CLAIMS

1. A Nipah virus vaccine composition comprising

a messenger ribonucleic acid (mRNA) comprising an open reading frame (ORF) encoding soluble Nipah virus glycoprotein (soluble NiV-G) fused with human collagen type I alpha 1 (COL1A1) signal peptide.

2. The Nipah virus vaccine composition according to claim 1, wherein the soluble NiV-G fused with COL1A1 signal peptide has an amino acid sequence of SEQ ID NO: 1.

3. The Nipah virus vaccine composition according to claim 1, wherein the ORF encoding soluble NiV-G fused with COL1A1 signal peptide has a nucleotide sequence of SEQ ID NO: 2.

4. The Nipah virus vaccine composition according to claim 1, wherein the mRNA comprising the ORF encoding soluble NiV-G fused with COL1A1 signal peptide further comprises a 5' untranslated region (UTR), a 3' UTR, and a poly (A) tail so as to have the following structure:

5'UTR-ORF encoding soluble NiV-G fused with COL1A1 signal peptide-3'UTR-poly (A) tail, and

wherein the ORF encoding soluble NiV-G fused with COL1A1 signal peptide has a nucleotide sequence of SEQ ID NO: 2.

5. The Nipah virus vaccine composition according to claim 4, wherein the poly (A) tail has a length of 50-250 nucleotides.

6. The Nipah virus vaccine composition according to claim 4, wherein the mRNA having the structure of 5'UTR-ORF encoding soluble NiV-G fused with COL1A1 signal peptide-3'UTR-poly (A) tail has a nucleotide sequence of SEQ ID NO: 3.

7. The Nipah virus vaccine composition according to claim 4, wherein the mRNA having the structure of 5'UTR-ORF encoding soluble NiV-G fused with COL1A1 signal peptide-3'UTR-poly (A) tail has a nucleotide sequence having at least 80% identity to SEQ ID NO: 3.

8. Use of an effective amount of the Nipah virus vaccine composition according to claim 1 in the manufacture of a medicament for inducing immune response in a subject against Nipah virus.

9. A Nipah virus vaccine composition comprising

a messenger ribonucleic acid (mRNA) comprising an open reading frame (ORF) encoding full-length Nipah virus glycoprotein (full-length NiV-G).

10. The Nipah virus vaccine composition according to claim 9, wherein the full-length NiV-G has an amino acid sequence of SEQ ID NO: 5.

11. The Nipah virus vaccine composition according to claim 9, wherein the ORF encoding full-length NiV-G has a nucleotide sequence of SEQ ID NO: 6.

12. The Nipah virus vaccine composition according to claim 9, wherein the mRNA comprising the ORF encoding full-length NiV-G further comprises a 5' untranslated region (UTR), a 3' UTR, and a poly (A) tail so as to have the following structure:

5'UTR-ORF encoding full-length NiV-G-3'UTR-poly (A) tail, and

wherein the ORF encoding full-length NiV-G has a nucleotide sequence of SEQ ID NO: 6.

13. The Nipah virus vaccine composition according to claim 12, wherein the poly (A) tail has a length of 50-250 nucleotides.

14. The Nipah virus vaccine composition according to claim 12, wherein the mRNA having the structure of 5'UTR-ORF encoding full-length NiV-G-3'UTR-poly (A) tail has a nucleotide sequence of SEQ ID NO: 7.

15. The Nipah virus vaccine composition according to claim 12, wherein the mRNA having the structure of 5'UTR-ORF encoding full-length NiV-G-3'UTR-poly (A) tail has a nucleotide sequence having at least 80% identity to SEQ ID NO: 7.

16. Use of an effective amount of the Nipah virus vaccine composition according to claim 9 in the manufacture of a medicament for inducing immune response in a subject against Nipah virus.

17. A Nipah virus vaccine composition comprising

a messenger ribonucleic acid (mRNA) comprising an open reading frame (ORF) encoding full-length Nipah virus fusion protein (full-length NiV-F).

18. The Nipah virus vaccine composition according to claim 17, wherein the full-length NiV-F has an amino acid sequence of SEQ ID NO: 9.

19. The Nipah virus vaccine composition according to claim 17, wherein the ORF encoding full-length NiV-F has a nucleotide sequence of SEQ ID NO: 10.

20. The Nipah virus vaccine composition according to claim 17, wherein the mRNA comprising the ORF encoding full-length NiV-F further comprises a 5' untranslated region (UTR), a 3' UTR, and a poly (A) tail so as to have the following structure:

5'UTR-ORF encoding full-length NiV-F-3'UTR-poly (A) tail, and

wherein the ORF encoding full-length NiV-F has a nucleotide sequence of SEQ ID NO: 10.

21. The Nipah virus vaccine composition according to claim 20, wherein the poly (A) tail has a length of 50-250 nucleotides.

22. The Nipah virus vaccine composition according to claim 20, wherein the mRNA having the structure of 5'UTR-ORF encoding full-length NiV-F-3'UTR-poly (A) tail has a nucleotide sequence of SEQ ID NO: 11.

23. The Nipah virus vaccine composition according to claim 20, wherein the mRNA having the structure of 5'UTR-ORF encoding full-length NiV-F-3'UTR-poly (A) tail has a nucleotide sequence having at least 80% identity to SEQ ID NO: 11.

24. Use of an effective amount of the Nipah virus vaccine composition according to claim 17 in the manufacture of a medicament for inducing immune response in a subject against Nipah virus.

25. A Nipah virus vaccine composition comprising

a messenger ribonucleic acid (mRNA) comprising an open reading frame (ORF) encoding full-length Nipah virus glycoprotein (full-length NiV-G), and

a mRNA comprising an ORF encoding full-length Nipah virus fusion protein (full-length NiV-F).

26. The Nipah virus vaccine composition according to claim 25, wherein the full-length NiV-G has an amino acid sequence of SEQ ID NO: 5, and

wherein the full-length NiV-F has an amino acid sequence of SEQ ID NO: 9.

27. The Nipah virus vaccine composition according to claim 25, wherein the ORF encoding full-length NiV-G has a nucleotide sequence of SEQ ID NO: 6, and

wherein the ORF encoding full-length NiV-F has a nucleotide sequence of SEQ ID NO: 10.

28. The Nipah virus vaccine composition according to claim 25, wherein the mRNA comprising the ORF encoding full-length NiV-G further comprises a 5’ untranslated region (UTR), a 3’ UTR, and a poly (A) tail so as to have the following structure:

5’UTR-ORF encoding full-length NiV-G-3’UTR-poly (A) tail, and

the ORF encoding full-length NiV-G has a nucleotide sequence of SEQ ID NO: 6, and

wherein the mRNA comprising the ORF encoding full-length NiV-F further comprises a 5’ UTR, a 3’ UTR, and a poly (A) tail so as to have the following structure:

5’UTR-ORF encoding full-length NiV-F-3’UTR-poly (A) tail, and

the ORF encoding full-length NiV-F has a nucleotide sequence of SEQ ID NO: 10.

29. The Nipah virus vaccine composition according to claim 28, wherein the poly (A) tail has a length of 50-250 nucleotides.

30. The Nipah virus vaccine composition according to claim 28, wherein the mRNA having the structure of 5’UTR-ORF encoding full-length NiV-G-3’UTR-poly (A) tail has a nucleotide sequence of SEQ ID NO: 7, and

wherein the mRNA having the structure of 5’UTR-ORF encoding full-length NiV-F-3’UTR-poly (A) tail has a nucleotide sequence of SEQ ID NO: 11.

31. The Nipah virus vaccine composition according to claim 28, wherein the mRNA having the structure of 5’UTR-ORF encoding full-length NiV-G-3’UTR-poly (A) tail has a nucleotide sequence having at least 80% identity to SEQ ID NO: 7, and

wherein the mRNA having the structure of 5’UTR-ORF encoding full-length NiV-F-3’UTR-poly (A) tail has a nucleotide sequence having at least 80% identity to SEQ ID NO: 11.

32. Use of an effective amount of the Nipah virus vaccine composition according to claim 25 in the manufacture of a medicament for inducing immune response in a subject against Nipah virus.