CLAIMS

1. A method of treating or preventing a complication of a respiratory viral disease in a subject, comprising administering to the subject a composition comprising an isolated polypeptide comprising the carboxy terminal-most 4 to 30 contiguous amino acids of an alpha Connexin.

2. The method of claim 1, wherein the respiratory viral disease is caused by SARS-CoV-2.

3. The method of claim 1, wherein the respiratory viral disease is caused by an Influenza A, B, or C virus.

4. The method of claim 2, wherein the respiratory viral disease is SARS-CoV-2-induced ARDS and/or ALI.

5. The method of any one of claims 1-4, wherein the polypeptide comprises the amino acid sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, and SEQ ID NO: 5.

6. The method of claim 5, wherein the polypeptide comprises the amino sequence of SEQ ID NO: 2.

7. The method of claim any one of claims 1-6, wherein the polypeptide further comprises a cellular internalization sequence.

8. The method of claim 7, wherein the cellular internalization sequence comprises an amino acid sequence of a protein selected from a group consisting of Antennapedia, TAT, HIV-Tat, Penetratin, Antp-3A (Antp mutant), Buforin II, Transportan, MAP (model amphipathic peptide), K-FGF, Ku70, Prion, pVEC, Pep-1, SynB 1, Pep-7, HN-1, BGSC (Bis-Guanidinium-Spermidine-Cholesterol) and BGTC (Bis-Guanidinium-Tren-Cholesterol).

9. The method of claim 8, wherein the cellular internalization sequence is Antennapedia, and wherein the sequence comprises the amino acid sequence of SEQ ID NO:7.

10. The method of claim any one of claims 1-9, wherein the polypeptide comprises the amino acid sequence selected from the group consisting of SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, and SEQ ID NO:12.

11. The method of claim 10, wherein the polypeptide comprises the amino acid sequence of SEQ ID NO:9.

12. The method of any one of claims 1-11, wherein the polypeptide is administered to the subject parenterally, intranasally, intratracheally, by inhalant, or by topical intranasal administration.

13. The method of any one of claims 1-12, wherein the composition is administered to the subject by aerosolized delivery.

14. The method of any one of claims 1-13, wherein the composition is administered via an inhaler or a nebulizer.

15. The method of any one of claims 1-14, wherein the polypeptide is administered to the subject in a drug loaded microcarrier formulation.

16. The method of claim 15, wherein the drug loaded microcarrier formulation comprises nanoparticles or exosomes.

17. The method of any one of claims 1-16, wherein the polypeptide is administered to the subject at the onset of infection.

18. The method of any one of claims 1-16, wherein the polypeptide is administered to the subject prior to the onset of symptoms of the respiratory viral disease.

19. The method of any one of claim s1-16, wherein the polypeptide is administered to the subject after onset of symptoms of the respiratory viral disease.

20. The method of any one of claims 1-19, wherein the method prevents lung injury caused by the respiratory viral disease.

21. The method of any one of claim s1-20, wherein the method limits the progression of lung injury caused by the respiratory viral disease.

22. The method of claim any one of claims 1-21, wherein the method maintains lung function after the onset of the respiratory viral disease.

23. A method for treating or preventing a respiratory disease or disorder in a subject in need thereof, the method comprising administering to the subject a composition comprising an isolated polypeptide comprising the carboxy terminal-most 4 to 30 contiguous amino acids of an alpha Connexin.

24. The method of claim 23, wherein the respiratory disease or disorder is acute respiratory distress syndrome (ARDS), alcoholic lung syndrome, acute lung injury, chronic obstructive pulmonary disease (COPD), or pulmonary fibrosis.

25. The method of claim 24, wherein the respiratory disease or disorder is idiopathic pulmonary fibrosis (IPF).

26. The method of any one of claims 23-25, wherein the polypeptide comprises the amino acid sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, and SEQ ID NO: 5.

27. The method of claim 26, wherein the polypeptide comprises the amino sequence of SEQ ID NO: 2.

28. The method of claim any one of claims 23-28, wherein the polypeptide further comprises a cellular internalization sequence.

29. The method of claim 28, wherein the cellular internalization sequence comprises an amino acid sequence of a protein selected from a group consisting of Antennapedia, TAT, HIV-Tat, Penetratin, Antp-3A (Antp mutant), Buforin II, Transportan, MAP (model amphipathic peptide), K-FGF, Ku70, Prion, pVEC, Pep-1, SynB 1, Pep-7, HN-1, BGSC (Bis-Guanidinium-Spermidine-Cholesterol) and BGTC (Bis-Guanidinium-Tren-Cholesterol).

30. The method of claim 29, wherein the cellular internalization sequence is Antennapedia, and wherein the sequence comprises the amino acid sequence of SEQ ID NO:7.

31. The method of claim any one of claims 23-30, wherein the polypeptide comprises the amino acid sequence selected from the group consisting of SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, and SEQ ID NO:12.

32. The method of claim 31, wherein the polypeptide comprises the amino acid sequence of SEQ ID NO:9.

33. The method of any one of claims 23-32, wherein the polypeptide is administered to the subject parenterally, intranasally, intratracheally, by inhalant, or by topical intranasal administration.

34. The method of any one of claims 23-33, wherein the composition is administered to the subject by aerosolized delivery.

35. The method of any one of claims 24-34, wherein the composition is administered via an inhaler or a nebulizer.

36. The method of any one of claims 23-35, wherein the polypeptide is administered to the subject in a drug loaded microcarrier formulation.

37. The method of claim 36, wherein the drug loaded microcarrier formulation comprises nanoparticles or exosomes.

38. A composition for use in treating or preventing a complication of a respiratory viral disease in a subject, wherein the composition comprises a polypeptide comprising the carboxy terminal-most 4 to 30 contiguous amino acids of an alpha Connexin.

39. A composition for use in treating or preventing a respiratory disorder in a subject, wherein the composition comprises a polypeptide comprising the carboxy terminal-most 4 to 40 contiguous amino acids of an alpha Connexin.