UQ Summer Research Scholarship Projects in Faculty of Medicine 2018

Read about the program on the https://employability.uq.edu.au/get-experiences/research-opportunities/uq-summer-research-program/apply-summer-research-program page, and apply online from 9 July – 31 August 2018 via https://employability.uq.edu.au/node/159/2#2

Please take note of where each project is located. Projects are listed under the unit names on the application page (CareerHub).

Scholars can select from one of the following to see the associated projects:

- Centre for Health Service Research
- Child Health Research Centre
- Ochsner Clinical School
- Office of Medical Education
- Princess Alexandra Hospital Southside Clinical Unit
- Prince Charles Hospital Northside Clinical Unit
- Primary Care Clinical Unit
- QIMR Berghofer Medical Research Institute
- Royal Brisbane Clinical Unit
- Rural Clinical Unit
- School of Biomedical Sciences
- School of Public Health
- UQ Centre for Clinical Research
- UQ Diamantina Institute

Important: These projects are located at multiple sites at St Lucia and Herston campuses and hospitals in Brisbane, Ipswich, and a number of rural and remote area facilities throughout the rest of the state.

Find out more about our research sites and research in our clinical schools and hospital sites.

Centre for Health Service Research	
CHSR 01	Big data analytics: Understanding the hidden gems in Queensland ID Scanning data
CHSR 02	Global Drug Survey: Analysis of the largest global survey of drugs users (2013-2018)
Child Health Research Centre	
CHRC 01	Relationship between otopathogens colonisation and social determinants of heath
CHRC 02	Adolescent Extended Treatment Programs Assertive Mobile Youth Outreach Service (AMYOS). A longitudinal study of high risk youth with severe, complex and persistent mental health problems.
CHRC 03	Factors influencing the development and severity of burn scarring: A systematic Review
Ochsner Clinical School	
OCS 01	Diagnostic Assessment of Eustachian Tube Dysfunction
OCS 02	Outcomes of Patients with Anoxic Brain Injury and Status Epilepticu
OCS 03	Cerebrovascular Small Vessel Disease Registry
OCS 04	Monitoring medical student well being longitudinally through the degree program
OCS 05	Molecular analysis of renal cell carcinoma metastasis
OCS 06	Why are the appropriate patients not treated with PCSK-9 inhibitors?
OCS 07	BLASTOCYSTIS HOMINIS – PREVALENCE AND EPIDEMIOLOGY AT OCHSNER MEDICAL CENTER
OCS 08	Infectious Outcomes in Donation After Circulatory Death (DCD) Liver Transplantation
OCS 09	Creating a Data Warehouse For Liver, Kidney and Pancreas Transplants Performed Over the Last 20 Years at Ochsner Clinic Foundation Hospital
OCS 10	Characterization of non insulin injectable agent use in type 1 diabetes

OCS 11	Unplanned SICU Admissions: A Root Cause Analysis
OCS 12	Patient-derived xenograft models of colorectal cancer in combination therapy
OCS 13	Epidemiology of Infections in Older Liver Transplant Recipients
OCS 14	Exploring Unconscious Bias in Medical Student Evaluation
OCS 15	Identifying Clinical Characteristics to Help Predict Outcomes in Cancer Patients Treated with Immune Checkpoint Inhibitor Therapies Across Solid Tumor Types.
OCS 16	Impact of Student-Led Antibiotic Allergy Reconciliation Service
Office of Medical Education	
OME 01	The association between personal traits, perception of the learning environment and well-being in medical students.
Princess Alexandra Hospital Southside Clinical Unit	
PAH 01	Safety and use of e-cigarettes as a harm minimisation measure. What's the evidence?
PAH 02	Systematic Review and Meta-Analysis of pharmacological treatments for tobacco addiction among people with severe and persistent mental illness
PAH 03	Management of Out of Hospital Cardiac Arrests
PAH 04	Trauma Reception in the ED Resus
PAH 05 (QEII 01)	The Rhythm and Blues Project: A proposed method of skill and knowledge maintenance in Advanced Life Support (ALS) training and recertification.
PAH 06	Using the iEMR to compare presenting complaint, ED diagnosis and in patient diagnosis
PAH 07	Presentations of codeine misuse and overdose presenting to a toxicology unit.
Prince Charles Hospital Northside Clinical Unit	
PCH 01	Pre-clinical investigation of the impact of high oxygen delivery during ECMO on blood cell function and inflammatory response
PCH 02	Analysis of breath samples for Volatile Organic Compounds (VOCs) to diagnose lung disease
PCH 03	Biomarkers for lung cancer
PCH 04	1) Osteoporosis prevalence in lung cancer screening scans. 2) Incidental lung nodules detected at CTCA. 3) Screening for lung cancer; the ILST study
PCH 05	1) Lung Microbiome Variation at Sites of Inflammation in Formalin-Fixed, Paraffin-Embedded Lung Tumours. 2) Effects of e-cigarette aerosol exposure on primary human bronchial epithelial cells. 3) Isolation of extracellular vesicles from COPD/ lung cancer primary human bronchial epithelial cells
PCH 06	Dietary fibre supplementation in chronic obstructive pulmonary disease: profiling dietary habits, gut microbiome and short chain fatty acid production.
PCH 07	Novel Exosome Diagnostics for Pleural Effusion
PCH 08	Researching TNM staging in lung cancer
Primary Care Clinical Unit	
PrimC 01	A Cochrane review on Vitamin C for acute upper respiratory tract infections
PrimC 02	The student-generated curriculum: a medical education research project
QIMR Berghofer Medical Research Institute	
QIMRB 01	Reversing therapy resistance in cancer
QIMRB 02	Developing human 'brain on a chip' cell models for investigation of brain ageing, disease, and drug development.
QIMRB 03	Brain dynamics following (un-)successful ageing
QIMRB 04	What is the economic burden of Epilepsy in Australia?
QIMRB 05	Understanding host/parasite interactions in malaria
QIMRB 06	Validation of protein biomarkers of mosquito age
QIMRB 07	Immune contexture analysis of Nasopharyngeal Carcinoma (NPC) and response to EBV-directed adoptive T cell immunotherapy

QIMRB 08	CRISPR-Cas9 approaches to model blood cancers in vivo.
QIMRB 09	Development of a Diagnostic PCR for Scabies
QIMRB 10	CAN WE STOP THE DEVELOPMENT OF BONE METASTATIC PROSTATE CANCER?
QIMRB 11	Priming the epigenome for small molecular therapy in Colorectal Cancer
QIMRB 12	What is the role of gene expression in mental health?
QIMRB 13	Delineating mechanisms of acquired resistance to kinase inhibitors
QIMRB 14	Brain waves
QIMRB 15	Micropeptides produced by cancer cells and their role in tumorigenesis
QIMRB 16	Heart rate variability as a biomarker of neurological function in neonates.
QIMRB 17	What makes the human brain unique?
Royal Brisbane Clinical Unit	
RBC 01	Arm and finger dimensions in adults presenting for elective surgery.
RBC 02	ROTEM® and platelet function in pre-eclamptic obstetric patients: A prospective observational study on labour ward inpatients.
RBC 03	Pain Care in the Emergency Department
RBC 04	Does transfusion-related immune modulation occur following intraoperative cell salvage: A pilot study
RBC 05	A Pre-operative Patient Blood Management Pilot Program: Reducing post-operative morbidity, mortality and associated cost.
RBC 06	Airway Management - DECIPHER STUDY
RBC 07	Patient risks associated with the use of blue and green ambient light in modern interventional suites.
Rural Clinical Unit	
RCS 01	Nomograms for gynecological cancer: A review of literature
RCS 02	Health literacy, rural medicine and the emergency department
RCS 03	A systematic review of the emergency department - primary care interface
RCS 04	A critical evaluation of the relationship between health literacy and health equity.
School of Biomedical Sciences	
SBMS 01	Analysis of the role of NFI proteins in cerebellar development
SBMS 02	The effects of selenium deficiency during pregnancy on placental morphology and offspring physiology
SBMS 03	Light inducible insulin secretion from MIN6 cells that express bPAC-mCngA calcium channels
SBMS 04	Developing a Her2 mutant that is insensitive to Herceptin as part of a project that aims to protect hearts from cancer chemotherapy-induced damage
SBMS 05	Ageing of the neuromotor system: effects of altered muscle-tendon structure.
SBMS 06	Zebrafish Models of Autism Spectrum Disorder
SBMS 07	Intraperitoneal lymphatic pharmacokinetics of protein drugs
SBMS 08	Using RNAi strategies to break down immune barriers for ovarian cancer treatment
SBMS 09	Medium chain triglyceride metabolism
SBMS 10	Can Preimplantation Genetic Testing (PGT) improve outcomes for patients with chromosomal translocations?
SBMS 11	Does treatment for subclinical thyroid dysfunction improve outcome of assisted reproductive treatments?
SBMS 12	Medium chain triglycerides in epilepsy
SBMS 13	Developing a model of cancer chemotherapy-induced cardiac damage
SBMS 14	Generating cytoplasmic variants of Dscam2 for transgene expression
School of Public Health	
SPH 01	Who wants to sit less?
SPH 02	Planning and Evaluating a Therapeutic Garden at the Goodna Community Health Centre - for happy and healthy staff, consumers and community groups.

SPH 03	Cessation and Relapse Prevention Trial
SPH 04	How has Tobacco Control Policy Developed in Australia
SPH 05	Literature review on the barriers and facilitators to implementing and accessing primary mental health services in Australia
SPH 06	Clinical Trial Protocol
SPH 07	Analysis of social media interactions concerning tobacco control and vaping policy
UQ Centre for Clinical Research	
CCR 01	Case-Control Study of Transdermal Nicotine Replacement Therapy Patches in Critically Ill Patients
CCR 02	Novel therapeutic targets for neurodegeneration in Parkinson's disease
CCR 03	Cognitive impairment in Parkinson's disease
CCR 04	A Systematic Review of Anxiety in Dementia
CCR 05	Social Anxiety in Parkinson's disease and essential tremor
UQ Diamantina Institute	
DI 01	Generation of functional liver cells from mesenchymal stem cells for cell therapy
DI 02	Possible implications of oxidative stress during chemotherapy: do changes in the liver niche impact tumour reoccurance and metastasis?
DI 03	Uncovering immunological pathways using gene set enrichment analysis
DI 04	Mutational screen of candidate genes in mouse tumour bank
DI 05	Visualising reactive oxygen species in hepatocellular carcinoma: novel approaches to assessing chemotherapy efficacy

Project Details

Centre for Health Service Research

Project title:	Big data analytics: Understanding the hidden gems in Queensland ID Scanning data
Project duration:	Length of project: 8 weeks Hours expected per week: 30 hrs/wk
Description:	Strong evidence exists of an association between alcohol and drug consumption and violence. In 2014 the Queensland Government released the 'Safe Night Out Strategy' outlining its approach for dealing with alcohol and drug related violence, for example, the establishment of Safe Night Precincts, new laws for violent behaviour and police empowerment to respond quickly to alcohol and drug related violence. One major policy initiative was the introduction of ID scanners in Safe Night Precincts. This project will draw on ID scanning data, consisting of millions of records, to explore hidden gems in the data. This research will provide policy makers and other key stakeholders with valuable information about the role of ID scanners in Safe Night Precincts across Australia.
Location:	Princess Alexandra Hospital, Woolloongabba
Expected outcomes and deliverables:	Conduct a literature search Creation of an endnote library Write up of literature for a report and journal article May include data cleaning and preparation May include descriptive data analysis Big Data analytics
Suitable for:	Excellent writing skills Quantitative analysis skills (3rd / 4 th year level) Interest in alcohol and illicit drug policy/interventions Interested in big data analytics and data science approaches

Primary Supervisor:	Associate Professor Jason Ferris
Supervisor's contact details:	Email: j.ferris@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Global Drug Survey: Analysis of the largest global survey of drugs users (2013-2018)
Project duration:	Length of project: 8 weeks Hours expected per week: 30 hrs/wk
Description:	The Global Drug Survey is the largest survey of drug users around the world. We have annual data spanning 2013-2018 (with almost 500,000 records). We have respondents from over 30 countries completed a survey of their drug use: ever, last 12 months and recent use. We have data on over 100 different types of drugs: on the less typical drugs for example GHB, ketamine, and many Novel Psychoactive Substances (NPS) and the more common drugs for example cocaine, methamphetamines, cannabis and synthetic cannabis, and alcohol. If you are interested in drug and alcohol research, this project is for you. We are looking for a highly motivated scholar to prepare 1, 2, or 3 papers of which you will be authored analysing the GDS data. If you want to know more see (http://www.globaldrugsurvey.com/)
Location:	Princess Alexandra Hospital, Woolloongabba.
Expected outcomes and deliverables:	Conduct a literature search Creation of an endnote library Write up of literature for a report and journal article May include data cleaning and preparation May include descriptive data analysis May include Big Data analytics
Suitable for:	Excellent writing skills Quantitative analysis skills (3rd / 4 th year level) Interest in alcohol and illicit drug policy/interventions Interested in big data analytics and data science approaches
Primary Supervisor:	Associate Professor Jason Ferris
Supervisor's contact details:	Email: j.ferris@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Child Health Research Centre

Project title:	Relationship between otopathogens colonisation and social determinants of heath
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	Otitis media (middle ear infections) are more prevalent in developing countries and indigenous populations. This is thought to be related to social determinants of health. We have collected upper respiratory tract swabs from Aboriginal and Torres Strait Islander children from two distinctively different communities and found a significant difference in the detection of otopathogens between the two communities. This project aims to analyse the relationship between otopathogen colonisation and the social determinants of health.
Location:	Children's Health Research Centre, LCCH

Expected outcomes and deliverables:	The student will present a report detailing the results of their research. This will be presented within the team meeting. Depending on the outcome their may be the potential for a poster/ presentation/ publication.
Suitable for:	Public health/ epidemiology student.
Primary Supervisor:	Dr Seweryn Bialasiewicz
Primary contact, if not supervisor:	Andrea Coleman
Supervisor's contact details:	Email: seweryn@uq.edu.au; a.coleman2@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	Adolescent Extended Treatment Programs Assertive Mobile Youth Outreach Service (AMYOS). A longitudinal study of high risk youth with severe, complex and persistent mental health problems.
Project duration:	Length of project: 8 weeks Hours expected per week: 30 hrs/wk
Description:	The Assertive Mobile Youth Outreach Service (AMYOS) provide an intensive mental health outreach service for high risk, difficult to engage young people aged 13-19 years. Teams work directly with the young person, their family as well as other service providers in their community. This population experience severe and complex mental health presentations which have not been able to be serviced by traditional community based treatment options. The aim of this project is to evaluate the efficacy of this new service. Queensland Health standardized Outcomes measures will be collected a part of mental health routine collection. These include the Strengths and Difficulties Questionnaire, HoNOSCA, FIHS and CGAS. These measures are collected at commencement of treatment, at a minimum of every 90 days during treatment intervention and at the completion of treatment. These data will be used to describe the patient population at the start of treatment and investigate the effect of the treatment by examining change over time.
Location:	Children's Health Research Centre, LCCH
Expected outcomes and deliverables:	Skills: - work with a large database - Description of research sample - regression analyses
Suitable for:	Students who have basic statistical skills
Primary Supervisor:	Professor Christel Middeldorp
Supervisor's contact details:	Email: c.middeldorp@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Factors influencing the development and severity of burn scarring: A systematic Review
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	There is minimal up-to-date evidence of the influence of a range of factors on the development and severity of burn scarring. Previous literature reviews and systematic reviews have not examined the strength of relationships between factors that influence the development and severity of scarring. These reviews have also not followed the latest guidelines for high quality systematic reviews.

	This systematic review aims to systematically review evidence of the strength of relationship between the development and severity of skin scarring and sociodemographic factors (e.g. age, gender, skin type), risk factors (e.g. smoking), clinical factors (e.g. total body surface area burn, skin grafting, scar location, number of operative procedures), and other factors (e.g. temperature, friction, time to wound healing). Methodological and reporting guidelines will be followed to ensure the systematic review is of the highest standard. It is expected that the systematic review will be published in a highly ranked journal for skin disorders, wound healing or burns.
Location:	Children's Health Research Centre, LCCH
Expected outcomes and deliverables:	Deliverables: (1) Complete data extraction for a systematic review that will contribute towards a publication (with the exception of rating risk of bias). (2) Complete a literature review that will contribute to a publication. (3) Develop or refine a search strategy with assistance of a medical librarian and study investigators. (4) Complete the calculation of effect sizes for all available data. (5) Assist with patient data collection from new patients attending the Pegg Leditschke Paediatric Burn Centre, Lady Cilento Children's Hospital Learning outcomes will be: (1) Develop an understanding of the quality of evidence and how to rate the quality of evidence. (2) Develop an understanding of the processes required to complete a high quality systematic review. (3) Understand effect sizes and standardised response means as measures of the relationship between factors. (4) Learn to use RevMan (Cochrane software) as a system for measuring effect sizes. (5) Develop an understanding of the factors that influence the development and severity of scarring.
Suitable for:	Pre-medical provisional students
Primary Supervisor:	Dr Zephanie Tyack
Supervisor's contact details:	Email: z.tyack@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Ochsner Clinical School

Project title:	Diagnostic Assessment of Eustachian Tube Dysfunction
Project duration:	Length of project: 8 weeks Hours expected per week: 25 hrs/wk
Description:	Eustachian tube dysfunction (ETD) is a highly prevalent cause of otologic symptoms for which standardized diagnostic measures are lacking. Several factors are understood to play a role in ETD, including allergic rhinitis and acid reflux disease; however, the clinical effects of these exposures has not been well defined. The present project aims to utilize novel validated clinical assessments to study the relationship between Eustachian tube inflammation, audiometric testing and patient-reported outcome measures in otorhinolaryngology practice.
Location:	Ochsner Clinical School, New Orleans, LA USA
Expected outcomes and deliverables:	The student researcher will learn fundamentals of clinical research design, data collection, and basic analysis. He or she will be expected to actively participate in

	clinical data collection, maintain organized and accurate records, and assist with drafting presentations and manuscript materials based on results. The student will have the opportunity to present their findings to a larger group.
Suitable for:	This project is open to applications from medical students with an interest in clinical.
Primary Supervisor:	Edward McCoul
Supervisor's contact details:	Email: edward.mccoul@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Outcomes of Patients with Anoxic Brain Injury and Status Epilepticus
Project duration:	Length of project: 8 weeks Hours expected per week: 28-30 hrs/wk
Description:	Status epilepticus (SE) affects an estimated 1041 in 100,000 people, with a short term mortality rate of 7–39%. Identifying mortality predictors could inform clinical decision making pertaining to SE patients. hile previous research has linked short term prognostic factors of SE such as older age and acute symptomatic etiology with worse outcomes, findings are inconsistent regarding variables like altered level of consciousness, total SE duration and time to treatment. Our primary goal is to explore variables that directly impact the outcome and can serve as prognostication tools. Intravenous anesthetic drugs (IVADs) are widely used in refractory status epilepticus (RSE) to control the ictal activity. Although the IVADs are extremely beneficial in achieving total seizure suppression, an electroencephalography (EEG) burst-suppression pattern, or an isoelectric EEG, their prolonged use can have a negative impact on outcome including mental status. Our secondary goal is to analyze the timeline of mental status improvement and review factors affecting this after the discontinuation of commonly used IVADs in patients successfully treated for RSE. We will perform an in depth retrospective chart and EEG data review of patients with status epilepticus (SE) at Ochsner Neuro ICU from 2012-2018.
Location:	Ochsner Clinical School, New Orleans, LA USA.
Expected outcomes and deliverables:	With the participation and completion of the proposed research project the student will benefit from gaining skills pertaining to clinical research (chart review, data analysis, bio-statistics, literature review, research writing, research submission and peer-review process). The student will also benefit from authorship in regards to the research manuscript(s) that will be submitted for publication. Lastly, the student will gain skills on presenting research work at department research meetings and national research meetings if applicable.
Suitable for:	UQ students in 2018-19, no research experience is necessary
Primary Supervisor:	Fawad Khan
Supervisor's contact details:	Email: fakhan@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Cerebrovascular Small Vessel Disease Registry
Project duration:	Length of project: 8 weeks

	Hours expected per week: 36 hrs/wk
Description:	Development and maintenance in long term prospective data registry of patients who have cerebral small vessel disease. Participants have opportunity to work 1:1 with faculty to discuss registry specifics, tools etc. The aim is to collect imaging and clinical data through chart review and data entry for patients seen in our hospital and clinic. Participation in the development of a data registry affords the opportunity, if desired, to participate in a long-term project over the course of your entire medical school (and potentially longer) experience. The data collected will spark ideas and hypotheses for research projects and thus serves as a repository for producing literature publications.
Location:	Ochsner Clinical School, New Orleans, LA USA
Expected outcomes and deliverables:	In the process you will have the opportunity to learn about small vessel disease and its many manifestations and impact on health and begin to cultivate skills of reading neuroimaging and linking clinical presentations with these radiographical findings. You will learn what a registry is, how to create one and understand the dynamic of this process. At the same time you will be able to use your creativity and ideas and provide input on the project. You will also have the opportunity to work with residents and fellows who may also be participating on this project.
Suitable for:	Students interested in participating in a registry data collection process which will afford the opportunity for future research ideas and abstract/publication submissions. Background in clinical research or data collection would be beneficial though not required. Ideal for those with clinical interset in Neurology - especially Vascular Neurology, aging and dementia and cerebral small vessel disease.
Primary Supervisor:	Joseph Tarsia
Supervisor's contact details:	Email: joseph.tarsia@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Monitoring medical student well being longitudinally through the degree program
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	Survey data collected across the MD degree with the aim of monitoring student mental well-being, and eventual longitudinal analyses of personality data collected at Y1 orientation.
Location:	Ochsner Clinical School, New Orleans, LA USA.
Expected outcomes and deliverables:	The applicant can expect to learn how to analyse a data set and generate a research paper.
Suitable for:	Students interested in psychiatry
Primary Supervisor:	David Galarneau
Supervisor's contact details:	Email: dgalarneau@ochsner.org
Note before application:	The supervisor MUST be contacted by students prior to submission of an application **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Molecular analysis of renal cell carcinoma metastasis

Project duration:	Length of project: 8 weeks Hours expected per week 20 hrs/wk
Description:	Renal cell carcinoma (RCC) is a deadly and difficult-to-treat cancer. In one year in USA and Australia, approximately 66,000 new cases and 15,000 deaths from RCC occurred. RCC is a complex disease with widely varying prognosis. Metastatic RCC is incurable and fatal. Our hypothesis is that RCC and lymph node (LN) stromal cell interactions enhance tumorigenicity, metastasis, and drug resistance. Our goal for this project is to identify the molecular signals involved in tumor/LN stromal interaction and further examine their roles in tumor progression, metastasis, and chemotherapy resistance.
Location:	Ochsner Clinical School, New Orleans, LA USA
Expected outcomes and deliverables:	Ochsner Research Day abstract/poster; LCRC Science Retreat abstract/poster; and/or Southern Reginal Meeting abstract/podium presentation
Suitable for:	UQ/Ochsner medical student (year 3)
Primary Supervisor:	Li Li
Supervisor's contact details:	Email: lli@ochsner.org
Note before application:	The supervisor MUST be contacted by students prior to submission of an application **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Why are the appropriate patients not treated with PCSK-9 inhibitors?
Project duration:	Length of project: 6 weeks Hours expected per week: 20 hrs/wk
Description:	Patients with cardiovascular disease are recommended to have an LDL cholesterol < 70 mg/dL or be on high intensity statins. However, many patients cannot tolerate statins or do not reach this goal on high intensity statins. PCSK-9 inhibitors are highly effective in reducing LDL cholesterol. Recently, the 2 PCSK-9 inhibitors available in the United States, evolocumab and alirocumab showed clinical efficacy in 2 large phase 3 clinical trials. One downside to these molecules is the very large price tag associated with their use. Therefore, use of these drugs has been limited. The purpose of this research is to evaluate the use of PCSK-9 inhibitors in the Ochsner Health System Epic database. Cardiovascular patients with elevated LDL cholesterol (>70 mg/dL) on high intensity satin therapy or unable to tolerate stating therapy will be used to compare those who were put on PCSK-9 therapy with those who are not taking PCSK-9 therapy. The data will be compared to see if there are any factors which differentiate the two which can then be used to increase appropriate use of this new, but expensive therapy.
Location:	Ochsner Clinical School, New Orleans, LA USA
Expected outcomes and deliverables:	Students will learn how to construct a database and appropriately apply statistics to observational data. Students will also gain insight in cost effective evaluation and appropriate use of medications through literature reviews and discussions with the mentor. Abstracts will be submitted to major meetings. Publications will be submitted to major journals.
Suitable for:	Ochsner Clinical School medical students
Primary Supervisor:	Mark Effron
Supervisor's contact details:	Email: mark.effron@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

	This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.

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Project title:	BLASTOCYSTIS HOMINIS – PREVALENCE AND EPIDEMIOLOGY AT OCHSNER MEDICAL CENTER
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	Blastocystis hominis is an enteric protozoan found in humans and animals, with a worldwide distribution.1 It is a commonly found organism in fecal human samples with a prevalence of 20% and 50% in developed and developing countries, respectively.2 Higher prevalence in developing countries is thought to be associated with lack of access to healthcare, poor hygiene, contaminated food or water, and close contact with domestic animals and livestock.1-3. Transmission of the parasite is suggested to be via fecal-oral route with zoonotic potential, as zookeepers and abattoir workers have been shown to exhibit B. hominis infections.1,4. Patients with infections from the parasite typically exhibit nonspecific symptoms such as abdominal pain, diarrhea, and flatulence. Treatment of antibiotics is suggested in patients in whom symptoms have not resolved and in the absence of other parasites identified on stool studies.5,6. There is much controversy surrounding the pathogenicity of B. hominis in humans and clinical significance of the organism continues to remain unclear. The presence of B. hominis in stool studies has been associated with asymptomatic patients and studies have demonstrated conflicting predictors of its pathogenicity.7 Many studies pertaining to B. hominis infections are documented worldwide, but there is lack of data surrounding the prevalence of the organism in the United States. This study will retrospectively review the prevalence of B. hominis in patients admitted to Ochsner Clinic Foundation from 1 January 2014 to 31 December 2016 and investigate the epidemiological factors in the selected population. Additionally, it will review the signs and symptoms associated with the parasitic infection as documented in the chart. This study will provide additional information on the growing worldwide scientific data on the epidemiology of B. hominis within the southeastern portion of the United States.
Location:	Ochsner Clinical School, New Orleans, LA USA
Expected outcomes and deliverables:	Applicants will gain knowledge about parasitogy, infectious diseases and basic aspects of clinical research
Suitable for:	Students with an interest in developing skills in clinical research.
Primary Supervisor:	Dr Obi Nnedu
Supervisor's contact details:	Email: onnedu@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Infectious Outcomes in Donation After Circulatory Death (DCD) Liver Transplantation
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	As the organ waiting list grows and supply wanes, strategies such as donation after circulatory death (DCD) are being used more frequently. Given the lower numbers of DCD liver transplants performed in the US compared to donation

	after brain death (DBD), the risk of infectious complications in recipients of DCD organs are not well defined. Ochsner Medical Center has historically performed a significant amount of DCD liver transplants. The aim of this study is to characterize the type, timeline and risk of infections in recipients of DCD liver transplants compared to DBD liver transplants. This project will include data collection through retrospective chart review as well as data synthesis and analysis.
Location:	Ochsner Clinical School, New Orleans, LA USA.
Expected outcomes and deliverables:	Applicants will gain experience in clinical research experience including chart reviews, data collection and synthesis, and measurable outcomes. In addition they will gain knowledge and understanding of solid organ transplant recipients and the particular clinical and infectious challenges they encounter. Scholars will have an opportunity to generate publications from this research. They may also be asked to produce an oral presentation at the completion of their time working on the project.
Suitable for:	This project is open to all students though looking for those with an interest in Infectious Diseases or Transplant Surgery
Primary Supervisor:	Jonathan Hand
Supervisor's contact details:	Email: jonathan.hand@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Creating a Data Warehouse For Liver, Kidney and Pancreas Transplants Performed Over the Last 20 Years at Ochsner Clinic Foundation Hospital
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Over the last 20 years, we have performed multiple ultrasound examinations on patients who have undergone liver, kidney and pancreas transplants. We have used a paper card system to record our data. We now intend to develop a data base to record this data on an ongoing basis. But in order not to lose the research value of our legacy data, we would like a student to enter accurately our old antilog data into our new digital system.
Location:	Ochsner Clinical School, New Orleans, LA USA.
Expected outcomes and deliverables:	The students will learn the factors needed for comprehensive US evaluation of transplants. They will learn normal levels and abnormal findings. They will lean how to interpret these US examinations.
Suitable for:	All medical students who have learned liver, kidney and pancreas anatomy.
Primary Supervisor:	Edward Bluth
Supervisor's contact details:	Email: ebluth@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Characterization of non insulin injectable agent use in type 1 diabetes
Project duration:	Length of project: 8 weeks Hours expected per week: 24 hrs/wk
Description:	Characterization of non insulin injectable agent use in type 1 diabetes

	Background/introduction; In recent times the classification of diabetes has shown increased heterogeneity. Consequently the type 1 diabetes phenotype has undergone significant changes including the identification of variants that have varying degrees of endogenous insulin production as well as differing degrees of islet autoimmunity. The recognition of the LADA subtype and increasing prevalence of obesity and consequent insulin resistance among patients with type 1 diabetes have made it obvious that insulin alone is no longer the only available therapeutic option for patients with type 1 diabetes. Symlin is a synthetic analog of the beta cell co-secretory peptide amylin which is already approved for use in type 1 diabetes but which has typically been underutilized despite the potential advantages its adjunctive use can confer. In addition, in the last few years the GLP-1 analogs have grown in prominence as a therapeutic option for management of type 2 diabetes, obesity and as ASCVD risk modulators. While there have been some published clinical trials of the use of GLP-1 analogs in type 1 diabetes populations, there is little published "real word" data in this regard. The portfolio of GLP-1 analogs has also been recently further expanded with the availability of the fixed drug combination of GLP-1 analogs with basal insulins. Xultophy (iDeg-Lira) and Soliqua (Lixi-Lan) are the two such agents thus far FDA approved but again thus far only FDA approved for use in type 2 diabetes despite the obvious potential utility in selected patients with type 1 diabetes. The suggested retrospective chart review is to investigate in the "real world" practice setting of the Ochsner health system how much of non insulin injectable adjunctive therapy there is among patients with type 1 diabetes.
Location:	Ochsner Clinical School, New Orleans, LA USA.
Expected outcomes and deliverables:	The Results of this retrospective study are expected to presented in abstract and poster form at the annual American diabetes Association scientific meeting for 2019 and is expected to also lead to the publication of at least one (and possibly more) peer reviewed published scientific manuscript in a medline cited Journal.
Suitable for:	A medical student interested in clinical research in the domain of diabetes and endocrinology.
Primary Supervisor:	Gabriel Uwaifo
Supervisor's contact details:	Email: gabriel.uwaifo@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Unplanned SICU Admissions: A Root Cause Analysis
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Hospital care organizations have developed improvement care programs utilizing early warning systems to reduce the incidence of serious adverse events (Al-Jaghbeer, Tekwani et al. 2016, Douw, Huisman-de Waal et al. 2016, Douw, Huisman-de Waal et al. 2016, Le Lagadec and Dwyer 2016, Rubano, Vosswinkel et al. 2016, Santamaria, Duke et al. 2016). Unplanned ICU admission contributes to permanent disability or death with previous studies documenting some adverse events may be preventable (Vlayen, Verelst et al. 2011, Vlayen, Verelst et al. 2012). The purpose of this retrospective study is to analyze current unplanned admissions in the SICU and determine etiologies of these admissions. Additional data to be collected include SICU and hospital length of stays, and subsequent adverse events including mortality rates.
Location:	Ochsner Foundation Hospital, New Orleans.

Expected outcomes and deliverables:	The purpose of this retrospective study is to analyze current unplanned admissions in the SICU and determine etiologies of these admissions. Additional data to be collected include SICU and hospital length of stays, and subsequent adverse events including mortality rates.
Suitable for:	Any UQ student who is citoprogram certified.
Primary Supervisor:	Bobby Nossaman
Primary contact, if not supervisor:	Lisa Trocquet: ltrocquet@ochsner.org
Supervisor's contact details:	Email: bnossaman@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Patient-derived xenograft models of colorectal cancer in combination therapy
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	CRC is the third most common cancer and the second leading cause of cancer-related mortality, with an estimated incidence of 143,000 cases and 51,000 deaths per year in the United States. Despite optimal oncologic treatment, including surgery, chemotherapy, and/or radiotherapy, up to 50% of stage II and III CRC patients will develop extra- nodal metastases. This is the most significant negative determinant of CRC morbidity and mortality. Based on work from our group and others, we identified a unique class of cells, CRC tumor-initiating cells (Co-TIC), which are responsible for CRC growth, drug resistance, and subsequent extra-nodal metastasis. These cells were shown to express the cell surface markers CD133 and CXCR4. We have further found that Co-TIC involvement in these processes is largely dependent on lymph node stromal cell. We hypothesize that the LN microenvironment is responsible for supporting CD133+CXCR4+ Co-TIC in CRC growth and extra-nodal metastasis via providing CXCL12 that primes and stimulates Co-TIC. There is increasing evidence that the lymph node microenvironment play a significant role in cellular communication resulting in CRC tumor growth, drug resistance, and subsequent extra-nodal metastasis. This project is to use patient-derived xenograft models of colorectal cancer for combination therapy targeting Co-TIC in addition to conventional chemotherapy.
Location:	Laboratory of Translational Cancer Research, Ochsner Clinic Foundation, Benson Cancer Center, 1N505, 1514 Jefferson Highway, New Orleans, LA 70121
Expected outcomes and deliverables:	Ochsner Research Day abstract/poster; LCRC Science Retreat abstract/poster; and/or Southern Reginal Meeting abstract/podium presentation.
Suitable for:	UQ/Ochsner medical student (year 3)
Primary Supervisor:	David Margolin
Primary contact, if not supervisor:	Li Li MD, PhD, lli@ochsner.org
Supervisor's contact details:	Email: damargolin@ochsner.org
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Epidemiology of Infections in Older Liver Transplant Recipients

Project duration:	Length of project: 6 weeks Hours expected per week: 20 hrs/wk
Description:	Compare the incidence of infections in the elderly (>65) compared to the younger transplant patient.
Location:	Ochsner Clinical School
Expected outcomes and deliverables:	Incidence of infections in the elderly liver transplant patient
Suitable for:	UQ students - preferably OCS year 3 and 4th
Primary Supervisor:	Julia Garcia-Diaz
Supervisor's contact details:	Email: jgarcia-diaz@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Exploring Unconscious Bias in Medical Student Evaluation
Project duration:	Length of project: 6 weeks Hours expected per week: 20 hrs/wk
Description:	Unconscious or implicit bias refers to the attitudes or stereotypes that affect our understanding, actions and decisions in an unconscious manner. Unconscious biases are not accessible through introspection, and physicians/employers are generally unaware of these biases and their effects on individuals under their supervision. On the other hand, explicit bias or discrimination is a different concept and refers to intentional actions resulting in unequal treatment in employment or educational opportunity due to attitudes based on the sex, race, ethnicity, religion or other characteristics of an employee or group of employees. While explicit bias certainly exists, unconscious gender bias is thought to be the major explanation for lower than expected numbers of women as department chairs and deans in schools of medicine in the United States. Additionally, there are scattered reports of unconscious gender bias in education, though this concept has not been widely explored.
Location:	Ochsner Clinical School
Expected outcomes and deliverables:	The summer scholar will gain skills in data management, data analysis and manuscript writing. The deliverable will be a poster at Ochsner Research Day and a manuscript for publication.
Suitable for:	Current UQ-OCS second or third year students who will be in New Orleans during the study period
Primary Supervisor:	Dr. G Dodd Denton
Supervisor's contact details:	Email: gdenton@ochsner.org
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Identifying Clinical Characteristics to Help Predict Outcomes in Cancer Patients Treated with Immune Checkpoint Inhibitor Therapies Across Solid Tumor Types.
Project duration:	Length of project: 8 weeks Hours expected per week: 30-36 hrs/wk
Description:	Over the last five years, the development of immune checkpoint inhibitor therapies, specifically those aimed at blocking the inhibitory interaction between PD-1 and PD-L1 on tumor cells to activate the immune system, have

	revolutionized clinical oncology and now provide a new, often efficacious, well tolerated treatment option for cancer patients with various solid tumors around the world. Despite the success of these therapies, predicting which patients will respond to these drugs has been an elusive undertaking.
Location:	Ochsner Cancer Center, New Orleans, Louisiana
Expected outcomes and deliverables:	Scholars will gain skills in data collection and analysis as well as basic statistics. Students will have the opportunity to put together an abstract of their findings. Previous students working on similar projects with Dr. Matrana have presented their findings as posters at national meetings. Students will also have the opportunity to work on a peer-reviewed publication.
Suitable for:	The ideal candidate will be a third or fourth year medical student. The location research will be conducted will be the Ochsner Medical Center in New Orleans, Louisiana.
Primary Supervisor:	Marc Matrana
Supervisor's contact details:	Email: mamatrana@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Project title:	Impact of Student-Led Antibiotic Allergy Reconciliation Service
Project duration:	Length of project: 8 weeks Hours expected per week: 30 hrs/wk
Description:	Hypothesis: Student-led interviews and intensive antibiotic discussions will increase the number of patients receiving optimal antimicrobial therapy. Students will perform thorough antimicrobial allergy histories, discussions with pharmacies/families, and affirm or document and remove allergies to antimicrobial therapy.
Location:	Ochsner Medical Center/Ochsner Clinical School - New Orleans
Expected outcomes and deliverables:	Number of allergies affired/removed; Number of patients receving beta-lactams; Antimicrobial-related adverse outcomes; patient LOS; antimicrobial usage metrics.
Suitable for:	All UQ med students
Primary Supervisor:	Samuel Travis King
Supervisor's contact details:	Email: samuel.king@ochsner.org
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is located at the UQ Ochsner Clinical School in New Orleans. The Summer Scholarship does not provide any travel funds.**

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Office of Medical Education

Project title:	The association between personal traits, perception of the learning environment and well-being in medical students.
Project duration:	Length of project: 6 weeks Hours expected per week: 20 hrs/wk
Description:	This project is suited to students with a background or interest in education and/or psychology to pursue research in the area of well-being and resilience during medical training. The successful applicant will join a multidisciplinary team investigating current aspects of student well-being as well as assessing

	areas to further develop, such as career guidance and counselling. The health and well-being of medical students is an important concern to medical schools and medical educators. Student perceptions of their learning environment can influence levels of anxiety, stress and burn-out. The successful and healthy progression through medical training poses the question of whether certain personality profiles allow some students to better endure the stress and pressure of a medical school education. The research will contribute to a comprehensive longitudinal program of medical education research.
Location:	No specific location.
Expected outcomes and deliverables:	Co-author on a conference abstract or a journal paper.
Suitable for:	A good understanding of statistics and experience in statistical analyses, and managing data in Excel and SPSS. Plus, excellent organizational skills are required. Good writing skills are also desired.
Primary Supervisor:	Associate Professor Diann Eley
Supervisor's contact details:	Email: d.eley@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Princess Alexandra Hospital Southside Clinical Unit

Project title:	Safety and use of e-cigarettes as a harm minimisation measure. What's the evidence?
Project duration:	Length of project: 8 weeks Hours expected per week: approx 25 hrs/wk
Description:	Background Seventy per cent of people with schizophrenia and 61 per cent of people with bipolar disorder are smokers, compared to 16 per cent of those without mental health problems. Indigenous Australian have similarly high rates, with a prevalence of 70% in some remote communities. The Royal Australian & New Zealand College of Psychiatrists have called for the controlled introduction of e-cigarettes as a harm reduction measure and this approach is similar to policy in Great Britain and Canada. According to the latest evidence commissioned for Public Health England in 2018, e-cigarettes pose only a small fraction of the risk of smoking, and encouraging smokers to switch completely to vaping would produce substantial health benefits. The review, an update of Public Health England's 2015 review, found no evidence that e-cigarettes were a route into smoking among young people, and that e-cigarettes did not seem to be undermining the UK's long-term decline in cigarette smoking among young people. This is in contrast to Australian guidelines that oppose the use of e-cigarettes as a harm-minimisation measure. One reason for thus range of views is the methodological quality of different guidelines Objective: To review the quality of current e-cigarette guidelines from around the world Methods: A systematic search of scientific databases, central government health authority websites, medical peak bodies, guideline clearing houses and Google. Two reviewers will independently assess guideline quality using the AGREE II (Appraisal of Guidelines for REsearch and Evaluation II) instrument.
Location:	Princess Alexandra Hospital, Woolloongabba.
Expected outcomes and deliverables:	This project will give experience in undertaking a systematic review of the literature as well as a critical appraisal of guidelines. The nature of the project

	means that the work is flexible and so could fit round other commitments. There is a good possibility of publication in a peer-reviewed journal with a reasonable impact factor.
Suitable for:	Health sciences students. Applications from students with experience of undertaking Medline, EMBASE or PsycInfo searches are especially welcome.
Primary Supervisor:	Professor Steve Kisely
Note before application:	Email: s.kisely@uq.edu.au
Project title:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Systematic Review and Meta-Analysis of pharmacological treatments for tobacco addiction among people with severe and persistent mental illness
Project duration:	Length of project 8 weeks Hours expected per week: approx 20-36 hrs/wk
Description:	Despite reductions in rates of smoking among the general population, smoking rates among people with severe mental illness remain intractably high. There have been a number of recent high quality randomised controlled trials of nicotine replacement therapy, varenicline and buproprion for tobacco addiction among people with severe mental illness We aim to undertake a Cochrane style systematic review and meta-analysis of this literature to inform clinicians on appropriate pharmacological strategies to reduce tobacco addiction among this vulnerable group.
Location:	Princess Alexandra Hospital, Woolloongabba.
Expected outcomes and deliverables:	A manuscript for submission to a peer reviewed journal. Conference presentations or posters if appropriate.
Suitable for:	Medical student or health science students.
Primary Supervisor:	Associate Professor Dan Siskind
Supervisor's contact details:	Email: d.siskind@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Management of Out of Hospital Cardiac Arrests
Project duration:	Length of project: 8 weeks Hours expected per week: 30 hrs/wk
Description:	This retrospective study will review Out of Hospital Cardiac Arrests (OOHCA) in the Metro South region. Its aim is to improve understanding of the number of OOHCA, their aetiology, the type of arrest, the clinical progress, the management and outcomes of patients who suffer cardiac arrests. This knowledge will help guide clinical practice and to see whether introducing Extracorporeal Cardiopulmonary Resuscitation (ECPR) in the emergency department would be of benefit and applicable to our patient population. ECPR is a salvage therapy for patients suffering cardiac arrest refractory to conventional resuscitation. ECPR provides a bridge therapy that maintains organ perfusion whilst the underlying aetiology of the cardiac arrest is determined and treated. In refractory cardiac arrest, the use of veno-arterial extracorporeal membrane oxygenation (ECMO) assisted CPR (E-CPR) is proposed for OOHCA. The study will determine how many patients would meet the criteria to benefit from mechanical CPR, hypothermia, ECMO and early re-perfusion.
Location:	Princess Alexandra Hospital, Woolloongabba
Expected outcomes and deliverables:	The PAH ED places a strong emphasis on learning about the entire research process. Activities will include a) literature review, b) development of a research

	proposal, c) knowledge of ethics application, d) collection and analysis of data, and e) reporting and dissemination of findings. Minimum expected outcomes are a project report and presentation to the ED research group. All previous summer scholars have also made at least one conference presentation or poster. Several have been co-authors on peer reviewed publications. Similar outcomes are expected in 2018.
Suitable for:	Any MD or allied health student with interest in developing research skills. No prior research experience is necessary as a primary objective of this exercise is to learn about the research process.
Primary Supervisor:	Dr Kim Gill
Primary contact, if not supervisor:	Dr Robert Eley
Supervisor's contact details:	Email: r.eley@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Trauma Reception in the ED Resus
Project duration:	Length of project: 8 weeks Hours expected per week: 30 hrs/wk
Description:	The Princess Alexandra Hospital (PAH) is the busiest Major Trauma Centre in Queensland. We have developed a unique trauma reception process that minimises the therapeutic vacuum that trauma patients experience when being handed over from the pre-hospital team to the waiting trauma team in the Emergency Department. A key feature of our trauma reception process is the rapid transfer of patients onto our trauma trolley to allow the concurrent primary survey, FAST scan, critical interventions and radiography x-raying the chest and pelvis to occur while the patient is being formally handed over to the trauma team leader. This ensures that at the end of handover, the trauma team leader has a significant amount of information including chest and pelvis x-rays to assist in decision-making. Radiography is seen as central to our trauma reception. This reception process may be unique to PAH and we would like to undertake literature review regarding trauma reception to determine if other centres are performing as we are and to benchmark what we do. We would also undertake an audit of a series of trauma cases to determine how quickly we get the chest and pelvis x-ray images available to us for our sickest cohort of trauma patients.
Location:	Princess Alexandra Hospital, Woolloongabba.
Expected outcomes and deliverables:	The PAH ED places a strong emphasis on learning about the entire research process. Activities will include a) literature review, b) development of a research proposal, c) knowledge of ethics application, d) collection and analysis of data, and e) reporting and dissemination of findings. Minimum expected outcomes are a project report and presentation to the ED research group. All previous summer scholars have also made at least one conference presentation or poster. Several have been co-authors on peer reviewed publications. Similar outcomes are expected in 2018.
Suitable for:	Any MD or allied health student with interest in developing research skills. No prior research experience is necessary as a primary objective of this exercise is to learn about the research process.
Primary Supervisor:	Dr James Collier
Primary contact, if not supervisor:	Dr Robert Eley
Supervisor's contact details:	Email: r.eley@uq.edu.au

Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	The Rhythm and Blues Project: A proposed method of skill and knowledge maintenance in Advanced Life Support (ALS) training and recertification.
Project duration:	Length of project: 6 weeks Hours expected per week: 20 hrs/wk
Description:	Increasing evidence suggests that a gradual decline in knowledge and skills occurs in the months following ALS certification. This can have a significantly negative impact on a patient's health and can lead to both professional and legal consequences for a healthcare provider and hospital. The QEII is an urban district hospital with an ED with an annual patient volume of 57,000. The ED has a simulation training faculty which directs the hospital's ALS program. The proposed 'Rhythm and Blues' project seeks to solve several significantly important issues that arise as a direct result of contemporary training methods; specifically, the lack of skill and knowledge retention, an inability to adequately train all staff members due to time constraints, and reduced ability to fully implement the learned skills during an actual emergency. The major goal of this pilot study is to evaluate the effectiveness that regular and brief ALS training sessions have on knowledge and skill retention over time when compared with the current, one day annual certification training. The pilot study is being developed with the goal of examining both the short and long-term retention of trainees' skill set and theoretical knowledge by implementing the "Rhythm and Blues" method of training when compared to the full day course. We hypothesise that "Rhythm and Blues" will demonstrate superiority across a wide array of important factors such as ALS knowledge, skills, and healthcare provider confidence. This is a two cohort comparison pilot study. The first cohort of participants will receive current ALS training while the second cohort will receive the training described in the proposed pilot study. This pilot study will be implemented over a 10 week period and is expected to recruit a cohort of 5-7 emergency nurses and 5-7 emergency physicians that have completed the Metro South ALS course in previous years. Drill sessions scripted in a Structured Clinical Examination (SCE) format will be delivered by an ALS instructor. The training content is guided by the ANZCOR guidelines and the Metro South ALS manual. A data collection sheet titled The Rhythm and Blues Participant Assessment Template (see attached) will be used for both cohorts. Quantitative data will be coded prior to its entrance into the Statistical Package for Social Sciences (SPSS) Version 23 for Windows 10. We expect that the Rhythm and Blues training will enable a busy hospital ED to educate residents in the core competencies of ALS in a considerably efficient way. In addition, we expect to conclude that the "Rhythm and Blues" method of training to be superior than contemporary methods by improving on the following parameters during both staged and real life scenarios: emergency recognition, improved adaptation skills, error reduction, improved teamwork, reduced costs, and improved outcomes.
Location:	QEII Emergency Department
Expected outcomes and deliverables:	A student is expected to draft a primary study protocol and submit to BMJ using SERTA funding (student will need to draft funding application).
Suitable for:	Medical student with previous research track record (e.g. publication, or conference presentations).
Primary Supervisor:	Dr Michael Devlin
Primary contact, if not supervisor:	Monica Ding

Supervisor's contact details:	Email: mingshuang.ding@health.qld.gov.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application

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Project title:	Using the iEMR to compare presenting complaint, ED diagnosis and in patient diagnosis.
Project duration:	Length of project: 8 weeks Hours expected per week: 30 hrs/wk
Description:	Patients attending the ED present with a complaint and following treatment are given an ED diagnosis. For patients discharged home this is their only diagnosis. However patients who are admitted to hospital are provided with a final diagnosis upon their discharge. Differences between complaint and initial diagnosis and between initial and final diagnosis do occur and have been used for audit and as predictors of length of stay. The electronic medical records (iEMR) utilized by the Princess Alexandra Hospital offers a unique opportunity to compare these parameters in the one place.
Location:	Princess Alexandra Hospital, Woolloongabba.
Expected outcomes and deliverables:	The PAH ED places a strong emphasis on learning about the entire research process. Activities will include a) literature review, b) development of a research proposal, c) knowledge of ethics application, d) collection and analysis of data, and e) reporting and dissemination of findings. Minimum expected outcomes are a project report and presentation to the ED research group. All previous summer scholars have also made at least one conference presentation or poster. Several have been co-authors on peer reviewed publications. Similar outcomes are expected in 2018.
Suitable for:	Any MD or allied health student with interest in developing research skills. No prior research experience is necessary as a primary objective of this exercise is to learn about the research process.
Primary Supervisor:	Dr Andrew Staib
Primary contact, if not supervisor:	Dr Robert Eley
Supervisor's contact details:	Email: r.eley@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Presentations of codeine misuse and overdose presenting to a toxicology unit.
Project duration:	Length of project: 8 weeks Hours expected per week: 30 hrs/wk
Description:	From 1 February 2018 codeine products became perscription only. This has generated a great deal of interest in whether alternative means of acquisition of medicines used for both legitimate and recreational purposes. The overall aim of this study is to evaluate the impact of these changes on codeine-related Emergency Department (ED) presentations for injury and toxicity and hospital admissions.
Location:	Princess Alexandra Hospital, Woolloongabba.
Expected outcomes and deliverables:	The PAH ED places a strong emphasis on learning about the entire research process. Activities will include a) literature review, b) development of a research proposal, c) knowledge of ethics application, d) collection and analysis of data, and e) reporting and dissemination of findings. Minimum expected outcomes are a project report and presentation to the ED research group. All previous summer scholars have also made at least one conference presentation or poster. Several

	have been co-authors on peer reviewed publications. Similar outcomes are expected in 2018.
Suitable for:	Any MD or allied health student with interest in developing research skills. No prior research experience is necessary as a primary objective of this exercise is to learn about the research process.
Primary Supervisor:	Dr Katherine Isoardi
Primary contact, if not supervisor:	Dr Robert Eley
Supervisor's contact details:	Email: r.eley@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Prince Charles Hospital Northside Clinical Unit

Project title:	Pre-clinical investigation of the impact of high oxygen delivery during ECMO on blood cell function and inflammatory response
Project duration:	Length of project: 8 weeks Hours expected per week: 30 hrs/wk
Description:	Extracorporeal membrane oxygenation (ECMO) is a life saving device used to treat critically ill patients with severe cardiac and/or respiratory dysfunction. In this critically ill adult cohort, patients are often indicated with greater than 80% risk of mortality and are refractory to conventional management. This modality enables oxygenation of patient blood external to the body, serving as a bridge to organ recovery as well as a bridge to further interventions. To prevent hypoxia (low blood-oxygen level) in ECMO patients, the standard management for oxygen is to set its delivery to the maximum value of 100%. As a consequence, hyperoxia (abnormally high blood-oxygen level) is induced and is very common in ECMO patients. Recent evidence has shown correlation between hyperoxia and increased mortality in ECMO patients. However, mechanistically "how" abnormally high blood-oxygen level mediated by ECMO attributes to the international average of 42% mortality rate and the frequently reported 87.1% adverse events is yet to be explored. Therefore, at the CCRG we aim to determine the impact of different level of oxygen supply during ECMO through characterisation of the changes in different blood cell function and inflammatory response using an ex vivo ECMO model.
Location:	The Prince Charles Hospital, Chermside
Expected outcomes and deliverables:	The Critical Care Research Group is recognised as frontier for basic and clinical ECMO research involving a broad range of disciplines. The scholar will therefore have the opportunity to work alongside experts in different fields (e.g. scientists, clinicians, nurses and engineers). Within the project, the scholar will help establish a novel ex vivo model of ECMO using a clinical air/oxygen blender and will gain skills in ECMO set up and priming. In addition, scholar will acquire skills in flow cytometry and/or spectrophotometry. The student may also be asked to produce a report or oral presentation at the end of their project3
Suitable for:	Science student or pre-medical provisional students interested in MD-HDR pathway.
Primary Supervisor:	Dr Katrina Ki
Supervisor's contact details:	Email: k.ki@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Analysis of breath samples for Volatile Organic Compounds (VOCs) to diagnose lung disease.
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	This project is intended to lead to the identification of non-invasive breath biomarkers (VOCs) for the diagnosis and treatment of lung disease including lung cancer and chronic obstructive pulmonary disease (COPD). Field-asymmetric ion mobility spectrometry (FAIMS) an analyser that separates molecules from samples according to the speed at which they move through a gas under the influence of an electric field will be used to identify VOC signatures for lung cancer and COPD. Breath samples will be collected by a bag system and/or a ReCIVA mask that contains absorbent tubes that the compounds bind to. The absorbent tubes will be sent to CSIRO in Canberra to be analysed by a gas chromatograph/mass spectrometer to identify the individual compounds.
Location:	The Prince Charles Hospital, Chermside
Expected outcomes and deliverables:	The student will be expected to recruit subjects with lung cancer and COPD to the study and collect breath samples for analysis. They will also assist with the analysis.
Suitable for:	The student should be meticulous, accurate and comfortable or experienced in working in a clinical environment with patients or with the public. They should also be able to work in a team environment.
Primary Supervisor:	Dr Annette Dent
Primary contact, if not supervisor:	Maria Martins
Supervisor's contact details:	Maria Martins (07 3139 4110) Email: uqtrc@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	Biomarkers for lung cancer
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	This project will investigate the use of minimally invasive bio-fluids (blood, microvesicles, exosomes and broncoscopy washings) to enable the detection of lung cancer biomarkers using modern technologies. Students may gain skills in sample collection and biobanking, data collection, research methodology and analyses or have an opportunity to help generate data for presentation and publications from their research.
Location:	The Prince Charles Hospital, Chermside
Expected outcomes and deliverables:	Students will be asked to produce a short oral presentation at the end of their project. They will be expected to gain competency in routine laboratory procedures such as specimen collection and processing, as well as project-specific skills and knowledge, by the end of the 8 weeks.
Suitable for:	Students with an interest in respiratory diseases (especially lung cancer) and genetics would be suitable for this project. However, any students with an interest in laboratory research and learning are welcome to apply.
Primary Supervisor:	Prof Kwun Fong and Brielle Parris
Primary contact, if not supervisor:	Maria Martins

Supervisor's contact details:	Maria Martins (07 3139 4110) Email: uqtrc@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	3 project options, 1 placement. 1) Osteoporosis prevalence in lung cancer screening scans. 2) Incidental lung nodules detected at CTCA. 3) Screening for lung cancer; the ILST study
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	1) Estimating osteoporosis prevalence in a cohort of people at high risk of lung cancer; correlating to osteoporosis fracture risk (FRAX score). 2) This project will investigate the prevalence and management of incidental lung nodules with research estimation of their underlying risk for lung cancer using validated risk prediction models. Students may gain skills in data collection, extraction, cleaning, storage, research methodology and analyses or have an opportunity to help generate data for presentation and publications from their research. 3) The ILST is a NHMRC funded trial of low dose CT screening to detect curable lung cancer. Involvement in this project will assess the use of 3D vs 2D measurements using CAD (computer aided diagnosis) for monitoring suspected cancers. Students may gain skills in data collection, extraction, cleaning, storage, research methodology and analyses or have an opportunity to help generate data for presentation and publications from their research.
Location:	The Prince Charles Hospital, Chermside
Expected outcomes and deliverables:	Enhance understanding of data collection and clean up, data entry, risk score methods, volumetric bone density estimation Students will be invited to produce a short oral presentation at the end of their project. They will be expected to gain competency in clinical research procedures and demonstrate acquisition of skills and knowledge, by the end of the 8 weeks.
Suitable for:	1) Clinical researcher, radiology aspirations, some simple stats. 2) Students with an interest in respiratory diseases (especially lung cancer), medical imaging, modelling and clinical outcomes will be suitable for this project. However, any students with an interest in clinical data, research and learning are welcome to apply. This demanding project will require a high level of diligence and focus, and computer proficiency. 3) Students with an interest in lung cancer, CAD and volumetrics will be suitable for this project. However, any students with an interest in clinical data, research and learning are welcome to apply. This technically demanding project will require the most skilled and diligent upcoming student researchers to extend their abilities.
Primary Supervisor:	1) Dr Henry Marshall 2) Dr Henry Marshall and Associate Professor Henry Marshall 3) Dr Henry Marshall, Professor Kwun Fong and Barbara Page
Primary contact, if not supervisor:	Maria Martins
Supervisor's contact details:	Maria Martins (07 3139 4110) Email: uqtrc@uq.edu.au

Note before application:	The supervisor MUST be contacted by students prior to submission of an application. *1 placement is available for these project options. Applicants should specify which option you are applying for.* **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	3 Project options, 1 placement. 1) Lung Microbiome Variation at Sites of Inflammation in Formalin-Fixed, Paraffin-Embedded Lung Tumours. 2) Effects of e-cigarette aerosol exposure on primary human bronchial epithelial cells. 3) Isolation of extracellular vesicles from COPD/ lung cancer primary human bronchial epithelial cells
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	1) It is recognised that the lung microbiome varies with exposure to different environments and differing capabilities of an individual's immune system. It is further known that immune cells are recruited to combat pathogenic invaders and that sites of inflammation may be an indicator of this. We hypothesise that an altered lung environment may enhance susceptibility to, or progression of, lung cancer. We aim to demonstrate that the lung microbiome differs between sites of inflammation and non-inflammation in a lung tumour, as well as from non-tumour lung. Results from this study will characterise the microbiome profiles associated with different lung sites in cancer patients and identify changes in key microbial populations. Future applications of this work could focus on treatments for manipulating the microbial populations in the lung and subsequently improve lung cancer outcomes. 2) This project will determine the role e- cigarette aerosol may have in causing inflammatory responses and DNA damage that may progress COPD and lung cancer. This will be assessed by analysing the inflammatory expression of differentiated primary human bronchial epithelial cells from normal, lung cancer and COPD/lung cancer cohorts. These cells will be exposed to e-cigarette aerosol with and without nicotine and flavourings as well as the cells being exposed to HEPA filtered air and cigarette smoke as controls. Exposures will be performed using an in vitro air liquid interface model for cellular exposure. Gene expression profiling of inflammatory pathways of pHBECs from lung cancer and COPD/ lung cancer patients in response to e-cigarette aerosol exposure and aerosol controls will be assessed using Nanostring nCounterÒ Human Inflammatory panels. 8 – oxo – dG ELISA assay will be used to assess oxidative stress and DNA damage. 3) This project will investigate the role of extracellular vesicles from COPD/ lung cancer primary human bronchial epithelial cells through isolation using modern technologies, characterization and nucleic acid extraction. Students will gain skills in cell culture, sample collection and biobanking, data collection, research methodology and analyses or have an opportunity to help generate data for presentation and publications from their research.
Location:	The Prince Charles Hospital, Chermside
Expected outcomes and deliverables:	Students will be asked to produce a short oral presentation at the end of their project. They will be expected to gain competency in routine laboratory procedures such as specimen collection and processing, nucleic acid extraction and genetic assays by the end of the 8 weeks.

Suitable for:	1) Students with an interest in respiratory diseases (especially lung cancer or COPD) or the human microbiome would be suitable for this project. However, any students with an interest in laboratory or clinical research are welcome to apply. 2) Eager and driven student who is keen to gain hands on laboratory experience performing ELISA assays and using novel gene expression technologies (NanoString). Interest/ background in immunology, cancer and airways diseases. 3) Eager and driven student who is keen to gain hands on laboratory experience in cell culture techniques, protocol optimisation and nucleic acid extractions.
Primary Supervisor:	1) Dr Felicia Goh 2 and 3) Professor Ian Yang and Hannah O'Farrell
Primary contact, if not supervisor:	Maria Martins
Supervisor's contact details:	Maria Martins (07 3139 4110) Email: uqtrc@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. *1 placement is available for these project options. Applicants should specify which option you are applying for.* **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	Dietary fibre supplementation in chronic obstructive pulmonary disease: profiling dietary habits, gut microbiome and short chain fatty acid production.
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	This project aims to investigate the relationship between the dietary habits, gut microbiome and short chain fatty acid production of chronic obstructive pulmonary disease (COPD) patients. This project is a sub-study in a randomised control trial investigating the effects of daily fibre supplementation on airway inflammation in COPD patients.
Location:	The Prince Charles Hospital, Chermside
Expected outcomes and deliverables:	Students will be asked to produce a short oral presentation at the end of their project. They will be expected to gain competency in routine laboratory procedures such as specimen collection and processing, as well as project-specific skills and knowledge, by the end of the 8 weeks.
Suitable for:	Motivated and enthusiastic students studying science, medicine or dietetics.
Primary Supervisor:	Miss Annalicia Vaughan and Professor Ian Yang
Primary contact, if not supervisor:	Maria Martins
Supervisor's contact details:	Maria Martins (07 3139 4110) Email: uqtrc@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	Novel Exosome Diagnostics for Pleural Effusion
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Current diagnosis of mesothelioma by pleural effusion subjected to various clinical marker tests and cellular examination remains imperfect, leading to incorrect treatment or readmission of patients for repeat tests or more invasive biopsy procedure. Exosomes contain diagnostically useful and functional proteins and molecules in higher concentrations than in free fluid, but are currently discarded in processing. This project aims to evaluate diagnostic utility of pleural fluid exosomes by: a) performing chemical assays against markers reactive to mesothelioma and other pleural disease (as controls); b) whole proteomic analysis on selected samples to detect expression of proteins associated with mesothelioma. An outcome showing improved test sensitivity will eliminate the need for repeated testing or more invasive biopsy, whilst the identification of mesothelioma protein expression signature will improve its diagnosis, thus reducing waiting period for treatment management.
Location:	The Prince Charles Hospital, Chermside.
Expected outcomes and deliverables:	Student will acquire essential laboratory and research skills from performing experiments to data analysis and reporting. With routine usage of multiple laboratory equipment and pipetting, student is expected to perform relevant tasks independently.
Suitable for:	Undergraduate student with minimal laboratory skills.
Primary Supervisor:	Associate Professor Rayleen Bowman and Kelly Chee
Primary contact, if not supervisor:	Maria Martins
Supervisor's contact details:	Maria Martins (07 3139 4110) Email: uqtrc@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	Researching TNM staging in lung cancer
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	This project will investigate the strengths and limitations of the current TNM staging system for lung cancer, and study potential new factors of inclusion in the next TNM revision. Students may gain skills in data collection, extraction, cleaning, storage, research methodology and analyses or have an opportunity to help generate data for presentation and publications from their research.
Location:	The Prince Charles Hospital, Chermside.
Expected outcomes and deliverables:	Students will be invited to produce a short oral presentation at the end of their project. They will be expected to gain competency in clinical research procedures and demonstrate acquisition of skills and knowledge, by the end of the 8 weeks.
Suitable for:	Students with an interest in respiratory diseases (especially lung cancer) and outcomes will be suitable for this project. However, any students with an interest in clinical data, research and learning are welcome to apply. This challenging project will require a high level of commitment and work from the successful applicant.

Primary Supervisor:	Prof Kwun Fong, Barbara Page and Jacci Brady
Primary contact, if not supervisor:	Maria Martins
Supervisor's contact details:	Maria Martins (07 3139 4110) Email: uqtrc@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Primary Care Clinical Unit

Project title:	A Cochrane review on Vitamin C for acute upper respiratory tract infections
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	Upper Respiratory Tract Infections (URTI) comprise a number of infections involving the nose, sinuses, pharynx or larynx. URTIs are very common, with the 'common cold' (which mainly affects the nasal mucosa) as the most frequent presentation. Vitamin C is a popular treatment for the common cold and it is commonly believed that taking high doses of vitamin C at the start of a common cold or URTI would shorten the duration of symptoms. Nevertheless, firm evidence for this is lacking. Therefore we will review the existing literature and assess the effectiveness of Vitamin C to prevent or treat URTI in the context of a Cochrane Review.
Location:	Herston
Expected outcomes and deliverables:	The student will be required to assist in all phases of the literature review. This means that the student will work closely with the supervisor and assist in assessing papers for eligibility, select studies for inclusion, perform data extraction and analyses in Revman software. The project will also provide an opportunity for the student to be co-author of a Cochrane review.
Suitable for:	This project is open to applications from students with an interest in Medicine and research methodology.
Primary Supervisor:	Dr Laura Deckx
Supervisor's contact details:	Email: l.deckx@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	The student-generated curriculum: a medical education research project
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	It is well known that the medical curriculum intended by Faculty is not the same as the curriculum experienced by students. One reason for this is that some students are studying for Australian and international medical qualifications concurrently. Another reason is that students themselves generate a curriculum of resources and teaching through peer-assisted learning. In this project the successful student will investigate the contribution to student learning and study

	of the student-generated curriculum, and compare this across domestic, onshore international, and offshore international student cohorts. The successful student would be expected to scope the relevant existing international medical education literature, design a draft electronic survey instrument to enable student participants in the study to log their use of learning resources over selected weeks, and pilot the survey with a small number of students. The student would also contribute to the writing of a Research Proposal to accompany an Ethics Application to start data collection in 2019. Focus group discussion may be used to explore how students allocate their time between Faculty and student-generated learning resources, and their perceptions of the value proposition of these different resources. We anticipate that this research will be published in a medical education journal, with the student included as an author, and be of interest to both the student body and the Medical Faculty (both at UQ and internationally).
Location:	Herston
Expected outcomes and deliverables:	1. Draft survey 2. Survey pilot 3. Research Proposal including brief literature review 4.We anticipate that this research will be presented at medical education conference and/or published in a medical education journal. The student would be included as an author, provided that they met authorship requirements.
Suitable for:	Students with an interest in medical education, who are able to contribute actively to a small team of researchers, and progress work independently. This may be of particular interest to international students, and/or students with an interest in peer-assisted learning.
Primary Supervisor:	Associate Professor Nancy Sturman
Supervisor's contact details:	Email: n.sturman1@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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QIMR Berghofer Medical Research Institute

Project title:	Reversing therapy resistance in cancer
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Our approach is to reverse the changes that have occurred in tumour cells when they develop resistance to the front line drugs. The genetic makeup of cells is a significant contributor to cancer, but it is not the only component that gives rise to the disease. Changes in DNA methylation patterns and/or post-translational modifications of histones (collectively known as epigenetic modifications) are a mechanism for regulation of gene expression in response to physiological changes in the body. There is now strong evidence that epigenetic alterations are key drivers of cancer progression. Epigenetic modifiers are commonly overexpressed in many cancer types. We have shown previously that inhibitors of these enzymes are potent suppressors of tumour growth either alone or in combination with other therapeutic drugs. Therefore, the proposed study is to examine the mechanism by which these epigenetic inhibitors reverse resistance to standard therapies.
Location:	QIMR Berghofer Medical Research Institute.
Expected outcomes and deliverables:	Students will gain experience in a wide range of molecular biology techniques (PCR, western blotting, cell culture, chromatin immunoprecipitation etc.) and possibly contribute toward a publication.

	Students will be expected to participate in lab meetings and give a short presentation at the end of the project.
Suitable for:	This project is a component of an existing larger study investigating the effect of epigenetics in gene expression. Students potentially continuing on to honours will be best suited as data generated in this summer project will integrate into a future honours project.
Primary Supervisor:	Associate Professor Jason Lee
Supervisor's contact details:	Email: Jason.Lee@qimrberghofer.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Developing human 'brain on a chip' cell models for investigation of brain ageing, disease, and drug development.
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Dementia (a form of neurodegeneration) is a rapidly growing health issue for Australia and worldwide with an expected 136 million cases by 2050 and there are currently no effective treatments. One of the major problems with trying to understand and treat dementia and related disorders, such as motor neuron disease, is that there are no ideal cell models to allow detailed molecular and cellular studies. Current models are generally composed of 2 dimensional cultures of neonatal rodent brain cells that do not accurately represent the complex 3D microenvironment and physiology of the human brain. To overcome this, we are developing a 3D human 'brain on a chip' platform. We grow human neural stem cells and human brain macrophages in 3D cultures. The aim is to generate an accurate model of an Alzheimer's brain involving neurons, astrocytes and Alzheimer's brain pathology including amyloid peptide deposition. Due to the importance of inflammation in the brain during Alzheimer's disease, we aim to add a neuro-immune response to the cultures by adding human brain macrophages. These cultures can be used to understand how amyloid accumulates, what role neuroinflammation has in the disease process, incorporation of patient cells, and enhance development of potential therapeutics that would normally only be examined in large scale animal studies. The model also forms a basis for similar models for other brain disorders including motor neuron disease and Parkinson's disease. Techniques will include neural stem cell and inflammatory cell culture, molecular studies (i.e. qPCR), microscopy (confocal imaging) and protein analysis (western blot).
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	The student can expect to participate in cutting edge neuroscience research and potentially contribute to journal publications. The student will also learn state-of-the-art stem cell culture procedures and common laboratory techniques as well as an insight into dementia and the development of new approaches to understand brain disorders. Students may give a short report or oral presentation at the end of their project.
Suitable for:	This project is suitable for students with a biomedical background and an interest in neuroscience, brain diseases, neural stem cell technologies or neurotherapeutics.
Primary Supervisor:	Professor Anthony White
Supervisor's contact details:	Email: tony.white@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Brain dynamics following (un-)successful ageing
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Neurons and the brain exhibit structural adaptations as we age. The functional consequences of such structural changes remain poorly understood. The goal of this project is to characterize changes in brain dynamics associated with ageing. This is a crucial step to identify disruptions in brain dynamics that lead to cognitive impairments.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Students will gain skills in mathematical modelling and computational neuroscience. Students will be expected to write a short report by the end of the project, detailing their findings. If successful, the work will form part of a future publication.
Suitable for:	This project would suit students with a background in physics, maths, or a related discipline (this is essential), and an interest in computational neuroscience, preferably with some experience in programming (e.g. in MATLAB).
Primary Supervisor:	Dr Leonardo Gollo
Supervisor's contact details:	Email: Leonardo.gollo@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	What is the economic burden of Epilepsy in Australia?
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	The project includes working with a research team to link different forms of evidence the economic burden of epilepsy (e.g. medical records and administrative databases) and extract information on resource use and costs. The aim is to describe the real world experience of patients and their families who deal with epilepsy.
Location:	QIMR Berghofer Medical Research Institute, Herston
Expected outcomes and deliverables:	Scholars may gain skills in developing a research ethics application, undertake a literature review, data collection, basic data analysis and may have an opportunity to contribute to a publication from their research.
Suitable for:	A person who is organised, likes reviewing and organising literature, good database management and would enjoy fieldwork in a large hospital neurology department.
Primary Supervisor:	Associate Professor Louisa Gordon
Supervisor's contact details:	Email: louisa.gordon@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Understanding host/parasite interactions in malaria
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	This project focuses on in vivo modelling of interactions between malaria parasites (Plasmodium) and the mammalian immune system. This is achieved by using established mouse models of blood-stage malaria. We are interested in how to improve control of parasite numbers by the immune system, as well as understanding how anti-malarial drugs could be better employed to treat infection. In addition, we are interested in how the parasite itself responds to host immune pressures. We have pioneered novel in vivo methodologies to explore host/parasite

	interactions, and will leverage these in this project to tip the balance of power in favour of the host.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	This project will provide intensive training in wet-lab experimental techniques, including cellular immunology, parasite culture, flow cytometry and PCR, as well as providing a thorough background in theoretical immunology and parasitology. There will also be an opportunity to use bio-informatics techniques to analyse existing single-cell RNA-sequencing datasets generated within the laboratory. Students will learn how to analyse and present their data using established software packages. Students will be trained to work effectively in an intensive team environment.
Suitable for:	To be successful in this project, candidates should provide evidence of 1) academic achievement; 2) enthusiasm; 3) capacity to work in a team environment in any sphere ; 4) excellence in communication skills.
Primary Supervisor:	Dr Ashraful Haque
Supervisor's contact details:	Email: Ashraful.haque@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Validation of protein biomarkers of mosquito age
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	The ability to transmit pathogens such as the Dengue viruses and Plasmodium parasites requires that mosquitoes live to a relatively old age. This is because the viral or parasite pathogens are required to infect the mosquito midgut lining, replicate and disseminate through the mosquito before infecting the salivary glands and saliva. This period is 8-12 days for dengue and up to 14 days for Plasmodium. Dr Leon Hugo and colleagues in the Mosquito Control Laboratory have characterized ageing related changes to the mosquito proteome [1, 2]. Candidate ageing biomarkers have been identified and antibodies against these proteins have been raised. This project seeks to validate the expression of these proteins in mosquitoes. This will require Western analysis on mosquito lysates, utilizing an infra-red detection system for antibody detection, and immunofluorescence analysis (IFA) to validate expression of these proteins in situ in mosquito paraffin sections and fluorescence microscopy. If successful, this project will validate new biomarkers for assessing the transmission risk posed by mosquitoes. 1. Hugo, L.E. et al. (2013) Proteomic biomarkers for ageing the mosquito Aedes aegypti to determine risk of pathogen transmission. PLoS One 8 (3), e58656. 2. Sikulu, M.T. et al. (2015) Proteomic changes occurring in the malaria mosquitoes Anopheles gambiae and Anopheles stephensi during aging. J Proteomics 126, 234-44.
Location:	QIMR Berghofer Medical Research Institute, Herston
Expected outcomes and deliverables:	Applicants will gain practical experience in laboratory techniques (including Western analysis and IFA) and gain skills in data collection. Students will be asked to summarize their results in tables and figures which may be suitable for inclusion into publications, leading to co-authorship.
Suitable for:	This project requires attention to detail to consistently produce high quality results. Familiarity with the theory behind the techniques used and prior laboratory experience are considered bonuses.
Primary Supervisor:	Associate Professor Greg Devine
Primary contact, if not supervisor:	Dr Leon Hugo

Supervisor's contact details:	Email: Leon.Hugo@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Immune contexture analysis of Nasopharyngeal Carcinoma (NPC) and response to EBV-directed adoptive T cell immunotherapy
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Clinical staging is currently based on histopathological analysis; however, recent studies have shown that enumeration of the type, density and location of tumour infiltrating lymphocytes (referred to as immunoscore), may be of superior prognostic significance. Indeed, a positive correlation of immune cells infiltrates with survival has now been shown in several types of cancers. Since tumours such as Nasopharyngeal Carcinoma (NPC) are heterogeneous in nature, extension of this immunoscore to an immune contexture that also incorporates functional information on the intra-tumoral immune cells may be necessary to fully understand how immune infiltrates influence prognosis. In particular, in the context of immunotherapy, immunological parameters may be important predictors of response to therapy. This project has two broad objectives: A. To generate a comprehensive immune contexture profile of primary and relapse NPC tumours using a combination of mIHC and multispectral imaging analyses B. To combine autologous adoptive T cell-based immunotherapy with immune contexture analysis to identify potential predictive markers of clinical response. We have developed a validated Opal multiplexed Immunohistochemistry (mIHC) method for immune contexture analysis that allows for automated quantification of phenotype and spatial distribution of different immune cell populations within formalin fixed paraffin embedded tissues. This will further allow us to link in situ immune profiling with the clinical response to adoptive immunotherapy.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Student will be able to demonstrate an advanced knowledge of routine tissue processing, tissue preparation, microtomy, routine and specialized histochemical and histological staining procedures with the opportunity to practice fluorescent Immunohistochemistry procedure. Student will gain a theoretical understanding of, and hands on experience with Vectra 3.0 Automated Quantitative Pathology Imaging System. Student will also learn fundamental image processing, segmentation and analysis techniques to address specific quantitative questions and troubleshoot the common problems that occur in the course of quantitative imaging experiment. Student may also be asked to give an oral presentation at the end of their project.
Suitable for:	Anyone with interest to learn about new therapy in cancer and interest or experience in immunohistochemistry.
Primary Supervisor:	Professor Rajiv Khanna
Primary contact, if not supervisor:	Dr. Reshma Shakya
Supervisor's contact details:	Email: reshma.shakya@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	CRISPR-Cas9 approaches to model blood cancers in vivo.

Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	This project involves the use of gene editing of primary mouse and human bone marrow cells and monitoring disease phenotypes. We will use Cas9 editing on adult stem cell populations derived from bone marrow to introduce oncogenic mutations that are found from patients with leukaemia. These cells can be propagated in vitro or in vivo and will be used to assess the impact of genetic mutations on disease development and/or treatment response.
Location:	QIMR Berghofer Medical Research Institute, Herston
Expected outcomes and deliverables:	Molecular biology techniques. Cloning. Genome editing.
Suitable for:	Laboratory techniques – molecular biology
Primary Supervisor:	Associate Professor Steven Lane
Supervisor's contact details:	Email: Steven.lane@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Development of a Diagnostic PCR for Scabies
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	In recent years, the interest in molecular diagnostic methods for the detection of many pathogens has grown substantially. This escalation in interest has occurred in parallel with data indicating inaccuracy of scabies diagnosis based on currently available methods such as handheld dermatoscopy , burrow ink test and examination of skin samples by standard microscopy The paucity of mites (5-15) in classical scabies makes it extremely difficult for even an experienced dermatologist to make a definitive diagnosis. Hence, scabies can be easily misdiagnosed as an allergic reaction or eczema. Such a state impedes epidemiologic studies, it complicates control programs, and makes accurate assessment of the effects of intervention difficult (eg for clinical trials of new drugs). The importance of sensitive and accurate diagnostic methods for the detection of scabies cannot be underestimated. Molecular assays using ribosomal and mitochondrial targets have been developed for scabies diagnosis, however, low level infections can be left undiagnosed because these targets are suboptimal. With the recent availability of the scabies genome, we hypothesise that a qPCR assay targeting high copy-number, repetitive sequences can improve the sensitivity and specificity of scabies diagnosis representing a major advance. Aim of project This project aims to develop a real time PCR assay for the diagnosis of human scabies.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Scholar is expected to gain skills in bioinformatics and molecular biology such as PCR assay design, optimisation and validation. Student is expected to perform diagnostic real time PCR on human samples collected from clinically diagnosed scabies patients.
Suitable for:	Applicant should have knowledge of infectious diseases (aetiology, transmission and diagnosis), parasite animal models , basic laboratory techniques in molecular biology, bioinformatics
Primary Supervisor:	Professor James McCarthy

Primary contact, if not supervisor:	Dr Cielo Pasay
Supervisor's contact details:	Email: Cielo.Pasay@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	CAN WE STOP THE DEVELOPMENT OF BONE METASTATIC PROSTATE CANCER?
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Prostate cancer is a slow-growing disease. Despite effective treatment by surgery or radiation therapy when detected early, around 25-40% of patients undergo relapse. Advanced metastatic prostate cancer is mostly found in bone. We have shown that extracellular vesicles (EVs) are involved in the growth of prostate cancer in response to treatment with androgen receptor blocker, the enzalutamide [1, 2]. The EV is also proposed as a treasure chest of biomarkers as they contain various molecules including protein, nucleic acid and lipid. However, it has been recognised in the field that small EVs, such as exosomes, consist of heterogenous sub-population of vesicles. This project will be focusing to characterising the secreted subpopulation of small EVs from prostate cancer cells in response to drugs. Techniques used in this project are vesicle isolation and characterisation, primary culture, coculture of cancer cells and bone cells, drug treatments and imaging. Ref: [1] C. Soekmadji, A. Rockstroh, G. A. Ramm, C. C. Nelson, P. J. Russell, Proteomics 2017. [2] C. Soekmadji, N. M. Corcoran, I. Oleinikova, L. Jovanovic, B. Australian Prostate Cancer Collaboration, G. A. Ramm, C. C. Nelson, G. Jenster, P. J. Russell, Prostate 2017, 77, 1416.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Students will gain skills in lab techniques (including vesicle isolation and characterisation, primary culture, coculture of cancer cells and bone cells, drug treatments and imaging) and have an opportunity to get involved in publications of current projects. Students will need to present in lab meeting at the end of their project.
Suitable for:	A person who has interest/experience in molecular biology and in developing a new strategy for prostate cancer management. Someone who enjoys research and has a long-term interest in pursuing a Master or PhD by research in the future.
Primary Supervisor:	Dr Carolina Soekmadji
Supervisor's contact details:	Email: Carolina.Soekmadji@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	Priming the epigenome for small molecular therapy in Colorectal Cancer
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Colorectal cancer is a genetically and epigenetically heterogeneous disease. Recent studies have indicated that the modulation of the epigenome may “rewire” signal transduction pathways within cancers, and therefore could dictate response to small molecule inhibitors. This project will explore the effects of different epigenetic drugs in determining response to an array of targeted therapies. Students will culture colorectal cancer cell lines, treat with a battery of epigenetic drugs and examine changes that occur in signal transduction pathways that are targetable with small molecule inhibitors.

	Results from this project will identify context-specific synergistic relationships that occur between epigenetic drugs and targeted therapies in colorectal cancer.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Students will gain skills in cell culture, molecular biology and pharmacology. Students may have the opportunity to participate in a publication.
Suitable for:	This project will suit students with a background in molecular and cell biology, and has experience in one of cell culture, western blotting, or PCR.
Primary Supervisor:	Associate Professor Vicki Whitehall
Primary contact, if not supervisor:	Lochlan Fennel
Supervisor's contact details:	Email: Lochlan.Fennell@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	What is the role of gene expression in mental health?
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Background: Genetic risk factors contribute to the risk to develop mental health disorders. Many genetic risk variants have relatively subtle effects by regulation the expression level of causal disease genes. Aim: To investigate associations between gene expression levels and the risk of mental health disorders in large population-based studies (N ~ 30,000 to 150,000). Approach: Statistical analyses will be conducted to predict disease risk using genetic expression levels as predictors. Analyses will need to be conducted in R. No prior expertise with R is required, but student should have an interest to learn.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Scholars may gain skills in genetic data analysis and R. Student will have the opportunity to contribute to a publication (and since data are ready for analysis, this will definitely be feasible for a highly motivated students. Scholar will be part of the research team.
Suitable for:	Interest in statistics. High level of analytic thinking.
Primary Supervisor:	Professor Eske Derks
Supervisor's contact details:	Email: eske.derks@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	Delineating mechanisms of acquired resistance to kinase inhibitors
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Background: Drug resistance has limited the efficacy of almost all targeted therapeutic agents used to treat cancers. Although some of the most successful anti-cancer drugs to emerge in the last 2 decades are kinase inhibitors, they are invariably associated with relapse due to development of resistance during the course of treatment. In this project, we will derive and characterize drug resistant clones to delineate mechanisms of acquired resistance to kinase inhibitors. This research work has the potential to reveal clinically relevant drug resistance mechanisms for some of the widely used anti-cancer agents. These resistance mechanisms could be targeted to achieve durable responses to cancer therapy. Aim: Delineating mechanisms of acquired resistance to kinase inhibitors Hypothesis: Unbiased investigation of drug resistant cancer cells by employing genomic, transcriptomic and proteomic methods can reveal clinically relevant

	mechanisms of acquired drug resistance to small molecule kinase inhibitors used in cancer treatment Approaches 1) Generate drug resistant derivatives of cancer cell lines by subjecting them to selection pressure under targeted kinase inhibitors that are in clinical use 2) Genomic, transcriptomic, proteomic and phosphoproteomic characterization of drug resistant clones 3) Determine molecular basis of acquired resistance by integrating multi-omics data 4) Determine novel therapeutic intervention strategies to target acquired drug resistance
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Scholars will gain experience in cell culture, drug treatment, deriving drug resistant clones, cell-based assays, analysis of genomic, transcriptomic and proteomic data and mouse xenograft studies depending on the need.
Suitable for:	Students interested in cell biology.
Primary Supervisor:	Dr Harsha Gowda
Primary contact, if not supervisor:	Dr Keshava K Datta
Supervisor's contact details:	Email: Keshava.Datta@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	Brain waves
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	There is recent experimental evidence that large-scale brain activity exhibits wave phenomena, such as travelling waves and rotating waves. While there are many settings in mathematics, physics, and chemistry where such dynamic wave patterns are well understood, in the case of the brain there is still much to learn. We have recently developed a model of large-scale brain dynamics on the connectome that exhibits a variety of metastable wave patterns. This project will extend that work by firming up the links to some recent experiments showing waves in human electrophysiological recordings and mouse imaging data.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Students will gain skills in mathematical modelling and computational neuroscience. Students will be expected to write a short report by the end of the project, detailing their findings. If successful, the work will form part of a future publication.
Suitable for:	This project would suit students with a background in physics, maths, or a related discipline (this is essential), and an interest in computational neuroscience, preferably with some experience in programming (e.g. in MATLAB).
Primary Supervisor:	Dr James Roberts
Supervisor's contact details:	Email: james.roberts@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	Micropeptides produced by cancer cells and their role in tumorigenesis
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Background: For several years, it is known that human genome has ~20,000 protein coding genes. Transcriptome sequencing studies in the past decade have revealed that a large portion of human genome is transcribed. However, most of it is thought

	to be non-coding. Recent studies have revealed that some of the annotated non-coding RNAs harbor small open reading frames that code for micropeptides/small peptides. We have previously discovered several small ORFs in annotated non-coding RNAs and UTR regions of mRNAs (Nature. 2014 509(7502):575-81). Various studies in the last five years have demonstrated that micropeptides regulate several functions including development, muscle performance and DNA repair. Ribosome profiling studies (Ribo-Seq) have also revealed the possibility of many small open reading frames that could potentially code for micropeptides. It appears that several micropeptides encoded by human genome are yet to be discovered. Until then, various cellular functions regulated by these micropeptides and their role in various human diseases remains out of bounds for systematic investigation. Aim: Identification of micropeptides produced by cancer cells Hypothesis: Cancer cells produce micropeptides that are involved in regulating tumorigenesis Approaches 1) Cell culture 2) Isolation of micropeptides from cancer cell lines 3) Identification and characterization of micropeptides by mass spectrometry 4) Characterization of role of micropeptides in tumorigenesis
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Scholars will gain experience in cell culture, protein isolation and estimation, sample preparation for mass spectrometry analysis, data analysis and carrying out cell-based assays using cancer cell lines
Suitable for:	Students interested in cell biology.
Primary Supervisor:	Dr Harsha Gowda
Primary contact, if not supervisor:	Dr. Keshava K Datta
Supervisor's contact details:	Email: Keshava.Datta@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	Heart rate variability as a biomarker of neurological function in neonates.
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Birth is a relatively short, but risky, journey. A critical physiological parameter that, ideally, is monitored during birth is the effective oxygenation of the brain. While the fetus is highly resistant to depletion in oxygenation saturation (asphyxia), there is a point where it becomes injurious and intervention is required. Monitoring physiological function in the fetus before, during and after birth is not a trivial task. We are developing a potential surrogate of neurological function, heart rate variability (HRV). HRV is a manifestation of autonomic function which originates from brain areas that are compromised during asphyxia. Accurate knowledge of brain function can assist clinicians during labour, and the aim of this project is to develop methods of extracting heart rate from electrocardiogram (ECG) recordings before, during and after birth. Summary statistics of HRV will also be developed.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Methods and code for the extraction of HRV from the ECG. Methods and code for the calculation of features of HRV that correlate with neurological function. Code will be posted on open access repositories such as Github.
Suitable for:	Students with experience in scientific programming, modelling physiological signals and an interest in medical diagnostics. (Medical physics or Biomedical Engineering).
Primary Supervisor:	Dr James Roberts

Primary contact, if not supervisor:	Dr Nathan Stevenson
Supervisor's contact details:	Email: nathan.stevenson@QIMRBerghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	What makes the human brain unique?
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	To understand human-specific brain function we need to interrogate a system that is capable of investigating (1) A manipulable human brain model together with (2) The whole human transcriptome to include recently evolved non-coding genomic changes. Therefore, we combine (1) induced pluripotent stem cell (iPSC) technology, from which functional human neurons can be derived and manipulated, with (2) whole genome transcriptomics. This allows us to investigate relevant gene expression involved in human neuronal function. A major strength of the iPS system is that we can easily investigate temporal changes, unlike any other system previously while sequencing allows us to decipher the response of the whole genome, including human-specific regions previously unseen.
Location:	QIMR Berghofer Medical Research Institute, Herston.
Expected outcomes and deliverables:	Students will be able to gain experience in either wet lab or bioinformatic aspects of the projects. They will learn how to come up with a relevant question, design an experimental plan and follow through to publishable results. Written and oral skills will also be practiced.
Suitable for:	Prior knowledge or experience in a laboratory setting (either wet lab or bioinformatics) will be useful but is not necessary. Students will, however, need to be enthusiastic, willing to learn and reliable.
Primary Supervisor:	Dr Guy Barry
Supervisor's contact details:	Email: guy.barry@qimrberghofer.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Royal Brisbane Clinical Unit

Project title:	Arm and finger dimensions in adults presenting for elective surgery.
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Background Poorly fitting blood pressure cuffs cause erroneous blood pressure readings. Accurate blood pressure measurements are essential in the perioperative period. Finger cuffs are available but local experience shows they may be too small for our patients. Aim This study aims to collect arm and finger measurements in adult patients presenting for elective surgery to determine the range of arm sizes and the suitability of finger cuffs in this population. Demographic information,history of hypertension, height and weight will also be collected. We will compare the results with cuff size recommendations from the AHA and with the available finger cuff sizes. We will also measure the conicity of the arm determine the best predictor of arm conicity.
Location:	Royal Brisbane & Women's Hospital, Herston.

Expected outcomes and deliverables:	The student will be trained in: obtaining patient consent for a low-risk project; anthropomorphic measurement techniques; clinical data collection; spreadsheet creation and management; data collection. At minimum an abstract will be submitted to a national conference and hospital symposium. At minimum one publication will be intended from this project.
Suitable for:	No prior skills are required, but having good people skills will make this easier and more successful.
Primary Supervisor:	Associate Professor Victoria Eley
Supervisor's contact details:	Email: va_eley@hotmail.com
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	ROTEM® and platelet function in pre-eclamptic obstetric patients: A prospective observational study on labour ward inpatients.
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	Rotational thromboelastometry (ROTEM®) is a point-of-care diagnostic device that was introduced to the Royal Brisbane and Women's Hospital in order to provide rapid specific coagulation assessment. The use of ROTEM® is well established in hepatic and cardiac surgery, but not as yet in the obstetric setting. Previous small-scale studies have reported ROTEM® values in non-pregnant women, normal pregnancies, postpartum and in active labour, but not in obstetric patients with pre-eclampsia, pregnancy-induced thrombocytopaenia, hepatic disease, haematological disease or other pathologies. An existing test, Multiplate®, can be used to test platelet function based on the same principles as ROTEM® Platelet, with results available within 6 minutes. This study aims to analyse changes in platelet function in obstetric patients presenting with pre-eclampsia. These values will be compared with published reference ranges and a small sub-study of uncomplicated pregnancies to further the understanding of coagulation changes in complicated pregnancies, in order to optimise haemostatic management in the parturient. This will be a prospective observational study focused on collecting quantitative data in the form of Multiplate® and ROTEM® values. This single-centre study will aim to recruit pre-eclamptic patients via sampling from parturients upon presentation in spontaneous labour or patients presenting for induction of labour.
Location:	The Royal Brisbane and Women's Hospital
Expected outcomes and deliverables:	Scholars will gain skills in data collection
Suitable for:	All students
Primary Supervisor:	Dr Julie Lee
Supervisor's contact details:	Email: julielee01@gmail.com
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement**

	with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.

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Project title:	Pain Care in the Emergency Department
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	Pain is one of the most common symptoms presenting to the emergency department, however, it is generally recognised as poorly treated. The most common outcome measure for pain care in the emergency department is the time taken to deliver the first analgesic medication. Previous work has identified nine factors that influence the time it takes for emergency care clinicians to deliver analgesic medication in patients presenting with moderate to severe pain. Previous work in this area had significant limitations, as it was only conducted in one department that already had wide ranging interventions set up to aid in the care of patients presenting in pain. The applicability of this model to other settings was mooted by the authors but never tested. This project aims to take this model and test it in another emergency department that has different practices and processes for treating pain. If the model is not applicable to this emergency department then other factors that influence time to first analgesic medication will be explored. This study will take the form of a retrospective medical record review, using quantitative data and multivariable survival analysis.
Location:	The Royal Brisbane and Women's Hospital
Expected outcomes and deliverables:	Applicants will: 1. Become an active member of a clinical research group 2. Gain experience working with and interpreting electronic medical records 3. Gain skills in data collection, processing and cleaning 4. Have opportunities to contribute to background literature reviews and abstracts/posters for presentations.
Suitable for:	Medical student. Demonstrated prior experience in research preferred but not essential.
Primary Supervisor:	Associate Professor Kevin Chu
Primary contact, if not supervisor	Mr James Hughes
Supervisor's contact details:	Email: k.chu@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	Does transfusion-related immune modulation occur following intraoperative cell salvage: A pilot study
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	Blood collected from volunteers, also known as allogeneic blood, is donated, processed and made available for patients requiring transfusion, such as during surgery. This is an expensive process; according to the National Blood Authority, the estimated cost associated with blood transfusion in Australia is over $1 billion

	per year. While the safety of allogeneic blood transfusions has improved over decades, life-threatening risks remain. For example, 617 transfusion-related adverse events were reported in Australia in 2013-2014. These adverse events include wrong blood to wrong patient, transfusion-related lung injury, allergic reaction, infection, cancer recurrence, organ failure and death. Research has linked some of these outcomes to a post-transfusion impairment of the patient's immune responses. In order to better understand how this happens, the Australian Red Cross Blood Service has developed a series of tests to characterise how transfusion impairs these immune responses. Intraoperative cell salvage is a process where blood lost during surgery is collected, processed and given back to the patient. Use of intraoperative cell salvage may provide a cost-effective and safer alternative to allogeneic blood transfusion. In particular, because patients aren't exposed to blood from another person, it seems likely that the impairment of immune responses that occurs following allogeneic blood transfusion will be prevented. However, whether or not this assumption is true remains to be investigated. Therefore this research project aims to investigate whether the process of intraoperative cell salvage affects the immune responses of patients. To do so, this research project will use the existing series of assays already developed by the Australian Red Cross Blood Service. This project will be highly significant to the health care system as we anticipate that intraoperative cell salvage, as an alternative to allogeneic blood transfusion, results in better patient care, less harm to patients and a decrease in costs. This important research is led by Dr Michelle Roets, a senior anaesthetist at the Royal Brisbane and Women's Hospital who has been researching improvements in blood management over the past 10 years. Her work has resulted in authorship of the 'Guidance for the Provision of Intraoperative Cell Salvage' National documents with the National Blood Authority in Australia. Dr Roets has teamed up with the Australian Red Cross Service to co-ordinate an expert team to enable successful prediction and evaluation of infection and cancer recurrence from donor blood transfusion. These results will significantly improve current blood administration practice.
Location:	Department of Anaesthesia, Level 4 Ned Hanlon Building, Royal Brisbane and Woman's Hospital.
Expected outcomes and deliverables:	Scholars may gain skills in data collection and analysis, literature review and writing of publication and grant applications.
Suitable for:	This project is open for students with a background in science and enrolled in medical school. Previous research in blood related studies would be an asset.
Primary Supervisor:	Dr Michelle Roets
Supervisor's contact details:	Email: michelle.roets@health.qld.gov.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	A Pre-operative Patient Blood Management Pilot Program: Reducing post-operative morbidity, mortality and associated cost.
Project duration:	Length of project: 8 weeks

	Hours expected per week: 24 hrs/wk
Description:	Enhancing the management of patients with pre-operative iron deficiency anaemia and improving their outcomes. The introduction of pre-operative anaemia management including early identification and treatment of iron deficiency anaemia (IDA) with products other than blood transfusions is an evidence based practice not widely applied yet in the perioperative setting. This project will be highly significant to the health care system as we anticipate that treatment of iron deficiency anaemia (IDA) with Intravenous iron infusion pre-operatively, to better optimise patients and prevent the administration of RBCT, results in better patient care, less harm to patients and a decrease in costs.
Location:	Royal Brisbane & Women's Hospital, Department of Anaesthesia and Perioperative Medicine
Expected outcomes and deliverables:	assistance in data collection annotated bibliography short report
Suitable for:	All medical students
Primary Supervisor:	Associate Professor Kerstin Wyssusek
Supervisor's contact details:	Email: k.wyssusek@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	Airway Management - DECIPHER STUDY
Project duration:	Length of project: 8 weeks Hours expected per week: 24 hrs/wk
Description:	One of the fundamental responsibilities of an anaesthetist is to maintain adequate ventilation via a patent airway. Although the incidence of difficult or failed tracheal intubation is low (1:2000 to 1:50 cases), unexpected difficulties and poorly managed situations may result in life-threatening events or even mortality. Despite careful clinical assessment of the upper airway, approximately half the airway difficulties arise unexpectedly. Previous studies have attempted to compare individual parameters clinically to predict difficult intubation with mixed results. Other studies have attempted to create scoring systems or complex mathematical models. All studies thus far have failed to accurately predict a difficult airway. The primary aim of this summer project is to investigate if there are any key defining features on radiological imaging that could assist in predicting a difficult intubation. A particular focus will be on the tongue, and other key anatomical features related to the airways.
Location:	Royal Brisbane & Women's Hospital
Expected outcomes and deliverables:	To find radiological parameters predicting a difficult airway during tracheal intubation. Measurements are done on existing radiographic material (unidentified).
Suitable for:	UQ Medical Students Year 2-4
Primary Supervisor:	Professor André VAN ZUNDERT
Supervisor's contact details:	Email: vanzundertandre@gmail.com

Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Project title:	Patient risks associated with the use of blue and green ambient light in modern interventional suites.
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	Improvements in high-precision intra-operative imaging have resulted in a surge of minimally invasive, real-time-image-guided interventions (gastro/cardiac/radiology), benefiting both patient and proceduralist. These procedures occur under blue and green ambient lighting to optimise contrast–enhancement, allowing surgeons to reliably distinguish between colours of healthy and sick tissue during endoscopic interventions. However, these changes to the surgical environment may negatively affect the visual performance of other staff (anaesthetists/scrub nurses), in terms of their ability to accurately assess their surroundings and prepare/verify medical processes (Figure 1). This could result in serious patient hazards such as incorrect drug identification, potentially lethal wrong drug/dose injections, difficulties in identifying patient changes and instrumentation, and increased length of procedure. The investigators hypothesise that subdued ambient lighting conditions (blue, green, dark) negatively impact the performance of theatre staff thought the inability to detect colour hues and may increase the risks of incorrect drug identification of commonly used anaesthetic drugs. We propose to test this hypothesis with anaesthetists, anaesthetic health practitioners and nurses using the following tests: a) Ishihara test; b) Farnsworth D-15 hue test; c) Drug Labelling Test.
Location:	Royal Brisbane & Women's Hospital
Expected outcomes and deliverables:	Medical student will gain skills in data collection, being actively involved in research, publication and presentation of results.
Suitable for:	UQ Medical Students Year 2-4
Primary Supervisor:	Professor André VAN ZUNDERT
Supervisor's contact details:	Email: vanzundertandre@gmail.com
Note before application:	The supervisor CAN be contacted by students prior to submission of an application. **This project is hosted in a hospital department. Depending on the project, there may be additional conditions that apply, e.g. assignment of the student's intellectual property to allow UQ to enter into a student placement agreement with the hospital, evidence of your vaccine-preventable disease status and/or blue cards.**

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Rural Clinical Unit

Project title:	Nomograms for gynecological cancer: A review of literature
Project duration:	Length of project: 8 weeks Hours expected per week: 25-30 hrs/wk

Description:	Predicting the risk of recurrence or prognosis after treatment for gynecological cancers can be done using various risk calculations, including nomograms. The literature review will be undertaken to evaluate current research on these predicting nomograms.
Location:	Rural Clinical School, Toowoomba or Online.
Expected outcomes and deliverables:	- Research skills in reviewing literature - writing, reading and interpretation skills - publication in a peer-reviewed journal
Suitable for:	Students interested in risk prediction, cancer, gynecological research, or interest in reviewing scientific literature
Primary Supervisor:	Dr Bushra Nasir
Supervisor's contact details:	Email: b.nasir@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Health literacy, rural medicine and the emergency department.
Project duration:	Length of project: 7 weeks Hours expected per week: 30 hrs/wk
Description:	This project has two streams of work investigating, respectively the distinctive features of rural emergency medicine and the relationship between health literacy and emergency medicine. Students can elect to conduct a systematic review in either of these areas.
Location:	Supervised from RCS Toowoomba and PACE Wooloongabba but suitable for remote/distance supervision via teleconferencing.
Expected outcomes and deliverables:	Outcomes - a review of literature suitable for a manuscript, and publication
Suitable for:	Students with an interest in patient perspectives on healthcare in the emergency department, rural healthcare or both.
Primary Supervisor:	Dr Remo Ostini
Supervisor's contact details:	Email: r.ostini@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	A systematic review of the emergency department - primary care interface.
Project duration:	Length of project: 7 weeks Hours expected per week: 30 hrs/wk
Description:	Patients who are discharged from a hospital emergency department (rather than being admitted to the hospital) will often be required to take additional steps to manage their health in a primary care setting. The transition between these different components of the health system can be complex and lack transparency for patients. This project will systematically review evidence for the effectiveness of hospital and primary care processes and interventions in facilitating that transition.
Location:	Supervised from RCS Toowoomba and PACE Wooloongabba but suitable for remote/distance supervision via teleconferencing
Expected outcomes and deliverables:	This project is expected to lead to outcomes that are suitable for conference presentation and potential peer-reviewed journal publication.
Suitable for:	Students with an interest in what happens to patients when they leave the emergency department; and care coordination between primary care and the emergency department specifically.

Primary Supervisor:	Dr Remo Ostini
Supervisor's contact details:	Email: r.ostini@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	A critical evaluation of the relationship between health literacy and health equity.
Project duration:	Length of project: 7 weeks Hours expected per week: 30 hrs/wk
Description:	Health literacy and health equity are important and growing areas of health research, particularly in ever more fragmented contemporary advanced health systems. While links between the two have been suggested there is little work exploring how or why the two concepts would be linked. This project will critically investigate the literature around health literacy and health equity to develop a theoretical model of potential relationships.
Location:	Supervised from RCS Toowoomba and PACE Wooloongabba but suitable for remote/distance supervision via teleconferencing.
Expected outcomes and deliverables:	This project is expected to lead to outcomes that are suitable for conference presentation and potential peer-reviewed journal publication.
Suitable for:	Students with an interest in health equity in relation to advanced health systems and with skills in critical analysis of social concepts.
Primary Supervisor:	Dr Remo Ostini
Supervisor's contact details:	Email: r.ostini@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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School of Biomedical Sciences

Project title:	Analysis of the role of NFI proteins in cerebellar development
Project duration:	Length of project: 8 weeks Hours expected per week: 25 hrs/wk
Description:	Here, we aim to understand how development of the cerebellum, a part of the brain crucial for motor control and balance, is regulated during postnatal life. We will use immunohistochemistry and qPCR to investigate how cerebellar development occurs in the absence of transcription factors of the NFI family.
Location:	UQ Otto Hirschfeld Building 81, St Lucia Campus.
Expected outcomes and deliverables:	- Appreciation of neural (cerebellar) development, and the key roles played by stem cells in this process - Obtain a solid grounding in sectioning, immunohistochemistry, microscopy and data interpretation
Suitable for:	This application is open to students with backgrounds in anatomy and science
Primary Supervisor:	Dr Michael Piper
Supervisor's contact details:	Email: m.piper@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	The effects of selenium deficiency during pregnancy on placental morphology and offspring physiology

Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Maternal nutrient deficiency is known to impair placental development and program chronic disease in offspring. While much is known about the impact of macronutrient deficiencies on offspring health, little is known about how deficiencies in micronutrients influence placental development and long term outcomes for children. Only 1 in 20 mothers consume the recommended quantity of fruit and vegetables which is of concern as most of our micronutrients are obtained from fruit and vegetables. A common micronutrient known be deficient in pregnant women from Queensland is selenium, a micronutrient required for antioxidant status, thyroid hormone function and metabolic function. However, the impact of selenium deficiency on the developing placenta is unknown. Furthermore, how this impacts offspring physiology requires further investigation. This project will investigate the effect of a maternal selenium deficient diet in mice on placental morphology and offspring cardio-renal and metabolic physiology.
Location:	St Lucia Campus
Expected outcomes and deliverables:	This project will offer the opportunity to gain a range of laboratory skills in samples from an animal model that represents a clinically important research question. Furthermore, the student will gain valuable experience in working with a range of research professionals within productive research environment.
Suitable for:	The applicant must be hard working and be prepared to apply themselves to a range of novel techniques. Previous experience in a research laboratory would be highly valued.
Primary Supervisor:	Dr James Cuffe
Supervisor's contact details:	Email: j.cuffe1@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Light inducible insulin secretion from MIN6 cells that express bPAC-mCngA calcium channels
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Diabetic foot occurs commonly as a serious complication in diabetes mellitus (DM) patients, causing the loss of mobility and work ability, and significant health care costs 1; 2. Topical insulin injection has been suggested by studies to be a safe therapy to ameliorate diabetic foot in DM patients or experimental animal models 3-5, but insulin does not circulate efficiently to the foot damaging (ulcer) sites due to obvious impairment of microcirculation in DM patients6. The effectiveness of topical insulin injection treatment requires repeated injections near ulcer sites, and the effects do not last long enough because insulin degrades very fast after injection. Implantation of insulin secreting cells close to ulcer sites in the foot would help ameliorate diabetic foot and the effects would last as long as the cells secret insulin efficiently. We plan to develop a methodology to control insulin secretion from beta cells by external light exposure that would be a useful facility to manage insulin supplement in the affected area of diabetic foot. We will estimate the feasibility of this methodology in vitro using MIN6 cells, an insulin secreting mouse beta cell line. We plan to express in the cell membrane bPAC-CngA, a light-activate calcium channel, that will trigger an increase in cytosolic calcium signal after light exposure and the subsequent insulin secretion. Aims. We plan to test if light can induce insulin secretion from MIN6 cells that express

	bPAC-mCngA. Hypothesis. We hypothesize that during light exposure bPAC-mCngA Ca2+ channels will be open and allow the extracellular calcium ions rushing into the cytosol that are capable to induce insulin secretion from MIN6 cells. Approach. We will culture MIN6 cell and transfect the cell with bPAC-mCngA plasmid. The expression of bPAC-mCngA will be assessed using fluorescent microscopy. The transfected cells will be measured in insulin secretion after light exposure. Free calcium ions in MIN6 cell will be measured using Fura-2 dyes and fluorescent microscopy 1. Jeffcoate, W.J., Vileikyte, L., Boyko, E.J., Armstrong, D.G., and Boulton, A.J.M. (2018). Current Challenges and Opportunities in the Prevention and Management of Diabetic Foot Ulcers. Diabetes Care 41, 645-652. 2. Quinton, T.R., Lazzarini, P.A., Boyle, F.M., Russell, A.W., and Armstrong, D.G. (2015). How do Australian podiatrists manage patients with diabetes? The Australian diabetic foot management survey. J Foot Ankle Res 8, 16. 3. Yu, T., Gao, M., Yang, P., Pei, Q., Liu, D., Wang, D., Zhang, X., and Liu, Y. (2017). Topical insulin accelerates cutaneous wound healing in insulin-resistant diabetic rats. Am J Transl Res 9, 4682-4693. 4. Emanuelli, T., Burgeiro, A., and Carvalho, E. (2016). Effects of insulin on the skin: possible healing benefits for diabetic foot ulcers. Arch Dermatol Res 308, 677-694. 5. Stephen, S., Agnihotri, M., and Kaur, S. (2016). A Randomized, Controlled Trial to Assess the Effect of Topical Insulin Versus Normal Saline in Pressure Ulcer Healing. Ostomy Wound Manage 62, 16-23. 6. Zimny, S., Dessel, F., Ehren, M., Pfohl, M., and Schatz, H. (2001). Early detection of microcirculatory impairment in diabetic patients with foot at risk. Diabetes Care 24, 1810-1814.
Location:	UQ School of Biomedical Sciences, St Lucia
Expected outcomes and deliverables:	Research skills, cell culture, transfect cells, transgenic cells, hormone assay, intracellular free calcium measurement, fluorescent microscope, etc.
Suitable for:	Third year biomedical students before hon year, or before clinic medical study.
Primary Supervisor:	Professor Chen Chen
Supervisor's contact details:	Email: chen.chen@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Developing a Her2 mutant that is insensitive to Herceptin as part of a project that aims to protect hearts from cancer chemotherapy-induced damage
Project duration:	Length of project: 10 weeks Hours expected per week: 36 hrs/wk
Description:	Breast cancer is the second most common cause of premature death in female Australians. Around one-third of breast cancers are aggressive, characterized by increased expression of the growth factor receptor ErbB2. Trastuzumab/Herceptin remains the most widely prescribed ErbB2 antibody for treating of ErbB2-positive breast cancer, despite detrimental cardiac side effects, which include left ventricular dysfunction and congestive heart failure. Current approaches for improving therapies focus on identifying mechanisms of cardiotoxicity, improving drug design, or development of alternative therapies. The possibility of protecting cardiomyocytes directly to mitigate the cardiotoxic effects remains unexplored. A student working on this project would be working with Her2 plasmids in cell culture, inducing mutations in the receptor and

	characterising the effect on receptor binding and signal transduction. This would also involve sequencing DNA, western blot and transfection.
Location:	UQ School of Biomedical Sciences, St Lucia
Expected outcomes and deliverables:	This project would give students experience with cell culture, plasmid transfection, signalling assays, and gene mutation. It is anticipated that data would be generated from this project that would form part of a publication, with student contributions acknowledged in the form of co-authorship.
Suitable for:	This project is best suited to a student interested in a research focussed higher degree, but would also be of interest to students who want to get some experience in basic research prior to medicine.
Primary Supervisor:	Dr Melissa Reichelt
Supervisor's contact details:	Email: m.reichelt@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Ageing of the neuromotor system: effects of altered muscle-tendon structure.
Project duration:	Length of project: 10 weeks Hours expected per week: 30 hrs/wk
Description:	Australians are getting older —the number of people aged 65+ is expected to increase from 3.6 to 9 million by 2055. Mobility is one of the most important predictors of living healthy in older age. Although even healthy ageing is associated with drastic performance declines that negatively influence ones' ability to move. Older adults walk slower, with increased energetic costs, and are more likely to fall compared to younger adults—factors which greatly limit ones' independence and quality of life. Movement is achieved via muscles that act as motors and sensors. Muscles generate power by pulling on the skeleton with elastic tendons to allow joints to rotate. The ankle is arguably the most critical joint in walking– providing up to 80% of the push-off power required to move the body from one step to the next. Imaging studies have revealed that the ankle is powered via a 'catapult' mechanism within the Achilles tendon (AT) and its' associated muscles. This complex interaction is essential for efficient and stable movement. Yet as we age, the AT loses its stiffness and consequently its ability to transfer force between the muscle and the environment. This lost stiffness likely disrupts the highly-tuned neuromechanical interaction between the triceps surae muscles and the AT leading to compromised mobility. These age-related movement deficits appear resistant to strength training, highlighting an urgent need for new, innovative solutions to restore locomotion in older adults. At present, what remains to be determined is how changes to the motor (muscle) and the transmission (tendon) affect locomotor function. Unveiling these mechanisms is necessary to develop effective interventions and exercise programs to enable our ageing population to move with ease and safety. The overarching goal of this project is to uncover the neuromechanical mechanisms governing age-related deficits in locomotor performance. These insights will guide the design and implementation of innovative wearable robotic devices capable of restoring independent mobility and enhancing the quality of life in our ageing populations Specific Aim - determine age-related changes in the structure and mechanical properties of the ankle muscle-tendon and their associated motor and sensory deficits that limit mobility with age.
Location:	UQ School of Biomedical Sciences, St Lucia
Expected outcomes and deliverables:	The student will be exposed to a variety of experimental techniques aimed at understanding mechanisms of musculoskeletal function including: ultrasound

	imaging, electromyography, motion capture, force sensors. They will be expected to collect experimental data in human subjects and will have the opportunity to generate publications from their research.
Suitable for:	pre-med, exercise sciences (HMNS)
Primary Supervisor:	Dr Taylor Dick
Supervisor's contact details:	Email: t.dick@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. This project has two positions available

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Project title:	Zebrafish Models of Autism Spectrum Disorder
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	This would be suitable for a range of projects involving genetic or environmental manipulations that could serve as a basis modelling Autism Spectrum Disorder in the zebrafish model system. We focus on behaviour and neural activity, and especially on responses to stimuli across multiple sensory modalities.
Location:	UQ School of Biomedical Sciences, St Lucia
Expected outcomes and deliverables:	The project is mostly a training exercise, but it would be desirable to produce publishable data, and to progress a project to the point where it could serve as basis for a future honours project.
Suitable for:	Students with a background in computational biology, optical physics, or neuroscience would be well suited to this project.
Primary Supervisor:	Associate Professor Ethan Scott
Supervisor's contact details:	Email: ethan.scott@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Intraperitoneal lymphatic pharmacokinetics of protein drugs
Project duration:	Length of project: 6 weeks Hours expected per week: 25-30 hrs/wk
Description:	The lymphatic pharmacokinetics of protein-based drugs have generally been well established after subcutaneous and intravenous administration. However, intraperitoneal administration represents an approach that can be used to better target peritoneal diseases such as ovarian cancers. Early evidence suggests that protein based drugs, such as antibodies, may be well absorbed from the intraperitoneal space, and mainly via the lymphatic system, but this needs to be explored further. This project will involve examining the intraperitoneal lymphatic pharmacokinetics of protein-based drugs in a rat model. Interested students must have extensive experience with handling rats and be willing to work after hours on weekdays.
Location:	St Lucia, Bld 64
Expected outcomes and deliverables:	Students will gain skills in lymphatic pharmacokinetics, calculating pharmacokinetic parameters and ELISA assays.
Suitable for:	Students with extensive experience in rat handling and are comfortable handling rats. Must be willing to work afterhours on weekdays to accommodate animal ethics requirements.
Primary Supervisor:	Dr Lisa Kaminskas
Supervisor's contact details:	Email: l.kaminskas@uq.edu.au

Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Using RNAi strategies to break down immune barriers for ovarian cancer treatment
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	We are interested in developing novel nano-therapeutic methods to overcome immune suppression in ovarian cancer. Ovarian cancer is the most deadly type of gynaecologic disease with more than 1500 new cases being diagnosed each year in Australia. The high recurrence rate is a major challenge in the clinical management of high grade serous ovarian cancer. While stimulating our own immune system to recognize and attack tumour cells represents an attractive means to facilitate complete elimination of tumours, emerging data suggest that many of the immunotherapy tools, such as immune checkpoint inhibitors, are minimally active in ovarian cancer. We aim to develop effective strategies to enhance the infiltration and function of cytotoxic T lymphocytes in ovarian tumours and to develop clinically feasible means to monitor T-lymphocytes activity in tumours following therapy. Ultimately, strategies developed in this project could harness the power of the immune system to eliminate tumours and significantly increase the survival of patients with ovarian cancer.
Location:	St Lucia, Bld 64
Expected outcomes and deliverables:	We are seeking a motivated undergraduate student who is interested in contributing to a large project involving nanotechnology and cancer biology, and who is eager to learn how to develop effective strategies to enhance anti-tumour immunity. The student will learn critical laboratory skills and knowledge needed to develop new strategies to enhance the infiltration and function of cytotoxic T lymphocytes in ovarian tumours. In addition, the student will gain experience in developing novel nanoparticle platforms for tumour-targeted delivery. He/She will gain experience in working in a multidisciplinary environment, obtain hands-on training from the lab head and a postdoctoral fellow, and contribute to an exciting project in the area of cancer nanomedicine and immunology. The student will be expected to give an oral presentation to the lab group at the end of the summer program.
Suitable for:	This project is open to applications from students with a background in biomedical sciences, pharmacy, or biomedical engineering, who is interested in exploring research as a career path.
Primary Supervisor:	Dr Sherry Wu
Supervisor's contact details:	Email: sherry.wu@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Medium chain triglyceride metabolism
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Medium chain triglycerides provide alternative sources of fuel. This project will investigate to which extent the brain can benefit.
Location:	St Lucia Skerman Building
Expected outcomes and deliverables:	Scholars will gain skills in the wet laboratory, experimental design, data collection, and may have an opportunity to generate publications from their research. Students will also be asked to produce a report and oral presentation at the end of their project.

Suitable for:	Any students interested in biochemistry.
Primary Supervisor:	Karin Borges
Supervisor's contact details:	Email: k.borges@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Can Preimplantation Genetic Testing (PGT) improve outcomes for patients with chromosomal translocations?
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Background: 1% of couples trying to conceive suffer recurrent miscarriages (≥ 3 miscarriages). Amongst these patients, 2-5% have structural chromosomal rearrangements, typically balanced translocations, which can be inherited by the embryo and result in markedly increase miscarriage risk. Although 30-50% of pregnancy losses in these patients carry the unbalanced arrangement, undertaking in vitro fertilisation (IVF) combined with preimplantation genetic testing (PGT) for screening out chromosomally unbalanced embryos has not been shown to improve overall livebirth rates. However, PGT may decrease the numbers of miscarriages patients experience on their journey to a successful livebirth and this would be hugely beneficial by reducing the psychological distress associated with miscarriage. Indeed, the background miscarriage rate in translocation carriers can be as high as 40-60%. It is currently unknown whether IVF with PGT could markedly improve the livebirth-to-miscarriage ratio. Hypothesis: IVF with PGT reduces the number of miscarriages per livebirth Aim: To determine miscarriage rates and livebirth rates in translocation carriers undergoing IVF with PGT compared with patients conceiving naturally. Approach: A systematic review of the literature on pregnancy outcome in translocation carriers conceiving naturally or with IVF and PGT.
Location:	UQCCR - Herston Campus
Expected outcomes and deliverables:	Scholars will gain a detailed understanding of how IVF is undertaken as well as the changes in thyroid function that occur during pregnancy. They will gain insight into the controversies surrounding thyroid function in the context of pregnancy, such as whether SCH increases risk of neurological impairment in offspring and if thyroxine replacement might be beneficial. They will learn generic skills (transferable to almost any project) for undertaking a thorough and focused literature search. Scholars will also learn how to apply PRISMA guidelines to identify, select and critically appraise relevant papers and to analyse studies that have been selected for the review. These efforts have a good likelihood of resulting in publication as well as presentation.
Suitable for:	This project is open to applications from students of any background but is particularly applicable to medical students and those intent on a medical career (e.g. pre-medical provisional students interested in MD-HDR pathway).
Primary Supervisor:	Professor Hayden Homer
Supervisor's contact details:	Email: h.homer@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application

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Project title:	Does treatment for subclinical thyroid dysfunction improve outcome of assisted reproductive treatments?
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Background: Subclinical hypothyroidism (SCH) refers to the presence of elevated levels of thyroid stimulating hormone (TSH > 4mIU/L) in the presence of normal thyroid hormones. SCH is present in 4-8% of reproductively aged women. With the increased demands placed on thyroid function during pregnancy, SCH could potentially place women at risk of thyroid decompensation during pregnancy, resulting in adverse outcomes such as miscarriage or neurological impairment in offspring. In support of this, there is evidence that thyroxine replacement during pregnancy in women with SCH could be beneficial in reducing miscarriage. It is currently unknown whether thyroxine treatment in women with SCH undergoing in vitro fertilisation (IVF) would improve IVF success measured in terms of miscarriage and livebirth rates. Hypothesis: Thyroxine replacement in women with SCH reduces miscarriage and improves livebirth rates Aim: To determine miscarriage rates and livebirth rates in women with SCH undergoing IVF with and without thyroxine replacement therapy. Approach: A systematic review of the literature on pregnancy outcome following IVF for women with thyroid dysfunction.
Location:	UQCCR - Herston Campus
Expected outcomes and deliverables:	Scholars will gain a detailed understanding of how IVF is undertaken as well as the changes in thyroid function that occur during pregnancy. They will gain insight into the controversies surrounding thyroid function in the context of pregnancy, such as whether SCH increases risk of neurological impairment in offspring and if thyroxine replacement might be beneficial. They will learn generic skills (transferable to almost any project) for undertaking a thorough and focused literature search. Scholars will also learn how to apply PRISMA guidelines to identify, select and critically appraise relevant papers and to analyse studies that have been selected for the review. These efforts have a good likelihood of resulting in publication as well as presentation.
Suitable for:	This project is open to applications from students of any background but is particularly applicable to medical students and those intent on a medical career (e.g. pre-medical provisional students interested in MD-HDR pathway).
Primary Supervisor:	Professor Hayden Homer
Supervisor's contact details:	Email: h.homer@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application

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Project title:	Medium chain triglycerides in epilepsy
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Our data show that medium chain triglycerides are effective in people with epilepsy. This project will collect data to initiate a clinical trial.
Location:	St Lucia Skerman Building
Expected outcomes and deliverables:	Scholars will gain skills in data collection and will gain insight into clinical trial design. Students will also be asked to produce a report or oral presentation at the end of their project.
Suitable for:	Any students interested in biochemistry and clinical trials.

Primary Supervisor:	Karin Borges
Supervisor's contact details:	Email: k.borges@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Developing a model of cancer chemotherapy-induced cardiac damage
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Breast cancer is the second most common cause of premature death in female Australians. Around one-third of breast cancers are aggressive, characterized by increased expression of the growth factor receptor ErbB2. Trastuzumab remains the most widely prescribed ErbB2 antibody for treating of ErbB2-positive breast cancer, despite detrimental cardiac side effects, which include left ventricular dysfunction and congestive heart failure. Current approaches for improving therapies focus on identifying mechanisms of cardiotoxicity, improving drug design, or development of alternative therapies. The possibility of protecting cardiomyocytes directly to mitigate the cardiotoxic effects remains unexplored. This project would involve developing and characterising an animal model of chemotherapy-induced cardiac damage. The student would be involved in implanting tumours, and providing chemotherapy to mice, and undertaking a detailed physiological assessment of cardiac function.
Location:	St Lucia
Expected outcomes and deliverables:	Students will gain experience in the development of preclinical animal models, and experience in cardiac and cancer tumour assessment. Students that contribute data towards a publication will be a co-author on the publication.
Suitable for:	This project is best suited to a student considering a research focused higher degree, but may also be of interest to a pre-medicical student wanting to get some experience with basic research.
Primary Supervisor:	Dr Melissa Reichelt
Supervisor's contact details:	Email: m.reichelt@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Generating cytoplasmic variants of Dscam2 for transgene expression
Project duration:	Length of project: 10 weeks Hours expected per week: 36 hrs/wk
Description:	There are six alternatively spliced versions of the Dscam2 cytoplasmic domain that have not been characterised thus far. This project will involve cloning these different variants into an expression vector that can then be injected into flies for transgenic expression. The long-term goals of this project are to determine whether the different cytoplasmic domains have different localisation patterns and functions *in vivo*.
Location:	St Lucia
Expected outcomes and deliverables:	Scholar will learn multiple molecular cloning techniques and fly genetics.
Suitable for:	This project is suitable for students with basic laboratory experience.
Primary Supervisor:	Dr Sean Millard
Supervisor's contact details:	Email: s.millard@uq.edu.au
Note before application:	Please contact Sean s.millard@uq.edu.au to organise a meeting prior to applying.

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School of Public Health

Project title:	Who wants to sit less?
Project duration:	Length of project: 8 weeks Hours expected per week: 28 hrs/wk
Description:	The BeUpstanding program (www.beupstanding.com.au) includes a national implementation trial of a free online toolkit designed to support workplaces, and workplace champions, to take up, deliver and evaluate an evidence-based program to reduce sitting and increase movement in the workplace. We are seeking students with an interest in translational research to help us understand who is taking up and engaging with the program. The applicant may also have the opportunity to be involved in the planning and delivery of the national launch of the program in early 2019.
Location:	Herston
Expected outcomes and deliverables:	Students will gain skills in science communication, research translation, industry relationships, and working as a multi-disciplinary team. There is the opportunity to generate publications from this research.
Suitable for:	Someone who is interested in undertaking translational research and making a practical difference. Strong communication skills are essential. A marketing / business and/or graphic design background is desirable.
Primary Supervisor:	Associate Professor Genevieve Healy
Supervisor's contact details:	Email: g.healy@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Planning and Evaluating a Therapeutic Garden at the Goodna Community Health Centre - for happy and healthy staff, consumers and community groups
Project duration:	Length of project: 8 weeks Hours expected per week: 28 hrs/wk
Description:	There is growing evidence that access to gardens and green spaces improves physical and mental well-being in communities and enhances consumer outcomes in healthcare settings. The West Moreton Public Health Unit is leading the planning and establishment of a therapeutic garden on the premise of the Goodna Community Health Centre (GCHC). The aim of this project is to create and evaluate a sustainable garden that can: a) increase the health, well-being and satisfaction of GCHC staff (as individuals and as healthcare providers); b) provide a healthy therapeutic and skills-development space for GCHC consumers; and c) enhance the activities of community groups that engage with GCHC. In partnership with UQ, WMPHU will evaluate the impact of the garden on GCHC staff, consumers and community groups over two years. The first data collection of this project is planned for August- October 2018.
Location:	Herston
Expected outcomes and deliverables:	Students will get hands on experience in processing and analysing both quantitative and qualitative data from the Baseline assessment of the project described above. They may also participate in additional data collection as needed. Expected outputs from this project will include a report for our research partners on the Baseline assessment and a presentation to the stakeholder committee.
Suitable for:	This project is open to applicants with a background in public health, social science or health programs.

Primary Supervisor:	Dr Sheleigh Lawler
Supervisor's contact details:	Email: s.lawler@sph.uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Cessation and Relapse Prevention Trial
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	The Cessation and Relapse Prevention trial is a national NHMRC funded trial that seeks to assist smoking cessation in participants with significant health co-morbidity. This is a hands on role developing skill in Clinical Trial interaction with participants and with Clinical Trial process This is a Public Health Research Clinical Trial.
Location:	Herston
Expected outcomes and deliverables:	1. gain experience with Clinical Trial participant contact. 2. gain experience in Ethics and governance of clinical trials 3. gain experience with clinical trial compliance measures
Suitable for:	Medical Students, Health Science Students with good communication skills.
Primary Supervisor:	Dr Malcolm Brinn
Primary contact, if not supervisor:	Associate Professor Coral Gartner
Note before application:	Email: m.brinn@uq.edu.au
Project title:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	How has Tobacco Control Policy Developed in Australia
Project duration:	Length of project: 8 weeks Hours expected per week: 28-36 hrs/wk
Description:	Australia is a world leader in tobacco control policy, thanks to political support to implement new policies such as plain packaging and graphic health warnings on cigarette packs. This project is looking at the history of tobacco and nicotine product regulation in Australia with a view to understanding how current policy has developed and why it differs to policy in other countries.
Location:	UQ School of Public Health, Herston
Expected outcomes and deliverables:	Descriptive, qualitative analysis of policy documents from government websites and other relevant sources.
Suitable for:	This project is suitable for anyone with an interest in health policy.
Primary Supervisor:	Associate Professor Coral Gartner
Primary contact, if not supervisor:	Dr Kylie Morphett
Supervisor's contact details:	Email: c.gartner@uq.edu.au or k.morphett@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Literature review on the barriers and facilitators to implementing and accessing primary mental health services in Australia
Project duration:	Length of project: 8 weeks Hours expected per week: 25 hrs/wk

Description:	Australia has recently sought to decentralise its primary mental health services by shifting the planning and funding of many services to regional entities called "Primary Health Networks" or PHNs. This review will aim to collect and synthesize relevant information about the implementation and accessibility of primary mental health services recently provided in Australia to facilitate the ongoing planning and implementation process for PHNs. The findings could also have important implications for similar organisations in other countries providing primary mental health services.
Location:	The Park Centre for Mental Health in Wacol, Dawson House
Expected outcomes and deliverables:	The student will gain experience in conducting and documenting a literature review for an academic publication. This will include designing a search protocol, undertaking a search of academic databases and government and non-government sources, as well as contributing to the writing of the methodology section of the paper. It could also include some data analysis.
Suitable for:	This project is suitable for a student with an interest or background in mental health services. Experience in literature reviews would be useful but not required.
Primary Supervisor:	Mrs Eryn Wright
Supervisor's contact details:	Email: e.wright@qcmhr.uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Clinical Trial Protocol
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Assist with bringing to publication the CARP trial protocol. Assist with Cochrane review - Smoking Cessation/prevention in Aboriginal Populations Clinical Trial Administration
Location:	UQ School of Public Health, Herston
Expected outcomes and deliverables:	Clinical Trial experience Publication experience Full Cochrane Review experience
Suitable for:	Students with background skills in statistics, literature review and analysis of data
Primary Supervisor:	Dr Malcolm Brinn
Supervisor's contact details:	Email: m.brinn@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Analysis of social media interactions concerning tobacco control and vaping policy
Project duration:	Length of project: 8 weeks Hours expected per week: 20-36 hrs/wk
Description:	Vaping is a lower risk method of using nicotine compared to tobacco smoking that has emerged over the past 10 years. How vaping and vaping products should be regulated is the subject of heated public debate. This project will analyse social media posts, such as Twitter, to understand what type of regulation is being advocated for and the arguments that are being made for and against such regulation.
Location:	UQ School of Public Health, Herston

Expected outcomes and deliverables:	Creation of a dataset of social media posts with categorization of the posts.
Suitable for:	This project is suitable for anyone but may be of most interest to those with a special interest in health policy, public health advocacy, tobacco control and harm reduction.
Primary Supervisor:	Associate Professor Coral Gartner
Primary contact, if not supervisor:	Dr Kylie Morphett
Supervisor's contact details:	Email: c.gartner@uq.edu.au or k.morphett@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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UQ Centre for Clinical Research

Project title:	Case-Control Study of Transdermal Nicotine Replacement Therapy Patches in Critically Ill Patients
Project duration:	Length of project: 8 weeks Hours expected per week: 20 hrs/wk
Description:	The use of transdermal nicotine replacement therapy (NRT) transdermal patches for smoking cessation with ward patients is well established, with large studies showing they are effective at promoting smoking cessation after hospital discharge. Their use in critically ill patients (especially those requiring vasopressor support), however, remains controversial. Smokers are over-represented in the ICU, with up to 40% of patients being identified as either active or ex-smokers and evidence supporting the use of nicotine patches in the ICU is limited. Case-control studies of NRT patches in Australian ICUs have been limited to small sample sizes (a few hundred patients at most). In this project, the electronic medical record database of a large metropolitan ICU will be analysed as part of a case-control study.
Location:	UQ Centre for Clinical Research, Herston
Expected outcomes and deliverables:	The student will learn about data collection from electronic medical record databases, statistical analysis of observational data, and have the opportunity to participate in manuscript preparation.
Suitable for:	MD/MBBS students in Years 2 or 3 of their studies.
Primary Supervisor:	Dr David Liu
Supervisor's contact details:	Email: d.liu3@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Novel therapeutic targets for neurodegeneration in Parkinson's disease
Project duration:	Length of project: 8 weeks Hours expected per week: 36 hrs/wk
Description:	Parkinson's disease (PD) is the second most prevalent neurodegenerative disorder worldwide and there are currently no disease-modifying treatments that can slow or halt disease progression. This project will validate novel therapeutic targets for PD using experimental models of neuroinflammation and neurodegeneration that are relevant to pathological disease mechanisms. The therapeutic potential of targeting these pathways using novel and repurposed drugs will also be evaluated.

Location:	UQ Centre for Clinical Research, Herston
Expected outcomes and deliverables:	Skills in cell culture, microscopy, molecular biology and proteomics as well as potential research publications.
Suitable for:	Suitable for students with a background or interest in Pharmacology and/or Neuroscience. Pre-medical provisional students interested in MD-HDR pathway.
Primary Supervisor:	Dr Richard Gordon
Supervisor's contact details:	Email: r.gordon1@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application. There are 2 placements available for this project option.

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Project title:	Cognitive impairment in Parkinson's disease
Project duration:	Length of project: 8 weeks Hours expected per week: 20-36 hrs/wk
Description:	Dementia is evident in 80% of persons with Parkinson's disease. Mild cognitive impairment (MCI) is a prodromal state of dementia; however, there are discrepancies in defining MCI in Parkinson's disease. The study will examine various methods used to evaluate MCI and will perform analysis using an existing dataset for publication. The study will include an international collaboration with experts in the field.
Location:	UQ Centre for Clinical Research, Herston
Expected outcomes and deliverables:	Publication
Suitable for:	Students with a background in Psychology or Medicine
Primary Supervisor:	Dr Nadeeka Dissanayaka
Supervisor's contact details:	Email: n.dissanayaka@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	A Systematic Review of Anxiety in Dementia
Project duration:	Length of project: 8 weeks Hours expected per week: 20-36 hrs/wk
Description:	Anxiety is a prominent behavioural and psychological symptom in dementia. The student will be required to assist with a systematic review of literature focused on anxiety in people with dementia.
Location:	UQ Centre for Clinical Research, Herston
Expected outcomes and deliverables:	Publication
Suitable for:	This project is open to students undertaking psychology or medical degrees
Primary Supervisor:	Dr Nadeeka Dissanayaka
Supervisor's contact details:	Email: n.dissanayaka@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Social Anxiety in Parkinson's disease and essential tremor
Project duration:	Length of project: 8 weeks Hours expected per week: 20-36 hrs/wk
Description:	This project is to conduct a systematic review on studies examining social anxiety in Parkinson's disease and essential tremor.

Location:	UQ Centre for Clinical Research, Herston
Expected outcomes and deliverables:	Publication
Suitable for:	Psychology or Medical students
Primary Supervisor:	Dr Nadeeka Dissanayaka
Supervisor's contact details:	Email: n.dissanayaka@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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UQ Diamantina Institute

Project title:	Generation of functional liver cells from mesenchymal stem cells for cell therapy
Project duration:	Length of project: 8 weeks Hours expected per week: 34 hrs/wk
Description:	Whilst liver disease impacts over 600 million people and remains among the top 12 leading causes of death globally, available therapy lacks adequate specificity and efficacy. Liver transplantation is now the only definitive and curative treatment for many types of liver diseases. Mesenchymal stem cells (MSCs) show homing in injured, inflamed or ischemic liver, together with adhesion to the liver sinusoidal endothelium (engraftment) medicated through CD29 and CD44. Until now, MSCs have been used as a therapy for liver diseases in 55 clinical trials (searching results from clinicaltrial.gov). The extent of cell engraftment and function has been shown to be related to the dosing route and number of hepatocyte affected. In this project, we will first generate functional liver cells (hepatocytes and cholangiocytes) using our developed in vitro cell culture platform. Then the in vivo functional integration of human MSC-derived liver cells into mouse livers will be investigated using our established imaging technique. We will also assess if these cells have increased viability than untreated MSCs, and can improve the outcomes of MSC-based therapy against liver diseases.
Location:	UQ Diamantina Institute, Translational Research Institute, Woolloongabba
Expected outcomes and deliverables:	Students will gain a deep understanding of liver pathology and physiology, as well as skills in assessment of treatment, in vitro stem cell culture and in vivo stem cell transplantation. Students may have an opportunity to generate co-authored publications from this project.
Suitable for:	Students with a background in biomedicine, pre-medical or medical students, or students interested in MD-HDR pathway.
Primary Supervisor:	Dr Haolu Wang
Supervisor's contact details:	Email: h.wang21@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application.

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Project title:	Possible implications of oxidative stress during chemotherapy: do changes in the liver niche impact tumour reoccurance and metastasis?
Project duration:	Length of project: 8 weeks Hours expected per week: 20hrs/wk
Description:	Liver cancer is one of the leading causes of cancer deaths worldwide and is known to be highly refractory to chemotherapy. It is therefore imperative that we improve our understanding of the response of the liver and liver cancer to chemotherapeutic regimes. The liver is a unique organ at the forefront of our

	bodies detoxification system, and is exposed to high levels of oxidative stress in the form of reactive oxygen species (ROS). Chemotherapy is known to cause increases in ROS in liver cancer cells, and is a proposed mechanism by which chemotherapy leads to cell death. However the liver is a complex organ, and we propose that chemotherapy also leads to alterations in the liver cancer niche. Specifically, in fibrotic diseases ROS is linked to activation of the stellate cells or fibroblasts of the liver niche. We propose chemotherapy is resulting in stellate cell activation, which creates a tumour permissive environment supporting hepatocellular carcinoma growth and colon carcinoma metastasis. The project will investigate the impact of ROS on stellate cells and determine if targeting ROS is a valid strategy for improving chemotherapeutic success. We will determine if altering ROS levels will impact niche activation in liver cancer and if stellate cell activation influences liver cancer growth.
Location:	UQ Diamantina Institute, Translational Research Institute, Woolloongabba
Expected outcomes and deliverables:	Laboratory skills in cell biology, genetics and molecular biology. Possibility of generating publications also.
Suitable for:	Broad range of scientific skills acceptable but an interest in cancer research career preferred.
Primary Supervisor:	Dr Rehan Villani
Primary contact, if not supervisor:	Xiaowen Liang
Supervisor's contact details:	Email: r.villani@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application

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Project title:	Uncovering immunological pathways using gene set enrichment analysis
Project duration:	Length of project: 8 weeks Hours expected per week: 30hrs/wk
Description:	The Broad Institute's GSEA is usually used to perform gene set enrichment analysis of differentially expressed genes. Specifically the molecular signature database (MSigDB) is a subset of large-scale datasets (containing ~4500 datasets related to immune system). To further understand the most prevalent immunological pathways expressed of genes of interest, this project aims to develop a software to perform immune-set enrichment analysis. We have recently shown the possibility of developing this software in our recent publication (https://insight.jci.org/articles/view/98212). Students having experience/interest in programming are encouraged to apply for Summer Research Scholarship
Location:	UQ Diamantina Institute, Translational Research Institute, Woolloongabba
Expected outcomes and deliverables:	1. Genome-wide expression analyses 2. Data analysis in R 3. Opportunity to generate publications from this research
Suitable for:	Background and interest in statistics and programming.
Primary Supervisor:	Dr. Ahmed Mehdi
Supervisor's contact details:	Email: a.mehdi@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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Project title:	Mutational screen of candidate genes in mouse tumour bank

Project duration:	Length of project: 8 weeks Hours expected per week: 25hrs/wk
Description:	We have stored many samples of tumours from our leukaemia mouse model. These tumours are widely varied in phenotype by the nature of the model; it has a long latency, and requires additional mutations to occur before leukaemia forms. We aim to uncover what these mutations are, and correlate them with the phenotype. The project will involve processing frozen tissue samples to generate DNA, performing PCR & sequencing for a range of candidate genes on each sample, and finally analysis of the sequencing data to identify mutations. The project will spark future projects on characterising the effect of each mutation.
Location:	UQ Diamantina Institute, Translational Research Institute, Woolloongabba
Expected outcomes and deliverables:	You will gain skills and experience in preparing tissue samples for DNA sequencing and DNA sequence analysis. You are very likely to identify at least one mutation during the project, and it is possible that this could lead to inclusion on a research publication in the future. You will be expected to maintain clear and precise experimental records, and present your work to a small group at the conclusion of the project.
Suitable for:	Background in molecular biology, and interest in cellular signalling and leukaemia.
Primary Supervisor:	Dr Chris Slape
Supervisor's contact details:	Email: c.slape@uq.edu.au
Note before application:	The supervisor MUST be contacted by students prior to submission of an application

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Project title:	Visualising reactive oxygen species in hepatocellular carcinoma: novel approaches to assessing chemotherapy efficacy.
Project duration:	Length of project: 8 weeks Hours expected per week: 20hrs/wk
Description:	Liver cancer, and especially hepatocarcinoma, is a devastating and common disease, with an extremely poor prognosis. As chemotherapy is notoriously ineffective for hepatocarcinoma, currently treatment is mostly by hepatectomy, a crude and high impact therapy. It is therefore imperative that we develop new and improved methods for liver cancer chemotherapy. Reactive oxygen species or ROS are small molecule signalling intermediates in the cell that can become damaging at high levels, such as after chemotherapy. Using novel tools developed in the Liang lab, we will investigate the ROS level in tumour cells and circulating tumour cells in the serum to identify if this could be a method to determine if chemotherapy is working. In order to do this we have developed a tumour model that will enable us to determine if ROS are a reliable marker of chemotherapy efficacy. This will enable us to visualise ROS in carcinoma cells, both in vitro and in situ, and live, in order to test specifics regarding the response of ROS to chemotherapy. This will enable our development of ROS based therapy monitoring methods for the improved treatment of hepatocarcinoma
Location:	UQ Diamantina Institute, Translational Research Institute, Woolloongabba
Expected outcomes and deliverables:	You will gain skills and experience in preparing tissue samples for DNA sequencing and DNA sequence analysis. You are very likely to identify at least one mutation during the project, and it is possible that this could lead to inclusion on a research publication in the future. You will be expected to maintain clear and precise experimental records, and present your work to a small group at the conclusion of the project.

Suitable for:	Preparation for research career, an interest in cancer research preferred though a wide range of experience can be accommodated.
Primary Supervisor:	Dr Xiaowen Liang
Primary contact, if not supervisor:	Dr Rehan Villani
Supervisor's contact details:	Email: X.liang@uq.edu.au
Note before application:	The supervisor CAN be contacted by students prior to submission of an application.

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