NCRIS
National Research Infrastructure for Australia
An Australian Government Initiative

27 April 2020

RE: NCRIS COVID-19 OFFERING

Please find enclosed a pack describing the offerings provided by a cross-section of NCRIS facilities ready to assist your researchers in the response to the COVID-19 pandemic.

The NCRIS facilities represented in this pack cover a broad spectrum of infrastructures that are **open and available** to researchers working in response to COVID-19.

NCRIS is an initiative of the Australian Government that has resulted from the long-term investment in a program of research infrastructures that are mature and ready to respond to active and emerging needs.

The NCRIS network, infrastructure and expertise is open to engage with you to support:

- Vaccine candidate development
- Clinical trial support
- Drug design and discovery
- Design and delivery of customised, genetically-engineered (e.g., by CRISPR) animal and cell models
- Production of biotherapeutics under Good Manufacturing Practice
- Diagnostic imaging
- DNA and RNA sequencing
- Bioimaging
- Data linkage
- Outcomes monitoring and post-market surveillance
- Personal Protective Equipment and medical device development
- Computing capability - High Performance Computing, Cloud Computing, Data Analysis and Data Collections

To ensure the research community and health professionals can get access to the spectrum of capabilities within NCRIS, we are helping to make this easy by providing a point of first contact to engage with the rich diversity of services, expertise and resources.

Please contact Dr Stuart Newman, CEO of Therapeutic Innovation Australia:

- Phone: 0402 345 736
- Email: s.newman@therapeuticinnovation.com.au

Alternatively, if you have specific requirements please feel free to follow up with the contacts listed on the individual fact sheets included within this pack.

Kind regards,

Dr Stuart Newman, on behalf of

Australian Centre for Disease Preparedness (ACDP, CSIRO), Australian Research Data Commons (ARDC), Bioplatforms Australia, Microscopy Australia, National Computational Infrastructure (NCI), National Imaging Facility (NIF), Pawsey Supercomputing Centre, Phenomics Australia, Australian National Fabrication Facility (ANFF), Population Health Research Network (PHRN), and Therapeutic Innovation Australia (TIA)

CSIRO Australian Centre for Disease Preparedness
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PMB 24, Geelong VIC 3220 Australia

csiro.au | ABN 41 687 119 230

16 April 2020

RE: Australian Centre for Disease Preparedness COVID-19 Offering

ACDP National Collaborative Research Infrastructure Strategy

NCRIS investment in the Australian Centre for Disease Preparedness (ACDP), (formerly AAHL), has enabled CSIRO the opportunity to deliver world-class research infrastructure for use by Australian and overseas researchers to benefit Australian's national disease diagnostic capability and to strengthen the country's biosecurity framework.

The ACDP has extensive laboratories, including animal facilities, able to undertake research on pathogens in risk groups 3 and 4. This means that ACDP can facilitate complex research of high consequence zoonotic pathogens and is recognised nationally and internationally as a centre of excellence in disease diagnosis, research, and policy advice in animal health and human diseases of animal origin.

COVID-19 response

CSIRO is involved in key research in the rapid global response to the novel coronavirus outbreak with ACDP playing a key role in testing of potential vaccines.

- Following successfully growing the virus in the containment labs at ACDP, researchers undertook susceptibility studies in ferrets in order to generate a reliable animal model in which to test vaccines.
- In consultation with the World Health Organisation, vaccine candidates from The University of Oxford and Inovio Pharmaceuticals were identified to undergo the first pre-clinical trials at CSIRO, which are being undertaken at ACDP.
- Researchers at ACDP also continue to investigate the physical and molecular characteristics of this virus and also the nature of the immune response in their animal model.

Facilities

Our modern, high-containment laboratory space and skilled scientific team can be accessed to conduct impactful COVID-19 research projects of national benefit.

Laboratory facilities

- Physical Containment (PC) 4 Zoonosis Suite
- Large animal Facility
- Biosecure Immunology Laboratory
- Bioimaging Facility
- Insectary

These laboratories provide advanced technology and infrastructure for scientists undertaking research requiring the highest levels of biosafety.

For more information regarding access to AAHL's facility for COVID-19 related work please visit

https://www.csiro.au/en/Research/Facilities/AAHL/AHHL-Infrastructure/Accessing-our-facilities

Please note: Due to a high demand for facility access, projects will be subject to a competitive scientific review process and access to the facilities will be prioritized based on scientific merit, available laboratory space and staff resourcing.

Additional research support and services

ACDP's research capabilities include diagnostic assay development, the identification and characterization of new and emerging viruses, comparative immunology, vector studies, preclinical studies of new vaccines and therapeutics, genome engineering for biosecurity purposes and pathogenesis studies.

Quality Certification and Accreditation

ACDP has been independently accredited to ISO 14001:2015, ISO 17025:2017, ISO 17043:2010 and Certification to ISO 9001:2015. We are enrolled in a number of Quality Assurance Programs including those withthe Royal College of Pathologists of Australasia and Certified Service Provider for vendors including Agena, illumina and Agilent.

Additional Resources Available

You will work with ACDP's engagement and operations manager to coordinate and streamline collaboration and access arrangements.

Yours sincerely,

Prof. Trevor Drew OBE, PhD, MSc, CBiol, FRSB
Director
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The Australian National Fabrication Facility

151 Wellington Road, Clayton 3168, Australia

Providing micro and nano fabrication facilities for Australian researchers.

ABN 50 124 231 661

23 April

RE: ANFF COVID-19 OFFERING

National Collaborative Research Infrastructure Strategy

The Australian National Fabrication Facility (ANFF) was founded in 2007 to provide access to micro and nanofabrication equipment, essential to Australia's scientific future.

The ANFF network provides access to more than 500 individual pieces of equipment across 20 sites, and is home to more than 100 experts employed under the ANFF banner that assist approximately 3,000 users a year to conduct nano-oriented research.

ANFF has become critical in translating ideas into products and the development of start-ups in a wide range of tech-based markets.

National Fabrication Facilities Open for Business

The ANFF network has been mobilised to provide support to the national COVID-19 response including:

- Production of face shields for health workers
  - Materials
  - 10000 delivered last Friday with another 10000 scheduled for this Friday.
  - Newcastle also providing 200 or 300 face shields to their local health authorities.
- Production of face shields for Canberra Hospital
  - ACT (Physics maker space)
  - 2000 face shields sent to central ACT health for distribution.
- Sydnov – Jonathan Shemesh – Microfluidic for improved Digital PCR
  - ANFF-NSW, ANFF-Q and possibly ANFF-SA
  - Awaiting outcome of internal grant scheme
  - Looking to the NSW Physical Sciences Fund as a possible source of funding
  - Drafting the projects agreements between UNSW and Sydnov.
  - Where to test the Qld produced polycarbonate designs? Send to NSW to test alongside PDMS ones.
- Testing of Merino wool fabric as possible face mask material
  - ANFF-Q
  - Working on ways to provide testing that will be of value. Working with a local who is coordinating on shore certified testing.
- Calumino Temperature scanner

- Looking to install these at nodes that are remaining open for business.
  - MCN and some hubs may be installing.
  - No other nodes have requested one.
- Confidential organisation 1
  - MCN residents.
  - Technology is possibly for detecting antibodies.
- Confidential organisation 2
  - Looking for cash from MRFF and Vic MedTech accelerator.
  - Based on Loop-mediated isothermal amplification
- Confidential organisation 3
  - Qld based, contacted MCN.
  - Wants to make magnetic beads for RNA extraction
- Face shields
  - Monash's Woodside Innovation Centre has 3D printing capability. NV to pass on face shield details.

Additional Resources Available

ANFF will provide additional resources to accelerate access to the NCRIS asset via

1. Consideration of cash contributions to relevant grants for meritorious research propositions in alignment with MRFF, NHMRC and similar funding agencies.
2. Consideration of meeting direct access costs for the ANFF network (https://www.anff.org.au/capabilities). Should you require burst out capacity or an acceleration of your research effort in support of acute clinical or population health need, ANFF will consider meeting facility costs.
3. We will work with other research infrastructures to coordinate our contributions and minimise the time you need to spend facilitating collaboration and access arrangements.

Yours sincerely,

Ian Griffiths

CHIEF EXECUTIVE OFFICER, ANFF

Australian Research Data Commons

RE: AUSTRALIAN RESEARCH DATA COMMONS COVID-19 OFFERING

National Collaborative Research Infrastructure Strategy

The ARDC response to COVID-19 has three streams, including targeted communications of existing facilities (listed below) to relevant communities; expansion or variation to current projects to optimise the response; and investigation of new activities through the ARDC data challenge flagship program.

Existing infrastructure

ARDC coordinates the Commonwealth Government NCRIS investment in:

- *Nectar Research Cloud* - agile cloud compute resource for researchers, able to quickly scale for high load uses - a collaborative activity across the sector
- *Research Data Retention* – direct and indirect support for the discovery, maintenance, and availability of over 35PB of collaborative collections across all research domains - a collaborative activity across the sector
- *Research Data Australia* - data discovery portal making data collections and assets findable, whether ARDC-supported or not, with discovery also made available via Google.
- *Research Data Alliance* - international research data governance and stewardship organisation, Australia is a foundation partner and ARDC is participating in working groups with the aim of “developing a system for data sharing in public health emergencies that supports scientific research and policy making, including an overarching framework, common tools and processes, and principles that can be embedded in research practice.”
- *Virtual Laboratories* - Galaxy Australia is an ARDC initiative which provides an online workflow and analysis platforms to enable the rapid, collaborative and transparent analysis of novel coronavirus. The Galaxy Australia platform is hosted on the Nectar Research Cloud.

Researchers meeting national merit criteria can access cloud compute and storage resources on the Nectar Research Cloud. More than 20% of resource allocations on the Nectar Research Cloud are for projects in biological, medical and health sciences. The Research Cloud provides pre-built applications including Bioconda, BioLinux, Jupyter Notebooks, R-Studio, and support for running Docker containers.

Policy and Collaboration

- ARDC input was invited by and provided to the OECD Policy Insight "Open science and data sharing in the COVID-19 crisis”
- ARDC input was invited by and provided to the Department of Industry for Australia's participation in the UNESCO "Ministers of Science online dialogue-COVID 19 and Open Sciences"

Services:

- liaison with CSIRO on sample identifier needs for AHL (via their IGSN service)

Skills and workforce development

- ARDC leads and conducts courses on how to collaborate effectively online

Variations to current programs

National Data Assets:

- Proposed adjustment of the scope of National Data Asset project calls to provide a 'special track' for COVID related infrastructure development

BIOPLATFORMS AUSTRALIA

NCRIS National Research Infrastructure for Australia
An Australian Government Initiative

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www.bioplatforms.com
ABN: 40 125 905 599

3 April 2020

RE: BIOPLATFORMS AUSTRALIA COVID-19 OFFERING

National Collaborative Research Infrastructure Strategy

Bioplatforms Australia coordinates the Commonwealth Government NCRIS investment in

- Genomics – DNA and RNA Sequencing, virus particles and host response
- Proteomics – design and production of monoclonal antibodies, protein structure, function, biomarkers
- Metabolomics – diagnostics, biomarkers, host response, antibody production
- Bioinformatics – molecular data analysis, clinical studies

Analytical Facilities Open for Business

The national network of **15 laboratories** (https://www.bioplatforms.com/infrastructure/) is established as a service to biological and medical research and can be readily mobilised to provide support to the national COVID-19 response, including

- diagnostics
- disease surveillance
- patient monitoring
- epidemiology support
- support of drug design and testing
- support of vaccine development and testing

Our laboratory network **remains open**. Laboratories are fitted with state-of the-art instrumentation and are committed to scaling up activity strategically in support of COVID-19 response and research. The network is interoperable and can source reagents and materials, and expertise from around the country on a needs basis. Our professional technical staff are highly qualified and accustomed to sample handling, aseptic technique, service delivery and methodology development. We have capacity to utilise commercially available kits as well as expertise to develop “in-house” diagnostics and screening protocols to handle overflow in acute situations.

Please contact myself or any of the facility leaders and we will work as a one stop shop to assist you with your research infrastructure needs and allow you to remain focused on critical COVID-19 research.

Quality Certification and Accreditation

Bioplatforms facilities hold a variety of ISO, NATA and CDC certifications and accreditations, including:

- ISO9001:2015
- Human Pathology – ISO 15189 (scope currently being extended to include SARS-CoV-2 diagnostic testing)
- NATA AS ISO 15189 – 213
- Animal Health - ISO/IEC 17025: 2017
- Life Sciences - ISO/IEC 17025: 2017
- Chemical Testing - ISO 17025: 2017
- NATA AS ISO 15189 – 213
- Research & Development - ISO/IEC 17025: 2017
- OECD GLP Principles (1997) interpreted for research - Healthcare, Pharmaceutical and Medical Products
- CDC for Vitamin D

We are enrolled in a number of Quality Assurance Programs including those withthe Royal College of Pathologists of Australasia and Certified Service Provider for vendors including Agena, illumina and Agilent.

Additional Resources Available

Bioplatforms Australia will provide additional cash resources to accelerate access to the NCRIS asset via

1. Consideration of cash contributions to relevant grants for meritorious research propositions in alignment with MRFF, NHMRC and similar funding agencies.
2. Consideration of meeting direct access costs for the Bioplatforms network (https://www.bioplatforms.com/infrastructure/). Should you require burst out capacity or an acceleration of your research effort in support of acute clinical or population health need, Bioplatforms will consider meeting facility costs.
3. We will work with other research infrastructures to coordinate our contributions and minimise the time you need to spend facilitating collaboration and access arrangements.

Yours sincerely,

Andrew Gilbert
CHIEF EXECUTIVE, BIOPLATFORMS AUSTRALIA

MICROSCOPY AUSTRALIA

242 Madsen Building, University of Sydney, Camperdown 2006
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20 April 2020

RE: MICROSCOPY AUSTRALIA COVID-19 OFFERING

National Collaborative Research Infrastructure Strategy

Microscopy Australia Microscopy Australia enables access to an array of high-end microscopes and technical experts in strategic locations to efficiently service Australia's microscopy needs. Microscopy Australia is currently coordinating future Commonwealth Government's NCRIS investment in

- cryo electron microscopy,
- atomic scale microscopy,
- 3D correlative microscopy, and
- high sensitivity microanalytical tools.

Many advances in defence, minerals, energy, engineering, manufacturing, communications, medical treatment and diagnostics, environmental management and agriculture, depend on microscopy. Research and innovations in these critical areas underpin diverse industries that not only sustain the economy but improve quality of life.

Microscopy Australia can help you take advantage of the widest range of microscopes and microanalysis techniques in the country.

Analytical Facilities Open for Business

The national network of **9 facilities** (https://micro.org.au/about/contact-us/facility-directory/) is established as a service to manufacturing, geological, biological and medical research and can be readily mobilised to provide support to the national COVID-19 response, including

- diagnostics,
- support of manufacturing design and testing (e.g., PPE, ventilators),
- support of drug design and testing, and
- support of vaccine development and testing.

Our laboratory network **is ready to support COVID-19 responses**. Laboratories are fitted with state-of the-art instrumentation and are committed to scaling up activity strategically in support of COVID-19 response and research. The networked facilities are interoperable and can source instruments, materials and expertise from around the country on a needs basis. Our professional technical staff are highly qualified and accustomed to supporting unique projects and demands. They are highly trained in sample preparation, sample handling, cutting edge technique, service delivery and methodology development.

Please contact myself or any of the facility directors and we will work as a one stop shop to assist you with your research infrastructure needs and allow you to remain focused on critical COVID-19 research.

MICROSCOPY AUSTRALIA

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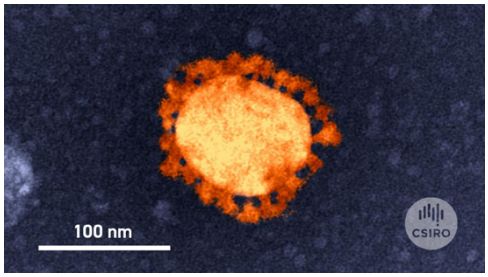
Examples of COVID-19 Support by Microscopy Australia Facilities

Microscopy Australia facilities offer flexibility and adaptability with the expert staff who can provide feedback and improve projects on the cutting-edge instruments. COVID-19 work is already being conducted at a number of facilities.

- Optical microscopy and the expertise of staff are being used to develop methodologies, bespoke equipment and to test the quality and effectiveness of personal protective equipment at the University of South Australia.
- Cryo-electron microscopes at the University of Queensland are being used to understand protein structures in the vaccine development program.
- Electron microscopes at Monash University are being used to understand materials being developed by the University of Melbourne for use in COVID-19 test kits.
- Microscopy Australia's Linked Lab at the CSIRO's high containment Australian Centre for Disease Preparedness, formerly known as the Australian Animal Health Laboratory, has captured TEM images of the SARS-CoV2 virus (right), which causes the COVID-19 disease.



- SEM at our Linked Lab at QUT has supported the development of new highly breathable nanocellulose mask materials that can filter out viruses.
- Additional confidential work is also in progress at a couple of our other facilities and should be announced in the near future.

Additional Resources Available

Microscopy Australia will provide additional resources to accelerate access to the NCRIS asset via

1. Consideration of in-kind contributions to relevant grants for meritorious research propositions in alignment with MRFF, ARC, NHMRC and similar funding agencies.
2. Consideration of reduced access costs for the Microscopy Australia network. Should you require support to accelerate your research efforts in support of a rapid response, Microscopy Australia will consider reducing the access fees. Please contact me for additional details.
3. We will work with other research infrastructures to coordinate our contributions and minimise the time you need to spend on access arrangements.

Yours sincerely,

Lisa Yen
CHIEF OPERATING OFFICER, MICROSCOPY AUSTRALIA

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nci.org.au

22 April 2020

RE: NCI Australia COVID-19 Offering

National Collaborative Research Infrastructure Strategy

NCI Australia coordinates the Commonwealth Government NCRIS investment in:

- Supercomputing – maintenance and operation of Australia's most powerful supercomputer
- Data Services – facilitated access to data collections through data portal and cloud environments
- Data Collections Management – curation and optimisation of nationally and internationally significant reference datasets
- Virtual Research Environments – development of VREs through engagement with research communities
- Data Storage – integration with collocated supercomputer across dedicated high-speed network provides rapid access to research-ready data
- Visualisation – specialist visualisation programmers generate images, videos, and virtual reality to extend the discovery process and communicate high-impact results
- HPC Optimisation – increased scientific productivity and high-resolution science through optimised code and data

Facility Open for Business

Operations of NCI systems and services will continue as normal. NCI are prepared for periods of remote operation now that staff are required to work from home as The Australian National University has declared a complete campus closure.

NCI Australia is supporting the Australian and international research community undertaking COVID-19 research through the provision of streamlined, prioritised and expedited access to computation and data resources. This unprecedented access is made possible by the Federal Government NCRIS funding for the new peak Gadi facility recently commissioned at NCI. Research supported by our infrastructure includes:

- Processing and analysing gene sequences
- Mathematical modelling of the vector stages predicting transmission and containment
- Computational predictions of protein structures associated with COVID-19 and associated biomolecular modelling
- Modelling economics of the COVID-19 global pandemic
- Population mapping and demographics
- Global biosecurity
- Epidemiological modelling

Additional Resources Made Available

NCI Australia has provided accelerated access to computational and data resources to three teams investigating aspects of COVID-19 totalling 40 Million Service Units on NCI's Gadi supercomputer and related data services:

- 13 Million Service Units - *Using large-scale molecular dynamics for rational drug design*
  - *The Australian National University*
  - Associate Professor Megan O'Mara
    Dr Katie Wilson
    Dr Stephen Fairweather
- 12 Million Service Units - *Structure-based drug discovery*
  - *Baker Heart and Diabetes Institute*
  - Associate Professor Michael Inouye
    Dr Sergio Ruiz Carmona
- 15 Million Service Units - *Targeting structural transitions in the COVID fusion protein*
  - *University of Queensland*
  - Professor Alan E. Mark
    Dr Martin Stroet
    Ms Shelley Barfoot

Yours sincerely,

Professor Sean Smith
Director

National Imaging Facility

NCRIS National Research Infrastructure for Australia
An Australian Government Initiative

National Imaging Facility
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9 April 2020

RE: NATIONAL IMAGING FACILITY COVID-19 OFFERING

National Collaborative Research Infrastructure Strategy

The National Imaging Facility (NIF) coordinates the Commonwealth Government NCRIS investment in biomedical imaging infrastructure. NIF is structured as a theme-based capability, with a focus in:

- Animals, Plants, and Materials Imaging
- Human Imaging
- Molecular Imaging and Radiochemistry

Imaging Facilities Open for Business

Our national network of **11 participants** was established as a service to a range of research, including biological and medical research, and can be readily mobilised to provide support to the national COVID-19 response, including:

- Diagnostic imaging
- Patient monitoring
- Support of drug and vaccine design and testing
- Support of PPE and medical device development (i.e., ventilators)
- Long-term patient outcomes
- Clinical tracer production and radiochemical development

Our facilities **remain open**. Laboratories are fitted with state-of the-art instrumentation and are committed to strategically supporting COVID-19 response and research. The network is interoperable and can source expertise and technology from around the country on a needs basis. Our Facility Fellows are highly qualified and accustomed to imaging methods development, service delivery and data analysis. We have a proven capacity to work with NCRIS capabilities to deliver a coordinated pipeline of research.

Quality Certification and Accreditation

NIF facilities hold a variety of certifications and accreditations, including:

- PC2 and QAP1 animal laboratories
- TGA licensed for F18 and other tracers
- ISO9001
- GMP
- GLP
- SPF

National Imaging Facility

NCRIS National Research Infrastructure for Australia
An Australian Government Initiative

Additional Resources Available

Across Australia, NIF provides access to 25 Facility Fellows, acting as points of contact for all infrastructure. Facility Fellows are key to the success of NIF, providing strategic advice to facility users on the most appropriate imaging tools and protocols, the optimal use of imaging modalities and experimental design.

In addition, 5 Informatics Fellows provide data management and analysis expertise. Informatics Fellows ensure that best practice is pursued with respect to analysis, archiving, and re-use of data. National activities driven by NIF Informatics Fellows include:

- Trusted Data Repositories
- Characterisation Virtual Laboratory
- Secure distributed repositories for sensitive data
- Analysis workflow packages such as MRTrix3 and Nipype/Banana

Please contact myself or any of our facility leaders or Fellows and we will work to assist you with your research infrastructure needs and allow you to remain focused on critical COVID-19 research.

Yours sincerely,

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1 April 2020

Pawsey Supercomputing Centre COVID-19 Offering

National Collaborative Research Infrastructure Strategy

The Pawsey Supercomputing Centre is a national publicly funded High-Performance Computing and Data (HPCD) facility, one of only two Tier 1 HPCD facilities within Australia's National Research Infrastructure Network.

An unincorporated joint venture between CSIRO, Western Australia's four public universities, supported by the State and Federal governments, Pawsey provides world-class expertise and infrastructure in supercomputing, cloud, data-intensive analysis, storage, and visualisation in State and National science and research priority areas such as radio astronomy, energy and resources, engineering and health. The Centre plays a key role in the development of the Square Kilometre Array (SKA) project.

The Australian Government has invested over $170 million to initially establish, and more recently upgrade Pawsey infrastructure.

Facilities and services

The Pawsey Supercomputer Centre provides access to petascale computing, cloud, storage and data analytics infrastructure and expertise across Australia.

The Centre's compute capacity has grown by orders of magnitude since its inception in 2012. Currently, Pawsey is undergoing a further $70 million upgrade to secure our next generation of supercomputers, data, visualisation and supporting infrastructure to maintain our position at the forefront of global advances in supercomputing technology and capability.

Magnus, the Centre petascale supercomputer, will be replaced in 2021 as part of the Capital Refresh project funded by the Australian Government. An early element of the Capital Refresh project is the recently upgraded Nimbus cloud. From 1 April researchers have access to 7,400 virtual cores with 9 PB of storage, 58 TB of RAM, 12 NVidia V100 GPU nodes and 100 Gb Ethernet networking as part of the new Nimbus Cloud.

Since 27 March, as part of the COVID-19 Accelerated Access joint Initiatives that Pawsey organised with the other Tier-1 Supercomputing Centre in Canberra, NCI, the new Nimbus allocation was immediately re-prioritised to support researchers involved in COVID-19 research to gain accelerated access.

Additional Resources Available

Data storage and expert support services (e.g. code optimisation, workflow debugging, visualisation expertise, data management advice, training, etc.) and remote visualisation services will be provided by dedicated support staff when appropriate.

Up to today, four projects have been granted an allocation on a Pawsey system, an additional project has been supported via training, and there are two more projects about to receive a new allocation.

The Nimbus call as part of COVID-19 Accelerated Access Initiatives is ongoing and researchers are welcome to apply at any time.

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PAWSEY supercomputing centre

Applying for Cloud resources

There are significant resources available to COVID-19 researchers at no cost.

Resources available are as follows:

Facility-System	Allocation per project
Pawsey – Cloud	Allocations up to 500 cores will be considered, with up to 100TB storage available for use during 2020 - 2021
Pawsey – Cloud Storage	Up to 0.5 PB will be considered for use during the project

All researchers requiring Pawsey resources should visit the Cloud application portal, marking their application with "COVID-19":

https://apply.pawsey.org.au/

Authentication of the Pawsey Application Portal is via Australian Access Federation (AAF) credentials. Individuals who do not have an AAF login are not excluded and should contact help@pawsey.org.au for further support.

Assessment criteria for access to Pawsey Cloud resources include:

- Is this project research?
- Can this project be run on Pawsey's Cloud infrastructure?

Applications for Cloud resources can be received at any time: there is no closing date. Applications will be processed on receipt, and resources can be made available within 24 hours.

Researchers can contact help@pawsey.org.au for further details at any time.

The Pawsey Supercomputing Centre is an unincorporated joint venture between CSIRO, Curtin University, ECU Edith Cowan University, Murdoch University, The University of Western Australia *and proudly funded by* NCRIS National Research Infrastructure for Australia, Government of Western Australia

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PAWSEY supercomputing centre

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PHENOMICS AUSTRALIA COVID-19 OFFERING

Custom pre-clinical models for fundamental and applied research

Enabled by the National Collaborative Research Infrastructure Strategy (NCRIS)

Phenomics Australia (formerly the Australian Phenomics Network, APN) is the Australian Commonwealth Government's key investment in the provision of national research infrastructure **to support the creation, characterisation and curation of pre-clinical model systems for biomedical research.** Our phenomics approach through a national partnership provides tools for researchers and clinicians to discover gene function, to determine the genetic causes of disease, and to develop new therapies tailored to individuals.

The COVID-19 pandemic has given rise to several national research challenges that Phenomics Australia is urgently addressing. These include:

1. Demand for the creation and supply of specific pre-clinical models for COVID-19 research;
2. Restricted supply chains for the domestic and international distribution of experimental animals and reagents; and
3. The sudden and unplanned imposition of restricted laboratory services and research activity that will require planning and provision to accelerate restoration of full operations.

To address these three pressing challenges, Phenomics Australia offers three complementary priority response measures:

1. **Expedited production of customised pre-clinical models in Australia;**
2. **Logistics support to enable acquisition, expansion, and distribution of pre-clinical models (locally-produced and/or internationally-sourced); and**
3. **Preparedness to enable a rapid recovery of both research infrastructure facility operations and research laboratory activities once the current restrictions are lifted.**

If you or your collaborators need support for your research and are looking for these or other solutions, please contact us.

If Phenomics Australia is unable to offer a solution, we will help find an organisation that can.

Phenomics Australia
Enabling genomic medicine

Enabled by NCRIS National Research Infrastructure for Australia
An Australian Government Initiative

Facilities Open for Business

Phenomics Australia's partner laboratories offer state-of-the-art expertise, technologies and instrumentation committed to strategically prioritising support for COVID-19-related research. Our partner laboratories collaborate to source reagents, materials, animals, and expertise both nationally and internationally. We also offer project management services for complex research investigations for and with the research community and industry.

Phenomics Australia **remains open and operational for model production and distribution** and has been mobilised to rapidly provide support to the national COVID-19 response, including for:

- design and delivery of customised, genetically-engineered (e.g. by CRISPR) animal and cell models;
- improved understanding of COVID-19 pathogenesis;
- discovery of therapeutic targets;
- novel drug design, efficacy, and safety testing;
- models and analyses for pre-clinical trials;
- vaccine development and testing;
- maintaining a source for national and international supply and distribution of customised animal and cell resources;
- husbandry – mouse colony maintenance, expansion, and distribution;
- cryopreservation and reanimation of mouse strains through the Australian Phenome Bank;
- rapid colony expansion to effectively once the current operational restrictions are lifted;
- secure supply of essential materials;
- coordinated priorities, investments and collaborative activities;
- assisting with project design, costings, and grant applications and
- coordinate unilateral and multilateral responses to provide precision medicine healthcare solutions.

Phenomics Australia's partners can collaborate with other NCRIS capabilities to deliver coordinated access to the full portfolio of national research infrastructure.

If you are seeking support for your COVID-19-related research or response measures in particular, or other research activities, please contact us or any of our facility leaders as detailed on our website at http://australianphenomics.org.au/

CONTACT

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Population Health Research Network
www.phrn.org.au
phrn@uwa.edu.au

POPULATION HEALTH RESEARCH NETWORK COVID-19 OFFERING

National Collaborative Research Infrastructure Strategy

The Population Health Research Network (PHRN) coordinates the Australian Government investment in infrastructure for linkage/integration of population-based health and other human services data and secure access to these data.

Linked data resources include:

- Administrative data collected by the Australian Government and all state and territory governments
- Registry data including data from state and territory cancer registries
- Some clinical and some genomics data

Data linkage facilities open for business

PHRN's national network comprising eight participants (https://www.phrn.org.au/about-us/participants/) supports data linkage and integration services within and between Australian jurisdictions. A number of these services are already supporting COVID-19 related activities and can be mobilised to provide support to the national COVID-19 response, including:

- Linkage of patient data
- Secure remote access data laboratory authorised to hold government data
- Disease surveillance
- Patient monitoring
- Support for vaccine testing
- Long-term patient outcomes

Our network **remains open**. The network is interoperable and can source expertise, technology and data from around the country. Our expert staff are highly qualified and experienced in linkage of patient data, including population-based administrative data (such as hospital admissions, notifiable diseases and death data) as well as linkage of research cohort data. In addition, we provide secure file transfer and secure remote access services. We are able to work with other NCRIS capabilities to deliver coordinated access to national research infrastructure.

Quality Certification and Accreditation

PHRN facilities hold a variety of certifications and accreditations, including:

- ISO 27001
- Australian Government-recognised IRAP assessment
- Australian Government Accredited Integrating Authority

Additional Resources Available

PHRN is able to provide advice on the availability of data linkage and linked data resources across Australia and on the design of studies using linked data. We can also coordinate data access for multi-state and cross-jurisdictional projects. In addition, we support:

- An Online Application System providing a standard online application form for multi-state and cross-jurisdictional data
- The Secure Unified Research Environment (SURE), a remote data access laboratory that can accommodate very large linked data projects including genomics projects.
- A number of jurisdictional linked data repositories

We also have access to data linkage expertise in developed countries across the globe including in UK, Europe and North America.

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RE: THERAPEUTIC INNOVATION AUSTRALIA COVID-19 OFFERING

National Collaborative Research Infrastructure Strategy

Therapeutic Innovation Australia (TIA), the lead agent for the NCRIS Translating Health Discoveries project, is a national consortium of research infrastructure that supports translation of discoveries into therapeutic products. TIA's vision is to enable and accelerate the translation of research discoveries along the development pipeline by ensuring that excellent translational research services are accessible by the Australian translational research community. To implement this vision, TIA has partnered with leading national research infrastructure facilities across three capabilities:

- Biologics (vaccines, protein-based products and monoclonal antibodies)
- Cell and Gene Therapies (cellular immunotherapy, CAR-T therapy, viral vectors and regenerative medicine)
- Small Molecules (pharmaceutical products)

Therapeutic Development Facilities Remain Open for Business

As we respond to challenges posed by the COVID-19 outbreak, TIA's network of 14 core facilities and 8 compound library screening facilities continue to be accessible by public and private sector researchers (www.therapeuticinnovation.com.au/capabilities). TIA facilities are currently enabling therapeutic development projects in support of national and international efforts to combat COVID-19, including:

- Vaccine candidate development
- Process development for biologics
- TGA-licensed GMP testing to support production
- Pilot-scale GMP production
- TGA-licenced production of cell therapies for clinical trial and patient use
- Patient sample collection and apheresis
- Supply and screening of known drug libraries
- Drug optimisation and advice on development strategy
- Preclinical and toxicological testing of small molecules, biologics and vaccine candidates
- Clinical trial support

TIA's facilities **remain open**. Each facility is a national leader in its field and has a core of experienced and expert staff supported by state-of-the-art equipment. Several TIA facilities are currently heavily involved in COVID-19-related projects and can offer advice and guidance based on current experience.

Please contact myself or any of the facility leaders to discuss which of our facilities would best meet your research infrastructure needs. We are ready to assist with your COVID-19 related research.

Enabled by NCRIS National Research Infrastructure for Australia
An Australian Government Initiative

Quality Certification and Accreditation

TIA facilities hold a variety of certifications and accreditations including:

- ISO14644-1/10
- ISO9001
- ISO15189
- ISO17025
- cGMP - TGA, Australian Pesticides and Veterinary Medicines Authority
- cGLP
- GCP
- FDA 21 Code of Federal Regulation
- Foundation for the Accreditation of Cellular Therapy

TIA facilities have considerable experience in development of therapeutics from candidate identification through to production and clinical application in hospital settings. Several facilities offer advice and consultancy services for quality management.

Additional Resources Available

TIA offers subsidised access to translational research capabilities by priority projects via its **Pipeline Accelerator** schemes, which offer fixed value vouchers to researchers and industry (including SMEs) allowing access to TIA-supported translational research capabilities at further reduced cost.

The Accelerator schemes are designed to be able to **respond quickly** to the needs of researchers and industry by facilitating access to our expertise and technical capabilities.

Commencing in April, TIA is implementing a special round of the Pipeline Accelerator scheme focussed on projects to combat COVID-19. For more information on this scheme, please visit www.therapeuticinnovation.com.au/accelerator.

Yours sincerely,

Stuart Newman

CHIEF EXECUTIVE OFFICER, THERAPEUTIC INNOVATION AUSTRALIA