

PhD/ Master by Research Opportunity

Project: The role of human microbiome in paediatric respiratory disease: Using -omics technologies to identify new ways to diagnose airway infections in young children

Opportunities are available for Master by Research and PhD projects embedded in a multi-disciplinary program that aims to translate biological data into new diagnostic modalities.

The research project:

Respiratory infections in children are believed to occur across a disease continuum that extends from acute lower respiratory infections such as pneumonia or bronchiolitis, through to protracted bacterial bronchitis (PBB) and subsequent bronchiectasis. This continuum is believed to be driven by repeated cycles of lower airway infection and inflammation which eventually result in irreversible tissue damage and progressive loss of lung function. Antibiotics are used to treat acute symptoms and to prevent exacerbations; however, infections in a subset of children are recalcitrant to standard therapies. Long courses (up to two years) of continuous antibiotic therapy are used to prevent acute exacerbations among children with bronchiectasis. Although important to bronchiectasis clinical management, prolonged antibiotic treatment risks emergent antibiotic resistance.

Achieving better prevention and clinical management of acute and persistent respiratory infections requires deeper understanding of the pathobiological drivers of the disease, including microbial, inflammatory and immune processes. Our multi-disciplinary team is working together to translate the findings of clinical studies (including randomised controlled trials) and basic science research into new ways to prevent, diagnose and treat respiratory infections in children.

In this laboratory and bioinformatics-based study, -omics technologies and machine learning techniques will be used to identify biomarkers that can distinguish bacterial profiles associated with endobronchial infection in PBB. The student will also determine whether airway biomarker profiles could be used to identify children at risk of persistent respiratory infections and/or progression to more severe disease. The study will be based in Darwin, with potential opportunities for some components to be undertaken at the laboratories of our international collaborators.

For further information about the project, please contact Dr Robyn Marsh at

robyn.marsh@menzies.edu.au or phone +61 8 89468563.

Eligibility: The successful applicant will meet the eligibility criteria for admission to a Master by Research or Doctor of Philosophy degree at Charles Darwin University.

Scholarship provisions:

Candidates will be encouraged to seek Research Training Program (RTP) scholarship funding through Charles Darwin University. Further information about RTP scholarship application process, eligibility criteria and key dates can be found on this [CDU webpage](#).

Successful candidates who is a recipient of a primary scholarship such as RTP will be eligible to apply for a Menzies top-up scholarship to the value of \$10,000 per annum for up to 3.5 years. Successful candidates will receive \$3,500 per annum for up to 3.5 years to cover direct costs of the research. In addition to these provisions, students will be supported to apply for travel grants to support professional development as required. This may include funding to support travel to collaborators' laboratories for specialist laboratory training.

Application process:

Applicants should submit the following:

- Completed application form
- Current CV
- Copies of certified academic transcripts
- Proof of Residency (not required for Australian citizens)

All applications should be submitted to robyn.marsh@menzies.edu.au by 30 September 2021.