



On Dec 2nd 2020 the first virtual event “Structural Biology Meets Clinic: Molecular aspects of COVID-19” took place. About 220 participants from various countries followed the presentations and discussions online. European guests were mainly from Norway, Sweden, Finland, the Netherlands, Germany, France, Italy and Greece. Many local guests from Austria attended as well as guests from Canada and the United States.

The goal of this “Structural Biology Meets Clinic” event was to bring together structural biologists, medical doctors and clinical research in order to learn from each other, to broaden the understanding of current research and to initiate new co-operations in translational research. Consequently the event was a combination of structural biology and clinical based aspects.

In the keynote, Sriram Subramaniam (University of British Columbia, Vancouver, Canada) gave a general overview for SARS-CoV-2 and its molecular architecture based on current research. He highlighted the advances in structural biology that are laying the foundation both for the development of therapeutics to treat those who are infected, and for the design of vaccines that can protect against future infection by the SARS-CoV-2 virus.

The short talks were moderated by Tobias Madl (ISB) and Peter Schemmer (Medical University of Graz, President of the Scientific Society of Medical Doctors in Styria):

Matt Sikora (Max-Planck-Institute of Biophysics in Frankfurt, Germany) explained how they combined cryo-electron tomography, subtomogram averaging and molecular dynamics simulations to

structurally characterise spike proteins on the surface of intact virions. Christian Löw (EMBL, Hamburg, Germany) talked about the rapid isolation and characterization of nanobodies from a synthetic library that target the receptor-binding domain of the SARS-CoV-2 spike protein and Chris Oostenbrink (University of Natural Resources and Life Sciences, Vienna, Austria) described molecular dynamics simulations defining the critical glycans that influence Spike-ACE2 complex formation and how recombinant soluble human ACE2 can neutralize SARS-CoV-2. Christian Gruber (Innophore & University of Graz) spoke about large-scale virtual drug screening to identify inhibitors targeting SARS-CoV-2 and ongoing in vitro testing in infected cell cultures. Infection with the SARS-CoV-2 virus, how it can affect the gastrointestinal system and the liver were then the main topics in the presentation given by Vanessa Stadlbauer (Medical University of Graz). Horst Olschewski (Medical University of Graz) finalised the short talks with his very interesting talk about the observation of endothelial dysfunction in COVID pneumonia and how his findings suggest „endothelialitis“ of the pulmonary vessels.

All seven invited speakers gave fascinating talks on molecular aspects of SARS-CoV-2 and COVID-19. The interest of the audience was enormous, and the large number of questions could not all be answered immediately in the available time. Therefore, questions were also collected in an online questionnaire (Gustav Oberdorfer, Andreas Winkler, ISB) and some were answered by the speakers during the discussion, while the remaining ones were afterwards answered in writing in the online questionnaire.

A general discussion and fruitful interdisciplinary exchange finalized the event and gave an even broader understanding of the pandemic. The openness of the speakers about current research results, the willingness to pass on their knowledge paired with respect and interest made this bridging event a very special one.

Thank you to the speakers, chairs and the audience for this interesting evening. This event was a successful start of our co-operation between the Scientific Society of Medical Doctors in Styria, ISB and the Science-Technology Interface: Structural Biology.

