



## Postgraduate Research Opportunities at the Telethon Kids Institute:



### **EARLY ENVIRONMENT**

- *Immunity and Inflammation, Infection and Vaccines, Developmental Origins of Child Health*

# Happy healthy kids

Telethon Kids Institute is the largest medical research facility in Western Australia. With more than 600 staff and students, we are also one of Australia's largest research facilities dedicated to child health. Our multidisciplinary approach brings together clinical researchers, laboratory scientists and epidemiologists all under the one roof to tackle the many complex childhood diseases and issues from a range of different angles.

Our goal is to build on our success and create a research institute that makes a real difference in our community, which will benefit children and families everywhere. We will do this together, with our values underpinning the way we work and make decisions.

## OUR VALUES

<b>COLLABORATION</b>	<b>COURAGE</b>	<b>EVIDENCE</b>	<b>RESPECT</b>
Our work is better when we work together	No problem is too big or too difficult	We do not compromise on quality	We are honest, ethical, and fair

## EARLY ENVIRONMENT

Early Environment is a Research Focus Area (RFA) which focuses on the ways that environments early in life can affect a child's life-long health and development. Factors ranging from infection and climatic conditions to pollutants, housing and our complex microbiome all have an impact. Understanding these exposures and their impact on early growth and development is key to preventing and treating a number of common childhood conditions.

At the Telethon Kids Institute, this research encompasses the development of the immune system, infectious diseases, maternal health and the developmental origins of disease and health.

Research Programs & Teams listed:

- Developmental Origins of Child Health
  - Clinical Epigenetics
  - The ORIGINS Team
- Infections and Vaccines
  - Ear Health, Wesfarmers Centre of Vaccines and Infectious Diseases
  - Infectious Disease Implementation Research, Wesfarmers Centre of Vaccines and Infectious Diseases
  - Infectious Diseases Epidemiology, Wesfarmers Centre of Vaccines and Infectious Diseases
  - Skin Health Team, Wesfarmers Centre of Vaccines and Infectious Diseases
  - Strep A and Rheumatic Heart Disease, Wesfarmers Centre of Vaccines and Infectious Diseases
  - Systems Vaccinology, Wesfarmers Centre of Vaccines and Infectious Diseases

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## The Epigenetics of Nutrition and Prenatal Alcohol Exposure

Research Program	Developmental Origins of Child Health
Research Group	Clinical Epigenetics
Start Date	January 2019
Chief Supervisor	Dr David Martino (Telethon Kids Institute)
Other Supervisors	Dr Martyn Symons (Telethon Kids Institute)
Project Outline	The clinical epigenetics team is engaged in understanding how early experiences shape development through epigenetic changes. Our vision is to improve the health and wellbeing of children through studying the molecular hallmarks of epigenetic control.

Prenatal alcohol exposure (PAE) can cause major disruptions to epigenetic marks during fetal development. PAE is a major preventable cause of lifelong intellectual and growth disabilities collectively termed FASD.

Folic acid, a water-soluble vitamin, has been identified as an essential nutrient that participates in epigenetic gene regulation, and may provide a protective effect against gestational ethanol exposure. This study will explore the links between folic acid levels in pregnancy, prenatal alcohol exposure and the development of FASD.

You will use cutting-edge DNA sequencing of mouse tissues from a model of PAE, and work with collaborators to validate molecular changes in human cohorts. The goal is to determine whether folate supplementation protects against molecular changes caused by PAE, and whether this information can be used to develop novel DNA-based diagnostics for early detection of children at risk.

Suitable For	<input type="checkbox"/> Honours	<input type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"><li>• Bachelor of science undergraduate degree</li><li>• Basic molecular biology knowledge</li><li>• Experience with mouse work desirable</li><li>• Experience in molecular techniques and sequencing desirable</li><li>• Experience with command line-based computer programming desirable</li></ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained	
Funding	<input checked="" type="checkbox"/> Top-up scholarship offered by project <input type="checkbox"/> Full scholarship offered by project			

For more information, please contact:

Dr David Martino  
(08) 6319 1635  
David.Martino@telethonkids.org.au

## Fetal and Maternal Heart Monitoring during Pregnancy

Research Program	Developmental Origins of Child Health			
Research Group	The ORIGINS Team			
Start Date	February 2020			
Chief Supervisor	Professor Desiree Silva (Telethon Kids Institute, Joondalup Health Campus, The University of Western Australia, Edith Cowan University)			
Other Supervisors	-			
Project Outline	HeraMED has developed a home-use fetal Heart-rate monitor (HeraBEAT) and its accompanying smartphone app (App) that enables easy and accurate monitoring and collection of fetal heartbeat, maternal heartbeat and other data. The ORIGINS Project is planning to use HeraBEAT within the two antenatal appointments for ORIGINS participants at Joondalup Health Campus. This project will analyse the HeraBEAT data and investigate the relationship between heart rate during pregnancy, with pregnancy, birth and later health and well-being outcomes.			
Suitable For	<input checked="" type="checkbox"/> Honours	<input type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"><li>• Minimum of 2A Honours degree in medicine, science, public health, or related</li><li>• Ability to conduct quantitative research</li><li>• Excellent writing skills</li><li>• Strong statistical analysis (SPSS/SAS) skills</li><li>• Ability to work as part of a team</li><li>• Good interpersonal and communication skills</li></ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			
For more information, please contact: Dr Erika Hagemann (08) 6319 1330 Erika.Hagemann@telethonkids.org.au				

## Improving the Health and Well-Being Outcomes of Families Experiencing Disadvantage

Research Program	Developmental Origins of Child Health			
Research Group	The ORIGINS Team			
Start Date	October 2019			
Chief Supervisor	Dr Lisa Gibson (Telethon Kids Institute, The University of Western Australia, Edith Cowan University)			
Other Supervisors	Professor Susan Prescott (Telethon Kids Institute, Perth Children’s Hospital, The University of Western Australia, Edith Cowan University) Professor Desiree Silva (Telethon Kids Institute, Joondalup Health Campus, The University of Western Australia, Edith Cowan University) Dr Erika Hagemann (Telethon Kids Institute, Edith Cowan University) Jackie Davis (Telethon Kids Institute, Curtin University)			
Project Outline	This project will be a partnership with The ORIGINS Project, to work with disadvantaged groups and families within the City of Wanneroo who, for various reasons, aren’t currently involved with The ORIGINS Project. This project will take a family-based approach and will collaborate with community organisations, local government and service providers. A multidisciplinary team will work to assess, support and assist with addressing the needs of these families in order to improve the health and well-being trajectories of the children and parents.			
Suitable For	<input type="checkbox"/> Honours	<input type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• Minimum of 2A Honours degree in social work, psychology, public health, health promotion or related</li> <li>• Ability to conduct quantitative and qualitative research</li> <li>• Excellent writing skills</li> <li>• Strong statistical analysis (SPSS/SAS) skills</li> <li>• Ability to work as part of a team and with families and young children</li> <li>• Ability to work productively with external stakeholders</li> <li>• Good interpersonal and communication skills</li> </ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained	
Funding	<input checked="" type="checkbox"/> Top-up scholarship offered by project group <input checked="" type="checkbox"/> Full scholarship offered by project group			

Please note that The ORIGINS Project is offering a competitive PhD scholarship by application

For more information, please contact:

Dr Lisa Gibson  
 (08) 6319 1405  
 Lisa.Gibson@telethonkids.org.au

## Nature Play & Grow: An Intervention to Promote Health and Well-Being in Young Children

Research Program	Developmental Origins of Child Health
Research Group	The ORIGINS Team
Start Date	September 2019
Chief Supervisor	Dr Lisa Gibson (Telethon Kids Institute, The University of Western Australia, Edith Cowan University)
Other Supervisors	Professor Susan Prescott (Telethon Kids Institute, Perth Children’s Hospital, The University of Western Australia, Edith Cowan University) Professor Desiree Silva (Telethon Kids Institute, Joondalup Health Campus, The University of Western Australia, Edith Cowan University) Dr Erika Hagemann (Telethon Kids Institute, Edith Cowan University) Jackie Davis (Telethon Kids Institute, Curtin University) Dr Alan Logan (New York) Dr Tanja Sobko (University of Hong Kong) Dr Nina D’Vaz (Telethon Kids Institute)
Project Outline	Research has shown that nature related activities enhance general wellbeing as well as physical activity, diet and sleep. This proposed project aims to develop and test the effectiveness of an intervention (“Nature Play & Grow”) to promote connectedness to nature, health and well-being. The project will evaluate a number of short and long-term outcome measures related to health, lifestyle behaviours and emotional wellbeing. It will be a sub project within The ORIGINS Project and will recruit a subset of families participating in this longitudinal birth cohort.

Suitable For	<input type="checkbox"/> Honours	<input type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• Minimum of 2A Honours degree in psychology, public health, nutrition, or related</li> <li>• Ability to conduct quantitative and qualitative research</li> <li>• Excellent writing skills</li> <li>• Strong statistical analysis (SPSS/SAS) skills</li> <li>• Ability to work as part of a team and with families and young children</li> <li>• Good interpersonal and communication skills</li> </ul>			

Ethics Approval	<input type="checkbox"/> Obtained	<input checked="" type="checkbox"/> Not Obtained
Funding	<input checked="" type="checkbox"/> Top-up scholarship offered by project group <input checked="" type="checkbox"/> Full scholarship offered by project group	

Please note that The ORIGINS Project is offering a competitive PhD scholarship by application

For more information, please contact:  
 Dr Lisa Gibson  
 (08) 6319 1405  
 Lisa.Gibson@telethonkids.org.au

## The Role of Fathers in Predicting and Improving Child Health and Developmental Outcomes

Research Program	Developmental Origins of Child Health
Research Group	The ORIGINS Team
Start Date	September 2019
Chief Supervisor	Dr Lisa Gibson (Telethon Kids Institute, The University of Western Australia, Edith Cowan University)
Other Supervisors	Professor Susan Prescott (Telethon Kids Institute, Perth Children’s Hospital, The University of Western Australia, Edith Cowan University) Professor Desiree Silva (Telethon Kids Institute, Joondalup Health Campus, The University of Western Australia, Edith Cowan University) Dr Erika Hagemann (Telethon Kids Institute, Edith Cowan University) Jackie Davis (Telethon Kids Institute, Curtin University) Professor Bu Yeap (Fiona Stanley Hospital, Harry Perkins Institute of Medical Research, University of Western Australia)
Project Outline	We have the unique opportunity within the context of The ORIGINS Project to recruit dads antenatally and follow them until their child reaches 5 years of age. Comprehensive data on lifestyle behaviour, physical and mental health is collected as part of The ORIGINS Project in addition to a number of biological sample collections. This project can utilise this existing data to examine the role of the father’s health in predicting and improving child health and developmental outcomes.

Suitable For	<input checked="" type="checkbox"/> Honours	<input type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• Undergraduate degree in social work, psychology, health sciences, public health, health promotion or related</li> <li>• Ability to conduct quantitative and qualitative research</li> <li>• Excellent writing skills</li> <li>• Strong statistical analysis (SPSS/SAS) skills</li> <li>• Ability to work as part of a team and with families and young children</li> <li>• Good interpersonal and communication skills</li> </ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained	
Funding	<input checked="" type="checkbox"/> Top-up scholarship offered by project group <input checked="" type="checkbox"/> Full scholarship offered by project group			

Please note that The ORIGINS Project is offering a competitive PhD scholarship by application

For more information, please contact:  
 Dr Lisa Gibson  
 (08) 6319 1405  
 Lisa.Gibson@telethonkids.org.au

## Cochrane Reviews of Interventions to Treat Chronic Otitis Media

Research Program	Infection and Vaccines
Research Group	Ear Health, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	February 2020
Chief Supervisor	Dr Chris Brennan-Jones (Telethon Kids Institute, Perth Children's Hospital)
Other Supervisors	Dr Natalie Strobel (University of Western Australia) A/Professor Peter Richmond (Telethon Kids Institute, The University of Western Australia, Perth Children's Hospital) Dr Mahmood Bhutta (University of Oxford and Brighton, Sussex University Hospital)

**Project Outline**  
Chronic suppurative otitis media (CSOM) is defined as chronic inflammation of the middle ear and mastoid cavity and the most prominent symptom is the persistent or recurrent ear discharge through a tympanic membrane perforation or a ventilation tube.

This condition is estimated to have an incidence rate of 31 million episodes per year, or 4.8 new episodes per 1,000 people (all ages). Children are particularly affected, with 22% of all cases affect children <5 years of age, and highest incidence is in the first year of life (15.4 new cases per 1,000 children per year). The prevalence of this condition varies widely between countries, and more common in low or middle-income countries seems to be most affected.

In 2016 our team conducted a scoping and prioritisation review that identified 11 interventions for CSOM that required Cochrane reviews to inform the evidence-based treatment of this condition. The team has completed Cochrane reviews for 7 of the identified topics. These 7 reviews will require updating and a further 4 reviews remain to be conducted as part of a Masters or PhD. In addition, an 'overview of reviews' comprising a network meta-analysis of evidence from all 11 reviews will be conducted as part of a PhD project.

We are seeking students with a background in epidemiology and public health who are keen to apply their knowledge to ear health and otitis media. However, applicants with clinical or other relevant qualifications will be considered, with prior experience of conducting systematic reviews highly desirable.

This is a high impact project involving numerous international stakeholders and has been conducted in close collaboration with the Cochrane ENT group at the University of Oxford. Therefore, opportunities for international travel are expected for applicants. This is a unique opportunity for exceptional individuals wishing to undertake training in Cochrane methodology within the Telethon Kids Ear Health team in Perth.

Suitable For	<input type="checkbox"/> Honours	<input type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	For Post-Grad: <ul style="list-style-type: none"> <li>• Have achieved a First-Class Honours (or equivalent) or a Masters in a relevant field (e.g. Medicine, Nursing, Audiology, Speech Pathology, Public Health, ICT, Health Economics, Psychology, Education, Health Promotion or another relevant degree).</li> <li>• Eligible to enrol in a PhD or a Masters at UWA (or other WA institution).</li> </ul> For Honours: <ul style="list-style-type: none"> <li>• A 65% course weighted average in a relevant field is desirable</li> </ul> Aboriginal / Torres Strait Islander students are particularly encouraged to apply			
Ethics Approval	<input checked="" type="checkbox"/> Obtained		<input type="checkbox"/> Not Obtained	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

For more information, please contact:  
Dr Chris Brennan-Jones  
(08) 6319 1520  
Chris.Brennan-Jones@telethonkids.org.au

## Djarli Waakinj: A Cohort Study of Otitis Media and Hearing Loss in Young Urban Aboriginal Children with an Integrated Telehealth Program

Research Program	Infection and Vaccines			
Research Group	Ear Health, Wesfarmers Centre of Vaccines and Infectious Diseases			
Start Date	February 2020			
Chief Supervisor	Dr Chris Brennan-Jones (Telethon Kids Institute, Perth Children's Hospital)			
Other Supervisors	A/Professor Peter Richmond (Telethon Kids Institute, The University of Western Australia, Perth Children's Hospital) A/Professor Daniel McAullay (The University of Western Australia)			
Project Outline	<p>Aboriginal Australian children suffer high rates of ear disease (known as otitis media or OM) within weeks of birth. The disease is often asymptomatic but can result in significant hearing loss. To assist in preventing the long-term consequences of early OM in urban Aboriginal children, our team have established the Urban Aboriginal Ear Health (UAEH) cohort that will follow children from 2 months of age to determine prevalence of and risk factors for OM and hearing loss in Aboriginal children aged <math>\leq 12</math> months. Through established relationships with Aboriginal organisations and programs, we plan to recruit pregnant Aboriginal women in Kwinana, Rockingham and Armadale Districts to enrol 252 babies and collect risk factor information. Nurse/Aboriginal Health Workers will perform otoscopy, video-otoscopy and multifrequency tympanometry at ages 2, 6 and 12 months and measure otoacoustic emissions at 2 months.</p> <p>Despite the potential impacts of otitis media on development, access to specialist care within public hospitals is poor, with many children waiting over 2 years to be seen by specialists at PCH. Formal audiology assessments will be conducted twice in the first 12 months and a telehealth ear and hearing health surveillance program will be developed to fast-track specialist assessment at PCH. Outcome measures include prevalence of OM, severe OM and hearing loss, accuracy of telehealth measures and improvements in time-to-assessment and time-to-treatment for children in the program.</p> <p>The study will provide essential information to develop a culturally appropriate ear health program and services for urban Aboriginal children/families, facilitate culturally valid communication and language skills.</p> <p>We are seeking a student interested in assisting with the recruitment and clinical assessment of participants, data analysis and development of health, development of IT platforms, language/communication and education resources to support families in the cohort. This is a unique opportunity for exceptional individuals wishing to undertake study with the Ear Health team in Perth.</p> <p>This study is co-ordinated by Ms. Valerie Swift and based in our field office at Cockburn Integrated Health centre. The program is jointly staffed by Aboriginal and non-Aboriginal researchers. Applicants from prospective Aboriginal students is particularly encouraged.</p>			
Suitable For	<input checked="" type="checkbox"/> Honours	<input checked="" type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<p>For Post-Grad:</p> <ul style="list-style-type: none"> <li>• Have achieved a First-Class Honours (or equivalent) or a Masters in a relevant field (e.g. Medicine, Nursing, Audiology, Speech Pathology, Public Health, ICT, Health Economics, Psychology, Education, Health Promotion or another relevant degree).</li> <li>• Eligible to enrol in a PhD or a Masters at UWA (or other WA institution).</li> </ul> <p>For Honours:</p> <ul style="list-style-type: none"> <li>• A 65% course weighted average in a relevant field is desirable</li> </ul> <p>Aboriginal / Torres Strait Islander students are particularly encouraged to apply</p>			
Ethics Approval	<input checked="" type="checkbox"/> Obtained		<input type="checkbox"/> Not Obtained	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			
For more information, please contact:				
Dr Chris Brennan-Jones				
(08) 6319 1520				
Chris.Brennan-Jones@telethonkids.org.au				

## Ear Portal: Integrating an Ear and Hearing Telehealth Program into Hospital and Community Ear Health Services

Research Program	Infection and Vaccines
Research Group	Ear Health, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	February 2020
Chief Supervisor	Dr Chris Brennan-Jones (Telethon Kids Institute, Perth Children's Hospital)
Other Supervisors	A/Professor Peter Richmond (Telethon Kids Institute, The University of Western Australia, Perth Children's Hospital) A/Professor Daniel McAullay (The University of Western Australia)

**Project Outline**  
Otitis media (ear infections) have the potential to significantly impact child development and the condition is highly prevalent in Aboriginal children. Despite this, access to specialist ear and hearing healthcare within public hospitals is poor, with many children waiting over 2 years to be seen by specialists at Perth Children's Hospital. This study involves the development and evaluation of a culturally appropriate ear health telehealth program for urban Aboriginal and non-Aboriginal children/families that has been designed to provide access to specialist consultation within 4 weeks of referral.

We are seeking students interested in assisting with the recruitment and clinical assessment of participants, data analysis and development of health, development of IT platforms, language/communication and education resources to support families in the study. This is a unique opportunity for exceptional individuals wishing to undertake study with the Ear Health team in Perth.

Suitable For	<input checked="" type="checkbox"/> Honours	<input checked="" type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<p>For Post-Grad:</p> <ul style="list-style-type: none"> <li>• Have achieved a First-Class Honours (or equivalent) or a Masters in a relevant field (e.g. Medicine, Nursing, Audiology, Speech Pathology, Public Health, ICT, Health Economics, Psychology, Education, Health Promotion or another relevant degree).</li> <li>• Eligible to enrol in a PhD or a Masters at UWA (or other WA institution).</li> </ul> <p>For Honours:</p> <ul style="list-style-type: none"> <li>• A 65% course weighted average in a relevant field is desirable</li> </ul> <p>Aboriginal / Torres Strait Islander students are particularly encouraged to apply</p>			
Ethics Approval	<input checked="" type="checkbox"/> Obtained		<input type="checkbox"/> Not Obtained	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

For more information, please contact:  
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 Chris.Brennan-Jones@telethonkids.org.au

## Examining the Economic Impact of Hospital and Community Ear Health Telehealth Services on Families and Health Service Delivery

Research Program	Infection and Vaccines
Research Group	Ear Health, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	February 2020
Chief Supervisor	Dr Rosanne Barnes (Telethon Kids Institute)
Other Supervisors	Professor Elizabeth Geelhoed (Telethon Kids Institute, The University of Western Australia) Dr Chris Brennan-Jones (Telethon Kids Institute, Perth Children’s Hospital)

**Project Outline**  
Aboriginal children in WA have some of the highest rates of otitis media (OM) in the world. Most children with OM waiting for an appointment will be experiencing a substantial hearing loss and this delay to assessment and treatment at such an early age is likely to have significant detrimental effects on their language and communication, behavioural development and educational experience. The Ear Portal telehealth program is designed to provide an ear health telehealth program for urban Aboriginal and non-Aboriginal children/families within 4 weeks of referral, compared to the standard waiting time for treatment which currently exceeds 2 years.

This student project sits within the broader Ear Portal study and aims to evaluate the economic impact of the telehealth service by completing a direct cost comparison of service provision for the Ear Portal program versus standard care. The student will contribute to the development of a database inputting cost information collected and managing and examining these data.

Suitable For	<input checked="" type="checkbox"/> Honours	<input type="checkbox"/> MD	<input type="checkbox"/> Masters	<input type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>A 65% course weighted average in a relevant field is desirable</li> </ul>			
	Aboriginal / Torres Strait Islander students are particularly encouraged to apply			
Ethics Approval	<input checked="" type="checkbox"/> Obtained	<input type="checkbox"/> Not Obtained		
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

For more information, please contact:  
 Dr Chris Brennan-Jones  
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 Chris.Brennan-Jones@telethonkids.org.au

# Examining the Impact of Hospital and Community Ear Health Telehealth Services on Hearing and Developmental Outcomes in a WA Cohort of Urban Aboriginal and Non-Aboriginal Children

Research Program	Infection and Vaccines
Research Group	Ear Health, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	February 2020
Chief Supervisor	Dr Rosanne Barnes (Telethon Kids Institute)
Other Supervisors	Dr Chris Brennan-Jones (Telethon Kids Institute, Perth Children’s Hospital) A/Professor Peter Richmond (Telethon Kids Institute, The University of Western Australia, Perth Children’s Hospital)

**Project Outline**  
 Aboriginal children in WA have some of the highest rates of otitis media (OM) in the world. Most children with OM waiting for an appointment will be experiencing a substantial hearing loss and this delay to assessment and treatment at such an early age is likely to have significant detrimental effects on their language and communication, behavioural development and educational experience. The Ear Portal telehealth program is designed to provide an ear health telehealth program for urban Aboriginal and non-Aboriginal children/families within 4 weeks of referral, compared to the standard waiting time for treatment which currently exceeds 2 years.

This student project aims to evaluate the impact of the telehealth service and involves the development of a database for collecting, storing and managing participant data collected through the Ear Portal telehealth program by Aboriginal research assistants in the community and research assistants at Perth Children’s Hospital. This project will sit within the broader Ear Portal study, where the student will prospectively evaluate the impact of the program in terms of key health outcomes such as hearing and language and behavioural development, hospital and emergency department readmissions, and/or economic cost savings for the individual and service delivery. PhD students will have the opportunity to undertake studies using linked data.

Suitable For	<input checked="" type="checkbox"/> Honours	<input checked="" type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
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**Essential Skills & Qualifications**  
 For Post-Grad:  

- Have achieved a First-Class Honours (or equivalent) or a Masters in a relevant field (e.g. Medicine, Nursing, Audiology, Speech Pathology, Public Health, ICT, Health Economics, Psychology, Education, Health Promotion or another relevant degree).
- Eligible to enrol in a PhD or a Masters at UWA (or other WA institution).

 For Honours:  

- A 65% course weighted average in a relevant field is desirable

Aboriginal / Torres Strait Islander students are particularly encouraged to apply

Ethics Approval	<input checked="" type="checkbox"/> Obtained	<input type="checkbox"/> Not Obtained
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**Funding**  
 Top-up scholarship offered by project group  
 Full scholarship offered by project group

For more information, please contact:  
 Dr Chris Brennan-Jones  
 (08) 6319 1520  
 Chris.Brennan-Jones@telethonkids.org.au

## Development and Validation of Patient Reported Outcome Measures for Acute Lower Respiratory Infections in Children

Research Program	Infection & Vaccines
Research Group	Infectious Diseases Epidemiology, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	March 2020
Chief Supervisor	A/Professor Chris Blyth (Telethon Kids Institute, Perth Children’s Hospital, The University of Western Australia)

Other Supervisors	Dr Sarah Doyle (Trinity College Institute of Neuroscience)
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**Project Outline**

Background: Acute respiratory infection (ARI) is the most common cause for paediatric hospitalisation, with one in four Aboriginal children and one in fifteen non-Aboriginal children hospitalised for a chest infection before their fifth birthday in Western Australia. Many more children are managed in emergency departments and general practice. ARI remains one of the major contributors to global childhood mortality and the morbidity and economic cost of paediatric ARI is enormous. Despite repeated calls to expand the evidence-base for ARI treatment guidelines, there has been little progress. We have established the PATRIC (Pragmatic Adaptive Trial for Respiratory Infections in Children) Clinical Registry that will enrol children presenting to Perth Children’s Hospital (PCH) Emergency Department with ARI. We will collect clinical and treatment information and monitor patients in four weeks of follow-up. The registry will be used to collect baseline data on ARI and allow clinical interventions to be tested in patient subgroups in the PATRIC Clinical Trial. This will inform the evidence base for ARI treatment.

**Aim:** As part of the tool-kit used in the PATRIC Clinical Registry and Trial we aim to develop and validate a Patient/Parent Reported Outcome Measure (PROM) for children with Acute Lower Respiratory Infection (ALRI). A subgroup of the participants in the PATRIC Clinical Registry will be invited to participate in the PROM development.

**Methods:** PROM development requires an extensive multi-phase process based on national and international guidelines (FDA, NQF, ISPOR). Phase 1: Definition of Outcome Concepts - Qualitative research with ALRI patients/parents post-discharge will be used to develop a conceptual framework of ALRI outcomes; Phase 2: Item generation - A review of the literature and existing instruments (including the current PATRIC follow-up surveys) will identify possible relevant questions; Phase 3: Cognitive debriefing – Questions and pictograms will be tested for understandability problems and wording preference for understandability of questions with paediatric ALRI patients; Phase 4: Field and validity testing - Pilot testing will be done with a cohort of ALRI paediatric patients within the PATRIC Registry through a survey panel; Phase 5: Final item reduction - Based on the Delphi process involving ED clinicians, researchers, patients and system administrators to create the final ALRI PROM. This tool will then be utilised as a validated outcome measure in the PATRIC Clinical Registry and Trial.

Suitable For	<input type="checkbox"/> Honours	<input type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• A minimum 2A Honours degree or Masters degree in a related field</li> <li>• An interest in consumer driven research and qualitative evaluation</li> <li>• High level written and verbal communication skills</li> <li>• Ability to work independently and as a member of a team</li> </ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

For more information, please contact:  
 Rebecca Pavlos  
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## Identifying the Long-Term Effects of Respiratory Infection

Research Program	Infection and Vaccines
Research Group	Infectious Diseases Epidemiology, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	January 2020
Chief Supervisor	Dr Hannah Moore (Telethon Kids Institute)
Other Supervisors	Dr Parveen Fathima (Telethon Kids Institute) Dr Janice Lim (Telethon Kids Institute) A/Professor Chris Blyth (Telethon Kids Institute, Perth Children’s Hospital, The University of Western Australia)
Project Outline	Respiratory syncytial virus (RSV) is a major cause of death and hospitalisation worldwide, especially in children. The World Health Organization has identified RSV research as a global health priority and an RSV vaccine is due to be licensed in 2020/21.

To maximise the effectiveness of an RSV vaccine, we need a better understanding of the epidemiology of RSV infection. While RSV is usually associated with bronchiolitis, studies have shown that the clinical manifestations of RSV infection is varied including cough, rhinitis, coryza, otitis media and pneumonia. Also, data on the long-term effects of RSV infection in infancy is sparse.

By linking existing birth, hospital and routine laboratory data, this project aims to answer the following questions:

- How much are we underestimating the burden of RSV infection?
- What are the long-term effects of RSV infection during infancy?

The student will form part of the Infectious Diseases Epidemiology group that sits within the Wesfarmers Centre of Vaccines and Infectious Diseases. PhD students will therefore be eligible to apply for a top-up scholarship offered by the Wesfarmers Centre of Vaccines and Infectious Diseases.

The student’s main responsibilities will be to clean, code and analyse linked administrative data. This will include data from births, perinatal, laboratory, hospital admissions and emergency department datasets.

Suitable For	<input type="checkbox"/> Honours	<input type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"><li>• Bachelor’s degree in Science, Public Health, Epidemiology, Statistics or related</li><li>• Strong quantitative analysis skills</li><li>• Good time management skills</li><li>• Ability to work within a larger team</li></ul>			
Ethics Approval	<input type="checkbox"/> Obtained	<input checked="" type="checkbox"/> Not Obtained		
Funding	<input checked="" type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

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## Determining Minimum Blood Volumes for Comprehensively Analysing Strep A Immunity

Research Program	Infection and Vaccines
Research Group	Skin Health Team, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	Student-dependent
Chief Supervisor	A/Professor Asha Bowen (Telethon Kids Institute)
Other Supervisors	Dr Janessa Pickering (Telethon Kids Institute)
Project Outline	Strep A is the 5th leading infectious cause of death. Detecting Strep A infection in children who live in high burden settings is important for preventing serious complications including the auto-immune disease acute rheumatic fever and rheumatic heart disease.

The detection of antibodies to the Strep A antigen 'Streptolysin O' (ASO) can indicate recent infection with Strep A. This test has been used for decades, but only allows the analysis of a single analyte. We have developed dried blood spot tests for ASO antibodies for our remote studies. This test utilises finger-prick collection of minute blood volumes which minimises discomfort in children. Modern research techniques have enabled the development of methods to analyse up to 30 different Strep A antigens in a single sample, allowing comprehensive characterization of the immunity to the bacterium. We do not know whether these new assays are possible with minute volumes of blood, but the extension of our dried blood spot test to include many more analytes is highly desirable.

This clinical laboratory project will develop methods for optimal collection and storage of blood for the subsequent analysis of antibody titres to multiple Strep A antigens. The student will compare 3 methods for obtaining blood (standard finger-prick, finger prick with high performance lancets and capillary tubes and standard venepuncture) and the impact of 3 methods for storing blood components on subsequent immune outputs. Initially, blood from adult donors will be used. The student will also be involved in step-wise community involvement activities develop the methods and protocols for subsequent analysis of the blood from children attending Perth Children's Hospital.

Suitable For	<input checked="" type="checkbox"/> Honours	<input checked="" type="checkbox"/> MD	<input type="checkbox"/> Masters	<input type="checkbox"/> PhD
Essential Skills & Qualifications	List skills/qualifications required in dot points: <ul style="list-style-type: none"> <li>• Undergraduate degree in medical and/or biomedical science/relevant degree</li> <li>• Excellent communication skills</li> <li>• Phlebotomy experience highly desirable</li> </ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained (application in 2019)	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

For more information, please contact:

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## Development of Skin Research for Urban Aboriginal Families

Research Program	Infection and Vaccines
Research Group	Skin Health Team, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	Student-dependent
Chief Supervisor	A/Professor Asha Bowen (Telethon Kids Institute)
Other Supervisors	Dr Janessa Pickering (Telethon Kids Institute)
Project Outline	Skin infections in remote living Aboriginal children are common. Despite knowing this, we have no knowledge of whether this is also true for urban Aboriginal children in WA. We think it might be high. For example, in Perth, Aboriginal children are hospitalised 10-times more commonly with a skin infection than non-Aboriginal children. Skin infections are painful, itchy and unpleasant and may lead to surgery, blood poisoning, bone infection or rheumatic heart disease. We need to know about skin infections in urban Aboriginal children (to complement our knowledge of the heavy burden for remote children gathered over many years), to highlight the need for relevant treatment and prevention strategies. Documenting this burden in urban children will be challenging as it has not previously been done. We need the cultural guidance and insight of Elders/Co-researchers to develop the project together from the beginning and make sure that the bigger studies and guidelines that result are best fit for Aboriginal families in Perth and throughout Australia. They will also help us inform health policy about skin infections.

### Hypothesis:

The prevalence of impetigo, scabies, tinea, cellulitis and abscess in urban Aboriginal children is under-appreciated and high.

### Aims:

Working together with the Aboriginal Elder/Co-researchers of the Budiya Kadidiny (Learning with Elders) project, we will co-design a study in urban Aboriginal families:

- that determines the burden of skin infections;
- pilot the study; and
- co-design solutions to address this burden through research into treatment and prevention.

### Methods:

Cross-cultural development training and cultural immersion experiences on country for non-Aboriginal researchers are the essential first step in this study. Following this, 6 co-design workshops with Elders/Co-researchers, community members, researchers, and senior management from service providers will be convened. The Elders/Co-researchers will guide the discussion including the research governance structure, what is already known about skin, community priorities regarding healthy skin, where a Healthy Skin pilot project might be possible, and other topics as directed by the Elders/Co-researchers. From here the co-design of a research project and integrated research translation plans will evolve. The co-design process will use a community participatory action research framework to facilitate the conversations. Once co-developed, the project will be piloted in the setting advised by the Elders/Co-researchers.

The student will coordinate and lead this project under the supervision of A/Prof Asha Bowen who has > a decade of experience working with remote Aboriginal communities to improve skin health.

Suitable For	<input checked="" type="checkbox"/> Honours	<input checked="" type="checkbox"/> MD	<input type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>Undergraduate degree in health care field e.g. nursing, medicine, allied health or early childhood</li> <li>Excellent communication skills</li> <li>Interest in healthy skin in Aboriginal families</li> </ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

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# The Molecular Microbiology of Strep A in Western Australian Children at High Risk of Strep A Infections

Research Program	Infection and Vaccines
Research Group	Skin Health Team, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	2020
Chief Supervisor	A/Professor Asha Bowen (Telethon Kids Institute)
Other Supervisors	Dr Janessa Pickering (Telethon Kids Institute) Dr Tim Barnett (Telethon Kids Institute)

**Project Outline**  
Strep A bacteria cause a wide range of infections and post-infectious complications including sore throats, skin sores and the auto-immune conditions acute rheumatic fever and rheumatic heart disease. Together, these infections and conditions kill more than half a million people every year. Effective prevention strategies including vaccines and public health interventions are urgently needed to alleviate the global burden of Strep A diseases, which primarily affect children.

This laboratory-based project will provide important new knowledge on Strep A from Western Australian children. This project will utilise clinical specimens from two large cohorts based in the Kimberley that aim to drive down the burden of skin and throat infections and the development of rheumatic heart disease.

The project will employ a combination of standard and cutting-edge research techniques to determine the presence, density and diversity of Strep A bacteria in skin and throat specimens. In addition to these molecular microbiology techniques, this project will allow the development of bioinformatic expertise for handling whole-genome sequencing data and longitudinal cohort analysis.

Student's main responsibilities

- Microbiological culture of clinical specimens
- Application of molecular techniques to biological samples (quantitative PCR, whole-genome sequencing and analysis)
- The development of metagenomics methods for analysing the throat microbiome

This project will greatly contribute to our understanding of Strep A skin and throat infections in Western Australia children. The data generated will help to inform public health strategies and future vaccine design and implementation.

Suitable For	<input type="checkbox"/> Honours	<input type="checkbox"/> MD	<input type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• Undergraduate degree in medical and/or biological science + honours in microbiology/relevant field</li> <li>• Excellent communication skills including oral presentation and writing</li> </ul>			
Ethics Approval	<input checked="" type="checkbox"/> Obtained		<input type="checkbox"/> Not Obtained	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

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## Sustainable Sore Throat Surveillance Network - a Feasibility Study

Research Program	Infection and Vaccines
Research Group	Skin Health Team, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	Student-dependent
Chief Supervisor	A/Professor Asha Bowen (Telethon Kids Institute)
Other Supervisors	Dr Janessa Pickering (Telethon Kids Institute)

**Project Outline**  
 Strep A bacteria cause a wide range of infections and post-infectious complications including sore throats, skin sores and the auto-immune conditions acute rheumatic fever and rheumatic heart disease. Whilst we know the rates of Strep A in developing countries and low-socioeconomic communities are disproportionately high, we currently have little understanding about the prevalence of Strep A sore throats in urban Western Australian communities. A sustainable Strep A surveillance network is highly desired to inform our strategies to prevent Strep A disease. Accurate Strep A surveillance data will also contribute to future vaccine design and implementation.

The primary aim of this project is to determine the feasibility of Emergency Department, General Practitioner networks and schools for recruiting children with suspected Strep A pharyngitis for the establishment of a sore throat surveillance network.

Project plan:

Following literature review and stakeholder discussions, detailed setting-specific information will be collected to allow the evaluation of:

- 1) the willingness of stakeholders to participate
- 2) cost
- 3) ease of conducting study
- 4) sample processing pipeline/staff requirements, and
- 5) expected population demographic

This analysis will guide the selection of sites for sustainable Strep A surveillance.

Suitable For	<input checked="" type="checkbox"/> Honours	<input type="checkbox"/> MD	<input type="checkbox"/> Masters	<input type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• Undergraduate degree in medical and/or biomedical science/relevant degree</li> <li>• Excellent communication skills, oral presentation and writing</li> <li>• Confidence/willingness for stakeholder engagement is highly desirable</li> </ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained- application in 2019	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

For more information, please contact:  
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 Janessa.Pickering@telethonkids.org.au

## SToP Trial (See, Treat, Prevent) Scabies and Skin Sores: Evaluation of a Stepped Wedge, Cluster Randomised Controlled Trial

Research Program	Infection and Vaccines
Research Group	Skin Health Team, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	TBA
Chief Supervisor	A/Professor Asha Bowen (Telethon Kids Institute)
Other Supervisors	N/A
Project Outline	This project is funded by the National Health and Medical Research Council Australia and Department of Health, Western Australia. The project is being led by researchers from the Telethon Kids Institute, in partnership with Kimberley Aboriginal Medical Services Council (KAMS) and Western Australia Country Health Service (WACHS).

The PhD student would be involved in a skin disease control program in the Kimberley. In remote Australian Aboriginal communities, skin infections (scabies and impetigo) are common. At any one time, 45% of children have impetigo. Untreated skin infections can lead to secondary lifelong conditions, including chronic kidney disease and possibly rheumatic heart disease, all of which occur at among the highest rates in the world in Aboriginal people. The study involves evaluation of a stepped wedge cluster randomised controlled trial assessing whether streamlined, evidence-based treatment of impetigo with cotrimoxazole and scabies with ivermectin will have an impact on reducing the burden of skin infections in Aboriginal school children.

Suitable For	<input type="checkbox"/> Honours	<input type="checkbox"/> MD	<input type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• Become part of a highly innovative team with extensive support and mentorship</li> <li>• Be willing to work in partnership with communities</li> <li>• Complete regular travel to remote communities in the Kimberley</li> <li>• Apply for APA, UPA or other scholarship</li> <li>• Receive a PhD scholarship top up</li> <li>• Have a high-level pass in Honours degree or equivalent, data analysis skills, writing skills and clinical experience</li> <li>• Aboriginal people are strongly encouraged to apply</li> <li>• Applicants based in Broome are encouraged to apply</li> </ul>			
Ethics Approval	<input checked="" type="checkbox"/> Obtained		<input type="checkbox"/> Not Obtained	
Funding	<input checked="" type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

For more information, please contact:

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## Understanding Contribution of Group A Strep Pharyngitis in the Context of High Impetigo Prevalence

Research Program	Infections and Vaccines
Research Group	Skin Health Team, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	TBA
Chief Supervisor	A/Professor Asha Bowen (Telethon Kids Institute)
Other Supervisors	Dr Dylan Barth (Telethon Kids Institute)

**Project Outline**  
 This project falls within the scope of the END RHD CRE Centre of Research Excellence funded by the National Health and Medical Research Council Australia. The END RHD CRE brings together 20 investigators from 16 institutions to develop a strategy for how Australia can eliminate RHD as a public health problem. The END RHD CRE will undertake a number of projects across several disciplines of research including epidemiology, biomedical sciences; implementation and translation; and understanding the RHD community with a special focus on documenting the experiences of those living with the disease.

Primary prevention of Acute Rheumatic Fever (ARF) and Rheumatic Heart Disease (RHD) begins with early treatment of Group A streptococcal (GAS) infections. Unfortunately, in remote northern Australia where the burden of ARF/RHD is the highest amongst Aboriginal children, it remains unclear whether GAS pharyngitis or GAS impetigo is the primary driver of ARF/RHD. The burden of GAS pharyngitis is anecdotally low in this population. The burden of GAS impetigo is well documented and highly prevalent. It is critical for END RHD to determine whether either or both GAS diseases are contributing to ARF/RHD in order to effectively target and prioritise primary prevention activities. This project will evaluate simple, robust tools for GAS surveillance to better inform treatment algorithms, public health priorities and ultimately GAS vaccine development.

Suitable For	<input type="checkbox"/> Honours	<input type="checkbox"/> MD	<input type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
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**Essential Skills & Qualifications**  
 The PhD student will:

- Lead a GAS pharyngitis and impetigo prospective surveillance study in 2 sites in remote Western Australia and the Northern Territory
- Become part of a highly innovative team with extensive support and mentorship
- Be willing to work in partnership with communities
- Complete regular travel to remote communities
- Apply for APA, UPA or other scholarship
- Receive a PhD scholarship top up
- Have a high-level pass in Honours degree or equivalent
- Aboriginal people are strongly encouraged to apply

Ethics Approval	<input type="checkbox"/> Obtained	<input checked="" type="checkbox"/> Not Obtained
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**Funding**  
 Top-up scholarship offered by project  
 Full scholarship offered by project

For more information, please contact:

A/Professor Asha Bowen  
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## How Does Group A Streptococcus Attach to the Tonsils?

Research Program	Infection and Vaccines			
Research Group	Strep A and Rheumatic Heart Disease, Wesfarmers Centre of Vaccines and Infectious Diseases			
Start Date	Negotiable (can start immediately pending approval)			
Chief Supervisor	Dr Tim Barnett (Telethon Kids Institute)			
Other Supervisors	A/Professor Anthony Kicic (Telethon Kids Institute, The University of Western Australia, Curtin University)			
Project Outline	<p>Streptococcus pyogenes (Group A Streptococcus, Strep A) is a human-adapted pathogen responsible for a wide spectrum of disease. GAS can cause relatively mild illnesses, such as “strep throat” or impetigo, and less frequent but severe life-threatening diseases such as “flesh-eating disease” and streptococcal toxic shock syndrome. As the first step in the progression of strep throat, a precise understanding of Strep A attachment to the tonsils is needed for design of vaccines to prevent this stage of disease.</p> <p>This project will examine attachment of Strep A to the tonsils using a combination of bacterial genetics and cell biology:            Examine attachment of the major strep throat-associated Strep A serotypes to tonsil epithelial cells.            Examine the role of a major Strep A surface protein in tonsil attachment.</p>			
Suitable For	<input checked="" type="checkbox"/> Honours	<input type="checkbox"/> MD	<input type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• Cell culture</li> <li>• Culturing bacteria</li> <li>• Good understanding of molecular biology and cell biology</li> </ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained (Not Required)	
Funding	<input type="checkbox"/> Top-up scholarship offered by project <input type="checkbox"/> Full scholarship offered by project			
For more information, please contact: Dr Tim Barnett (08) 6319 1319 Timothy.Barnett@telethonkids.org.au				

## Which Key Opens Door #2; Characterisation of a Cell Invasion Pathway Exploited by Serotype M1 Group A *Streptococcus*

Research Program	Infection and Vaccines
Research Group	Strep A and Rheumatic Heart Disease, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	Negotiable (can start immediately pending approval)
Chief Supervisor	Dr Tim Barnett (Telethon Kids Institute)
Other Supervisors	A/Professor Anthony Kicic (Telethon Kids Institute, The University of Western Australia, Curtin University)

**Project Outline**  
*Streptococcus pyogenes* (Group A *Streptococcus*, Strep A) is a human-adapted pathogen responsible for a wide spectrum of disease. GAS can cause relatively mild illnesses, such as “strep throat” or impetigo, and less frequent but severe life-threatening diseases such as “flesh-eating disease” and streptococcal toxic shock syndrome. A single GAS clone (M1T1) has disseminated globally as a prevalent cause of pharyngitis and invasive disease. M1T1 strains have evolved multiple mechanisms to evade the immune system and replicate within host cells (see Barnett et al. 2013 *Cell Host Microbe* 14: 675-682).

We have uncovered evidence that M1T1 strains exploit a novel pathway to invade epithelial cells. This project will characterise this pathway, using a combination of bacterial genetics and cell biology:

- Examine the requirement of individual GAS surface proteins to invade epithelial cells using a panel of M1T1 mutant strains.
- Examine the role of a candidate cell endocytosis pathway using a combination of siRNA and pharmacological inhibitors.

Suitable For	<input checked="" type="checkbox"/> Honours	<input type="checkbox"/> MD	<input type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• Cell culture</li> <li>• Culturing bacteria</li> <li>• Good understanding of molecular biology and cell biology</li> </ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained (Not Required)	
Funding	<input type="checkbox"/> Top-up scholarship offered by project <input type="checkbox"/> Full scholarship offered by project			

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## Decoding the Immune Response in Early life with ASAP (Accelerator for Systems Biology & Advanced Analytics in Paediatrics)

Research Program	Infection and Vaccines
Research Group	Systems Vaccinology, Wesfarmers Centre of Vaccines and Infectious Diseases
Start Date	March 2020
Chief Supervisor	Professor Tobias Kollmann (Telethon Kids Institute)
Other Supervisors	Dr Mario Fidanza Dr Rym Ben Othman Dr Nelly Amenyogbe

**Project Outline** As you read this paragraph, two infants in the world will have died from an infection for which there is an effective vaccine. Worldwide we could save millions of infants every year - if only we could immunize them on time. The work in our lab focuses on part of the science to help solve this problem.

Our lab uses state-of-the-art wet-lab technology and bioinformatic approaches (systems biology) to get the most information out of the smallest samples from newborns and infants around the world. Parallel to these observational human cohort studies, we are developing in vitro (culture) and in vivo (animal) models where we establish concrete cause & effect of the relationships identified in our systems biological studies. This combined approach allows us to systematically dissect the key cellular and molecular mechanisms important in the human neonatal and infant response to infection or vaccination. Based on that knowledge, we are identifying immune modulators that help protect newborns from disease, and aid in their immune response to vaccines important for global health. This work is done in close collaboration with several large national and international research groups from Africa and Asia, to Europe, North America and as well as in Australia.

Suitable For	<input checked="" type="checkbox"/> Honours	<input type="checkbox"/> MD	<input checked="" type="checkbox"/> Masters	<input checked="" type="checkbox"/> PhD
Essential Skills & Qualifications	<ul style="list-style-type: none"> <li>• Undergraduate degree in the Life Sciences</li> <li>• Excellent communication skills</li> <li>• Ability to thrive within and work with large collaborative teams</li> <li>• Passion to make a difference where it matters most: in early life in low resource settings</li> </ul>			
Ethics Approval	<input type="checkbox"/> Obtained		<input checked="" type="checkbox"/> Not Obtained	
Funding	<input type="checkbox"/> Top-up scholarship offered by project group <input type="checkbox"/> Full scholarship offered by project group			

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# RESEARCH FOCUS AREAS



## BRAIN AND BEHAVIOUR

Steve Zubrick

## CHRONIC AND SEVERE DISEASES

Elizabeth Davis

## ABORIGINAL HEALTH

Glenn Pearson



## EARLY ENVIRONMENT

Deborah Strickland

# RESEARCH PROGRAMS AND TEAMS

<b>DEVELOPMENT AND EDUCATION</b> RESEARCH PROGRAM <b>Donna Cross</b>	<b>CHILD HEALTH, DEVELOPMENT AND EDUCATION</b> Sally Brinkman	<b>HEALTH PROMOTION AND EDUCATION</b> Donna Cross	<b>DISABILITY</b> RESEARCH PROGRAM <b>Andrew Whitehouse</b>	<b>ALCOHOL AND PREGNANCY AND FASD RESEARCH</b>	<b>AUTISM RESEARCH</b> Andrew Whitehouse	<b>CHILD DISABILITY</b> Helen Leonard, Jeremy Downs	<b>MENTAL HEALTH AND YOUTH</b> RESEARCH PROGRAM <b>Ashleigh Lin</b>	<b>ABORIGINAL HEALTH AND WELLBEING</b> Glenn Pearson, Carrington Shepherd, Brad Farrant	<b>YOUTH MENTAL HEALTH</b> Ashleigh Lin	<b>SOCIAL &amp; EMOTIONAL WELLBEING OF ABORIGINAL YOUNG PEOPLE</b> Juli Coffin	<b>POPULATION HEALTH</b> RESEARCH PROGRAM <b>Francis Mitrou</b>	<b>BIostatISTICS</b> Nicholas De Klerk	<b>CHILD EPIDEMIOLOGY</b> Elizabeth Milne	<b>CHILD PHYSICAL ACTIVITY, HEALTH AND DEVELOPMENT</b> Hayley Christian	<b>HUMAN CAPABILITY</b> Steve Zubrick, Francis Mitrou, Cate Taylor	<b>DEVELOPMENTAL PATHWAYS AND SOCIAL POLICY</b> Rebecca Glauert, Melissa O'Donnell
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<b>CANCER</b> RESEARCH PROGRAM <b>Terry Johns</b>	<b>BRAIN TUMOUR RESEARCH</b> Raeleie Enderby, Nick Gottardo	<b>CANCER IMMUNOTHERAPY</b> Jason Walthman	<b>LEUKAEMIA AND CANCER GENETICS</b> Rishi Kotecha, Sebastien Malinge	<b>ONCOGENIC SIGNALLING LABORATORY</b> Terry Johns	<b>SARCOMA TRANSITIONAL RESEARCH</b> Joost Lesterhuis	<b>DIABETES AND OBESITY</b> RESEARCH PROGRAM <b>Shelley Gorman</b>	<b>CARDIOMETABOLIC SUNHEALTH</b> Shelley Gorman	<b>DIABETES AND OBESITY RESEARCH</b> Tim Jones, Elizabeth Davis	<b>GENETICS AND RARE DISEASES</b> RESEARCH PROGRAM <b>Timo Lassmann</b>	<b>COMPUTATIONAL BIOLOGY</b> Timo Lassmann	<b>GENETICS AND HEALTH</b> Jenifer Blackwell	<b>RESPIRATORY HEALTH</b> RESEARCH PROGRAM <b>Alexander Larcombe</b>	<b>AIRWAY EPITHELIAL RESEARCH</b> Anthony Kicic	<b>CHILDREN'S LUNG HEALTH</b> Graham Hall, Shamon Simpson	<b>P4 RESPIRATORY HEALTH FOR KIDS</b> Stephen Stick	<b>RESPIRATORY ENVIRONMENTAL HEALTH</b> Alexander Larcombe
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<b>DEVELOPMENTAL ORIGINS OF CHILD HEALTH</b> RESEARCH PROGRAM <b>Roz Walker</b>	<b>ABORIGINAL MATERNAL HEALTH AND CHILD DEVELOPMENT</b> Roz Walker	<b>CLINICAL EPIGENETICS</b> David Martino	<b>THE ORIGINS TEAM</b> Susan Prescott	<b>IMMUNITY AND INFLAMMATION</b> RESEARCH PROGRAM <b>Anthony Bosco</b>	<b>ALLERGY AND INFECTIOUS DISEASE RESEARCH</b> Beilinda Hales	<b>CHILD ALLERGY AND IMMUNOLOGY RESEARCH</b> Debbie Palmer	<b>EXPERIMENTAL IMMUNOLOGY</b> Deborah Strickland	<b>HUMAN IMMUNOLOGY</b> Pat Holt	<b>INFLAMMATION</b> Pruce Hart	<b>SYSTEMS IMMUNOLOGY</b> Anthony Bosco
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<b>INFECTION AND VACCINES</b> RESEARCH PROGRAM <b>Hannah Moore</b>	<b>BACTERIAL RESPIRATORY INFECTIOUS DISEASE GROUP</b> Lee-Ann Kirkham, Rith Thornton	<b>EAR HEALTH</b> Deborah Lehmann	<b>INFECTIOUS DISEASES EPIDEMIOLOGY</b> Hannah Moore, Chris Blyth	<b>INFECTIOUS DISEASE IMPLEMENTATION RESEARCH</b> Tom Snelling	<b>SKIN HEALTH TEAM</b> Asha Bowen	<b>STREP A AND RHEUMATIC HEART DISEASE</b> Jonathan Carapetis	<b>SYSTEMS VACCINOLOGY</b> Tobias Kolman	<b>VACCINE TRIALS GROUP</b> Peter Richmond	<b>NEONATAL HEALTH AND DEVELOPMENT</b> RESEARCH PROGRAM <b>Tobias Strunk</b>	<b>NEONATAL CARDIORESPIRATORY HEALTH</b> Jane Pillow	<b>NEONATAL GUT HEALTH, NUTRITION AND DEVELOPMENT</b> Karen Simmer	<b>NEONATAL INFECTION AND IMMUNITY</b> Tobias Strunk
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