2024-25 Adelaide Summer Research Scholarships.

Researchers listed in this document are interested in supervising students for Summer Research Scholarships in the Faculty of Health and Medical Sciences.

Eligible students are encouraged to contact Researchers to discuss their research projects and potential supervision for a Summer Research Scholarship.

ADELAIDE DENTAL SCHOOL:

Researcher:	Research Area:	Available Project(s):
Sonia Nath	Indigenous Oral Health	**The association of oral disease and chronic health conditions and effects on culturally safe dental care on oral and general health among Indigenous South Australian Adults** The research focuses on chronic health conditions such as cardiovascular disease, diabetes and chronic kidney disease impacting oral health among Indigenous South Australians, in urban and regional areas. The study aims to inform better policies for improving Indigenous health and access to dental and medical care services in Australia. Bridging these gaps is crucial for developing evidence-based interventions to address the burden of oral disease and chronic health conditions and ultimately reducing health disparities. There are multiple other projects, please contact researcher for discussion.
Assoc Prof Dimitra Lekkas and Assoc Prof Eleanor Parker	Educational Research	**Experiences of rural dental students** This project will investigate the lived experiences of dental students from rural backgrounds, from the time before applying to dental school and their time during dental school. The project will involve a rapid literature review, preliminary project design and initial ethics application. This project will suit a high achieving dental student, who has excellent academic writing, critical thinking, time management and organisational skills and seeking to enhance their research capabilities.

ADELAIDE MEDICAL SCHOOL:

Researcher:	Research Area:	Available Project(s):
Assoc Prof Nicole Williams	Paediatric Orthopedic Surgery and Trauma	**Multiple projects in Trauma and Orthopedics** Please contact researcher for further information
Dr Melanie Wittwer	Medicine – Cardiology and Intensive Care	Please contact researcher for discussion

Dr Hassen Mohammed	Vaccines and Infectious Disease Group	**Maternal vaccination uptake in women who deliver at the Women's and Children's hospital: a medical case note audit** In Australia, maternal influenza and pertussis vaccinations are recommended for every pregnancy since 2010 and 2015, respectively. This study aims to determine maternal vaccine uptake and assess factors associated with vaccine uptake among pregnant women. This retrospective study collects maternal vaccination, obstetric history, and antenatal care data from the South Australian Pregnancy Record and other medical records from 2019-2022.
Assoc Prof Richard Young	Medicine – critical illness, diabetes research areas	**Medicine – critical illness, diabetes research areas** Please contact researcher for discussion, please see researcher profile for project outlines.
Assoc Prof Alexia Pena	Paediatrics	Please contact researcher for discussion
Dr Sivabaskari Pasupathy	Medicine, Cardiology	Our understanding of heart attack acute myocardial infarction (AMI) has evolved considerably over the past 50 years, which has given rise to innovative therapies that have improved patient outcomes. Each year, 55,000 Australians suffer an AMI whereby treatment is centered around a prompt diagnosis of coronary artery blockages followed by coronary interventions to re-open the artery. However, in 10% of myocardial infarction patients (6,000 annually), a blockage is not identified and so the cause and management for patients are unclear. Please contact researcher for discussion.
Prof Leonie Heilbronn	Obesity, Nutrition and Metabolism	**Resetting meal timing for metabolic health** Our research team is conducting a clinical trial to study how different meal timings affect circadian rhythms and metabolism in humans. During the summer research experience, you'll participate in clinic visits, interact with study participants, and gain lab experience in qPCR, clinical chemistry, and data management. This involvement will provide valuable insights into research and the role of nutrition and circadian health in preventing metabolic diseases.
Assoc Prof Wendy Ingram	Surgical Specialties, Breast Biology and Cancer	Please contact researcher for discussion
Dr Liliana Ciobanu	Neurobiology of Cognition	Please contact researcher for discussion
Dr Liliana Ciobanu	Cognitive Genomics and Neurobiology of Cognitive Processes	Please Contact researcher for discussion

Dinesh Selva	Ophthalmology	**Multiple projects** Please contact Dr Khizar Rana, khizar.rana@adelaide.edu.au for discussion.
Dr Ryan Quarrington	Applied Biomechanics of Injury	**Injury patterns and patient outcomes associated with micromobility accidents** Electric scooters (e-scooters) and other personal micromobility devices are increasingly popular modes of transportation, with hire e-scooters recording 808,000 trips in Adelaide (as of October 2022) since they were introduced in 2019. However, emerging reports from other cities have found that the adoption and misuse of micromibility devices has led to an influx of related injuries at hospital emergency departments, both of the rider and other road users (e.g., pedestrians and cyclists). In order to develop new legislation around the use of these transportation modes, and to guide prevention strategies and clinical management of the injuries associated with their use, additional evidence on injury patterns and patient outcomes is required. The aim of this project is to investigate the injury patterns and patient outcomes of micromobility accident cases admitted to the Royal Adelaide Hospital emergency department. The student will assist with: • Identifying appropriate cases via an audit of the emergency department admission notes; • Extracting injury causation and outcome information from patient case notes; • Undertaking statistical analysis of the data.
Dr Ryan Quarrington	Applied biomechanics of Injury	**Developing an instrumented surrogate spinal cord for estimating spinal cord injury risk during simulated neck trauma** Cervical spinal cord injury (SCI) causes significant emotional and economic burden. The relationship between neck trauma and SCI severity is unclear, inhibiting the development of improved preventative measures and treatments. My research aims to improve our understanding of neck injury and SCI mechanisms through experimental models of trauma, but it is difficult to assess SCI risk in the lab. During neck trauma, the amount of spinal cord compression (caused by fractured vertebrae or herniated spinal discs, for example) corresponds to neurological impairment severity. Therefore, the aim of this project to develop an instrumented surrogate cervical spine cord that can acquire sensitive, high resolution, cord deformation measurements during experimental models of neck trauma. This will involve: • Creating surrogate spinal cords, with appropriate geometry, using various hydrogels;

		• Varying the composition of hydrogels and determining their relationship to the material properties of the surrogate cord; • Developing a method for rigidly embedding a custom fibre-optic sensor within the surrogate spinal cord; • Establishing the infrastructure and methodologies required to acquire and process fibre-optic sensor data; and, • Confirming that cord deformation measurements are sufficiently accurate and sensitive.
Dr Ryan Quarrington	Applied biomechanics of Injury	**Biomechanical investigation of thoracic spine injury mechanisms and the efficacy of current racing vests during jockey falls** Despite the high incidence of jockey falls in horse racing, little is known about the mechanisms underlying the devastating spinal injuries associated with these falls. Globally, over one quarter of jockey falls result in fractures of the head, neck, and back (thoracic spine), all of which are potentially career- and life-threatening. In a review by the British Horseracing Authority, thoracic spine injuries were the second most common career ending injuries (13.3%) suffered by jockeys, behind the head and neck (26.7%). In an effort to protect against torso and spinal injuries, jockey safety vests became compulsory in Australian horse racing in 1998; however, there is no evidence that these vests mitigate occurrence of the severe back injuries that occur during impact with the ground. Therefore, the overall aim of this project is to determine the mechanisms underlying jockey thoracic spine injuries during horseracing falls and investigate the efficacy of current jockey vests in mitigating these injuries. In the proposed project, a computational modelling pipeline will be established that can simulate the most common jockey-to-ground impact scenarios resulting in spinal injuries. This computer modelling pipeline will combine multi rigid-body modelling with dynamic finite element analysis, both of which will be informed by video analysis of horseracing falls (both injurious and non-injurious) and ex vivo impact biomechanics data. The outputs from these computer simulations will provide novel insights into the mechanisms leading to thoracic spine injuries during a jockey fall and will allow investigation into the influence of racing vests on spinal injury mechanics.
Dr Ryan Quarrington	Applied biomechanics of injury	**Investigating bone and soft-tissue damage associated with neck injuries** Neck injury causes significant emotional and economic burden, but the microscopic features of associated bone and soft-tissue damage is unclear. Using high-resolution CT scanning followed by histological analysis, students will investigate the nature and extent of injuries induced in a biomechanics laboratory setting. This research will provide valuable insights into the mechanisms of neck injuries, contributing to the

		development of improved safety measures and treatment strategies. This placement offers hands-on experience in advanced imaging techniques and histological analysis.
Dr Ryan Quarrington	Biomedical Engineering - mechanical models of human disease and disability	**Next generation models of the human airways for laboratory research** Current airway models fall short of replicating the situation in vivo. This project aims to founder next generation of airway models by combining 3D biomedical engineering and advanced tissue architecture, to produce organotypic and real world outcomes indicative of human disease.
Dr Emily Aldridge	Medicine/Obstetric and Cardiovascular Medicine	Please contact researcher for discussion
Dr Ilaria Stefania Pagani	Cancer Biology, Metabolism and Epigenetic	I am unravelling metabolic vulnerabilities in Chronic Myeloid Leukaemia Patients with the aim to design novel targeted therapies to eradicate therapy-resistant cells. The project will involve the use of cutting edge technologies, including single cells sequencing, proteomics and lipidomics, as well as optimised drug screening techniques on a panel of sensitive/resistant cell lines and primary stem/progenitor cells from patients. Contact Dr Pagani at Ilaria.Pagani@sahmri.com for more information.
Dr Jacqueline Gould	Paediatrics (and nutrition)	We have multiple large studies and trials, with nested projects available for students. Current projects include: • Understanding the complimentary foods and feeding patterns of Australian toddlers - does current practice meet the recommendations of the World Health Organisation? • Parents perceptions of preterm lung and brain development.
Dr Kevin Fenix	Cancer Biology, Immunotherapy, and Cancer Microbiome	**Clinical Immunology and Oncology Research** I have multiple lines of active ongoing research: 1. Development of immunotherapies for bowel and head and neck cancers. 2. Identification of how tumour associated bacteria can affect cancer pathobiology. 3. Dissecting the contribution of the immune response to chronic inflammatory diseases. If you are interested in any of these topics, please contact me to discuss further.
Dr Amna Ghith	Breast Biology and Breast Cancer	**Identification and validation of potential proteins from breast milk acting as biomarkers for mastitis** This project aims to identify, validate and characterise proteins using different techniques such as mass spectrometry. The proteins identified from this study will be further validated as potential biomarkers for lactational Mastitis using different

		immunoassays. We aim to analyze the role of these specific proteins in development of Mastitis. Finally, the validation of these novel biomarkers will facilitate the early detection and development of targeted therapies.
Dr Clare Quigley and Prof Dinesh Selva	Ophthalmology	**Drains in Orbital Study** Publication of survey results of drain usage in orbital surgery by Australia and New Zealand Society of Ophthalmic Plastic Surgeons. This includes practices in placement of drains in different settings; drainage of orbital abscess in orbital cellulitis, orbital decompression in thyroid eye disease, orbitotomy for tumour. Current evidence base will also be assessed.
Assoc Prof Chung Hoow Kok	Clinical Bioinformatics Translational	Please contact researcher for discussion
Dr Damjana Bogatic	Gastroenterology	**Multiple different project types available** Depending on your area of interest, as part of a trial investigating faecal microbiota transplant (FMT) as therapy for primary sclerosing cholangitis (such as dietary influence on the microbiome, antibiotic preconditioning prior to FMT, impact of oral delivery on FMT engraftment, metabolomic changes after FMT).
Dr Natasha Maddigan	Inflammatory Bowel Disease	**Metabolomic Analysis for Microbial Manipulation Therapies in Inflammatory Bowel Disease** Investigate the microbiome's role in inflammatory bowel disease (IBD) through metabolomic and analytical testing. Develop new analytical methodologies for detecting and quantifying disease related metabolites and create novel protocols for understanding and optimizing microbial manipulation therapies.
Dr Hassen Mohammed	Vaccine and Infectious Disease	**The Safety of Bivalent and Omicron XBB.1.5 COVID-19 Vaccines in Pregnancy** The bivalent and Omicron XBB.1.5 COVID-19 vaccines are preferred and recommended for pregnant women in many countries, but safety and effectiveness data are limited. This rapid review investigates the safety of these vaccines in pregnant women and their impact on perinatal outcomes, using a comprehensive search strategy across multiple databases.
Dr Emmanuel Gnanamanickam and Prof Stephen McDonald	Health Services Research, Clinical Epidemiology, Biostatistics, Health Economics, Data Science, Registry Science, Renal Medicine	**Using Health and Electronic Medical Record Data to answer clinical and service planning questions through traditional and modern data science methods** We have a number of projects that require use of epidemiological, statistical, health economic and data science methods to answer questions on delivery of health and clinical service in South Australia. You can expect to wrangle with big datasets to answer one or two pertinent questions - Please contact researcher for discussion and further details.

ADELAIDE NURSING SCHOOL:

Researcher:	Research Area:	Available Project(s):
Professor Frank Donnelly	Nursing / Health	Please contact researcher for discussion

SOUTH AUSTRALIAN IMMUNOGENOMICS CANCER INSTITUTE:

Researcher:	Research Area:	Available Project(s):
Dr Qi Zhang	Epigenetics, Biochemistry, Molecular Biology and Cell Biology	**Uncovering the Regulation and Dysregulation of Epigenetic Modifiers** Explore how epigenetic modifiers regulate gene expression and contribute to diseases using diverse methodologies such as biochemistry, biophysics, structural biology, molecular and cell biology, genomics, and bioinformatics. Gain hands-on experience in cutting-edge techniques to uncover the fundamental mechanisms behind epigenetic regulation and its role in development and disease.
Dr Nora Liu	Bioinformatics; Cancer	Please contact researcher for discussion
Dr Ning Liu	Bioinformatics	Please contact researcher for discussion
Dr Adrienne Sullivan	Epigenetics and Molecular Biology	**GATA3 and enhancer decommissioning in development and cancer** This project will investigate the molecular mechanisms of how the transcription factor GATA3 changes cell properties by deactivating gene regulatory elements known as enhancers. This involves cloning expression constructs, CRISPR/Cas9 genome editing, cell culture, and molecular assays such as ATAC and ChIP.

SCHOOL OF BIOMEDICINE:

Researcher:	Research Area:	Available Project(s):
Dr Simran Sidhu	Human Neurophysiology	Please contact researcher for discussion
Dr Stefka Tasheva	Neurobiology	**Investigating the Therapeutic Potential of Antisense Oligonucleotides for PCDH19-Clustering Epilepsy** This project aims to evaluate the therapeutic efficacy of antisense oligonucleotides (ASOs) for treating PCDH19-clustering epilepsy. The primary objective is to assess whether ASOs can correct the genetic anomaly underlying the disease

		and mitigate associated neuropathological effects. Research methodologies for comprehensive evaluation include cell culture, western blotting, immunofluorescence and RT-qPCR.
Prof Jose Polo	Epigenetics, reprogramming and cancer	The Polo group is interested in the transcriptional and epigenetic mechanisms that govern cell identity, in particular pluripotency, reprogramming of somatic cells into induced pluripotent stem (iPS) cells, development and cancer. We have multiple projects available including but not limited to: 1. Exploring the biochemistry of epigenetics in a prostate cancer model. 2. Reprogramming marsupial fibroblasts into induced pluripotent stem cells. 3. Investigating the epigenetic and transcriptional changes during reprogramming of cells to pluripotent stem cells. We also have projects available for those interested in bioinformatics. Please contact us for a discussion.
Dr Rebecca Hood	Stroke	**Understanding the impact of age on stroke pathophysiology in a rat model of stroke.** Multiple projects available. Contact researcher for discussion.
Dr David Bersten	Molecular Biology	A forward and reverse genetic screening platform to uncover new bioactive molecules and their host factors
Assoc Prof Lyndsey Collins-Praino and Angus McNamara	Neuroscience (Discipline of Anatomy and Pathology)	**Utilising Multi-Modal Neuroimaging to Predict Risk of Future Parkinson's Disease Development Following a Traumatic Brain Injury** You will assess Parkinson's disease (PD)-relevant pathology in a traumatic brain injury (TBI) cohort, using a sophisticated suite of neuroimaging (F-DOPA PET and neuromelaning-sensitive magnetic resonance imaging). This will be paired with clinical assessment to determine if neuroimaging and symptomatic profiles can be used to predict risk of PD development following a TBI.
Dr John Cirillo	Neurophysiology / Motor Learning	**Motor skill acquisition** Skill improvement requiring fast and accurate movements often involve highly dexterous muscles where maximal performance increase is achieved after a brief period of training, resulting in a task ceiling effect. Does a hand muscle not typically associated with precise and intricate movements increase task complexity and diminish this ceiling effect?

SCHOOL OF PSYCHOLOGY:

Researcher:	Research Area:	Available Project(s):
Rachel Searston	Cognitive Science	**The Influence of Valence-Loaded Scientific Jargon on Evidence Evaluation** Investigate how emotionally charged scientific jargon in research abstracts and expert reports affects memorability and perceived credibility of scientific results. This study aims to understand the impact of positive wording and complexity on the public's evaluation of scientific information generally and applied in the context of the justice system.
Dr Natasha Van Antwerpen	Psychology; Socio-cognitive Psychology; Mixed-methods	**Does meaning matter? A mixed-methods analysis of existential nihilism and wellbeing** A mixed-methods study on people's experiences of meaning (or meaningless) in life as they relate to wellbeing and social connectedness. All data will be collected by the scholarship, consisting of qualitative interview or focus group and survey data from people identifying as nihilistic or interested in nihilism. The scholarship will likely include contributions to analysis of transcripts, survey data, and literature review work. The scholarship will be co-supervised with Dr Sarah Halliday.
Dr Carly Stagg	Youth Mental Health and Wellbeing	Opportunity to work with qualitative survey data from Australian school students to explore youth wellbeing and resilience. The project will use qualitative methods to explore students' perspectives on support strategies and is part of a partnership between the University of Adelaide School of Psychology WiLDLab and Resilient Youth Australia.
Assoc Prof Rachel Reilly	Social and emotional wellbeing, anti-racism, health psychology	**Addressing Racism in Sport in South Australia** This qualitative project will support work in anti-racism being conducted via a partnership between Wardliparingga Aboriginal Health Equity, SAHMRI, and Preventative Health SA. We will conduct a qualitative study of a sporting club to: • understand experiences and perspectives on racism, individual and organisational responses, and social and emotional wellbeing impacts. • understand experiences and perspectives on racism, individual and organisational responses, and social and emotional wellbeing impacts.
Dr Nicole Nelson	Child Development and understanding of emotions/social communication	This project will involve the creation of a study (materials, design for delivery, etc.) to be conducted with child and adult participants, examining how emotion influences attention/memory. The potential for conducting research with participants as well. Having a current WWCC is a bonus, as is an interest in programming.

Jacqueline Gould	Child Development	**We have multiple large studies and trials, with nested projects available for students. Currently available projects include:** • Understanding breastfeeding barriers, enablers and experiences of new mothers. • Does parental reporting of child development and behaviour match psychologist testing? • Parents perceptions of lung and brain development.

SCHOOL OF PUBLIC HEALTH:

Researcher:	Research Area:	Available Project(s):
Prof Zoe Jordan	Evidence Based Healthcare	**Empathy in global collaborative networks: Empathy provides the foundation for deep and authentic understanding between collaborative partners.** This study seeks to utilise an empathy mapping approach to uncover, through qualitative field study, participant experiences of global collaborative evidence network engagement.
Mr Isaiah Luc	Health economics/Health policy	What is the overlap between the Federal and State government in consideration of medicines for funding decisions? What bearing do two factors have on funding decisions – patient engagement and high unmet medical need? Please contact researcher for further discussion.
Dr Romy Jia	Public health	Scoping review addresses methodological challenges in studying health-related major life transitions, exploring how these transitions are conceptualized and analyzed. It examines transition types and phases, theories and frameworks used, and data collection and analysis methods. The review aims to enhance understanding and inform future research and interventions.