

Organizational Meeting of the Microphysiological Systems COVID Research (MPSCoRe) Working Group

On January 29, 2021 NICEATM and the National Centre for the Replacement Refinement and Reduction of Animal Research (NC3Rs) co-hosted the first MPSCoRe meeting.

The closed meeting included people and organizations representing MPS stakeholders and COVID researchers. There were three presentations and an open discussion at the end of the meeting. [A recording of the presentations](#) is available on the MPS webpage on the NICEATM website. The open discussion is not included in the recording.

Overview of the Microphysiological Systems COVID Research (MPSCoRe) Group *(Nicole Kleinstreuer, NICEATM)*

This introductory talk provided an overview of the MPSCoRe working group, which is designed to support and help coordinate global efforts to use tissue chips and other microphysiological systems to study COVID-19 and for use in future infectious disease applications. The aim is to collectively leverage these activities and maximize the scientific, animal reduction, and public health impacts that MPS offer in better understanding and treating COVID-19, and to support their adoption in readiness for the emergence of future diseases with epidemic potential. The composition of the working group, the objectives, and current and planned activities were discussed.

Utilizing microphysiological systems in support of the COVID19 pandemic and beyond *(Kyle Glover, U.S. Department of Defense)*

The COVID19 pandemic has exemplified the power of nature to upend society, even after decades of technological advancements in health and science. However, these technological advances have also been showcased at an impressive scale, as information and tools to fight the virus have accelerated at a fervent pace. Microphysiological systems have advanced tremendously over that last decade, and have a significant, albeit yet to be fully realized, role to play in this pandemic. This talk briefly summarized the incredible events of that last year while highlighting opportunities for MPS to bolster the pandemic response.

Development of a COVID-19 disease portal in the Microphysiology Systems (MPS) Database to accelerate the development of human MPS for testing prospective therapeutics (*Mark Schurdak, University of Pittsburgh*)

The University of Pittsburgh's, [Microphysiology Systems Database](#) (MPS-Db) is an innovative advancement for the MPS community bringing together functions to manage, analyze, share, computationally model and integrate data in one platform. It is the first and only publicly accessible, comprehensive resource for sharing and disseminating MPS data and information currently supporting the MPS community. The expansion of the MPS-Db disease portal and the creation of a comprehensive centralized hub for information on using MPS systems to study COVID-19 infection and pathogenesis will significantly improve the efficiency of researchers obtaining the critical information to inform the design, development, validation, and application of human MPS experimental models for COVID-19 therapeutic development.

Open discussion (*Anthony Holmes, NC3Rs*)

During this open discussion session participants asked further questions of the presenting authors and took a deeper dive into some of the topics raised during the meeting. It also provided an opportunity for discussions to help clarify the role of the working group and define the direction, key objectives and initial programmes of work and outputs that the group should focus on.