



## SSV Newsletter, June 2020

Friends and colleagues,

As you know by now, our annual, physical meeting at the lovely island of Smögen, has been cancelled due to the COVID-19 pandemic. Whereas this is of course sad, as we looked forward to another successful meeting, to meet friends and colleagues, the decision is based on the recommendations from the Swedish Public Health Agency and other governmental decisions. Thus, our invited keynote speakers Drs Linda Dixon, Stephan Urban, and Peter Palese have been invited to next years meeting. This year we will instead organize a web-based meeting with excellent keynote speakers: Drs Marion Koopmans, Bart Haagmans, and Stefan Pöhlmann, and the topic will be SARS-CoV-2 and COVID-19, as currently this is the most outstanding topic in virology and will be so at least to the end of 2020. Furthermore, the members of the board and the society are actively discussing research funding in the area of virology with the funding bodies and also politicians. It is now clear for most people that virus-caused infections is an important problem, that we have few drugs/vaccines, and that these infections constitute a burden to health care and are extremely costly for the society at large. As you know the Swedish government allocated some 100 MSEK targeting COVID-19 specifically. More importantly, we have had some success with broad career grants for virologists also being announced by the Swedish Research Council. The fall will be exciting with a new research bill in the pipeline. It is now apparent that our work and our research field is more important than ever!

With these words, we wish you a sunny and healthy summer!

Niklas Arnberg  
Chairman, SSV

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- 1) The upcoming 17th Smögen Summer Symposium will this year be online, and take place August 21. Invited keynote speakers, Marion Koopmans, Bart Haagmans and Stefan Pöhlmann, are all eminent virologists who recently contributed important findings on Covid-19/SARS-Cov-2. In addition, as usual, there will be time for short presentations. For more information and registration see our webpage under [Meetings](#).
  - 2) Do not miss open calls from the Swedish Research Council ([www.vr.se](http://www.vr.se)) including International Postdoc Grants, Starting Grants, Consolidator Grants for research on viruses and virus-caused disease conditions (deadline August 25).
  - 3) Several Career Opportunities, including position as Professor in Medical Virology at Uppsala University and Postdoc in Viral Intestinal Pathophysiology at Linköping University, are now posted on our website under [Jobs](#).

- 4) Congratulations to Ali Mirazimi, and team at SVA/KI, coordinating a large EU-financed Innovative Medicine Initiative (IMI) project on “Modern approaches for developing antivirals against SARS-CoV-2”. This project was granted 6.4 million euros and together with seven other projects selected among 144 applicants.
- 5) Travel grants: PhD students 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](mailto:Mikael.Berg@slu.se)
- 6) Virology research highlights: In this Newsletter we highlight a publication coauthored by Ali Mirazimi and collaborators: *Mechanism of Baricitinib Supports Artificial Intelligence-Predicted Testing in COVID-19 Patients*. See below.
- 7) 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](mailto:Tomas.Bergstrom@microbio.gu.se)

## Happy Midsummer from SSV

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### Virology Highlights

**Mechanism of Baricitinib Supports Artificial Intelligence-Predicted Testing in COVID-19 Patients.** In a recent *EMBO Mol Med* publication with Ali Mirazimi as co-author, the potential use of Baricitinib for treatment of COVID-19 patients was reported on. Baricitinib, an oral Janus kinase (JAK)1/JAK2 inhibitor developed against rheumatoid arthritis, was identified using artificial intelligence –algorithms as a potential drug for COVID-19.

Stebbing J, Krishnan V, de Bono S, Ottaviani S, Casalini G, Richardson PJ, Monteil V, Lauschke VM, Mirazimi A, Youhanna S, Tan YJ, Baldanti F, Sarasini A, Ross Terres JA, Nickoloff BJ, Higgs RE, Rocha G, Byers NL, Schlichting DE, Nirula A, Cardoso A, Corbellino M, Sacco Baricitinib Study Group. **Mechanism of Baricitinib Supports Artificial Intelligence-Predicted Testing in COVID-19 Patients.** *EMBO Mol Med.* 2020 May 30. doi: 10.15252/emmm.202012697. <https://pubmed.ncbi.nlm.nih.gov/32473600/>

#### Abstract

Baricitinib, is an oral Janus kinase (JAK)1/JAK2 inhibitor approved for the treatment of rheumatoid arthritis (RA) that was independently predicted, using artificial intelligence (AI)-algorithms, to be useful for COVID-19 infection via a proposed anti-cytokine effects and as an inhibitor of host cell viral propagation. We evaluated the in vitro pharmacology of baricitinib across relevant leukocyte subpopulations coupled to its in vivo pharmacokinetics and showed it inhibited signaling of cytokines implicated in COVID-19 infection. We validated the AI-predicted biochemical inhibitory effects of baricitinib on human numb-associated kinase (hNAK) members measuring nanomolar affinities for AAK1, BIKE, and GAK. Inhibition of NAKs led to reduced viral infectivity with

baricitinib using human primary liver spheroids. These effects occurred at exposure levels seen clinically. In a case series of patients with bilateral COVID-19 pneumonia, baricitinib treatment was associated with clinical and radiologic recovery, a rapid decline in SARS-CoV-2 viral load, inflammatory markers, and IL-6 levels. Collectively, these data support further evaluation of the anti-cytokine and anti-viral activity of baricitinib and supports its assessment in randomized trials in hospitalized COVID-19 patients.