

We claim:

1. A fusion protein comprising a viral receptor binding domain and an Fc fragment, wherein the viral receptor binding domain and the Fc fragment are connected by a peptide linker, wherein the fusion protein comprises the following sequence:

RVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRKRISNCVADYSVLVNSASF
STFKCYGVSPTKLNDLCFTNVYADSFVIRGDEVQRQIAPGQTGKIADYNYKLPDDF
TGCVIAWNSNNLDSKVGGNYNYLYRLFRKSNLKPFERDISTEIQAGSTPCNGVE
GFNCYFPLQSYGFQPTNGVGYQPVRVVLSFELLHAPATVCGPKKSTNLVKNKC
VNFNENGLTGTGVLTESNKKFLPFQQFGRDIADTTDAVRDPQTLEILDITPCSGGG
SGGGSDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDP
EVKFNWYVDGVEVHNAKTKPREEQYNSTYRVVSVLTVLHQDWLNGKEYKCKV
SNKALPAPIEKTISKAKGQPREPQVYTLPPSRDELTKNQVSLTCLVKGFYPSDIAVE
WESNGQPENNYKTTTPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHN
HYTQKSLSLSPG (SEQ ID NO: 19).

2. The fusion protein of claim 1, wherein the fusion protein is a homodimer.
3. The fusion protein of claim 1 or claim 2, wherein the Fc fragment is glycosylated.
4. An immunogenic composition comprising a fusion protein according to any one of claims 1-3 and a pharmaceutically-acceptable carrier.
5. The immunogenic composition of claim 4, further comprising an adjuvant.
6. The immunogenic composition of claim 4 or 5, wherein the fusion protein is emulsified with the adjuvant.
7. A method of producing a fusion protein according to any one of claims 1 to 3, the method comprising transiently transfecting a nucleic acid encoding for the fusion protein into a HEK293 or CHO-SE cell, wherein the transfected HEK293 or CHO-SE cell expresses the fusion protein, or stably transfecting a nucleic acid encoding for the fusion protein into a CHO cell, wherein the recombinant CHO cell expresses the fusion protein.

8. A cell transfected with a nucleic acid encoding the fusion protein according to any one of claims 1 to 3.
9. A cDNA encoding a fusion protein according to any one of claims 1 to 3.
10. Use of a fusion protein comprising the sequence of SEQ ID NO: 19 for the manufacture of a medicament for the treatment and/or prophylaxis of a SARS-CoV-2 viral infection.
11. A booster vaccine for increasing anti-SARS-CoV-2 virus antibody titer in a subject previously immunized against SARS-CoV-2 infection or who has previously had a SARS-CoV-2 infection, the booster vaccine comprising an effective amount of a fusion protein according to any one of claims 1 to 3.
12. The booster vaccine of claim 11, further comprising a pharmaceutically acceptable carrier.
13. The booster vaccine of claim 12, wherein the pharmaceutically acceptable carrier is selected from the group consisting of water, saline, ethanol, salts, polyols, vegetable oils, ethyl oleate, potassium phosphate, sodium phosphate, hydrochloric acid, sodium hydroxide and mixtures thereof.
14. The booster vaccine of any one of claims 11-13, consisting essentially of the fusion protein and the pharmaceutically acceptable carrier.
15. Use of the booster vaccine according to any one of claims 11-14, for the manufacture of a medicament for increasing anti-SARS-CoV-2 antibody titers in a subject previously immunized against SARS-CoV-2 infection or who has previously had a SARS-CoV-2 infection.
16. The use of claim 15, wherein the subject is antibody-positive for SARS-CoV-2.
17. The use of claim 15 or 16, wherein the subject has measurable anti-SARS-CoV-2 antibodies.

18. The use of any one of claims 15-17, wherein the subject has recovered from the SARS-CoV-2 infection.
19. The use of any one of claims 15-18, wherein the medicament is to be administered to the subject as an antibody amplification treatment (AAT), to increase the anti-SARS-CoV-2 antibody titers before serum donation by the subject for convalescent serum treatment, thereby increasing the anti-SARS-CoV-2 antibody titer of extracted subject sera.
20. The use of any one of claims 15-19, wherein the subject previously immunized against SARS-CoV-2 infection has measurable anti-SARS-CoV-2 antibodies that have waned since the previous immunization.
21. The use of any one of claims 15-20, wherein the medicament protects the subject from infection and/or symptoms related to infection with the SARS-CoV-2 virus.
22. The use of any one of claims 15-21, wherein the medicament is to be administered to the subject by subcutaneous (s.c.) or intramuscular (i.m.) injection.
23. The use of any one of claims 15-22, wherein the medicament comprises a unit dosage form of the booster vaccine and a dosing syringe.
24. The use of claim 23, wherein the unit dosage form of said booster vaccine consists essentially of the fusion protein and a pharmaceutically acceptable carrier in a vial.
25. A booster vaccine kit for increasing anti-SARS-CoV-2 virus antibody titer in a patient previously immunized against SARS-CoV-2 infection or who has previously had a SARS-CoV-2 infection, the kit comprising:
a unit dosage form of a booster vaccine according to any one of claims 11-14;
a dosing syringe for administering the booster vaccine to a patient; and
instructions for administering said booster vaccine.
26. The fusion protein of any one of claims 1-3 for use in increasing antibody production in a subject against an antigenic agent.

27. A fusion protein comprising the sequence of SEQ ID NO: 19 for use in the treatment and/or prophylaxis of a SARS-CoV-2 viral infection.
28. The booster vaccine of any one of claims 11-14, for use in increasing anti-SARS-CoV-2 antibody titers in a subject previously immunized against SARS-CoV-2 infection or who has previously had a SARS-CoV-2 infection.
29. The use of claim 10, wherein the subject has a measurable antibody titer against the SARS-CoV-2 viral infection.
30. The use of claims 10 or 29, wherein the subject is antibody naïve.
31. The use of any one of claims 10 or 29 to 30, wherein the medicament is to be administered via injection.
32. The use of claim 31, wherein the medicament is to be administered subcutaneously or intramuscularly.
34. The use of any one of claims 10 or 29 to 31, wherein the fusion protein is to be co-administered with an adjuvant.
35. The use of any one of claims 10 or 29 to 34, further comprising pre-mixing the fusion protein with an adjuvant before it is to be administered.
36. The use of claim 35, wherein the pre-mixing comprises emulsifying the adjuvant and the fusion protein.