

PhD scholarship

Systems immunology and multi-omics approaches to understand protective immunity to human malaria

The Australian Institute of Tropical Health and Medicine (AITHM) at James Cook University (Cairns) is a cross-disciplinary research institute comprised of bioinformaticians, systems biologists, immunologists, molecular biologists, and chemists. The scope of research encompasses basic science through to clinical translation and impact.

We invite applications for a PhD position focused on identifying human host factors that predict immune control of malaria. The project will utilise systems-based immunology and multi-omics approaches to profile the host immune response in controlled infection models of malaria at molecular, cellular, transcriptome and proteome-wide scale. The overall aim will be to develop and apply computational/biostatistical approaches, including network theory and machine learning, which integrate genomics, proteomics, transcriptomics and molecular immunology to improve our understanding of the host-parasite relationship and predict immune responsiveness and parasite control. Molecular signatures of immunity to malaria will inform the development of vaccines, immunotherapies or diagnostic biomarkers.

This project will provide an opportunity to be involved in cutting-edge advances integrating diverse fields of high dimensional -omic datasets. It will complement ongoing systems-based and therapeutic development efforts at AITHM directed at malaria and other tropical pathogens. The successful candidate will learn from, and be supported by, a team of researchers in bioinformatics, immunology, molecular sciences and biostatistics.

Methodologies:

Bioinformatics, Machine Learning, Immunology, Systems Immunology, Systems Biology, Genomics/Proteomics/Transcriptomics, Molecular and Cell Biology, Statistics

Eligibility:

Entry: BSc Honours Class I (or equivalent via outstanding record of professional or research achievements)

Experience/Background: Experience with programming languages, mathematics, statistics and/or background in immunology and molecular sciences, with an interest in integrating the fields of immunology and bioinformatics.

Excellent computer, communication, and organisational skills are required. Forward thinking, innovation and creativity are encouraged.

Scholarship: \$28,000 per annum for three years.

Closing date: 13th Sept 2019

Please send your Curriculum Vitae, a copy of your academic record, and 1-page outline of your goals for a PhD (as per contact details below).

Supervisors:

- Dr Ashley Waardenberg – Research Fellow (Bioinformatics), Theme Leader, JCU Centre for Tropical Bioinformatics and Molecular Biology
<https://research.jcu.edu.au/portfolio/ashley.waardenberg/>

- Professor Denise Doolan – Professorial Research Fellow (Molecular Immunology), AITHM Deputy Director; Director of JCU Centre for Molecular Therapeutics
<https://research.jcu.edu.au/portfolio/denise.doolan/>
- Dr Ingrid Wise – Research Fellow (Molecular Immunology)
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