



UNSW
Kirby Institute

Kirby Institute Annual Report 2022



UNSW
SYDNEY



The Kirby Institute is a world-leading health research institute at UNSW Sydney. We work to eliminate infectious diseases, globally. Focused in Australia and the Asia-Pacific region, our work improves and protects human health, wellbeing and ability to thrive.

On site in Kempsey, NSW for 'Sexual Health Enhanced Walkabout'
CREDIT: Thunderbox Films

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The Kirby Institute at UNSW Sydney is located on the Traditional Lands of the Bidjigal Peoples.

We acknowledge the Traditional Owners of Country throughout Australia, and Aboriginal and Torres Strait Islander people's continuing connection to culture, land, sea, waters, and community.

We pay our respects to Elders both past and present.

Message from our Director

Scientia Professor Anthony Kelleher



2022 has been another exceptional year. We collectively continued to navigate the COVID-19 pandemic, from lockdowns and outbreaks to the rise of hybrid immunity and the easing of restrictions. It is safe to say we find ourselves in a changed world.

At the Kirby Institute, we continued our broad program of research to understand and control COVID-19 from the laboratory through to the wider social impacts, in order to prevent its worst outcomes. There have been important discoveries on the immune profile of long COVID, and we have made major contributions to ongoing surveillance and modelling of the pandemic, which has enabled appropriate planning of public health responses.

Simultaneously, we have been dedicated to continuing to address the infectious disease health challenges of the day.

I have been proud of the contributions our research has made in Australia and globally across a wide range of infectious diseases and their impact, particularly in marginalised and at-risk populations.

We have been very fortunate to welcome a number of Aboriginal and Torres Strait Islander staff to the Kirby Institute in 2022, who are leading and collaborating on Aboriginal and Torres Strait Islander health research alongside Aboriginal communities and community-controlled

health organisations. I would like to thank our Manager of Aboriginal and Torres Strait Islander health research, Robert Monaghan, for his leadership in coordinating a number of cultural awareness workshops this year, alongside Big River Connections. As an institute, we are committed to enhancing our Aboriginal and Torres Strait Islander cultural competency and safety and I look forward to continuing to expand this important offering.

Among some significant funding successes, predominantly through various Australian Government schemes, we also very gratefully received generous philanthropic funding in 2022. Vitalik Buterin, via his Balvi Philanthropic Fund, made a very generous gift of \$5 million towards enhancing EPIWATCH, an open-source, AI-driven platform to detect infectious threats. And we thank our Patron, The Hon Michael Kirby AC CMG, for generously supporting the TraX study, enabling the rapid establishment of this important study to address the threat of mpox (monkeypox) when it emerged. We thank our donors for their generous support, without which much of our work would not be possible.

It has been wonderful to see the recommencement of in-person graduation ceremonies, and we were delighted to acknowledge and celebrate

16 PhD completions in 2022. This is a remarkable individual achievement and testament to the hard work of our students and their supervisors through exceptionally challenging times.

There have also been a significant number of staff achievements throughout the year. Behzad Hajarizadeh was promoted to Associate Professor, alongside five promotions to senior lecturer: Nila Dharan, David Boettiger, Skye McGregor, Hamish McManus and Lise Lafferty; and two promotions to Lecturer: Amy Kwon and Alison Marshall. There were also an outstanding number of staff and students who received various awards from colleagues and collaborators, including a prestigious Eureka Prize awarded to Professor Raina MacLyntré, which you will read about in this report.

The second half of 2022 brought with it a return to some level of normalcy, with in office working resuming. Of course, we are still amid a pandemic, and must continue to practise safe interaction, but it has been extraordinary to reflect on the scientific advancement, collaboration, collegiality and strength of our colleagues over the past few years, and celebrate some remarkable achievements, including those laid out in this report.

Message from our Patron

The Honourable Michael Kirby AC CMG



2022 was a year in which, at least for the public, the immediate threat and fear of the COVID-19 pandemic started to ease. Many of us returned to normal life, but did so knowing that excellent research institutions like the Kirby Institute would continue to have COVID-19 as a major priority. It brought me comfort to know that Kirby Institute researchers were tracking the numbers of infections, designing treatments, prioritising the vulnerable, and analysing each new variant as it arrived on Australian shores. Experts from the Kirby Institute became familiar figures in the media because of their prominent roles in explaining the science of the COVID pandemic, the importance of prevention, and the need to involve patients and the general community in the practices which are essential to prevent the spread of the virus. In many ways, the Kirby Institute and its scientists communicated to the public the lessons of transparency and open discussion that, earlier, played an important part in HIV and AIDS.

The emergence of mpox (monkeypox) in early 2022 once again put our research community to the test. For those of us who lived through the HIV epidemic, a terrible but familiar fear set in. Impacting predominantly gay and bisexual men, there was potential to repeat the mistakes made in the early days of the HIV epidemic.

But the research community were quick to respond, putting the lessons learned as long ago as HIV, and as recently as COVID-19, into practice. We have extensive evidence demonstrating the effectiveness of stigma-free, community-driven public health initiatives. And by the end of 2022, much of the at-risk community was vaccinated against mpox. According to the Kirby Institute-led TraX survey, almost 90 per cent of people at highest risk of mpox had received at least one dose of vaccine ahead of Sydney World Pride. A remarkable achievement in a very short period of time.

Scientia Professor David Cooper AC, the Kirby Institute's inaugural director, practised the gold standard of infectious disease research for marginalised populations. Each year he is remembered through the David Cooper Lecture. In 2022, we were immensely fortunate to have former Prime Minister, The Honourable Julia Gillard AC, deliver the lecture. Her poignant reflections on the pandemic, especially with regard to inequitable access and distribution of health innovations, including vaccines and testing, gave us all pause for thought, reinforcing and reinvigorating our focus to prioritise those in greatest need. This is the *raison d'être* of the Kirby Institute.

And, we were delighted to celebrate a great accolade for our friend and

colleague, Professor Basil Donovan, who was made an Officer of the Order of Australia (AO) in the Queen's Birthday Honours. Basil was very fittingly recognised "for distinguished service to medicine in the field of sexual health through tertiary education, research and advisory roles". As an Australian and global leader in sexual health research, and terrific advocate for marginalised communities throughout his career, it is an excellent and well-deserved tribute.

In this report, you will read about the many ways in which researchers at the Kirby Institute are improving the health of our most marginalised populations. They worked in partnership with rural and remote Aboriginal and Torres Strait Islander health services on a program of improved testing options for infectious diseases. In Papua New Guinea and Vanuatu, they are working with local authorities to progress the elimination of cervical cancer – a preventable disease which sees unacceptably high rates in these nations. And among people who use drugs and people who are incarcerated, our institute's researchers are working to improve access to testing for hepatitis C.

These are just some of a plethora of ways in which the Kirby Institute is pursuing its overarching goal of equitable access to health.

2022 at a glance

We fight disease by spreading solutions

Infectious diseases work by spreading through individuals, communities and populations. At the Kirby Institute, we deliver solutions the same way. As a world-leading health research organisation, we focus on putting communities at the heart of our research. That way, we are better able to design tests, treatments and cures that have the greatest chance of success, helping us to eliminate infectious diseases globally.

We discover, develop, implement, and evaluate solutions to infectious diseases. What makes these solutions unique is that they are designed to be scaled for maximum impact across diverse communities, populations, and regions.

We do this via a highly successful, three step approach:

1. **Understanding:** the impacts of infectious diseases in individuals and populations.
2. **Intervention:** an holistic approach to developing, testing, and evaluating new strategies to prevent and treat infectious diseases.
3. **Implementation:** a consultative approach to working with affected and at-risk communities to deliver evidence-based health solutions.

Equality drives us

Infectious diseases disproportionately affect marginalised populations. We work with at-risk communities, ensuring the most effective interventions and treatments reach those who need them the most.

The Kirby Institute received:

\$57,228,390
from new and continuing
external grants in 2022

\$10,751,463
in philanthropic funding
in 2022



RIGHT: Annett Howe and Anthony Kelleher in the Kirby Institute laboratories



2
NHMRC
Program Grants



3
NHMRC
Project Grants



10
NHMRC
Partnership Grants



12
NHMRC Fellowships and
Investigator Grants



3
NHMRC Centre for
Research Excellence Grants



2
ARC
Research Grants



8
Medical Research
Future Fund Grants



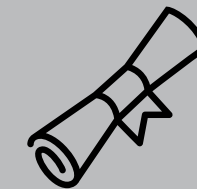
15
National Institutes of Health
(USA) Grants



319
staff
members



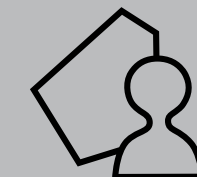
16
PhD
completions



8
academic
promotions



43
Kirby Institute Seminar Series
talks held



81
postgraduate
students



30
international postgraduate
students from 20 countries



984
collaborations in
52 countries on 6 continents

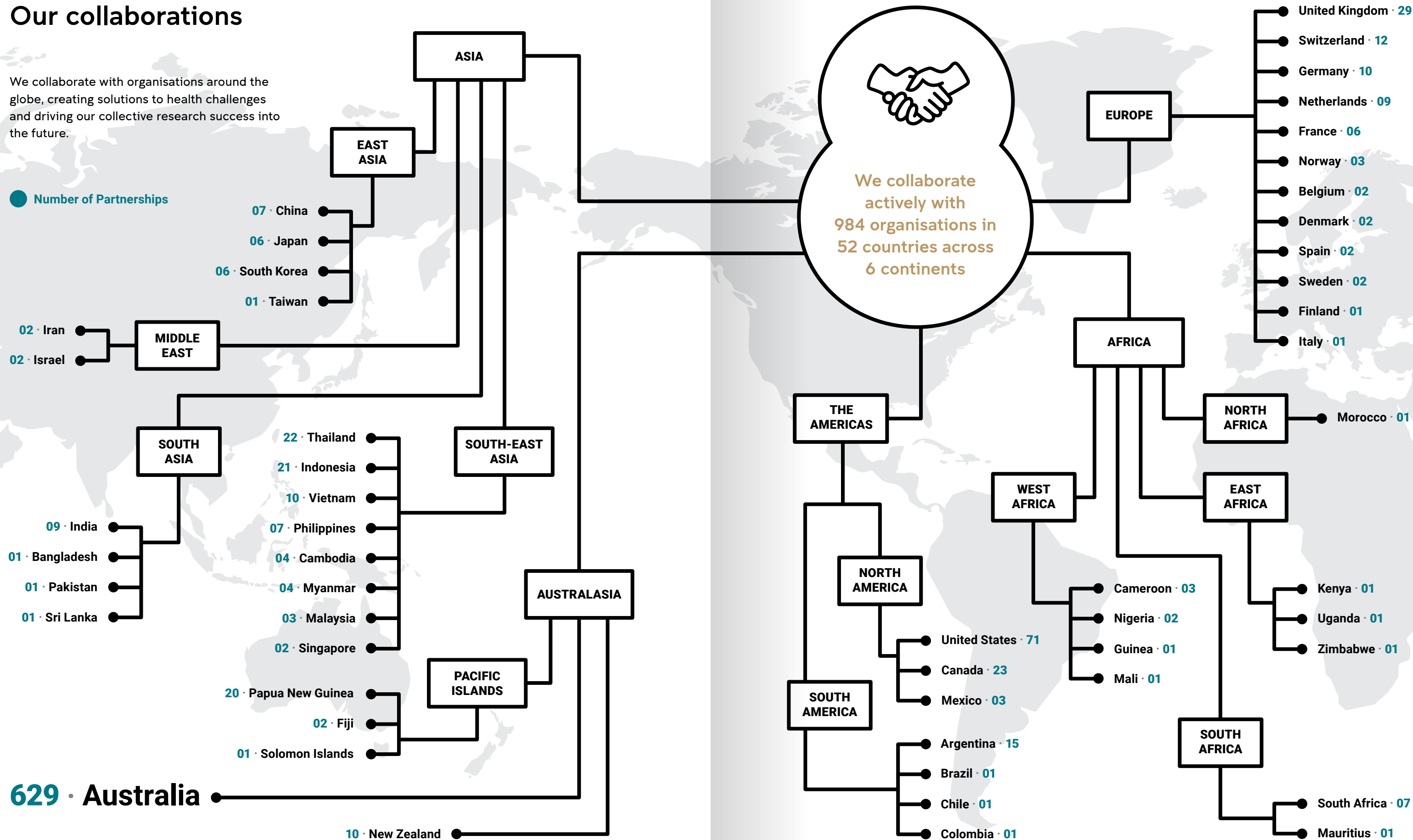


753
peer reviewed
publications

Our collaborations

We collaborate with organisations around the globe, creating solutions to health challenges and driving our collective research success into the future.

● Number of Partnerships



Our research

At its core, our mission is very simple: to ensure no infectious disease is left unchallenged. Focused in Australia and the Asia-Pacific region – but with global impact – our work improves human health and wellbeing.



Aboriginal and Torres Strait Islander health



“The barber chair is something that we’re now using as a space to get people healthy and get people well. It’s not just about the haircut, it’s about the conversation.”

Brian Dowd
Walkabout Barber

Enhanced sexual health for young Aboriginal men

Sexually transmissible infections (STIs) impact Aboriginal and Torres Strait Islander peoples at higher rates than non-Indigenous Australians, particularly among young people in rural and remote communities.

The ongoing impacts of colonisation, social issues and inadequate access to health services are factors that increase the risk of STIs in remote Aboriginal and Torres Strait Islander communities.

‘Sexual Health Enhanced Walkabout’ is a pilot project that is co-designed by Aboriginal communities and the Kirby Institute to improve health service engagement and sexual health awareness for young Aboriginal and Torres Strait Islander men. The project is funded by Durex.

“These are complex problems, and the answers won’t be found in universities; they’re found here, in communities,” said Robert Monaghan, who is the Manager of Aboriginal and Torres Strait Islander health research at the Kirby Institute.

For this project, the Kirby Institute partnered with Walkabout Barber, an established and innovative Aboriginal-led health promotion program that ‘combines haircuts with mental health first aid’, offering suicide prevention and wellbeing training to young Aboriginal people across Australia, often in hard-to-reach locations.

“For the pilot project, we partnered with this existing service and headed out to the rural NSW town of Kempsey to initiate discussions with young men about sexual health, and where appropriate, provided access to STI testing,” said Mr Monaghan.

Dr Skye McGregor from the Kirby Institute said the initiative is all about normalising conversations about sexual health. “It shouldn’t be something that’s outside everyday life, it should be something that is integrated in a holistic way into life,” she said.

Mr Monaghan said he’s looking forward to continuing this work.

“The pilot visit to Kempsey was successful in multiple ways. We connected a number of young men to sexual health services and started important conversations in the community. But we also proved that doing research differently can be successful in Aboriginal communities. We built a project around a concept of values, and we built methodologies around having yarns and we now have a successful framework to do more Aboriginal community-led research,” he said.

TOP: Robert Monaghan, Kirby Institute Manager of Aboriginal and Torres Strait Islander health research and Brian Dowd, founder of Walkabout Barber
CREDIT: Thunderbox Films

PAGE 11 LEFT: Kirby Institute researchers on site in Kempsey, NSW for ‘Sexual Health Enhanced Walkabout’
CREDIT: Thunderbox Films

PAGE 11, RIGHT: A health worker giving out specimen jars for STI testing
CREDIT: Thunderbox Films

Implementing improved infectious disease testing in remote Aboriginal communities

Infectious disease rates are unacceptably high for many Aboriginal and Torres Strait Islander communities, and the nearest laboratory may be hundreds of kilometres away, leading to lengthy delays in the receipt of test results.

People living in these regions tend to have higher levels of poverty, fewer job opportunities, limited or overcrowded households, limited access to healthcare and associated medical services including diagnostic testing, and multiple chronic comorbidities. This contributes to many infectious diseases having a disproportionately greater impact in these communities.

A partnership between the Kirby Institute and the National Aboriginal Community Controlled Health Organisation (NACCHO) is working to improve testing and treatment for infectious diseases, through developing a national framework for a type of testing called 'point-of-care' testing.

"This test is offered and conducted on site, with results available within an hour. Depending on the disease, in the case of a positive test, it means same-day treatment and

public health responses such as contact tracing can be implemented immediately," said Professor Rebecca Guy, who is leading the research at the Kirby Institute.

2022 was a big year for program implementation. By the end of the year, there were 100 sites offering molecular point-of-care testing for respiratory infections (SARS-CoV-2, influenza A and B and respiratory syncytial virus) and 55 sites offering chlamydia, gonorrhoea and trichomoniasis point-of-care tests.

"Most of these sites are remote or very remote, which can make establishing new sites challenging. There was extensive consultation with Aboriginal Community Controlled Health Organisations, government health services, laboratories and other key stakeholders," said Mr Robert Monaghan from the Kirby Institute. "In 2022, more than 120,000 tests were offered across the combined programs; an incredible achievement."

This is the first program to take on a fully integrated, multi-disease health systems approach to infectious disease point-of-care testing in primary care. It will continue to be scaled up nationally and expanded to include other priority infectious disease point-of-care tests as they become available.

Aboriginal cultural awareness training at the Kirby Institute

Over the past two years, more than 100 Kirby Institute staff have undertaken Aboriginal and Torres Strait Islander cultural awareness and ethical research training. This training is designed to improve cultural understanding and create safer workplaces for Aboriginal and Torres Strait Islander employees.

"In organising these sessions, we recognise the reality that we all need to be better informed and have greater understanding, in order to make our workplaces safe and empowering for First Nations people," said Kirby Institute Director, Professor Anthony Kelleher.

Mr Robert Monaghan, Manager of Aboriginal and Torres Strait Islander health research said the sessions represent important progress in cultural sensitivity at the Institute.

"The Kirby Institute has many hard-working researchers who work in partnership with First Nations communities to improve health, but we rarely take a moment to consider the broader structures that lead to disadvantage. These sessions allowed us to pause, and to create dialogue and understanding, as well as engage on an emotional and spiritual level with our complex histories," he said.



Hayden Crowley

"My Aboriginal heritage has been the foundation for my working goal of health equity for our mob and empowering those who may not feel their voices are being heard. The Kirby Institute is very inclusive and provides great pathways for Aboriginal and Torres Strait Islander staff members, and through my work I hope to inspire the next generation of Aboriginal and Torres Strait Islander people who might want to work within the health or research sectors and be a positive male role model."

Hayden Crowley is a proud Aboriginal man, North Queensland raised with connections to the Kalkadoon and Jirrbal people. He is a Project Research Officer at the Kirby Institute with the Aboriginal and Torres Strait Islander Point-of-Care Testing for Respiratory Infection Program.



PAGE 12: Program staff from the Kirby Institute and Flinders University International Centre for Point-of-Care Testing visit one of the Point-of-Care Program sites in Bidadanga, Western Australia

LEFT: View over Roebuck en route to Bidadanga, Western Australia

“I’m looking forward to bringing these new skills home to Papua New Guinea where it’s most needed.”

Dr Janet Gare
PNG Institute of Medical Research (PNGIMR)



Global health

Power in partnership: tackling HIV drug resistance in Papua New Guinea

Papua New Guinea (PNG) has the highest burden of HIV in the Pacific region. Researchers in the country have in recent years honed efforts to better understand the epidemic in order to develop and implement appropriate education, testing and treatment initiatives for their communities. But a rise in drug resistance in the region has proven particularly problematic for those currently on or about to commence HIV treatment.

HIV treatments are designed to suppress the virus in the body to undetectable levels, but resistance is developing to the standard, most widely used treatments, preventing viral suppression. Researchers at the Kirby Institute and the PNG Institute of Medical Research (PNGIMR) are working together to tackle this health threat in PNG through a program called ACTUP-PNG. Scientists in Australia and PNG are working together to strengthen the laboratory and public health workforce capacity for point-of-care HIV viral load testing and early infant diagnosis, as well as HIV drug resistance testing.

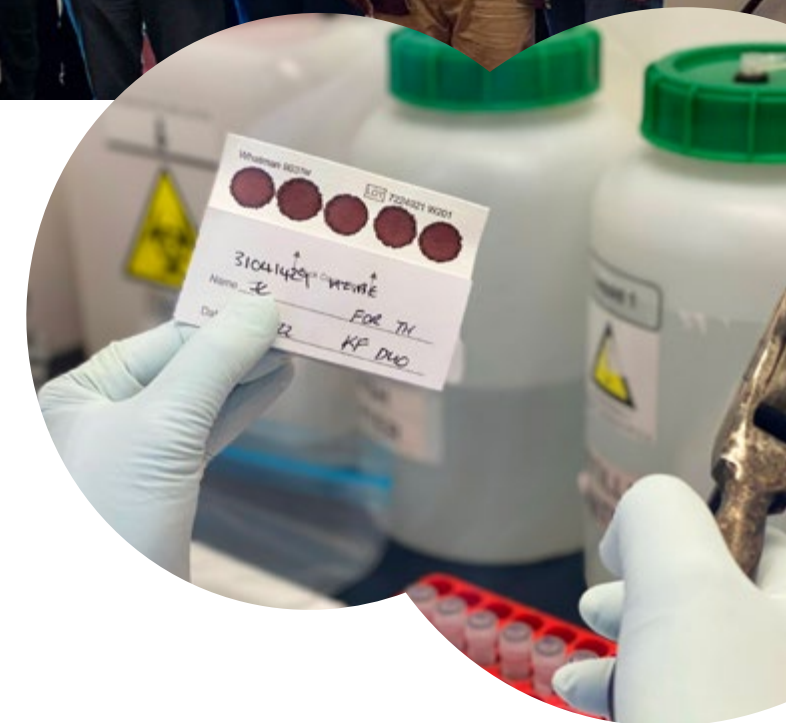
In 2022, the Kirby Institute and St Vincent’s Hospital, Sydney welcomed Dr Janet Gare and Helen Keno from PNGIMR, who spent three weeks undertaking intensive HIV drug resistance

training, with the view to take their skills and expertise back to PNG to expand knowledge and boost local infrastructure to deliver the testing.

“There have been significant inroads made in PNG to better understand the HIV epidemic, including the high burden of HIV drug resistance,” said Dr Gare. “However, it is crucial that as part of a laboratory strengthening initiative, Papua New Guinean researchers and laboratory scientists are supported to remain up to date in the latest HIV drug resistance testing and surveillance techniques. I’m looking forward to bringing these new skills home to PNG where it’s most needed.”

The NSW State Reference Laboratory for HIV at St Vincent’s Hospital, Sydney is a designated WHO Regional Reference Laboratory for HIV drug resistance. The researchers said that the visit was an important opportunity to enhance inter-country partnerships, providing ongoing laboratory mentorship and support from Australia while the technology is developed in-country.

“This training is critical to building laboratory capacity in PNG and enhances existing local capabilities in HIV drug resistance surveillance,” said the Kirby Institute’s Associate Professor Angela Kelly-Hanku who is co-leading ACTUP-PNG. “The transfer of information being facilitated through this program, we hope, will mean that these critical tests can be sustainably integrated in PNG’s health system, and ultimately, improve health for people living with HIV.”



PAGE 14-15: Colleagues from PNGIMR visited St Vincent’s Hospital, Sydney and the Kirby Institute to share knowledge and skills around HIV testing
CREDIT: Angela Kelly-Hanku

Improving perinatal health in the Pacific

The Kirby Institute is leading a project designed to decrease adverse perinatal outcomes and sexually transmissible infections (STIs) in the Pacific region.

The trial, which will be conducted in partnership with the Fiji Ministry of Health and Medical Services and the Murdoch Children's Research Institute, will deliver treatment for chlamydia and gonorrhoea; STIs which are curable but can lead to adverse pregnancy outcomes including stillbirth, early neonatal death, low birth weight and preterm birth. Treatment with the oral antibiotic azithromycin will be delivered to 180,000 men and women aged 18–49 years in

the Central Division of Fiji by mass drug administration, which involves administering medication to a defined population to control or eliminate endemic disease.

“There is a very high prevalence of STIs, including among pregnant women, in the Pacific region, and screening can be expensive and difficult to access for many people in resource-limited settings,” said Dr Lucia Romani, who is chief investigator on the project. “Mass drug administration has already been proven to be effective at controlling a number of neglected tropical diseases. Similarly, STIs are easily treated, and the medication is safe, so by treating the whole community, we hope to seriously reduce transmission and improve the health outcomes of women, their babies, and the broader community.”



Integrated NTD control: the path to healthier communities

The Kirby Institute is working alongside non-profit organisation Bridges to Development, the Vanuatu Ministry of Health and World Health Organization's regional and in-country offices to develop and implement an innovative large-scale, integrated control program targeting multiple neglected tropical diseases (NTDs). As part of the program, the entire population of three provinces will be offered the antiparasitic medications albendazole and ivermectin, aiming to achieve control of intestinal worm infections and scabies; and the antibiotic azithromycin, aiming to achieve elimination of yaws, another skin infection. The program will also involve strategies to enhance the diagnosis and reporting of NTDs.

“Vanuatu is a Pacific Island nation with a population spread widely over 83 islands, so access to effective health care is not always straightforward,” said Associate Professor Susana Vaz Nery. “Measuring and providing evidence of success is crucial in any setting and particularly so where health spending is limited. By tracking the effectiveness of the program, we can then provide guidance for how it could be rolled out nationally, as well as in other countries facing similar challenges.”

By working with the Ministry of Health and in-country partners, A/Prof Vaz Nery said that partnership and collaboration are crucial to enhancing local health systems and achieving infection control.

“Health system implementation of infection control strategies requires a multi-faceted and highly collaborative approach. In partnership with the Vanuatu Ministry of Health, the WHO, as well as the communities taking part in this program, we are confident that together, we can deliver a program that has a lasting, positive impact on the health of communities in our region.”

John Paul Caesar delos Trinos

“Through my studies at the Kirby Institute, I figured out health economics was the best way I could help address these health issues. We don't need more cutting-edge technology or scientific innovations to solve these problems, we just need to know how to implement existing solutions better.”

Paul is a public health researcher whose interests include neglected tropical diseases (NTDs), economic evaluation, and management. He is currently completing a PhD at the Kirby Institute as a UNSW Scientia PhD Scholar, with the NTD Research Group. His research is analysing the cost-effectiveness of community and school-based mass deworming in low- and middle-income countries for the control of intestinal worms, which is a major public health concern, especially for children and women of reproductive age.



PAGE 16: In Fiji, a trial is underway to decrease adverse perinatal outcomes and sexually transmissible infections
CREDIT: Alex Douglas/Unsplash

PAGE 17, TOP LEFT: Clare Dyer training survey teams prior to fieldwork as part of a program designed to control neglected tropical diseases in Vanuatu

In partnership

Insights and safety for Australia's blood supply

Maintaining a steady and safe blood supply is vital for the Australian health system, which requires 33,000 blood donations every week. One in three Australians will require blood or blood products in their lifetime, and these transfusions depend entirely on voluntary donors.

Supported by an NHMRC Partnership Project grant, the Kirby Institute and Australian Red Cross Lifeblood have been working together to gain insights into Australians' knowledge around blood donation and their eligibility to donate.

Conducted by Kirby Institute researchers, the first 'State of Donation' survey was released on 14 June 2022 – World Blood Donor Day. The survey found that Australians underestimate how much donated blood is needed by patients each year, while vastly overestimating how many people donate. The survey was conducted in collaboration with Australian Red Cross Lifeblood and the University of Queensland, and is one of the many projects being conducted under the NHMRC-funded partnership.

"Data and research drive all our donation decisions, and there's no doubt that our partnership with Kirby Institute has played a critical role in the value that Lifeblood can bring to Australia's health services," said Professor David Irving, Director of Research at Lifeblood.

In the **first six months** following the lifting of the vCJD donation deferral, Lifeblood reported:

- ◆ **67,448** collections from people previously ineligible to donate
- ◆ **38,349** additional donors who were previously ineligible
- ◆ **8.97%** of all attendances were from donors previously ineligible to donate.

Source: Australian Red Cross Lifeblood, 24 January 2023.

LEFT, CREDIT: Australian Red Cross Lifeblood

RIGHT: Matthew Law donating at the Lifeblood Town Hall Donor Centre

Safely removing barriers to donation

In 2022, Australia lifted a 20 year long blood donation deferral that prevented people who had spent more than six months in the UK between 1980 and 1996 from donating blood due to the risk of variant Creutzfeldt-Jakob disease (vCJD) – or 'mad cow disease' – a serious and usually fatal brain disease.

This decision was based on research by the Kirby Institute and Australian Red Cross Lifeblood which found that the risk of a blood recipient acquiring vCJD in Australia is extremely low – about one in 1.4 billion – and will become even smaller over time. "Our modelled projections show that removal of the UK residence deferral was a safe and effective strategy for providing a much-needed boost to the pool of eligible donors, as the potential risk of doing so is extremely low," said Dr Hamish McManus, who coordinated the risk modelling in the research.

The new research adds to a growing body of evidence showing that the risk of acquiring vCJD from a blood transfusion is virtually zero. The deferral removal is expected to result in an additional 58,000 annual donations, with 750,000 additional people eligible to donate blood in Australia.

Australia was the second country after Ireland to remove the deferral. Since the peak of the vCJD epidemic in 2000, there have been only two cases worldwide since 2015. The disease arose in the UK through the consumption of beef at a time when herds were heavily affected by 'mad cow disease,' which is the animal version of vCJD.

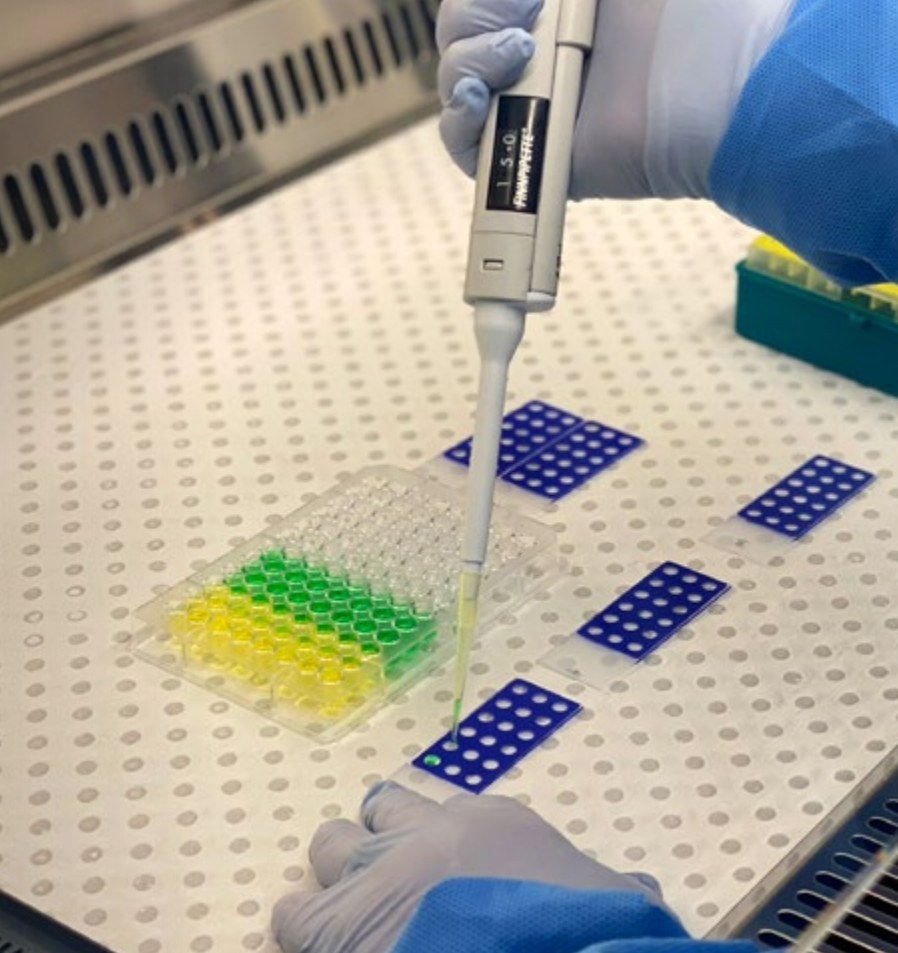
The researchers used a mathematical model originally developed by the United States Food and Drug Administration (FDA) and adapted it for Australia using Australian Bureau of Statistics and Australian Red Cross Lifeblood data to estimate the risk associated with removing the restrictions. They looked at a range of scenarios, with varying assumptions about vCJD prevalence, infectiousness, and incubation periods, to determine the risk of vCJD to Australia's blood supply.

"In all our models, we took a wide range of assumptions and considered worst case scenarios, and still found the risk to be extremely low," said Professor Matthew Law, head of the Biostatistics and Databases Program which conducted the evaluation.

When the 'mad cow' blood donation deferral was lifted and announced at the Lifeblood Town Hall Donor Centre, the Kirby Institute's Professor Matthew Law became the first person in Australia impacted by the rule change to donate.



COVID-19 and emerging infections



Rapid lab analysis informs global COVID-19 guidelines

Kirby Institute researchers developed a world-first method for rapid isolation and characterisation of COVID-19 variants and have used it to track every single major variant from the start of the pandemic.

The methodology, which was published in *Nature Microbiology*, is highly cost effective, automated, and can be used to measure the effectiveness of therapeutics and scaled to test thousands of samples.

“Our approach is unique because of its speed and accuracy,” explained Associate Professor Stuart Turville who developed the methodology. “Our ‘supercharged’ cells allow the virus to replicate four times faster than through any other techniques currently published in the scientific literature, meaning we can understand the likely impact of variants of concern much more quickly.”

The work has informed therapeutic guidelines for the Centres for Disease Control in the United States, national guidelines through ATAGI, and international vaccine guidelines.

Tracking the pandemic

In 2022, Kirby Institute researchers tracked the spread of COVID-19 through the Australian population, providing crucial information to inform our pandemic response

At the end of 2022, more than two thirds of adult Australians had been infected with SARS-CoV-2, virtually all since the appearance of Omicron variant in late 2021.

But official testing data alone did not provide this information. Throughout 2022, there were changes in testing requirements, particularly among the different states and territories. Also, many tests are ineffective at picking up low levels of infection, or asymptomatic infection. Official testing data also relies on people coming forward for testing or reporting results if they self-test.

In order to track the spread of COVID-19 more effectively, a team of researchers, led by the Kirby Institute and the National Centre for Immunisation Research and Surveillance – partnered with Australian Red Cross Lifeblood to analyse routinely collected blood samples for evidence of SARS-CoV-2 infection.

“We call this type of surveillance a serosurvey,” said Dr Dorothy Machalek who leads this work at the Kirby Institute. “Serosurveys provide a more complete picture of how much COVID-19 is out there because they measure antibodies to the virus, created when the body’s immune system responds to infection, that remain present for many months afterwards.”

“The more we know about this virus and how it spreads through the population, the better we can design interventions and target public health responses,” said Dr Machalek.

Professor Paul Kelly, Australia’s Chief Medical Officer, said that “data collected from these surveys is crucial for informing our pandemic response.”

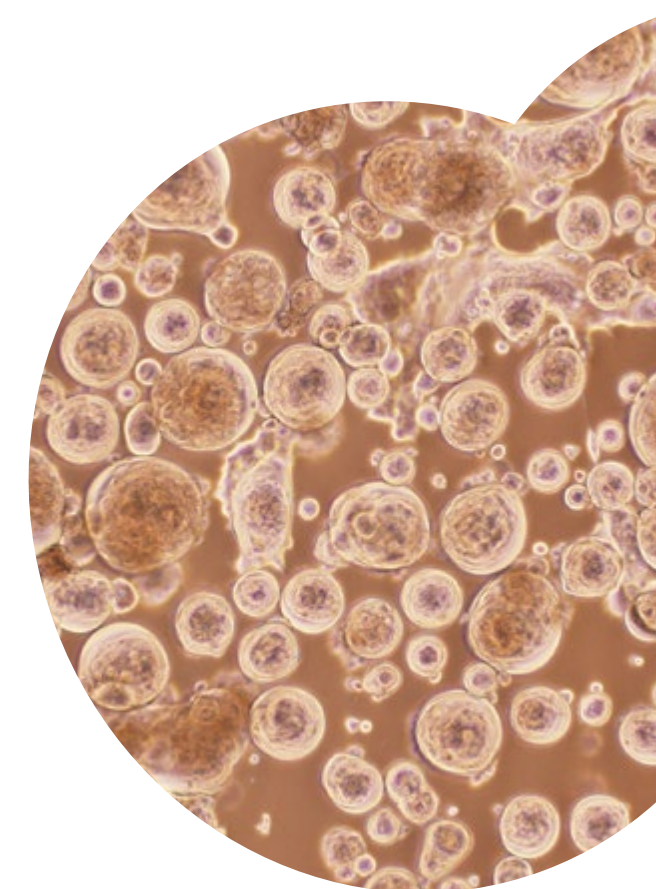
Strengthened networks and collaboration will improve disease management into the future

Scientia Professor John Kaldor from the Kirby Institute believes that Australia is in a unique position to study the detail of our infectious disease outbreaks.

“We have excellent public health systems in place, world-class research centres and very productive collaborative relationships between research and government sectors,” he said.

“Serosurveys provide an important opportunity for new insights to help us manage COVID-19 in Australia for years to come. They can also inform the global response, especially in countries that have high SARS-CoV-2 rates and health system strain that make this kind of analysis impracticable.”

Thanks to the collaborative efforts of multiple research centres and health departments and services, Australia now has a national network to enable further serosurveys for COVID-19 and other infectious diseases.



TOP: Dorothy Machalek and John Kaldor

PAGE 21, LEFT: Serology testing
CREDIT: NSW Health Pathology

PAGE 21, RIGHT: The SARS-CoV-2 B.1.351/
Beta lineage, entering cells
CREDIT: Stuart Turville

Raina MacIntyre awarded Eureka Prize for Leadership in Science and Innovation

Professor Raina MacIntyre was awarded the prestigious Department of Defence Eureka Prize for Leadership in Science and Innovation in 2022.

The Department of Defence Eureka Prize for Leadership in Science and Innovation is awarded to an individual who has 'successfully integrated their scientific expertise with the leadership skills necessary to nurture, inspire and mobilise their peers'.

"This Eureka Prize is an outstanding recognition of Professor MacIntyre's leadership, especially in the context of the COVID-19 pandemic," said Kirby Institute Director, Professor Anthony Kelleher. "She is the number 1 ranked researcher in the world on respiratory protective devices, and in the top 20 for several other areas of infectious diseases. Her facemask research was critical during the COVID pandemic and has informed policy worldwide."



When is the best time for COVID-19 boosters for people commencing immunosuppression?

In 2022, the Kirby Institute was awarded \$2.75 million by the Australian Government's Medical Research Future Fund to undertake a randomised control trial of COVID-19 boosters among people commencing new immunosuppression.

"Throughout the 'booster' vaccine rollout, there has been very little pre-existing data to guide the timing of booster vaccines in relation to the commencement of moderate to severe immunosuppressive treatments," said Dr Sarah Sasson from the Kirby Institute, who leads the research team.

"Treatments such as chemotherapy and bone marrow transplantation that suppress the immune system have the potential to weaken the effect of a booster. What we want to know is how best to time vaccination and immunosuppressing treatments to ensure the best outcomes for our patients."

Understanding the role of T cells in COVID-19 immunity

T cells are a type of white blood cell that can help protect the body from infections.

In 2022, researchers at the Doherty Institute and Kirby Institute gathered evidence to clarify the role vaccine-induced T cells play in the fight against COVID-19.

Published in *Nature Reviews Immunology*, the research found a profound lack of clinical and experimental evidence for a role of vaccine-induced memory T cells in preventing symptomatic infection, or in preventing severe COVID-19, and proposed optimal study designs for acquiring such evidence.

Professor Miles Davenport from the Kirby Institute explained that "there are major challenges in identifying any potential role for T cells in vaccine protection from severe COVID-19, given the lack of standardised assays and clinical studies. However, given widespread belief in the field that T cells should be important, it is a path that still needs to be pursued."

PAGE 23, TOP: Members of the Biosecurity Program, which consists of the EPIWATCH team

PAGE 23, INSET: Vitalik Buterin, co-founder of Ethereum



Major crypto gift funds Kirby Institute open-source artificial intelligence tool to prevent pandemics

In 2022, Ethereum co-founder Vitalik Buterin gifted USDC\$4 million to establish the Shiba Inu OSINT Initiative at the Kirby Institute.

Funded by his Balvi Philanthropic Fund, the project is working to prevent future global pandemics through the development of EPIWATCH, an open-source tool which provides early pandemic warning signals.

Buterin's crypto gift – which was converted to AU\$5.3 million – supported the further development of EPIWATCH, an open-source intelligence (OSINT) tool developed by the Kirby Institute's Professor Raina MacIntyre since 2016.

The tool works by scanning millions of items of publicly available online data, such as social media and news reports, for early signals of epidemics. It uses two artificial intelligence subsystems to make sense of vast amounts of data in real time, detecting changes to what are considered 'normal' reports about health concerns. This is much quicker than waiting for formal reporting through doctors and laboratories and can provide an early warning to health systems.

The gift has allowed the team at the Kirby Institute to make EPIWATCH accessible to low- and middle-income countries and to create an open-source development community.

"This year, we have developed the capabilities of EPIWATCH further. We have begun collaborations in several countries to widen our global reach and provided open access analytics. We are working toward open sourcing EPIWATCH and increasing access worldwide, including dashboards in various languages," said Prof MacIntyre.

Buterin said, "the earlier we can detect new epidemics as they come, the more quickly we can start developing treatments or even stop them before they become large. Open analysis of public data is an excellent alternative to more intrusive forms of monitoring, which are also often only available to governments and other high bidders but closed to the public."

The gift from the Balvi Philanthropic Fund was UNSW's first crypto gift and is believed to be the largest crypto gift accepted by an Australian higher education institution.

Professor Attila Brungs, Vice-Chancellor and President of UNSW Sydney said: "It's a powerful opportunity to drive meaningful social change and far better health outcomes, not just for the people in those countries but for everyone globally."

Assessing the effectiveness of the COVIDSafe app

A team of Kirby Institute researchers, led by Dr Florian Vogt, conducted an evaluation of the Australian Government's COVIDSafe digital contact tracing app.

Basing their analysis in NSW, they found that COVIDSafe did not make a meaningful contribution to the COVID-19 response in NSW during 2020, and that instead the app created a high workload for no clear benefit.

"For digital contact tracing apps to be effective and useful, it will be important to involve contact tracers when designing the system, to road test the underlying technology in real-life settings, and to evaluate the app regularly after roll-out," said Dr Vogt.

Improving therapies for severe respiratory infections in hospitalised adults

The Kirby Institute is involved in coordinating a major new global adaptive clinical trials platform, STRIVE. STRIVE (Strategies and Treatments for Respiratory Infections and Viral Emergencies) is a pandemic preparedness platform which will evaluate the safety and efficacy of unlicensed and licensed therapeutics for severe respiratory infections in hospitalised adults.

"Throughout the COVID-19 pandemic we've seen the development of highly effective treatments for people with early COVID-19, but therapies for people who have severe disease are much less effective," said Professor Gail Matthews, who will be leading the research at the Kirby Institute. "Our study is designed to determine the most effective treatments and strategies in people who are hospitalised with severe respiratory illness both now and during future pandemics."

The Kirby Institute is the Sydney International Coordinating Centre (ICC) for STRIVE and has responsibility for sites in Argentina, India, Japan, Nigeria, South Korea and Thailand as well as Australia. Globally, STRIVE is being conducted across several hundred international clinical sites that are affiliated with networks funded by the United States National Institutes of Health including the INSIGHT clinical trials network.



Stopping mpox in its TraX

In 2022, mpox (formerly monkeypox) emerged internationally as a public health threat. The virus mostly causes a mild flu-like illness associated with a rash, but in a minority of cases can become serious. Gay and bisexual men account for more than 95 per cent of cases globally.

Australia began administering mpox vaccines to high-risk populations in August 2022, with the expectation of expanding the rollout as more vaccine becomes available.

The Kirby Institute, in collaboration with our community and government partners, launched Australia's largest mpox study – TraX – which provided timely information on the mpox vaccine rollout and determined the real-world effectiveness of the vaccine.

Since September 2022, TraX enrolled over 3,500 participants in the study. Participants responded to a brief survey each

week that collected data on mpox vaccination uptake, testing, and mpox sexual risk behaviours. By December 2022, 18 per cent of participants reported receiving one dose of the mpox vaccine and 69 per cent had received the recommended two doses. Among those unvaccinated, 80 per cent indicated they were likely to receive an mpox vaccination.

"With 87 per cent of those at highest risk of mpox having received at least one dose of vaccine before Sydney World Pride, we are in a really good position to determine whether that level of vaccination is enough to successfully avoid a major outbreak in Australia," said Professor Andrew Grulich, who is leading the research at the Kirby Institute. The expert Kirby Institute team also includes Professor Raina MacIntyre, who brings her expertise in orthopox viruses to the study.

Coordinating Investigator, Dr Mohamed A. Hammoud said that the study's success was thanks to the collective and rapid efforts from everyone involved. "The speed with which individuals from all sectors collaborated on this study to prevent a major outbreak in Australia was remarkable. We are particularly grateful for the commitment shown by each TraX participant who responded to the weekly surveys, as they played a crucial role in protecting themselves and others from mpox," he said.

TOP: By December 2022, 18% of TraX participants had received one dose of the mpox vaccine, while 69% had received two
CREDIT: AdobeStock

Kirby Institute Patron, The Honourable Michael Kirby AC CMG, provided generous support for this research with a major donation.

"One of the lessons from the HIV/AIDS epidemic was how critical community knowledge and involvement was in shaping the response and reducing the burden of a public health threat," he said. "Our recent experience with COVID-19 should teach Australians that international pandemics are always just around the corner. We need to be a step ahead of them. The Kirby Institute plays a leading part in keeping Australia in front of the recurring challenges. In supporting this important research, I encourage anyone who is eligible to participate."





30 years exploring accounts of HIV infection and diagnosis

In 1992, the first in-depth study was set up by the Kirby Institute to explore the ‘event’ that people attributed to their HIV seroconversion. Unique in the world, this study investigated the ways in which people understand and negotiate HIV risk.

On the 30th anniversary of the first HIV seroconversion study in Australia, and timed to coincide with World AIDS Day, the Kirby Institute hosted a seminar with researchers who have been involved in the studies.

“For over 30 years, studies of HIV seroconversion have provided insight into HIV transmission and prevention and, in more recent years, into diagnosis and treatment,” said Associate Professor Garrett Prestage. “They have also chronicled, via participants’ accounts, the significant medical and cultural developments in the HIV epidemic. We are extremely fortunate that people have been so willing to share their experiences.”

In the early 1990s when the HIV epidemic was at its peak, there were few treatment and management options, meaning that HIV was a death sentence for most of those who were infected. But more recently, due to significant medical advancements, rates in Australia have dramatically fallen, and people living with HIV live healthy and sexually active lives.

“Contemporary antiretroviral-based HIV prevention approaches such as ‘treatment-as-prevention’ and Undetectable = Untransmissible, or U=U, along with PrEP, the revolutionary HIV prevention medication, have dramatically improved the health and wellbeing of people living with HIV, and have provided effective prevention options for those at risk of infection. Through these studies, we have observed significant uptake of these health interventions by those at risk, and transmissions fall as a consequence,” said A/Prof Prestage.

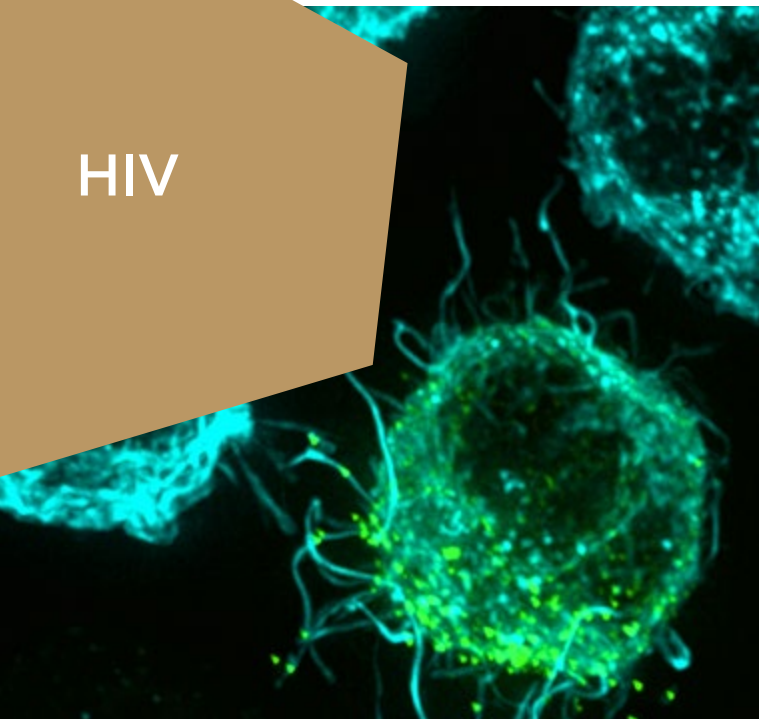
This research, that draws upon the accounts of an estimated 1,000 newly diagnosed HIV positive patients, continues to be important today, providing insights into HIV testing patterns, mobility, PrEP, and the negotiation of sexual encounters on digital media apps.

Dr Brent Clifton, Deputy Director at the National Association of People Living with HIV Australia (NAPWHA) paid tribute to community members who have been so central to progressing action on HIV/AIDS. “Australia has benefitted from strong political action, trust in research, and developing evidence-based approaches to take on this great public health challenge that faced and continues to face our communities. The Australian approach has been viewed as best practice worldwide to tackling the HIV/AIDS epidemic, and we should all be proud of our collective efforts.”

TOP: Garrett Prestage presenting from online at the World AIDS Day seminar

BOTTOM: Colourised microscopic image of HIV cells
CREDIT: Stuart Turville

PAGE 27: Julie Bates AO and Basil Donovan AO
CREDIT: Deep Field Photography



HIV

A national database on HIV prevention and care

Dr Skye McGregor, who leads the Kirby Institute’s Surveillance Innovation Group, received an NHMRC Partnership Project grant for research that will help identify and address inequities in HIV prevention and care in Australia.

The grant will enable the research team at the Kirby Institute to partner with community organisations and government to establish a better system for evaluating data about HIV prevention, testing, diagnosis and care in Australia. The partners will work together to create a national database that will anonymously bring together existing data that informs HIV prevention and care.

“This project focuses on equity of the HIV response in Australia by providing detailed information on factors that are contributing to gaps in access to prevention and treatment. It will also help us understand why some population groups have poorer health outcomes than others and allow us to design a national health response that is better matched to the realities of the people who most need health care,” said Dr McGregor.

Progress on understanding the HIV reservoir

Kirby Institute researchers have been working in the laboratory to understand the HIV reservoir – a pool of cells latently infected with HIV and invisible to the immune system, which is one of the largest barriers to HIV cure.

Led by Dr David van Bockel, the PINT study is looking closely at HIV-infected cells to determine how large the reservoir is inside these cells and how fast HIV evolves within it. This information will show how effective antiretroviral treatments that stop HIV entering into the genome of cells are at attacking the HIV reservoir.

In 2022, the researchers made significant inroads by collecting detailed data of a large cohort of patients over a treatment period of three years, to understand the characteristics and evolution of the virus over that time.

Australia records lowest ever HIV numbers

The latest HIV surveillance data, collected and analysed by the Kirby Institute on behalf of the Australian Government, reported the lowest number of diagnoses since the HIV epidemic began. With 552 new HIV diagnoses in Australia in 2021, the researchers point to high uptake of HIV prevention measures including pre-exposure prophylaxis, testing, and high levels of treatment among people living with HIV as factors contributing to the declines. But the low numbers must also be considered within the context of the COVID-19 pandemic, which impacted on testing and sexual behaviour, as well as the movement of people in and out of Australia.

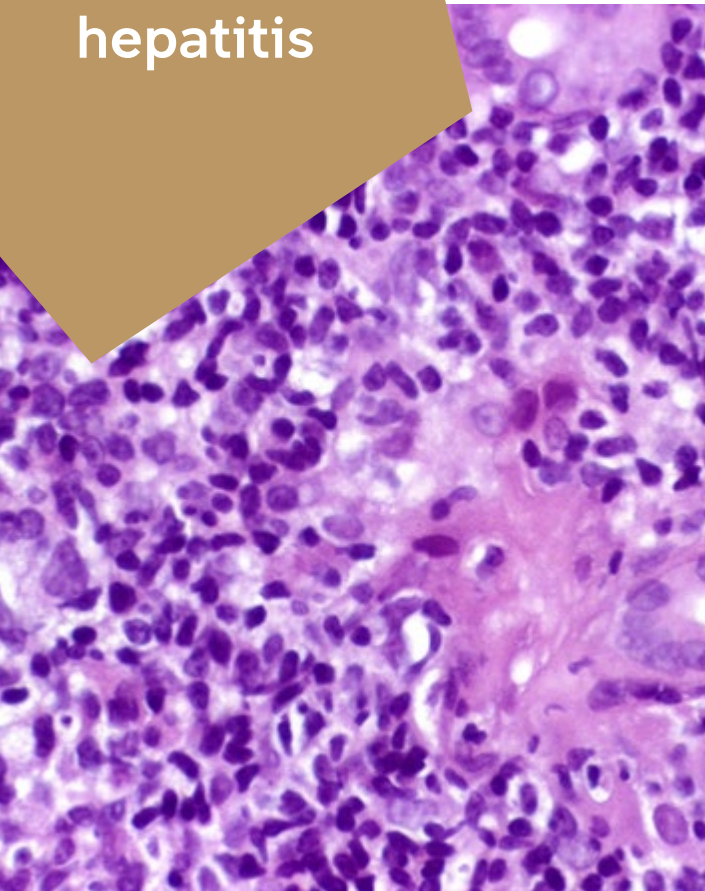
Basil Donovan and Julie Bates: ACON HIV Heroes

Professor Basil Donovan AO and his long-time collaborator and friend, Julie Bates AO, received the HIV Hero Award at the 2022 ACON Honour Awards for their service and contributions to Australia’s HIV response, especially in relation to sex worker health. Prof Donovan (head of the Sexual Health Program at the Kirby Institute) and Ms Bates have worked together for over three decades and through their dedication, advocacy and expert perspectives they have been key influencers in policy change and in achieving very low rates of HIV among sex workers in New South Wales and in Australia more broadly.





Viral hepatitis



Facilitating hepatitis C elimination in Australia

Researchers at the Kirby Institute have been at the forefront of hepatitis C testing and treatment research for over a decade. Now, they are leading the National Australian Hepatitis C Point-of-Care Testing Program, in partnership with the International Centre for Point-of-Care Testing at Flinders University. The program includes more than 150 community, practice, and policy stakeholders, who are working together to expand access to hepatitis C point-of-care testing. In 2022, the team conducted an extensive evaluation of the impact of the program, supported by an NHMRC Partnership Project grant.

Professor Jason Grebely, who leads the Hepatitis C and Drug Use Research Group at the Kirby Institute, led the evaluation, and says that Australia has done well to engage people at risk of hepatitis C, in particular people who inject drugs, but there are still barriers to overcome.

“Testing and treatment is hampered by current health service pathways which require multiple healthcare visits. People living with hepatitis C are some of Australia’s most marginalised populations, and so it’s vital we reduce barriers to accessing testing and treatment services. Point-of-care testing means that people can receive the test and their results within an hour, and commence treatment immediately within the same visit, if required,” said Prof Grebely.

The evaluation found that in 2022, of the over 5,700 tests conducted within the community and in prisons, 713 people were found to have hepatitis C. Three quarters of those who received a positive test commenced curative treatment. “The results of our evaluation are really promising, and with such a significant number of people with hepatitis C now on treatment, the health impact for these individuals, and for the wider community is significant,” said Prof Grebely.

The researchers hope that the expansion of the program, which leverages significant funding support from the Australian Government and industry, will reinvigorate Australia’s progress towards elimination of hepatitis C as a public health threat.

“Our evaluation makes the case for continued scale-up to improve health and save lives of individuals and communities who are often hard to reach,” said Prof Grebely. “We are in a unique position in Australia to become one of the first countries in the world to eliminate hepatitis C. By continuing to expand access to testing and treatment, we have the ability to get back on track to meeting the World Health Organization’s 2030 targets.”

TOP: Finger-prick blood sample taken to test for hepatitis C virus

BOTTOM: The hepatitis C virus
CREDIT: University of Alabama at Birmingham
Department of Pathology/Peter Anderson

Collaboration and leadership to improve prisoner health

Prisons carry a large burden of hepatitis infection and are a key setting for hepatitis C transmission. Curative direct-acting antiviral (DAA) treatment for hepatitis C is available to people who are incarcerated in Australia, but there are a range of barriers and challenges to health delivery that may prevent people in prison from accessing hepatitis C testing, treatment and prevention.

Researchers in the Kirby Institute’s Viral Immunology Systems Program are leading Australia’s prison-based hepatitis C efforts through the National Prisons Hepatitis Network (NPHN).

In 2022, the NPHN led the development of the National Consensus Statement on the Management of Hepatitis C in Australia’s Prisons, which was published in the *Medical Journal of Australia* in early 2023. This collaboration draws on the expertise and close partnership between academia, government, health services, and hepatitis C and prisoner consumer groups in the NPHN.

The Kirby Institute’s Professor Andrew Lloyd, who chairs the NPHN, said that cross-sector collaboration is essential to achieving the ambitious goal of hepatitis C elimination in Australia. “There are a number of challenges in delivering lifesaving health care in prison settings, but the recommendations and performance indicators we have developed for the sector will make a major contribution towards Australia’s efforts to eliminate hepatitis C as a public health threat by 2030.”

Expanding access: the Kombi Clinic

When it comes to hepatitis C elimination, those who are most at risk may not want to, or be able to, access services for testing and treatment. To address this challenge, a team of health care providers has joined forces to bring the clinic to the road, by way of a 1970s VW Kombi that has been fitted with the latest in hepatitis C diagnostic equipment.

Kirby Institute researchers are working with the Kombi Clinic team to evaluate the impact of the mobile testing service, as part of the National Australian Hepatitis C Point-of-Care Testing Program. “These community-led initiatives can make a huge difference in the lives of people at risk of hepatitis C. But it’s difficult for them to find sustainable funding without an evidence base to show the impact of the service,” said Scientia Professor Gregory Dore, Head of the Kirby Institute’s Viral Hepatitis Clinical Research Program.

In 2022, the Kombi Clinic conducted thousands of point-of-care tests, and hundreds of liver scans, for people who otherwise may not have received a test. “These numbers are impressive,” said Prof Dore. “It’s important that everyone at risk of hepatitis C, no matter their circumstances, has access to these lifesaving health interventions.”

Understanding hepatitis B

In 2022, the Australian Government Department of Health awarded \$1.63 million to the Real-world Assessment of people living with Chronic Hepatitis B in Australia (REACH-B) study. Led by Professor Gail Matthews, Head of the Kirby Institute’s Therapeutic and Vaccine Research Program, the study will follow people living with hepatitis B over a long period of time in order to better understand the disease spectrum in Australia. It will also assess treatment uptake among people living with hepatitis B, and evaluate new methods to enhance access to care and treatment adherence.

“Hepatitis B is a chronic condition that affects the liver, but can be managed with antivirals,” said Prof Matthews. “Many people living with hepatitis B in Australia remain undiagnosed and so are not accessing care. It’s important that we have a comprehensive understanding of who is impacted by hepatitis B so that appropriate testing, treatment and care can be delivered to those who need it.”



Associate Professor Behzad Hajarizadeh

In 2022, the Brett Tindall Memorial Lecture was awarded to Associate Professor Behzad Hajarizadeh in recognition of his impactful research into equitable hepatitis C treatment uptake. The lecture is held yearly in honour of one of the Institute’s early researchers and a great friend, the late Dr Brett Tindall.

Sexual health



An Asia-Pacific Hub to combat AMR

Antimicrobial resistance (AMR) is one of the greatest scientific challenges of the 21st century. Bacteria, viruses, and some parasites are increasingly becoming resistant to antibiotics, antivirals and antimalarials, posing a serious threat to human health. Antibiotic overuse, combined with an inadequate pipeline for diagnostic technologies and new drugs, has led to this development.

“It’s what happens when pathogens no longer respond to drugs intended to kill them,” explains Professor Rebecca Guy. “This makes infections difficult to treat with drugs that would have worked in the past. AMR generally occurs because of the overuse of antibiotics across the world.”

In response to this global challenge, the Kirby Institute brought together a world-class team of collaborators to establish a new national research hub, funded by the Australian Research Council, working to combat AMR. The Hub has a particular focus on sexually transmissible infections, which are an AMR major concern, and an area in which the Kirby Institute has a longstanding track record. “If we can’t find solutions quickly to the increasing rates of AMR, infections will rise, along with the serious associated complications,” said Prof Guy, who leads the Hub.

Officially launched in 2022 at the Kirby Institute by Ms Judi Zielke, Chief Executive Officer of the Australian Research Council, the Industrial Transformation Research Hub to Combat Antimicrobial Resistance is

a world-leading collaboration between industry, researchers, health service providers and the community to tackle the global challenge of AMR. UNSW Vice-Chancellor and President Professor Attila Brungs, and UNSW Medicine & Health Senior Vice Dean Professor Sean Emery also attended the launch.

The Hub aims to connect the many complex facets of AMR, to provide highly integrated diagnostic and pharmaceutical solutions to the problem of AMR under the umbrella of antimicrobial stewardship, which is the responsible and careful use and management of antimicrobials. By doing so, the Hub has a vision to transform health outcomes globally and will establish Australian industry as global leaders in the space.

Prof Guy said that the Hub “takes a holistic approach through the development of a range of new molecular diagnostic tests to ensure we use antibiotics more precisely, while at the same time improving the processes for identifying and optimising both old and new antibiotics, supported by social science, modelling, health economics and epidemiological research”.

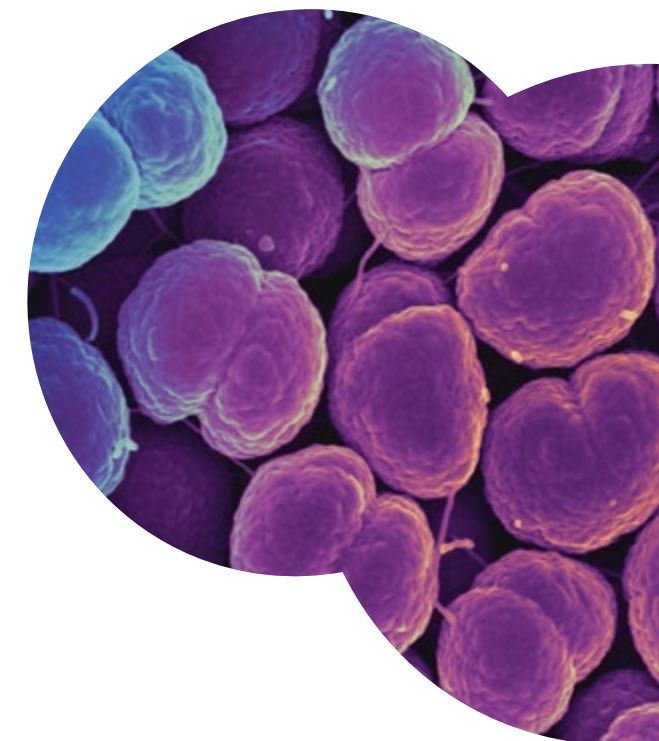
In launching the Hub on behalf of the Education Minister, The Hon Jason Clare, Ms Zielke said the initiative “encourages Australia’s best researchers in training the future workforce. As we all know, collaboration is critical to us achieving these major challenges that we have, and working with industry, with other researchers and with international partners is great to see.”

Australia’s sexual health and relationships checkup

The Australian Study of Health and Relationships is Australia’s largest study of sexual and reproductive health. It is a nationally representative survey of over 15,000 Australians aged 16–69 years. Conducted once a decade, this research provides a snapshot of the sexual health and wellbeing of the Australian population.

“This third survey comes at a time of major change in social, technological and medical developments in society, which affect the sexual and reproductive health of Australians. The information we gather will be essential for the development of policy and the delivery of sexual and reproductive health programs across Australia,” said study lead Professor Rebecca Guy.

Led by the Kirby Institute, with data collection conducted by the Social Research Centre in Melbourne, the third national survey commenced in 2022. Researchers refined and developed the questionnaire based on consultations with collaborators, and completed fieldwork data collection. The main study will take place in 2023, with results analysed and reported in 2024.



TOP: Collaborators from the AMR Hub
CREDIT: Conor Ashleigh

PAGE 31, LEFT: Arthur Wong from our Surveillance and Evaluation Research Program
CREDIT: Conor Ashleigh

PAGE 31, RIGHT: Colorised scanning electron micrograph of Neisseria gonorrhoeae bacteria, which causes gonorrhoea
CREDIT: NIAID



LEFT: HPV testing at the Vila Central Hospital, Vanuatu
CREDIT: Andrew Vallely

Is sex lost in translation?

Translated questionnaires are increasingly used in population health research, but translation is often not conducted with the same rigour as the process of survey development in the original language. This may introduce bias or confusion in the meaning and relevance of questions.

As part of the development of questions for the Australian Study of Health and Relationships, the Kirby Institute's Dr Allison Carter and her colleague Dr Horas Wong from the University of Sydney undertook the process of translating the questions from English to Simplified Chinese. "We found that in the process of translating the questions, the terminology and expression related to sexual and reproductive health that we use in English did not simply translate to Chinese. For example, in some cases, particular words or descriptions of sexual practices did not have an equivalent word or expression in Chinese," said Dr Carter.

This work is being used to better inform the refinement and development of surveys, and other studies, where the concept of the subject matter being researched can be impacted by cultural or linguistic nuances.

Progress on eliminating cervical cancer in the Western Pacific

The Western Pacific has among the highest rates of cervical cancer in the world, and leads to an estimated 1,200 deaths in Papua New Guinea (PNG) alone every year. Human papillomavirus, or HPV, causes almost all cervical cancers worldwide. HPV infection and disease can be prevented by childhood vaccination, whilst screening women for HPV infection in adult life is highly effective at detecting early disease and preventing cervical cancer.

The Eliminating Cervical Cancer in the Western Pacific (ECCWP) program commenced in 2022 with sites established in both PNG and Vanuatu. ECCWP is working with partner countries to achieve the WHO targets for HPV vaccination, cervical screening, and treatment by 2030, and to sustain these achievements over the coming decades to eliminate cervical cancer as a public health problem in the region.

The program is co-led by the Kirby Institute, Cancer Council NSW, Australian Centre for Prevention of Cervical Cancer (ACPCC), and Family Planning NSW, on behalf of the NHMRC Centre of Research Excellence in Cervical Cancer Control (C4), in close collaboration with in-country partners and stakeholders.

In 2022, ECCWP coordinated and supported in-country planning workshops, staff recruitment, training, introduction of a new electronic screening register, procurement and supplies of new equipment, health facility renovations, and in PNG, began the first mobile outreach cervical screen-and-treat service for women in rural and remote communities via a dedicated mobile clinic truck.

ECCWP is a world-first initiative supported by landmark investments from the Minderoo Foundation, biotechnology companies Cepheid and Copan, and the Frazer Family Foundation, with in-kind contributions from the governments of PNG and Vanuatu, that joins forces with the Asia Development Bank and UNICEF to provide more than AUS\$30 million to set both countries firmly on a path to eliminating cervical cancer.



A global leader in sexual health

Kirby Institute Professor Basil Donovan was made an Officer of the Order of Australia (AO) in the 2022 Queen's Birthday honours.

Prof Donovan, who is a sexual health physician and Head of the Kirby Institute's Sexual Health Program, was recognised "For distinguished service to medicine in the field of sexual health through tertiary education, research and advisory roles".

In a career spanning more than four decades, Prof Donovan is a highly regarded sexual health physician, one of Australia's most prolific sexual health researchers and one of the most highly influential figures in Australia's early response to the HIV epidemic. He was among the group of clinician researchers who first mapped the extent of the AIDS epidemic in Sydney in the mid to late 1980s and contributed to the first description of the clinical syndrome of primary HIV infection; a world first.

He co-founded the Taylor Square Private Clinic in 1981, and since then, has been known as a trusted and adored doctor in the Darlinghurst area among patients and colleagues alike, and one of the most highly cited sexual health academics in Australia.

"Throughout his career, informed by his clinical and academic expertise, Basil has been a staunch and fearless advocate for the communities he works with whilst providing compassionate and judgement-free clinical care," said Kirby Institute Director, Professor Anthony Kelleher. "His work has saved and improved countless lives, and his multi-dimensional approach to sexual health should serve as a gold standard in Australia and across the world. This honour by the Order of Australia is richly deserved."

Associate Professor Catherine O'Connor

Associate Professor Catherine O'Connor was awarded the ASRHA Distinguished Services to Sexual Health Award at the 2022 ASHM Joint Australasian HIV&AIDS and Sexual Health Conferences. She is a Visiting Senior Fellow with the Sexual Health Program at the Kirby Institute. In a career spanning over 25 years, A/Prof O'Connor has worked as a sexual health clinician and researcher to improve health access and care for those with STIs and HIV.



Dr Skye McGregor

Dr Skye McGregor was awarded the Levinia Crooks Emerging Leader in BBV/STI Award at the 2022 ASHM Joint Australasian HIV&AIDS and Sexual Health Conferences. Dr McGregor is an epidemiologist and Lead of the Kirby Institute's Surveillance Innovation Group. She oversees analyses of national STI and blood-borne virus surveillance data, and leads the production of annual surveillance reports on behalf of the Australian Government.

2022 Seminar Series: A forum for dialogue and sharing ideas

The Kirby Institute's weekly seminar series offers a platform for Kirby Institute researchers, as well as high profile Australian and international researchers to share their insights into infectious diseases. During 2022, the Kirby Institute Seminar Series transitioned to some in-person and some hybrid events.

Throughout 2022, the Kirby Institute hosted 43 research seminars. This included the Brett Tindall Memorial Lecture, which has been held each year since 2012 in honour of one of the institute's early researchers and great friend, Dr Brett Tindall. In 2022, it was awarded to the Kirby Institute's Associate Professor Behzad Hajarizadeh for his extensive and world-leading research into hepatitis C treatment uptake.

In partnership with the UNSW Centre for Ideas and UNSW Medicine & Health, the Kirby Institute also hosted former Prime Minister Julia Gillard, who is now the Chair of the Wellcome Trust, who gave this year's David Cooper Lecture.

The 2022 Seminar Series featured speakers from a range of sectors and as well as seminars in acknowledgement of important awareness days including International Women's Day, NAIDOC Week, World Hepatitis Day and World AIDS Day.

Dr Benjamin Bavinton, Chair of the Seminar Series Committee, says the weekly talks provide a platform for researchers to share their work with the community. "Infectious disease research is increasingly sought out and valued by other academics and the broader public. These seminars facilitate discussion, knowledge sharing and promotion of important research topics," he said.

TOP: 2022 David Cooper Lecture
with The Honourable Julia Gillard AC
in conversation with Tegan Taylor



The importance of fighting inequality: Julia Gillard on lessons learnt from the pandemic

In May 2022, the Kirby Institute was honoured to have former Prime Minister The Honourable Julia Gillard AC deliver the David Cooper Lecture. Ms Gillard spoke of the need for the global community to enact policy that helps our most vulnerable, to ensure we emerge from the pandemic as a healthier and fairer society.

"It was a privilege having Julia Gillard deliver this year's David Cooper Lecture. She is a truly motivational speaker and her conversation on how infectious diseases disproportionately affect the most disadvantaged in society and what that means for how we respond was fascinating. Her observations on how COVID has helped reduce the stigma attached to mental health were particularly pertinent," said Professor Anthony Kelleher, Director of the Kirby Institute.

Following her time serving as 27th Prime Minister of Australia, Ms Gillard has dedicated herself to advocacy, governance roles, and writing. Last year, she was appointed Chair of the Wellcome Trust, a global charitable foundation based in the UK which supports science to solve urgent worldwide health challenges.

"The pandemic has had the biggest impact on those most disadvantaged in the world. Because we are here in Australia and we've had good access to vaccines, it's easy to forget that in many parts of the world people are still waiting to be vaccinated; even those at most risk of catastrophic health consequences from COVID have not yet been reached by vaccines," Ms Gillard said.

"In the health response there has been an inequity in vaccine access, and we know in societies around the world that those who get the most urgent access to care are often those with the most information and the most resources.

"What we want to do as a global community, as an Australian community, is eradicate that disadvantage."

The David Cooper Lecture honours the legacy of the Kirby Institute's inaugural director Scientia Professor David Cooper AC, who passed away in 2018. He was an internationally renowned scientist and HIV clinician.



Our new research groups in 2022

In 2022 we expanded our research groups, which sit within our research programs. These groups are led by outstanding researchers with a track record in independent research leadership. They reflect the growing research scope of the Kirby Institute, and our commitment to fostering the research leaders of tomorrow.



Dr Sarah Sasson **Clinical, Experimental and Computational Immunology Group**

Our group applies frontier laboratory techniques in cellular and molecular biology to critical challenges in clinical medicine. We are increasingly using bioinformatic approaches to large datasets including single-cell transcriptomics. Our work aims to increase the understanding of disease processes through the study of primary tissue samples, in order to identify targets for new therapeutic strategies.



Dr Louise Causer **Decentralised Diagnostics Implementation Research Group**

Our group undertakes co-designed, multidisciplinary research to evaluate the feasibility, acceptability, impact, and economic costs associated with point-of-care testing for a range of infectious diseases. Our research aims to support the optimisation of implementation and integration into primary health care settings, and ensure equity and sustainability of point-of-care testing for infectious diseases across Australia and the Asia-Pacific region.



Dr Tanya Applegate **Diagnostic Innovations Group**

Our group aims to accelerate equitable access to diagnostic tests and health care for all, with a particular focus on improving care for people who are marginalised or living in remote or resource-constrained settings. We work closely with partners to identify novel diagnostic tests, analytical tools and software that enhance infectious disease testing to deliver appropriate treatment. We also work to optimise the integration of diagnostic testing, such as point-of-care testing, into routine clinical practice and to enhance infectious disease surveillance.



Professor Andrew Vallely **Global Reproductive Health Group**

Our group is committed to improving sexual and reproductive health in low- and middle-income countries in our region and globally. A key focus of our work is the participatory co-design, conduct and evaluation of novel solutions to improve the reproductive health of women and girls, and to control sexually transmitted and other priority infectious diseases. We are an interdisciplinary group grounded in the principles of community engagement, equitable partnerships, and improved access to health care for key populations.



Professor Virginia Wiseman **Health Economics and Health Systems Research Group**

Our group undertakes research and training to enhance health system performance, improve health outcomes, and achieve greater value for public health resources. Our health economists and modellers work with clinicians, sociologists, statisticians, policy makers, health care managers and affected communities to improve how health care is delivered and financed in Australia and the Asia-Pacific region.



A/Prof Kathy Petoumenos **HIV Cohorts Research Group**

Our group conducts research on the long-term clinical outcomes of people living with HIV and receiving effective antiretroviral treatment (ART) for life, while also facing an ageing HIV population. To evaluate the association between modern ART therapies, HIV infection, natural ageing processes, and chronic conditions such as cardiovascular disease, cancer, chronic kidney disease, and all-cause mortality, we utilise data from national and large multi-international HIV cohorts.



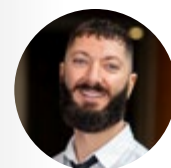
A/Prof Fabio Luciani **Immunogenomics and Systems Immunology Laboratory**

Our research is conducted by a multi-disciplinary team that combines methods of immunology, genomics and bioinformatics to understand the role of immune cells in human diseases. The focus of our laboratory is to dissect the molecular mechanisms that determine the optimal success of an immune response from unwanted scenarios. We believe this multi-disciplinary approach is the perfect combination to understand complex human systems, such as the immune system.



Dr Lisa Vallely **Maternal and Newborn Health in Low-Resource Settings Research Group**

Our group is an interdisciplinary group committed to reducing adverse maternal and newborn health outcomes in high-burden, low-resource settings. We are a group that draws on unique and long-term research and collaboration working to improve maternal and newborn health in Papua New Guinea and across the Pacific. Building on innovative community- and facility-based research in low-resource settings, our group designs, evaluates and implements novel health facility and community-based interventions to address these longstanding international public health priorities.



Dr Mohamed Hammoud **Psychosocial Aspects of HIV Prevention Research Group**

Our group undertakes research to understand how mental health, alcohol and other drugs, and social networks impact HIV prevention norms among gay and bisexual men. With a specific focus on HIV treatment as prevention and undetectable equals untransmissible, and HIV pre-exposure prophylaxis, our research brings together an interdisciplinary team to understand the complex social contexts that affect HIV prevention and the broader health and wellbeing of gay and bisexual men.



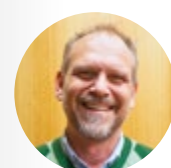
Dr Allison Carter **Sexual Health And Reproductive Equity (SHARE) Research Group**

Our group aims to strengthen responses to gender, social justice, and sexual and reproductive health and rights and is committed to improving the health of communities that have historically been disadvantaged and marginalised, through genuinely collaborative partnerships with those communities. Much of our research combines qualitative and epidemiological methods with theory from the social sciences to understand how social, structural, and relational factors influence sexual and reproductive health.



A/Prof Behzad Hajarizadeh **Systematic Review and Data Synthesis Research Group**

Our group conducts systematic reviews to answer focused clinical and public health questions, particularly in the field of infectious diseases. Systematic reviews, as the backbone of evidence-based practice, use scientific and transparent methods to generate high-quality evidence from available research findings. Our work aims to use the existing data to generate new knowledge, and to inform clinical practice and health policy.



A/Prof Stuart Turville **Viral Pathogenesis and Vector Laboratory**

Our group uses novel methods in molecular virology to study the pathogenesis of viral infections. This research spans the basic science of viruses within the laboratory through to understanding the biology of viruses in the real world and in the face of the human immune response. The viruses we study range from blood-borne pathogens such as HIV through to emerging pathogens like Ebola and SARS-CoV-2.



TOP: Heather Valerio and her PhD supervisor, Gregory Dore

BOTTOM: Kirby Institute Postgraduate Student Prize recipient Nila Dharan, with Kirby Institute Director Anthony Kelleher

PAGE 41, LEFT: The Honourable Jillian Skinner gives the occasional address at the UNSW Medicine & Health Graduation Ceremony

PAGE 41, RIGHT: Gail Cross, David Cooper Scholar

Excellence in postgraduate research

For decades, the Kirby Institute has been committed to training and inspiring the next generation of infectious disease researchers through offering postgraduate research programs as Doctor of Philosophy (PhD) and Masters by Research. At the Kirby Institute, postgraduate research students have the opportunity to research and study under the supervision of some of Australia's, and the world's, most influential infectious disease researchers, and in turn produce and contribute to highly impactful research.

In 2022, the Kirby Institute had 81 postgraduate students enrolled, including 30 international students from 20 countries, and celebrated 16 PhD completions.

"I congratulate all of the recent PhD graduates and graduands on their significant accomplishment," said Professor Anthony Kelleher, Director of the Kirby Institute. "Their efforts to complete their studies during the pandemic have been significant. They should all be exceptionally proud not only of achieving their PhD, but of making significant research contributions to the Kirby Institute and society more broadly."

Among the 2022 graduates, there were four students who received exceptional accolades.

Three Kirby Institute graduates received 2022 Dean's Awards for Outstanding PhD Theses. Dr Heather Valerio received the award for her thesis entitled 'Elimination of hepatitis C virus among people who inject drugs in Australia'. Dr Shovon Bhattacharjee's thesis was entitled 'Development of Next-Generation Protective Clothing and High-Performing Face Masks'. And, Dr Louise Geddes received the award for her thesis entitled 'An investigation of the health-related harms associated with illicit opioid injection'.

In addition, Dr Nila Dharan was awarded the Kirby Institute's Postgraduate Student Prize for 2022 for her paper titled 'HIV is associated with an increased risk of age-related clonal hematopoiesis,' which was published in *Nature Medicine* in 2021. The Kirby Institute Postgraduate Student Prize is an annual award given to the most significant first author paper by a Kirby Institute student, published in the previous calendar year in a peer-reviewed journal in the area of infectious diseases.

Honouring a leader in the HIV response

At the graduation ceremonies in May, former NSW Minister for Health, The Honourable Jillian Skinner, was awarded a Doctor of Medical Science, *honoris causa* – UNSW's highest accolade – for her leadership and service to elimination of HIV transmission in NSW, and Australia more broadly.

As NSW Minister for Health, and the first standalone Minister for Medical Research (2011–2017), Dr Skinner officially opened the Kirby Institute when it relocated to the Wallace Wurth Building on the UNSW Kensington campus in 2012. She is widely recognised as having implemented transformative policies and programs in a number of areas, the most prominent being in the control of HIV infection.

The honorary degree was conferred by UNSW Chancellor David Gonski AC. UNSW Vice-Chancellor and President, Professor Attila Brungs, read the citation, which was followed by Dr Skinner's occasional address.

In her address, Dr Skinner reflected on the significant strides made in NSW towards elimination of HIV transmission, and her pride in the contributions she made. She paid tribute to her family and the many partnerships, both within the NSW Government, and more broadly, who have all contributed to her legacy of progressing towards elimination of HIV transmission in NSW and Australia, and the many other health initiatives she advocated for as Minister, and continues to advocate for.

Professor Anthony Kelleher, who nominated Dr Skinner for the award, said that she has had a lasting impact on HIV prevention and transmission in NSW and Australia. "Jillian's leadership, as well as her commitment to evidence and community consultation, is unparalleled. To receive an honorary Doctor of Medical Science from UNSW is a very fitting acknowledgement of Jillian's contribution to health," he said.



Carrying forward a legacy: The David Cooper Scholarship

Infectious disease physician Dr Gail Cross was awarded the inaugural David Cooper Scholarship in 2022. Thanks to generous donations made in memory of the Kirby Institute's inaugural director, the scholarship was established to carry forward Professor Cooper's vision of equitable access to health and his passion for knowledge exchange to train the next generation of researchers and clinicians.

Dr Cross' PhD research will investigate the efficacy of a new drug in the treatment of tuberculosis, which is a leading cause of death from a single infectious agent and requires a complex, six month treatment plan. The study aims to simplify and shorten tuberculosis treatment.

"We were thrilled to award the David Cooper Scholarship to Dr Gail Cross. Building on her significant clinical experience in infectious diseases, she is committed to improving health access and outcomes for underserved populations. The work she is undertaking for her PhD on optimising tuberculosis treatment for people in low- and middle-income countries, while using the opportunity to increase our understanding of the underlying biology, echoes David Cooper's vision for developing a broad, robust evidence base that can be used to enhance access to new interventions that improve health," said Professor Anthony Kelleher.

Significant publications

In 2022, there were 753 peer-reviewed publications by Kirby Institute researchers

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PAGE 41: Health professionals trained through the Eliminating Cervical Cancer in the Western Pacific (ECCWP) program in Port Vila, Vanuatu

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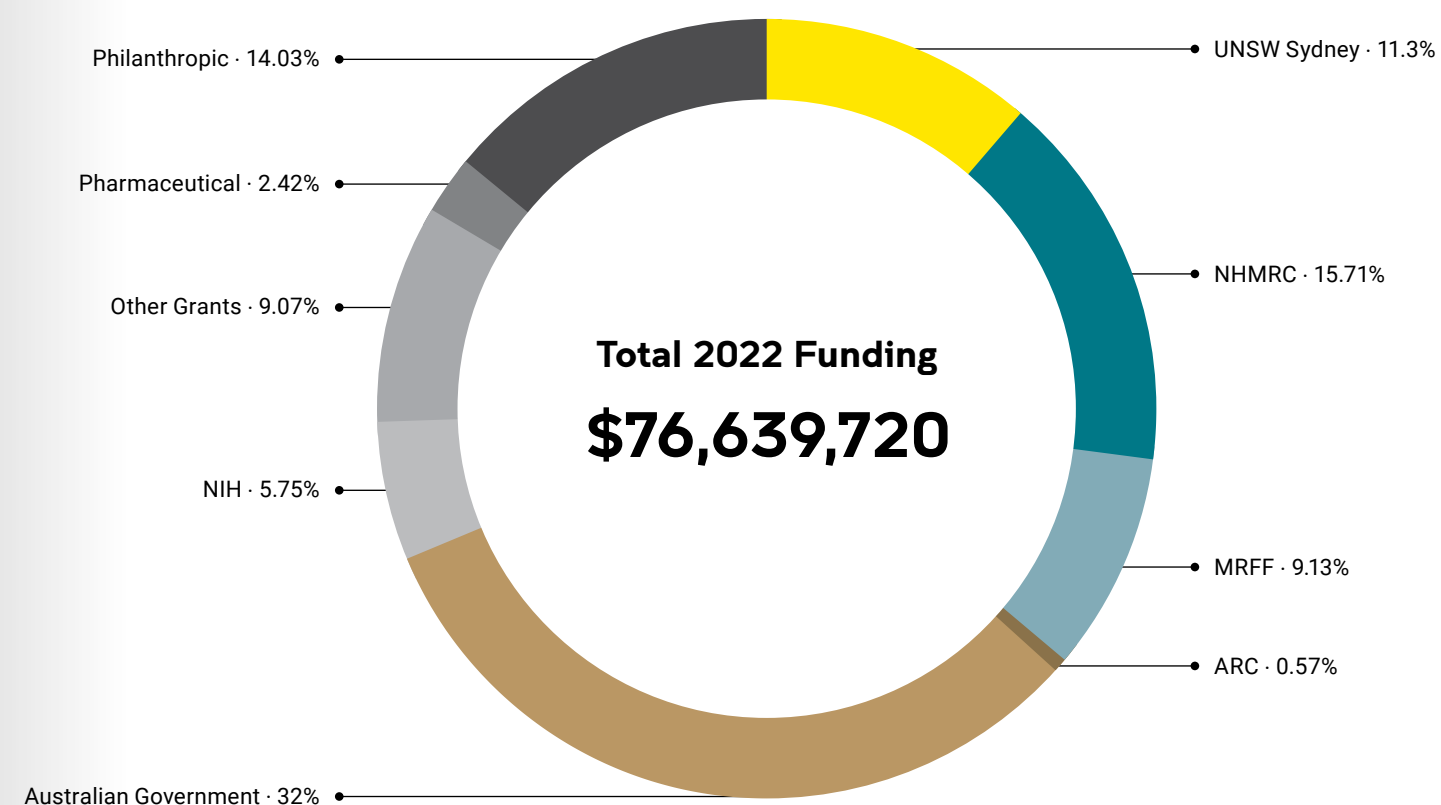
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Your support will ensure that the Kirby Institute can continue to carry out innovative research, working towards our vision of a world free of infectious diseases.

To find out more and make a donation, visit kirby.unsw.edu.au/donate or call +61 2 9385 0900

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