The University Of Queensland
AUSTRALIA

CREATE CHANGE

Child Health Research Centre

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The Child Health Research Centre brings together a constellation of researchers working for a happy and healthy life for all children, adolescents and families in Queensland and beyond. Through collaborative and interdisciplinary discovery, clinical, translational, public health and service delivery research, we provide the evidence to enable the best health and wellbeing for all children, adolescents and families.

Fast facts

Over 260 articles in 2022

$14 million in research funding in 2022

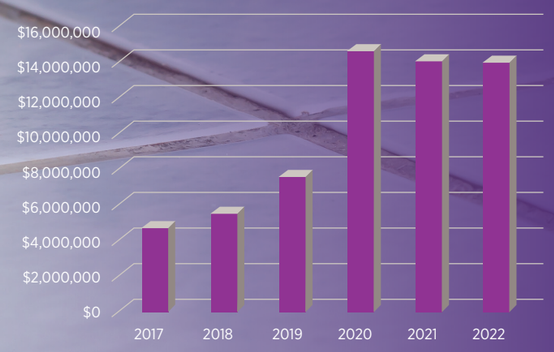
75% of research is published in top quartile journals

Location at the Centre for Children's Health Research, a collaborative research facility.

51 Higher Degree Research students

Staff: 81

CHRC Total Research Income



Message from the Director

With mounting evidence that long-term health is strongly influenced by a child's early years, investing research effort into children's health is critical.

Launched in 2015, the Child Health Research Centre (CHRC) has recently doubled in size and brought together 15 highly skilled research groups. Over that time, CHRC has more than trebled its research income and invested it in better outcomes for children.

These groups address the full spectrum of children's health and wellbeing including social and environmental determinants, respiratory and sleep disorders, cerebral palsy, rehabilitation, musculoskeletal health, allergy, immunology, mental health, neurodevelopment, patient safety and physical activity.

In this impressive undertaking, CHRC works closely with many partners including Children's Health Queensland HHS, the Children's Hospital Foundation and Health and Wellbeing Queensland.

CHRC is located in the purpose-built Centre for Children's Health Research which is also home to collaborators from Children's Health Queensland, QUT and TRI. This facility also gives our researchers access to state of the art laboratory facilities, the Qld Paediatric Infectious Diseases Group and the Qld Motion Analysis Service.

By bringing on board experts from across The University of Queensland, external researchers, the health system, Government, NGOs and the wider community, we are building a constellation of researchers and industry experts who can answer the questions that one researcher can't answer alone.

The research conducted at CHRC is highly translatable, and because we have such close ties to Children's Health Queensland, it allows us to rapidly transfer our research into clinical practice.

No matter what our individual research groups are focused on – our collective vision is the same: to give every child a happy and healthy life.

Professor Craig Munns
Director, Child Health Research Centre

Research Priority

Brain and Mind

Acquired Brain Injury in Children (ABiC)

ABiC's goal is to improve the lives of children with an acquired brain injury by using child-friendly brain imaging methods and developing new therapies and treatments. Our KidStim lab is an advanced brain investigation and treatment facility in CHRC investigating the use non-invasive brain stimulation techniques to improve outcomes in children with neurological impairment.

Child and Youth Mental Health Research Group

Led by child and adolescent psychiatrist, Professor James Scott, the Child and Youth Mental Health Research Group aims to improve outcomes for families with children and adolescents with psychiatric disorders. The group hopes to achieve this by investigating risk and protective factors for the development and persistence of childhood and adolescent mental health symptoms, and through the development and evaluation of new treatment and prevention programs.

Fetal Alcohol Spectrum Disorder Research Collaboration (FASD)

The FASD research collaboration aims to improve the health and wellbeing of children who have experienced prenatal alcohol exposure/fetal alcohol spectrum disorder and their families. We investigate ways to improve prevention of prenatal alcohol exposure. For those who have experienced prenatal alcohol exposure we aim to investigate ways of improving assessment, diagnosis, and support. Our research focuses on methods to provide holistic and integrated care that meets their physical, developmental and wellbeing needs. Additionally, our research and clinic also focus on how we can better support and improve caregiver and family wellbeing.

Queensland Cerebral Palsy Rehabilitation and Research Centre

Our eight key research themes reflect the significant areas of need for investigation in infants, children, adolescents and adults with Cerebral Palsy, Acquired Brain Injury or Traumatic Brain Injury. Since establishment in 2007, the QCPRRC has achieved more than $20m in funding including NHMRC and MRFF projects, NHMRC Fellowships, Qld Government projects and Fellowship, an ARC project and NIH project funding. UQ has shown ongoing support for the Centre through $5.2m in strategic funding. Our mission is to lead research, innovation and education to advance the health of children with cerebral palsy, acquired brain injury and related disabilities, supporting them and their families across their lifespan.

Research Priority

Population, Environment and Health

Applied Public Health Research Group

The Applied Public Health Research Group at Central Queensland Public Health Unit is a diverse group of researchers united by a common goal to understand the influence of factors that determine population health and propose interventions and health policies based on scientific knowledge and evidence. The main focus of our research is applied epidemiology, precision public health, communicable disease control, disease surveillance, immunisation, and health systems research.

Childhood Allergy and Epidemiology

The Childhood Allergy & Epidemiology research group conducts research into the prevalence, natural history, causes and consequences of childhood allergic disease. Our research includes population-based cohort studies, clinical trials testing allergy prevention and management strategies, and living systematic reviews to seamlessly connect evidence and practice. As part of the leadership of the National Allergy Centre of Excellence (NACE) and NHMRC-funded Centre of Research Excellence in Food Allergy (CFAR) we work with a network of leading allergy researchers across Australia to improve the lives of the millions of Australians living with allergic disease.

Children's Physical Activity Research Group (CPARG)

The Children's Physical Activity Research Group (CPARG) is dedicated to expanding the body of knowledge on physical activity and its promotion in children and adolescents. An overarching aim of CPARG is to enhance the health of young people by generating the knowledge needed to design and implement effective programs to increase physical activity in children with typical development and those with chronic and complex health conditions. Research interests include device-based assessment of physical activity and sedentary behaviour, early life prevention of childhood obesity and chronic disease, therapeutic exercise programs for children with chronic health conditions, and the relationships between physical activity and other health behaviours.

Children's Health and Environment Program

The Children's Health and Environment Program (CHEP) aims to address the impact of environmental exposures on child health through a holistic approach to environmental health research and policy reform. As part of our role as a WHO Collaborating Centre for Children's Health and Environment, our research focuses on understanding early life mechanisms of disease, and on improving risk assessment for environmental exposures - the process of estimating or measuring the magnitude, frequency and duration of environmental exposures in children.

Kids Sleep Research

Kids Sleep Research aims to improve the health and wellbeing of children by targeting sleep to improve long-term functional outcomes. They have an established research presence within Australia, participating in several multi-centre clinical trials, publishing widely in peer-reviewed journals and successfully receiving grants from different sources including National Health and Medical Research Council (NHMRC), The Medicine Research Future Fund Scheme (MRFF) and the Australian Research Council (ARC). (See UQmedicine Magazine)

Queensland Cystic Fibrosis Research Program

Queensland Cystic Fibrosis Research Program is Queensland's first cystic fibrosis research program established to help improve outcomes for patients living with the life-threatening genetic disorder. The program is supported by $15 million of funding from The University of Queensland, US-based Cystic Fibrosis Foundation, Children's Hospital Foundation, Department of Health Medical Research Future Fund, and an anonymous donor.

Research Priority

Empowering Child Health, Wellbeing and Development

Children's Musculoskeletal, Endocrine and Diabetes Research Group (MED-Kids)

By achieving excellence in interdisciplinary research, education, collaboration and advocacy, we can help every child and adolescent with a musculoskeletal, endocrine disorder, or diabetes live their best life. Our ambition for MED-Kids is to be the premier child and adolescent Musculoskeletal, Endocrine, and Diabetes research program in Australia. (See UQmedicine Magazine)

Ian Frazer Centre for Children's Immunotherapy Research (IFCCIR)

The Centre is dedicated to the innovation of new immunotherapies and better translation of successful adult treatments for children and adolescents suffering from cancer and other life-threatening immune-related diseases, such as autoimmune and infectious diseases. Through collaborative research among immunologists, paediatricians and technology experts, the Centre applies cutting-edge technologies to understand the specific features of children's immune system in response to disease and therapy, and rationally design new diagnoses and immunotherapies with high effectiveness and low adverse effects in children.

Computational Immunology

We are working together with the IFCCIR team to focus on how paediatric immunity is perturbed during cancer at the cellular level and how this information can be used for creating novel warning systems for children with cancer. To achieve this, we have developed several tools including a bespoke software tailored for single-cell T/B Cell Receptor sequencing analysis, *Dandelion*, which was used in one of the largest combined single-cell transcriptomic, surface proteomic and TCR/BCR sequencing dataset in the world, published in *Nature Medicine*. We also introduced a new concept for performing trajectory analysis using immune repertoires in a recent publication in *Nature Biotechnology*.

Children's Intensive Care Research Program (ChIRP)

ChIRP is a group of academic and clinician researchers focused on improving outcomes in critically ill children. Our main areas of research include clinical trial methodology, precision medicine, sepsis, common Paediatric Intensive Care Unit (PICU) interventions including antibiotics and intravenous fluid therapy, and long-term follow up of children discharged from PICUs. While a new group, ChIRP already holds NHMRC funding and has international collaborations supported by grants from ARCH-India 'Unnati', DFAT 'COALAR', and ETH Domain, 'Personalized Health & Related Technologies'). (See UQmedicine Magazine)

Paediatric Nursing and Patient Safety

Our research program aims to eliminate healthcare-associated injuries, such as central line-associated bloodstream infection, thrombosis, extravasation injuries and medication error for children. We are achieving this aim by informing everyday clinical practices with innovation and high quality research trial data, then sustainably and effectively implementing evidence-based care into practice across Australian and international paediatric healthcare. Our team also supports the development of research capacity across Children's Health Queensland, particularly within nursing via mentorship, HDR training, and collaborative networks.

Queensland Children's Tumour Bank

The Queensland Children's Tumour Bank (QCTB) is an openly accessible paediatric tumour tissue bank. The facility aims to assist as many quality scientific projects as possible, both large and small, in order to increase knowledge about childhood cancer and improve outcomes for patients. Part of CHRC, the proximity to the QCH operating theatres and Queensland Health Pathology enables samples to be obtained rapidly after surgery.

The sleep whisperer

"I embrace being a clinician researcher who learns from patients and families about how to provide high-quality care to a unique group of children with sleep difficulties."

"My aim is to be a role model for all clinician researchers, especially young females, who deserve to realise that they can make a significant difference to the world."

It's this passion for paediatrics and her infectious positivity that drives Associate Professor Jasneek Chawla to improve the lives of others. In fact, some may say it's what keeps her awake at night!

As a Paediatric Respiratory and Sleep Specialist with the Queensland Children's Hospital and an Academic Title Holder (ATH) with the UQ Child Health Research Centre, Dr Chawla explores new treatments for children with neurodisabilities, including Down syndrome, and educates medical students.

"A key aspect of my clinical research is working with families and the organisations that support them to better understand the challenges they face and identify sleeping priorities for their child," Dr Chawla says.

"At the moment, I am leading a multi-centre study with colleagues in Sydney and Melbourne, and I will use the information to explore new diagnostic methods and treatments to improve sleep, quality of life and family functioning for these children.

"Their families have so many struggles and challenges, and sleep is a modifiable factor that, if treated correctly, has the potential to positively impact the health and wellbeing of these children.

"We want to give these children, who are often not included in large-scale research, a voice and platform to be heard, and inform the development of national clinical guidelines in this area."

Dr Chawla's work with children who have a neurodisability extends beyond Australia.

Born in London, Dr Chawla completed her education in Scotland before moving to Canada for further training.

"I completed my paediatric and paediatric respiratory training in Edinburgh, which included spending one year in Vancouver for a paediatric respiratory fellowship," she reveals.

"After qualifying as a consultant in paediatric respiratory medicine in 2012, I came to Australia to do a sleep Fellowship at the Mater Children's Hospital and then the Queensland Children's Hospital, when the two merged.

"At the same time, I joined UQ Medicine through the ATH Pathway, where I am heavily involved in medical and allied health student supervision, which is another passion of mine.

"My proudest research moment would have to be when the mother of a child with Down syndrome told me that she had just been to a birthday party and all the parents were excitedly talking about the study I am leading.

"This is exactly why I started clinical research – so I can contribute to making a difference to these families," Dr Chawla says enthusiastically.

"However, my research would not be possible without the incredible support that I receive from partners, such as Down syndrome Queensland. I feel privileged and very grateful for their support."

There is also one other very important supporter that Dr Chawla would like to recognise – her labradoodle, Ollivander.

"He is always so patient, waiting calmly for walks when I am busy working on the computer, and always brings a smile to my face with his cameo appearances during my virtual meetings," Dr Chawla says with a beaming smile.

"Ollivander is also a companion dog for 'Little Lives', the children's charity that I run. He truly brings joy to so many people."

It's this broad support that enables Dr Chawla to keep striving towards advancing her field of medicine.

"Sleep needs to be recognised as the third pillar of good health, which impacts the entire spectrum of a child's life and that of their family," she adds.

"My team's goal is to become the leading research group for sleep in children with neurodisability across Australia and, in time, gain international recognition as experts in this field."

Now that would be a dream come true!

Breathing new life into *Cystic Fibrosis research*

Greg Dunn will never forget the heart-wrenching moment he and his wife learned that their two year old son had cystic fibrosis. It was half-way through the pregnancy of their second child.

As new parents, Greg and Heidi barely had time to come to terms with the diagnosis before being hit with a new harsh reality – their second child could suffer the same fate.

"We got two-out-of-two babies affected, which was pretty unlucky," recalls Greg, who is now a father of three. Their youngest child doesn't have the disease.

"When the kids were born they were talking about a life-expectancy into the early-30s, now they're talking about it being late-30s, and it goes up every year."

The incurable genetic disease primarily affects the respiratory and digestive systems. When both parents are carriers there is a one-in-four chance of the baby being affected with cystic fibrosis (CF).

Fast forward to present day and son Aidan, aged 17, and daughter Mya, aged 15, have learned to live with their disease. They stoically embrace up to three hours of daily treatments and numerous 2–3 week hospital admissions during each year for their 'tune-up'.

"The kids take up to 25 tablets every day, including enzymes, antibiotics, vitamins, salt and also calorie supplements," Greg explains.

"Twice a day we do treatments to remove excess mucus which clogs their lungs, and they take nebulised antibiotics and other drugs."

Both children have been part of clinical trials to help improve their condition. Mya has responded to one trial with great success, but Aidan hasn't been able to reap the same benefits due to concerns the drug may worsen his liver disease.

The good news is a new $15 million Queensland Cystic Fibrosis Research Program has now been created to help improve outcomes for patients with CF in Queensland and elsewhere.

The program will focus on two new research projects: the Early Life Origins of CF lung disease (the ELO study) and the Mycobacterium abscessus (MABS) pulmonary disease program.

The ELO study will recruit patients from birth to 30 years of age to develop disease trajectories.

Both research projects aim to improve clinical diagnosis of lung disease and its progression across early life and adulthood.

"We will use novel lung function tests, novel MRI techniques, and develop new specific biomarkers that show lung disease activity earlier than currently possible," UQ researcher, Professor Peter Sly explains.

"Findings from this study will increase our knowledge of why lung disease progresses, and will offer a better understanding of the relationship between early lung disease and loss of lung function."

Professors Claire Wainwright, Peter Sly and Scott Bell will lead The Queensland Cystic Fibrosis Research Program team as part of UQ's Child Health Research Centre.

Major funding to support this program has been awarded to the Queensland researchers by The University of Queensland, the Children's Hospital Foundation and the American-based Cystic Fibrosis Foundation. The clinical trials have attracted funding from the Australian Department of Health Medical Research Future Fund and an anonymous donor, as well as support from the Thoracic Society of Australia and New Zealand. Research support will also be provided by the Children's Hospital Foundation, The Prince Charles Hospital Foundation and UQ.

The research will be carried out in partnership with the Children's Health Queensland Hospital and Health Service, the Metro North Hospital and Health Service and The Prince Charles Hospital.

Our Partners

Children's Health Queensland Hospital and Health Service

Queensland Children's Hospital

Children's Hospital Foundation

health + wellbeing Queensland

You can improve children's lives

Our researchers need your support, and all donations make an impact. Through your generosity, you can contribute vital funding to:

- advance life-improving and life-saving children's health research projects
- provide critical research equipment
- support promising researchers' careers
- attract senior researchers to further world-class research in our own backyard.

To discuss your tax-deductible research gift, contact:

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