Males' motivation for colorectal cancer screening: a Self Determination Theory model

Principal supervisor: Dr Ingrid Flight

School / Organisational Unit: Flinders Centre for Innovation in Cancer, School of Health Sciences

Location: Adelaide - Bedford Park campus

Project background and aims:
Men’s participation in faecal occult blood test (FOBT) screening for colorectal cancer in men is low despite their increased risk. We conducted a randomised controlled study to determine whether changes to screening invitations to target psychosocial variables associated with men’s FOBT participation improved screening participation compared to current practice. The main results from this study have been published. We also collected data designed to (1) investigate the relationship between a person’s level of motivation to screen at baseline, measured according to self-determination theory (SDT) constructs, and return of FOBT and (2) to investigate whether the intervention and (non)return of FOBT influenced movement along the motivational continuum (as posited by SDT theory) post-intervention. These data remain to be extracted, analysed and written up as a research paper.

Possible research methods:
The student will gain skills and experience in data extraction and statistical analysis; literature searching of existing research in the area; preparation of papers for publication.

Suggested readings:

Contact: ingrid.flight@flinders.edu.au
Social media and clean eating

Principal supervisor: Dr Kacie Dickinson

School / Organisational Unit: Nutrition and Dietetics, School of Health Sciences

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
Despite claims of nutritional superiority, clean eating blogs are not usually authored by people qualified to give individual nutrition advice and the nutritional profile of recipes may not always consistent with recommendations for good health (1). We suspect that in some cases these clean eating images and content may portray may inaccurate messages about food and nutrition and in susceptible persons reinforce disordered eating behaviours.

1. To perform a content analysis of clean eating across social media platforms
2. To perform a nutritional analysis of a sample of recipes from social media platforms

Possible research methods:
Content analyses allow researchers to both understand and examine an area of research before conducting more in-depth research in that area. Using this methodology written content and recipes will be sampled from “clean eating” blogs and social media platforms to evaluate the information included on these sites. Analysis of published recipes sampled from blogs will be undertaken using specialised software (Foodworks)

Suggested readings:

Contact: kacie.dickinson@flinders.edu.au
Analysis of the nutritional composition of recipes designed for residents living with dementia in Residential Aged Care Facilities

Principal supervisor: Dr Alison Yaxley

School / Organisational Unit: Nutrition and Dietetics, School of Health Sciences

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
In 2014, the Maggie Beer Foundation (MBF) was established with the aim to improve the lives of those living in Residential Aged Care facilities through provision of fresh, seasonal, flavourful and nutrient-dense foods. Aside from the changes which occur as we age, people living with dementia have a range of additional issues which impact their ability to consume adequate nutrition, including forgetting how to eat and drink, and failing to recognise food as food. In conjunction with Flinders University, the MBF have designed a range of recipes appropriate for residents living with dementia and this project aims to conduct a thorough analysis of the nutritional composition of those recipes.

Possible research methods:
1. Use of Foodworks to conduct nutritional analyses
2. Use of Excel to create databases of recipes and nutrient analyses

Suggested readings:
The Maggie Beer Foundation website (https://www.maggiebeerfoundation.org.au/)

Contact: alison.yaxley@flinders.edu.au
Evaluation of a program designed to assist residents of Residential Aged Care Facilities to grow their own produce

Principal supervisor: Professor Michelle Miller

School / Organisational Unit: Nutrition and Dietetics, School of Health Sciences

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
In 2014, the Maggie Beer Foundation (MBF) was established with the aim to improve the lives of those living in Residential Aged Care Facilities through provision of fresh, seasonal, flavourful and nutrient-dense foods. Older people often spend time pottering in their gardens and they often have to give up this pleasure when they move to Residential Aged Care. This project aims to evaluate a program designed to assist residents of Residential Aged Care Facilities to maintain a garden and to grow their own produce.

Possible research methods:
1. Conduct a literature search on garden programs in Residential Aged Care Facilities
2. Conduct a program evaluation
3. Write a report suitable for presentation to the Board of the MBF

Suggested readings:
The Maggie Beer Foundation website (https://www.maggiebeerfoundation.org.au/)

Contact: michelle.miller@flinders.edu.au
Faculty of Medicine Nursing and Health Sciences

Summer Research Scholarships 2015 – 2016 Projects

Preparation of tools to evaluate the Appetite for Life program for cooks and chefs of Residential Aged Care Facilities

Principal supervisor: Professor Michelle Miller

School / Organisational Unit: Nutrition and Dietetics, School of Health Sciences

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
In 2014, the Maggie Beer Foundation (MBF) was established with the aim to improve the lives of those living in Residential Aged Care facilities through provision of fresh, seasonal, flavourful and nutrient-dense foods. The MBF created the Appetite for Life program for cooks and chefs of Residential Aged Care Facilities, designed to provide alternative ways of feeding residents, based on the MBF philosophy. The first program ran in June 2015 in the Barossa Valley, South Australia. This project aims to prepare tools to evaluate the ongoing program in order to assess its benefits and improve future offerings.

Possible research methods:
1. Prepare survey tools for cooks and chefs of Residential Aged Care Facilities
2. Pilot evaluation tools and methods with appropriate populations

Suggested readings:
The Maggie Beer Foundation website (https://www.maggiebeerfoundation.org.au/)

Contact: michelle.miller@flinders.edu.au
Together from the start: planning for consumer co-creation of a healthy diet, lifestyle and wellbeing program for children

Principal supervisor: Dr Carly Moores

School / Organisational Unit: Nutrition and Dietetics, School of Health Sciences

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
The PEACH™ Program (Parenting, Eating and Activity for Child Health) is an evidence-based group program supporting parents to improve the lifestyles of their overweight children. The 6-month program includes parenting skills and training focusing on family eating and activity behaviours.

Recruitment, attendance and long-term engagement have been a challenge for the PEACH™ Program. Participatory research (i.e. research with and not on the population of interest) offers a promising method for the design of relevant, engaging and sustainable health interventions.

The aim of this research project is to investigate examples of consumer involvement or end-user perspectives in healthy lifestyle programs or interventions in primary school-aged children (including child weight, improve diet, physical activity and/or wellbeing programs).

Supervised by a multidisciplinary team with expertise in education, mental health, nutrition and lifestyle, you will use these examples, to assist with planning for consumer engagement and user co-creation of a child healthy lifestyle program.

Possible research methods:
You will conduct literature searches to retrieve examples and models of diet and lifestyle programs or intervention co-creation. You will read, critique and summarise these. Then, you can start developing a plan for consumer engagement and user co-creation of a program to improve diet, lifestyle and wellbeing of children and/or adolescents. You will have the opportunity observe participatory workshops and assist with preparing research ethics application to obtain long-term feedback and reflections from young adults who have completed PEACH™.

Suggested readings:

Contact: carly.moores@flinders.edu.au
Promoting patient safety and quality for people with advanced dementia and/or delirium in a geriatric evaluation management (GEM) unit: A video reflexive ethnographic (VRE) study.

Principal supervisor: Dr Aileen Collier

School / Organisational Unit: Palliative and Supportive Services, School of Health Sciences

Location: Adelaide - Repatriation General Hospital (RGH)

Project background and aims:
The aim of this study is to explore the conditions in which patient safety can flourish and be maintained for people with dementia and/or delirium in a GEM unit as a case study. A significant and increasing number of older people with cognitive impairment are admitted to hospital. Delirium can be extremely distressing for patients, families and staff and places people at significant risk from adverse events. The authors of a recent RCT highlighted that patients’ and families’ experiences of care are of equal importance to other measures of health status in this population. To date the study of patient safety has focused on elimination of adverse events. Identifying safety issues from a strength perspective through a lens of positive organizational scholarship is our point of departure in this study. We seek to exnivate how patient safety unfolds in a GEM unit recognized for providing best practice safe care.

Possible research methods:
VRE invites participants to: feature in and/or have gather visual data (V); interpret the data by monitor(ing) and affect(ing) events and contexts in situ (R); and uses ethnographic methods (E) to suspend and understand experiences.

This is a unique opportunity for a student to work alongside Dr. Aileen Collier and Dr. Anita De Bellis to assist in the setting up of a VRE project including: with institutional ethical approval; preparation of the environment; database searching and writing a literature review.

Suggested readings:

Contact: aileen.collier@flinders.edu.au
Analysing Missed or Rationed care

Principal supervisor: Professor Eileen Willis

School / Organisational Unit: Social Health Sciences, School of Health Sciences

Location: Adelaide - Bedford Park campus

Project background and aims:
Using existing survey data sets compare results from NSW, Victoria, and Tasmania for reasons why nurses argue care is missed. This is a research study drawing on management of resources

Possible research methods:
Interpretation of survey data and merging of data sets

Suggested readings:
Reports produced by research team at http://phamilton9.wix.com/insrnc

Contact: eileen.willis@flinders.edu.au
Faculty of Medicine Nursing and Health Sciences

Summer Research Scholarships 2015 – 2016 Projects

Effects of cycle training on running performance in athletes

Principal supervisor: Dr Lynda Norton

School / Organisational Unit: Social Health Sciences, School of Health Sciences

Location: Adelaide - Bedford Park campus

Project background and aims:
To establish the short term benefits of exercise training in cycling on running performance.

To establish whether high intensity interval training in cycling influences intermittent or endurance running performance

Possible research methods:
1. Exercise testing using cycle ergometer and treadmill
2. Analysis of exercise metabolism using indirect calorimetry and blood biochemistry analysis
3. Field based assessment of exercise performance using GPS

Suggested readings:

Contact: lynda.norton@flinders.edu.au
How does stigma impact upon help-seeking for respiratory illnesses

Principal supervisor: Dr Christopher Barton

School / Organisational Unit: Social Health Sciences, School of Health Sciences

Location: Adelaide - Bedford Park campus

Project background and aims:
Underdiagnosis and under-treatment of chronic obstructive pulmonary disease are concerns amongst respiratory physicians and general practitioners.

Up to 80% of participants who are affected by airways obstruction measured by spirometry may never have had a diagnosis of COPD. Yet, an early and correct diagnosis can positively influence the progress of the disease, relieve symptoms and increase quality of life.

The summer vacation project will involve reviewing the literature and preparing a proposal to investigate the role of stigma in delayed help seeking for respiratory symptoms amongst primary care patients.

This proposal can then be used as the foundations of an honours project to characterise stigma amongst patients with respiratory symptoms and determine if stigma impacts upon help seeking for respiratory symptoms.

Possible research methods:
Quantitative and qualitative methods (mixed methods)

Suggested readings:

Contact: christopher.barton@flinders.edu.au
Exploration of the facilitators and barriers to optimal outcomes following stuttering intervention at a student clinic

**Principal supervisor:** Dr Michelle Swift

**School / Organisational Unit:** Speech Pathology, School of Health Sciences

**Location:** Adelaide - Flinders Medical Centre (FMC)

**Project background and aims:**
The Flinders University Fluency Clinic is a speech pathology student training clinic which treats and assesses clients who stutter. This clinic is one of the main service providers for fluency in South Australia treating clients of all age groups using a variety of treatment methods and delivery models. This study aims to:
1. Explore the facilitators and barriers to optimal outcomes following stuttering treatment at a student clinic.
2. Investigate client and parent expectations for therapy, ideas for improvement and satisfaction with the overall therapy process.
3. Gather and analyse recommendations for improving the process of therapy offered at the Flinders University Fluency Clinic.
4. Investigate factors perceived to affect success or failure in achieving fluent speech and optimal psychosocial functioning.

**Possible research methods:**
Research techniques to be used by the Summer Research Scholar may include:
1. conducting semi-structured interviews
2. transcribing interviews
3. coding of the text using a codebook and inductively developing new codes.

This research will be conducted within the framework of critical realistic evaluation.

**Suggested readings:**

**Contact:** michelle.swift@flinders.edu.au
The effects of curcumin on breast cancer cells

Principal supervisor: A/ Prof Sonja Klebe

School / Organisational Unit: Anatomical Pathology, School of Medicine

Location: Adelaide - Bedford Park campus

Project background and aims:
Breast cancer is the most common cancer in women. Curcumin is derived from the spice tumeric and has antioxidant, antiproliferative and apoptotic effects. Of particular interest, we have found that curcumin also affects a particular type of vessel formation, vascular mimicry, which breast cancer is capable of. However, curcumin is difficult to dissolve and instable in solution.

This project is a preliminary study to explore the effect of various enhanced formulations of curcumin on breast cancer cell lines and primary cells with particular emphasis on the vascular pathways, including activities of various proteins, such as inflammatory cytokines, transcription factors, and gene-products linked with cell survival and proliferation.

The aim of the study is to identify a forumlation of curcumin that will be suitable for further study and, eventually, clinical adminstration.

Possible research methods:
Thorough basic training- accuracy of pipetting, sterile techniques, keeping of records/lab book. General cell culture techniques, proliferation assays (e.g. MTS), flow cytometry for apoptosis and cell identification, scratch assay, angiogenesis assays and ELISA. Histology including cutting, cell block preparation, immunohistochemistry and making of own tissue microarrays. Basic statistics- i.e. ANOVA.

Suggested readings:

Contact: sonja.klebe@health.sa.gov.au
Neurophysiology of insect vision

Principal supervisor: Dr Karin Nordstrom

School / Organisational Unit: Anatomy and Histology, Neuroscience of Insect Vision, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
As an animal moves through the world, its own movement generates optic flow across the retina, which it can use to maintain a straight path or to avoid obstacles. The visual system can also easily disambiguate the motion of objects that move independently of the surround from such self-generated optic flow. In the vertebrate visual cortex, and the insect optic ganglia, we find neurons specialized for detecting these different types of motion patterns: Some respond optimally to optic flow, whereas others are specifically tuned to the motion of small targets. In the proposed project the student will look at the neural representation of visual motion by record responses using intracellular electrophysiology of single neurons in intact insects while they view experimenter-controlled visual stimuli, enabling us to correlate the exact visual input with the neural response on a frame-by-frame basis.

Possible research methods:
Electrophysiology, image analysis, matlab

Suggested readings:

Contact: karin.nordstrom@flinders.edu.au
Reducing musculoskeletal disorders experienced by Sonographers during scanning

Principal supervisor: Dr Olivia Lockwood (nee Pallotta)

School / Organisational Unit: Biomedical Engineering, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
80 - 90% of Sonographers report experiencing pain during ultrasound examinations particularly in the upper body, shoulder and neck. Approximately 20% of Sonographers will have a career changing injury as a result.

A 6 month research project into the causes of Sonographers' musculoskeletal injuries has been conducted by the research team, highlighting the need for the adoption of proper scanning techniques.

This project seeks to influence the education of student Sonographers, to ensure:
1. Future Sonographers know of musculoskeletal injuries that can result from poor scanning techniques
2. Appropriate scanning techniques are taught, by the educational institutions or industry, to reduce or mitigate musculoskeletal injuries and their subsequent effects on the Sonographers' career and life

This will involve:
1. Surveying and interviewing national educational and industry bodies that train student Sonographers
2. Reviewing their training material and techniques
3. Report on the effectiveness of the current training modalities

Possible research methods:
Surveying and interviewing, Review and analysis of data, report writing

Suggested readings:
Sonographer Safety Initiative: A document collated by the team outlining the background of the project and main findings; the reasons for Sonographers; musculoskeletal injuries and ways to reduce or mitigate them. This is available on request from the Supervisor

Contact: olivia.pallotta@flinders.edu.au
Brain neural pathways linking emotional state to physiological function

Principal supervisor: Dr Yoichiro Otsuka

School / Organisational Unit: Centre for Neuroscience, Human Physiology, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
Background: All mammals, birds and reptiles need to adapt to their behaviour in order to survive in salient harsh environments, those relevant to the life and survival of the individual. Brain neural circuits controls behavior and maintain bodily homeostasis, during salient environmental interactions. Brain adjusts bodily condition within a certain healthy range even under stress conditions. However, if stress is excessive and prolonged, our bodily condition will be shifted outside the healthy range and resulted in neuropsychiatric illnesses, such as anxiety, depression. Discovering how processes in the brain organize our emotional daily life is one of the fundamental aims of the modern neuroscience.

Aims: The aim of this project is to investigate brain neural circuits control behaviour and physiological response to emotional/psychological stress. The project will investigate the activation or inhibition of specific brain neuro-transmitter pathways alters stress-associated behavioural, physiological and cardiovascular changes.

Possible research methods:
1. Surgical techniques for animal experiments
2. Recording bio-signals from animals
3. Cutting-edge gene-techniques such as optogenetics and pharmacogenetics.
4. Genotyping with polymerase chain reaction (PCR)
5. Immunohistochemical analysis of brain tissue

Suggested readings:

Contact: yoichiro.otsuka@flinders.edu.au
Modulating neutrophil migration in respiratory syncytial virus infection

Principal supervisor: Dr Dani Dixon

School / Organisational Unit: Critical Care Medicine, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
Respiratory syncytial virus (RSV) is the most common childhood respiratory pathogen, infecting nearly all infants in the first 12-24 months of life. Of those infected, a significant number require hospitalisation due to bronchiolitis an of these infants at least 50% will go on to develop childhood asthma.

Strong evidence from our laboratory and others, suggests that RSV, induces host immune cells (neutrophils) to damage the lung, increasing disease severity in the acute stage of illness. We hypothesise that this acute neutrophil-mediated damage may set up the potential for on-going airway inflammation and asthma.

Recently our lab demonstrated the ability of a neutrophil modulator (feG) to prevent and treat neutrophil-mediated lung injury. In this project we aim to evaluate the role that feG may play in neutrophil migration and how this might modulate neutrophil-mediated damage, utilising an in vitro co-culture system.

Possible research methods:
Cell culture (including transwell co-culture), virus culture, neutrophil isolation, immunohistochemistry, ELISA, cell viability assays and RT-PCR.

Suggested readings:

Contact: dani.dixon@flinders.edu.au
The contribution of tissue crosslinking and lymphangiogenesis to lung mechanics and oedema in a chronic heart failure model.

Principal supervisor: Dr Mark Lawrence

School / Organisational Unit: Critical Care Medicine, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
Acute left ventricular dysfunction usually leads to an acute elevation of pulmonary microvascular pressure (Pmv) followed by acute pulmonary oedema. However, chronic elevations in Pmv (as observed in CHF) are known to lead to physiological adaptation; in the form of muscularisation of the pulmonary circulation, thickening of the endothelial and epithelial basement membranes, and a reduction in the capillary filtration coefficient with amelioration of the increase in lung water.

This project will examine, in lung tissue from a rat model of CHF, processes which may contribute to the observations of reduced lung compliance (lung stiffening) and reduced capillary filtration coefficients in clinical and experimental models of CHF. Specifically, the contribution of matrix crosslinking enzymes (TGM2 and LOXL2) in reducing lung compliance and, the role of alternatively activated macrophages in the induction of lymphangiogenesis, potentially through macrophage trans-differentiation.

Possible research methods:
Immunohistochemistry and RT-PCR

Suggested readings:

Contact: mark.lawrence@flinders.edu.au
The relationship between stroke outcomes and stress hyperglycaemia

Principal supervisor: Mr. Greg Roberts

School / Organisational Unit: Endocrinology, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
Patients suffering an acute illness may develop stress hyperglycaemia, and this phenomenon is recognised even in the absence of a pre-existing diagnosis of diabetes. Stress hyperglycaemia in hospitalised patients is associated with increased mortality and morbidity. There is some suggestion in the literature that intervention for management of blood glucose during periods of stress hyperglycaemia improves outcomes.

We use a new marker, the Stress Hyperglycaemia Ratio, to determine if relative hyperglycaemia (an increase above normal baseline glycaemia) is a better predictor of stroke outcome than absolute hyperglycaemia. This study examines the relationship between blood glucose and stroke outcomes, as well as the relationship between relative hyperglycaemia (the Stress Hyperglycaemia Ratio) and stroke outcomes. If outcomes are related to the relative increase in glucose, rather than absolute glucose levels, this indicates we should be considering individualised glucose management targets for stroke patients in the acute setting.

Possible research methods:
This is a retrospective, single centre, cohort study for patients diagnosed with an ischaemic or haemorrhagic stroke. A combined primary end-point will be used as a dichotomous marker of stroke severity.

The relationship of the primary endpoint with the variables of interest (age, gender, haemoglobin, renal function, admission blood glucose, admission SHR) will be explored with univariable and multivariable regression analysis.

Suggested readings:

Contact: greg.roberts2@sa.gov.au
To what extent do medications mediate an increased risk of heat related hospital admissions?

Principal supervisor: Prof Richard Woodman

School / Organisational Unit: Epidemiology and Biostatistics, School of Medicine

Location: Adelaide - Bedford Park campus

Project background and aims:
Heat-related illnesses are a common occurrence particularly amongst the frail or elderly, with potentially serious consequences. Effects of excessive heat include dehydration, abdominal pain and nausea, fainting, general weakness or unconsciousness, which may lead to falls, fractures and even mortality. Certain medications may increase the risk of heat-related illness including diuretics and anticholinergics. Diuretics can reduce the ability to sweat, and anticholinergic drugs including antidepressants may reduce the body’s sensory capacities. Our own pilot data with Flinders Medical Centre emergency department (ED) and hospital admissions demonstrates increased admissions for the ED complaint codes of abdominal pain, headaches and syncope/fainting/collapse during heatwave periods. This project will more accurately assess the extent of heat related admissions and also examine whether these excess admissions are partly mediated via medications including diuretics and anticholinergics.

Possible research methods:
Hospital admissions will be extracted from existing databases for the major 4 hospitals in Adelaide. The admission periods will include all days with excessive heat (≥35 degrees Celsius) and weekday matched control periods between 2009 and 2015. Poisson regression will first determine the effect of excessive heat on heat related admissions. Mediation analysis will then be used to determine the extent to which any increased admission rates are mediated via diuretics and anticholinergics.

Suggested readings:
1. Influence of drug use on morbidity and mortality in heatstroke.

Contact: richard.woodman@flinders.edu.au
Developing health promotion, prevention and support information for Australians; a review of the literature to date

Principal supervisor: Dr Kate Fennell

School / Organisational Unit: Flinders Centre for Innovation in Cancer, School of Medicine

Location: Other - Cancer Council SA

Project background and aims:
The purpose of this project is to bring together research on best practice methods of developing health information, to summarise what is already known about effective strategies in communicating health-related messages to the Australian population and to identify areas that require further research. Findings may inform the work of organisations such as Cancer Council SA, who pride themselves on delivering evidence-based information and support.

Possible research methods:
This project will involve undertaking a review of the literature and summarising findings both in an academic document and a document that is accessible to health professionals without a research background. It is anticipated that the review would be divided in to two sections- one section focusing on communicating prevention and health promotion messages and another section focused on communicating health messages to those who already have health conditions.

Contact: kate.fennell@flinders.edu.au
Clinician views and experiences of practice change to provide self-management support: compatibility with implementation frameworks

Principal supervisor: Dr Melanie Harris

School / Organisational Unit: Flinders Human Behaviour and Health Research Unit, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
A common problem in health care is failure to replace older clinical practices when newer practices are proven to produce better patient outcomes. Often, clinical teams express the wish to adopt the newer practices but fail to do so. In response, several implementation frameworks have been proposed. These show factors and/or processes thought to be necessary for successful practice change.

One poorly implemented clinical practice is chronic disease self-management support to improve patient outcomes and reduce longer term health care expenditure. An implementation framework may assist, and clinicians are most likely to make use of a framework that relates to their perceptions of implementation process and problems.

The aim of this project is to qualitatively explore views and experiences of clinicians attempting to introduce self-management support and assess how major implementation frameworks may inform change in this field.

Possible research methods:
Ethical and administrative approvals and data collection sites are in place for qualitative interviews, using an existing guide, with clinicians implementing chronic disease self-management support in two different medical areas. Analysis of this data, supported by the supervisor, will be conducted using (1) interpretive descriptive analysis (2) examination of relationships between this analysis and 3 or more major implementation frameworks. Conclusions will then be drawn about the practical usability of a framework or frameworks, potentially in collaboration with the clinicians.

Suggested readings:

Contact: melanie.harris@flinders.edu.au
The development of guidelines for cross-cultural validation of measurement scales in chronic disease self-management

Principal supervisor: Dr David Smith

School / Organisational Unit: Flinders Human Behaviour and Health Research Unit, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
The global impact of chronic disease has led to the strategy of self-management in order for individuals to have greater control of their conditions to improve quality of life and reduce economic burden. A key to global implementation of self-management is the development of meaningful and valid quality measures that are sensitive and reflexive to social, cultural and health service norms alongside consistent measurement of latent constructs that are meant to be measured. However, methodological approaches to translation, adaptation and validation of such instruments are varied due to a lack of clear guidelines specific to chronic disease self-management. Therefore, the objectives of this project are twofold: (i) conduct a systematic review of the literature in relation to cross-cultural validation of self-management scales, and (ii) develop preliminary guidelines for cross-cultural validation of scales in self-management practice based on review findings.

Possible research methods:
This research project will be conducted in three (3) phases:
1. Conduct a systematic literature review (e.g. narrative synthesis)
2. Share findings to a group of experts in chronic-disease self-management. Group discussion will be facilitated in order to identify key themes for guideline development
3. Present a set of preliminary guidelines.

Suggested readings:

Contact: david.smith@flinders.edu.au
What do we know about online learning for self-management support?

Principal supervisor: A/Prof Sharon Lawn

School / Organisational Unit: Flinders Human Behaviour and Health Research Unit, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
Reviews suggest that online learning is as effective as face-to-face for health professional training broadly (Cook et al 2010; Lahti et al 2014; Lam-Antoniades et al 2009) However, particular practices are needed in providing patient self-management support (King and Hoppe 2013; Lawn et al. 2009). Additionally, some of these practices (eg partnering with patients in goal setting) challenge conventional norms. Self-management support training may therefore need to be different. Advice and studies on training in these skills in fact often assume use of face-to-face without consideration of on-line. A synthesis is therefore needed on the effectiveness of online methods compared to face-to-face, in relation to skills needed for self-management support.

To support improvements in online learning a synthesis is also needed on features associated with best acquisition of skills of self-management support. The aim of this project is to create these syntheses.

Possible research methods:
1. Using conceptual and empirical literature, delineate the skill categories relevant for provision of self-management support (may include eg shared goal setting and planning and motivational strategies)
2. Identify and summarise structured reviews on comparative effectiveness of online learning in these skills, and note any gaps in this review literature.
3. Identify and summarise structured reviews to single out those features of online courses highly associated with learning of these skills, and note any gaps in this review literature.

Suggested readings:

Contact: sharon.lawn@flinders.edu.au
Psychology in the personal training-client relationship

Principal supervisor: Dr Tiffany Lavis

School / Organisational Unit: Flinders Human Behaviour and Health Research Unit, School of Medicine

Location: Adelaide - Bedford Park campus

Project background and aims:
Research exploring the role of psychology in the personal trainer-client relationship is limited (see, e.g., Griffin, 2006). This project aims to address this gap in the literature, and contribute to the development of a practical course for personal trainers within Australia. In particular, the research project will explore how the relationship between personal trainers and clients can be used to assist in athletes achieving personal goals, the role of emotional abuse in these relationships, and the impact of personality differences.

Possible research methods:
The primary role of the student will be in conducting a literature search relevant to the key themes of the project. A systematic review process is intended to take place. The student will also be involved in the process of course design.

Contact: tiffany.lavis@flinders.edu.au
Factors that influence the preparedness of the Northern Territory medical graduates to deliver health services in underserved areas

Principal supervisor: Ms Helen Wozniak

School / Organisational Unit: Flinders NT, School of Medicine

Location: Northern Territory - Darwin

Project background and aims:
Flinders University has implemented a bold, nationally significant program that aims to produce a sustainable, work-ready medical workforce in the Northern Territory. The Northern Territory Medical Program (NTMP), aims to graduate doctors, including Indigenous doctors, who are appropriately skilled in and committed to delivering health services to remote and Indigenous communities. This project will contribute to the development of methods to be used in a longitudinal study tracking NTMP students as they progress through the stages of their medical education and into the medical workforce. This research is nationally and internationally significant for two major reasons. Recruitment and retention of doctors in the NT is problematic and the health status of Indigenous Australians is significantly poorer than the rest of the population. Improving our understanding about the factors that impact intentions to practice (demographic, educational and attitudinal), will provide invaluable information to inform policy directions locally, nationally and internationally.

Possible research methods:
This scholarship will enable the student researcher to work with academic staff to review the literature, and assist in the analysis of the current quantitative and qualitative data that has been collected since 2011. This will include cleaning and coding the current data set and interpretation of data trends. It will also involve the development of new data collection tools such as surveys and interview protocols. It is not necessary for the student to be located in the NT.

Suggested readings:

Contact: helen.wozniak@flinders.edu.au
Does alcohol intake, smoking and obesity increase risk of bowel cancer despite regular surveillance?

Principal supervisor: Dr Erin Symonds

School / Organisational Unit: Gastroenterology, School of Medicine

Location: Adelaide - Repatriation General Hospital (RGH)

Project background and aims:
People with a family history of bowel cancer have an increased risk for developing bowel cancer. It is therefore recommended that they undergo regular surveillance colonoscopies (every 3-5 years) so that any polyps that are found in the bowel can be removed at an early stage, prior to becoming cancer. Despite regular surveillance and medical tests, some people still develop pre-cancerous adenomas and cancers. The aim of this project is to determine whether lifestyle factors such as smoking, alcohol intake and obesity accelerate the development of significant lesions in the bowel.

Possible research methods:
This is a computer-based research study which will involve interrogating clinical databases, assessing colonoscopy findings and conducting analysis to determine the relationship between the lifestyle factors and the development of bowel cancer.

Contact: erin.symonds@sa.gov.au
Glucose-induced DNA damage in human endothelium

Principal supervisor: Dr Elke Sokoya

School / Organisational Unit: Human Physiology, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
Type 2 diabetes is one of the leading causes of mortality in Australia, mainly due to vascular complications. Diabetics do not absorb glucose properly, leaving high levels of glucose in the blood, that damage the inner layer of cell (known as endothelial cells) within blood vessels. This damage persists, even after normal blood glucose levels are restored. The mechanisms underlying this damage are not fully understood. The aim of this project is to first characterise the DNA damage at the chromosome extremities in endothelial cells exposed to elevated glucose levels and second to determine whether this damage can be reversed by glucose normalisation. Understanding the mechanism of DNA damage within endothelial cells may offer opportunities for therapeutic targeting, thereby deterring the onset of diabetes-related vascular disease.

Possible research methods:
1. cell culture
2. immunocytochemistry
3. Western blotting
4. qPCR

Suggested readings:

Contact: elke.sokoya@flinders.edu.au
Development of tools for measuring Cryptosporidium extracellular lifecycle stages

Principal supervisor: Dr Paul Monis

School / Organisational Unit: Medical Biotechnology, School of Medicine

Location: Other - SA Water Molecular and Cell Culture Laboratories

Project background and aims:
Cryptosporidium is a key human enteric pathogen, representing a major threat to public health. Methods are required to measure the infectivity of this pathogen. Cell culture assays have been developed but require further optimisation. The aim of this project is to develop tools for enumerating extracellular stages of Cryptosporidium, a step required for further assay optimisation

Possible research methods:
Mammalian cell culture, real-time PCR, microscopy, flow cytometry

Suggested readings:

Contact: paul.monis@flinders.edu.au
Investigating the role of genetic background on cataract development

Principal supervisor: Dr Shiwani Sharma

School / Organisational Unit: Ophthalmology, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
Cataract is an opacification of the ocular lens that impairs vision. It is the leading cause of blindness in the world. Cataract is common among the elderly (age-related cataract) and rarely can also occur in children or babies (congenital cataract). Both genetic and environmental factors contribute to age-related cataract. Common polymorphisms in the EPHA2 gene have been associated with the risk of age-related cataract. Knockout of this gene leads to age-related cataract in mice. Thus the EPHA2 knockout mice are a useful model for investigating the role of environmental factors in age-related cataract. Our work suggests that genetic background influences EPHA2-related cataract development. Thus the aim of this project is to investigate the role of genetic background on EPHA2-related cataract development. EPHA2 knockout mice on different genetic backgrounds are being used for these investigations.

Possible research methods:
The project involves genotyping and eye examination in EPHA2 knockout mice, routine mouse monitoring, data recording data analysis, and dissection of mouse eye tissue for analysis. Genotyping will include genomic DNA extraction, polymerase chain reaction (PCR) and agarose gel electrophoresis. Eye examination will involve live animal handling and anaesthetising and reviving mice using standardised protocols. Data will be recorded using appropriate software and statistical tools.

Suggested readings:

Contact: shiwani.sharma@flinders.edu.au
Quantitative analysis of revision lower limb arthroplasty at RGH and initiation of a formal Revision Arthroplasty Registry

Principal supervisor: Prof Jegan Krishnan

School / Organisational Unit: Orthopaedic Surgery, IMRI, School of Medicine

Location: Adelaide - Repatriation General Hospital (RGH)

Project background and aims:
Total joint replacement surgery is associated with excellent gains in quality of life, reducing pain associated with the affected joint and improving patient performance of daily activities. However, it is a major surgery and is not devoid of complications. Revision surgery of hip and knee implants may be a result of a number of factors, including loosening, dislocation, infection or wear and is a commonly performed procedure at the Repatriation General Hospital (RGH).

Revision surgery data from the Orthopaedic Surgery Department at the RGH has been collected retrospectively from May 2013 to December 2014 however it has not been analysed for potential predictors of revision in these patients, such as patient-specific or device-associated factors. Therefore, this comprehensive electronic dataset will be analysed to determine any potential correlations between patient characteristics, implant type, and reason for revision.

Possible research methods:
The student will be involved in analysing and reporting on findings of the existing dataset, as well as maintaining prospective collection of revision data. Further studies will include correlating these findings with those of the national joint registry (Australian Orthopaedic Association National Joint Replacement Registry).

The student will join the International Musculoskeletal Research Institute research team and will be encouraged to learn more about anatomy, orthopaedic surgical procedures and ethical research practice in the context of a busy clinical environment.

Suggested readings:

Contact: kristen.georgiou@flinders.edu.au
The 1st decade of advanced paramedics in Australia: a survey of evolving practice.

Principal supervisor: A/Prof Anne Wilson

School / Organisational Unit: Paramedics, School of Medicine

Location: Adelaide - Bedford Park campus

Project background and aims:
Previously the role of Paramedics has been to provide patient treatment during ambulance transportation (Hoyle, 2012). However the Paramedic’s role is continuing to grow and expand in congruence with the community’s changing health needs (Blacker 2009). To provide treatment sooner and to avoid potentially unnecessary transfers to hospital an ‘Extended Care Paramedic’ (ECP) role was created (Moulton 2009). This role requires extra training to acquire an extended set of expertise (Blacker 2009) which enables ECPs to provide treatment at the scene. However as ECPs are still a new role, whether they are meeting the needs of the healthcare system and having a significant, positive impact on patient outcomes are still unfolding.

This project explores a sample of ECP practices and outcomes across a variety of healthcare specialties to assess if ECP practices are continuing to develop and are contributing to increased access to health care and improved health outcomes.

Possible research methods:
1. Two self-enumerated e-surveys including qualitative and quantitative data.
2. Delphi Technique to determine consensus.

Suggested readings:

Contact: annewilson.rec@gmail.com
An audit of prehospital spinal care provided to patients with spinal column injuries

Principal supervisor: Mr Timothy Pointon

School / Organisational Unit: Paramedics, School of Medicine

Location: Adelaide - Bedford Park campus

Project background and aims:
The purpose of this study is to examine how patients with spinal column injuries, or suspected spinal cord injuries, are managed in the prehospital setting. There has been little effective research into the immediate management of a trauma case from the initial accident scene until the presentation at the emergency department. Given the lack of evidence to inform practice in the prehospital setting, the study will provide an audit of actual practices, which may be compared with current clinical practice guidelines. This comparison will provide a benchmark of the current status and allow further studies to investigate the safety and efficacy of paramedic practice in the area of trauma management.

Possible research methods:
De-identified patient care records from SA Ambulance Service will be examined to record a set of specific variables for each case. This data includes age, sex, trauma type, injuries reported, vital signs and spinal immobilisation techniques. This data will be collated to report the methods paramedics are using to manage trauma cases generally and those cases where spinal column injury is suspected.

Suggested readings:

Contact: timothy.pointon@flinders.edu.au
An Integrative Review of the Extended Care Paramedic Literature
(specific area of focus to be determined with successful applicant)

Principal supervisor: A/Prof Anne Wilson

School / Organisational Unit: Paramedics, School of Medicine

Location: Adelaide - Bedford Park campus

Project background and aims:
Historically the ambulance service has provided patient treatment during transportation to the emergency department (Hoyle, 2012). However, to provide treatment sooner and to avoid potentially unnecessary transfers to hospital an ‘Extended Care Paramedic’ (ECP) role was created (Moulton 2009). An ECP takes on extra education and training and has an expanded set of protocols, skills and referral options (Blacker 2009). This extended training enables ECPs to provide treatment or referral on scene, reducing the number of transportations (Hoyle, 2012). This may result in improved patient experience and reduced burden on the hospital emergency department (Swain 2012).

The aim of this literature review is to systematically synthesise the literature focussing on personal perceptions and experiences of extended care paramedic care and to identify factors that influence that services.

Possible research methods:
A systematic search will be conducted of PubMed, EMBASE, CINAHL, PsychINFO, Scopus and grey literature. Boolean connectors AND, OR and NOT will be used to combine search terms such as paramedic, extended care, perception and experiences. In addition, the references of retrieved publications will be examined to identify any additional papers.

Suggested readings:

Contact: annewilson.rec@gmail.com
Regional Primary Health Care Organisations: population health planning, participation, equity and the extent to which initiatives are comprehensive

Principal supervisor: Dr Sara Javanparast

School / Organisational Unit: Southgate Institute for Health, Society and Equity, School of Medicine

Location: Adelaide - Bedford Park campus

Project background and aims:
Comprehensive Primary Health Care (CPHC) is an approach that emphasises equity, community participation, health promotion and recognition of social determinants of health. Australia's health reforms have stressed CPHC as a means to responding to increasing trend in chronic diseases and the widening gap in health access and outcomes. This study is a three year NHMRC funded project and provides an opportunity to work in a research team and learn about primary health care organisations in the Australian context, and the extent to what they consider issues of equity in their population health planning and programs. Medicare Locals (MLs) were the primary health care organisations commenced in 2011 and have been replaced by Primary Health Networks (PHs) from July 2015. The study examines the capacity of primary health care organisations in population health planning for primary health care and engagement with community and other PHC stakeholders.

Possible research methods:
This component of the study will use a document review and analysis. The planning documents and governance structure of PHNs will be gathered from PHNs' websites. The composition and capacity of management team in PHNs to engage with communities, and to develop population health planning will be compared with the previous MLs. To do this, the student will pursue a research question relevant to the study aims and closely supervise by the research team to collect and review documents.

Suggested readings:

Contact:  sara.javanparast@flinders.edu.au
Refugee Health and Wellbeing

Principal supervisor: Prof Anna Ziersch

School / Organisational Unit: Southgate Institute for Health, Society and Equity, School of Medicine

Location: Adelaide - Bedford Park campus

Project background and aims:
Refugees and asylum seekers represent a particularly vulnerable group in the Australian community, and previous research has shown that they face multiple barriers to health and wellbeing. Research also suggests that there is a link between housing and health, wellbeing and social inclusion. However, there is less information on these connections between housing and health for refugees and asylum seekers. This project aims to examine the links between housing, health, wellbeing and social inclusion for refugees and asylum seekers. The student would be immersed in the issues of working with refugee and asylum seekers communities in a research capacity, including ethical and research design issues. The student would also have the opportunity to learn data analysis skills, including both primary and secondary data. Input into the development of innovative methodologies such as photovoice and digital storytelling is also possible.

Possible research methods:
The student would gain knowledge concerning research designs and methodologies when working with culturally and linguistically diverse communities, including people with refugee and asylum seeker backgrounds. In addition, the student would be exposed to the use of innovative research methodologies, as well as both qualitative and quantitative data analytic techniques. The student may also potentially be involved in the preparation of a manuscript concerning housing policies and wellbeing for publication.

Suggested readings:

Contact: anna.ziersch@flinders.edu.au
Drug development to control neurotransmitter release

Principal supervisor: A/Prof Damien Keating

School / Organisational Unit: Human Physiology, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
In collaboration with researchers throughout Australia, we have developed a novel suite of small molecules (drugs) and identified that they regulate the release of neurotransmitters. We wish to build upon our initial high impact publication and understand the mechanism by which these new drugs work.

Possible research methods:
We use an array of methods in our lab and provide a strong research environment. The techniques used in this project will include single cell analysis, microscopy, pharmacology and other complimentary techniques.

Suggested readings:
We have published a strong intital paper on this topic that will provide a good idea of what this project may be about.


Contact: damien.keating@flinders.edu.au
Faculty of Medicine Nursing and Health Sciences

Summer Research Scholarships 2015 – 2016 Projects

The role of novel endocrine cells in metabolic control and diabetes

Principal supervisor: A/Prof Damien Keating

School / Organisational Unit: Human Physiology, School of Medicine

Location: Adelaide - Flinders Medical Centre (FMC)

Project background and aims:
Gut endocrine cells (called enteroendocrine cells) represent the largest endocrine tissue in our body. Yet we know the least about them in terms of their function. Research in the past decade demonstrates that these cells have major effects on our metabolism and are the sites of novel drug targets for obesity and Type 2 diabetes. Our group has developed novel methods to examine the function of these cells and this project will identify how they respond to nutrients and how their function changes in human disease.

Possible research methods:
We utilise an array of experimental approaches and provide a very strong learning environment for our students. We have world-leading access to human tissue, use transgenic animal models an a suite of intro approaches including ELISA assays, real time PCR, immunocytochemistry, microscopy and FACS.

Suggested readings:
The importance of this area of our research can be seen in these high impact publications:
- Cell Metabolism 2012 Nov 7;16(5):588-600

Contact: damien.keating@flinders.edu.au
Faculty of Medicine Nursing and Health Sciences

Summer Research Scholarships
2015 – 2016 Projects

Use of best practice to create a web-based interdisciplinary resource for professionals working with children in the early years

Principal supervisor: A/P Julian Grant

School / Organisational Unit: Nursing and Midwifery, School of Nursing and Midwifery

Location: Adelaide - Bedford Park campus

Project background and aims:
This summer scholarship opportunity is situated within a larger research project developing a national interdisciplinary learning and teaching framework to inform curriculum for the education of professionals who will work with young children. Incorporating interdisciplinary education into the pre-service education of professionals is important for improving the health, social and education outcomes for children under 5 years of age and their families.

The aim of this project is to develop a web-based resource which is based on the best available evidence for engaging end users of research outcomes. We have an existing data base of information to help professionals from different disciplines to work better together and are seeking to translate this into a resource for educators and students. Both research and IT skills can be developed through this project.

Possible research methods:
The focus of this project is research translation. This will initially involve a systematic literature review to determine the best available evidence. The second stage of the project will involve translating this into the development of a web based resource using an existing database.

Suggested readings:

Contact: julian.grant@flinders.edu.au
Chronic Fatigue Syndrome and Cytokines

Principal supervisor: Dr Michael Musker

School / Organisational Unit: SAHMRI, School of Nursing and Midwifery

Location: Adelaide - SAHMRI

Project background and aims:
Chronic fatigue syndrome (CFS) is characterised by a constellation of symptoms in previously healthy and active individuals. Because of these symptoms, quality of life of persons with CFS can be extremely compromised. While the search for a clear-cut cause remains elusive, we believe that we can make a major contribution to patient’s quality of life by elucidating the biological basis of their clinical symptoms. If the proximal biology underlying the disabling symptoms of CFS is elucidated, we will be able to target treatments aimed at symptomatic improvement.

Possible research methods:
1. Setting up human research study with ethics application.
2. Interviewing Participants and sampling of bloods.
3. Collecting data from human participants in a mental health context.
4. Entering data into a spreadsheet and analysis.
5. Writing about the project and the results.

The participant will not be recorded as a member of the research team or be entered on subsequent publications, but will be a learner and observer.

Suggested readings:

Contact: michael.musker@sahmri.com
National survey on nurses working with patients with cardiac conditions

Principal supervisor: Professor Robyn Clark

School / Organisational Unit: Acute Care and Cardiovascular Research Group, School of Nursing and Midwifery

Location: Adelaide - Bedford Park campus

Project background and aims:
Pressures to avoid hospital admissions, improve service delivery, facilitate cost effectiveness and enhance access to health care services have led to the development of expert nursing roles.

In Australia, cardiac specialist roles exist in heart failure, cardiac rehabilitation, chest pain, cardiac arrhythmia and implantable device management, and operate within both public and private hospital systems, in clinics and the community as well as at the hospital bedside.

The aim of this project is to understand the diversity and characteristics of cardiac nurse specialist roles across Australia via an online survey.

The specific objectives of this survey are to:
1. Determine how specialist cardiac nurses are measuring and reporting service effectiveness
2. Describe how services are funded
3. Determine if there are perceived gaps in funding delivery
4. Gather information on satisfaction and confidence with patient care.

Possible research methods:
The student will gain skills in:
1. Survey delivery
2. Data entry
3. Descriptive statistical analysis
4. Thematic analysis
5. Preparing research data for publication
6. Working with stakeholders to disseminate research outcomes.

Suggested readings:

Contact: robyn.clark@flinders.edu.au
Children living in SES diadvantage and their access to health

Principal supervisor: Dr Yvonne Parry

School / Organisational Unit: Primary Health Care, School of Nursing and Midwifery

Location: Adelaide - Bedford Park campus

Project background and aims:
To investigate the levels of health access of children living in disadvantage.

Possible research methods:
Mixed methods using Hospital based data and parent interviews.

Suggested readings:
1. Parry YK 2012 Understanding the relationship between the social determinants of health (SDH), Paediatric Emergency Department use and the provision of primary care: a mixed methods analysis. Thesis Flinders University

Contact: yvonne.parry@flinders.edu.au
Understanding peer-to-peer support provided through Facebook for women exclusively expressing breast milk

Principal supervisor: A/Prof Linda Sweet

School / Organisational Unit: Midwifery, School of Nursing and Midwifery

Location: Adelaide - Bedford Park campus

Project background and aims:
The overall goals of this study are to gain an insight into the content of enquiry and dialogue, and the ways in which a Facebook group functions to provide information, social support, and a sense of community to people exclusive expressing of their breast milk.

Objectives
1. undertake a content analysis of the key topics and advice that arise from the dataset
2. undertake a discourse analysis of the ways in which the women support one another in their quest to exclusively express their breast milk, and to allay their sense of stigmatisation
3. undertake a thematic analysis of the lactation and breast expression management questions and advice that arise within the dataset, and compare these with current best practice
4. undertake an emotion coding analysis of the dataset to explore subjective qualities of the human experience including emotions, values, conflicts, and judgements

Possible research methods:
This project aims to perform a series of analyses on an existent dataset from an online support group for women who exclusively express their breast milk.

The successful applicant will be taught NVivo software by the supervisor, and gain experience in how to undertake a qualitative research analysis on an existing dataset and contribute to writing for publication.

Suggested readings:

Contact: linda.sweet@flinders.edu.au
Characterisation of a novel hormone-associated organelle in endocrine cells

Principal supervisor: Dr Amanda Lumsden

Co-supervisor: Dr Damien Keating

School / Organisational Unit: Human Physiology, School of Medicine

Location: Adelaide – Flinders Medical Centre

Project background and aims:
The mucosal lining of the gut is a critical interface between our body and the external environment that is uniquely exposed to fluctuations in nutrient availability and osmolarity. Endocrine cells that reside in the gut lining (‘enteroendocrine’ cells), secrete hormones that regulate the body’s metabolic response to what we ingest, and are therefore implicated in a growing list of metabolic diseases including obesity and Type 2 diabetes. We have discovered that certain hormones that are secreted from these cells localize, to an uncharacterised intracellular organelle resembling vacuoles found in ancient organisms such as yeast and amoeba, where they have important functions in osmoregulation, nutrient sensing, and secretion. There is novel potential in understanding the role of these organelles in mammalian hormone secretion. This project involves characterisation of the organelles in order to address both their identity and function.

Possible research methods:
Endocrine cell isolation from human or rodent gut tissue; live cell staining and microscopy using fluorescent markers of membranes, acidity, and calcium; time lapse imagery; immunolabelling of cells; utilisation of various pathway inhibitors to assess function.

Suggested readings:
Biochim Biophys Acta. 2009 April, 1793(4): 650-663

Contact: amanda.lumsden@flinders.edu.au
The effect of manipulation of the SK/S1P pathway on HIV transcription

Principal supervisor: Dr Jillian Carr

Co-supervisor: Dr Damien Keating

School / Organisational Unit:
Microbiology and Infectious Diseases/Virus Research Laboratories, School of Medicine

Location: Adelaide – Flinders Medical Centre

Project background and aims:
Infection with the HIV is still a major global epidemic but, at least in western countries, can be successfully controlled by anti-retroviral treatment. These treatments do not cure HIV infection and the virus remains latent in cellular reservoirs and can re-activate. Current treatment aims are to ‘cure’ this latent reservoir by either activation or full repression of HIV transcription, which is controlled by a region called an LTR. We have identified that manipulations of the SK/S1P pathway can affect cellular transcription factors that are major controllers of the HIV LTR. We HYPOTHESIZE that treatment with SK/S1P manipulating agents can effect transcription from the HIV LTR and thus effect HIV reactivation from latency. To test this we AIM to (1) culture HIV LTR-reporter cell lines ± SK inhibitors and S1P analogues and (2) measure reporter gene activity to determine HIV transcriptional activity.

Possible research methods:
Experiments will utilize cell culture of lines containing stably integrated HIV LTR-reporter constructs, treatment with drugs and analysis of reporter activity by direct assay or flow cytometry. All techniques are established. These experiments utilize PC2 GMO’s and will have Flinders Institutional Biosafety Committee approval. Experiments will not involve use of infectious HIV.

Suggested readings:

Contact: jill.carr@flinders.edu.au
Environmental control of cell growth and cell division: Relevance to cancer

Principal supervisor: Associate Professor Janni Petersen

School / Organisational Unit:
The Environmental Control of Cell Growth and Cell Division laboratory, School of Medicine

Location: Adelaide – Flinders Centre for Innovation in Cancer (FCIC)

Project background and aims:
Cancer is a disease of inappropriate cell growth and cell division. In addition, cancer cells migrate to colonise new parts of the body, here they undergo cell division in environments with limited nutrient supply and therefore cancer cells are frequently nutritionally stressed. The Target of Rapamycin (TOR) signalling pathway co-ordinates cell division with available nutrients and importantly altered TOR signalling has been linked to 80% of cancers. We exploit the simplicity of a single celled lifestyle and strong genetics in yeast to understand the principles of TOR signalling and identify key conserved regulations of this pathway, which we then subsequently study in human cells. In shedding light on the mechanisms behind environmental and TOR pathway control of cell division we will aim to target these in human cancers.

Possible research methods:
The student has the possibility to gain experience with a range of techniques including mammalian tissue cultures, yeast cell biology and genetics, Biochemistry including: SDS-PAGE, western blotting, Molecular biology including: PCR, DNA cloning and DNA sequencing.

Suggested readings:

Contact: janni.petersen@flinders.edu.au
Analysis of the development and implementation of mental health related clinical practice guidelines in Australian ambulance services

Principal supervisor: Dr Louise Roberts

School / Organisational Unit: Paramedic Unit, School of Medicine

Location: Adelaide – Bedford Park campus

Project background and aims:
The aim of this study is to investigate how mental health related guidelines and policies have been developed and implemented in Australian ambulance services. The four key objectives of the study are to; investigate the evidence-base that underpins mental health related policies and guidelines in Australian ambulance services and how have they been created, explore how mental health related policies and guidelines have been implemented in Australian Ambulance services, examine how mental health related guidelines are viewed by key persons that have been directly involved in their development and explore the links between wider mental health reform and pre-hospital organisational policy and guideline development in this area.

Possible research methods:
Data will be collected from both publically available and organisational based documents such as State and Territory mental health legislation and Ambulance clinical practice guidelines. Data will be analysed by coding and developing conceptual maps from the written documents that direct paramedic clinical practice in this area. Discourse analysis enables the data to be examined for who and what is being said, the dominant voices and players and importantly what is not being included.

Suggested readings:
Current mental health legislation and literature discussing the way clinical practice guidelines are developed and implemented into emergency provision of health care

Contact: louise.roberts@flinders.edu.au