We claim:

1. A pharmaceutical composition comprising:
a binding agent that comprises an H5 hemagglutinin ("HA") polypeptide that is at least 20 amino acids in length and has an amino acid sequence that:

i) shows at least 95% identity with a corresponding portion of a reference H5 HA of SEQ ID NO: 50; and

ii) shows sequence variation from that of the reference H5 HA polypeptide in that the binding agent's sequence has a deletion at one or more positions selected from the group consisting of: 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, and combinations thereof.

~~having an amino acid sequence which differs from that of the reference H5 HA polypeptide sequence at one or more of residues selected from the group consisting of residues 130, 131, 132, 133, 135, 137, 155, 188, 192, 193, 221, 226, 227, 228, and combinations thereof.~~

2. The pharmaceutical composition of claim 1, wherein the binding agent competes in a glycan HA polypeptide interaction between umbrella topology glycan and an HA polypeptide.

~~3. The pharmaceutical composition of claim 1, wherein the H5 HA polypeptide has a length within the range of 19-55 amino acids.~~

~~4. The pharmaceutical composition of claim 1, wherein the H5 HA polypeptide has amino acid sequence including a portion that is at least 19 amino acids in length and shows at least 95% overall sequence identity with a corresponding portion of an H5 HA polypeptide selected from the group consisting of SEQ ID numbers 50, 51, 53, 54, or 55.~~

~~5. The pharmaceutical composition of claim 1, wherein the H5 HA polypeptide has amino acid sequence that shows at least 95% identity with a reference H5 HA selected from the group consisting of SEQ ID numbers 50, 51, 53, 54, or 55, over a region corresponding to amino acids 1 to 55, but differs from that of the reference HA by one or more residues selected from the group consisting of residues 130, 192, 193, and combinations thereof.~~

~~6. The pharmaceutical composition of claim 1, wherein the H5 HA polypeptide has amino acid sequence that shows at least 95% identity with a reference H5 HA selected from the group consisting of SEQ ID numbers 50, 51, 53, 54, or 55, over a region corresponding to amino acids 1 to 55, but differs from that of the reference HA by one or more residues selected from the group consisting of residues 128-137, and combinations thereof.~~

~~7. The pharmaceutical composition of claim 1, wherein the H5 HA polypeptide has amino acid sequence that shows at least 95% identity with a reference H5 HA selected from the group consisting of SEQ ID numbers 50, 51, 53, 54, or 55, over a region corresponding to amino acids 1 to 55, but differs from that of the reference HA by the presence of a deletion of amino acid residue 130.~~

~~8. The pharmaceutical composition of claim 1, wherein the H5 HA polypeptide has amino acid sequence that shows at least 95% identity with a reference H5 HA selected from the group consisting of SEQ ID numbers 50, 51, 53, 54, or 55, over a region corresponding to amino acids 1 to 55, but differs from that of the reference HA by one or more of residues selected from the group consisting of residues 160, 226, 228, and combinations thereof.~~

~~9. The pharmaceutical composition of claim 1, wherein the H5 HA polypeptide has amino acid sequence that shows at least 95% identity with a reference H5 HA selected from the group consisting of SEQ ID numbers 50, 51, 53, 54, or 55, over a region corresponding to amino acids 1 to 55, but differs from that of the reference HA by one or more of residues selected from the group consisting of residues 158, 226, 228, and combinations thereof.~~

3. The pharmaceutical composition of claim 1, wherein the H5 HA polypeptide amino acid sequence has a deletion of the amino acid residue at a position selected from 130, 131, 132 and 133.

4.~~10.~~ The pharmaceutical composition of claim 2, wherein the umbrella topology glycans comprises long α2-6 sialylated glycans.

5.~~11.~~ The pharmaceutical composition of claim 4~~10~~, wherein the long α2-6 sialylated glycans are selected from the group consisting of Neu5Acα2-6Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAc, Neu5Acα2-6GalNAcβ1-4GlcNAcβ1-3GalNAcβ1-4GlcNAc, Neu5Acα2-6Galβ1-4GlcNAcβ1-3Galβ1-4GalNAc, Neu5Acα2-6Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-3GalNAc, Neu5Acα2-6GalNAcβ1-4GlcNAcβ1-3Galβ1-4GalNAc, Neu5Acα2-6GalNAcβ1-4GlcNAcβ1-3GalNAcβ1-4GlcNAcβ1-3Galβ1-3GalNAc, NeuAcα2-3Galβ1-3GalNAcα2-6Neu5Ac, Neu5Acα2-6Galβ1-4GlcNAcβ1-3/6GalNAc, Neu5Acα2-6Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ1-3/6GalNAc, Neu5Acα2-6GalNAcβ1-4GlcNAcβ1-3/6GalNAc, Neu5Acα2-6GalNAcβ1-4GlcNAcβ1-3GalNAcβ1-

4GlcNAcβ1-3/6GalNAc, NeuAcα2-6Galβ1-4GalNAcβ1-6GlcNAcβ1-3Galα2-3Neu5Ac, NeuAcα2-6Galβ1-4GalNAcβ1-3/6GlcNAcβ1-3/6Galα2-3/6Neu5Ac, Neu5Acα2-6Galβ1-3GalNAcβ1-4Galα1-3Galβ1-4Glc, Neu5Acα2-6Galβ1 -3GalNAcβ1-3Galα1-4Galβ1-4Glc, Neu5Acα2-6Galβ1-3GlcNAcβ1-3Galβ1-4Glc and Neu5Acα2-6Galβ1-4GlcNAcβ1-3Galβ1-4Glc.

6.~~12.~~ The pharmaceutical composition of claim 2, wherein the binding agent binds to umbrella topology glycans with an affinity that is at least 50%, at least 70%, at least 80%, at least 90% or at least 100% of that observed under comparable conditions for a wild type HA that mediates infection of humans.

7.~~13.~~ The pharmaceutical composition of claim 2, wherein the binding agent binds to umbrella topology glycans more strongly than it binds to cone topology glycans.

8.~~14.~~ The pharmaceutical composition of claim 2, wherein the binding agent shows a relative affinity for umbrella topology glycans versus cone topology glycans of at least 2.

9.~~15.~~ The pharmaceutical composition of claim 2, wherein the binding agent shows a relative affinity for umbrella topology glycans versus cone topology glycans of at least 5.

10~~16~~. The pharmaceutical composition of claim 2, wherein the binding agent shows a relative affinity for umbrella topology glycans versus cone topology glycans of at least 10.

11~~17~~. The pharmaceutical composition of claim 2, wherein the interaction occurs between the HA polypeptide and receptors found on human upper respiratory epithelial cells, the bronchus, trachea, or the deep lung.

~~18. A vaccine composition comprising:~~
~~a binding agent that competes a glycan HA polypeptide interaction between umbrella topology glycan and an HA polypeptide,~~
~~wherein the vaccine is broadly protective against any H5 influenza virus.~~

12. An immunogenic composition comprising: a binding agent that comprises an H5 hemagglutinin ("HA") polypeptide that is at least 20 amino acids in length and has an amino acid sequences that:

i) shows at least 95% identity with a corresponding portion of a reference H5 HA of SEQ ID NO: 50; and
ii) shows a sequence variation relative to the reference H5 HA, which sequence variation includes a sequence element selected from the group consisting of:

137 Gln or Arg

155 Thr

158 Asn

160 Thr

193 Xaa, wherein Xaa is any non-basic amino acid

226 Leu, Ile or Val;

which binding agent is characterized by an activity selected from the group consisting of: it competes a glycan HA polypeptide interaction between an umbrella topology glycan and HA polypeptide; and it binds to human tissues.

~~19. The vaccine composition of claim 18, wherein said H5 influenza virus is a human-adapted H5 virus or avian-adapted H5 virus.~~

~~20. The vaccine composition of claim 19, wherein said H5 adapted virus comprises a H5 HA polypeptide sequence which differs from a reference H5 HA polypeptide sequence at one or more of residues selected from the group consisting of residues 130, 131, 132, 133, 135, 137, 155, 188, 192, 193, 221, 226, 227, 228, and combinations thereof.~~

~~21. A method of inhibiting binding of a H5 influenza virus to a hemagglutinin receptor having an umbrella topology, in a subject, or minimizing the risk of infection of a subject by an influenza virus which binds a hemagglutinin receptor having an umbrella topology, or treating a subject, the method comprising: identifying a subject susceptible to or suffering from infection by an influenza virus, selecting a binding agent that competes a glycan HA polypeptide interaction between an umbrella topology glycan and an HA polypeptide; and administering an effective amount of the binding agent so that binding by the virus to hemagglutinin receptors having umbrella topology glycans is reduced, the risk is minimized, or the patient is treated.~~

~~22. The method of claim 21, wherein the binding agent comprises an H5 HA polypeptide sequence from a reference H5 HA polypeptide sequence at one or more of residues selected from the group consisting of residues 130, 131, 132, 133, 135, 137, 155, 188, 192, 193, 221, 226, 227, 228, and combinations thereof.~~

~~23. The method of claim 21, wherein the step of selecting includes selecting a binding agent on the basis of the binding agent being able to bind a hemagglutinin receptor having umbrella topology glycans.~~

~~24. The method of claim 21, wherein the binding agent is an LSBA~~

13. The immunogenic composition of claim 18, wherein the sequence variation relative to the reference H5 HA additionally comprises substitutions at positions corresponding to one or more of residues 128, 159, and 224.

14. The pharmaceutical composition of claim 1, wherein the binding agent further shows sequence variation from that of the reference H5 HA polypeptide at one or more positions selected from the group consisting of: 128, 137, 155, 158, 159, 160, 193, 224, 226, and combinations thereof.

~~25. The method of claim 21, wherein the binding agent is a UTBA.~~

~~26. The method of claim 21, wherein the binding agent is a UTSBA.~~

~~27. The method of claim 26, wherein the UTSBA is administered to the subject prior to exposure to the virus.~~

~~28. The method of claim 26, wherein the UTSBA is administered to the subject after exposure to the virus.~~

~~29. The method of claim 21, wherein amount administered is sufficient to saturate the subject's HA receptors containing umbrella topology glycans.~~

~~30. The method of claim 26, wherein the UTSBA is administered by inhalation.~~

~~31. The method of claim 26, wherein the UTSBA is selected from the group consisting of antibodies, lectins, aptamers, and non-HA polypeptides.~~

~~32. The method of claim 26, wherein said UTSBA is administered in combination with administration of a second therapeutic.~~

~~33. The method of claim 32, wherein the second therapeutic is an anti-viral agent.~~