Swedish Society for VIROLOGY

SSV Newsletter, May 2020

Friends and colleagues,

As we all know the world has turned upside down because of a virus. We are all doing our best to support health care, protect the vulnerable and contribute with expertise, experience, and research. We obviously do not know when it all will be over, but we know that there will be a price to pay, in lives and in assets.
The covid-19 pandemic has clearly pinpointed the importance of our area, and our work is more important than ever. Pandemics like the one that now torture the world can only be avoided and/or efficiently controlled by efforts originating from research. The board approaches multiple stakeholders actively and continuously, to increase the awareness about virus-caused infections and their impact on human and animal health, health care, economy, and society. The Swedish Research Council and other funding bodies (probably Vinnova) announce 100 MSEK for research on coronavirus and Covid-19, and another 100 MSEK for research on virology in general. For more info about some of the calls, including deadlines (June 2 for some calls) https://www.vr.se/
Our ambition is that the Government will also take a more broad and long-term perspective on virus-caused infections in general, which addresses all non-treatable and non-curable virus-caused infections. Keep your eyes open for new calls. A new research bill will be launched some time during the fall, which means that there is still some work to be done.
It is a pleasure to inform that we have created a new logotype for the society and launched a newly designed webpage, which will be a platform for communication from and within the society. It is also a pleasure to inform that members of the society have been successful in Covid-19-related Horizon 2020 calls. In this newsletter, you will also find information about upcoming meeting, grants, and research highlights.

On behalf of the board, I wish you all good health and a happy springtime!

Niklas Arnberg
Chairman, SSV

1) The upcoming 17th Smögen Summer Symposium was scheduled for August 20-22. However, due to the SARS Cov-2 epidemic, we have this year decided to ***reschedule this meeting for next year***. Thus, in order for everyone to enjoy the previously scheduled keynote speakers, including Dr. Peter Palese, Icahn School of Medicine at Mount Sinai, USA, Dr. Stephan Urban, University Hospital Heidelberg, Germany and Dr. Linda Dixon, Pirbright Institute, UK, on location in Smögen, they will be asked to join us next year

instead. However, we still would like to arrange a Summer Mini-Symposium on Virology, but this year online and with a Covid-19/SARS-Cov-2 theme, focused to Friday August 21. More information on this event will be distributed closer to the opening of registration. Keep eyes open!

2) Congratulations to the SARS CoV-2 projects that received funding from the European Commission (Horizon 2020), several of which coordinated and/or contributed by members of SSV, including Dr Matti Sällberg, Dr Ali Mirazimi, Dr Gerald McInerney, Dr Gunilla Karlsson Hedestam.

3) We are very happy to announce that the SSV webpage has been updated with a new design, including our new logotype nicely created by Arash Hellysaz, Karolinska Institutet. Go ahead and check it out http://www.swedishvirology.se
To make our webpage even better, please feel free to recommend posts on meetings, courses, jobs or other relevant information about virology by contacting us via our webmaster Marianne.Jansson@med.lu.se

4) Travel grants: PhD student and postdocs are welcome to apply for the SSV travel grants. See guidelines and how to apply on our website, or if you have questions contact Mikael.Berg@slu.se

5) Virology research highlights: In this Newsletter we highlight a publication from Ali Mirazimi's laboratory: *Inhibition of SARS-CoV-2 infections in engineered human tissues using clinical-grade soluble human ACE2*. See below.

6) Anyone that has suggestions on publications that should be highlighted, and are of interest for Swedish virologist, please send this information to Tomas.Bergstrom@microbio.gu.se

7) GDPR: Information on GDPR (General Data Protection Regulation) and the relevance for you as member of SSV can be found at our website.

Best wishes from SSV

Virology Highlights

Inhibition of SARS-CoV-2 infections in engineered human tissues by soluble ACE2.
Recent publication in Cell by Swedish virologist Ali Mirazimi and coauthors, report on the blockade of SARS-CoV-2 by human recombinant soluble Angiotensin converting enzyme 2 (hrsACE2). Inhibition of virus replication was demonstrated in single cell kidney cell cultures as well as in organoids of blood vessel and kidney origins. These results provide promising and important knowledge for the development of antiviral drugs targeting SARS-CoV-2 infection.

Vanessa Monteil V, Kwon H, Prado P, Hagelkrüys A, Wimmer RA, Stahl M, Leopoldi A, Garreta E, Hurtado del Pozo C, Prosper F, Romero JP, Wirnsberger G, Zhang H, Slutsky AS, Conder R, Montserrat N*, Mirazimi A*, Penninger JM*. **Inhibition of SARS-CoV-2 infections in engineered human tissues using clinical-grade soluble human ACE2**. DOI: 10.1016/j.cell.2020.04.004

Abstract

We have previously provided the first genetic evidence that Angiotensin converting enzyme 2 (ACE2) is the critical receptor for SARS-CoV and that ACE2 protects the lung from injury, providing a molecular explanation for the severe lung failure and death due to SARS-CoV infections. ACE2 has now also been identified as a key receptor for SARS-CoV-2 infections and it has been proposed that inhibiting this interaction might be used in treating patients with COVID-19. However, it is not known whether human recombinant soluble ACE2 (hrsACE2) blocks growth of SARS-CoV-2. Here we show that clinical grade hrsACE2 reduced SARS-CoV-2 recovery from Vero cells by a factor of 1,000-5,000. An equivalent mouse rsACE2 had no effect. We also show that SARS-CoV-2 can directly infect engineered human blood vessel organoids and human kidney organoids, which can be inhibited by hrsACE2. These data demonstrate that hrsACE2 can significantly block early stages of SARS-CoV-2 infections.