COUNTERACTING CORONAVIRUS

Understanding a novel virus is the first step in developing effective diagnosis, prophylactic vaccines and therapeutics.

Thanks to its fully fledged, highly advanced range of capabilities to enhance research into infectious pathogens and the prevention and treatment of disease – along with leading research technologies, specialised equipment, and fit-for-purpose laboratories – UQ is well placed in the current fight against coronavirus.

UQ Protein Expression Facility Director **Professor Linda Lua** believes UQ's expertise in immunology, structural biology, vaccine engineering and bioprocessing, and materials fabrication and characterisation has assisted many of the University's COVID-19-related research activities.

"In drug discovery, rapid diagnostics and vaccine development, it's critical to have a comprehensive understanding of the virus-host interaction and the structure and function of key viral proteins," she says.

"UQ has several centres with a range of expertise and diverse equipment on offer to accelerate drug discovery and the development of rapid diagnostic tools and vaccines

For example, the **Australian National Fabrication Facility** - Queensland node offers state-of-the-art fabrication, characterisation and 3D printing services.

This can help create diagnostic devices for early rapid disease identification and also develops and tests personal protective equipment (PPE) to protect against virus transmission.

UQ Infrastructure	Capabilities
Australian Genome Research Facility	Sanger sequencing for validation purposes
Australian National Fabrication Facility–Queensland	Diagnostic devices, PPE manufacture and quality-control, design and fabrication of microfluidic devices, rapid development of medical treatments
Centre for Advanced Imaging	Processing of small molecules via NMR molecular structure determination tools, preclinical molecular imaging, vaccine component monitoring, vaccine safety testing, clinical tracing, long-term patient monitoring
Centre for Microscopy and Microanalysis	Macromolecular and protein structure characterisation via TEM; cryo-EM and use of X-ray protein crystallography for protein structure determination; mass photometry for measurement of macromolecules complexes and their molecular mass.
Protein Expression Facility	Recombinant protein production, high-grade plasmid DNA, serology-specific reagents, protein engineering, bioprocess development, antibody technology
Research Computing Centre	GPU high-performance computer cluster Weiner for processing data from the electron microscopes to produce a 3D model of the "spike" protein
TetraQ	Rodent toxicology and pharmacokinetic services, bioanalytical services

Further information
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