

## **Camelid-derived nanobodies to neutralize SARS-CoV-2 and future pandemic coronaviruses for therapy and post-exposure prophylaxis**

Initiative: Innovative Ansätze in der antiviralen Wirkstoffentwicklung

Bewilligung: 21.06.2021

Laufzeit: 3 Jahre

Infection by SARS-CoV-2, the causing agent of COVID-19, strictly depends on the interaction of the Spike protein with cellular receptors, most notably ACE2. Interfering with this interaction represents an important opportunity for therapy and prevention. The research team isolated and characterized the first Göttingen virus strain and has developed antibody fragments, termed nanobodies, from alpacas immunized with the Spike protein. The team found these nanobodies against the receptor-binding domain of Spike to neutralize the virus at low picomolar concentrations, revealing extraordinary potency. The researchers are now developing these for clinical applications, improving stability and pharmacokinetics and then moving to GMP production, in vivo efficacy testing, and early clinical studies. After having founded a company to support these tasks, the team continues to develop new nanobodies in the academic domain. On top of improving current nanobodies, new preparations directed against several domains on the Spike protein will be developed, aiming at broadly active compounds that neutralize even mutants of SARS-CoV-2 and possible future SARS strains, based on their interactions with conserved Spike domains. These candidates will be evaluated regarding their antiviral activity in relevant model systems, i.e. cells and animals, and then should be taken to clinical development.

### **Projektbeteiligte**

#### **Prof. Dr. Matthias Dobbelsstein**

Universität Göttingen  
Universitätsmedizin Göttingen  
Abt. Molekulare Onkologie  
Göttingen

#### **Prof. Dr. Dirk Görlich**

Max-Planck-Institut für  
biophysikalische Chemie  
Zelluläre Logistik  
Göttingen