NCRIS Health Group

Enabling health innovation and translation

We work together using world-class research infrastructure to turn health discoveries into better prevention, diagnosis and treatments for Australians.



NCRIS
National Research Infrastructure for Australia
An Australian Government Initiative
Health Group

Australian Government

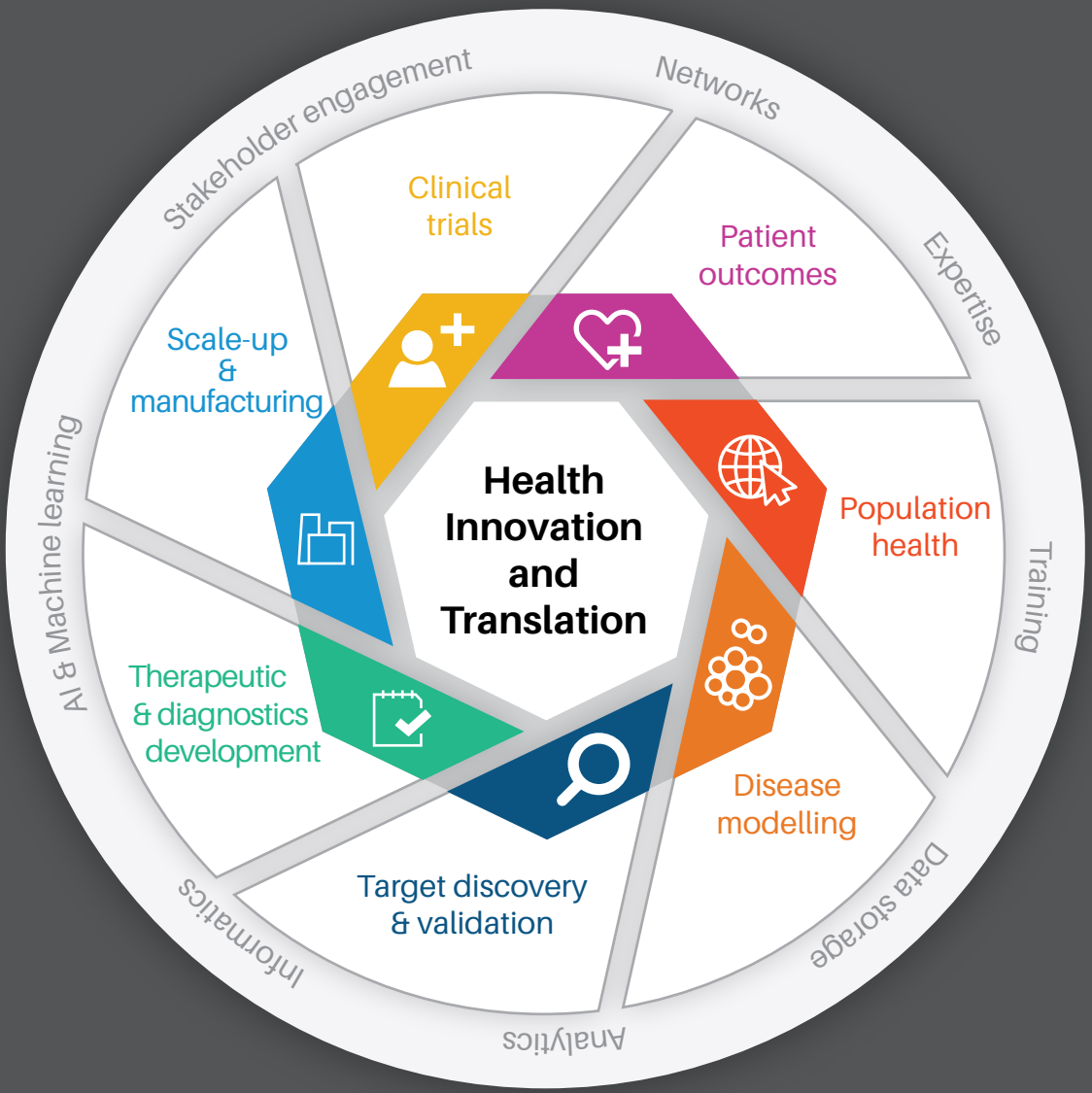
The NCRIS Health Group improves Australia's health and reduces our disease burden

We tackle complex, multidisciplinary medical challenges that cannot be solved by a single organisation or area of research alone.

The NCRIS Health Group connects and coordinates access to experts and infrastructure so researchers, clinicians and industry can collaborate at a national scale, solve problems faster, and translate their discoveries into real-world health benefits.

Our combined experts, data and tools have enabled groundbreaking work such as:

- modelling to understand how diseases develop
- developing tools for diagnosis, monitoring and treatment
- analysing population health data to understand influences on community health
- testing personalised, precision medicines
- accelerating the discovery of new drug targets
- testing and manufacturing medical devices and products
- supporting innovative clinical trials
- running advanced analytics on data within secure environments for new insights into disease.



Read our case studies

Health Group providers are tackling critical challenges such as:



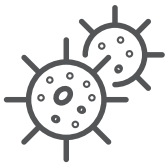
Beating cancers

- Improving melanoma detection, diagnosis, treatment for all Australians
- New antibody reveals ovarian and bladder cancers, then delivers treatment



Improving heart health

- Fighting Australia's leading killer by collaborating on data, genetics, drugs, imaging
- Biotech startup uses NCRIS to build mini heart model for heart disease answers



Battling bacteria

- Defence against antibiotic-resistant infections driven by coordinated national research
- Investing in national preparedness: new Australian antibiotic enters Phase 1 trials



Tackling chronic conditions

- Delivering dementia and ageing research for better quality of life for older Australians
- Harnessing linked health data to transform endometriosis diagnosis and care



Advancing RNA treatments and vaccines

- Australian science advances global access to mRNA vaccines and next-gen therapies
- Closing the gap in Australia's ability to test home-grown RNA treatments and vaccines

NCRIS means access to world-leading expertise, tools and services

Australia's National Collaborative Research Infrastructure Strategy (NCRIS) gives researchers and industry access to critical equipment, data, services and expertise to enable world-leading research and development for the benefit of all Australians.

The NCRIS Health Group accelerates Australian health research and industry innovation, reducing the time and costs of getting new ideas to patients.

Our 10 specialised providers work together to give clinicians and researchers a seamless pipeline for translating their ideas into solutions for diagnosis, treatment, protocols and devices.

Without the NCRIS Health Group, Australia would see slower medical advances, less effective and slower disease responses, increasing health inequity and growing healthcare costs.

We help underpin the quality, safety and future readiness of Australia's health system.

NCRIS Health Group providers

ANFF

The Australian National Fabrication Facility provides open access to micro and nanofabrication equipment for developing new MedTech products and improving current production methods.

ARDC
Australian Research Data Commons

The Australian Research Data Commons delivers data infrastructure to create, discover, integrate, analyse and reuse health and medical data assets from across the health system.

BIOPLATFORMS AUSTRALIA

Bioplatforms Australia provides infrastructure and expertise in genomics, proteomics, metabolomics, synthetic biology and bioinformatics.

EMBL Australia

EMBL Australia enables access to infrastructure, data resources, and expertise in Europe, and fosters the next generation of life-science researchers in Australia.

MICROSCOPY AUSTRALIA

Microscopy Australia enables health research by providing nationally coordinated access to advanced microscopes and expertise to accelerate discovery, diagnosis and translation.

ANSTO
National Deuteration Facility

National Deuteration Facility (at Australian Nuclear Science and Technology Organisation) offers molecular deuteration to investigate the relationship between molecular structure and function, for the benefit of Australian science.

NATIONAL IMAGING FACILITY

National Imaging Facility provides Australia's advanced imaging network, including preclinical, clinical, human and animal imaging, radiochemistry, and imaging data analysis.

Phenomics Australia
Enabling precision medicine

Phenomics Australia provides and applies preclinical models, genome engineering, screening, phenotyping, biobanking and pathology services.

THERAPEUTIC INNOVATION AUSTRALIA

Therapeutic Innovation Australia enables access to expertise and services to accelerate the translation of lab discoveries into new therapeutic products.

DATA CONNECT AUSTRALIA

Data Connect Australia (formerly the Population Health Research Network or PHRN) is Australia's national infrastructure for discovering, securely linking and enabling access to health and human services data through integrated data linkage services, secure research environments, a metadata platform and national support services.

Beating cancers

Improving melanoma detection, diagnosis, treatment for all Australians

Australia leads the world in melanoma rates, with over 18,000 diagnoses each year. The NCRIS Health Group's collaborative, sustained efforts have delivered lasting national and global impact.

Bioplatforms Australia provided early strategic genomics investment to reveal driving mutations for melanoma: the foundational datasets stratified which patients might respond to expensive inhibitor drugs and who wouldn't. Phenomics Australia has strengthened this work by ensuring data could be analysed at scale and shared efficiently. The Australian Research Data Commons provided the digital infrastructure and strategic leadership to support this distributed data ecosystem, using Phenomics Australia's data processing. Australian National Fabrication Facility's work finding melanoma through capturing and profiling cells supports better detection for patients.

This system is now powering the largest Australian melanoma cohort study ever, with 15,000 participants. It is transforming early detection through 3D total-body advanced imaging and National Imaging Facility expertise, scanning the whole body in under a second and creating a detailed digital avatar of all moles and skin lesions.

Together, the NCRIS Health Group has enabled the pipeline that accelerates early diagnosis, informs national screening programs, and offers real-world health and economic benefits.

"I think it's certainly fair to say that our group is leading the world in this kind of interdisciplinary melanoma research. We want to introduce a paradigm shift in how melanoma and skin cancer is diagnosed in Australia because it works beautifully!"

Prof H. Peter Soyer, ACRF ACEMID leader

Transforming early diagnosis with a 3D model:

1 second

92 cameras

up to 9000 skin spots

In 2015, the 5-year survival rate for melanoma was **less than 5%** in 2025, it's **over 50%**



New antibody reveals ovarian and bladder cancers, then delivers treatment

A promising Australian ovarian cancer therapy has progressed from discovery to first-in-human trials.

National Imaging Facility provided world-class imaging to detect and track the cancers with precision, and Therapeutic Innovation Australia supported the complex steps needed to manufacture a clinical-grade antibody safely and at scale through the Pipeline Accelerator voucher scheme. National Imaging Facility delivered advanced imaging, radiochemistry and clinical trial coordination, ensuring rapid progress without reliance on overseas systems.

Together, these nationally funded providers formed a seamless, end-to-end pipeline, enabling an Australian-developed innovation to enter first in-human trials and offering new hope for patients with hard-to-treat ovarian and bladder cancers.

The National Deuteration Facility supplies the deuterium-labelled standards used in a new blood test for breast cancer diagnosis, soon to be rolled out nationally.

"Having national research facilities available has been a game changer – without them, I couldn't have done what I have, and they came through at exactly the right time for the research that I was doing."

Prof John Hooper, Cancer Biology Research Group leader, Mater Research Institute

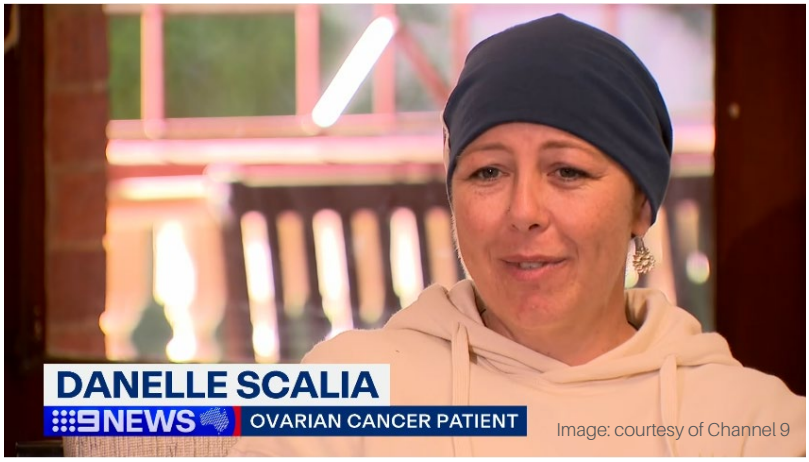


Image: courtesy of Channel 9

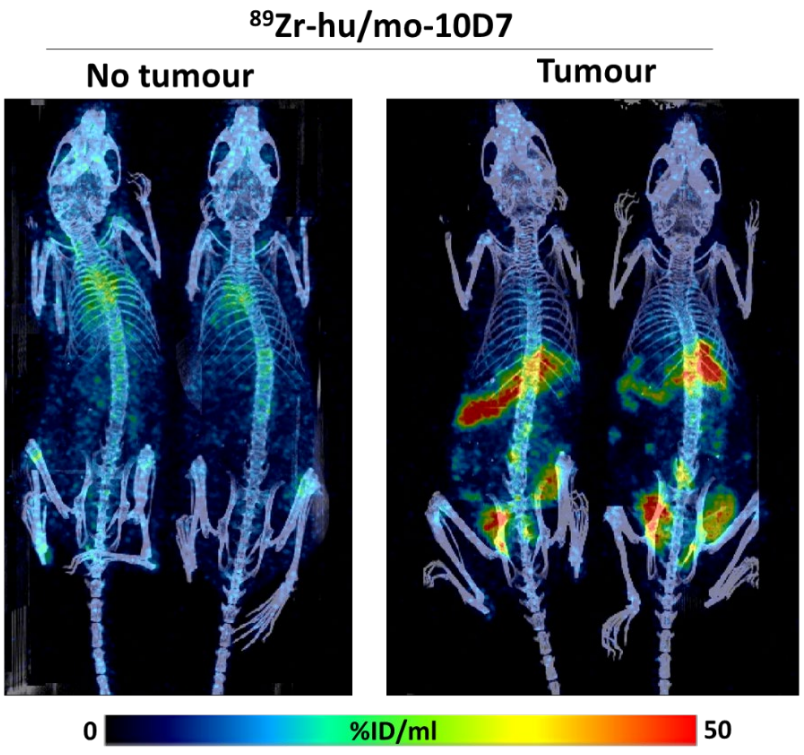


Image: Prof John Hooper

The supported project received
$1.9 million

MRFF funding for an ovarian cancer trial
$950,000

from the CUREator scheme for a bladder cancer trial
$1.8 million
through an NHMRC Ideas Grant

Improving heart health

Fighting Australia's leading killer by collaborating on data, genetics, drugs, imaging

Coronary heart disease remains Australia's leading cause of death, and the NCRIS Health Group is helping transform cardiovascular research and patient care.

Bioplatforms Australia first supported development of the BioHEART biobank that links de-identified health data with genetic, imaging, metabolic and treatment outcomes. This led to a coordinated national effort that translated into the CAD Frontiers consortium – gathering researchers, clinicians and industry – supported by NCRIS providers including Bioplatforms Australia, Data Connect Australia (formerly the PHRN), Phenomics Australia and the National Imaging Facility.

Therapeutic Innovation Australia, via its Pipeline Accelerator awards, also enabled researchers to move toward producing a safe and scalable stem cell therapy alternative to transplantation.

Together, Health Group providers have variously supported data management, analysis and sharing through the Australian Cardiovascular Data Commons; found new potential drug targets; received significant funding and industry engagement; and created spin-out companies.

Uniting the cardiovascular research community and strengthening our national research capacity has already created clinical impacts for Australian patients.

"It is thought that more than 400,000 Australians have had a heart attack at some stage in their lives and that there is roughly one heart attack every 10 minutes. Through our research, we have the opportunity to change the negative impact of these statistics."

A/Prof James Chong, Westmead Institute for Medical Research

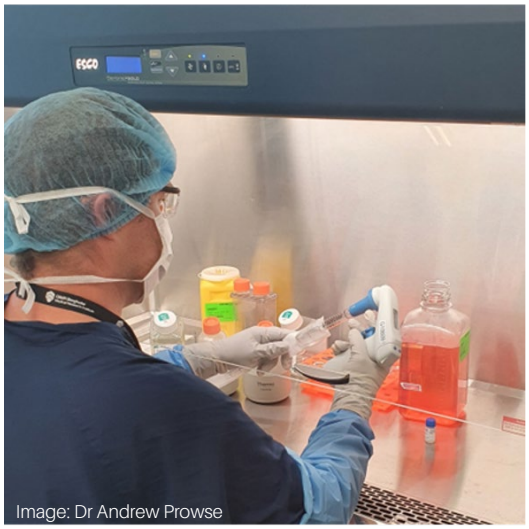


Image: Dr Andrew Prowse

Coronary heart disease is responsible for about

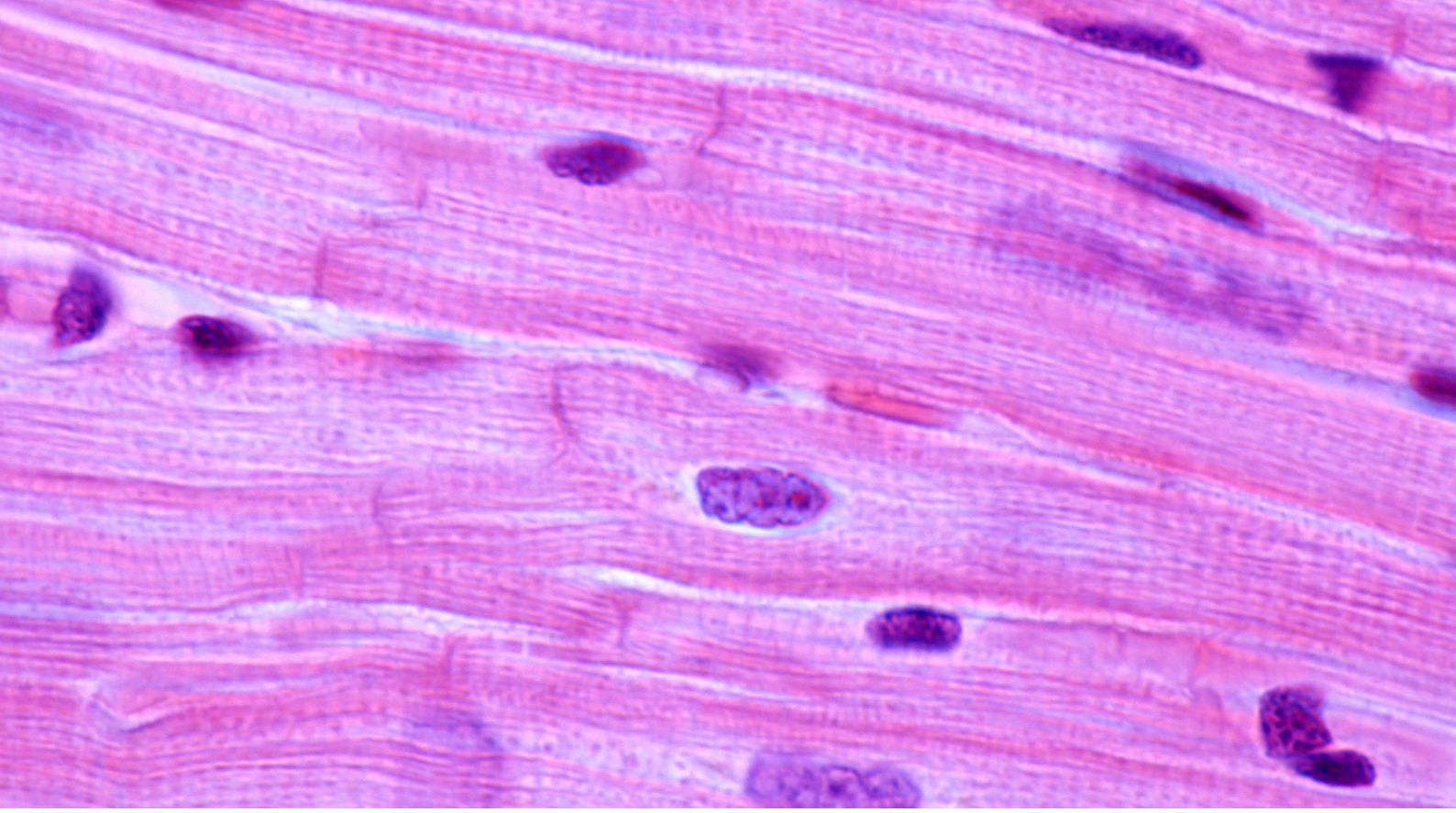
1 in 10 deaths per day

for Australians

First Nations adults have coronary heart disease at more than

twice the rate

of non-Indigenous adults



Biotech startup uses NCRIS to build mini heart model for heart disease answers

Australian researchers have developed a world-first heart-mimicking 'cardiac organoid' that models human heart tissue to unlock the root causes of heart failure. This breakthrough builds on the NCRIS Health Group's providers that combine advanced disease modelling, high-resolution imaging and precision fabrication.

Professor James Hudson was awarded a Phenomics Australia Pipeline Accelerator voucher, enabling access to infrastructure which accelerated organoid development and genetic disease modelling. Microscopy Australia's facilities were used to verify that the organoid cells' internal structures closely matched those found in real human heart cells. Australian National Fabrication Facility's precision engineering manufactures the moulds for growing the organoids on a high-throughput scale.

The biotech start-up Dynomics used the NCRIS Health Group's integrated, nationally funded platforms to move from discovery to unprecedented insights into cardiac biology – a tool that promises to transform cardiovascular drug discovery and treatment understanding.

"The support of the voucher scheme enabled us to generate a novel line, which ... provided really important information to show that these cells resemble native cardiac cells. We hope to now extend these findings and discover new therapeutics."

Prof James Hudson, QIMR Berghofer

Cardiovascular disease remains the leading cause of death worldwide.

In Australia alone, each day

157 individuals

experience an acute coronary event, and

112 suffer a stroke

Battling bacteria

Defence against antibiotic-resistant infections driven by coordinated national research

Australian researchers and industry partners have used the NCRIS Health Group capabilities to confront infectious diseases that kill more people globally than cancer and drive rising healthcare costs, such as sepsis, pneumonia and meningitis.

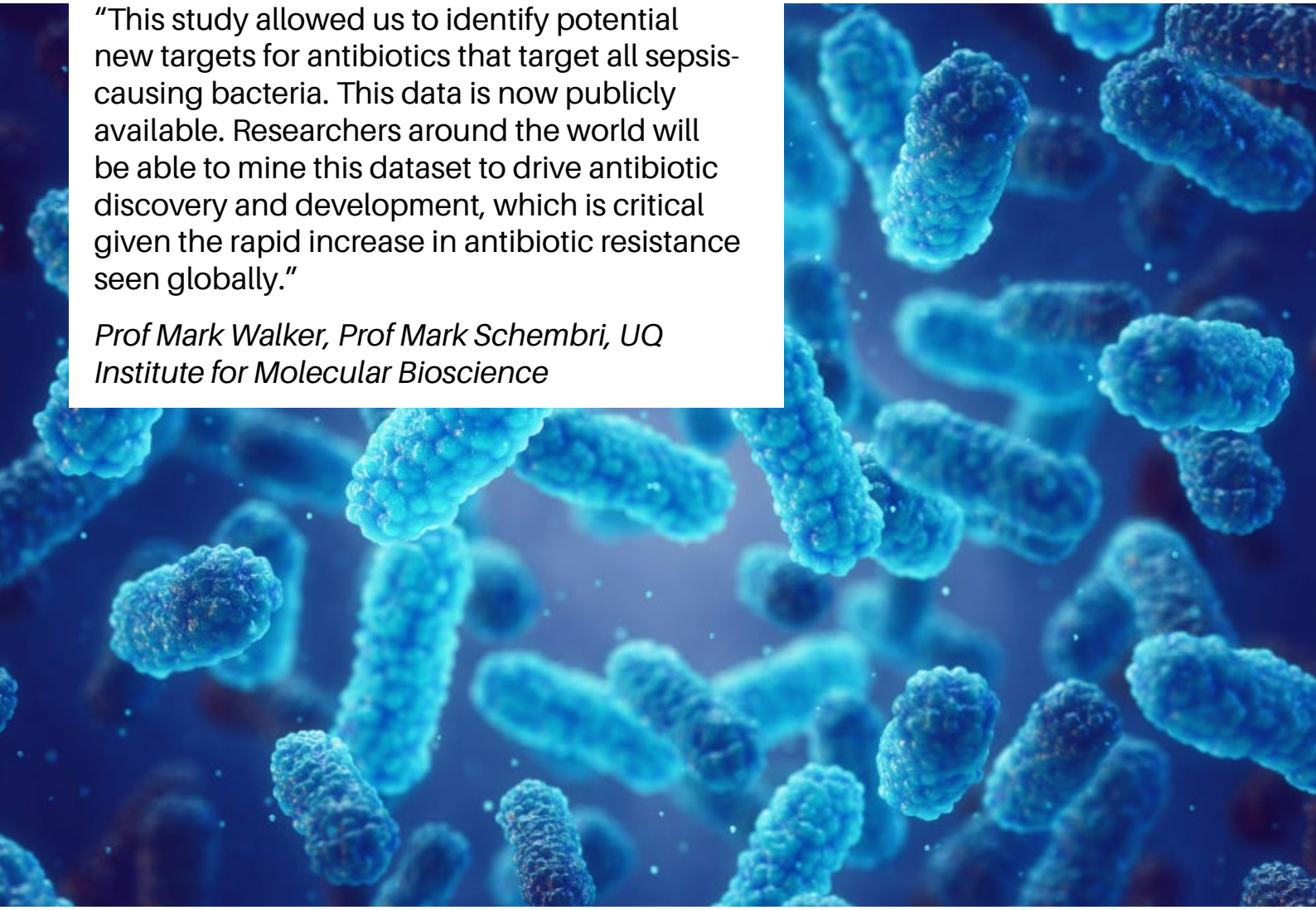
Bioplatforms Australia – through the Antibiotic Resistant Pathogens Framework Data Initiative – created data resources to study virus evolution to help with new clinical treatments; improve early diagnosis, treatment, and prevention of life-threatening bacterial infections; coordinate national teams; and help researchers store, share and analyse data.

This work has guided new strategies that reduce people's illnesses without worsening resistance. The NCRIS Health Group has turned molecular insight into vaccine development, strengthening Australia's capacity to address resistant infections and protect public health.

Invasive pneumococcal diseases
(severe pneumonia, meningitis and bloodstream infections) were at a
20-year high
in 2024, and cause significant illness and mortality in Australia

"This study allowed us to identify potential new targets for antibiotics that target all sepsis-causing bacteria. This data is now publicly available. Researchers around the world will be able to mine this dataset to drive antibiotic discovery and development, which is critical given the rapid increase in antibiotic resistance seen globally."

Prof Mark Walker, Prof Mark Schembri, UQ Institute for Molecular Bioscience



Investing in national preparedness: new Australian antibiotic enters Phase 1 trials

Supported by the NCRIS Health Group, Australian researchers working with industry have developed a promising new antibiotic to tackle drug-resistant bacteria that cause life-threatening infections such as sepsis. Antibiotic resistance already affects tens of thousands of Australians each year and is a growing global threat.

Researchers used the NCRIS providers Phenomics Australia and National Deuteration Facility to test its safety, side effects and how the new drug works in the body – generating the high-quality data needed to move from laboratory discovery to human trials. The new drug has now successfully entered Phase 1 clinical trials. Shared capabilities enabled faster collaboration, rigorous testing and confidence in the early results, accelerating the process toward clinical trials.

The Australian Research Data Commons also supported a tool to assess if a bacteria-killing phage is suitable for targeted therapy within 10 minutes. Phages identified using this tool have then been imaged at Microscopy Australia revealing mechanics that help to explain why some are more effective at killing bacteria than others.

This case illustrates how NCRIS Health Group infrastructure enables Australia's healthcare systems with preparedness and prevention.

Each year, sepsis affects over

55,000 Australians

and causes about

8,500 deaths

Antibiotic resistance costs the Australian economy about

$700 million

a year

"Since 2013, Professor Li and his team have been utilising the unique services offered by Phenomics Australia. … Due to the success of the collaboration, there have been a number of publications and advancements in drug development for multidrug-resistant organisms."

Prof Janet Keast, University of Melbourne



Tackling chronic conditions

Improving health outcomes for Australia's ageing population

Delivering dementia and ageing research for better quality of life for older Australians requires long-term evidence, advanced imaging and real-world data. NCRIS Health Group providers are addressing the challenge of improving the quality, safety and effectiveness of care in later years.

Data Connect Australia (formerly the PHRN) has securely linked hospital, screening and mortality data, allowing researchers to follow thousands of older people over 3 decades without repeated clinic visits. This has reduced bias, improved understanding of ageing-related risks, and informed better screening and prevention strategies.

The National Imaging Facility has supported dementia research and treatment development by providing advanced MRI and PET imaging essential for enabling the approval of the first disease-modifying treatment (donanemab) for early-stage Alzheimer's disease in Australia. Microscopy Australia enabled an Australian spin-off that is commercialising a new drug candidate to treat agitation and aggression in dementia – now in phase 2 clinical trials.

The Australian Research Data Commons provides a secure online platform for researchers to combine and analyse data from dementia studies from around the world.

NCRIS Health Group providers are turning complex data and imaging into safer, more effective care for older Australians with real-world evidence for clinicians and policymakers.

Dementia is a huge health burden for Australians. It is the

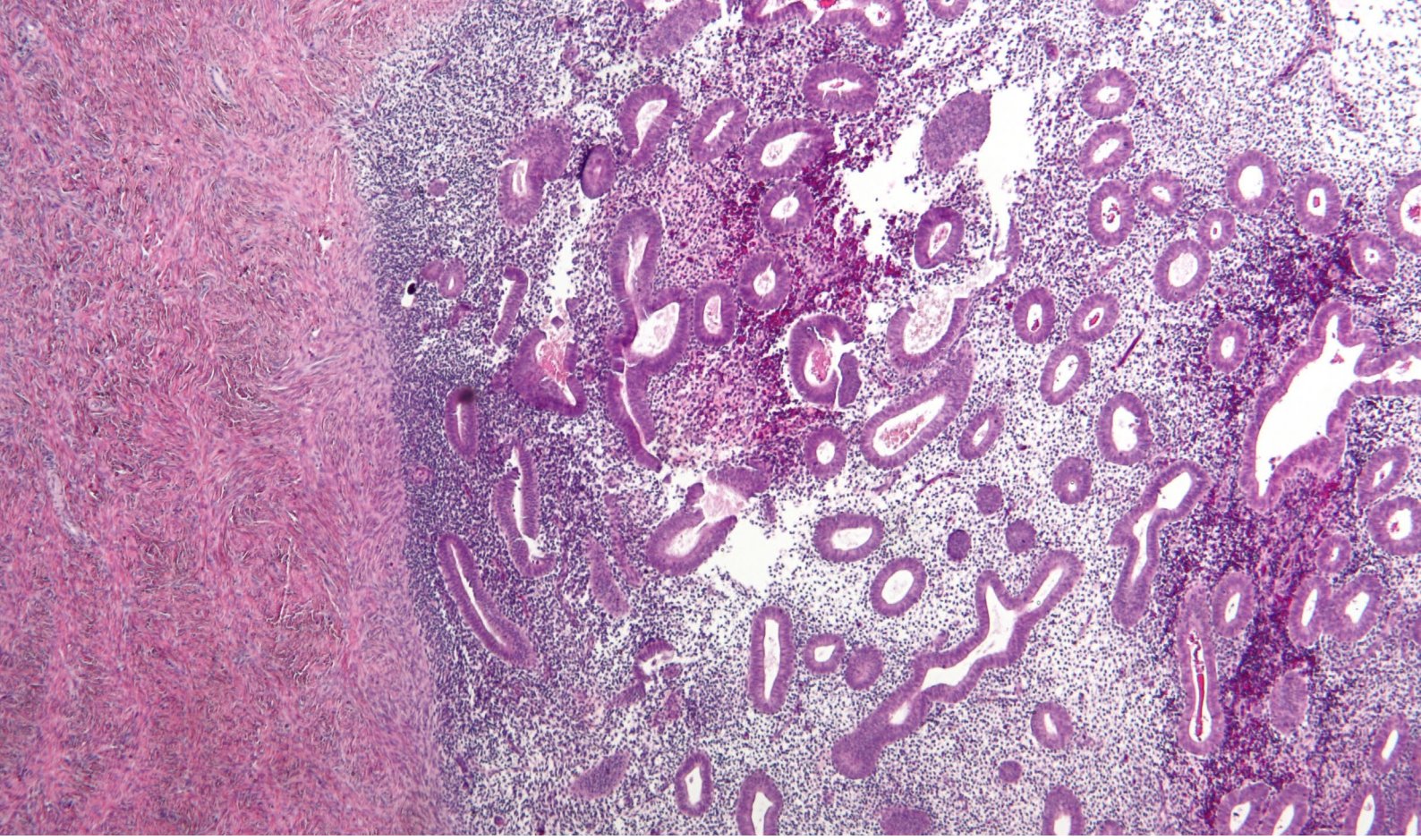
second-leading cause of death

in Australia, affecting nearly half a million Australians, and numbers are expected to double by 2058

"These new therapies are the first to address the underlying disease process in Alzheimer's disease. The approval of donanemab will most likely herald other agents, along with combination therapies. It's an important new era for the management of Alzheimer's disease."

Prof Michael Breakspear, Hunter Medical Research Institute Imaging Centre





Harnessing linked health data to transform endometriosis diagnosis and care

Endometriosis affects millions of women and girls worldwide, and an estimated 1 in 7 in Australia, but often goes undiagnosed for years. NCRIS Health Group providers are helping researchers uncover the full impact of endometriosis.

Since 1996, the Australian Longitudinal Study on Women's Health has collected survey data from 57,000 women and, with support from Data Connect Australia (formerly the PHRN), links survey data with hospital and health records. This powerful combination allows researchers to track prevalence, risk factors, co-morbidities, and long-term outcomes. Findings show diagnosis prevalence, with many patients facing chronic pain, reproductive complications and mental health challenges.

By enabling large-scale, linked data analysis, the NCRIS Health Group infrastructure supports practical efforts for tools such as an endometriosis risk calculator with clinical guidelines for health professionals, improving diagnosis and care for Australian women.

"We found that early diagnosis is the key to better outcomes for women. Having a diagnosis before fertility treatment levelled the playing field – outcomes were no different for early-diagnosed women and women without endometriosis."

Prof Gita Mishra, The University of Queensland

40,500
Australian women were hospitalised in 2021–22 for endometriosis-related issues.

It was the
20th most common
reason for hospitalisation among women aged 15–44

Advancing RNA treatments and vaccines

Australian science advances global access to mRNA vaccines and next-gen therapies

mRNA vaccines have transformed global health, but rely on lipid nanoparticles (the stable carriers that protect and deliver mRNA) that need ultra-cold storage and tend to accumulate mostly in the liver. This limits their effectiveness, restricts transport and increases cost. NCRIS Health Group providers are working to lift these constraints.

ANSTO's National Deuteration Facility enabled an international collaboration to study how lipid nanoparticles behave under different conditions by supplying specially modified lipids to increase their stability while maintaining vaccine performance. A biotech giant has since taken up the customised lipids to commercialise individualised mRNA treatments.

Researchers also used the NCRIS Health Group providers to direct the lipid nanoparticles to places other than the liver. Phenomics Australia supported access to the mouse lines used for the in-vivo imaging of mRNA-lipid nanoparticle distribution, Australian National Fabrication Facility imaging checked the mRNA went where it needed to, high-resolution imaging at Microscopy Australia confirmed the size and shape of the lipid nanoparticles which influences where they go in the body and how effectively they deliver mRNA, National Imaging Facility advanced imaging tracked successful delivery, and a Therapeutic Innovation Australia-supported facility manufactured the nanoparticles.

Through these unique materials, innovative measurement and national coordination, NCRIS Health Group providers helped Australian science strengthen the world's access to next-generation vaccines and mRNA therapies.



Image: Base Facility

200+

human RNA vaccines and therapeutics under development globally

~$8 billion

Australia's RNA sector could add to our GDP over 10 years to 2033

"ANSTO's National Deuteration Facility has been the only facility worldwide supplying many of the lipids used in the lipid nanoparticles of mRNA vaccines in their deuterium-labelled form, enabling researchers and industry to trace and investigate the structure and function of these drug-delivery vehicles under diverse conditions."

Dr Tamim Darwish, National Deuteration Facility Director

Closing the gap in Australia's ability to test home-grown RNA treatments and vaccines

mRNA vaccines have recently transformed the fight against infectious diseases such as COVID-19, and RNA therapeutics are now showing significant promise for treating conditions such as cancer, auto-immune and metabolic diseases. But Australian researchers face a critical gap in their local capability to test and assure the quality of Australia's emerging RNA medicines.

EMBL Australia scientists led the establishment of an RNA mass spectrometry platform that coordinates expertise across universities, hospitals and industry to define and work towards meeting that national need. The platform enables long-term and international collaboration and skills development. Bioplatforms Australia provides access to advanced molecular analysis and mass spectrometry infrastructure, allowing detailed assessment of RNA structure, stability and safety.

Together, these NCRIS Health Group providers support domestic development of next-generation RNA technologies and vaccines. It reduces our reliance on overseas services, accelerates translation to clinical trials, and helps deliver safer, faster pathways to new treatments across cancer, infectious, autoimmune and metabolic diseases.

The new RNA mass spectrometry platform, awarded

$4 million

by the Medical Research Future Fund (MRFF) brings together

16 investigators

from

6 Australian universities and research institutes

and

2 hospitals

"The surge in RNA therapeutic development and investment since the COVID-19 pandemic has created a demand for domestic services for RNA mass spectrometry. Before, if you wanted to find a place that provided a full package of analytical services for people developing RNA therapeutics and studying RNA, you would likely have had to collaborate with someone outside of Australia."

Prof Chen Davidovich, Monash Biomedicine Discovery Institute



Image: Monash University



Contact our providers

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