The present invention also provides any one of the embodiments disclosed below and indicated with the numbers 1 to 74.

1. A respiratory syncytial virus (RSV) fusion (F) protein comprising at least one modification or mutation that increases the expression of said RSV F protein in a host cell.

2. A RSV F protein comprising at least one modification or mutation that reduces the cellular toxicity of said RSV F protein in a host cell.

3. A RSV F protein comprising at least one modification or mutation that enhances the immunogenic properties of said RSV F protein as compared to an unmodified RSV F protein.

4. The RSV F protein of any of claims 1-3, wherein said F protein further comprises an amino acid substitution at the amino acid position corresponding to the proline 102 residue of the wild-type RSV F protein (SEQ ID NO: 2).

5. The RSV F protein according to claim 4, wherein said proline 102 residue is replaced with an alanine residue.

6. The RSV F protein according to any of claims 4-5, further comprising an amino acid substitution at the amino acid position corresponding to the isoleucine 379 residue of the wild-type RSV F protein (SEQ ID NO: 2).

7. The RSV F protein according to claim 6, wherein said isoleucine 379 residue is replaced with a valine residue.

8. The RSV F protein according to any of claims 4-7, further comprising an amino acid substitution at the amino acid position corresponding to the methionine 447 residue of the wild-type RSV F protein (SEQ ID NO: 2).

9. The RSV F protein according to claim 8, wherein said methionine 447 residue is replaced with a valine residue.

10. The RSV F protein according to any of claims 1-9, wherein said RSV F protein assumes a lollipop morphology.

11. The RSV F protein according to any of claims 4-10, comprising a mutation that inactivates at least one furin cleavage site.

12. The RSV F protein according to claim 11, wherein said furin cleavage site is the primary cleavage site.

13. The RSV F protein according to any of claims 11-12, wherein said inactivation of at least one furin cleavage site is accomplished by introducing at least one amino acid substitution at positions corresponding to arginine 133, arginine 135, and arginine 136 of the wild-type RSV F protein (SEQ ID NO: 2).

14. The RSV F protein according to claim 13, wherein at least two amino acid substitutions are introduced at positions corresponding to arginine 133, arginine 135, and arginine 136 of the wild-type RSV F protein (SEQ ID NO: 2).

15. The RSV F protein according to any of claims 14, wherein three amino acid substitutions are introduced at positions corresponding to arginine 133, arginine 135, and arginine 136 of the wild-type RSV F protein (SEQ ID NO: 2).

16. The RSV F protein according to any of claims 13-15, wherein said arginine 133 residue is replaced with glutamine.

17. The RSV F protein according to any of claims 13-16, wherein said arginine 135 residue is replaced with glutamine.

18. The RSV F protein according to any of claims 13-17, wherein said arginine 136 residue is replaced with glutamine.

19. The RSV F protein according to any of claims 4-18, wherein said RSV F protein further comprises at least one modification of the cryptic poly(A) site of F2.

20. The RSV F protein according to any of claims 4-19, wherein said RSV F protein further comprises a deletion in the N-terminal half of the fusion domain corresponding to about amino acids 137-146 of the wild-type RSV F protein (SEQ ID NO: 2).

21. The RSV F protein of any of claims 1-3, wherein said modification or mutation is selected from the group consisting of:

(i) inactivation of at least one furin cleavage site;

(ii) a modification of the cryptic poly(A) site of F2; and

(iii) a deletion in the N-terminal half of the fusion domain corresponding to about amino acids 137-146 of the wild-type RSV F protein (SEQ ID NO: 2).

22. The RSV F protein of any of claims 1-3, wherein said RSV F protein harbors at least two mutations selected from the group consisting of:

(i) at least one amino acid substitution at positions corresponding to proline 102, isoleucine 379, and methionine 447 of the wild-type RSV F protein (SEQ ID NO: 2);

(ii) inactivation of at least one furin cleavage site;

(iii) a modification of the cryptic poly(A) site of F2; and

(iv) a deletion in the N-terminal half of the fusion domain corresponding to about amino acids 137-146 of the wild-type RSV F protein (SEQ ID NO: 2).

23. The RSV F protein of any of claims 1-3, wherein said RSV F protein harbors at least three mutations selected from the group consisting of:

(i) at least one amino acid substitution at positions corresponding to proline 102, isoleucine 379, and methionine 447 of the wild-type RSV F protein (SEQ ID NO: 2);

(ii) inactivation of at least one furin cleavage site;

(iii) a modification of the cryptic poly(A) site of F2; and

(iv) a deletion in the N-terminal half of the fusion domain corresponding to about amino acids 137-146 of the wild-type RSV F protein (SEQ ID NO: 2).

24. The RSV F protein of any of claims 1-3, wherein said RSV F protein harbors four mutations selected from the group consisting of:

(i) at least one amino acid substitution at positions corresponding to proline 102, isoleucine 379, and methionine 447 of the wild-type RSV F protein (SEQ ID NO: 2);

(ii) inactivation of at least one furin cleavage site;

(iii) a modification of the cryptic poly(A) site of F2; and

(iv) a deletion in the N-terminal half of the fusion domain corresponding to about amino acids 137-146 of the wild-type RSV F protein (SEQ ID NO: 2).

25. The RSV F protein of any of claims 21-24, wherein said RSV F protein harbors at least two amino acid substitutions at positions corresponding to proline 102, isoleucine 379, and methionine 447 of the wild-type RSV F protein (SEQ ID NO: 2).

26. The RSV F protein of any of claims 21-25, wherein said RSV F protein harbors three amino acid substitutions at positions corresponding to proline 102, isoleucine 379, and methionine 447 of the wild-type RSV F protein (SEQ ID NO: 2).

27. A RSV F protein encoded by the nucleic acid sequence selected from the group consisting of SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, and SEQ ID NO: 9.

28. A RSV F protein comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, and SEQ ID NO: 10.

29. The RSV F protein according to any of claims 1-28, wherein said RSV F protein exhibits increases expression in a host cell as compared to a wild-type RSV F protein.

30. The RSV F protein according to any of claims 1-29, wherein said RSV F protein exhibits enhanced immunogenic properties as compared to a wild-type RSV F protein.

31. The RSV F protein according to any of claims 1-30, wherein said host cell is a eukaryotic cell.

32. The RSV F protein according to claim 31, wherein said eukaryotic cell is an insect cell.

33. The RSV F protein according to claim 32, wherein said insect cell is an Sf9 cell.

34. The RSV F protein according to any of claims 1-33, wherein said RSV F protein is derived from an RSV strain selected from the group consisting of an A strain of human RSV, a B strain of human RSV, strains of bovine RSV, and strains of avian RSV.

35. A purified micelle comprising one or more RSV F proteins of any of claims 1-34.

36. A virus-like particle (VLP) comprising a RSV F protein of any of claims 1-34.

37. The VLP of claim 36, further comprising a matrix (M) protein.

38. The VLP of claim 37, wherein said M protein is derived from a human strain of RSV.

39. The VLP of claim 37, wherein said M protein is derived from a bovine strain of RSV.

40. The VLP of claim 37, wherein said M protein is M1 from an influenza virus strain.

41. The VLP of claim 40, wherein said influenza virus strain is an avian influenza virus strain.

42. The VLP of claim 41, wherein said avian influenza virus strain is an H5N1 strain.

43. The VLP of claim 42, wherein said H5N1 strain is A/Indonesia/5/05.

44. The VLP of claim 37, wherein said M protein is derived from a Newcastle Disease Virus (NDV) strain.

45. The VLP of any of claims 36-44, further comprising the RSV glycoprotein (G).

46. The VLP of any of claims 36-45, further comprising the RSV glycoprotein (SH).

47. The VLP of any of claims 36-46, further comprising the RSV nucleocapsid protein (N).

48. The VLP of any of claims 36-47, wherein the VLP is expressed in a eukaryotic cell under conditions which permit the formation of VLPs.

49. The VLP of claim 49, wherein the eukaryotic cell is selected from the group consisting of yeast, insect, amphibian, avian, mammalian, or plant cells.

50. An immunogenic composition comprising a RSV F protein of any of claims 1-34.

51. An immunogenic composition comprising a purified micelle according to claim 35.

52. An immunogenic composition comprising a VLP according to any of claims 36-49.

53. A pharmaceutically acceptable vaccine composition comprising a RSV F protein of any of claims 1-34, wherein the RSV F protein is capable of eliciting an immune response in a host.

54. A pharmaceutically acceptable vaccine composition comprising a purified micelle according to claim 35, wherein the micelle is capable of eliciting an immune response in a host.

55. A pharmaceutically acceptable vaccine composition comprising a VLP according to any of claims 36-49, wherein the VLP is capable of eliciting an immune response in a host.

56. A kit for immunizing a human subject against a viral infection comprising a RSV F protein of any of claims 1-34.

57. A kit for immunizing a human subject against a viral infection comprising a purified micelle according to claim 35.

58. A kit for immunizing a human subject against a viral infection comprising a VLP according to any of claims 36-49.

59. The kit according to any of claims 54-56, wherein the viral infection is a RSV infection.

60. A method of vaccinating a mammal against a viral infection comprising administering the RSV F protein of any of claims 1-34 in a pharmaceutically acceptable formulation to a human subject.

61. A method of vaccinating a mammal against a viral infection comprising administering a purified micelle of claim 35 in a pharmaceutically acceptable formulation to a human subject.

62. A method of vaccinating a mammal against a viral infection comprising administering a VLP according to any of claims 36-49 in a pharmaceutically acceptable formulation to a human subject.

63. The method according to any of claims 60-62, wherein the pharmaceutically acceptable formulation comprises an adjuvant.

64. The method according to claim 63, wherein the adjuvant is a non-phospholipid liposome.

65. A method of generating an immune response against a viral infection comprising the RSV F protein of any of claims 1-34 in a pharmaceutically acceptable formulation to a human subject.

66. A method of generating an immune response against a viral infection comprising administering a purified micelle of claim 35 in a pharmaceutically acceptable formulation to a human subject.

67. A method of generating an immune response against a viral infection comprising administering a VLP according to any of claims 36-49 in a pharmaceutically acceptable formulation to a human subject.

68. An isolated nucleic acid encoding a RSV F protein according to any of claims 1-30.

69. An isolated cell comprising a nucleic acid of claim 68.

70. A vector comprising the nucleic acid of claim 68.

71. A method of making a RSV F protein, comprising:

(a) transforming a host cell to express a nucleic acid of claim 68; and

(b) culturing said host cell under conditions conducive to the production of said RSV F protein.

72. A method of making a RSV F protein micelle, comprising:

(a) transforming a host cell to express a nucleic acid of claim 68; and

(b) culturing said host cell under conditions conducive to the production of said RSV F protein micelle.

73. The method according to any of claims 71-72, wherein said host cell is an insect cell.

74. The method according to claim 73, wherein said insect cell is an insect cell transfected with a baculovirus vector comprising a nucleic acid of claim 68.