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Press release

Availability of SARS-CoV-2 assays and Covid-19 immunity profiling.

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Synovo GmbH has implemented the CDC assay for the detection of SARS-CoV-2 – the agent causing the Covid-19 outbreak.

“We can now provide researchers and other professionals quantitative assays of SARS-CoV-2 RNA. We are now also developing assays for antibodies to SARS-CoV-2 to estimate whether blood donors and other individuals have been exposed to the virus. These should be available in the coming weeks to support research into community wide immune status”. Commented Michael Burnet, managing director of Synovo.

In support of its Covid-19 profiling research, Synovo has also joined a European Consortium to develop a point of care assay for SARS-CoV-2, prognostic markers and antibodies to the virus.

“While detection is important, especially early in disease, it needs to be paired with a therapeutic response. What we urgently need is accessible therapies that can be prescribed as soon as the virus is detected in a patient and which could prevent worsening of the disease and thus limit the need for ICU facilities” commented Dr. Burnet.

In the context of therapeutics research, Synovo is applying for German Government funds to bring its candidate therapies to clinical trial. “SARS-CoV-2 was not a market for Pharmaceuticals in the past so all developments are the “redirection” of existing programs that are relevant to Covid-19. It is just as necessary to support these developments as it is vaccines” Said Dr. Burnet

Synovo is building on its previous work in the context of Zika virus¹, pneumonia² and inflammatory diseases³. In particular, it is also investigating the mode of action of combinations of hydroxychloroquine and azithromycin recently reported to be effective by French research teams to determine whether there is a good pharmacological basis for these observations and whether further combinations or improvements may be possible.

“We have been active in Azithromycin-related research for over 20 years and a number of our candidate compounds are improved analogs of Azithromycin with lower dose and more general immune effects. Drugs like hydroxychloroquine or azithromycin can only impact viral replication indirectly by changing host cell biochemistry or moderating opportunistic infections, thus there will always be limits to their effects. However, making use of generic registered drugs like azithromycin, if they are effective, is a useful and efficient stop-gap until more targeted therapies are available” commented Dr. Burnet.

¹ <https://www.noviruses2brain.pt/noviruses2brain-overview/#1573225036075-51f4de0f-8377>

² <http://www.stw.nl/nl/content/mdr-phage-small-molecules-promote-bacterial-killing-phagocytes>

³ https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/prizes/horizon-prizes/better-use-antibiotics_en



Background

About Covid-19 and SARS-CoV-2

One of the large Corona virus family, SARS-CoV-2 causes the disease called Covid-19. Corona viruses cause a range of diseases in humans and animals although thus far, the 3 variants endemic to the human population were associated with "common colds" rather than lethal viral pneumonias. SARS and MERS were similar phenomena to Covid-19, with related viral sequences, but higher mortality.

SARS-CoV-2 is an RNA virus that infects the upper airways and progressively the lower airways, heart and major blood vessels. It enters cells via the Angiotensin Converting Enzyme (ACE2) which is up-regulated in certain forms of cardiovascular disease, and this is proposed as one reason why it is particularly severe in patients with heart disease.

Although apparently mild in children, it appears to be progressively more severe with the increasing age of patients. This is common in some viral diseases where adult immune systems either over-react to the virus, worsening signs, or are unable to raise an effective anti-viral response. The age effects may also reflect cumulative weakening of the lungs and heart with age. Patients with severe disease appear to have a limited lymphocyte response, slowing the immune reaction that would ordinarily neutralise the virus.

Where severe, it also causes inflammation of both the lungs and the heart and major coronary vessels. This inflammation is both a reaction to the damage that the virus does to cells, but also a form of "over-reaction" in which more immune cells than needed arrive at the tissue and amplify signals of distress. This leads to further edema (accumulation of fluid) which fills airways and prevents air reaching the alveoli.

Excess accumulation of immune cells in the lung is particularly dangerous due to edema restricting breathing efficiency. Existing, treatments to manage or reduce edema are, however, suppressive of adaptive immunity and can potentially delay the immune response.

So far, several therapies appear to be effective in severe cases. These include "host modifiers" chloroquin, hydroxy chloroquin and azithromycin in combinations, and the more broad-spectrum anti-virals that interfere with viral replication favipiravir and remdesivir.

About Synovo GmbH

Synovo is a drug discovery company based in Tübingen Germany. It was founded in 2004 and is focused on immune and inflammation-related diseases. It has 54 employees on two sites. It has extensive collaborations with European and international pharmaceutical and biotechnology companies and universities and public sector organisations. Synovo is managed by its founder and managing director Michael Burnet. Prior to founding Synovo, Dr. Burnet was a project manager for Zeneca in the United Kingdom.