murdoch children's research institute

Annual Report 2023

Murdoch Children's Research Institute acknowledges the Wurundjeri people, the Traditional Owners of the land on which MCRI is located. We pay our respects to their Elders, past and present.

MAIN IMAGE: Fenna, of the Djirri Djirri Wurundjeri women's dance group, performs a traditional dance to open the MCRI Symposium. Watch the Djirri Djirri dancers give the Welcome to Country at the Symposium.

OUR COVER: Gurjinder Naneer and Royal, 4, underwent life-changing brain surgery to treat his focal epilepsy. Read his story on page 18.

2023 stories

1 Research impact

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Director's Report

PROFESSOR KATHRYN NORTH AC

DIRECTOR

I am delighted to present the 2023 Murdoch Children's Research Institute Annual Report. The year marked my 10-year anniversary as Director of MCRI. As I reflect on the achievements of the Institute over the past decade, I am delighted to say that the pace of our progress is way beyond anything I could have imagined when I started my career. And I am so proud of the collaborations that we have forged and nurtured within Parkville and Victoria, around Australia and across the world. We have evolved to become a truly global organisation.

Recently, I looked back at some of my early Director's reports. In 2014, I expressed the hope that our pilot study of rapid genomic screening for the sickest babies would cut the time to diagnosis down to just a few months, and one day be available for all children to both treat, AND prevent, illness. Now, we routinely provide genomic testing for infants in intensive care, with results available in just under three days.

And in 2023 we commenced the BabyScreen+ project to test the feasibility and community acceptability of newborn genomic screening for all babies. I also wrote about another small pilot trial of our then-new rotavirus vaccine, RV3-BB, to prevent children dying from severe diarrheal disease. We now have multiple in-country manufacturers ready to produce the halal vaccine under license, benefitting hundreds of thousands of newborns in our region and globally.

Other partnerships forged by our researchers are delivering advances in infectious disease, allergies and asthma, mental health and wellness, traumatic injuries including concussion, congenital diseases of the brain, heart, kidney, bones and cartilage, childhood cancer and global health. You can read about some of these studies in this Annual Report.

Of course, our other key partners are our patients, families and research participants. This year's report details how we are coordinating and expanding our consumer consultation activity to achieve even more effective and relevant outcomes from our research. In particular, we will continue to be accountable and responsive to the needs and voices of our First Nations researchers, consumers and wider communities.

When we talk about engaging with our families, the prime example is GenV. The two-year in-hospital recruitment phase of all babies born in Victoria wrapped up in 2023, with over 115,000 participants who opted in to GenV, now poised to drive the innovations required to overcome the challenges facing our youngest Australians. To do this, GenV will link its wealth of information to state and national data repositories. This will increase the type of questions that researchers who partner with GenV will be able to ask and answer. The other exciting development in GenV has been the addition of the environmental and health geography team, who will look at relationships between children's health and, among others, air and noise pollution, access to open green space and the built environment.

For the first time in my tenure, 2023 saw our Institute gather at the Melbourne Convention and Exhibition Centre for an all-hands research symposium, showcasing some of the incredible work of our research themes and flagships. The theme of our conference was "Connected. Inspired. Proud."

We had over 800 attendees, 80 presenters, 150 posters and a great deal of fun and learning. The event gave everyone the opportunity to reconnect and spark new ideas and collaborations after the disruption of COVID-19.

At the symposium we were pleased and proud to announce the Ruth Bishop Fellowship, a five-year Fellowship generously funded by the Bill & Melinda Gates Foundation for a mid-career female researcher specialising in vaccines. Honouring Professor Bishop AC's legacy, the Fellowship will allow the recipient to develop new tools and strategies in global health. The Fellowship also continues a long and valued partnership with the Bill & Melinda Gates Foundation, a fantastic example of the many philanthropic partnerships we cherish, such as those with the Novo Nordisk Foundation, Paul Ramsay Foundation and Stafford Fox Medical Research Foundation, among so many others.

In 2023, we also farewelled Dr James Dromey as Chief Innovation Officer and welcomed Ben Fielding as our new Chief Strategy Officer.

I acknowledge and extend my gratitude to all members of our boards, subcommittees and councils, particularly our Chair, Patrick Houlihan, and Co-Chair, Sarah Murdoch, for being key to our success.

I am very sure that while Professor David Danks AO and Dame Elisabeth Murdoch AC DBE would recognise the "DNA" of the Institute they founded in 1986, they would be astounded at the pace and scale of progress that our researchers, clinicians, staff, students and supporters have managed to achieve. We are all doing our utmost to give every child the opportunity to live a healthy and fulfilled life.

All best wishes.

Chair and Co-Chair Reports

PATRICK HOULIHAN

CHAIR

Together with my Co-Chair, Sarah Murdoch, I commend to you the 2023 MCRI Annual Report.

Firstly, congratulations to Professor Kathryn North AC, who in 2023 marked 10 years as MCRI Director. Under Kathryn's leadership, the Institute's revenues have more than doubled to over $200M, enabling a commensurate increase in the breadth and scale of MCRI's impact.

But more than this, Kathryn has embraced the challenge of static funding from the National Health and Medical Research Council by diversifying our income streams, chiefly by leveraging the Medical Research Future Fund since its launch in 2015. She has been able to achieve this by playing to an enduring strategic strength of MCRI, which is to ensure that all our research is required, relevant and readily translatable to clinics, classrooms and living rooms throughout Australia and the world.

Over her 10 years, Kathryn has also built MCRI's commercial and translation capacity, such that we now have multiple clinical and consumer-facing apps, education and edutainment products and protected inventions in markets around Australia and the world.

Finally, Kathryn has ensured that we continue to back our "big bets" in GenV, genomics, stem cells and global health, engaging fantastic support and advocacy from government, the private sector and philanthropists.

I would also like to take this opportunity to mark the sad passing during 2023 of one of my predecessors, Mr Laurie Cox AO. Laurie's 25-year contribution during his time as MCRI Board Chair included merging the Murdoch Institute with The Royal Children's Hospital Research Institute in 2000, to form MCRI as we know it today.

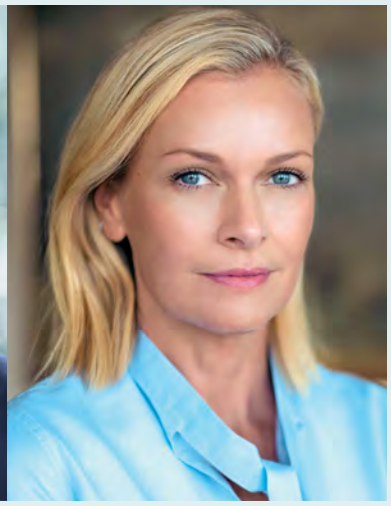
Thank you to my fellow Board members and those on our Institute's sub-committees, who do so much to enable MCRI to build on its leading role among the global child and adolescent health research organisations.

Finally, we warmly welcome Mr Rajeev Natarajan, Managing Director of ICONIQ Capital, as our newest Board Director. Raj's experience in international funds management will be a valuable asset to the Board. We also thank Ms Rowena Coutts for her dedication and service to MCRI over the years. Rowena remains Board Chair of RCH so our association will undoubtedly continue.

Together with Sarah, I look forward to the coming year and continuing to strive to give all children the opportunity to live a healthy and fulfilled life.

SARAH MURDOCH

CO-CHAIR AND GLOBAL AMBASSADOR



What a fantastic year 2023 has been for MCRI! We have much to celebrate, including Kathryn's remarkable 10-year tenure as Director. Kathryn, your warm, generous, wise, and kind leadership has been the cornerstone of our success. Thank you for your unwavering dedication.

I am consistently inspired by Kathryn's vision, realised not only at MCRI but in her key national and global leadership positions. As the world rapidly advances in areas like genomics and artificial intelligence, Kathryn is deeply respected for her expertise. Her peers around the world often mention to me how fortunate we are to have Kathryn leading our work at MCRI.

We welcomed Dame Graça Machel in June for a conversation on global health leadership, facilitated by Richard Ditizio, CEO of the Milken Institute. Dame Graça's life, marked by wit, intelligence, humour, patience and an unwavering hope for a better future for children in dire circumstances, continues to inspire us all.

Professor Daniel MacArthur spoke at the Sohn Hearts and Minds conference in November, Australia's premier investment leaders conference, dedicated to advancing Australian medical research. Daniel spoke about establishing Australian leadership in executing large-scale projects to advance genomic medicine. Hosting the fundraising launch of Daniel's Centre for Population Genomics was a particularly memorable moment for me.

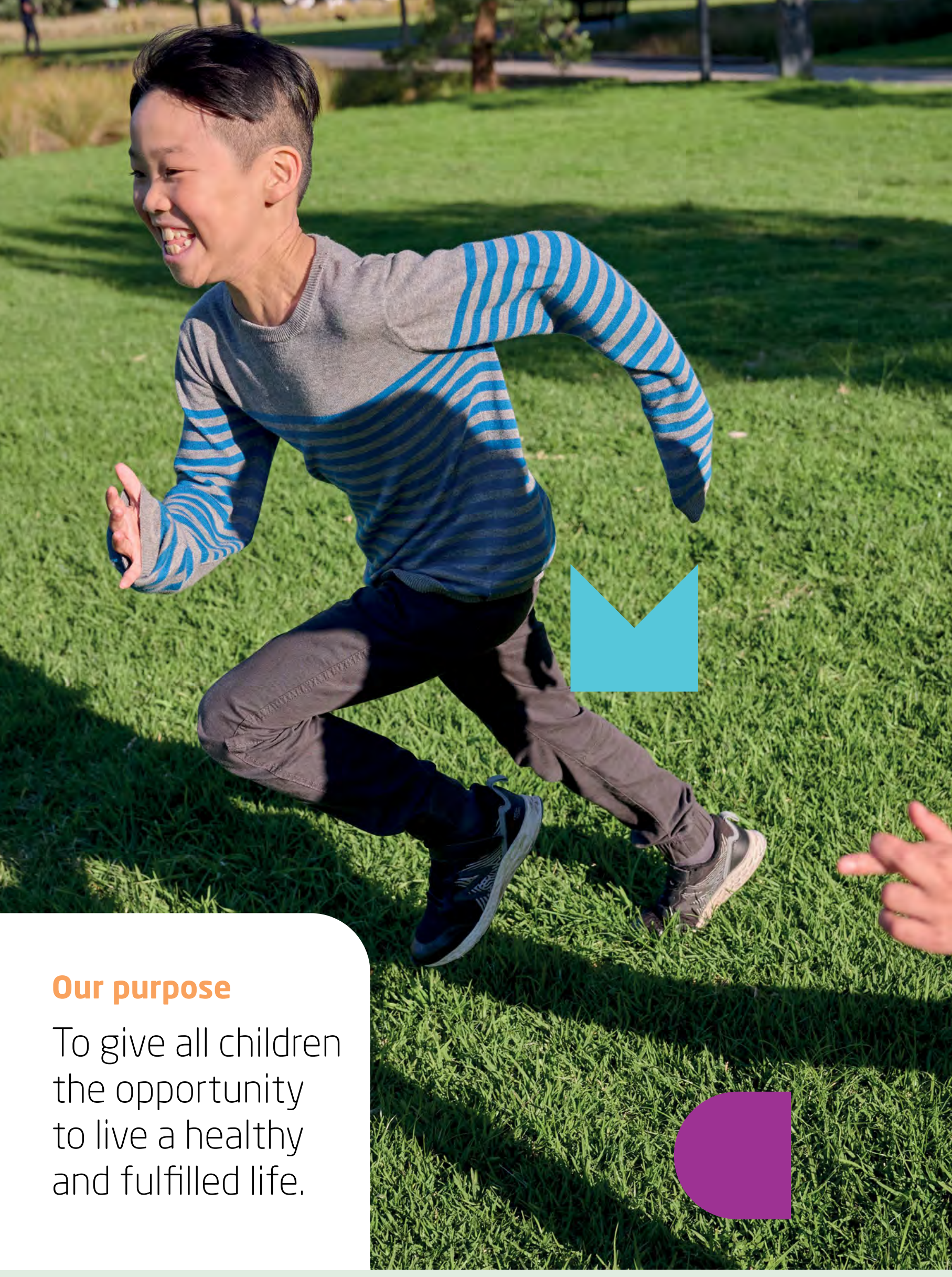
Congratulations also to Penny Fowler, who was appointed a Member of the Order of Australia (AM) for significant community service. As the granddaughter of Dame Elisabeth Murdoch AC DBE, Penny continues the family legacy of driving positive change for children's health. Penny's leadership of the Good Friday Appeal and support for MCRI has played a crucial role in advancing our research to address some of the most critical child health issues around the world.

Sadly, we marked the passing of Brian Walsh, a great friend and supporter of our work. Alongside his pioneering 28-year career at Foxtel, Brian was instrumental in leading significant in-kind support for MCRI, including the Foxtel Lap and the Step-a-Thon for Kids, national walking challenges which raised millions of dollars for child health research.

We are immensely grateful for the support and leadership of our Global Advisory Board and Development Board. Their philanthropic advocacy has been crucial in our journey. The dedication and vision of these Boards have helped us forge partnerships, secure essential funding and expand our reach both locally and globally.

As we look to the future, our goal remains to provide the critical resources MCRI needs to fulfil its purpose: to give all children the opportunity to live healthy and fulfilled lives. We are excited about the projects and initiatives ahead that will enhance our research and broaden our impact.

As ever, we could not make any of our world-first breakthroughs without your valuable support and so once again on behalf of all the Boards, Directors and sub-committees, I thank you. Please enjoy the breadth and depth of the stories presented in this year's Annual Report.



Our purpose

To give all children the opportunity to live a healthy and fulfilled life.

1

Research impact

MCRI is an impact organisation powered by research. From fundamental discoveries to developing and trialling new therapies and interventions, our scientists, researchers and clinicians strive to tackle the big issues in child and adolescent health. We are at the forefront of advances such as artificial intelligence while never forgetting the primacy of advocating for our most important stakeholders – the infants, children and teens we aim to help.

Celebrating Kathryn North's decade of impact

"As a 'cell to society' research institute Kathryn has embraced our diversity. I just love hearing her talking about child health equity and disadvantage. As a neurologist and geneticist she would make a great public health researcher … I congratulate her on a decade of excellence."
PROF SHARON GOLDFELD AM, POPULATION HEALTH DIRECTOR

"Kathryn has always championed global child and adolescent health at the Institute. MCRI's purpose is to give all children the opportunity to live a healthy and fulfilled life – Kathryn recognises that 'all children' translates to children across the globe, especially those living in low- and middle-income countries. Kathryn's support of the global child and adolescent health research at MCRI has been unwavering, and as such she has provided great leadership."
PROF ANDREW STEER, INFECTION, IMMUNITY AND GLOBAL HEALTH DIRECTOR

"Inspiring, engaging and forward looking – Kathryn has led MCRI to new heights!"
PROF JULIE BINES, ENTERIC DISEASES GROUP LEADER

2023 marked Professor Kathryn North's decade as Director of MCRI. Reflecting on 10 years at the helm, Professor North AC is proud of MCRI's many achievements over that time, the strength and breadth of our partnerships nationally and globally and the increasing focus on innovation and impact to ensure that we are making a real difference to the health and wellbeing of all children.

"It's a different way of thinking," she said. "I encourage our researchers to be brave, bold and collaborative so that we bring together all of the expertise across the Institute and around the world to tackle the big and 'wicked' problems. I am so proud that we are now consistently ranked among the top three children's research institutions internationally."

In 2013, Professor North joined as Director after 30 years predominantly based in Sydney. She trained as a paediatrician, neurologist and clinical geneticist and completed a postdoctoral fellowship in the Harvard Genetics Program. In Sydney, she was the Douglas Burrows Chair of Paediatrics and Head of the Institute for Neuroscience and Muscle Research, based at the Children's Hospital at Westmead.

She was attracted to MCRI as she could see the unique opportunity of the Melbourne Children's Campus – the co-location of MCRI with The Royal Children's Hospital, The Royal Children's Hospital Foundation and University of Melbourne Department of Paediatrics – and the integration of researchers and clinicians in a purpose-built facility.

In the early days, MCRI was "much more of a research hotel," she said. "There were around 85 separate research groups, and not a lot of crosstalk between them. I've really tried to drive [stronger] collaboration and the formation of multidisciplinary teams, working together to solve the major health problems faced by our children and young people."

A decade later, Professor North is leaving her mark. Among her many accomplishments, she has overseen the establishment of a clinical trials centre and placed MCRI at the forefront of the genomics revolution nationally and internationally.

There have been other major shifts. "Stem cell research barely existed when I arrived," she said. "This research area is now bigger than Ben Hur!" As for the transformational Generation Victoria (GenV) research program, 10 years ago it was "just the nub of an idea" – now it is a whole-of-state population cohort of about 120,000 people and a national resource of international significance.

The numbers tell a remarkable story of growth: during her tenure, staff levels have increased 50 per cent and there has been an average yearly increase in revenue of 10 per cent.

After receiving a Member of the Order of Australia (AM) in 2012, Professor North's global leadership in genomic medicine and contribution to the advancement of genetic, neurological and child health was officially recognised when she was appointed a Companion to the Order of Australia (AC) in 2019.

This was in addition to numerous other prestigious awards, including the Peter Wills Medal from Research Australia, the GSK Australia Award for Research Excellence and the Ramaciotti Medal for Excellence in Biomedical Research.

While there is no typical day at MCRI, Professor North often starts early, with calls to international colleagues. From there her work can take her from meeting researchers for project updates, speaking with members of state and federal governments or meeting philanthropic donors.

"Face-to-face meetings are important and I tend to spend my day talking to people," she said. "I check in regularly across all our leaders. We've got so much going on and it's important not to get overwhelmed – I feel a great sense of responsibility to know what's happening across our teams."

One particular day stands out as a key example of the often eclectic nature of her job. She started early with an international Zoom call with the leaders of medical research institutes across four countries, then attended a government think tank on the future of genomics, before running across town to a photoshoot for *Vogue* magazine in the afternoon, with the then-Chair of the MCRI Board, Suzi Carp AO, and Ambassador The Honourable Dame Quentin Bryce AD CVO. "I thought, 'Wow, what a day!' How hilarious – from one extreme to the other."

As for where MCRI is going, Professor North envisions a future in which we can use the power of genomics to prevent disease before it develops and remove the trial and error from treatment. Since 2016, she has led Australian Genomics, which is focussed on the integration of genomics into healthcare nationally.

"It's unbelievable what we're achieving across the Institute," she said. "It's just so amazing. I live in a constant state of excitement!"

In 2023, MCRI's Council of Ambassadors generously commissioned a striking sculpture to celebrate her 10 years of leadership. *Blue Green Margin, 2023*, was conceived and created by artist Matthew Curtis, renowned for his science-inspired glass works.

It symbolises the interconnectedness of individuals, objects and ideas, evoking harmony and mutual support. The sculpture now stands proudly in MCRI's reception area, outside the Director's office as a fitting embodiment of her decade of outstanding leadership.

A Director's Fund has been established for supporters interested in contributing towards Professor Kathryn North's most vital and urgent research initiatives.

"After having seen many changes over more than 20 years on the Children's campus, I was immediately struck on Kathryn's arrival by her fresh style and big-picture vision. She quickly learned to appreciate the value of a high-functioning biostatistics research group and has consistently supported our unique role in enhancing the quality of a wide range of research."

PROF JOHN CARLIN, SENIOR PRINCIPAL RESEARCH FELLOW

"Congratulations to Kathryn North on a decade at the helm of MCRI. She has brought and modelled a 'can do' culture, with a focus on solutions rather than problems and on real translation of health outcomes for our patients and families."

PROF RAVI SAVARIYAN, CLINICAL GENETICIST

"Kathryn's ability to communicate and really connect with people from all different backgrounds is one of the things that makes her truly exceptional. She can capture a roomful of world-leading academics one moment and quickly switch to meaningful and valued conversations with our team's own stakeholders, the interested public, donors or patient families."

REBECCA HARFORD, HEAD OF PHILANTHROPY

Separating fact from science fiction – AI in children's health

MCRI scientists dissect the future of artificial intelligence

Prof Daniel MacArthur (top) and Dr Gerardo Luis (Ikee) Dimaguila (above) are using AI to improve children's health.

Professor Daniel MacArthur is bullish on the impact that artificial intelligence (AI) and machine learning (ML) will have on children's healthcare.

"The dramatic language we're hearing about the transformative impact of AI is justified," said Professor MacArthur, Director of the Centre for Population Genomics, a partnership between Murdoch Children's Research Institute and Garvan Institute of Medical Research.

"The speed with which we're seeing these transformative changes in the large language model (LLM) space, the ability to process huge amounts of data and give sensible answers to human questions – it's a capability that's immediately applicable to many healthcare and research settings."

Through a partnership with Microsoft Research and the Broad Institute of MIT and Harvard University, Centre for Population Genomics researchers are working to adapt LLM models such as GPT-4 for clinical impact. The immediate focus is on speeding up genetic filtering processes that currently take hours of work by experts known as variant curators.

Because of this labour-intensive process, genetic testing is expensive, and it's difficult to re-analyse patient data over time. This ability is crucial in genomics, because the field is evolving rapidly.

"With standard testing, we can only find the precise cause of severe genetic disease in about half of all families that are affected," Professor MacArthur explained. "But by regularly re-analysing data from patients who didn't get a diagnosis the first time around, we can take advantage of updated methods and knowledge to get answers to families as quickly as possible. We're working to automate components of that process to make it possible to run it at scale."

Early versions of the new approach have been developed in collaboration with the Victorian Clinical Genetics Service (VCGS), with Professor Zornitza Stark leading the clinical application work.

These new approaches are already showing promise, and a prototype pipeline has already found over 100 new diagnoses for patients who had already undergone genetic testing.

"We want to get to a stage where every patient in Australia is in a system that's constantly refreshing, again and again," Professor Stark said. "A diagnosis makes an enormous difference – it enables families to undergo family planning and get more accurate information on how best to support their child."

Throughout MCRI, experts are thinking through how best to use revolutionary new AI and ML tools to ensure every child can live a healthy and fulfilled life. Because the technology is so new, they're also writing the rules for future collaborations in the process.

"It's innovation now, but we aim to make it core operations tomorrow," said the Centre for Health Analytics' Dr Gerardo Luis (Ikee) Dimaguila. "Training and testing ML models is one thing, deploying them is another. You need ongoing infrastructure. Working with experts across the Institute, we're setting up new systems, developing our AI policies and ensuring data security."

Dr Dimaguila is working on VaxPulse, which is part of a broader effort by MCRI researchers to combat a problem that has grown recently – the spread of vast amounts of vaccine misinformation that spread quickly and fuel hesitancy, or what the World Health Organisation (WHO) calls an "infodemic".

An interdisciplinary team of experts in everything from communications to social science and AI/ML technology are coming together for the VaxPulse learning health system. Dr Muhammad Javed and Dr Sedigh Khademi have designed AI and ML algorithms that scrape global multilingual social and electronic media for vaccine-related concerns and vaccine events.

"It's challenging to pin down the rules of how people talk," Dr Dimaguila said. "So the team is using ML that need large amounts of data and update it as we go along. It's a complex undertaking, but the systems improve over time."

Another application is in rapid notification systems for health authorities around emergencies such as "thunderstorm asthma" outbreaks. Using anonymised triage notes from multiple emergency departments, Dr Khademi has developed natural language algorithms to quickly identify and then warn authorities of rapidly escalating health events, which would be slow and unwieldy to do on a site-by-site basis.

Then there's the impact that ML and AI are directly having on child patients already. You can read about how advanced neuroimaging analysis helped stop four-year-old Royal Naneer from having multiple seizures a day on page 18.

From identifying previously invisible lesions to scanning massive datasets for vaccine concerns and rapidly speeding up the time it takes to sift through genetic data, AI and ML are revolutionising paediatrics. "The ripple effects are enormous," Professor MacArthur said. "We all need to get used to living in an exponentially changing world."

Committed to making a difference

Making research relevant, inclusive and impactful

Achieving research impact lies at the heart of our ability to improve children's health and wellbeing. But we know that much health research fails to influence further knowledge, practice or policy – or can take more than a decade to do so.

We're committed to making a difference. The Murdoch Children's Research Institute Impact and Consumer Involvement Team works in partnership across the Institute to build understanding, skills and a culture that focusses on making our research as relevant, inclusive and impactful as possible.

FOSTERING AN INCLUSIVE APPROACH TO IMPACT CULTURE

What is research impact? The benefits of research are extraordinarily varied, and there are many different pathways to creating change through research. Our team works to collaboratively align impact-enabling activities across the Institute, and we provide advice and strategic guidance to Themes, Flagships and Major Initiatives. The team delivers an award-winning training and education program that has strengthened the capacity and capability of over 3,000 Campus staff since 2021. We facilitate an Impact Community of Practice that comprises over 700 staff and students – asking the hard questions, and learning how to be more impactful, together.

The team plays a leading role in national approaches to impact in health and medical research, and was part of the leadership group that co-developed the first Research Impact Framework for medical research institutes in Australia. The Framework takes a necessarily broad approach to the benefits arising from research: expanding knowledge, strengthening capacity to undertake excellent research, informing the decisions we make, improving the health of populations, strengthening the economy and contributing to a fairer, safer and more inclusive society.

MAKING INVOLVEMENT MATTER: PLACING CHILDREN, YOUNG PEOPLE AND FAMILIES AT THE HEART OF WHAT WE DO

For research to make a difference – to have an impact – it needs to reflect the needs and priorities of those it seeks to benefit. For us, that means placing children, young people and families at the heart of what we do.

Working with our Campus partners – The Royal Children's Hospital, The Royal Children's Hospital Foundation and University of Melbourne Department of Paediatrics – we have made a joint commitment to partnering with children, young people and families in all our work.

At MCRI, this means designing and delivering research in partnership. We are working across all research areas to provide training and tools, and to recognise and showcase excellent practice in this area.

We are establishing MCRI's first central Consumer Advisory Group, and our new Consumer Involvement Network has over 150 members.

Importantly, we have partnered with the Centre for Community Child Health to co-deliver the Voice of the Child Project, which is developing a toolkit and resources to ensure we have all the skills and systems necessary to centre the voices and priorities of children in our research. This work places the rights of children to have a voice in all matters affecting them as a foundational principle of our Institute's vision.

TOWARDS FAIRER AND MORE EQUITABLE COMMUNITY-LED CHANGE FOR LGBTQIA+ INCLUSION

Sometimes, to overcome discrimination and disadvantage, different approaches are required for different groups – equality does not necessarily mean treating everyone the same way. We have established the Melbourne Children's LGBTQIA+ Collective to tackle LGBTQIA+ inequity in research and clinical care. Comprising over 150 dedicated LGBTQIA+ staff, students and allies, the Collective has emerged as a voluntary force committed to confronting discrimination and dismantling stigmas.

Our mission is to cultivate an environment of safety and inclusivity for LGBTQIA+ staff, students, patients and research participants on Campus. In 2023, the Collective was funded by The Royal Children's Hospital Foundation to co-develop and implement a formal, ambitious LGBTQIA+ inclusion and advocacy strategy. The strategy's essence will lie in its direct response to the needs and priorities of LGBTQIA+ staff, students, patients and research participants.

We want to give all children the opportunity to live a healthy and fulfilled life and contribute to a world where all kids thrive. The LGBTQIA+ Campus Strategy actively seeks to strengthen our response to the known, specific challenges that LGBTQIA+ children, young people and families face in receiving quality clinical care, and proactively include their experiences and knowledge in research, education and training.

Research impact metrics for 2023

Advancing knowledge

Murdoch Children's Research Institute constantly strives to achieve high quality research outputs and outreach. Publication metrics of the breadth and quality of our endeavours in 2023 affirm the consistently high quality of our research output.

RESEARCH PUBLICATIONS

1,171 peer-reviewed papers

2,716 total citations

H-index = 18
(18 papers were cited 18 times or more)

Highly cited publications

4 hot papers (Articles published in the last two years that received citations quickly after publication. These papers have been cited enough times in the most recent bimonthly period to place them in the top 0.1 per cent when compared to papers in the same field.)

21 highly cited papers (Articles that perform in the top 1 per cent based on the number of citations received in the previous two months when compared to other papers published in the same field in the same year.)

Collaborations

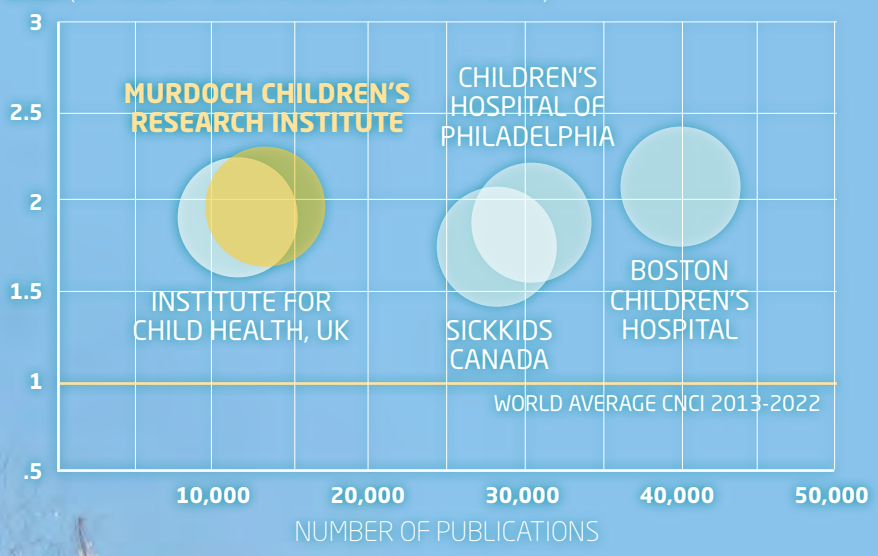
10,759 research collaborations (8651 international; 2108 national)

1,630 organisations we collaborate with (140 within Australia)

105 countries where our collaborators are located

According to Clarivate benchmarking, MCRI research output ranks consistently in the top three over the past 10 years.

Source: Web of Science (Clarivate)



Behind the scenes

MCRI incurs many research costs not covered by grants. These include commercialisation and intellectual property costs to maximise return on investments, cybersecurity to keep data safe and secure, clinical trials to take breakthroughs to families and running costs for infrastructure underpinning our cutting edge science. Here are some of the hundreds of unsung heroes delivering MCRI's impact.

SARA HOWDEN

IPSC DERIVATION & GENE EDITING FACILITY

Provides stem cell derivation and gene-editing services to researchers.

CAROLYN STEWART

MELBOURNE CHILDREN'S TRIALS CENTRE

Supports paediatric clinical trials internally and externally, from design to delivery

DR ALEJANDRO HIDALGO-GONZALEZ

STAFFORD FOX DRUG DISCOVERY FACILITY

"I hope my research and clinical work will help improve the respiratory health and wellbeing of all children and young people."

SILA GENC

DEVELOPMENTAL IMAGING

Facilitates high-quality medical imaging research to improve our knowledge of development and health through sophisticated imaging acquisition and analysis techniques.

REVI ROSENBERG

OFFICE OF DATA

Optimises the data ecosystem to empower researchers to generate insights and solutions for positive impacts on children's health.

ANTHONY NEALE

CYBERSECURITY

Prevents unauthorised access to MCRI assets such as computers, networks and data. Maintains the integrity and confidentiality of sensitive information.

NYANHIAL YANG

CONSUMER ENGAGEMENT

Fosters a collaborative environment where consumers and researchers work together to make a difference in child health research.

ASSOCIATE PROFESSOR MIRANA RAMIALSON

TRANSCRIPTOMICS & BIOINFORMATICS

A multidisciplinary team of computational and molecular biologists who specialise in mining genomic information to uncover the underlying causes of congenital diseases.

NIRASHA PARTOSAM

INNOVATION

Accelerates discoveries to make the greatest impact on child and adolescent health

PROFESSOR KATHERINE LEE

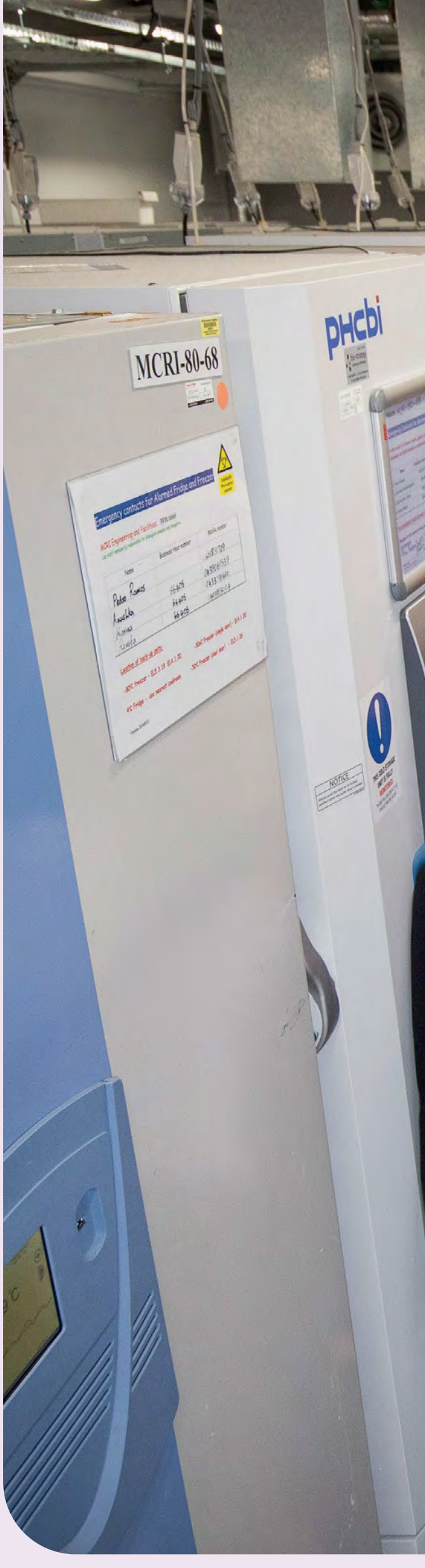
CLINICAL EPIDEMIOLOGY & BIOSTATISTICS

Specialises in biostatistics, epidemiological methods and data management, strengthening evidence for better health in children and young people

DR BENJAMIN ONG

SCIENTIFIC SERVICES, INFRASTRUCTURE & ENGINEERING

Facilitates the biomedical laboratory, clinical research and office environment to enable MCRI to meet its organisational objectives




MCRI-80-88
MCRI-80-79

Expanding horizons

Cruze and Florence have the most common form of dwarfism, achondroplasia. Learn more about MCRI's pioneering work in this area on page 27.

2

Research excellence

Across Clinical Sciences, Genomic Medicine, Infection Immunity and Global Health, Population Health and Stem Cell Medicine, our researchers are taking world-first discoveries into the clinics, classrooms and living rooms of children and families around Australia and around the world.

Research breakthroughs transforming lives of children with epilepsy

MCRI researchers are using new models of collaboration alongside artificial intelligence (AI) and machine learning (ML) to address childhood epilepsy, which affects around one in 200 children.

Royal (pictured) has a cheeky, contagious laugh that could even make a cranky T-Rex smile.

So when the bubbly four-year-old, who loves dinosaurs, started making uncharacteristic laughing sounds, his mum Gurjinder Naneer knew something wasn't right.

"Royal was a healthy boy, nothing out of the ordinary, until one day his behaviour changed overnight," she said. "We were going through our home routine after picking Royal up from childcare. But when he went to wash his hands, I could hear this strange, weird laughter coming from the bathroom.

"Upon checking, everything seemed to be normal until later that night, Royal went to the bathroom again where I heard that unnerving laugh. This time I found him holding on tight to the door handle, frozen and laughing.

"Once the episode was over, Royal took a deep breath and felt tired, but told me not to worry. But that wasn't his laugh and I knew something was wrong."

Over the next few days, the family kept a close eye on him, checking in with their doctor, hoping to get answers.

"The episodes, later diagnosed as seizures, became more frequent, from a couple a day to one every half an hour, until they started to appear in clusters," Gurjinder said. "The worst being 19 seizures within just two hours. Every time his whole body would freeze for at least a minute and as the days went on, he lost his appetite."

After five days of being on tenterhooks, Royal woke up having a larger seizure and with a heavy nosebleed.

He was rushed to the local hospital where he was given anti-seizure medications. But with those failing to help and an MRI unable to provide answers, he was transferred to The Royal Children's Hospital.

It was there that Royal's family met MCRI clinician-scientist Dr Emma Macdonald-Laurs. As part of her PhD, she developed a machine-learning-based automated detection algorithm using MRI and PET scans for identifying focal cortical dysplasias (FCDs).

FCDs are abnormal brain areas that develop when the baby is still in the womb and are a common cause of drug-resistant seizures in children.

It can be impossible for traditional MRI techniques to identify smaller FCDs, meaning patients sometimes live with seizures for many years. But breakthroughs in AI and ML are enabling much quicker diagnoses.

When Royal arrived at The Royal Children's Hospital, an MRI-PET scan was performed and the FCD was found using the algorithm that Dr Macdonald-Laurs developed. It identified a tiny cortical dysplasia, about the size of a blueberry.

"AI and big data will be increasingly integrated into our care," Dr Macdonald-Laurs said. "I think what AI can do for medicine is get from A to B much faster. Rather than waiting 11 years for a diagnosis, it can happen much quicker."

Across MCRI, researchers are collaborating on new diagnoses and treatments for epilepsy. Families from around Australia are treated using the most advanced molecular, imaging and surgical techniques available. It's estimated that one in 200 children has epilepsy, and more than 21,000 children in Victoria alone live with uncontrolled seizures.

MCRI is bringing together clinicians, imaging scientists and laboratory scientists to collaborate on new approaches. Dr Katherine Howell is a clinician-scientist, paediatric neurologist and MCRI's Epilepsy Team Leader. She said seizures often had broad impacts on a child's health.

"Uncontrolled seizures in a baby's brain can lead to major developmental setbacks," she said. "Identifying the cause early can help guide treatment options like medication changes, which can improve seizure control."

Dr Sila Genc has developed an advanced MRI technique for cellular imaging of cortical matter in the brain to help find these abnormal seizure-causing cells. She said imaging breakthroughs like this, implemented clinically by the Neuroscience Advanced Clinical Imaging Service (NACIS) team, can help to diagnose children faster and help neurosurgeons navigate surgery.

"Our research-integrated approach allows us to get more, better imaging, which in turn enables neurosurgeons to develop a safe surgical roadmap," she said. "[It's vital] to avoid important blood vessels and areas of language function and motor structure, to enable a safe surgery."

As for Royal, he successfully underwent surgery, and his mum Gurjinder said he has not had a seizure since.

"The whole ordeal took a huge toll on our family and we were struggling mentally," she said. "We were so lucky that we quickly picked up that something was wrong because young children can't always explain what they are going through.

"Royal is back to his calm, friendly, patient self. He loves dinosaurs and now has a few more in his collection from friends since spending time in hospital."

HRH Princess Astrid of Belgium, alongside families with children living with severe epilepsy, announcing the research grant from UCB Australia.

Watch how Levi has benefited from genetic screening for severe epilepsy.

Levi, who has a rare genetic disorder that triggers frequent seizures, attending the event with his mum Karsha, purple Wiggle Lachlan Gillespie, Kathryn North AC and Dr Howell.

Grant to help improve the health outcomes of children with epilepsy

MCRI's efforts to improve the health outcomes of children with epilepsy received a funding boost in October 2023 with a $193,000 grant from UCB Australia for a research project aiming to quantify the economic benefit to families and society of rapid diagnostic testing for infantile epilepsy.

UCB is headquartered in Belgium and the grant was announced by Her Royal Highness Princess Astrid of Belgium, Representative of His Majesty the King, alongside families with children living with severe epilepsy and representatives of the Belgian economic mission to Australia.

The grant was made in recognition that further evidence was needed to support implementing rapid genome sequencing into healthcare, including determining its cost-effectiveness, required to inform advocacy and policy decisions.

MCRI's Dr Katherine Howell, who will lead the research, said an early diagnosis allowed doctors to make informed decisions affecting treatment, evaluation, counselling and potential precision therapies earlier and potentially avoid further brain damage due to seizures or underlying disease.

"Epilepsy is not just one condition, there are many different forms," she said. "I'm privileged to be awarded this grant on behalf of MCRI to continue the important research investigating genome sequencing to provide information that will ultimately lead to better outcomes for children living with epilepsy in Australia."

Driving treatments for childhood concussion

Changing the rules on head injury

New diagnostic tools and updated world's best practice on how to prevent and treat sport-related concussion have been laid out in a 'game changing' series of studies.

The vast body of international research, with major contributions from MCRI researchers, represents a deep dive into all aspects of concussion management across 23 papers. The findings were the result of the 2023 International Consensus Conference on Concussion in Sport, which sought to establish and guide a coordinated agenda to reduce concussion risk.

MCRI's Professor Gavin Davis, who provided key insights on childhood concussion, said the findings would change how concussion was viewed across sporting codes and recreational sport and within medical clinics and emergency departments.

"Concussion is among the most common injuries in sport, presenting a variety of symptoms and functional difficulties that can impact school, work, sport and recreation," he said.

Fortunately, most concussion symptoms resolve themselves within two weeks of injury. However, up to 30 per cent of sufferers will report persisting symptoms beyond 30 days.

Professor Vicki Anderson, who leads MCRI's concussion research area, said typical concussion symptoms were not easily recognised, leading to many children not receiving medical help as early as they could.

"Unlike adults, the developing brain responds differently to concussion and the prevention of long-term effects requires child-specific diagnosis, acute management and recovery protocols," Professor Anderson said.

The new diagnostic tools will work alongside the Headcheck app, a concussion diagnosis and management tool designed by leading MCRI child concussion experts in partnership with the Australian Football League (AFL).

One in five children will experience a concussion before the age of 10, mainly due to falls or playing sport. The risk continues through adolescence

18-year-old Oliver Radford (pictured) has had six concussions, with the most recent and impactful two years ago while playing football. In the weeks following the concussion he was extremely sensitive to light and experienced nausea and headaches for months.

"Due to the impact, I missed weeks of school and then only went back with limited hours," he said. "I still have issues with concentration and can struggle to focus."

Oliver said due to the lingering impacts of the concussion he had given up playing football and instead became an umpire.

"The physio had cleared me to play but I decided not to risk another concussion," he said.

Welcoming the more comprehensive concussion roadmap, he said it would make a huge difference for players and sporting clubs to better manage recovery.

New clinical guidelines improving expert care

Focussing on cancer treatment and anxiety

World-first international clinical guidelines to help prevent and treat heart complications in children undergoing cancer treatment have been created with the help of MCRI experts.

The guidelines cover cardiovascular disease assessment, screening and follow-up for paediatric patients receiving cancer treatment with new molecular therapies, immunotherapy, chemotherapy and radiotherapy.

Led by Associate Professor Rachel Conyers, the expert consensus defined the high-risk group of cancer patients who should undergo a heart check-up, standardised an approach to screening and surveillance during treatment and provided recommendations to protect vulnerable young hearts. There are also recommendations to better support young people coping with anxiety.

MCRI researchers have also created new clinical guidelines to better support children and adolescents diagnosed with anxiety as demand for mental health care surges post-pandemic.

The Australian-first, evidence-based clinical guidelines for healthcare professionals aim to improve the identification, assessment and management of anxiety disorders, which affect one in 14 youths and have risen in the aftermath of COVID-19.

The document was developed as part of the Melbourne Children's Campus Mental Health Strategy, involving experts from MCRI, The Royal Children's Hospital and University of Melbourne Department of Paediatrics.

Jonathan Glenning checks the blood pressure of a primary school student.

Apple Watch detecting heart issues

An MCRI trial led by Associate Professor Rachel Conyers will use Apple Watch's electrocardiogram (ECG) function to monitor children's hearts during cancer therapy. Toxicities in cancer treatment can lead to long-term complications, including heart rhythm disturbances, which can be potentially life-threatening.

Children undergoing cancer treatment currently need to have an ECG heart check twice a week in hospital, which is a huge burden on patients and their families. If successful, Apple Watch monitoring would not only save families time but also save the health system money.

40 children are taking part in the trial see if the device can monitor their hearts remotely. Associate Professor Conyers teamed up with digital health pioneers Curve Tomorrow to build an app that extracts data from the watch-based ECG and sends it to the team to analyse. The study could be a precursor to a larger trial, with a view to changing medical practice for these vulnerable patients.

Key recommendations included more consistent and regular assessments, screening and treatment of anxiety, with a focus on helping young people identify between everyday worries and what is clinically significant.

BLOOD PRESSURE CHECK FOCUSSES ON SCHOOL CHILDREN

Primary school students' blood pressure is being checked in the classroom under a MCRI-led pilot program that aims to lower the risk of stroke and heart disease in later life.

The study aims to address the silent precursors of serious heart ailments such as high blood pressure and thickening of the arteries that begin in the early years.

The Healthy Hearts @ School Study involves students in grades three to six, like Louis (pictured left), who have their blood pressure checked with parental/carer consent. The families of those students who record a high blood pressure reading will receive a letter to give to their GP who can then refer them to The Royal Children's Hospital or their local paediatrician for specialist follow-up.

The research team also runs heart health education sessions at the schools, covering how the heart and arteries work, what blood pressure is and strategies for good heart health such as regular exercise, a healthy diet and getting the recommended amount of sleep.

Watch Jonathan Glenning talk about the Healthy Hearts @ School Study.

Spotlight on stem cells

Towards solving childhood brain cancer

Brain cancer kills more children in Australia than any other disease and has the lowest survival rates of almost any cancer.

Among the most deadly of brain cancers are the paediatric high-grade gliomas, which are aggressive and invade the surrounding brain tissue. These high-grade gliomas are usually inoperable and are resistant to treatment. Sadly, only 5 per cent of children with this type of brain cancer survive more than two years.

To tackle this complex and deadly cancer, researchers across three MCRI labs have come together to understand how paediatric high-grade gliomas develop and work towards exploring new treatment options.

The majority of high-grade gliomas in children may arise as a result of abnormal brain development, from precursor cells that would normally become brain cells. Therefore, understanding normal brain development is the first key to unlocking how high-grade gliomas form.

Dr Maria Giovanna Garone, from the Neural Stem Cell laboratory, led by Associate Professor Silvia Velasco, is an expert in growing 'brain organoids': complex neural tissues generated in a dish from human pluripotent stem cells. Brain organoids are a powerful tool for studying aspects of human brain development and disease in the lab.

The Neural Stem Cell lab's research program is supported by the Lachlan and Sarah Murdoch Foundation, the Thyne Reid Foundation and the Samuel Nissen Charitable Foundation.

In parallel, Liam Furst from the Neuro-oncology laboratory, led by Professor David Eisenstat, works on growing patient-derived brain cancer cells to understand cancer development. These cells originate from labs around the world, including The Royal Children's Hospital. This work is funded by charities RUN DIPG and the Isabella & Marcus Foundation.

Recently, Furst and Dr Garone have brought their research together to create a 3D brain organoid-cancer model.

This model has allowed them to begin to explore the complex relationship between the brain and cancer cells, including how the cancer develops and why it is resistant to treatment.

Diving deeper into the causes of brain cancer, the Neuro-oncology lab also aims to use this 3D brain organoid-cancer model to investigate DLX2, a gene they believe is critical for controlling whether precursor brain cells turn into cancer cells rather than healthy normal cells.

This includes work from Dr Morgan Marshall from the Neuro-oncology lab, who aims to understand the structure and function of DLX2. This work has been generously supported by the Live for Lily Foundation.

To understand more about paediatric high-grade glioma and other forms of brain cancer at a cell protein level, the team has started working with the Functional Phosphoproteomics lab led by Dr Sean Humphrey.

Dr Hannah Huckstep from the Phosphoproteomics group will join the collaboration to study modifications to cancer cell proteins using the recently purchased Orbitrap Astral Mass Spectrometer.

Integral to the success of the collaborations between these three Stem Cell Medicine labs is Dr Maree Faux from the Neuro-oncology lab, who maintains the highest standards of scientific inquiry and research excellence.

Ultimately, this interdisciplinary team aims to advance our understanding of this complex and deadly childhood brain cancer, and to find and test potential treatments that will effectively kill cancer cells while minimising damage to healthy brain cells.

The first Thermo Scientific Orbitrap Astral Mass Spectrometer (MS) installed in Australia.

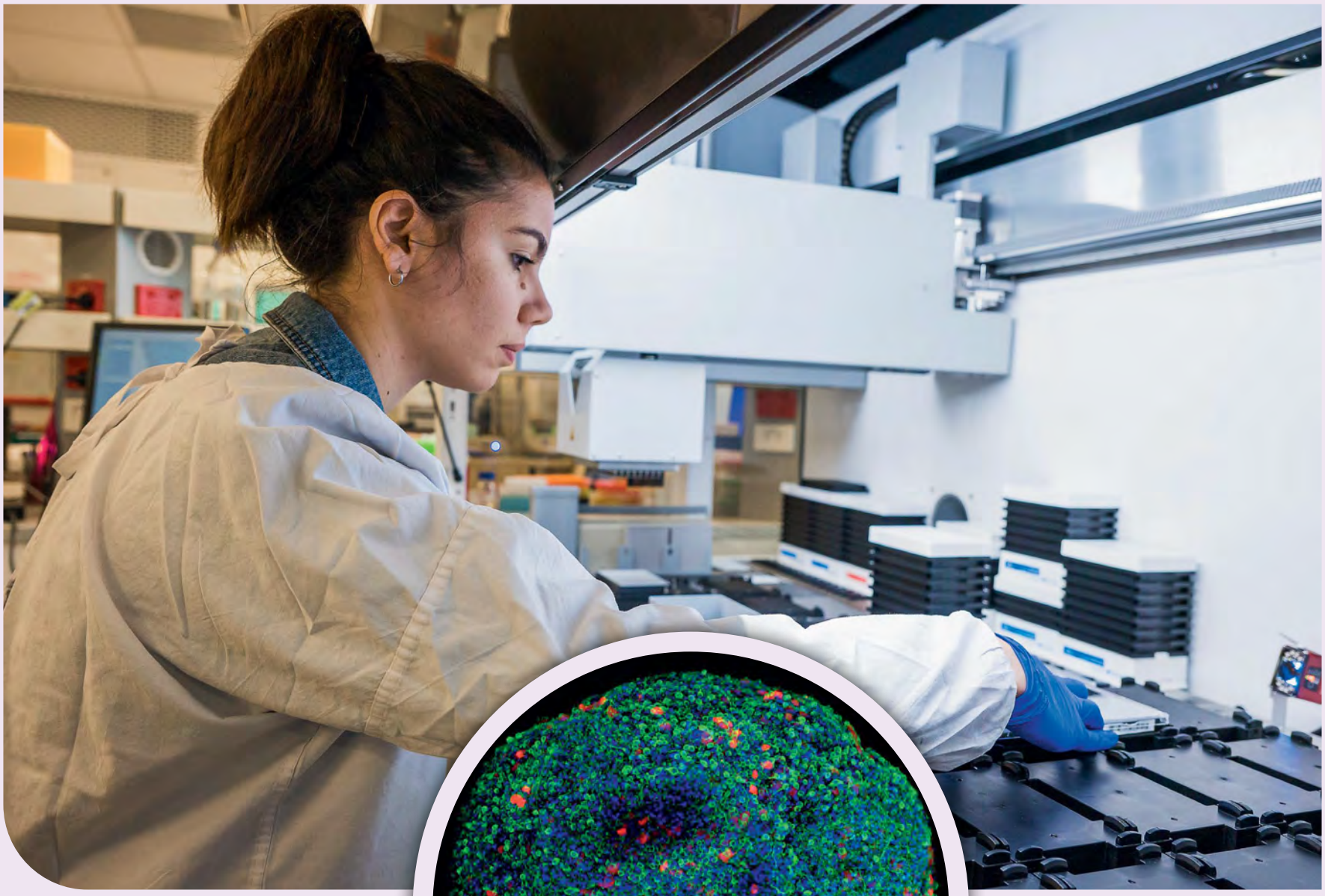
The Orbital Astral Mass Spectrometer

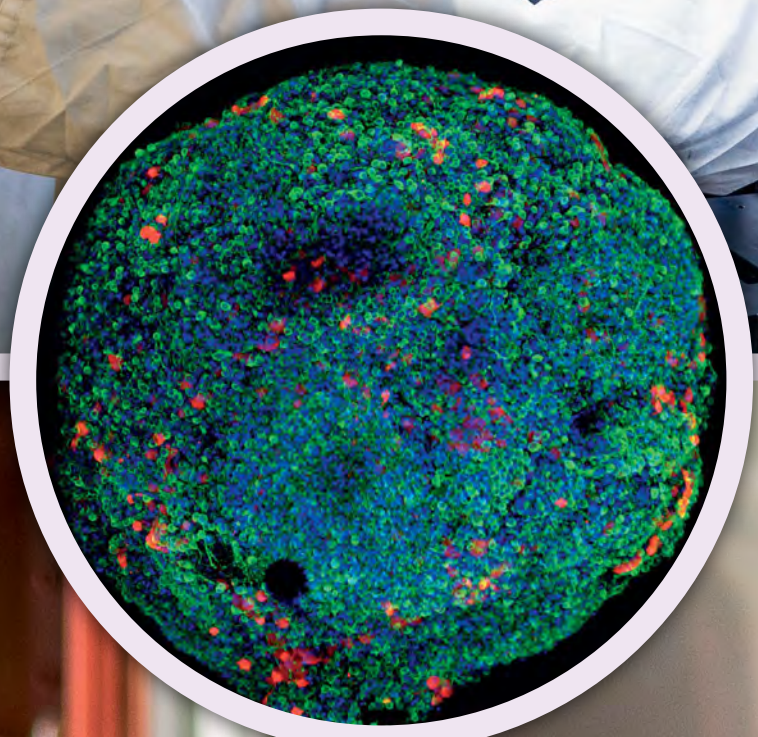
The first Thermo Scientific™ Orbitrap™ Astral™ Mass Spectrometer (MS) installed in Australia, and one of the first in the world, will enable researchers to study proteins faster and with more precision, accelerating discoveries into childhood diseases such as brain cancer.

Dr Sean Humphrey and his team's research focuses on developing new ways to study proteins and how they are modified in the cell by a process called "phosphorylation".

Protein phosphorylation is key to many cellular processes that keep our body healthy. But dysregulation of this process can contribute to disease.

The acquisition of the Orbitrap Astral Mass Spectrometer was made possible through support from the Stafford Fox Medical Research Foundation and the Estate of Patricia Mary Gleeson.





TOP: Dr Maria Giovanna Garone working on her 3D organoids. INSET: Dr Garone's 3D cancer-brain organoid model. BOTTOM: Neural Stem Cell lab group leader A/Prof Silvia Velasco with a flask of brain organoids.

Australian-first trial in immune deficiency

Children's lives will be transformed in new study

Watch 7News Australia tell the story of our RAG-1 SCID clinical trial.

In 2023, MCRI became the first Australian site for a clinical trial for children diagnosed with RAG-1 deficient severe combined immunodeficiency (RAG-1 SCID).

Children with RAG-1 SCID do not have a working immune system, making them susceptible to life-threatening infections. Without treatment, children born with the genetic disorder may die from infection during their first year or two of life.

A stem cell transplant from a healthy donor can cure RAG-1 SCID but a good match can be difficult to find. This new gene therapy offers a life-saving alternative while avoiding and reducing lifelong complications that can arise from stem cell transplants.

Olympia, 5, was diagnosed with RAG-1 SCID at six months, after a persistent rash covered her entire body. While she underwent a transplant, complications meant she could have benefited from gene therapy, which her mum Genevieve calls "a phenomenal breakthrough".

Previously, this clinical trial was only offered to patients in Europe through the Leiden University Medical Center (LUMC) in the Netherlands. There, the trial is led by Professor Frank Staal, Principal Investigator at the Novo Nordisk Foundation Center for Stem Cell Medicine, (top left) and Professor Arjan Lankester from LUMC's Willem-Alexander Children's Hospital.

In 2023, Professor Staal partnered with MCRI's Associate Professor Rachel Conyers (top right) to broaden the clinical trial to Australia. Associate Professor Conyers is an Associate Investigator with the Novo Nordisk Foundation Center for Stem Cell Medicine.

Under the trial, stem cells from the child's own bone marrow will be transferred to LUMC and provided with a healthy copy of the RAG-1 gene in a highly specialised laboratory, before being infused back into patients.

These genetically modified stem cells will become healthy white blood cells that will build a new, functional immune system.

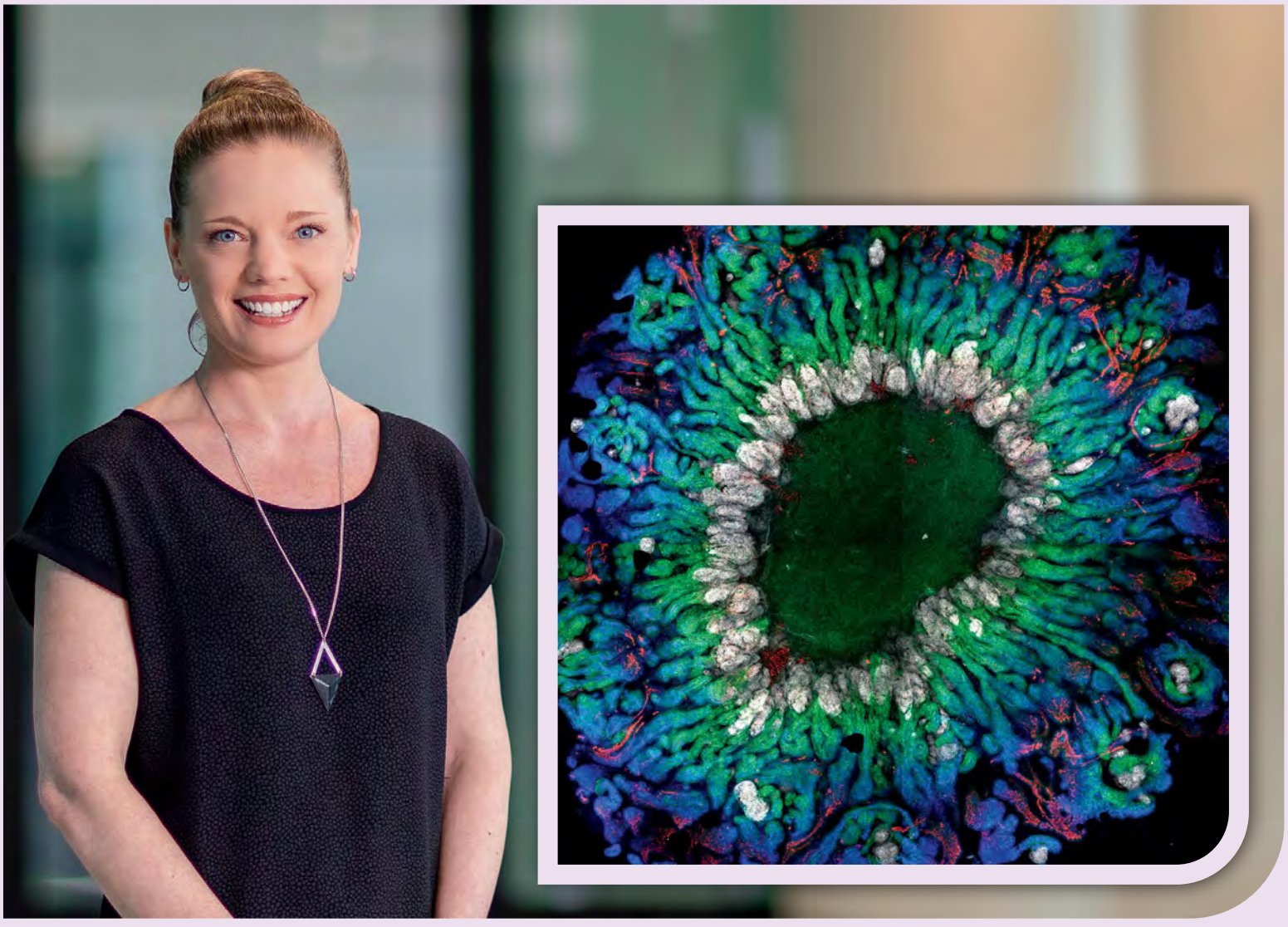
"This stem cell-based gene therapy could provide a lifelong cure and will transform the lives of Australian children with RAG-1 SCID," Associate Professor Conyers said.

"The children can live a normal life, play with friends, go to school and fight off the common colds and normal infections that in the past could have made them extremely unwell or been life-threatening."

The expansion of the trial has been made possible through an investment of 6.2 million Danish krone from the Novo Nordisk Foundation Center for Stem Cell Medicine and in partnership with the team at LUMC.

New ways to model kidney disease

Fully accurate organoids a step closer



Dr Jessica Vanslambrouck.

INSET: An enhanced image of Dr Vanslambrouck's kidney organoid.

Chronic kidney disease affects over 10 per cent of the population worldwide but despite being a major chronic illness, treatments remain limited in many cases.

To address this need, researchers in the Kidney Regeneration team use stem cell-derived kidney models to better understand complex kidney diseases and perhaps one day offer new treatment options.

Dr Jessica Vanslambrouck and her team are working hard to improve how we make models of kidney tissue in the lab that better represent human kidneys. Recently, they created a new method for growing kidney organoids with improved proximal tubules.

"Compared to previous organoids, these enhanced kidney organoids have more mature proximal tubules that are more similar to those of a human kidney," Dr Vanslambrouck said. "This is a very important feature, because the proximal tubules, which are part of the kidney's filtering units, play such critical roles in kidney function and are often affected by disease."

Another member of the Kidney Regeneration Lab, Dr Aude Dorison, is using her own models of kidney tissue to better understand a disease that affects 18 to 20 children each year at The Royal Children's Hospital.

Dr Dorison and Professor Melissa Little AC have created genetically modified models of human kidney tissue to provide insights into the molecular basis of steroid-resistant nephrotic syndrome (SRNS).

SRNS causes children to pass too much protein in urine. Treatment includes replacing the protein through intravenous infusions and reducing blood supply to the kidney with medication.

Unfortunately, the disorder can progress to end-stage kidney disease, with most children eventually needing a kidney transplant.

By replicating variations in the affected NPHS2 gene, Dr Dorison, Professor Little and their team uncovered mechanisms contributing to the disease. They hope that they can use this information to explore new drugs to treat SRNS.

Seeking treatments for rare neurological condition

Children's lives will be transformed in new study

Gary Boyer with his son Edward, who has KAND.

Twelve-year-old Edward Boyer is the first child to be diagnosed with KIF1A associated neurological disorder (KAND) in Australia and is one of just 500 or so people diagnosed worldwide.

Little is known about the KIF1A gene variation, according to MCRI researcher Dr Simran Kaur, who is investigating the cause of Edward's rare degenerative condition using stem cell-derived brain cells. Dr Kaur is also pioneering the search for therapies and drugs that can help slow or stop the negative effects of KAND on KIF1A individuals.

"It could be inherited, or it could be a brand-new variation in the individual child, so there are multiple ways this difference arises in the genome of each child," Dr Kaur said.

But families receiving a confirmed diagnosis through genomic testing was key, she added.

"With genomic testing now, things are very different from 10 years ago. In fact, even just five years ago, it used to be very slow and very costly," she said.

KIF1A variants can cause a range of severe conditions, including cognitive impairment, speech problems and epilepsy. Symptoms often appear at birth or in early childhood, with varying severity.

Edward's story has inspired his family to seek support and spread awareness of the condition. Despite the hardships, the family finds joy in every moment, while actively exploring new treatment options and advancements to improve his quality of life.

"It's a bittersweet experience," says Edward's father Gary. "You want to do things with your son, and you look out the window and see people kicking the footy down the street with their kids. Knowing you can't do that is really heartbreaking.

"But at the same time, I love him for who he is, and he inspires me every day. We are grateful for all the research and support we have received, and we want to do everything to help him live the best life possible."

MCRI is part of a national collaborative network which is looking into treatments for KAND. It includes The Royal Children's Hospital, the Children's Medical Research Institute (CMRI) at the Children's Hospital at Westmead, the Universities of Melbourne and Sydney and international researchers.

Dr Kaur has also been recognised with an Award for Excellence in Engagement from the University of Melbourne for establishing a partnership with KIF1A.ORG, a global community dedicated to accelerating the diagnosis of, and cure for, KAND.

Drug may reduce sudden death

Children with achondroplasia at 50x greater risk

A drug that boosts bone growth in children with the most common form of dwarfism, achondroplasia, may also reduce their chances of sudden infant death syndrome (SIDS), sleep apnoea and needing surgery, according to an international research trial led by MCRI.

The study showed for the first time that vosoritide treatment increases height, facial volume and the size of the foramen magnum, the hole at the base of the skull that connects the brain with the spinal cord, in children under five years of age with achondroplasia.

MCRI is the biggest vosoritide clinical trial site in the world. Professor Ravi Savarirayan's research team has previously shown how the drug improves bone growth development in patients aged five to 18 years with achondroplasia. This latest study found the drug produces similar results in children and infants as young as four months.

Achondroplasia, a genetic bone disorder affecting one in every 25,000 children, is caused by a variation in the FGFR3 gene. The condition slows bone growth in children's limbs and spine and narrows the base of the skull, putting pressure on the spinal cord. Patients under five with achondroplasia are 50 times more likely to die due to complications of this narrowing, which causes spinal cord compression and breathing difficulties.

The randomised controlled trial involving 75 children under five-years-old from Australia, the US, Japan and the UK found vosoritide led to an increase in the foramen magnum.

The federal government recently listed vosoritide on the Pharmaceutical Benefits Scheme (PBS) to treat achondroplasia. It is the first and only approved medicine on the PBS that targets the underlying cause of the condition.

Daisy and Justin's son Casper (pictured) was diagnosed with achondroplasia as a newborn. They enrolled Casper in the vosoritide trial when he was five months old. Daisy said it was remarkable to see the positive changes in Casper.

"Casper has no spinal compression, his limbs are more proportionate and his legs are less bowed," she said. "He is healthy and happy and a lot of that we contribute to the vosoritide treatment."

Daisy said the latest MCRI research came as a huge relief and would be life changing for families.

"We did a lot of research into the condition when Casper was born and there were some very sobering statistics," she said. "But it's reassuring to learn that vosoritide can help improve the quality of life of young children with achondroplasia and ultimately avoid some of the long-term health complications."

Watch Daisy and Casper talk about how being part of a clinical trial has helped them.

Biobank aims to discover new treatments for children with genetic muscle diseases

MCRI has joined forces with Monash University and Alfred Health to establish the first national muscle biobank. The biobank will store patient samples from across Australia, helping researchers understand the causes of these diseases and find new treatments.

The project forms part of a $2.5 million Medical Research Future Fund grant awarded to the team for research into congenital muscle diseases, with the biobank headed by Dr Peter Houweling.

Watch Bindushree Pathre discuss her daughter Ivani's muscular dystrophy diagnosis.

Bindushree Pathre's daughter Ivani, four, was diagnosed with congenital muscular dystrophy at four months of age. "As a newborn she started to lose weight, couldn't suck and was very lethargic," she said. "We were shattered when genetic testing confirmed the muscular dystrophy diagnosis. We have no idea how long she might live so we have to take one day a time and cherish every moment."

Bindushree said the muscle disease biobank gave her hope that new treatments could be developed. "Muscular dystrophy is poorly understood and there isn't enough awareness. This biobank gives me hope for my daughter, and if not, hopefully for another family in the future."

VCGS: The power of genetics for families

Genomic health entering the mainstream

A UNIQUE SERVICE

Victorian Clinical Genetics Services (VCGS) is Victoria's leading provider of prenatal, childhood and adult clinical genetics services. As a wholly owned subsidiary of Murdoch Children's Research Institute, what differentiates VCGS from other providers is the co-location of key disciplines in genetic health and care – clinical genetics, genetic counselling, and medical pathology services.

ARRIVAL OF NEW CEO

In 2023, VCGS welcomed the arrival of its new CEO, Martin Smith (pictured), a seasoned senior healthcare executive.

Smith will play a critical role in defining the VCGS strategy and positioning VCGS for ongoing success, increasing our community impact, supporting research translation projects and streamlining service delivery in both clinical and laboratory settings.

"VCGS is an organisation at the forefront of genetics and genomics care in Australia," Smith said. "Our service is driven by the world-leading expertise of our staff. I'm excited to enable our people to deliver on our purpose and deliver meaningful health outcomes for our patients, their families and referrers."

GENETIC CARRIER SCREENING: INFORMING REPRODUCTIVE JOURNEYS

Focus on Australian-based testing services

Reproductive genetic carrier screening is a type of genetic testing that helps individuals determine if they have a higher likelihood of having children with a serious genetic condition. Approximately 2 per cent of those who have genetic carrier screening discover they have an increased chance of having children with a serious inherited condition.

VCGS has been a leader in this field, introducing general population carrier screening to Australians in 2006.

Historically, extensive screening for hundreds of conditions required sending samples overseas. But in 2023, VCGS leveraged insights from the MRFF-funded Mackenzie's Mission project to develop two expanded screening options available within Australia.

These new services allow Australians to access essential reproductive information without the need to send their personal information and DNA abroad.

Removing barriers to access

For many Australian families, genetic carrier screening has been an additional financial burden associated with pregnancy and seen as an 'optional extra'.

In 2023, Australians were given access to subsidised screening thanks to the federal government allocating $80 million to establish a new Medicare item number.

This item number applies to three-condition carrier screening for cystic fibrosis, fragile X syndrome and spinal muscular atrophy and is available to individuals who are pregnant or planning a pregnancy.

Up to 150,000 women may access this test every year, giving individuals and couples important reproductive information for their family planning journey.

FINDING ANSWERS: RDNOW RARE DISEASE PROJECT

In 2023, VCGS clinical services conducted over 6,500 consultations with patients, many of whom have rare genetic conditions.

While rare diseases are individually 'rare', collectively they are quite common. One in 12 babies is born with a rare disease. Sadly, many of these children will not survive beyond the age of five, and numerous others will remain undiagnosed. Without a diagnosis, patients and their families face uncertainty and limited support.

Funded by The Royal Children's Hospital Foundation, The RDNow program is a collaborative effort between VCGS and MCRI, designed for patients who have undergone all standard medical tests and clinical evaluations without receiving a diagnosis. This program provides access to additional genomic testing and information not typically available through regular clinical services.

Professor Sue White, VCGS clinical geneticist and co-lead of the RDNow program, said, "We want to improve medical care for families affected by rare disease. Our motivation is our patients, and we feel passionately that children and families affected by rare diseases deserve equitable access to the best possible care."

Nearly 320 families have been enrolled into the RDNow program, resulting in 74 patients receiving a definitive diagnosis. This information significantly improves the wellbeing of individuals with rare diseases and their families and offers much-needed clarity to the clinicians involved in their care.

KAREN'S REPRODUCTIVE JOURNEY AND FRAGILE X SYNDROME

For a long time, Karen Lipworth (pictured) faced challenges in conceiving. After some time into her reproductive journey, she discovered the reason for these challenges – a genetic change in the gene associated with fragile X syndrome. "It was a massive shock to me, it really changed everything," she said.

Fragile X syndrome is a genetic condition that results from a genetic change in one of the X chromosome genes, leading to a spectrum of physical, developmental, behavioural, and emotional issues that can vary in severity.

Lipworth, now a board member for the Fragile X Association of Australia, sought consultation from three different doctors before undergoing fragile X syndrome testing, and the diagnosis came as a profound and unexpected revelation for her.

Although receiving the news was emotionally challenging, the testing offered crucial insights. "Doing testing and having awareness created an opportunity to make some informed decisions and that was really important," she said.

"I think as soon as people start thinking about having a family, they should be offered genetic screening because that's going to make you aware if you are at risk of any of these conditions and then that might determine the path you might choose."

Lipworth has now welcomed a daughter, Emilia (pictured) who is unaffected by fragile X syndrome.

"An important aspect of the carrier screening service provided at VCGS is partnering with organisations like the Fragile X Association of Australia and providing foundational research data to strengthen the argument for accessible carrier screening," said Associate Professor Alison Archibald, Head of Service Development – Reproductive Genetics and group leader for Reproductive Genetic Counselling at VCGS.

Progress towards fair access to genetic information has been significant. The inclusion of reproductive genetic carrier screening under Medicare is a major step forward.

VCGS is proud to have led this effort by pioneering testing and genetic counselling services and advocating for policy changes. Lipworth's story highlights the impact of genetic testing on reproductive decisions.

The collective efforts of VCGS, healthcare professionals, researchers, policymakers, and advocacy groups will advance genetic literacy and empower individuals to make informed choices for future generations.

BY THE NUMBERS:

6,500 clinical consults

72,990 babies screened with newborn screening

102,589 tests delivered (176,000 total incl. NBS)

$3m grant awarded in June 2022 through the MRFF's Genomics Health Futures Mission

One in 12 babies is born with a rare disease

2 million Australians living with rare disease.

$80m to establish Medicare item number for three-condition carrier screening

Unlocking the secrets of our immune system

Turning convention on its head

MAPPING THE HUMAN IMMUNE SYSTEM FOR LIFE

The human immune system has been tracked and mapped from birth through to the age of 75 for the first time (see opposite page). This remarkable effort has paved the way for future therapies to tune the immune systems of people at higher risk of certain diseases. It also helps explain why young children are so good at picking up new germs in childcare – they are training their naive immune systems.

Led by PhD candidate Sedi Jalali, the research focussed especially on infants and children to gain a clearer picture of early-life immune development.

Associate Professor Daniel Pellicci, who leads the MCRI Cellular Immunology group, said: "By mapping how these immune populations develop as we age, with a focus on the critical early periods of infancy through to early adulthood, we now better understand how ageing can influence our immune responses and how this can make us susceptible to different diseases over our lifespan."

DISCOVERY OPENS PATHWAY TO NEW TREATMENTS

In a second major achievement for the year, Associate Professor Pellicci's team also cracked how a special type of immune cell, 'gamma delta T cells', develop in the body and protect against infection and disease. The discovery paves the way to develop novel and preventive treatments.

Together with researchers from Federation University Australia, the team uncovered how these specialised white blood cells operate and produce a unique immune response. Understanding how these cells work means they could be harnessed to help prevent cancer and highly infectious diseases such as COVID-19, Strep A and tuberculosis.

Published in *Science Immunology*, the study isolated the cells from thymus samples donated during heart surgery from patients up to 16 years old.

FELLOWSHIP TO SUPPORT RESPIRATORY DISEASE RESEARCH

Associate Professor Pellicci has been awarded a Viertel Fellowship to further his work in immunology and infectious disease prevention. His research will explore how a specialised type of immune cell fights off serious infectious diseases, including tuberculosis, Strep A and respiratory syncytial virus (RSV).

He was one of three mid-career Australian researchers to be awarded a Senior Medical Research Fellowship by The Sylvia and Charles Viertel Charitable Foundation. The $1.37 million, five-year grants support innovation and the development of new therapies across various health conditions.

Associate Professor Pellicci's work builds on previous research, having been the recipient of a $1.25 million, five-year CSL Centenary Fellowship in 2018.

He said his research would help inform future vaccine development, potentially preventing deaths and serious disease caused by respiratory infections.

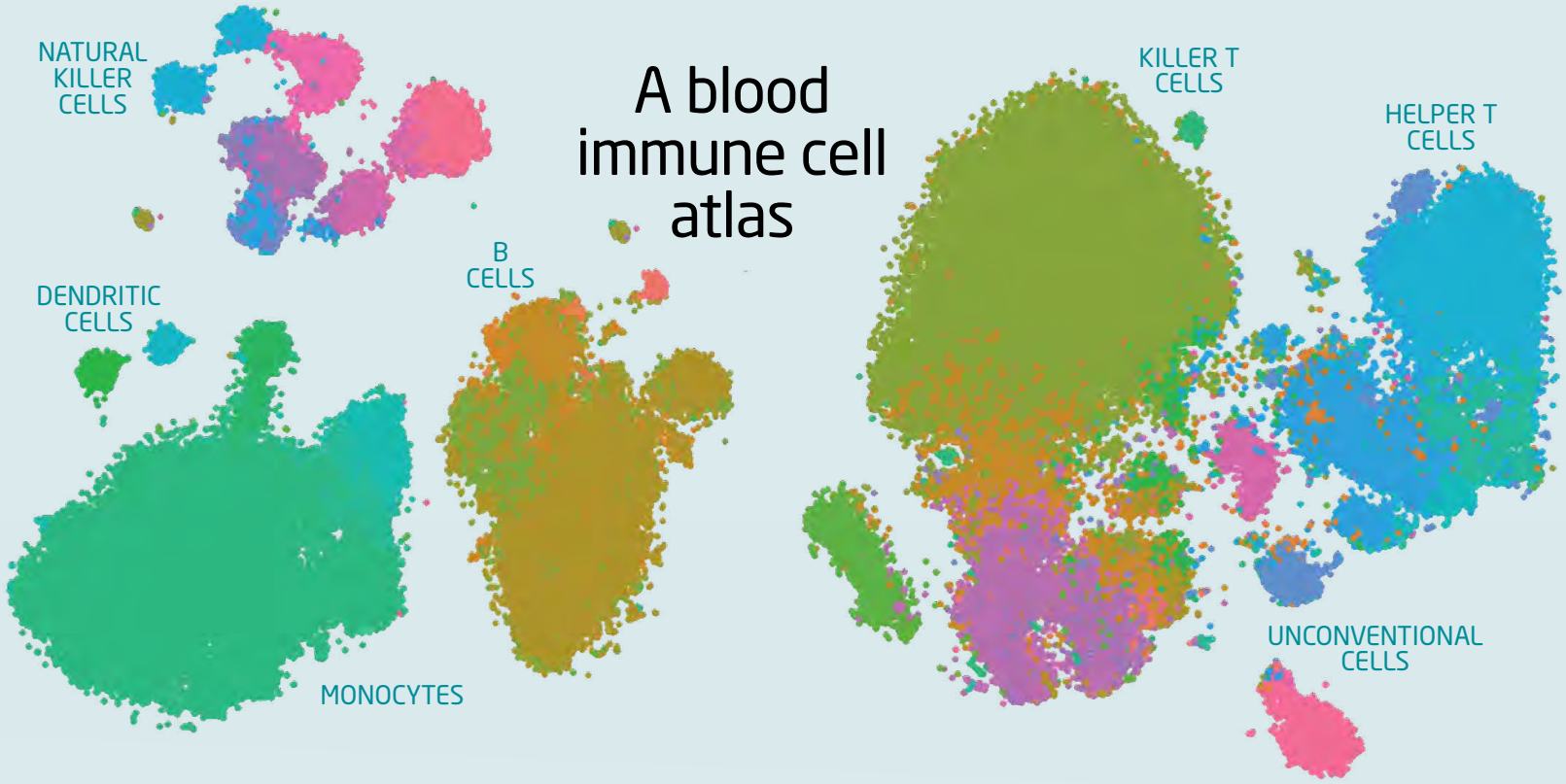
"This project will look at severe respiratory illnesses that do not have effective vaccines," he said, "... because we currently have a poor understanding of the immune cells that contribute to protective immunity.

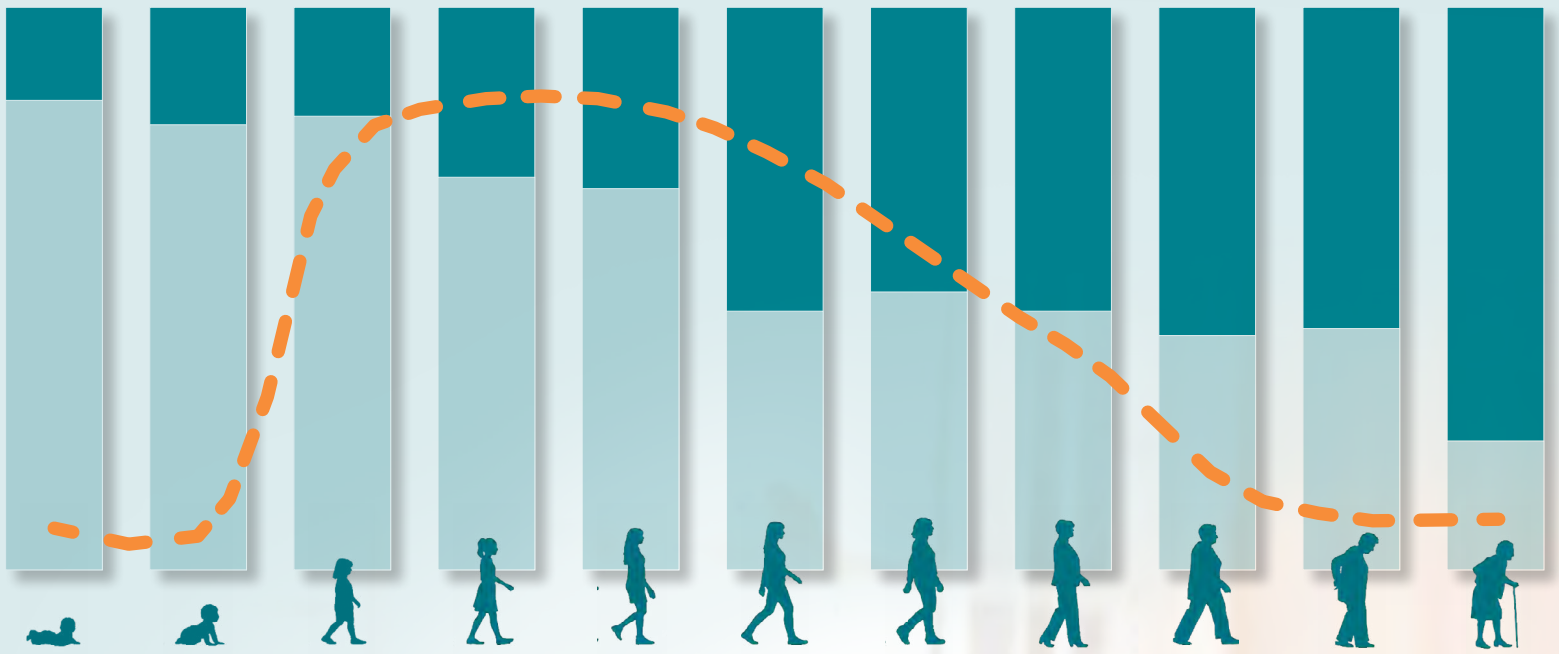
"By fully understanding the workings of unconventional T cells, a particular type of white blood cell that plays a critical role in fighting off infections and building immunity, we could be a step closer to creating life-saving vaccines for tuberculosis, Strep A and respiratory syncitial virus."

Associate Professor Pellicci said the project would use MCRI's state-of-the-art equipment including RNA-sequencing technology.

Gursirat, 1, pictured with her mum Sandeep, dad Sodhi and brother Gursheen, spent weeks in hospital after suffering a severe Strep A infection.

A blood immune cell atlas





Unconventional T cells play a vital role in combatting human infections.

We recently found that the numbers of unconventional T cells peak when children first attend school, likely when exposure to childhood infections is highest.

Unconventional T cells are low in infants and in the elderly and this coincides with increased susceptibility to infections such as the flu.

Targeting unconventional T cells may boost the human immune system to prevent serious disease in these vulnerable groups.

Diving deeper into COVID-19

Some surprising results

FEWER PRETERM BIRTHS DURING FIRST COVID-19 LOCKDOWNS

The number of babies born preterm decreased (and stillborn rates remained unchanged) during the first four months of COVID-19 lockdowns, according to a large-scale international study co-led by MCRI.

Examining 52 million births from 26 countries, the work reported a 3-4 per cent reduction overall in preterm births, averting almost 50,000 preterm pregnancies during the first month of lockdown alone. But the decrease in preterm births was limited to only high-income countries including Australia.

The International Perinatal Outcomes in the Pandemic (iPOP) Study involved 167 collaborators across 42 countries. MCRI's collaborators included The Children's Hospital Research Institute of Manitoba, University of Manitoba, The University of Edinburgh and UNSW Sydney.

Professor David Burgner said the decrease in preterm births could have been caused by fewer non-COVID-19 infections due to improved hygiene practices and reduced air pollution during the lockdown period. Infections and air pollution were known to trigger inflammation, which contributed to premature births, he said.

COVID-19 VACCINES EFFECTIVE AGAINST SEVERE CASES IN CHILDREN

COVID-19 vaccines are effective against severe disease in children and adolescents, according to an MCRI-led literature review published in BMJ Paediatrics Open. However, with most children now having natural immunity through catching SARS-CoV-2, the additional benefit of vaccination in healthy children is minimal.

The international review explored the challenges and considerations of COVID-19 vaccination, especially in low- and middle-income countries with high levels of community transmission and infection-derived immunity. The review recommended that roll-out of COVID-19 vaccines in those countries should complement routine childhood vaccine programs, which have a greater impact on illness and death, including for measles, pneumonia and diarrhoeal disease.

Building on recent MCRI-led research that found two-thirds of children with COVID-19 who attended hospital in the first two years of the pandemic did not require medical intervention, this review reported that despite the fact that severe childhood infections could occur, deaths were extremely rare.

FRACTIONAL BOOSTERS PRODUCE SIMILAR IMMUNE RESPONSE AS FULL DOSES

Reducing the dose of a widely used COVID-19 booster vaccine produces a similar immune response in adults to a full dose, with fewer side effects. The research, led by MCRI and the National Centre for Communicable Diseases in Mongolia, found that a half dose of Pfizer's COVID-19 booster vaccine produced a sufficient immune response compared to a full dose in previously vaccinated adults.

The research is part of an international clinical trial, which also includes Australia and Indonesia, investigating the different COVID-19 booster shot approaches to guide future vaccination strategies. The Coalition for Epidemic Preparedness Innovations (CEPI) is funding the trial overseen by MCRI. CEPI receives significant Australian Government funding to support its global work.

Almost half of all newborns in an MCRI-led international trial during the pandemic were denied early and close contact with their mother, resulting in low breastfeeding and skin-to-skin contact rates. The trial also showed that COVID-19 transmission from mother to baby was rare and generally mild. Shannon Trenwith's (right) daughter Agnes, born at 23 weeks, spent the first 160 days of her life in hospital. During this time, Shannon and her partner Kim (left) caught a mild dose of COVID-19. Shannon said the 10 days spent apart from her daughter in home quarantine were unbearable.
PICTURE: BRAD FLEET

Tackling global health challenges

Working towards equitable healthcare for children

MCRI's Vaccine Uptake group has been training healthcare providers in the Asia Pacific on how to advocate for the benefits of vaccination.

PICTURE: ZOOM FIJI PHOTOGRAPHY

REDUCING THE NUMBER OF 'ZERO-DOSE' CHILDREN

The Murdoch Children's Research Institute Vaccine Champions program is helping lift vaccination rates across the Asia Pacific.

The Vaccine Champions Vaccine Communication Training Program started in Victoria in 2021 during the COVID-19 vaccine rollout, with the support of the Victorian Department of Health.

Vaccine Champions are trusted community members who are passionate about encouraging people to receive vaccines. They are trained and supported to deliver vaccine information sessions to their community.

Following a successful program in Fiji and Tonga, the initiative partnered with the Vietnamese Ministry of Health, UNICEF Vietnam and the Woolcock Institute of Medical Research to deliver two regional training sessions across 25 provinces.

MCRI's Dr Jessica Kaufman and Belle Overmars facilitated the training with Vietnamese Master Trainers, provided to health workers, union representatives, community leaders and some ethnic minorities from Vietnam's northern mountain regions. The aim is to increase COVID-19 and routine vaccine uptake against diphtheria, pertussis, tetanus, poliomyelitis, measles and tuberculosis in the region.

Dr Kaufman's work is supported by fellowship funding from the Marian and E.H. Flack Trust.

Murdoch Children's Research Institute is a signatory to the ACFID Code of Conduct, which is a voluntary, self-regulatory sector code of good practice. As a signatory we are committed to, and fully adhere to, the ACFID Code of Conduct, conducting our work with transparency, accountability and integrity.

FEWER VACCINE DOSES CAN SUPPORT PNEUMOCOCCAL IMMUNITY IN BABIES

Fewer doses of a vaccine that protects against meningitis and pneumonia can still provide protective levels of immunity in babies.

The research in Vietnam, led by MCRI, Pasteur Institute of Ho Chi Minh City and Menzies School of Health Research, found that administering two doses of pneumococcal conjugate vaccine (PCV), rather than three, still provided protection against meningitis and pneumonia.

The Vietnam Pneumococcal Trial II administered the PCV vaccine to babies at the age of two-months and one year. The adapted schedule still reduced the amount of pneumococcal bacterium in healthy children by up to two-thirds, helping to stop disease spread and promote herd immunity.

RESEARCH IDENTIFIES MATERNAL HEALTHCARE GAP FOR MILLIONS OF ADOLESCENT GIRLS

New research published in *The Lancet* found that the healthcare needs of pregnant adolescents will continue to be ignored in low and middle-income countries (LMICs) unless there are major changes to healthcare delivery and frameworks.

The study, in collaboration with University College London (UCL), found that public health policies for adolescents in LMICs focussed on pregnancy prevention did not target areas such as childbirth, postnatal care, abortion, mental health, violence or substance misuse.

MCRI Adolescent and Global Health researcher and GP Dr Farnaz Sabet said that 21 million girls aged 15-19 years old become pregnant annually in LMICs (accounting for 97 per cent of global adolescent births), with almost no high-quality support services for them.

WASTEWATER MONITORING COULD GIVE PANDEMIC EARLY WARNING

Wastewater monitoring could give early warning to help countries better prepare for future pandemics.

An international collaboration involving MCRI, The Rockefeller Foundation, Mathematica and the UK's Health Security Agency has shown how improvements could be made to different countries' wastewater monitoring during infectious diseases outbreaks.

Samples from treatment plants, rivers, wetlands and open drains were reported from 43 nations in six continents.

MCRI and University of Melbourne Professor Julie Bines, who worked with colleagues from Universitas Gadjah Mada in Yogyakarta, said the COVID-19 pandemic highlighted the need for robust disease surveillance systems.

PROFESSOR GEORGE PATTON'S LASTING LEGACY

In the months following the 2022 death of much-loved and respected MCRI researcher Professor George C Patton AO, the Centre for Adolescent Health had nine exceptional papers published or accepted by *The Lancet*. Professor Patton remained one of Clarivate's Highly Cited Researchers in 2023.

All were influenced by Professor Patton, who directed the Centre for Adolescent Health from 1997 to 2003 before leading its Adolescent Health Research. He helped shift adolescent health from an emerging paediatric sub-speciality to a critical area of public health.

The health themes within the papers spanned communicable and non-communicable diseases in various health settings (including mental health, substance use and nutrition) as well as adolescent pregnancy. His legacy will no doubt be felt for decades to come.

WHO ADOPTS RECOMMENDATION TO WIDEN ACCESS TO MEDICAL OXYGEN

The World Health Organisation (WHO) has endorsed a resolution calling for wider access to medical oxygen to strengthen global health systems and provide the essential medicine to all.

Adopted at the 76th World Health Assembly, the Access to Medical Oxygen Resolution urges member countries to include medical oxygen as a life-saving essential medicine with no substitute.

MCRI Associate Professor Hamish Graham was a key contributor to the resolution, with the support of Professor Andrew Steer and University of Melbourne Professor Trevor Duke.

Currently, many health facilities in low-income countries lack access to medical oxygen. "I was working in Sudan with Médecins Sans Frontières when I first saw the impact of not having basic things like medical oxygen," Associate Professor Graham said, "and I believe that no one, no matter where they live, should die from lack of oxygen."

SCABIES MILESTONE IN THE SOLOMON ISLANDS AND FIJI

MCRI's World Scabies Program completed the first round of its mass roll-out of an anti-parasitic drug in the Solomon Islands and Fiji, helping to protect millions from the contagious skin condition.

The project, one of the Macquarie 50th Anniversary Award winners, administered scabies treatment ivermectin to the population of the two Pacific nations to reduce the burden of scabies, a significant public health problem in the region. The Solomon Islands and Fiji are the first countries in the world to conduct a national mass drug administration to control scabies.

Together with the Kirby Institute and the Fiji and Solomon Islands Ministries of Health, MCRI showed that community-wide ivermectin treatment reduces scabies prevalence by up to 94 per cent.

Watch how Macquarie Group Foundation has helped MCRI roll out the World Scabies Program.

A family in Solomon Islands receiving scabies medications in the World Scabies Program rollout.

A voice for all

Responding to health needs

RECOGNITION FOR RESEARCHER'S WORK IN INDIGENOUS HEALTH

Researcher Associate Professor Graham Gee received a national award for his work supporting healing and recovery for Aboriginal and Torres Strait Islander survivors of childhood sexual abuse, and for improving practices to better suit their needs.

The National Health and Medical Research Council's Sandra Eades Investigator Grant Award recognises the highest ranked successful Indigenous applicant in the council's Investigator Grants Emerging Leadership scheme.

Child sexual abuse is a form of violence that occurs across nations and cultures worldwide. Collective efforts are being made to focus on this issue within Victoria's Aboriginal and Torres Strait Islander communities.

Addressing a current lack of research in the field, Associate Professor Gee will work with a coalition of Victorian Aboriginal services to improve the quality of practice, training, education and support mechanisms, to better respond to the needs of survivors.

"This research will generate new knowledge about survivors' lived experiences of healing and recovery, identify current therapeutic practices, and build training and education resources that support Aboriginal organisations to better meet the healing and recovery needs of survivors," he said.

Associate Professor Gee is an Aboriginal-Chinese man, also with Celtic heritage, originally from Darwin. He trained as a clinical psychologist and worked at the Victorian Aboriginal Health Service for 11 years before taking up a Senior Research Fellow position at MCRI, where his research focusses on healing and recovery from complex trauma among Aboriginal and Torres Strait Islander peoples, with an increasing focus on child sexual abuse.

This work will be supported by fellowship funding from the Eisen Family Private Fund.

A/Prof Graham Gee.

L-R: Prof Andrew Steer, Marcus Stewart, Helen Kennedy and Tony Garvey.

DECLARING SUPPORT FOR A VOICE

MCRI joined key national and Victorian health services in co-signing two initiatives in support of the proposed Indigenous Voice to Parliament.

Led by the Victorian Aboriginal Community Controlled Health Organisation (VACCHO), the Health Statement on the Voice outlined how a constitutionally enshrined Voice for Aboriginal and Torres Strait Islander peoples would see health benefits and improvements to policies regarding children and families, education, jobs, housing and transport.

The VACCHO-led statement was signed by more than 40 Victorian healthcare organisations. MCRI also signed an open letter of support for the Voice, published in *The Australian*.

MCRI Director Professor Kathryn North AC said that supporting the Voice was "a fundamental step in building meaningful relationships with Aboriginal and Torres Strait Islander families and communities in Victoria and nationally.

"This is critical to our ability to work effectively in improving Aboriginal and Torres Strait Islander health. As the Uluru Statement says, Aboriginal and Torres Strait Islander children should be our hope for the future.

"While the Voice ultimately did not pass the referendum, MCRI remains absolutely steadfast in our commitment to the principles of Voice, Treaty and Truth."

Changing children's chances in the early years

An equitable start is the best start

SUMMIT SIGNALS NEW FOCUS ON CHILDHOOD

Four leading child health and early development experts from MCRI attended the federal government's inaugural Early Years Summit, which is shaping a new approach that focuses on young children and their families. The team included Professor Sharon Goldfeld AM, Director of Population Health and a member of the Early Years Strategy expert advisory group.

Reflecting the importance of Australia's children to the nation's future, MCRI has called on the federal government to be bold in its actions.

"We can improve entrenched childhood disadvantage by reforming the governance of early years and take seriously this commitment to put children at the centre of how government makes decisions about how and where it invests money," Professor Goldfeld said.

ADDRESSING DISADVANTAGE AMONG CHILDREN

Reducing inequities in children's health and development would have immediate and lasting benefits for children, families and communities. The Changing Children's Chances (CCC) project, led by MCRI and bringing together national and international child equity researchers and child health clinicians, focuses on the need for 'precision policy' to address the growing inequity Australian children face.

Phase One of the project (2016-2020) described the complex circumstances in which children are born, live, learn and grow – known as social determinants. Phase Two (2021-2024) aims to better understand policy opportunities for reducing inequities in children's mental health, physical health and academic achievement.

Currently, CCC researchers are modelling how combining or 'stacking' interventions can reduce inequities, particularly for those experiencing the greatest vulnerability or disadvantage.

HEALTHY START REDUCES MENTAL HEALTH RISKS LATER

Improving preschool attendance and parental mental health could help reduce child and youth mental health issues, according to an MCRI study published in *Pediatrics*. pubmed.ncbi.nlm.nih.gov/37009670/

Senior author, MCRI's Dr Meredith O'Connor, said the study found that increasing children's preschool attendance, improving the mental health of parents and addressing social and economic disadvantages in the early years could reduce the risk of children developing mental health problems later on. The study drew on data from the Longitudinal Study of Australian Children (a birth cohort of 5,107 children from all parts of Australia) that commenced in 2004.

"Children's mental health and wellbeing is affected by where they live, learn and grow," Dr O'Connor said. "Good mental health allows children to make friends, to play and learn, and to deal with challenges."

FRAMEWORK TO SAFEGUARD CHILD WELLBEING

A national framework has been created to help steer children and young people towards better health and wellbeing. The Future Healthy Countdown 2030 tracks and reports on the most important health and wellbeing outcomes for young Australians amid rising concerns about the challenges facing this demographic.

Supported by the Victorian Health Promotion Foundation (VicHealth), MCRI and the Australian Research Alliance for Children and Youth, the framework launched against the backdrop of issues impacting young people such as wealth inequality, inactivity, food insecurity and stress.

Research shows one in six Australian children and young people live in poverty, 24 per cent of five–14 year olds are overweight or obese and 40 per cent of 16-24 year olds have a mental health disorder.

Food allergy in infancy linked to childhood asthma

A surprising allergy knock-on effect

Pippa James with children Neve, 9, and Rafe, 5, who both have allergies. Pippa has been trying recipes in the *Allergy Friendly Family Cookbook* and said they are "fantastic".

PICTURE: RICHARD DOBSON

Having a food allergy as a baby is linked to asthma and reduced lung function later in childhood, according to a world-first study led by MCRI and published in *The Lancet Child & Adolescent Health*. The study found that food allergy in early life is associated with an increased risk of both asthma and reduced lung growth at six years of age.

The Melbourne research involved 5,276 infants from the HealthNuts study who underwent skin prick testing to common food allergens, including peanut and egg, and oral food challenges to test for food allergy. The children were followed up at age six with further food allergy and lung function tests.

The study found that 13.7 per cent of the children, like Ollie (pictured on page 41), reported a diagnosis of asthma at age six. However, those who had a food allergy as babies were almost four times more likely to have developed asthma, compared to children without a food allergy. The impact was greatest in children whose food allergy persisted to age six as opposed to those who had outgrown their allergy. Children with a food allergy were also more likely to have reduced lung function.

Associate Professor Rachel Peters said food allergy in infancy, whether it had resolved or not, was linked to poorer respiratory outcomes in children. "This association is concerning given reduced lung growth in childhood is associated with health problems in adulthood, including respiratory and heart conditions," she said.

Food allergy affects 10 per cent of babies and 5 per cent of children and adolescents.

MCRI and University of Melbourne Professor Shyamali Dharmage said the findings would help clinicians tailor patient care and encourage greater vigilance around monitoring respiratory health.

Suba Slater said she wasn't well informed of the link between food allergy and asthma prior to her son Zane's diagnosis.

"As a newborn, he developed eczema on his back and I thought, because I was breastfeeding, there was something in my diet causing the rash," she said. "Tests subsequently confirmed he was allergic to eggs, sesame and peanuts. He also has asthma.

"Having this link shown through this research and making parents and medical professionals aware of it is extremely important."

Zane, now 15 months, has participated in several food challenges at MCRI.

"By taking part in the food challenges we have found out that Zane is now able to tolerate egg in baked goods and certain nuts much more and has learnt how to include these foods in his diet," Slater said.

National Allergy Centre of Excellence marks first anniversary

After uniting almost 400 experts in drug, food, insect and respiratory allergy to help accelerate research, the National Allergy Centre of Excellence (NACE) marked it's first anniversary in September 2023.

The Australian government-funded NACE – hosted at Murdoch Children's Research Institute and led by Professor Kirsten Perrett – achieved key milestones to help address the allergy epidemic. The NACE:

- Established a Clinical Trials Network to streamline the start-up of national allergy trials giving Australians faster access to emerging treatment options;
- Designed an Acute Allergy Registry to collect real-time data on allergic reactions and anaphylaxis in participating Emergency Departments;
- Synthesised evidence to underpin the activities of partner allergy organisations;
- Introduced the National Allergy Studies Directory to connect the allergy community with studies currently recruiting across Australia;
- Incorporated consumer involvement into allergy research through a Consumer Advisory Group and Consumer Engagement Register; and
- Awarded seven Postgraduate Scholarships and three Postdoctoral Fellowships to nurture the next generation of allergy researchers.

Find out more: nace.org.au

15-month-old Zane has asthma and was allergic to eggs, sesame and peanuts as a newborn. However, thanks to MCRI food trials, he can now tolerate egg in baked goods and certain nuts. PICTURES: WAYNE TAYLOR

A national data and research asset by Victorian families

Building the world's biggest biobank

Rebecca and Mark Alabakov, pictured with their daughter Florence, celebrated joining the tens of thousands of families in GenV, proudly declaring: "We are part of the 100,000!"

Watch Professor Melissa Wake discuss GenV on 7News Australia.

Australia's largest consented child and parent longitudinal cohort, Generation Victoria (GenV), completed its recruitment in 58 maternity hospitals, where the team drove the recruitment of 116,000 participants including 46,000 children.

GenV continues its pursuit of transforming the health and wellbeing of an entire generation. To do this, GenV is bringing together information participants provide and linking this with existing data to create a unique picture of parent and child health. Complementing this information are biosamples. GenV boasts a world-class biosample collection, with almost 96,000 saliva samples and the world's largest biobank of matched breastmilk and infant stool samples. GenV's design enables discoveries (to identify patterns) and to test new approaches (what works, for whom and how well?).

With the possibility to transform areas such as chronic disease, mental health, learning and development, inequity across society, obesity, climate change, COVID-19 and more, GenV aims to deliver the platform for researchers, services and policy-makers at the scale and speed necessary to solve complex problems for parents and their children.

END OF ESTABLISHMENT

After a presence of nearly three years, the GenV field team had their final day in maternity hospitals across Victoria in October. The partnership with all 58 Victorian maternity hospitals and the dedication of 140 on-the-ground staff members was unique and incredibly important to successfully recruiting a population-wide cohort during a global pandemic. To celebrate this milestone, the Deputy Premier of Victoria and the Minister for Medical Research, The Honourable Ben Carroll MP visited GenV families at Joan Kirner Women's and Children's Hospital at Sunshine Hospital.

Participants celebrated joining the tens of thousands of families in GenV. In June, GenV passed a monumental milestone with parents proudly declaring: "We are part of the 100,000!"

REPRESENTING ALL VICTORIANS

GenV is incredibly proud to reflect Australia's cultural, social and geographic diversity (except remote Australia). The 46,000 families participating come from all walks of life. Inclusivity and equity have underpinned GenV's design. Reflecting the diversity of the Australian population within the cohort also means insights using GenV will be more applicable to contemporary Australia.

GenV's community includes families with twins or multiple births, living with disabilities, from migrant and refugee backgrounds, from regional and rural areas, from First Nations communities and across the LGBTQIA+ spectrum. With 71 languages spoken, families in Victoria, regardless of place or language, are invited to join.

THE 'DOOR'S ALWAYS OPEN' AT GENV

While maternity hospital-based recruitment has ended, GenV continues to welcome new families. This is because recruitment for GenV does not close for eligible children and their parents, a unique design feature compared to other cohorts. This means families that were missed in-hospital, wanted more time to consider joining, change their minds, or have since moved into Victoria, including migrant or refugee families, can join.

Health and community services, including Maternal and Child Health nurses across the state, are helping spread the word that GenV remains open. Services are assisting with referring those they see every day to GenV.

MULTIPLE STUDIES USING GENV

As the resource continues to be built, with the first data release occurring in 2025, collaborating researchers are already realising the value of GenV. Over $30 million of competitive academic funding led by collaborators for research has been leveraged from projects utilising GenV. This research has been made possible only because of the GenV research asset.

One of these projects is looking at hip dysplasia to reduce the risk of pain and disability later in life through early identification and treatment. This means these kids will be able to live healthier and more active lives. Another project is exploring why some children's development regresses in the early stages of childhood, including language and walking. GenV can follow these kids as they grow to help understand why this is, identify early prediction opportunities and generate translatable evidence to enhance the way health, education and social services are delivered.

GenV is led by the Murdoch Children's Research Institute, supported by The Royal Children's Hospital and The University of Melbourne, and funded by the Paul Ramsay Foundation, the Victorian Government, The Royal Children's Hospital Foundation, the National Health and Medical Research Council and the Medical Research Future Fund.

Rachel Cornwall with her son Ollie, 3, who suffers from severe asthma. Ollie was admitted to hospital 48 times, but Rachel said things had improved since coming under the care of the Complex Asthma Service.

PICTURE: DAVID CAIRD

2023 GenV at a glance

More than

116,000

participants, including
45,000 babies
71,000 parents

Almost

96,000

saliva samples stored securely at the Melbourne Children's campus

More than

25,000

participants, from regional Victoria

Families who speak

71

languages including
7,400 families whose primary language at home is not English

More than

700

parents
who identify as First Nations

More than

10,000

participants who are the most or 2nd-most disadvantaged (SEIFA)

More than

$30m

in competitive funding led by collaborators from NHMRC, MRFF and state government

More than

16

active studies addressing issues such as skills loss, hearing, food allergy and neonatal care

Our work is centred on our passion to improve children's health and wellbeing. Whether our work occurs in the laboratory, the community, the clinic or the office, children are at the heart of everything we do.

3

Living our values

We aspire to provide a truly inclusive place to work where all staff, regardless of gender, carer status, age, disability, cultural background, religion or sexual orientation are supported in reaching their full potential. We are continually guided by a strong set of beliefs that shape how we think and act as an organisation. Our values shape how we behave, how we treat other people, and how we make decisions with clarity.

Connected. Inspired. Proud.

MCRI staff celebrate being together again

"Most of what we heard about would have been thought of as impossible even 20 years ago."

PROFESSOR RICHARD SAFFERY

"The standard and entertainment value of all the talks ... really brought our research to life."

PROFESSOR KATHRYN NORTH AC

TOP: MCRI Board Director Nicola Roxon looks to the future of children's health with Prof North and MCRI's Theme Directors. ABOVE: The Djirri Djirri Wurundjeri women's dance group welcomed attendees to the 2023 MCRI symposium.

The 2023 Murdoch Children's Research Institute Symposium brought together more than 800 of our people to learn about how we are tackling the most challenging problems in child health. There was a strong emphasis on how we work in multidisciplinary teams drawn from diverse areas of the organisation.

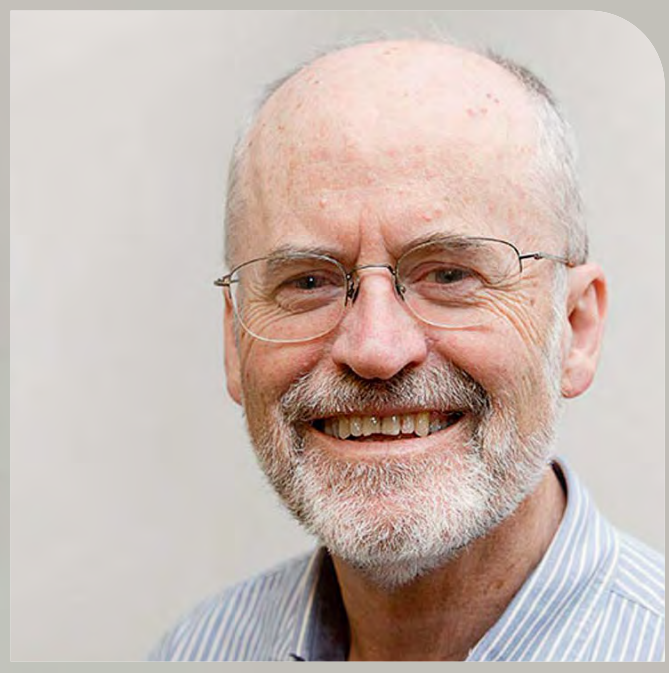
The Symposium was an opportunity to highlight the important role played by every team and individual as we work towards our shared vision to give every child the opportunity to live a healthy and fulfilled life.

By gathering to share critical strategic objectives, priorities, progress and achievements, hear from patients and families and inspire ownership, we reaffirmed our collaborative commitment to derive even greater impact from our research.

Watch a round-up of all the action at the 2023 MCRI Symposium.

Prizes and awards

In 2023, MCRI's talented researchers were again recognised with several state, national and international awards. The Institute extends its congratulations to our researchers, who are dedicated to conducting groundbreaking research that will give all children the opportunity to live a healthy and fulfilled life.



PROFESSOR JEANIE CHEONG (LEFT) AND PROFESSOR LEX DOYLE

National Health and Medical Research Council (NHMRC) Ten of the Best Award for the Centre for Research Excellence in Newborn Medicine, in tribute to the research teams who are addressing Australia's greatest health challenges.

DR CHANTAL ATTARD

Elected President of Australian Society for Medical Research, the peak professional society representing Australian health and medical research.

DR CINDY PHAM

Inducted into the Victorian Honour Roll of Women as an Emerging Leader, recognising outstanding levels of leadership and excellence as an early career researcher in neurodevelopment and emotional-behavioural outcomes in young children.

ASSOCIATE PROFESSOR JENNY HYNJSON OAM (LEFT) AND ASSOCIATE PROFESSOR NGAIRE ELWOOD AM

Australia Day Honours Member of the Order of Australia. Associate Professor Hynjson for service to palliative care medicine, Associate Professor Elwood for significant service to medicine, particularly through stem cell research.

PROFESSOR JOHN CARLIN

Awarded the Pitman Medal by the Statistical Society of Australia, for his contribution to the discipline of statistics, recognising a career spanning more than 35 years at the cutting edge of biostatistics.

ASSOCIATE PROFESSOR GRAHAM GEE

NHMRC Sandra Eades Investigator Grant Award, for being the highest ranked successful Indigenous applicant in the Council's Investigator Grants Emerging Leadership scheme.

PROFESSOR VICKI ANDERSON

Presented with a Lifetime Achievement Award in Research by the International Neuropsychological Society.

DR ELENA TUCKER

Norman Beischer Early-Mid Career Scientific Research Fellowship supporting the creation of a national network of clinicians and researchers to unlock answers about Primary Ovarian Insufficiency (POI), also known as premature menopause.

MCRI receives Athena Swan Bronze Award

Towards full gender equity

MCRI staff profile

3,052
Staff and students

905
FTE

24.6%
Male

75.4%
Female

11.1%
Students

8.7%
Contractors & volunteers

29.9%
Honoraries

50.3%
Paid employees

Diversity and inclusion

48
People in self-assessment team (over two years)

50+
People in focus groups

20+
People in interviews

900
People surveyed

15+
People in consolidation workshop

Who makes up MCRI

10+
Languages spoken

0.8%
Aboriginal and/or Torres Strait Islander respondents

59%
No religion

65%
Born in Australia

2%
Born in North America

49%
With caring responsibilities

32%
With history of migration

3%
Born in New Zealand

12%
Identify as LGBTQIA+

40%
Practise a major faith religion

9%
Born in Europe

1%
Born in South America

20%
Report a physical and/or mental health condition/ disability

27%
In people leader positions

14%
Born in Asia

15%
Born in Africa

In 2023, MCRI was awarded the Athena Swan Bronze Award by Science in Australia Gender Equity (SAGE). **Andrea Frigo**, Director of People & Culture, explains.

Please tell us how we achieved this and what the award means for MCRI.

Achieving the SAGE Bronze Award recognises MCRI's efforts to drive organisational progress towards equity, diversity and inclusion.

Over two and a half years, 53 people from across MCRI volunteered their time, skills, and expertise to support data collection, analysis, and action planning that formed the basis of MCRI's SAGE Application.

Through the SAGE process, MCRI has been able to acknowledge and celebrate its current practices that promote gender equity, representation, progression, and success for all. We also identified specific areas for improvement and created targeted actions to address them. This award positions us among our global peers in paediatric research and translational medicine.

How does our institute address the unique challenges faced by women in the research field?

MCRI's initiatives include the Maternity Leave Award, which provides financial support, recognition and encouragement to female researchers going on parental leave to pursue their research whilst they are on, or after they have returned from, maternity leave.

Paid parental leave of 16 weeks is crucial for supporting new parents to navigate the demands of work and parenting. Flexible Working and Purchased Leave are also key initiatives offered. These efforts not only support women but also contribute to MCRI's overall success and productivity.

Lastly, please share any future plans regarding our SAGE accreditation.

MCRI is committed to diversity and inclusion, and we have a strong focus on intersectionality to ensure we achieve gender equity for all.

We have developed a comprehensive seven-year action plan. Some of its key focuses are embedding the values of equity and diversity in our policies, procedures, practices and programs. We also provide our people with access to flexible working options. Additionally, we plan to strengthen our approach to career progression by implementing a career pathways and capability framework.

Our vision is to 'foster the attraction, retention, progression, and empowerment of all to ensure significant impact and the health and fulfilment of our people'.

Celebrating excellence: MCRI & VCGS awards

Recognising excellence across all areas of the Institute

The tireless work of MCRI and VCGS staff makes a critical contribution to the health and wellbeing of children and adolescents. Their work is having a transformational impact on the lives of individuals, families, communities and populations far and wide. To recognise this dedication to excellence and commitment to impact, each year staff are invited to nominate their peers for the MCRI and VCGS Awards. From the nominees, the VCGS Employee of the Year was selected by VCGS leadership, while the Research Excellence Award recipients in 2023 were selected by our Director, Professor Kathryn North AC.

Winners of the MCRI and VCGS Staff Awards for 2023

Above and Beyond Award
Recognises outstanding contribution that enhanced the impact of their group or wider team.
Dan Cowan, Head of People and Culture, Operations
Laura McMullin, Research Assistant, GenV

Above and Beyond in Service Excellence Award - VCGS
Recognises demonstrated depth and commitment to high quality of service.
Michael Ingold, Medical Scientist, Genetics and Genomics, VCGS
Non-Invasive Prenatal Testing Team, VCGS

Inspiring Others Award
Inspired and motivated others to achieve their greatest potential.
Associate Professor Belinda Dawson McClaren, Team Leader/Senior Project Officer, Genomics in Society, Genomic Medicine
Dr Simran Kaur, Senior Research Officer, Brain and Mitochondrial, Genomic Medicine

Leading and/or Contributing to Large Projects and Teams Award
Recognises Project/Program Co-ordinators and Managers.
Belle Overmars, Research Assistant, Vaccine Uptake, Infection, Immunity and Global Health.
William Siero, Cohort Manager, GenV

Mentor Award
Outstanding mentor, supervisor, manager or colleague.
Dr David Burgner, Group Leader/Principal Research Fellow, Inflammatory Origins, Infection, Immunity and Global Health
Dr Chantal Attard, Senior Research Officer, Haematology, Clinical Sciences
Professor David Amor, Group Leader/Honorary Fellow Manager, Neurodisability and Rehabilitation, Clinical Sciences

Research Associates Award for Professional Excellence
Recognises contribution to research activity.
Casey Pell, Senior Research Assistant, Translational Microbiology, Infection, Immunity and Global Health

Safety, Health and Wellbeing Award
Promoted, enhanced or protected the safety, health and wellness of our staff and students.
Tanya Labonne, Laboratory Manager/Research Assistant, Blood Development, Stem Cell Medicine

Innovation Award
Translated research into a 'real-world application' that will impact children and their families.
Michelle Challis, Medical Scientist, Reproductive Genetics, VCGS

Rising Star Award - Student
Recognises exceptional participation in the Institute community, as well as research outcomes for the year.
Loretta Gasparini & **Hannah Morgan**, Co-Presidents Melbourne Children's Campus Research Student Association

VCGS Employee of the Year
Recognises a member of staff who has gone 'above and beyond'.
Paul De Fazio, Medical Scientist, Translational Genomics Unit, Clinical Genomics, VCGS

Discovery Award
Recognises outstanding early and mid-career researchers.
Dr Nadia Mazarakis, Research Officer, New Vaccines, Infection, Immunity and Global Health
Dr Jessica Vanslambrouck, Team Leader/Senior Research Officer, Kidney Regeneration, Stem Cell Medicine

"I want to express my heartfelt gratitude to our donors for their remarkable support in 2023. The continuous generosity of our community and their dedication to funding MCRI's most critical initiatives is making a profound impact, propelling our research forward and providing life-changing hope and relief to children and families worldwide."

MATTHEW HANNAN
DIRECTOR, ENGAGEMENT & DEVELOPMENT

4

Securing their future

It is with sincere gratitude that we acknowledge the support of state and federal governments, industry and commercial partners, individual donors, bequestors and trusts and foundations for providing the resources required to translate our child health research into tangible solutions for children and families. Thanks to our valuable and ongoing partnerships we can advance with agility.

Our donors

With life-changing support from our donors, together we have made a positive impact around the world this year

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John and Irene Williams
Zagora Foundation represented by the Clifford and Widdup families
Dr Elane Zelcer
Jack Zhang
Anonymous (18)

Ruth Bishop Fellowship made possible by the Bill & Melinda Gates Foundation

Professor Ruth Bishop AC's pioneering research led to the development of a life-saving vaccine for rotavirus, and helped inspire the creation of the Bill & Melinda Gates Foundation. Her legacy continues with the creation of the Ruth Bishop Fellowship.

Murdoch Children's Research Institute has established a new five-year Fellowship, named in honour of pioneering researcher Professor Ruth Bishop AC. Made possible by funding from the Bill & Melinda Gates Foundation, the Ruth Bishop Fellowship will support a mid-career female researcher to continue her legacy.

The late Professor Bishop was an eminent scientist and microbiologist who devoted her career to improving child health. She is considered one of Australia's infectious disease pioneers.

Professor Bishop discovered that rotavirus was the cause of a deadly form of severe gastroenteritis among children, in 1973. This discovery led to the development of a vaccine by 2007, and her life-saving work helped inspire the creation of the Bill & Melinda Gates Foundation.

Professor Bishop made extensive contributions to the field of vaccinology. But as her daughter Anne Legoe told MCRI staff at the inaugural research symposium in October, Ruth was humble about her achievements and did not consider herself a trailblazer.

"From a modest upbringing in Frankston, she gave us seven decades of scientific persistence," Anne said. "She followed the science and listened to the people, not the politics. She broke through barriers with diplomacy and gracious determination, not division.

"Ruth left her mark, but she refused to acknowledge that it was hers alone. It was always a team medal – she went out of her way to encourage and champion young minds."

The new Fellowship is a fitting tribute to Professor Bishop's career, said Professor Andrew Steer, MCRI's Theme Director of Infection, Immunity and Global Health.

"Professor Bishop's work was enormously important to global child health, and this Fellowship will support a fellow female researcher with a proven track record in vaccinology research to follow in her footsteps. Through the new Ruth Bishop Fellowship, MCRI will continue to champion gender equity."

Professor Bishop held "the utmost respect" for the Bill & Melinda Gates Foundation, its values and its people, Anne told the MCRI symposium. "Mum would be humbled that this Fellowship is being bestowed by the generous and prestigious Bill & Melinda Gates Foundation. They've not only been a vital part in the delivery of the rotavirus vaccine, but they continue to enable a positive real-life outcome for global health."

Gagandeep Kang, Director of Enterics, Diagnostics, Genomics & Epidemiology at the Bill & Melinda Gates Foundation, said Professor Bishop "was not just a pioneer, but an outstanding collaborator, who supported rotavirus research in South-East Asia and globally.

"Her leadership and generosity provided the opportunities for many young scientists and medical researchers to grow, as will the fellowship named for her," she said.

Professor Bishop died in 2022, on her 89th birthday. "She was a brilliant human, compassionate, fair, diligent and humble," Anne said. "She was elegant, witty, wise and very brave. She was a student, a colleague, a mentor, a wife, a mother, a grandmother and a friend to the world."

She would be "thrilled" that the Fellowship will go to a young female researcher, and support them to honour her legacy and change children's lives for the better, Anne said.

In mid-2024 following an extensive international search, Dr Nancy Wang was appointed as the inaugural Ruth Bishop Fellow.

Dr Wang specialises in immune cell biology and the prevention of infections caused by salmonella poisoning. Her research has involved training immune T cells to select and remember parts of a germ, so the body can quickly remember how to fight off future infections.

The findings could help inform new vaccines against typhoid fever and other enteric diseases, striking an effective balance between strong immune response and high tolerability (fewer and milder side effects).

"I am honoured to walk in the footsteps of Professor Bishop," Dr Wang said. "Ruth has done what we all hope to do in medical research – her lifelong work has saved countless lives worldwide, and she's done so with such determination, but resilience and humility too.

"That makes her an enduring role model [who] will inspire generations of young scientists to keep looking for answers. For me, I feel incredibly honoured and humbled. I hope my research will translate into positive health outcomes in the years to come, and I want to make Ruth proud."

To find out more about supporting MCRI, please contact philanthropy@mcri.com.au

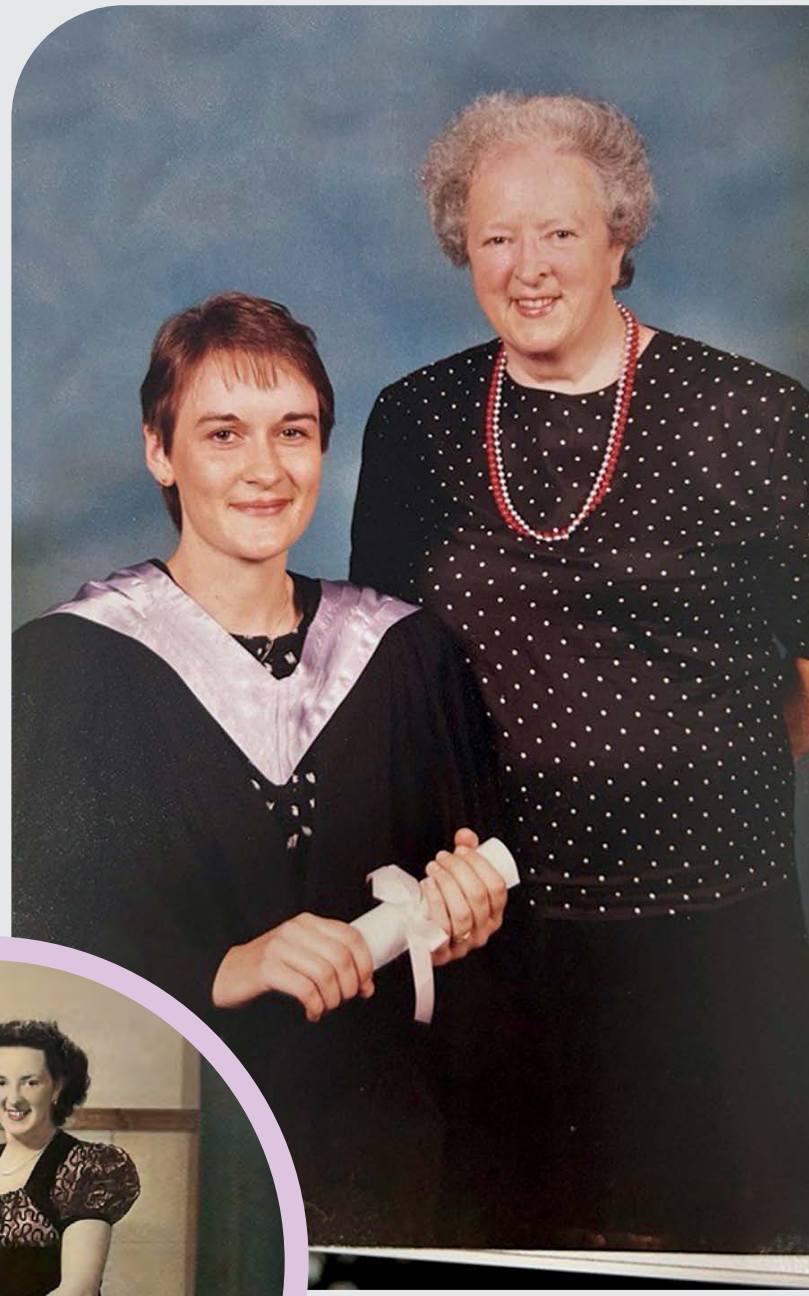
Watch Bill Gates talk about how Professor Ruth Bishop helped inspire the creation of the Gates Foundation.

Dr Nancy Wang has been appointed as the inaugural Ruth Bishop Fellow.

INSET: Professor Ruth Bishop AC.

Miss G's bequest leaves a lasting legacy for future generations

Beloved and accomplished piano teacher Patricia Mary Gleeson ensures that her legacy of striving for excellence continues for younger generations, with a generous gift in her Will to support childhood disease research.



PATRICIA MARY GLEESON
7/11/1927 – 12/5/2022

A transformational gift from the estate of Patricia Mary Gleeson is enabling Murdoch Children's Research Institute to accelerate research into childhood diseases.

Patricia Gleeson, known to many as Miss G, was a renowned piano teacher who attracted high-performing music students from all over the world to her small home studio in Ballarat, regional Victoria. Conversations with a close friend who worked in healthcare sparked her interest in MCRI, and she came to see its work as vital.

In May 2022, Patricia passed away. She is remembered as a sincere and generous person whose lifelong passion was supporting the growth of children and young people.

"I began my piano lessons with Miss G during my fifth grade of music, which was in 1980," said Lauren Knight, a close friend of Patricia's.

"I highly valued her opinion and wisdom, and she inspired me to become a piano teacher. She generously gave her time, talents and energy to her community, students and friends. She was a woman of great integrity and thought."

RIGHT: Lauren Knight (left) was a close friend and piano student of Patricia Mary Gleeson (right). INSET: Patricia Mary Gleeson in her youth.

Over the years, Patricia and Lauren became close friends. Lauren said she learned a lot from her wisdom and knowledge of people. "She was always helping other people to grow. She certainly helped me to grow in many ways, more than one can imagine."

Having positively influenced the lives of so many young people as a pianist and teacher, Patricia's dedication to making a meaningful difference to the lives of children continues, thanks to her bequest in support of child health research.

"Her great interest throughout her life was young people," said Lauren. "Through music and education, her life's work was centred on children and young adults. She felt that the research being undertaken by the Institute specific to children's health was very important."

Patricia's decision to gift her estate to MCRI would have been carefully considered to reflect the values of her late parents and brother, Lauren said. She was acutely aware that her passing would be the end of her family line. In this way, her gift reflects not only her own generous legacy, but that of her family as well.

Patricia's bequest arrives at a critical moment for medical research, providing essential support for two projects with a particular focus on brain cancer research.

Watch Dr Sean Humphrey discuss the impact of Patricia Mary Gleeson's generous support.

TECHNOLOGY TO ACCELERATE MEDICAL DISCOVERIES

The first project is a collaboration between MCRI, the Children's Cancer Centre at The Royal Children's Hospital and the Children's Cancer Centre Biobank to better understand brain tumours in children and adolescence.

The first Thermo Scientific™ Orbitrap™ Astral™ Mass Spectrometer installed in Australia – and one of the first in the world – is now helping to accelerate research into childhood diseases from brain cancer to muscular dystrophy.

Thanks to Patricia's generous gift, this machine will enable researchers to study proteins faster and with more precision, accelerating discoveries into stem cells and childhood diseases.

L-R: Hannah Huckstep (Senior Researcher), A/Prof Sean Humphrey (Group Leader, Functional Phosphoproteomics), Lauren and James Knight, James Burgess (Research Assistant).

"Working with leading experts at MCRI, combined with the power of this new equipment will drive discoveries that could lead to effective new treatments for devastating childhood diseases," said MCRI Associate Professor Sean Humphrey.

One of the team's first projects is a collaboration with MCRI's Professor David Eisenstat and Professor Silvia Velasco towards understanding the disease mechanisms in the most common malignant childhood brain tumour, medulloblastoma.

IMPROVING OUTCOMES FOR PATIENTS

Patricia's gift is also generously supporting BRAINtegrate, an alliance for better outcomes in young people with brain cancer and epilepsy.

Epilepsy and brain cancers are serious health issues affecting children, teenagers and young adults. They are the most common reasons for brain surgery in these age groups and the two conditions often occur together. While it is not fully understood how these conditions develop, it is believed that there are similar genetic factors contributing to both epilepsy and brain cancers.

To create better patient outcomes, a continuous research loop and coordinated interdisciplinary collaboration is required. Diagnosis, discovery and treatments can then all work hand-in-hand.

Complementing other sources of funding such as the Medical Research Future Fund, Patricia's visionary support will help unify research efforts across all neurosurgical cohorts. This will improve diagnosis and understanding of patients' conditions, support better care for patients and help develop personalised medicine.

AN INSPIRING LEGACY OF COMMUNITY SUPPORT

Patricia wanted to "leave the world quietly, with the least inconvenience to others," Lauren said. "She gave many personal items to friends and relatives over the last decade, sometimes returning gifts to the giver, but also placing items of significance to her with people who would value them.

"She gave books to the colleges in Ballarat and gradually gave away her music collection and special family items."

MCRI would like to express its deepest and most heartfelt gratitude to Patricia for her visionary gift, which brings us closer to providing much-needed answers and improved treatments for childhood diseases, particularly brain cancer.

Life-changing discoveries take time and visionary support by people who can look to the future and imagine a better, healthier and happier world for every child. Gifts in Wills are vital for research that will transform the health of children in the future. To learn more about MCRI's bequest program, please contact bequests@mcri.edu.au

Development Board inspiring young minds

Dr Julian Stolper with special guests of the Development Board in the stem cell laboratory.

In April 2023, a group of children aged from four to 17 donned their own lab coats and toured Murdoch Children's Research Institute's labs, as guests of the MCRI Development Board. Igniting sparks of curiosity and imagination among the children, the tour showcased research from across Stem Cell Medicine, Genomic Medicine and Population Health.

"Witnessing the children's eyes light up as they saw science come to life was just magical," said Trent Blacket, a member of the Development Board. "My daughters Poppy and Luna joined the tour and it's a visit they'll never forget."

Inspiring the next generation to embrace science is all in a day's work for the MCRI Development Board, which continues to play a vital role in shaping the future strategic direction and growth of MCRI.

Trent said the children's tour was a "real highlight" of his time on the Development Board, and he is deeply passionate about the role it plays at the Institute.

"I'm so proud to be a member of MCRI's Development Board. I love the opportunity to showcase MCRI's research whenever possible. It's truly incredible work."

The Development Board supported several philanthropic, community and engagement activities in addition to the children's tour in 2023. This included participating in a series of mental health roundtable luncheons, leading the fundraising campaign for the Dame Elisabeth Murdoch Lunch, and championing the launch of MCRI's Philanthropic Funds.

With their wide range of expertise and extensive networks, the Development Board continues to serve as a valuable asset for the Institute, connecting MCRI with other organisations, professionals, partners and philanthropists to deliver lasting, positive change in children's health.

"For more than 20 years, the Development Board has built a strong network of donors and advocates who support MCRI in their own unique and impactful ways," said Miffany Blythe, Chair, MCRI Development Board.

"This community's support is critical in ensuring the realisation of some of the most important health research in the world."

Researchers at MCRI are dedicated to pursuing solutions for all children. To help advance our discoveries and create a meaningful impact on lives, it is crucial that they receive the necessary support to fully fund their research. MCRI recognises the invaluable contributions of the Development Board in accelerating the impact of our research worldwide.

MCRI would also like to acknowledge and sincerely thank the outgoing Development Board members of 2023 – Vicky Alexiou, Elizabeth Briskin and Marcus Freeman – for their many years of leadership and commitment towards the Institute.

Funds launched to spearhead urgent paediatric research

Nick Fennessy from Bongiorno Group holding heart stem cells while visiting Dr Kevin Watt (Heart Regeneration).

MCRI's philanthropic efforts reached a new milestone in 2023 with the launch of the Philanthropic Funds. The funds are an invitation to like-minded, impact-driven organisations and philanthropists to join forces and co-invest in MCRI's life-changing medical research.

The Philanthropic Funds are critical to supporting some of the key initiatives at MCRI. Together, they are supporting the scientific discoveries that are helping change what is possible in child health.

The Brilliant Minds Fund supports MCRI's most promising research leaders. The Discovery Fund supports seed funding for groundbreaking research projects, while the Innovation Fund focuses on real-world outcomes and life-changing improvements in communities. The Future Fund supports MCRI's long-term sustainability and growth.

Individuals and organisations from diverse philanthropic backgrounds have generously donated to the Philanthropic Funds throughout the year.

Among the funds' supporters is financial services organisation the Bongiorno Group, which contributed its support in late 2023.

"At the Bongiorno Group, our mission is to support better global education and health outcomes for disadvantaged communities and children," said Margaret Mote, Bongiorno Group CEO.

"Giving back is embedded in the Bongiorno Group culture and helps unite and define our team."

MCRI regularly hosts donors at the Institute, giving them the opportunity to experience first-hand the life-changing difference their support can have. In October 2023, the Bongiorno Group visited the Institute on a tour to learn more about the impact of MCRI's research, with a focus on stem cell medicine.

"The Bongiorno Group has recently become a supporter of MCRI and we have been fascinated with how stem cell technology is being used in research to help understand heart and lung disease in children," said Margaret.

To find out more about supporting MCRI's Philanthropic Funds, please contact philanthropy@mcri.com.au

Enabling all stages of innovation

Murdoch Children's Research Institute's Innovation Team enables, fuels and accelerates MCRI research through commercial and non-commercial channels. The team works closely with innovators on campus to fully realise the translation and knowledge potential of their ideas and to create greater benefits and impacts for children, communities and society. We are building a culture of innovation at every stage of the research pipeline.

FOSTERING AN INNOVATION CULTURE

The Innovation Team supported four researchers to participate in the aMoon Innovation Fellowship. Supported by global healthtech and life sciences investment fund aMoon, the program takes researchers through the commercialisation process and explains what interests commercial partners.

"The aMoon program provided invaluable training with project-specific feedback, propelling my research towards real-world impact," said Dr Sohinee Sarkar (pictured left), who is developing new approaches to prevent serious bacterial 'superbug' infections.

"The Innovation Team's support has been instrumental, connecting me with the right resources while ensuring my work's market viability and legal protection. Their guidance has been crucial."

A THRIVING IMPACT ECOSYSTEM

MCRI's partnerships with vaccine manufacturers and low- and middle-income countries are contributing to the reduction of serious rotavirus infections. Safe vaccines for children aged from six weeks of age have enabled gastroenteritis wards in Australia to close. But the disease still kills almost 250,000 children aged under five worldwide every year.

In countries where healthcare access is limited, childbirth is an ideal vaccination opportunity, because it's a rare moment where there is contact between mother, baby and health services. Building on Professor Ruth Bishop's pioneering research, Professor Julie Bines and her team have developed a halal version of the vaccine able to be given in this crucial time-period. MCRI is now partnering with several vaccine manufacturers in Asia and the Middle East to ensure the broadest impact of this technology. This includes a multi-year deal with MEVAC, an Egyptian vaccine manufacturer and the largest private factory for manufacturing vaccines in Egypt, the Middle East and Africa. Work is also underway to progress partnerships with other low-and-middle-income countries on this vaccine, including Bangladesh.

Rachael and Jonathan Casella lost baby Mackenzie to spinal muscular atrophy (SMA). Their advocacy has enabled Medicare rebates for couples to determine their risk of having a child born with SMA, cystic fibrosis or fragile X syndrome.

PARTNERING FOR SCIENTIFIC BREAKTHROUGHS

One of the biggest scientific breakthroughs in recent years has been the rapid development of mRNA technology. To further advance mRNA medicines, MCRI has joined the mRNA Platform Incubator Network.

The Incubator is a partnership between Moderna, Monash University, the Peter Doherty Institute for Infection and Immunity, PeterMacCallum Cancer Centre and Doherty Clinical Trials Limited. It aims to foster scientific excellence in clinical translation in Australia, and further the therapeutic potential of the mRNA platform.

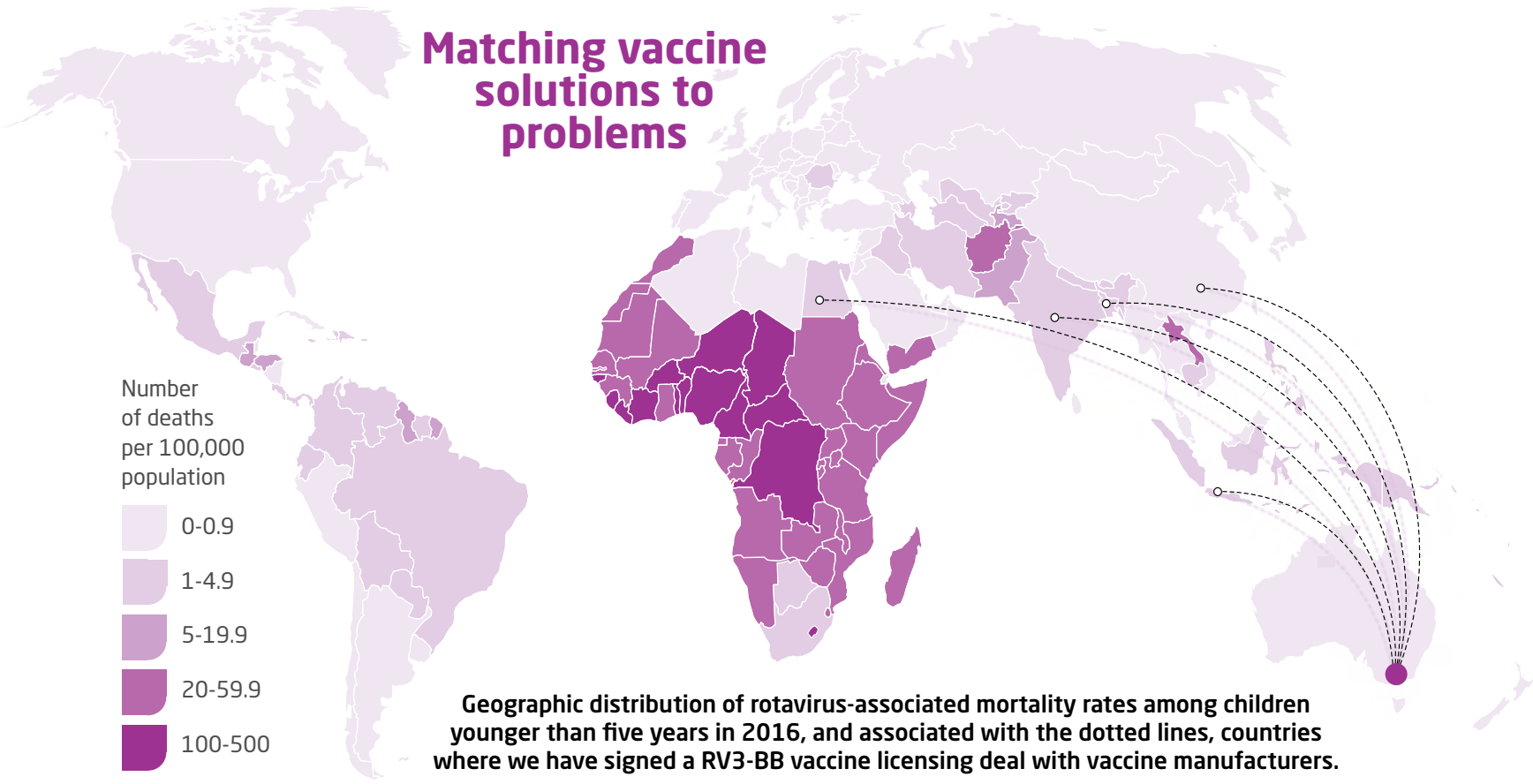
The Platform Incubator Network brings together specialist expertise in translational and pharmaceutical science, early-phase clinical trials and regulatory science and accelerate mRNA therapies.

ACCELERATING IMPACT

MCRI is accelerating impact across its research pipeline. Key highlights include:

Lumi joint venture

The Lumi Health joint venture has developed a 'sliding doors test' as an affordable pre-conception genetic screen. A simple cheek swab test screens couples to assess their likelihood of having a child with a severe childhood-onset inherited genetic condition.



Geographic distribution of rotavirus-associated mortality rates among children younger than five years in 2016, and associated with the dotted lines, countries where we have signed a RV3-BB vaccine licensing deal with vaccine manufacturers.

"With the support of highly trained genetic counsellors, couples are empowered to make choices according to their own values," said Dr Alison Archibald, VCGS Group Leader of Reproductive Genetic Counselling. "While the news can be difficult, people value this information and it informs their decision-making around having a family."

Lumi is a three-way partnership between myDNA Australia, MCRI and its subsidiary, Victorian Clinical Genetic Services (VCGS). Thanks to Australian government coverage via the Medicare Benefits Scheme, Lumi Health will screen for three conditions with no out-of-pocket cost to parents.

A smartphone app for Laotian healthcare workers

Led by Professor Amy Gray, members of Melbourne Children's Global Health partnered with UNICEF to develop an app for healthcare workers in Laos. The IMNCI (Integrated Management of the Newborn and Childhood Illness) app is based on global WHO/UNICEF guidelines, adapted, and translated into Lao language and approved by the Laos Ministry of Health.

"Medical education in Laos has undergone significant developments over the last few decades," Professor Gray said. "There has been a significant transition to building to local capability in medical workforce training, while international partners can support local priorities."

Despite challenges, Professor Gray said the situation in Laos is "a story of great optimism", because local healthcare workers are keen to innovate and partner with organisations to do so.

The app is designed to equip healthcare workers in Laos with information that is easily accessible and friendly to use from their mobile phones.

Prota Therapeutics spin-out

Murdoch Children's Research Institute spin-out, Prota Therapeutics Pty Ltd, was successful in its last round of funding of $US21 million in equity and debt financing, led by Singapore-based SPRIM Global Investments.

The funding round will help the company prepare for a Phase 3 clinical investigation of Prota's PRT120 oral immunotherapy for peanut allergy.

Reflecting on her experience transitioning from research to entrepreneurship, CEO Professor Mimi Tang said that advancing commercialisation in the Australian ecosystem had taken "a great deal of resilience and perseverance" but was now paying off. "It's been a steep learning curve, but I have loved every minute of it."

Based on Professor Tang's work at the Institute, Prota is developing a treatment to achieve clinical remission of peanut allergies. It was spun out in 2016.

Hear from the Innovation team about how they are helping researchers create impact.

A global partner headquartered in Melbourne

Research is a team sport, MCRI is a top team player

Every day, MCRI is taking the lead on national and international collaborations to drive scientific breakthroughs. In contrast to traditional 'siloed' approaches to research, collaborations recognise that sharing expertise and resources drives innovative solutions to paediatric health challenges.

When Professor Daniel MacArthur returned to Australia after working abroad for over a decade, he wanted to "build something truly national, with collaboration built in from the outset", he said.

"One of the reasons I decided to return in 2019 was that the research landscape in Australia was way more collaborative than it had traditionally been," he said.

The result of Professor MacArthur's vision is the Centre for Population Genomics (CPG), a partnership between MCRI and the Garvan Institute of Medical Research.

The collaboration was a 'natural fit' for both organisations, he said. "The Garvan has extensive expertise in population sequencing and data science, while MCRI brought expertise in paediatrics and the ability to rapidly take genomic breakthroughs to clinical practice through its wholly owned subsidiary Victorian Clinical Genetics Services."

Although operating across two institutes comes with some administrative complexity, the CPG is now a thriving remote-first team of 40, with staff located in multiple sites across Victoria, New South Wales and New Zealand, enabled by strong cross-institutional collaboration.

"We've learned a lot about how best to do things most efficiently. It's a template for future collaborations," Professor MacArthur said.

The Strep A Vaccine Global Consortium (SAVAC) is another notable MCRI collaboration, bringing together experts from MCRI and the World Health Organisation's International Vaccine Institute to fast-track vaccine discovery and development.

"We developed the world's only human challenge model of Strep A disease," said Dr Josh Osowicki, team leader at MCRI.

Human challenge models involve deliberately exposing participants to the germ being researched. In this case, MCRI researchers tested a Strep A strain they believed would cause a strep throat but was unlikely to cause acute or chronic health problems.

Because MCRI is home to the world's only Strep A human challenge model, Dr Osowicki notes that every Strep A vaccine developer is seeking partnerships with MCRI.

"We work with the best researchers from all around Australia and the world to plan the best studies using the best possible samples," he said. "Our team at MCRI can't possibly have the expertise to do it all. Partnerships let us work with the best people wherever they are."

"Everyone wins" in an effective partnership, he said. "Researchers at MCRI and elsewhere produce the best possible research, commercial partners get what they need to advance development of their products, and we all learn from working with the best people from around the world."

SAVAC is one of many Strep A-focussed partnerships at MCRI. There's also the Australian Strep A Vaccine Initiative, a partnership between MCRI and Telethon Kids Institute, while the University of Queensland is leading a collaboration with MCRI researchers and Moderna to accelerate development of an mRNA vaccine.

Watch Prof Daniel MacArthur speak at the 2023 Sohn Hearts & Minds Conference about the revolution in genomic health.

A prestigious United States National Institutes of Health grant has also funded a Strep A research collaboration between MCRI and Sweden's Karolinska Institute (home of the Physiology or Medicine Nobel Prize).

Another partnership having an immediate real-world impact is the International Precision Child Health Partnership (IPCHiP) collaboration, the first ever major global collaboration around genomics and child health.

Four paediatric centres are involved – MCRI and the University of Melbourne, Toronto's Hospital for Sick Children, Boston Children's Hospital and London's UCL Great Ormond Street Institute for Child Health and Great Ormond Street Hospital.

Dr Katherine Howell is a neurologist and lead researcher with IPCHiP. She said the collaboration enabled each partner to move at much greater speed.

"In Melbourne, we only see about 30 babies [with genetic epilepsy] every year, but by following the outcomes of hundreds of infants with epilepsy across the four IPCHiP sites who receive cutting-edge genetic sequencing, genetic counselling and precision treatments, we can all treat genetic epilepsy faster, more precisely and with better outcomes."

In 2023, the collaboration published in *The Lancet Neurology* that rapid genome sequencing achieved a remarkably high diagnostic rate of 43 per cent for infantile epilepsy. The collaboration has been recognised by the Global Alliance for Genomics and Health as a 'Driver Project', or a world-leading genomic data initiative with clinical connections.

The Novo Nordisk Foundation Center for Stem Cell Medicine, reNEW, is another global consortium that focuses on translating stem cell science into therapies at its three research nodes in Copenhagen, Leiden, and MCRI at Melbourne. In its second year of operation, reNEW focused on strengthening collaborations within its three nodes, to advance stem cell-based medicine.

"After an incredible launch in 2022, we are reaching flight altitude, and 2023 was another great year of stem cell science and translation," said Professor Melissa Little, the CEO of reNEW and MCRI Chief Scientist. "ReNEW supports excellent stem cell researchers to develop products."

While MCRI's collaborations span many areas and partners, they are all enabled by a culture that promotes this approach to research, Professor MacArthur said.

"Kathryn North's vision has meaningfully shifted the mindset here. To this day, MCRI remains the most collaborative medical research institute in Australia."

Novo Nordisk Foundation CEO, Mads Krogsgaard Thomsen (left) with Prof Melissa Little AC, CEO of reNEW and MCRI Chief Scientific Officer, at the reNEW 2023 Annual Scientific Meeting.

Partnering with government

Working with policymakers who make a difference

Listen to Professor Vicki Anderson talk to ABC Radio about the Parliamentary Inquiry into Concussion in Sport.

At MCRI our research is not only leading the way in improving child health, it also informs policy-makers to develop services and policies related to children's health and wellbeing.

This includes significant policy advocacy activity undertaken by the Centre for Community Child Health in early years and mental health and Australian Genomics, which is supporting the translation of Australia's excellence in genomic health research into clinical practice.

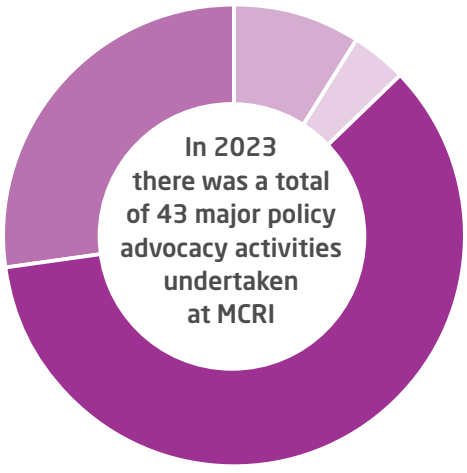
Our regular submissions to government, including policy and evidence briefs, offer recommendations to help solve the real-world challenges facing governments today and into the future. Whether it is COVID-19 or mental health, or rolling out genomic medicine across Australia, our wide-ranging policy advocacy activities assist governments to address the challenges facing children, parents and families, locally and globally.

One of the major policy advocacy highlights for MCRI in 2023 was our contribution to the Royal Commission into Early Childhood Education and Care by the South Australian Government.

The Royal Commission was led by former Prime Minister Julia Gillard, who had recommended an overhaul of South Australia's early childhood and education and care sector.

By engaging with the state and Commonwealth public service and partnering with government, our research and evidence strengthens MCRI's integrity and reputation among decision-makers, as one of the world's most-trusted health and medical research experts in child health.

Policy advocacy highlights at a glance



9% General advocacy

4% Evidence brief

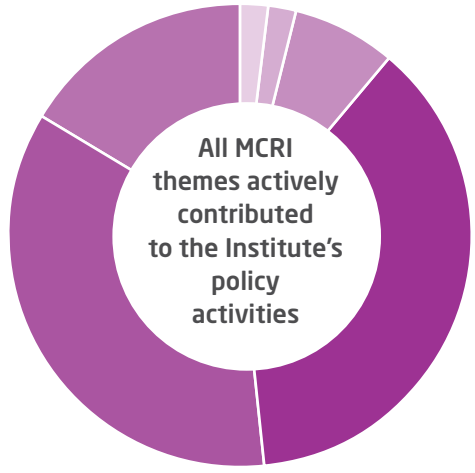
60% Policy submission consultation responses

27% White papers and reports

56% to the Commonwealth Government

12% to the Victorian state government

32% to other bodies, including to organisations such as the World Health Organisation and other state governments



2% Clinical science

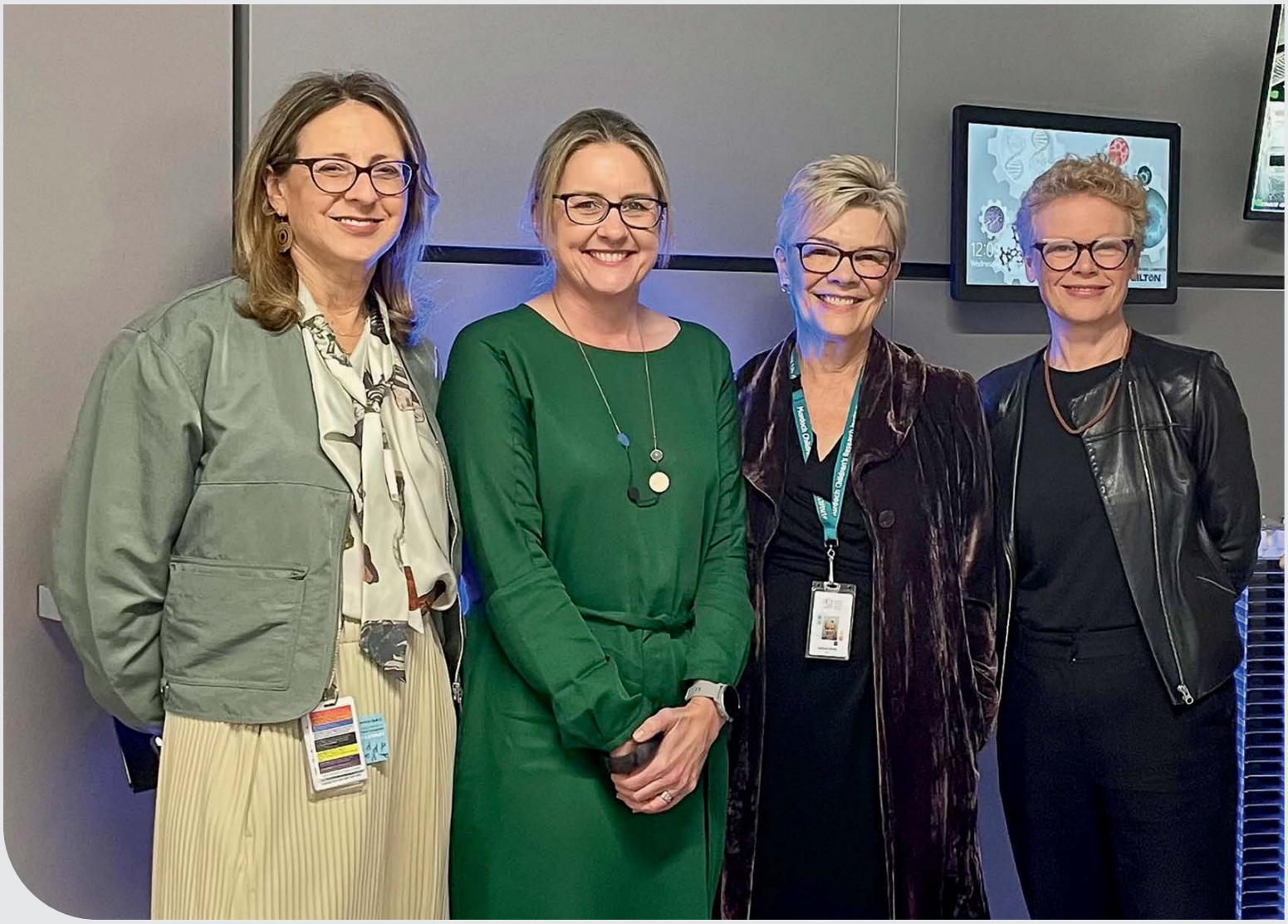
2% stem cells

7% infection, immunity and global health

37% genomics

35% population health

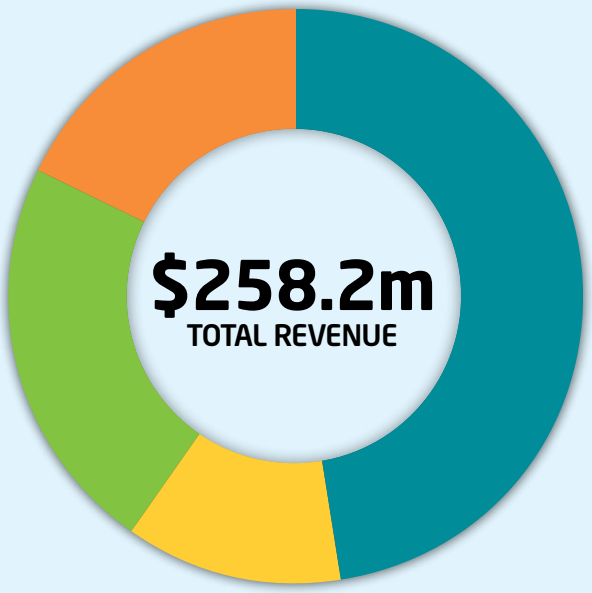
16% MCRI



CLOCKWISE FROM TOP: Premier Jacinta Allan viewing the GenV Biobank on a visit to MCRI; Prof Catherine Law, The Hon Lizzie Blandthorn MP and Prof Sharon Goldfeld AM met at MCRI to discuss international perspectives and best practice in child public health policies – particularly around inequity, disadvantage, and poverty; Briefing with Assistant Minister for Health and Aged Care Ged Kearney MP at her office in Canberra, with Professor Kirsten Perrett on allergy research underway; Deputy Premier, Ben Carroll exploring advanced therapies at MCRI.

The year at a glance

Murdoch Children's Research Institute financials for 2023



$123.3m
RESEARCH AND GOVERNMENT GRANTS

$31.3m
DONATIONS, FUNDRAISING AND BEQUESTS

$58.1m
CONTRACT RESEARCH, CLINICAL TRIALS AND OTHERS

$45.5m
VCGS

Statement of profit or loss and other comprehensive income

for the year ended December 31, 2023

	Consolidated		The Company	
	2023	2022	2023	2022
	$'000	$'000	$'000	$'000
Revenue from research and clinical activities	216,240	190,548	171,493	150,554
Donations, estates, bequests and fundraising income	31,260	24,366	31,260	24,363
Depreciation and amortisation	(9,819)	(9,115)	(7,850)	(7,808)
Other expenses for research and clinical activities	(249,361)	(228,396)	(204,419)	(189,844)
Fundraising expense	(3,341)	(2,920)	(3,341)	(2,920)
Derecognition of VCCC joint operation	(734)	-	(734)	-
Finance income	**10,717**	**333**	**9,985**	**122**
Finance costs	(130)	(80)	(130)	(80)
Net finance income	**10,587**	**253**	**9,855**	**42**
Share of profit/(loss) from associates	2	(96)	2	(96)
Total deficit for the period	**(5,166)**	**(25,360)**	**(3,734)**	**(25,709)**

Statement of cash flows

For the year ended December 31, 2023

	Consolidated		The Company	
	2023 $'000	2022 $'000	2023 $'000	2022 $'000
Cashflows from operating activities				
Patient fees received	37,009	32,824	-	-
Government and other grants received	120,234	119,078	109,880	108,363
Donations received	31,259	24,365	31,258	24,363
Interest received	4,179	1,748	3,891	1,615
Other receipts	46,544	42,370	49,740	46,364
Advances to / (from) related parties	-	-	476	(321)
Cash paid to suppliers and employees	(250,468)	(232,906)	(206,101)	(194,753)
Net cash provided from/ (used in) operating activities	**(11,243)**	**(12,521)**	**(10,856)**	**(14,369)**
Cashflows from investing activities				
Investment income received	3,972	2,896	3,656	2,733
(Acquisition)/ Disposal of property, plant & equipment and intangibles	(10,016)	(9,708)	(6,792)	(7,938)
(Acquisition)/ Disposal of investments	23,944	(29,644)	20,954	(30,600)
Net cash provided from/ (used in) investing activities	**17,900**	**(36,456)**	**17,818**	**(35,805)**
Cashflows from financing activities				
Payment of lease liabilities	(334)	(99)	(334)	(99)
Net cash provided from/ (used in) financing activities	**(334)**	**(99)**	**(334)**	**(99)**
Net increase/ (decrease) in cash and cash equivalents	**6,323**	**(49,076)**	**6,628**	**(50,273)**
Cash and cash equivalents at 1 January	**21,735**	**68,417**	**19,937**	**67,817**
Effect of foreign exchange on opening cash balances	281	2,394	282	2,393
Cash equivalents at 31 December	**28,339**	**21,735**	**26,847**	**19,937**

Statement of financial position

As at December 31, 2023*

	Consolidated		The Company	
	2023 $'000	2022 $'000	2023 $'000	2022 $'000
Current assets				
Cash and cash equivalents	28,339	21,735	26,847	19,937
Trade receivables and other assets	25,595	17,876	21,114	14,103
Investments	66,192	94,675	63,192	88,375
Right-of-use assets	1,341	1,341	1,341	1,341
Total current assets	**121,467**	**135,627**	**112,494**	**123,756**
Non-current assets				
Investments	83,399	77,346	77,460	71,845
Property and equipment	16,346	14,835	11,598	11,482
Intangibles	1,934	1,818	1,518	1,263
Right-of-use assets	52,829	53,412	52,829	53,412
Investments in associates	206	154	206	154
Total non-current assets	**154,714**	**147,565**	**143,611**	**138,156**
Total assets	**276,181**	**283,192**	**256,105**	**261,912**
Current liabilities				
Trade and other payables	112,301	117,785	108,947	113,895
Employee benefits	27,216	24,984	19,170	17,619
Lease liability	407	576	407	576
Total current liabilities	**139,924**	**143,345**	**128,524**	**132,090**
Non-current liabilities				
Employee benefits	4,092	3,479	3,086	2,556
Lease liability	2,882	1,919	2,882	1,919
Total non-current liabilities	**6,974**	**5,398**	**5,968**	**4,475**
Total liabilities	**146,898**	**148,743**	**134,492**	**136,565**
Net assets	**129,283**	**134,449**	**121,613**	**125,347**
Members' funds				
Accumulated funds	129,243	134,409	121,613	125,347
Other reserve	40	40	-	-
Total members' funds	**129,283**	**134,449**	**121,613**	**125,347**

* To view the full set of Murdoch Children's accounts, visit the ACNC (Australian Charities and Not-for-profits Commission) at **acnc.gov.au/charity/charities**

2023 Board of Directors

Patrick Houlihan

Murdoch Children's Board Chair

Sarah Murdoch

Murdoch Children's Board Co-Chair

Miffany Blythe

Steven Casper

Dr Rowena Coutts

Resigned June 2023

Professor Jane Gunn

Rajeev Natarajan

Joined January 2024

Professor Kathryn North AC

MCRI Director, VCGS Board Member

Paul Rayner

The Hon Nicola Roxon

Dominic Stevens

Andrew Wilson

Dr Brandon Carp

Bernadette McDonald

Simon Rothery

Other Boards and Committees

Names of members only

Audit, Finance and Risk Committee
Paul Rayner (Chair)
Stuart Boxer
Elise Elliot
David Gillespie
Professor Kathryn North AC
Andrew Wilson

Investment Committee
Simon Rothery (Chair)
Adrian Redlich (Deputy Chair)
Ariane Barker
Craig Dandurand
Paul Rayner

Nominations and Remuneration Committee
Pat Houlihan (Chair)
Sarah Murdoch
Professor Kathryn North AC
Simon Rothery
Andrew Wilson

Innovation Committee
Andrew Wilson (Chair)
Dr Brandon Carp
Steven Casper
Professor Kathryn North AC

Global Advisory Board
Sarah Murdoch (Chair)
Trent Blacket
Miffany Blythe
David Calvert-Jones
Suzi Carp AO
Sue Collyns
(joined February 2023)
Sarah Harden
Steve Hasker
(retired December 2023)
Tristen Langley
Chelsey Martin
Kate Mohr
Katie O'Reilly
Erica Packer
Nicholas Stone
Lauren Thurin

Global Ambassadors
Suzi Carp AO
Sarah Murdoch

Development Board
Miffany Blythe (Chair)
Vicky Alexiou
(retired February 2023)
Trent Blacket
Elizabeth Briskin
(retired October 2023)
William Broughton
(joined February 2024)
Georgia Danos
Marcus Freeman
(retired October 2023)
Tanya Hamersfeld
Zara Hines
(joined March 2023)
Vas Katos
Clark Kirby
Tahli Koch
(joined March 2023)
Tamara Lasky
Peter Mastos
Kaajal Prasad
(joined January 2023)

Council of Ambassadors
The Honourable
Dame Quentin Bryce AD CVO
Janet Calvert-Jones AO
Paula Fox AO
Jean Miller
Professor Kathryn North AC
Jeanne Pratt AC
Lady Primrose Potter AC
Frances Underwood

Marketing Council
Ian Rowden (Chair)
Joanne Smith
Martin Ward

Victorian Clinical Genetics Services Board
Dr Brandon Carp (Chair)
David Gillespie
Professor Kathryn North AC
Professor Andrew Sinclair

Our manifesto

We believe that for every question there's an answer.

For every child's illness there must be a cure.

For every obstacle there must be a way around.

What inspires us is asking the big questions – Why is it so? Why does it happen? How can we fix it?

What excites us is tackling the big issues affecting children's health.

Children are at our heart, in our blood, and in our bones.

We believe every child deserves a healthy start to life.

And a happy and prosperous community needs healthy children.

We believe in the power of curiosity, cleverness and cutting-edge research.

We are excited by discovery and new knowledge to make a difference.

The future is purchased by the present, we can shape the future, we can change the world.

So every child can have a childhood.

So every child can grow to reach their full potential.

Children are at the heart of everything we do.

Scan here to access a digital copy of the annual report on your device.

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murdoch children's research institute

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