is:

1. An antigen-binding molecule specific to an hMPV Fusion (F) protein, wherein the antigen-binding molecule comprises a variable domain that contacts the hMPV F protein at

i.) any 1, any 2, any 3, any 4, any 5, any 6, or any 7 of residues 287, 293, 296, 364, 376, 417 and 419 of the hMPV F protein amino acid sequence set forth in SEQ ID NO: 1.;

ii.) any 1, any 2, any 3, any 4, any 5, or any 6 of residues 144, 160, 163, 188, 194 and 199 of the hMPV F protein amino acid sequence set forth in SEQ ID NO: 1; or

iii.) any 1, any 2, any 3, any 4, any 5, any 6, any 7, any 8, or any 9 of residues 44, 45, 49, 150, 156, 160, 229, 232 and 236 of the hMPV F protein amino acid sequence set forth in SEQ ID NO: 1.

2. The antigen-binding molecule of claim 1, comprising: a heavy chain and a light chain,

wherein the heavy chain comprises an H-CDR1, an H-CDR2, and an H-CDR3 wherein: H-CDR1 comprises the sequence GYTFTSY (SEQ ID NO: 3); H-CDR2 comprises the sequence YPGSGS (SEQ ID NO: 4); and H-CDR3 comprises the sequence LLRLTFDV (SEQ ID NO: 5); and

wherein the light chain comprises an L-CDR1, an L-CDR2, and an L-CDR3, wherein: L-CDR1 comprises the sequence RASQDISNYLN (SEQ ID NO: 7); L-CDR2 comprises the sequence YTSGLHS (SEQ ID NO: 8); and L-CDR3 comprises the sequence QQGNTLPWT (SEQ ID NO: 9).

3. The antigen-binding molecule of claim 1 or claim 2,

wherein the heavy chain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 2, and/or

wherein the light chain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 6.

4. The antigen-binding molecule of any one of claims 1-3, comprising

a variable heavy (VH) chain domain wherein the VH domain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 50, and

a variable light (VL) chain domain wherein the VL domain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 51.

5. The antigen-binding molecule of claim 1, comprising: a heavy chain and a light chain,

wherein the heavy chain comprises an H-CDR1, an H-CDR2, and an H-CDR3 wherein: H-CDR1 comprises the sequence GFTFTDY (SEQ ID NO: 11); H-CDR2 comprises the sequence RNKDNGYT (SEQ ID NO: 12); and H-CDR3 comprises the sequence YYFGYDGDYFDY (SEQ ID NO: 13); and

wherein the light chain comprises an L-CDR1, an L-CDR2, and an L-CDR3, wherein: L-CDR1 comprises the sequence SASSSISSNYLH (SEQ ID NO: 15); L-CDR2 comprises the sequence RTSNLAS (SEQ ID NO: 16); and L-CDR3 comprises the sequence QQGSSLPRT (SEQ ID NO: 17).

6. The antigen-binding molecule of claim 5,

wherein the heavy chain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 10, and/or

wherein the light chain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 14.

7. The antigen-binding molecule of any one of claims 1, 5, or 6, comprising

a variable heavy (VH) chain domain wherein the VH domain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 52, and

a variable light (VL) chain domain wherein the VL domain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 53.

8. The antigen-binding molecule of claim 1, comprising: a heavy chain and a light chain,

wherein the heavy chain comprises an H-CDR1, an H-CDR2, and an H-CDR3 wherein: H-CDR1 comprises the sequence GFSLSTFGM (SEQ ID NO: 19); H-CDR2 comprises the sequence WWDDD (SEQ ID NO: 20); and H-CDR3 comprises the sequence IVKVLEQYFDV (SEQ ID NO: 21); and

wherein the light chain comprises an L-CDR1, an L-CDR2, and an L-CDR3, wherein: L-CDR1 comprises the sequence KASQDVGTAVA (SEQ ID NO: 23); L-CDR2 comprises the sequence WASTRHT (SEQ ID NO: 24); and L-CDR3 comprises the sequence QQYTSYPLT (SEQ ID NO: 25).

9. The antigen-binding molecule of claim 8,

wherein the heavy chain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 18, and/or

wherein the light chain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 22.

10. The antigen-binding molecule of any one of claims 1, 7, or 8, comprising

a variable heavy (VH) chain domain wherein the VH domain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 54, and

a variable light (VL) chain domain wherein the VL domain comprises a sequence having at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, at least 98%, at least 99%, or 100% sequence identity to SEQ ID NO: 55.

11. The antigen-binding molecule of any one of claims 1-10, wherein the antigen-binding molecule is an immunoglobulin molecule.

12. The antigen-binding molecule of claim 11, wherein the immunoglobulin is a humanized antibody.

13. A polynucleotide encoding the antigen-binding molecule of any one of claims 1-12.

14. A pharmaceutical composition or vaccine, comprising the antigen-binding molecule of any one of claims 1-12 or the polynucleotide of claim 13, and a pharmaceutically acceptable carrier, diluent, or excipient.

15. The pharmaceutical composition or vaccine of claim 14 for use in a method of treating or preventing an hMPV infection in a subject in need thereof.