Wal-yan
RESPIRATORY RESEARCH CENTRE
Healthy lungs for every child, for life

Dissecting microbial functional capabilities shaping disease progression trajectories in CF

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Research Focus Area:	Respiratory Centre; Chronic & Severe Diseases
Research Group:	Synergy CF, Wal-Yan Respiratory Research Centre
Chief Supervisor:	Dr Jose Caparros-Martin, Telethon Kids Institute
Other Supervisors:	Prof. Elaine Holmes, Murdoch University Prof. Fergal O'Gara, Telethon Kids Institute Dr Nicola Gray, Murdoch University
Project Outline:	Cystic fibrosis (CF) starts early in life with lung damage caused by recurrent cycles of infection-inflammation. Based on this evidence, early childhood interventions should therefore be focused on the key processes governing the deregulated inflammatory responses, and the microbial succession events favouring the establishment of pathogens. We have recently observed that the detection of two types of bacteria-derived metabolites could contribute to the exaggerated inflammatory response seen early in CF. The candidate will evaluate the contribution of these two types of molecules in the progression of CF lung disease in parallel to the microbial colonisation of the lungs. They will carry out a systematic analysis of the lung-associated metabolome to discover new molecular pathways that could contribute to the CF pulmonary phenotype and will mine the microbial metagenome to identify keystone microorganisms based on their functional capabilities to produce these metabolites.
Suitable for:	☐Honours ☐MD ☐Masters ☒PhD
Ethics approval:	☐Obtained ☒Not Obtained
Funding:	☐Top-up scholarship offered by project group. ☒Full scholarship offered by project group. There are a limited number of scholarships (or top ups) available that will be issued at the Respiratory Centre's discretion, targeted to the most competitive (highest calibre) students that apply.
Essential Selection Criteria:	- Honours degree or international equivalent in Biological Sciences, Medical/Biomedical Sciences, Biostatistics, Analytical Chemistry, Bioinformatics/Computational Biology, Engineering or related discipline. - Candidates should demonstrate a genuine interest in host-microbiota interaction, integration of "omics" strategies and modelling in precision medicine, and enthusiastic to work on a multidisciplinary project. - Knowledge in programming languages (e.g. R, Python) is desirable.

For more information, please contact:

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