Claims

1. Aptamer for use in therapy of a subject by treating, curing or preventing further progression of infection with a virus from the *Coronaviridae* family, wherein the aptamer comprises a nucleic acid sequence of SEQ ID No. 1 (GGT TGG TGT GGT TGG) and/or a nucleic acid sequence being at least 80% identical to SEQ ID No. 1.

2. Aptamer for use according to claim 1, wherein the infection is caused by a virus from the genus *Betacoronavirus*, preferably from the subgenus *Sarbecovirus* or *Merbecovirus*, more preferably by a virus selected from the group comprising MERS-CoV, SARS-CoV and SARS-CoV-2, particularly preferably wherein the infection is caused by SARS-CoV-2.

3. Aptamer for use according to any of the preceding claims, wherein the aptamer has anticoagulant activity, preferably wherein the aptamer is able to prolong coagulation time measured as partial thromboplastin time (PTT) of human calibration plasma to 60 seconds or more at an aptamer concentration of 0.03 mg/ml and/or wherein the aptamer is able to lower the prothrombin time (Quick value) of human calibration plasma to 40% or less at an aptamer concentration of 0.03 mg/ml.

4. Aptamer for use according to any one of the preceding claims, wherein the aptamer interferes with the infection of somatic cells by selectively interacting with the Spike (S) glycoprotein of the virus, preferably by preventing or interfering with the interaction of the Spike glycoprotein of the virus and the angiotensin-converting enzyme 2 (ACE2) or the dipeptidyl peptidase 4 (DPP4), more preferably the ACE2 of a subject host cell.

5. Aptamer for use according to claim 4, wherein the Receptor-binding domain of the Spike glycoprotein has a sequence of SEQ ID NO: 2 (SARS-CoV-2 Spike RBD) or SEQ ID NO: 3 (SARS-CoV Spike RBD) or SEQ ID NO: 4 (MERS-CoV Spike RBD), preferably wherein the Receptor-binding domain of the Spike glycoprotein has a sequence of SEQ ID NO: 2 or SEQ ID NO: 3, preferably wherein the Spike glycoprotein has a sequence of SEQ ID NO: 2.

6. Aptamer for use in therapy of a subject by treating, curing or preventing disease symptoms associated with long COVID in a patient having overcome an infection with a virus from the *Coronaviridae* family, wherein the aptamer comprises a nucleic acid sequence of SEQ ID No.

1 (GGT TGG TGT GGT TGG) and/or a nucleic acid sequence being at least 80% identical to SEQ ID No. 1.

7. Aptamer for use according to claim 6, wherein the disease symptoms comprise one or more from the group comprising neurological symptoms, such as chronic fatigue syndrome, postural orthostatic tachycardia syndrome (PoTS), dysautonomia, tremor, attention deficit, anomic aphasia, neuropathy, transverse myelitis, acute necrotising myelitis, and Guillain-Barré syndrome, cardiovascular symptoms, such as myocardial inflammation, arrhythmia, tachycardia, bradycardia, hypertension, and atrioventricular (AV) block, dermatological symptoms, such as alopecia and eczema, or gastrointestinal diseases.

8. Aptamer for use according to any of claims 6 or 7, wherein the aptamer is used to inhibit the interaction of autoantibodies specific for a G-protein coupled receptor with its target proteins.

9. Aptamer for use according to any of claims 6 to 8, wherein the aptamer is for use in the treatment of a patient in which autoantibodies against G-protein coupled receptors can be detected.

10. Aptamer for use according to any of claims 6 to 9, wherein the patient exhibits functional autoantibodies against G-protein coupled receptors, preferably functional autoantibodies specific for any one of the human G-protein coupled receptor adrenergic alpha-1 receptor, adrenergic beta-2 receptor, endothelin 1 ETA receptor, muscarinic M_2 receptor, angiotensin II AT1 receptor, MAS-receptor and/or the nociception receptor, more preferably for any one of the adrenergic beta-2 receptor, muscarinic M_2 receptor, angiotensin II AT1 receptor, MAS-receptor, particularly preferably wherein the patient exhibits an antibody pattern comprising functional autoantibodies specific for each of the adrenergic beta-2 receptor, muscarinic M_2 receptor, angiotensin II AT1 receptor, and MAS-receptor.

11. A method of preventing infection of somatic cells with a virus from the *Coronaviridae* family by using an aptamer, wherein the method is carried out *in vitro/ex vivo* and wherein the aptamer comprises a nucleic acid sequence of SEQ ID No. 1 (GGT TGG TGT GGT TGG) and/or a nucleic acid sequence being at least 80% identical to SEQ ID No. 1.

12. Pharmaceutical composition comprising an aptamer for use according to any of claims 1 to 10 and at least one pharmaceutically acceptable excipient.

13. Kit comprising at least one aptamer for use according to any of claims 1 to 10 and a container.

14. Use of the aptamer as defined in claim 1 for preventing infection of somatic cells with a virus from the *Coronaviridae* family, wherein the aptamer is used *in vitro/ex vivo*.

15. Affinity molecule that specifically binds to a peptide of amino acid sequence Leu-Tyr-Arg-Asn-Arg-Asp-Val (LYRNRDV; SEQ ID NO: 9) and/or His-Arg-Phe-Tyr-Arg-Leu-Ala-Asn (HRFYRLAN; SEQ ID NO: 10) within the RNA-dependent RNA polymerase of the Severe acute respiratory syndrome coronavirus 2 (SEQ ID NO: 8).

16. Affinity molecule according to claim 15, wherein the affinity molecule is a small molecule having a molecular weight of at most 900 Daltons, preferably wherein the affinity molecule is a small molecule from any one small molecule collection from the group comprising the University of Cincinnati Compound Collection, the DiscoveryProbe™ Bioactive Compound Library Plus from ApexBio Technology LLC, and the SARS-CoV-2 Screening Library from Cayman Chemical.

17. Affinity molecule according to claim 15, wherein the affinity molecule is a peptide-based compound, preferably an antibody or a binding fragment thereof.

18. Affinity molecule according to claim 15, wherein the affinity molecule is an aptamer or oligonucleotide.

19. Affinity molecule according to any of claims 15 to 18 for use as a medicament.

20. Affinity molecule according to any of claims 15 to 18 for use in therapy of a subject by treating, curing or preventing further progression of infection with a virus from the *Coronaviridae* family.