

WHAT IS CLAIMED IS:

1. A recombinant spike protein in which a cleavage site between S1 and S2 genes of a coronavirus spike protein is removed and a linker sequence is introduced.

2. The recombinant spike protein according to claim 1, wherein the coronavirus is SARS-CoV, MERS-CoV or SARS-CoV-2.

3. The recombinant spike protein according to claim 2, wherein the coronavirus is SARS-CoV-2.

4. The recombinant spike protein according to claim 1, wherein the linker is composed of (GGGS)n.

5. The recombinant spike protein according to claim 4, wherein the n is an integer of 1 to 5.

6. The recombinant spike protein according to any one of claims 1 to 5, wherein the spike protein ~~antigen~~-linked by the linker sequence has an increased stability.

7. The recombinant spike protein according to any one of claims 1 to 5, wherein the spike protein ~~antigen~~-linked by the linker sequence has an increased antigen expression level.

8. A polynucleotide encoding a recombinant spike protein in which a cleavage site between S1 and S2 genes of a coronavirus spike protein is removed and a linker sequence is introduced.

9. The polynucleotide according to claim 8, wherein the coronavirus is SARS-CoV, MERS-CoV or SARS-CoV-2.

10. The polynucleotide according to claim 8, wherein the linker sequence is composed of (GGGGS)_n.

11. A vector comprising a polynucleotide ~~encoding a recombinant spike protein in which a cleavage site between S1 and S2 genes of a coronavirus spike protein is removed and a linker sequence is introduced~~ of claim 8.

12. The vector according to claim 11, wherein the coronavirus is SARS-CoV, MERS-CoV or SARS-CoV-2.

13. The vector according to claim 12, wherein the coronavirus is SARS-CoV-2.

14. The vector according to claim 11, wherein the vector is a virus or a plasmid.

15. The vector according to claim 14, wherein the virus is adenovirus, retrovirus, lentivirus, modified vaccinia virus ankara (MVA), adeno-associated virus (AAV), herpes simplex virus or baculovirus.

16. The vector according to claim 15, wherein the adenovirus is Ad2, Ad4, Ad5, Ad11, Ad26, Ad35, ChAd68, FAd9 or PAd3.

17. The vector according to claim 15 or 16, wherein the adenovirus has a high antigen expression level.

18. A vaccine for preventing or treating coronavirus infection comprising a vector ~~containing a polynucleotide of S1 and S2 genes of a coronavirus spike protein~~ of claim 11.

19. The vaccine for preventing or treating coronavirus infection according to claim 18, wherein the coronavirus infection is SARS, MERS or COVID-19.

20. ~~A method~~Use of the vector of claim 11 for the
manufacture of a vaccine for preventing or treating coronavirus
~~infection comprising a step of administering a vector containing~~
~~a polynucleotide of S1 and S2 genes of a coronavirus spike~~
~~protein to a subject.~~