

In one aspect, there is provided an isolated nucleic acid molecule encoding an antibody heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 7 and an antibody light chain variable region comprising the amino acid sequence of SEQ ID NO: 8.

5 In another aspect, there is provided an expression vector comprising the isolated nucleic acid molecule as defined herein.

In another aspect, there is provided a host cell comprising: (a) an expression vector comprising the isolated nucleic acid molecule encoding an antibody heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 7 and an antibody light chain variable region comprising the amino acid sequence of SEQ ID NO: 8; or (b) (i) an expression
10 vector comprising an isolated nucleic acid molecule encoding an antibody heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 7, and (ii) an expression vector comprising an isolated nucleic acid molecule encoding an antibody light chain variable region comprising the amino acid sequence of SEQ ID NO: 8.

15 In another aspect, there is provided an isolated nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 24, and SEQ ID NO: 26.

In another aspect, there is provided a method of producing an antibody or antigen binding fragment comprising:

- 20 (a) culturing the host cell as defined herein; and
(b) recovering the antibody or antigen binding fragment from the host cell and/or culture medium.

In another aspect, there is provided use of an antibody or antigen binding fragment that binds to human RSV F protein, in the manufacture of a medicament for the

prevention or treatment of an RSV infection in a human subject, wherein the antibody or antigen binding fragment comprises a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1, a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2, a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4, a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, and a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6.

In another aspect, there is provided use of an antibody or antigen binding fragment that binds to human RSV F protein, in the manufacture of a medicament for the prevention or treatment of transplantation related RSV infections in a human subject, wherein the antibody or antigen binding fragment comprises a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1, a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2, a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, a light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4, a light chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, and a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6.

CLAIMS

1. An isolated nucleic acid molecule encoding an antibody heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 7 and an antibody light chain variable region comprising the amino acid sequence of SEQ ID NO: 8.

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2. An expression vector comprising the isolated nucleic acid molecule of claim 1.

3. A host cell comprising:

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(a) an expression vector comprising the isolated nucleic acid molecule encoding an antibody heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 7 and an antibody light chain variable region comprising the amino acid sequence of SEQ ID NO: 8; or

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(b) (i) an expression vector comprising an isolated nucleic acid molecule encoding an antibody heavy chain variable region comprising the amino acid sequence of SEQ ID NO: 7, and (ii) an expression vector comprising an isolated nucleic acid molecule encoding an antibody light chain variable region comprising the amino acid sequence of SEQ ID NO: 8.

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4. The host cell of claim 3, wherein the host cell is a *Pichia* cell or a Chinese hamster ovary cell.

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5. The isolated nucleic acid molecule of claim 1, wherein the isolated nucleic acid molecule encodes an antibody heavy chain comprising the amino acid sequence of SEQ ID NO: 23 and the antibody light chain comprising the amino acid sequence of SEQ ID NO: 25.

6. The isolated nucleic acid molecule of claim 5, wherein the isolated nucleic acid molecule comprises:

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(a) the nucleic acid sequence set forth in SEQ ID NO: 24 encoding the antibody heavy chain; and

(b) the nucleic acid sequence set forth in SEQ ID NO: 26 encoding the antibody light chain.

7. The isolated nucleic acid molecule of claim 1, wherein the isolated nucleic acid molecule comprises:

(a) the nucleic acid sequence set forth in SEQ ID NO: 15, 17, or 24 encoding the antibody heavy chain; and

(b) the nucleic acid sequence set forth in SEQ ID NO: 16, 18, or 26 encoding the antibody light chain.

8. A method of producing an antibody or antigen binding fragment comprising:

(a) culturing the host cell of claim 3; and

(b) recovering the antibody or antigen binding fragment from the host cell and/or culture medium.

9. The method of claim 8, wherein the host cell comprises an expression vector comprising the isolated nucleic acid molecule encoding the antibody heavy chain variable region and an expression vector comprising the isolated nucleic acid molecule encoding the antibody light chain variable region.

10. The method of claim 8, wherein the host cell comprises an expression vector comprising the isolated nucleic acid molecule encoding the antibody heavy chain variable region and the antibody light chain variable region.

11. The method of any one of claims 8 to 10, wherein the host cell is a *Pichia* cell or a Chinese hamster ovary cell.

12. The method of any one of claims 8 to 11, wherein the isolated nucleic acid molecule encoding the antibody heavy chain variable region encodes an antibody heavy chain comprising the amino acid sequence of SEQ ID NO: 23 and the isolated nucleic acid molecule

encoding the antibody light chain variable region encodes an antibody light chain comprising the amino acid sequence of SEQ ID NO: 25.

13. The method of claim 12, wherein the isolated nucleic acid molecule
5 encoding the antibody heavy chain comprises the nucleotide sequence set forth in SEQ ID NO: 24 and the isolated nucleic acid molecule encoding the antibody light chain has the nucleic acid sequence set forth in SEQ ID NO: 26.

14. The method of any one of claims 8 to 11, wherein the isolated nucleic acid
10 molecule encoding the antibody heavy chain variable region comprises the nucleic acid sequence of SEQ ID NO: 15 or SEQ ID NO: 17 and the isolated nucleic acid molecule encoding the antibody light chain variable region comprises the nucleic acid sequence of SEQ ID NO: 16 or SEQ ID NO: 18.

15. Use of an antibody or antigen binding fragment that binds to human RSV
F protein, in the manufacture of a medicament for the prevention or treatment of an RSV
infection in a human subject, wherein the antibody or antigen binding fragment comprises a
heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 1, a
heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 2, a
20 heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, a light
chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4, a light chain
variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, and a light chain
variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6.

25. Use of an antibody or antigen binding fragment that binds to human RSV
F protein, in the manufacture of a medicament for the prevention or treatment of transplantation
related RSV infections in a human subject, wherein the antibody or antigen binding fragment
comprises a heavy chain variable region CDR1 comprising the amino acid sequence of SEQ ID
NO: 1, a heavy chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO:
30 2, a heavy chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 3, a
light chain variable region CDR1 comprising the amino acid sequence of SEQ ID NO: 4, a light

chain variable region CDR2 comprising the amino acid sequence of SEQ ID NO: 5, and a light chain variable region CDR3 comprising the amino acid sequence of SEQ ID NO: 6.

17. The use of claim 15 or 16, wherein the antibody or antigen binding
5 fragment comprises a heavy chain variable region having the amino acid sequence of SEQ ID NO:7 and a light chain variable region having the amino acid sequence of SEQ ID NO:8.

18. The use of claim 15 or 16, wherein the antibody comprises a heavy chain
10 having the amino acid sequence of SEQ ID NO:23 and a light chain having the amino acid sequence of SEQ ID NO:25.

19. The use of any one of claims 15 to 18, further comprising an antibody or
an antigen binding fragment thereof against a respiratory pathogen selected from influenza,
human cytomegalovirus (hCMV), human metapneumovirus (hMPV), human parainfluenza
15 (hPIV), human rhinovirus (hRV), mycoplasma pneumonia, streptococcus pneumoniae, adenovirus, bocavirus, enterovirus, norovirus, or BK virus.

20. The use of claim 19, wherein the respiratory pathogen is influenza,
hCMV, hMPV, hPIV, norovirus, or BK virus.
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21. The use of any one of claims 15 to 20, wherein the antibody or antigen
binding fragment that binds to human RSV F protein is provided in an immunogenic
composition comprising an antigen selected from RSV F protein and RSV G protein and
fragments thereof.
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22. The use of any one of claims 15 to 21, wherein the human subject is a
human infant.