CLAIMS

What is claimed is:

~~1. A method for treating or preventing influenza virus infection, the method comprising administering to a subject in need thereof a pharmaceutical composition comprising a type II transmembrane serine protease (TTSP) inhibitor.~~

~~2. A method for preventing or reducing the accumulation of influenza-infected alveolar macrophages, influenza-infected neutrophils and/or influenza-infected epithelial cells in the lungs of a subject that has been exposed to or challenged with influenza virus, the method comprising administering to the subject a pharmaceutical composition comprising a type II transmembrane serine protease (TTSP) inhibitor.~~

~~3~~1. ~~A~~ Use of an antibody or antigen-binding fragment which binds specifically to transmembrane protease serine S1 member 2 (TMPRSS2) but does not substantially inhibit the protease activity of any other type II transmembrane serine protease (TTSP) inhibitor in the preparation of a pharmaceutical composition ~~comprising a type II transmembrane serine protease (TTSP) inhibitor~~ for ~~use in treating or~~ preventing or reducing the accumulation of **influenza-infected alveolar macrophages, influenza-infected neutrophils and/or influenza-infected epithelial cells in the lungs of a subject that has been exposed to or challenged with** influenza virus ~~infection in a subject~~.

~~4. A pharmaceutical composition comprising a type II transmembrane serine protease (TTSP) inhibitor for use in preventing or reducing the accumulation of influenza-infected alveolar macrophages, influenza-infected neutrophils and/or influenza-infected epithelial cells in the lungs of a subject that has been exposed to or challenged with influenza virus.~~

~~5. The pharmaceutical composition of claim 3 or 4, wherein the TTSP inhibitor is a transmembrane protease serine S1 member 2 (TMPRSS2) inhibitor.~~

~~6. The pharmaceutical composition of claim 5, wherein the TMPRSS2 inhibitor is selected from the group consisting of a small molecule protease inhibitor, a peptide inhibitor, and a nucleic acid-based inhibitor.~~

~~7. The pharmaceutical composition of claim 5, wherein the TMPRSS2 inhibitor inhibits the protease activity of TMPRSS2 but does not substantially inhibit the protease activity of any other TTSP.~~

~~8. The pharmaceutical composition of claim 3 or 4, wherein the TTSP inhibitor is an antibody or antigen-binding fragment thereof that specifically binds TMPRSS2 and inhibits the proteolytic activity thereof.~~

~~9. The pharmaceutical composition of claim 8, wherein the antibody or antigen-binding fragment thereof inhibits the protease activity of TMPRSS2 but does not substantially inhibit the protease activity of any other TTSP.~~

~~10~~2. Use ~~The pharmaceutical composition of~~ according to ~~any one of claims 3 to 9~~claim 1, wherein the pharmaceutical composition is formulated for systemic administration.

~~11~~3. Use~~The pharmaceutical composition~~ according to ~~of~~ claim ~~10~~2, wherein the pharmaceutical composition is formulated for subcutaneous administration.

~~12~~4. Use~~The pharmaceutical composition~~ according to ~~of~~ claim ~~10~~2, wherein the pharmaceutical composition is formulated for intravenous administration.

13. ~~The pharmaceutical composition of any one~~Use according to any one of claims ~~3~~ 2 to ~~12~~4, wherein the pharmaceutical composition further ~~comprising~~ comprises a second therapeutic agent.

~~14~~6. Use~~The pharmaceutical composition~~ according to ~~of~~ claim ~~13~~5, wherein the second therapeutic agent is an antiviral agent.

~~15~~7. Use~~The pharmaceutical composition~~ ~~of~~ according to claim ~~14~~6, wherein the antiviral agent is selected from the group consisting of amantadine, rimantadine, oseltamivir, and zanamivir.

~~16~~8. Use~~The pharmaceutical composition~~ ~~of~~ according to claim ~~13~~5, wherein the second therapeutic agent is an influenza virus vaccine.

~~17~~9. Use ~~The pharmaceutical composition of~~ according to claim ~~13~~5, wherein the second therapeutic agent is an anti-influenza antibody.

~~18~~10. Use~~The pharmaceutical composition of~~ according to claim ~~17~~9, wherein the anti-influenza antibody is an antibody that specifically binds hemagglutinin (HA).

What is claimed is:

1. A method for treating or preventing influenza virus infection, the method comprising administering to a subject in need thereof a pharmaceutical composition comprising a type II transmembrane serine protease (TTSP) inhibitor.

2. A method for preventing or reducing the accumulation of influenza-infected alveolar macrophages, influenza-infected neutrophils and/or influenza-infected epithelial cells in the lungs of a subject that has been exposed to or challenged with influenza virus, the method comprising administering to the subject a pharmaceutical composition comprising a type II transmembrane serine protease (TTSP) inhibitor.

3. A pharmaceutical composition comprising a type II transmembrane serine protease (TTSP) inhibitor for use in treating or preventing influenza virus infection in a subject.

4. A pharmaceutical composition comprising a type II transmembrane serine protease (TTSP) inhibitor for use in preventing or reducing the accumulation of influenza-infected alveolar macrophages, influenza-infected neutrophils and/or influenza-infected epithelial cells in the lungs of a subject that has been exposed to or challenged with influenza virus.

5. The pharmaceutical composition of claim 3 or 4, wherein the TTSP inhibitor is a transmembrane protease serine S1 member 2 (TMPRSS2) inhibitor.

6. The pharmaceutical composition of claim 5, wherein the TMPRSS2 inhibitor is selected from the group consisting of a small molecule protease inhibitor, a peptide inhibitor, and a nucleic acid-based inhibitor.

7. The pharmaceutical composition of claim 5, wherein the TMPRSS2 inhibitor inhibits the protease activity of TMPRSS2 but does not substantially inhibit the protease activity of any other TTSP.

8. The pharmaceutical composition of claim 3 or 4, wherein the TTSP inhibitor is an antibody or antigen-binding fragment thereof that specifically binds TMPRSS2 and inhibits the proteolytic activity thereof.

9. The pharmaceutical composition of claim 8, wherein the antibody or antigen-binding fragment thereof inhibits the protease activity of TMPRSS2 but does not substantially inhibit the protease activity of any other TTSP.

10. The pharmaceutical composition of any one of claims 3 to 9, wherein the pharmaceutical composition is formulated for systemic administration.

11. The pharmaceutical composition of claim 10, wherein the pharmaceutical composition is formulated for subcutaneous administration.

12. The pharmaceutical composition of claim 10, wherein the pharmaceutical composition is formulated for intravenous administration.

13. The pharmaceutical composition of any one of claims 3 to 12, further comprising a second therapeutic agent.

14. The pharmaceutical composition of claim 13, wherein the second therapeutic agent is an antiviral agent.

15. The pharmaceutical composition of claim 14, wherein the antiviral agent is selected from the group consisting of amantadine, rimantadine, oseltamivir, and zanamivir.

16. The pharmaceutical composition of claim 13, wherein the second therapeutic agent is an influenza virus vaccine.

17. The pharmaceutical composition of claim 13, wherein the second therapeutic agent is an anti-influenza antibody.

18. The pharmaceutical composition of claim 17, wherein the anti-influenza antibody is an antibody that specifically binds hemagglutinin (HA).

CLAIMS

What is claimed is:

1. Use of an antibody or antigen-binding fragment which binds specifically to transmembrane protease serine S1 member 2 (TMPRSS2) but does not substantially inhibit the protease activity of any other type II transmembrane serine protease (TTSP) inhibitor in the preparation of a pharmaceutical composition for preventing or reducing the accumulation of influenza-infected alveolar macrophages, influenza-infected neutrophils and/or influenza-infected epithelial cells in the lungs of a subject that has been exposed to or challenged with influenza virus.

2. Use according to claim 1, wherein the pharmaceutical composition is formulated for systemic administration.

3. Use according to claim 2, wherein the pharmaceutical composition is formulated for subcutaneous administration.

4. Use according to claim 2, wherein the pharmaceutical composition is formulated for intravenous administration.

5. Use according to any one of claims 2 to 4, wherein the pharmaceutical composition further comprises a second therapeutic agent.

6. Use according to claim 5, wherein the second therapeutic agent is an antiviral agent.

7. Use according to claim 6, wherein the antiviral agent is selected from the group consisting of amantadine, rimantadine, oseltamivir, and zanamivir.

8. Use according to claim 5, wherein the second therapeutic agent is an influenza virus vaccine.

9. Use according to claim 5, wherein the second therapeutic agent is an anti-influenza antibody.

10. Use according to claim 9, wherein the anti-influenza antibody is an antibody that specifically binds hemagglutinin (HA).