WHO R&D Blueprint

COVID-19 Animal Models

Summary of the progress made by the WHO COVID-19 modelling ad hoc expert working group
Covering period Mar 15-Mar26

Chairs

William Dowling, Simon Funnel and César Muñoz-Fontela

WHO Secretariat
Pierre-Stéphane Gsell, Ximena Riveros

Background

In response to the current COVID-19 pandemic, the WHO Blueprint team established several ad hoc Expert working Groups including one focused on COVID-19 disease modelling (COM). The goal of the disease modelling group is to advance the development of COVID-19 medical countermeasures (vaccines, therapeutics and/or drugs). This is being achieved by providing a platform to share data to help reduce duplication of effort and to accelerate learning by sharing outcomes in a secure and confidential workspace. In addition, the principles of reduction, refinement and replacement are being addressed by this international effort. The group is co-chaired by Drs. William Dowling (CEPI), Simon Funnell (PHE) and César Muñoz-Fontela (BNITM) who are seconded to WHO for this task.

Progress to date

As of 26th March 2020, the group includes 92 experts representing 15 countries and 60 research, regulatory or funding entities. The group currently meets weekly to share updates on live studies and to discuss advances in the following areas;

1. COVID-19 comparative pathogenesis in animal models: What models recapitulate human disease with more accuracy?


Outcomes to date

Significant progress has been achieved in the development of large animal models that recapitulate mild COVID-19 disease in humans. In particular, several laboratories across the world have shown with high reproducibility that Rhesus macaques and ferrets are infectable with SARS-CoV-2, show evidence of virus replication and shed virus in nasal swabs. Ongoing studies in these models include testing of therapeutics and vaccine candidates.