Seminar Speaker Series

in the framework of Interreg V-A project CAPSID

presents

Prof. Imre Berger

Max Planck Bristol Centre, UK

The Bristol MultiBac Platform in the COVID19 Response:

New avenues to combat the pandemic

28. 01. 2021 at **14:00**

Online virtual talk via Zoom

Join this talk here

Organized by:

Prof. Imre Berger

University of BRISTOL

Professor of Biochemistry

SEMINAR ANNOTATION

The team headed by Professor Imre Berger from the Max Planck-Bristol Centre for Minimal Biology, used a powerful imaging technique, electron cryo-microscopy (cryo-EM), to analyse SARS-CoV-2 Spike at near atomic resolution. This enabled the researchers to peer deep inside the Spike identifying its molecular composition. Unexpectedly, **the research team analysis revealed the presence of a small molecule, linoleic acid (LA), buried in a tailor-made pocket within the Spike protein.** LA is a free fatty acid, which is indispensable for many cellular functions. The human body cannot produce LA. Instead, the body absorbs this essential molecule through diet. Intriguingly, LA plays a vital role in inflammation and immune modulation, which are both **key elements of COVID-19 disease progression**. LA is also needed to maintain cell membranes in the lungs so that we can breathe properly.

Berger's team also **discovered a druggable pocket in the SARS-CoV-2 Spike protein that could be used to stop the virus from infecting human cells.** Their findings are a potential 'game changer' in defeating the current pandemic and add that small molecule anti-viral drugs developed to target the pocket they discovered could help eliminate COVID-19.

SHORT BIO

Imre Berger was born in Budapest and grew up in Germany. He studied Biochemistry at Leibniz University and Medical School in Hannover, and at MIT in Cambridge, USA. I. Berger carried out his PhD work in molecular biology and X-ray crystallography at MIT's Laboratory of Molecular Structure. After a brief post-doctoral stay at MIT, he joined the Institute for Molecular Biology and Biophysics at ETH Zürich, shifting his focus to eukaryotic multiprotein complexes involved in gene expression. In 2005, he received the *venia legendi* in Biochemistry from ETH and established his research group with a joint appointment in the Gene Expression Programme, Heidelberg. I. Berger has developed the technologies for multiprotein complex production. He has received numerous fellowships and awards for his innovative research.

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- Toelzer C, Gupta K, Yadav SKN, Borucu U, Davidson AD, et al. & **Berger I*** and Schaffitzel C*. Free fatty acid binding pocket in the locked structure of SARS-CoV-2 spike protein. ***Science***. ***2020*** Nov 6;370(6517):725-730.
- Gupta K, Tölzer C, Sari-Ak D, Fitzgerald DJ, Schaffitzel C, **Berger I***. MultiBac: Baculovirus-Mediated Multigene DNA Cargo Delivery in Insect and Mammalian Cells. ***Viruses. 2019*** Feb 26;11(3):198.
- Coscia F, Taler-Verčič A, Chang VT, Sinn L, O'Reilly FJ, Izoré T, Renko M, **Berger I**, Rappsilber J, Turk D, Löwe J*. The structure of human thyroglobulin. ***Nature. 2020*** Feb;578(7796):627-630.

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