



THE PRE-CLINICAL STUDIES UNIT

Clinically relevant models of infection and disease for testing new vaccine candidates, drugs and therapies

Supported by The Pandemic Institute, and based at the University of Liverpool, the Pre-Clinical Studies Unit offers world leading expertise and technical know-how in testing new vaccine candidates, therapeutics, drugs, small molecules and other experimental therapies, using clinically relevant in vitro and in vivo models. In addition to offering established models of infectious disease, our in-house expertise and infrastructure allow us to pivot rapidly to new and emerging infections and develop relevant new models.

OPEN FOR BUSINESS

WHAT WE OFFER

High quality pre-clinical immunogenicity and efficacy data on vaccine candidates, novel experimental therapeutics and other treatments, using the following:

- Organ specific in vitro tissue culture models (respiratory, CNS, GI, skin, mucosal tissues)
- In vivo models of viral and bacterial respiratory carriage, transmission, and pneumonia
- In vivo models of viral and bacterial meningitis and encephalitis
- In vivo models of bacterial sepsis
- Organoid, dynamic biophysiological systems, organ on a chip models

- Immune cell activation assays
- Antibody functional assays
- Opsonophagocytic killing assays
- Vaccine immunisation and protection studies using vaccine antigen candidates with full humoral and cellular immune profiling
- Immunological assays
- Small animal imaging and confocal microscopy

In addition to the established models/assays listed, TPI's Pre-Clinical Studies Unit can also develop (upon emerging need/request) new models for bacterial and viral pathogens. We have state-of-the-art category 2 and 3 facilities for *in vitro* and *in vivo* work, with multiple immunological techniques available, such as mass cytometry, single cell RNA sequencing, 12 colour flow cytometry, cell sorting, IVIS (In Vivo Imaging System) and Confocal imaging.





IN VIVO INFECTION MODELS CURRENTLY ESTABLISHED

- SARS-CoV-2
- Respiratory Syncytial Virus (RSV)
- Influenza A Virus (IAV)
- Streptococcus pneumoniae
- Staphylococcus aureus
- Klebsiella pneumoniae
- Pseudomonas aeruginosa
- Burkholderia cepacia
- Acinetobacter baumannii
- Group A Streptococcus
- Group B Streptococcus
- We also have various humanised mouse models, including ACE2 and FcR mice, Treg deficient mice and other mouse models of immune deficiency.

We hold in the laboratory multiple other pathogens for which models could be established upon request, especially arboviruses of the genus Flavivirus, e.g., Japanese encephalitis virus, West Nile virus, Zika virus, Usutu virus, yellow fever virus, and tick-borne encephalitis virus, among others.



CONTACT US

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The Pandemic Institute partners:

