Wal-yan

RESPIRATORY RESEARCH CENTRE

Healthy lungs for every child, for life

July 2022 - June 2023
Wal-yan Centre Annual Report

A Powerhouse Partnership

TELETHON KIDS INSTITUTE
Discover. Prevent. Cure.

Perth Children's Hospital Foundation

Perth Children's Hospital

Wal-yan Warlang-up

Place of healthy lungs

The English translation of our Noongar name is “Place of Healthy Lungs”.

“Wal-yan” means lungs, and “Warlang-up” means healthy place.

We would like to acknowledge Walter Jnr McGuire and Elder May McGuire for the Noongar name of place with English translation.

Acknowledgement

We would like to acknowledge and pay our respect to Australia’s Aboriginal and Torres Strait Islander peoples as the traditional custodians of the lands, the waterways, and the skies across Australia. We would like to thank the Aboriginal and Torres Strait Islander people for caring and sharing the land on which we are able to learn and undertake our respiratory research.

We would like to acknowledge the Noongar Nations and especially the Noongar Whadjuk People on whose land the Wal-yan Warlang-up Respiratory Research Centre at the Telethon Kids Institute is situated. We would like to acknowledge and thank the traditional custodians of all the lands we have worked in across the Kimberley and Pilbara regions over the past year, including but not limited to Tawuwu, Bardi, Jawi, Karajarri, Juwalinny, Mangala, Nyungamarta, Yulpartja, Jaru, Kukatja and Marapikurrinya people.

We pay our respects to elders past and present.
We share our friendship and our kindness.

We work together to ensure that every child has healthy lungs, for life.

About the Wal-yan Respiratory Research Centre

The Wal-yan Respiratory Research Centre - a powerhouse partnership between Telethon Kids Institute, Perth Children’s Hospital Foundation and Perth Children’s Hospital - brings together clinicians, scientists and community members from across the globe with a united goal to prevent childhood respiratory illness and ensure that all children have healthy lungs for life.

Our Vision

To ensure that every child has healthy lungs for life.

Our Mission

To prevent and cure respiratory illness in children through world-class, multidisciplinary research, that will drive pioneering discoveries out of the labs and into the community, across WA, Australia and beyond.

Our work extends across six strategic research areas:

- Beating Chronic Lung Disease
- Early Life Influences
- Respiratory Infections and Immune Systems
- Lungs and the Environment
- Indigenous Health
- Implementation into Clinics

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A Powerhouse Partnership

Message from the Director

In reflecting on the past year, I am inspired by the remarkable achievements made by our dedicated team and supportive community.

In Australia, the alarming reality remains that around one million children are living with serious respiratory diseases, with over 110,000 of these children residing in Western Australia.

Over the fourth year of the Wal-yan Centre's powerhouse partnership between Telethon Kids Institute, Perth Children's Hospital Foundation and Perth Children's Hospital, the Centre has continued its unwavering commitment to making a significant impact on the health of these children through groundbreaking research.

Our 140-strong team, working tirelessly on over 100 research projects, has been instrumental in driving our mission forward. While it is impossible to mention every achievement in this report, I would like to highlight some notable milestones from the past year.

We have accelerated our research efforts in developing an innovative and patented treatment for childhood wheezing and asthma. Our groundbreaking work utilizing a new class of drugs to enhance airway epithelial repair brings hope to millions of children suffering from these respiratory conditions.

In a world-first discovery, we have provided evidence that not all biodiesel fuels are equal. Our research has demonstrated that the exhaust from certain biodiesel types, particularly those derived from beef tallow, can produce more toxic health effects than others. This vital knowledge will shape environmental practices and promote healthier alternatives for the wellbeing of our children.

Other study results have shown the effectiveness of a common asthma drug for very premature babies who go on to suffer from lung complications. By expanding our understanding of treatment options, we can provide better care and outcomes for these vulnerable infants.

I am delighted to share that we have reached a significant milestone in our 20-year MAVRIC study by recruiting our 1000th participant. This ongoing study aims to better understand and predict why specific children experience recurrent respiratory exacerbations, while also developing new treatments to reduce the likelihood of asthma development.

Our regional wet cough work has also made significant advancements, focusing on the prevalence and management of chronic wet cough in Aboriginal children to improve their long-term lung health. These efforts are a testament to our commitment to addressing health disparities and ensuring equal access to care for all children.

In line with our commitment to innovation, we have continued to develop a clinical program for implementing phage therapy. This program specifically targets bacterial infections resistant to antibiotics, including lung infections in children living with cystic fibrosis. By exploring alternative treatment options, we aim to provide new hope for those affected by these challenging conditions.

Furthermore, we are proud to have acquired state-of-the-art lung function testing equipment dedicated to research purposes. This valuable resource will enhance our capabilities and facilitate groundbreaking studies that push the boundaries of respiratory research.

Looking towards the future, the Wal-yan Centre is embarking on a new additional research direction—investigating the impact of climate change on children's respiratory health in Australia. Our team is merging geospatial data on health, climate, and socio-economics to conduct a comprehensive whole-of-continent study that will be crucial for informing policies and interventions nationally.

As we progress in our mission, we are cognizant of the challenges faced by the research community. Securing funding and providing viable career pathways for emerging scientists remain critical priorities. Rest assured, we will continue to advocate for the necessary resources to support our research and nurture future leaders in the field.

Our achievements would not be possible without the unwavering support of our community. I extend my heartfelt thanks to our study participants, their families, our community reference group members, research buddies, collaborators and partners, and our corporate and philanthropic supporters. Your commitment and collaboration have played an instrumental role in improving, extending, and saving the lives of children suffering from various respiratory diseases.

I would also like to express my gratitude to each, and every staff member involved in the Wal-yan Centre. Your dedication and tireless efforts have brought us closer to our vision of a healthier future for children battling respiratory illnesses. Together, we will continue to drive innovation, find solutions, and transform lives.

Professor Stephen Stick
Director, Wal-yan Respiratory Research Centre

Highlights

Healing airways so kids with asthma can breathe better

An exciting discovery is that the airways of children with asthma do not repair effectively when injured, for example, following virus infections. The group has identified a mechanism to restore healthy repair using a new class of drugs that will protect young sufferers from ongoing lung damage and improve their long-term health outcomes.

These researchers at the Wal-yan Centre have discovered an FDA-approved medication traditionally used to treat pain in children and adults – that enhances repair and reduces inflammation in airway epithelial cells from children with asthma.

The research team, including collaborators at Monash University, was granted a patent in 2022 on the 'Promotion of Epithelial Repair', paving the way for a potentially new class of drugs which target a previously unknown asthma pathway.

The team, led by Dr Thomas Iosifidis, is now investigating the preclinical safety and effectiveness of these therapeutics, prior to clinical trial assessment.

In the near future, this novel treatment solution will help heal the airways of children with asthma, protecting them from ongoing damage, and improving their long-term health outcomes.

Read the full story here

Common asthma drug gives hope for better lung health for some preterm babies

A new study has found a common asthma drug is effective for some very premature babies who go on to suffer from lung complications.

Every year nearly two million babies are born at less than 32 weeks of gestation globally. These babies face a broad range of health challenges, including respiratory problems throughout life.

So far, there are no specific treatments to improve the lung health of children surviving preterm birth after discharge from the neonatal intensive care unit.

A clinical trial led by Associate Professor Shannon Simpson aimed to determine the effectiveness of a common asthma medication, 'Flixotide', for treating ongoing breathing problems in preterm born children aged six to 12 years old, who were born at less than 32 weeks gestation.

The five-year Preterm paediatric Inhaled CorticoSteroid Intervention (PICSI) study found that children who received Flixotide experienced modest improvements in lung function, compared to children in the control group, but nearly one quarter (23 per cent) of children experienced a significant improvement in their lung function.

In addition, the study identified a group of children who benefited the most from corticosteroids, based on two markers of health measured at the start of the study. This finding may one day help clinicians identify which children will benefit the most from corticosteroid treatment.

The findings of this study may change the way some preterm babies are treated, leading to improved respiratory health in this population.

Read the full story here

Biodiesels not as clean and green as they seem

In a world being urged to embrace renewable options, biodiesel fuels – made from plants and animal by-products – are increasingly touted as a greener, cleaner choice than traditional diesel.

But world-first evidence being produced by Dr Katherine Landwehr has raised questions about the health impacts of these seemingly friendly products.

Dr Landwehr's work has, for the first time, proved not all biodiesel fuels are equal, with the exhaust from some – especially biodiesel made from beef tallow – producing more toxic health effects than others.

The findings have revealed that even short exposures to diesel and biodiesel exhaust can have toxic effects.

Read the full story here

20-year MAVRIC study celebrated recruitment of its 1000th participant

The MAVRIC (Mechanisms of Acute Viral Respiratory Infection in Children) study celebrated the recruitment of the 1000th participant to the study, eight-year-old Sullivan Strahan.

The 20-year study, being led by Professor Peter Le Souef and Associate Professor Ingrid Laing, is designed to discover why some children are more susceptible to getting severe respiratory illnesses when they have a viral infection.

The study was the first to discover that a newly recognised species of rhinovirus (the common 'cold' virus) is the most common cause of children presenting to hospital with acute wheezing and asthma. Present research is aimed at uncovering why this new virus is such a serious worldwide problem in young children.

The ongoing study also continues to try to better understand and predict why particular children keep returning to hospital with respiratory exacerbations, and to develop new treatments which reduce the likelihood of them developing asthma.

Read the full story here

Community bands together to improve lung health of Aboriginal children in East Kimberley

A three-month intensive health promotion campaign in the East Kimberley region aimed to raise awareness of the dangers of a chronic wet cough in Aboriginal children.

Researchers from the Wal-yan Centre, led by Professor André Schultz, and the Kulunga Aboriginal Unit at the Telethon Kids Institute partnered with Kimberley Aboriginal Medical Services, Yura Yungi Aboriginal Medical Services, Aboriginal families, and clinicians in the East Kimberley to improve the lung health of Aboriginal children.

They aimed to raise awareness and to develop solutions for timely detection, accurate diagnosis, and optimal management of chronic wet cough in Aboriginal children.

A wet cough experienced by a child for more than four weeks can be a sign of underlying infection known as protracted bacterial bronchitis. If left untreated, this can lead to irreversible, life-shortening lung damage known as bronchiectasis.

Read the full story here

New treatment option for West Australians with cystic fibrosis one step closer thanks to generosity of Conquer Cystic Fibrosis

Access to phage therapy, a treatment option for antibiotic resistant superbugs, is now one step closer for people with cystic fibrosis (CF) in WA thanks to a $500,000 donation from Conquer Cystic Fibrosis to the Wal-yan Centre.

Antimicrobial resistance occurs when bacteria develop ways to resist antimicrobial medicines, such as antibiotics. These resistant bacteria then grow causing very bad and uncontrolled infections.

This is a big problem for people living with CF because they usually take high-dose, long-course antibiotics frequently to fight serious and potentially deadly lung infections.

Individuals living with CF and their families need alternatives to antibiotics to fight against the harmful bacteria that cause these lung infections – a powerful new weapon is phage therapy.

The Wal-yan Centre is home to the Phage WA team – a network which aims to make phage therapy a reality to treat a variety of bacteria-caused infections, including lung infections in children living with CF. The team is led by Professor Stephen Stick and Associate Professor Anthony Kicic.

Read the full story here

Study shows lung health of Aboriginal children hospitalised with chest infections improved following co-designed intervention

A co-designed and culturally secure intervention to improve medical follow-up for Aboriginal children hospitalised with acute chest infections resulted in higher follow-up rates and improved longer-term lung health outcomes for children.

Aboriginal children hospitalised with acute chest infections are at-risk of developing bronchiectasis, which is a chronic, debilitating and life-shortening lung disease.

The earliest sign of chronic lung disease after hospitalisation is usually a wet cough for more than four weeks. If the ongoing wet cough is managed early, bronchiectasis can often be prevented. Therefore, effective follow-up after being discharged from hospital is essential.

The study, co-led by Dr Pam Laird and Professor André Schultz, demonstrates the urgent need for a national follow-up strategy for Aboriginal children who have been hospitalised for acute chest infections, to prevent more serious lung disease.

Read the full story here

New trial aims to nip chronic lung disease in the bud for First Nations kids

The team were successful in securing a $1.97 million Medical Research Future Fund grant to develop and trial an effective, culturally secure follow-up strategy, to ensure that Aboriginal children around the nation are receiving effective medical follow-up and treatment.

The four-year trial will be led by Dr Pam Laird from Telethon Kids Institute in collaboration with The University of Western Australia and the Menzies School of Health Research, with a team of researchers from Telethon Kids, UWA, the Queensland University of Technology, the University of Queensland, and Curtin University.

The group will work with partner organisations from Queensland and from the Kimberley and Pilbara regions in Western Australia, including Aboriginal medical services that support remote-living First Nations communities.

Read the full story here

Analysis of worldwide research showed that despite advances in neonatal care, preterm babies have lower lung function throughout their life

A review of existing research on lung function in individuals born preterm found that whilst there have been overall improvements in lung function due to advances in neonatal care, individuals born preterm continue to have lower lung function throughout their life compared to babies born full-term.

Furthermore, the research review showed that where a baby is born can have an impact on their lung function outcomes, with preterm born babies in Scandinavian countries having better lung function outcomes than babies born in similarly economic developed countries.

Co-authored by Dr James Gibbons, the research paper was published in JAMA Pediatrics, which is a peer-reviewed medical journal published by the American Medical Association.

This paper suggests that there is still further work to do in determining what impacts poorer lung function in people born prematurely.

Read the full story here

New study to find COVID-fighting properties in existing medications

Nearly 50 existing prescription medications already used by Australians will be tested by new research in the fight against COVID's mutant variants.

The new research, led by Associate Professor Anthony Kicic, will investigate the anti-viral properties of 45 medications already approved by the Therapeutic Goods Administration.

Associate Professor Kicic said repurposing existing medications may offer a new shield in the battle against the emerging threats of COVID variants that are continuing to prove deadly.

This research will provide doctors with an insight into what medications they can prescribe to help someone with COVID.

Read the full story here

New study to better understand how bronchiectasis develops during childhood

A new research project – the WA Paediatric Bronchiectasis Cohort Study – officially commenced with the aim of looking at children with bronchiectasis in Western Australia, to better understand how this disease develops during childhood.

Bronchiectasis is one of the most underdiagnosed and neglected lung diseases in children and adults across the world. Importantly, early detection and treatment of bronchiectasis in childhood can prevent and slow progression of lung damage.

This study, led by Dr Kathryn Ramsey, aims to gain knowledge into the disease mechanisms of childhood bronchiectasis so that targets for treatment can be identified.

Read the full story here

Study finds high rates of chronic lung disease in remote-living Aboriginal children

A study co-designed and conducted in partnership with Aboriginal communities found that almost one in five children across four remote Kimberley communities has some form of chronic lung disease.

A team of clinician-researchers from the Wal-yan Centre worked with the Kimberley Aboriginal Medical Service and 16 Aboriginal community researchers to screen almost 400 children aged 0-18 years living in the four communities.

The results reveal 17.9 per cent of the children screened had a chronic respiratory disease – either protracted bacterial bronchitis (PBB), chronic suppurative lung disease (CSLD), bronchiectasis, or asthma.

PBB and CSLD are conditions which, if not properly treated, can lead to bronchiectasis – a disease that eats away at the lungs, causing progressive, irreversible, and life-shortening damage.

The findings of this study – led by Dr Pam Laird - will help to fill a serious information gap about how common and serious chronic lung disease is in Aboriginal children, and how important it is to urgently tackle it in a culturally secure way.

Read the full story here

A Powerhouse Partnership

Development of new therapies for respiratory viruses supported by State Government grant

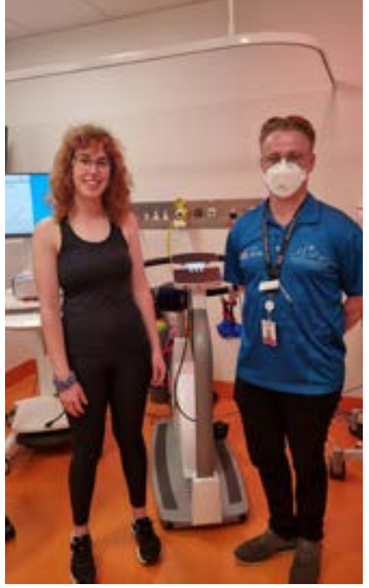
A project to be undertaken by a team of researchers at the Wal-yan Centre, led by chief investigator Professor Stephen Stick, aims to develop interventions that could provide protection in the event of a new pandemic, and against common viruses already infecting children and adolescents in Western Australia.

The two-year project is made possible thanks to nearly $600,000 in funding provided by the State Government's WA Child Research Fund.

The project will identify the factors that determine the outcome of viral exposure and infection.

The development of new therapies for respiratory viruses, including new viruses with pandemic potential, is a World Health Organization priority.

Read the full story here



New state-of-the-art lung function testing equipment becomes a reality

Respiratory function testing is essential for the diagnosis, monitoring, and treatment of a range of conditions, including asthma, cystic fibrosis and the chronic lung disease of prematurity.

However, these tests are highly specialised and require adapted equipment to be suitable for testing in children.

Thanks to funding support from the Stan Perron Charitable Foundation, the Telethon Kids Institute and the Wal-yan Centre, the Centre now has a range of new specialist respiratory function testing equipment, dedicated for research use, on hand.

In addition, portable equipment is available, to enable bedside and community-led research in rural and remote communities, which is vital for respiratory research.

Program Manager of the Children's Lung Health team, Dr Elizabeth Smith, said the new equipment is invaluable for the research work her team undertakes.

Read the full story here

Research into innovative treatments for people with asthma and antibiotic resistance supported by Innovation Fellowships

Two Wal-yan Centre researchers were awarded a 2022 Innovation Fellowship supported by the WA Government's Future Health Research and Innovation Fund.

Associate Professor Anthony Kicic (pictured below) was awarded $145,036 for enabling the establishment of a phage bioreactor facility for human therapeutic application.

Dr Tom Iosifidis (pictured above) was awarded $110,726 to investigate an innovative treatment to enhance airway repair, which is anticipated to reduce asthma exacerbations and hospitalisation.

Read the full story here

300th participant recruited to crucial respiratory research program

A research program, which enables over 25 important respiratory research studies to be undertaken, celebrated the recruitment of its 300th participant.

The Western Australian Epithelial Research Program (WAERP) is a community cohort biobank that collects and stores respiratory epithelial cells from the upper (nose) and lower (trachea) airways of Western Australian children and adults undergoing non respiratory elective surgery.

Airway cells are known to be the first line of defence against respiratory viruses, bacteria, pollutants and allergens.

The WAERP biobank supports numerous and diverse research studies intended to improve understanding and assessment of treatments for respiratory conditions.

WAERP Study Recruitment Officer Amy Greenly said that by taking part in the program, the participants are bringing hope for people with respiratory conditions.

Read the full story here

Research to help identify which children will develop asthma and to design more specific asthma treatments supported by Federal Government funding

Research focussed on identifying which children will develop asthma, and developing more specific asthma treatments, has been supported by the National Health and Medical Research Council's (NHMRC) Ideas Grants.

This study will address the main gaps in asthma research that have delayed progress in preventing and treating asthma over the past 30 years - including a lack of understanding of why only some children develop asthma, and the lack of early susceptibility factors (biomarkers) to detect these children.

The project – which will be undertaken by a team of expert children's respiratory researchers, including Professor Peter Le Souef and Associate Professor Ingrid Laing - will determine if the future development of asthma in a child is influenced by changes to how their genes work as a result of behavioural and environmental factors, known as epigenetic changes.

As epigenetic changes are reversible, this project has the potential to open the way for the development of entirely new therapies to counter epigenetic changes and achieve the large-scale prevention of the development of asthma.

Read the full story here

New study to determine if it's safe for children born preterm to attend day care

A new study to determine if it's safe for children who were born preterm to attend day care officially commenced.

Children born preterm are seven times more likely to be hospitalised within the first year of life with respiratory infections when compared with babies born at term.

As day care is associated with increased risks of acquiring these respiratory infections, one of the most frequently asked questions by parents of children born preterm is whether it is safe to attend day care.

The aim of the Kids INfections and Day care's Effects on the lungs in those born Early (KINDEE) study is to improve lung health outcomes in children born preterm by better understanding the impact that respiratory infections and day care attendance have on their lung health during later childhood.

The study's lead investigators are Associate Professor Shannon Simpson and Dr James Gibbons.

Read the full story here

Patients with antibiotic-resistant lung infections to receive promising phage therapy treatment as part of new trial

Patients with lung infections that are not responding to antibiotics will be treated with phage therapy as part of a new translational trial program.

This will be the first time that a coordinated, standardised approach to assess the effectiveness of phage therapy for treating antibiotic-resistant pseudomonas lung infections in humans has been undertaken.

The three-year program, to be led by Associate Professor Anthony Kicic, has received $1,972,632 funding under the Federal Government's Medical Research Future Fund.

Read the full story here

New risk factor identified to help predict the long-term lung health of young adults born very preterm

A study which set out to determine ways to predict the long-term lung health of young adults born very preterm has shown that a childhood history of respiratory hospital admission should be a key consideration in the management of preterm children and adults.

In addition, the study found that having a history of asthma in the mother or a personal history of allergies did not have any clear effect.

As more and more babies are surviving premature birth due to better neonatal care, it's important to identify those who are at the highest risk for long-term lung problems.

The information gathered in this study, led by Associate Professor Shannon Simpson, can help healthcare providers better manage the long-term lung health of preterm children and adults.

Read the full story here

466 babies recruited to AERIAL study

The AERIAL study, in partnership with the ORIGINS Project (Joondalup Health Campus), endeavours to understand if exposures during pregnancy and early life can affect the cells lining the airways (epithelial cells) in newborns and whether this is associated with the development of wheeze, allergy and asthma later in childhood.

We launched the AERIAL Study in August 2020, and this year saw the recruitment of the final participant, which includes 14 siblings, 2 sets of twins, 310 placenta samples and 462 newborn nasal samples collected – an extraordinary effort.

The AERIAL families continued to embrace using the AERIAL smartphone app to monitor respiratory viral infections in real time, with 95% families using the app, 70% on a regular basis, resulting in the collection of 650 swabs from sick babies.

The lead researcher on the AERIAL study is Dr Liz Starcevich.

Making headlines about the health impacts of e-cigarettes

Associate Professor Alex Larcombe's leading program of research into what's in e-cigarette products - including nicotine in some, as well as other toxic chemicals and substances – has been referenced multiple times throughout the year in mainstream media stories, social media mentions and citations. Associate Professor Larcombe has also directly participated in a range of media interviews, to educate the public about the dangers of vaping.

This research work has had a massive and rapid impact on how e-cigarettes are viewed from a health effects of exposure perspective, helping to reinforce the message that e-cigarettes are not harmless, and to inform policy.

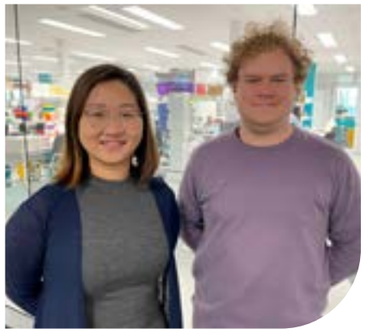
A Powerhouse Partnership

Vertex grants to support advances in cystic fibrosis care

Three outstanding researchers - Dr Daniel Laucirica, Dr Kak-Ming Ling and Dr Samuel Montgomery - were awarded Vertex Cystic Fibrosis (CF) Mentored Innovation Research Awards.

Together, Dr Laucirica, Dr Ling and Dr Montgomery received $540,000 funding to support their innovative and collaborative clinical research to improve the care of people with CF.

Dr Laucirica's project will specifically assess whether phages (viruses that kill bacteria) can be used as an anti-inflammatory therapy targeting neutrophils in the lungs during infection.



Dr Ling's research project will yield important data for the future use of phage therapy in individuals with CF. This information will focus on the effectiveness of phages, how they are administered, and the various formulations available.

Dr Montgomery's research study aims to improve the lung health of young children with CF following a viral infection.

Read more about Dr Ling's and Dr Montgomery's research

Learn more about Dr Laucirica's research

Great minds came together at Wal-yan Scientific Retreat

Wal-yan Centre team members and special guests travelled to Wadjemup (Rottnest) in October to spend an intensive two days together learning about, and providing input into, the broad range of research projects underway within the Centre.

The scientific retreat also provided a forum to discuss future collaborations, new ideas and opportunities, and ways to improve the Centre's research work.

Read the full story here

Community Involvement and Engagement

At the Wal-yan Centre, we prioritise amplifying the community's voice in respiratory research. Our unwavering commitment lies in ensuring that our research is not only relevant, but also delivers high-quality outcomes and successful translation of our research findings into effective clinical care.

As part of this commitment we are proud to have over 50 community members who contribute to our research through our eight community reference groups:

- BREATH (Building Respiratory Equity for Aboriginal and Torres Strait Islander Health) Consumer Reference Group of WA
- Child and Adolescent Cystic Fibrosis Consumer Reference Group of WA
- MAP (Metabolomics to predict asthma in children) Consumer Reference Group
- Neuromuscular Consumer Reference Group
- Next Generation CF Youth Consumer Reference Group
- Paediatric Bronchiectasis Consumer Reference Group of Western Australia
- Preterm Community Reference Group
- Western Australian Epithelial Research Program (WAERP) Consumer Reference Group

In addition, we are fortunate to have a number of community members who help to shape our research as 'research buddies' and as research investigators.

Community Involvement and Engagement (cont)

Other community involvement highlights this year include:

- A special evening where supporters of the Wal-yan Centre came together to learn about some of the Centre's research underway in the areas of phage therapy, e-cigarettes and heated tobacco products, asthma, and lung health following preterm birth. Rael Rivers, who herself has asthma, as do her three children, also delivered a heartfelt presentation on 'Why she wants change'.
- Presentations at Cystic Fibrosis WA events and involvement in the organisation's fundraising events including 65 Roses Day and the Matagarup Bridge Climb for Cystic Fibrosis
- Associate Professor Anthony Kicic featured as the guest medical speaker at the Conquer Cystic Fibrosis ball, Professor Stephen Stick was interviewed for the special video presentation on the evening and Alana Harper braved the chilly waters of the Swan River, to swim one kilometre as part of the Dare to Care Swim for Conquer Cystic Fibrosis.
- Completion of a preterm lung health priority setting partnership where the community were invited to work together with the Children's Lung Health team to establish the community's top 10 research priorities for the lung health of people born prematurely.

- Consumer representatives embedded into the Centre's governance committee - the Wal-yan Centre Scientific Steering Committee – and on award review and selection panels.
- Wal-yan researchers volunteered to share their science through the Telethon Kids Institute's outreach and education program

Through the Centre's website, social media channels - Twitter and Facebook - and mainstream media coverage, engagement with the community has increased.

During the period 1 July 2022 to 30 June 2023, the Centre's organic **Facebook posts reached 29,786 people and the number of followers increased to 580**.

The Centre's tweets appeared on user's screens **(impressions) over 114,000 times, with the number of Twitter followers increasing to 350.**

Coverage of the Centre's work has also been included on partner social media channels, including Telethon Kids Institute, Perth Children's Hospital Foundation and Perth Children's Hospital.

There were **7,837 unique page views to the Wal-yan Centre website** during the year and 30 news stories were published.

Relevant stories continued to be pitched to traditional media outlets and specialist publications, with coverage being achieved on many occasions during this time period.

A Powerhouse Partnership

Global Reach and Impact

To achieve a strong global collaboration, we work in partnership with world-class researchers, clinicians and investigators, and participate in respiratory conferences and networks globally.

International conferences we presented at during the year include:

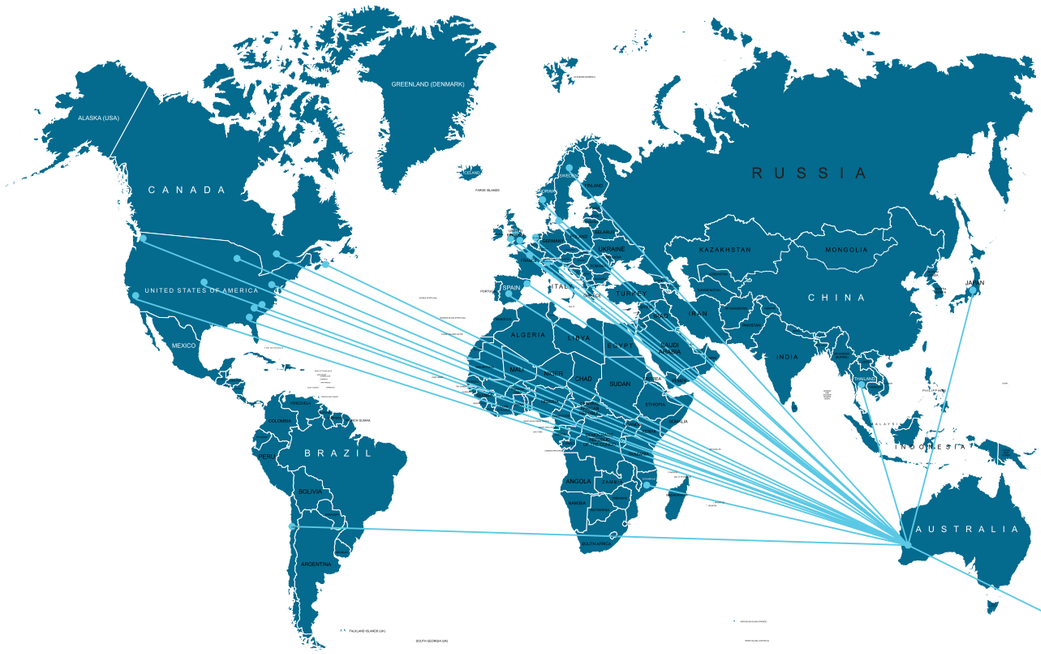
- American Thoracic Society, Washington DC
- Australian Pacific Respiratory Society, Japan
- International Congress of Antimicrobial Chemotherapy, Perth, Australia
- North American Cystic Fibrosis Conference, Philadelphia, USA
- The European Respiratory Society (ERS) International Congress, Barcelona, Spain
- The International Meeting on Indigenous Child Health in Tulsa, Oklahoma
- The Thoracic Society of Australia and New Zealand and The Australia and New Zealand Society of Respiratory Science (TSANZSRS) Annual Scientific Meeting, Christchurch, New Zealand

We are actively collaborating with colleagues and organisations around the world including:

- Prematurity's Effects on the Lungs in Children and Adults Network (PELICAN) - the European Respiratory Society's fourth clinical research collaboration. Associate Professor Shannon Simpson co-chairs the consortium alongside Dr Jenny Hallberg from the Karolinska Institute, Sweden.

- Research collaborations with:

- Centro de Investigação em Saúde de Manhiça (CISM), Maputo, Mozambique
- Consorcio de Investigación Biomédica en Red de Epidemiología y Salud Pública (CIBERESP), Madrid
- Dalhousie University, Halifax, Canada
- Department of Clinical Science, University of Bergen, Bergen, Norway
- Department of Pediatrics, University of Wisconsin - Madison, Madison, WI, USA
- Department of ENT, Head and Neck Surgery and Audiology, Rigshospitalet, Copenhagen University, Copenhagen, Denmark
- Erasmus University Medical Center, Rotterdam, Netherlands
- Emory university, Georgia, USA
- ICREA, Pg. Lluís Companys 23, 08010 Barcelona, Spain
- INSERM, Paris, France
- ISGlobal, Hospital Clínic - Universitat de Barcelona, Barcelona, Spain
- King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Bangkok, Thailand
- Meyer Children's Hospital, Florence, Italy
- Pediatrics Department, Hospital Sant Joan de Déu, Universitat de Barcelona, Esplugues, Barcelona, Spain
- Respiratory Medicine, University College London, London, UK
- Research Institute, Hospital for Sick Children, Toronto, Canada
- School of Medicine at Pontificia Universidad Católica de Chile
- School of Medicine, Cardiff University, Cardiff, Wales



- Seattle Children's Research Institute, Seattle, WA, USA
- The Bixby Center for Population, Health and Sustainability, School of Public Health, University of California, Berkeley, California, USA
- Thirona, Nijmegen, The Netherlands
- University of British Columbia, Canada
- University of North Carolina at Chapel Hill School of Medicine, NC, USA
- University of Manchester, UK
- University of Bern, Bern, Switzerland
- University of Washington, Seattle, WA, USA
- University Health Network and University of Toronto, Canada
- Yamagata Prefectural Central Hospital, Yamagata, Japan

Funding and developing our researchers

The Wal-yan Centre is committed to supporting current and the next generation of respiratory researchers. This is being achieved through investing in our people and their ideas by providing funding opportunities for high quality research.

Some funds also provide opportunity for new ideas and new research partnerships to grow ideas, and often results in further funding.

Seven innovative lung health research projects announced as the 2023 Wal-yan Centre Strategic Inspiration Projects

Seven innovative lung health research projects received funding support as the 2023 Wal-yan Respiratory Research Centre Strategic Inspiration Projects.

The projects align to the purpose of the Centre - to undertake innovative, transformative work where teams come together to create significant impact and value to our community.

Valued at a total of $1.99 million, the successful projects are looking at:

- accelerating an innovative, patented, therapeutic avenue to treat childhood wheezing and asthma using a new class of drugs that enhance airway epithelial repair - ***Team Lead - Dr Thomas Iosifidis***
- clearly defining the impact of climate change on children's respiratory health in Australia – ***Team Lead - Professor Peter Le Souëf***
- if the way our immune system develops before birth is similar to how it functions in our respiratory system when we are older – ***Team Lead - Professor Stephen Stick***
- analysing the inhalable aerosols produced by e-cigarettes and relating the outcomes directly to the resultant health risks – ***Team Lead - Associate Professor Alex Larcombe***
- development of a clinical program to implement bacteriophage (phage) therapy for bacterial infections that are resistant to antibiotics – ***Team Lead - Associate Professor Anthony Kicic***
- working in partnership with First Nations communities throughout WA and wider Australia, local State and Aboriginal health services to reduce the significant Indigenous health gap in relation to respiratory disease – ***Team Lead - Professor André Schultz***
- whether azithromycin - a commonly used antibiotic – is a safe, simple and affordable intervention to prevent severe early life acute respiratory infections in those born very preterm – ***Team Lead - Associate Professor Shannon Simpson***

All supported projects set out to make significant impact within the Centre's six strategic research areas. Importantly, they all provide the opportunity for collaboration and involvement from researchers across the Centre.

Seed funding awarded to support three bold research ideas

Attention-grabbing seed funding pitches were delivered by six researchers aiming to secure $20,000 in funding to help progress their bold ideas to the next stage.

The winners Michelle Schwager (left), Jane Choi (centre) and Renee Ng (absent from image), and Melinda Judge (right), award-winning ideas included:

- investigating why some children with acute wheeze have an increased risk of recurrent asthma exacerbation
- a creative approach to phage therapy, and
- the effects of environmental factors on the respiratory health of Australian children.

Five innovative research projects supported by Inspiration Awards 2022

Valued at $440,000, the Wal-yan Centre Inspiration Awards 2022 supported five cutting-edge research projects.

The Inspiration Awards are designed to support new and exciting projects that do not fit the traditional grant schemes.

The five successful research projects are focussing on:

- development of a mix-and-read assay (laboratory test) for detecting multiple viruses and bacteria in just minutes – ***Chief Investigator Patricia Agudelo-Romero***
- testing whether clusters exist in the blood immune cells collected from children during wheezing and asthma, to guide early identification and treatment of children at high-risk of developing persistent respiratory exacerbations – ***Chief Investigator Laura Coleman***
- development of software that can automatically analyse the data generated by the wearable electrical impedance tomography belt – a tool used to monitor lung function in real time – ***Chief Investigator Yuliya Karpievitch***
- understanding how allergies interfere with the immune system's ability to fight viruses in children and contribute to asthma development - ***Chief Investigator Jonatan Leffler***
- establishing how climate change has altered Aboriginal child health over the last 30 years, with the aim of using this information to help protect Aboriginal children from future environmental health risks – ***Chief Investigator Peter Le Souef***

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Perth Children's Hospital Foundation
Perth Children's Hospital

Funding and developing our researchers (cont)

Wal-yan Centre scholarship awardees to research interventions for improving lung health

As part of the Wal-yan Centre's aim to support the next generation of scientists in children's respiratory research, a competitive scholarship program was introduced.

The successful candidates, Michael Beaven (pictured middle) and Sourav Shyam (pictured left), and Yaqin Alziyadat (right), will receive three years of funding to support their PhD completion.

Michael's PhD is focussed on understanding how the body of an adult who was born preterm responds to incremental exercise, and how this response changes over time compared to adults who were born at term.

Sourav's PhD is focussed on whether therapeutics and drugs can improve lung health. If the answer to this is yes, Sourav's study aims to streamline what drugs and therapies would help improve patients' airways.

Yaqin is looking at how modifying the body's immune system using a bacterial lysate (medicine made from bacterial cells that are broken down) can redirect the way the immune system reacts to viral respiratory infections in young children, towards more natural responses and away from those that lead to wheeze and asthma.

Prizes, Awards and Positions

- **A/Prof Shannon Simpson** was one of National Health and Medical Research Council's 'Ten of the Best' which highlights outstanding Australian research
- **A/Prof Shannon Simpson** was awarded a Stan Perron Charitable Foundation People grant
- **A/Prof Shannon Simpson** featured in a Herald Sun article as one of Australia's top female scientists changing the world
- **Dr Samuel Montgomery** received the Thoracic Society of Australia and New Zealand (TSANZ) Janet Elder International Travel Award in the early career researcher category
- **A/Prof Anthony Kicic** was awarded 2022 PhD Supervisor of the Year at Telethon Kids Institute
- **Dr Elizabeth Smith** was awarded a European Respiratory Society (ERS) Young Scientist Sponsorship
- **Dr Patricia Agudelo-Romero** was appointed as a member of the European Virus Bioinformatics Center
- **Grace Pettigrew** was awarded a European Lung Foundation Travel Grant for Best Abstract in Patient Centred Research for the ERS International Congress
- **Grace Pettigrew** was awarded a Thoracic Society of Australia and New Zealand and The Australia and New Zealand Society of Respiratory Science (TSANZSRS) Annual Scientific Meeting (ASM) 2023 Travel Grant
- **Tiffany Bradshaw** was awarded a TSANZSRS ASM 2023 Travel Grant
- **Talya Conradie**, was awarded the best talk at the November Microbiome Virtual International Forum

Honours and PhD Student Highlights

- **Denby Evans** was awarded the Ann Woolcock New Investigator Award
- **Denby Evans** was awarded the Stan and Jean Perron Excellence Award
- **Renee Ng** was awarded the American Society for Microbiology Best Oral Presentation Award, and the International Society of Antimicrobial Chemotherapy Young Investigator Travel Award at the International Congress of Antimicrobial Chemotherapy
- **Andrew Vaitekenas** was one of six finalists for the Ann Woolcock New Investigator Award
- **Josh Iszatt** was awarded first prize in the Wal-yan Centre New Investigator presentations
- **Rebecca Watkinson** was awarded second place in the Wal-yan Centre New Investigator presentations
- **Dr Katherine Landwehr** achieved a chancellor's commendation at her doctorate graduation
- **Daniel Laucirica** passed his PhD thesis
- **Laura Coleman** submitted her PhD thesis
- **Jane Choi** submitted her PhD thesis
- **Renee Ng** Submitted her PhD thesis
- **Alex de Bont** passed his Masters course
- Honours student **Julia Casella** passed her course
- Honours student **Ashleigh Heng-Chin** passed her course
- Honours student **Jake Puglia** passed his course
- Honours student **Braeden Simms** passed his course

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Grant Income

Members across the Centre received the following grants since July 2022 (along with a few earlier grants that were not included in the 2022 Annual Report). Wal-yan Centre researchers and their global collaborators were awarded a total of $17,604,309 in grant funding, covering projects to be delivered between 2021-2027. A breakdown of the awarded grants is presented in the table below.

Chief Investigator	Project Title	Primary Fund Scheme	Start Date	End Date	Total
Prof Stephen Stick	Priority Driven Childhood Respiratory Research	NHMRC investigator grant	2022	2027	$1,947,721
A/Prof Shannon Simpson	Arresting and reversing lung function decline for survivors of preterm birth	WA Near-miss Awards	31/12/2021	30/01/2023	$100,000
A/Prof Deb Strickland	Using OM-85 as an innate immune training agent to prevent respiratory infections	OM Pharma Contract Research	31/12/2021	30/07/2023	$117,865
Dr David Martino	Effects of chlorinated drinking water on the assembly of the infant gut microbiome Project (TUMS)	Water Corporation	29/03/2022	30/12/2023	$25,000
Dr Lea-Ann Kirkham	A novel otitis media vaccine: optimising manufacture and dosing strategies for human trials.	WA Child Research Fund (formerly TPCHRF)	29/05/2022	29/05/2023	$599,896
A/Prof Anthony Kicic	Compound repurposing into novel therapeutics to treat SARS-COV2 infection.	MRFF Coronavirus Response Initiative - 2021 COVID-19 Treatment Access and Public Health Activities	31/05/2022	29/05/2024	$998,520
A/Prof Shannon Simpson, Dr Andrew Wilson and Prof. Jane Pillow	Lungs for life: Using wearable oximetry and a virtual ward to improve outcomes of infants with bronchopulmonary dysplasia	MRFF Chronic Respiratory Diseases	1/01/2023	30/06/2028	$1,918,884.78
A/Prof Shannon Simpson	Arresting and reversing lung disease for the children of WA who were born too soon	Stan Perron People Fellowship	2023	2027	$571,729.89
A/Prof Shannon Simpson	Kids Infections aNd Day care's Effects on the lungs in those born Early (KINDEE Study)	Research Excellence Awards - WA Child Health Research Fund	1/06/2022	31/06/2024	$340,000
Dr Andrew Wilson	Deeply phenotyping the Effect of Very and Extremely preterm birth on the Lungs of Primary school children - the DEVELOP Study	NHMRC Ideas WA Near-miss Awards	1/07/2022	20/06/2023	$100,000
Dr1/06/2023 Kathryn Ramsey	Assessing the clinical utility of the lung clearance index in children with bronchiectasis	Australian bronchiectasis centre of research excellence	1/06/2023	31/06/2024	$25,000
Dr Samuel Montgomery	Establishing a pipeline for repurposing anti-inflammatory drugs to tackle viral-induced exacerbations in children with cystic fibrosis	Vertex Cystic Fibrosis Research Innovation Award- Mentored	19/06/2022	19/12/2023	$172,856
A/Prof Anthony Kicic	Enabling the establishment of a phage bioreactor facility for human therapeutic application.	DOH WA FHRIF Innovation Fellowships	26/06/2022	26/06/2023	$145,036
Dr Thomas Iosifidis	Towards preventing respiratory deterioration: a new class of mucosal repair therapeutics	DOH WA FHRIF Innovation Fellowships	26/06/2022	26/06/2023	$110,726
A/Prof Anthony Kicic	Making bacteriophage therapy a reality: Implementation of a novel treatment pipeline to treat antimicrobial-resistant infections.	FHIRF - Innovation Seed Fund	27/06/2022	26/06/2024	$500,000
Dr David Hancock	The Microbiome in Young Children with Cystic Fibrosis	Perpetual Impact Grant	30/06/2022	29/06/2025	$54,000
A/Prof Shannon Simpson	Excellence Award	Western Australia Future Research Fund	1/07/2022	30/06/2024	$340,000
Dr Luke Garratt	Excellence Award	Western Australia Future Research Fund	1/07/2022	30/06/2024	$220,000
Prof Stephen Stick	Excellence Award	Western Australia Future Research Fund	1/07/2022	30/06/2024	$340,000
Prof André Schultz	Excellence Award	Western Australia Future Research Fund	1/07/2022	30/06/2024	$110,000
A/Prof Alexander Larcombe	Excellence Award	Western Australia Future Research Fund	1/07/2022	30/06/2024	$110,000
Dr David Martino	Epigenetic biomarkers of heterologous protection: accelerating vaccine design	WA Near-miss Awards	1/07/2022	29/06/2023	$100,000
Dr Jonatan Leffler	Unravelling the male/ female immune imbalance: mapping immune changes following gender transformation	WA Near-miss Awards	1/07/2022	29/06/2023	$100,000
Dr Yuliya Karpievitch	AI- and XR- enabled Virtual Doctor for respiratory disease	WA Near-miss Awards	1/07/2022	29/06/2023	$100,000

Grant Income(cont)

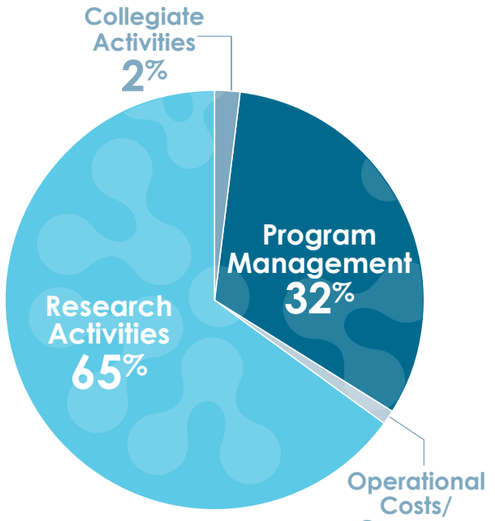
Chief Investigator	Project Title	Primary Fund Scheme	Start Date	End Date	Total
Dr Kak-Ming Ling	Investigating bacteriophage behaviour and efficacy in the Cystic Fibrosis (CF) lung microenvironment	Vertex Cystic Fibrosis Research Innovation Award- Mentored	18/07/2022	18/07/2024	$171,921
Dr Katherine Landwehr	The impact of heated-tobacco-product use on gene expression in the lung - are they really a better alternative to cigarette smoking?	ARC Research Support Grants	01/12/2022	31/12/2023	$20,000
Dr Kathryn Ramsey	Improving prognosis and quality of life in children with muco-obstructive lung disease	NHMRC Investigator Grant	31/12/2022	31/12/2027	$1,576,390
Dr Samuel Montgomery	Repurposing anti-inflammatory drugs to tackle viral-induced exacerbations in children with cystic fibrosis	Conquer Cystic Fibrosis Innovation Grant	31/12/2022	30/12/2023	$50,000
Dr Pamela Laird	A programme to improve medical follow-up and health outcomes for First Nations children hospitalised with lung infections	MRFF Clinical Trials Activity Initiative - 2021 Clinical Trials Activity	31/01/2023	30/01/2027	$1,970,716.29
Prof. Stephen Stick	Close encounters of the nasal mucosa: identifying mechanisms that determine host responses to infection in children following first contact with respiratory viral pathogens	WA Child Research Fund (formerly TPCHRF)	1/05/2023	31/05/2025	$597,424
Dr Daniel Laucirica	Assessing anti-inflammatory and neutrophil-modulating capacity of phage therapy for Pseudomonas aeruginosa infection	Vertex Pharmaceuticals Incorporated	02/05/2023	02/05/2025	$184,302.50
A/Prof Anthony Kicic	Making bacteriophage a reality: implementation of a novel treatment pipeline for antimicrobial-resistant infections	Therapeutic Innovation Australia	1/01/2023	31/12/2023	$10,000

Chief Investigator	Project Title	Primary Fund Scheme	Start Date	End Date	Total
Prof P Le Souef	Reducing the impact of climate change on the health and well-being of children in WA.	Western Australia Child Research Fund (Round 10)	1/01/2023	31/12/2024	$514,045
Iosifidis, Garratt, Caparros-Martin, Amenyogbe, Jones, Looi, Agudelo-Romero, Martino, Starcevich, Montgomery, McDonnell, Foley, Pretorius, Evans, Pillow, Kicic, Stick, Kollmann	Securing a biobank to study the health implications of circadian rhythm disruption in early life	TKI Theme Collaboration Awards	1/01/2023	31/12/2023	$125,000
Agudelo-Romero, Amenyogbe, Pickering, Ling, Martin, Floreani, Jones, Armitage, Elaskalani, Martino, Caparros-Martin, Aya-Bonilla, Barnett, Drouart, Breen, Buckberry, Malinge, Stick, Kicic, Verhasselt, McDonnell, Endersby	Ensuring sustainable capacity in Bioinformatics at Telethon Kids Institute.	TKI Theme Collaboration Awards	1/01/2023	31/12/2023	$125,000
Prof Peter Le Souef	What codes the development of asthma in children?	NHMRC Ideas Grant	1/1/2023	30/12/2025	$1,139,644
A/Prof Anthony Kicic	Treating Pulmonary Pseudomonas Infections with Bacteriophage Therapy (TERMINATE- TRIALS)	2022 MRFF Preventive and Public Health Initiative - 2021 Chronic Respiratory Conditions Grant Opportunity – Stream 1	2023	2026	$1,972,632

Wal-yan Centre Expenditure

The Scientific Steering Committee sets the funding priorities for the Wal-yan Centre and decides on the allocation of resources necessary to advance our scientific agenda. The current proportion of funding used to support different activities within the Centre is shown in the opposite figure and is largely consistent with previous years, with a slightly higher percentage being spent on research activities than in previous years.

Research support funding includes the Centre's Strategic Inspiration Projects, Inspiration Awards, leverage funding to support ambitious research ideas, research consumables, laboratory resources, clinical trials support, biostatistical support and data management. The Centre has an allocation of funds that are used for collegiate activities, including the annual Wal-yan Rottnest/Wadjemup Scientific Conference, which is a long-standing tradition amongst respiratory researchers. The Scientific Conference is a forum that supportively showcases and tests new ideas and results, and is frequently the breeding ground for new opportunities, collaborations, and projects to be initiated. The Centre's collegiate activities bring local and global networking opportunities to the Centre, allowing the formulation of new ways of working, approaching our greatest respiratory challenges and sharing knowledge amongst our peers. There is an allocation of funds towards consumer and community engagement, such as the annual Supporter Evening.



The program management of the Centre includes directorship and leadership from Professor Stephen Stick, program management from Nicole Elliott and communication specialist expertise from Jacqui Caldwell. This central team is responsible for developing, implementing, and maintaining the strategic plan for the Centre, management, and delivery of the strategic communication plan, as well as facilitating day-to-day communications activities. The central program management offers support to Centre-wide initiatives and grant applications, ensuring the end-to-end management of high impact activities.

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Wal-yan

RESPIRATORY RESEARCH CENTRE

Healthy lungs for every child, for life

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