ABOUT HONOURS

The Public Health honours is a specialised year of study for those students who have demonstrated a high level of academic achievement in their undergraduate degree. The honours year offers an opportunity to immerse yourself in a research topic under the expert guidance of an academic supervisor, providing you with advanced training in contemporary approaches to health research.

If you have performed well in your undergraduate studies, have a capacity for defining and solving problems, enjoy discussing concepts, and exploring ideas, we encourage you to apply for honours.

Honours has the ability to improve your employment opportunities, as many prospective employees view honours as an indicator of advanced skills and knowledge and an ability to work independently. The completion of an honours year shows that you have persistence, the ability to apply yourself to achieving a complex goal, and are able to manage your time when presented with a large task to complete independently.

Public Health honours students are a select group. If you are successful in your application, we look forward to welcoming you to our stimulating, supportive and growing research community.

YOUR HONOURS COORDINATORS

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INSTRUCTIONS TO STUDENTS

We encourage you to review the available projects listed under the School of Public Health themes in this booklet. We then invite you to contact the academic supervisor responsible for the project to discuss the research project in more detail.

ABOUT THE SCHOOL OF PUBLIC HEALTH

The School of Public Health is the largest of the eight Schools within the Faculty of Health Sciences. We teach and conduct cutting edge, world-class research across three main themes in public health: health promotion and disease prevention; occupation and the environment; and health systems and health economics.

The School of Public Health at Curtin University was established in 1979 and has evolved to become a leader in public health in Australia and the broader Asia-Pacific region. We are driven towards developing, testing and implementing innovative solutions to new and emerging public health issues.

The research undertaken within the School has an international outlook supported by a network of strong relationships with universities across Southeast Asia and Europe, making us an attractive destination for international students wanting to pursue education in public health.
EFFECT OF DIETARY FATS ON BLOOD BIOMARKERS FOR ALZHEIMER'S DISEASE RISK

SUPERVISOR/S
John Mamo and Ryu Takechi
Contact: J.Mamo@curtin.edu.au

PROJECT DESCRIPTION
Recent research has found that raised levels of a protein (ß-amyloid) found in blood can predict future risk of Alzheimer’s Disease. However, the mechanism for this link or indeed the factors that affect the levels of this protein remains to be fully established. The aim of this study is to examine the short-term effect of consuming different types of fats on the levels of amyloid protein in blood. In this study, we will monitor levels of amyloid in blood at regular time points after consumption of different fats in a high-fat test meal. Results from this study may explain, at least in part, the effect of dietary fats on risk of Alzheimer’s Disease.

METHODS
management and organization of clinical cohort and their data/samples, blood sample analyses, statistical data analyses, scientific writing, dietary analysis

NECESSARY SKILLS/KNOWLEDGE
preferred students with nutritional background and data analysis experience
THE IMPACT OF REPETITIVE MILD SUB-CONCUSSION ON COGNITIVE PERFORMANCE, CEREBROVASCULAR FUNCTION AND NEUROINFLAMMATION: A PRE-CLINICAL MODEL STUDY.

SUPERVISOR/S
Ryu Takechi and Andrew Lavender
Contact: r.takechi@curtin.edu.au

PROJECT DESCRIPTION
Increasing reports suggest that repetitive mild sub-concussion (i.e. soccer heading) can induce neurodegeneration by extension impair cognitive function. However, detailed underlying mechanisms are currently unknown and there are no effective preventative strategies established. The integrity and function of cerebrovascular blood-brain barrier is considered as central to maintaining healthy neuronal function and cognitive performance. Our laboratory team has a number of NHMRC-funded projects to protect cognitive function by positively modulating the integrity of cerebrovasculature. With those expertise, we would like to test the effects of mild sub-concussion on blood-brain barrier integrity and cognitive function in rodent models. The impact of repetitive mild sub-concussion on cognitive performance, cerebrovascular function, and neuroinflammation: a pre-clinical model study

METHODS
blood sample analyses, statistical data analyses, scientific writing, dietary analysis

NECESSARY SKILLS/KNOWLEDGE
Preferred students with nutritional and biochemistry background and data analysis experience

PROJECT DESCRIPTION
Diabetes mellitus has two types, type-1 and type-2. Type 1 Diabetes is characterized by the body destruction of the pancreas which results in the loss of the pancreas ability to produce insulin and control blood sugar levels. Injectable insulin has been the main therapy for Type 1 diabetic patients since its discovery in 1921. Recent advancement in biotechnology showed significant potential in designing an artificial pancreas, by growing a healthy pancreas and transplanting it to Type 1 diabetic patients, and thus, replace the need for administering insulin and cure Type 1 diabetes. The project aims to invent new formulation to create a healthy functional pancreas, which can cure diabetes.

NECESSARY SKILLS/KNOWLEDGE
Student eagerness to make a career working with bio-nanotechnology and designing new organs. The student does not need to have particular lab skills, but has to be eager to learn nano-technology and how to grow a pancreas.
DESIGNING NEW DRUGS FOR TREATING TYPE 2 DIABETES USING ANTI-LIPIDEMIC DRUGS. THE POWER OF NANOTECHNOLOGY

SUPERVISOR/S
Ryu Takechi and Hani Al-Salami
Contact: hani.al-salami@curtin.edu.au

PROJECT DESCRIPTION
Patients with Type 2 Diabetes suffer from chronic inflammation and the inability to control their blood sugar levels. New cutting-edge designs of capsules that can optimize the effects of antidiabetic drugs, are needed to optimise the effects of current treatments. The project aims to design new nano-capsules which can result in better drugs effects in diabetes treatment. The aims can be achieved using nano technologies and new discoveries. The supervisors’ lab is well designed and equipped to carry out the work, so the honour student will get significant support from other lab members and the supervisors. All ethics applications are in place, which will ensure the smooth conduct of the Honour research project. The successful student(s) will have the opportunity, if appropriate, to continue the research project (under a scholarship) to further make new discoveries, in the areas of diabetes treatment.

NECESSARY SKILLS/KNOWLEDGE
Learning from experience existing lab members, the student will gain crucial skills in nanotechnology, diabetes therapy and drug analytical methods, which will enable
EVALUATING THE IMPLEMENTATION OF A COMPREHENSIVE SCHOOL-BASED HPV PROJECT
SUPERVISOR/S
Sharyn Burns
Contact: s.burns@curtin.edu.au

PROJECT DESCRIPTION
This project will include an evaluation of a school-based program to promote the HPV (Human Papillomavirus) vaccination to Year 8 students and their parents. The intervention will be developed and implemented through the Department of Health (WA). A health promoting schools approach will be employed to ensure a broad range of strategies across the areas of Curriculum, Learning and Teaching; School Organisation, Ethos and Environment; and Partnerships and Services. This project will include a mixed methods evaluation using a case study design with a small sample (n = 2) of purposively selected schools in Perth. The evaluation will focus on determining the efficacy of implementing the project in schools. Knowledge and attitudinal changes will also be measured.

METHODS
Students will develop skills in literature review and mixed methods data collection and analysis. The case study design will include quantitative (surveys) and qualitative (focus groups; document analysis; interviews) data collection and analysis. The student will be supported to develop skills. This study will also provide the student to work with staff from the Health Department (WA) and school-based staff.

NECESSARY SKILLS/KNOWLEDGE
Students will be required to use a statistical data analysis package (SPSS or STATA) and NVIVO however support will be provided for students not familiar with these packages. This project requires sound communication skills.

CAN YOU SWIM? AN EXPLORATION OF SWIMMING ABILITY IN WA.

SUPERVISOR/S
Justine Leavy and Gemma Crawford
Contact: j.leavy@curtin.edu.au

PROJECT DESCRIPTION
Little is known about the relationship between real and perceived water competence among youth in the context of drowning prevention or of their perceptions of their risk of drowning. This research project will be in two parts: an initial questionnaire survey to provide self-estimates of water competency and risk perception, followed by practical tests in the water.

METHODS
Quantitative and qualitative research skills, questionnaire design, participant recruitment

NECESSARY SKILLS/KNOWLEDGE
SPSS, NVivo skills (desirable not essential) and the ability to swim. Bronze medallion and CPR certification preferred.
COST EFFECTIVENESS ANALYSIS OF A SOCIAL FRANCHISE MODEL FOR MENTAL HEALTH PROMOTION

SUPERVISOR/S
Delia Hendrie and Abby Mosedale
Contact: d.v.hendrie@curtin.edu.au

PROJECT DESCRIPTION
The Act-Belong-Commit campaign makes extensive use of social franchising to facilitate participation in mentally healthy activities and for the delivery and implementation of the campaign at a local community level. The social franchise model enables the Act-Belong-Commit campaign to grow and expand its impact and geographical reach without necessarily increasing the size of the franchiser “hub” (Beckmann and Zeyen 2013). The campaign partners with over 150 organisations in WA, with its success recognised outside of WA with the uptake of the campaign by partners across Australia and internationally in Japan, UK, Fiji, and Denmark’s National Institute for Public Health (Koushede et al. 2015). Through a cost-effectiveness analysis of the social franchise model for the Act-Belong-Commit campaign, this research will demonstrate the success of this model for maximising campaign reach and impact.

METHODS
Literature searching, Critical Analysis, Data Analysis.

NECESSARY SKILLS/KNOWLEDGE
Experience using SPSS, STATA, or other statistical package.

LIFESTYLE AND CLINICAL MARKERS OF PRE-DIABETES AND INCREASED CRADIOVASCULAR DISEASE RISK IN YOUNG ADULTS

SUPERVISOR/S
Jacquita Affandi; Natalie Ward, Luke Haseler, Chris Reid
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PROJECT DESCRIPTION
In Australia, 30% of deaths in 2012 were attributed to cardiovascular disease (CVD) - usually coronary heart disease (CHD), stroke, heart failure (HF) and cardiomyopathy. The primary cause of CVD is atherosclerosis due to formation of arterial plaques. This can result in a reduced or blocked blood supply to the heart – causing angina or heart attack, or to the brain – leading to stroke. Whilst manifestations of CVD generally appear in middle age, the damage begins far earlier. Although the prevalence of these risk factors are low in the young adult population, adapting early lifestyle changes may reduce the risk of CVD developing later in life. Preventable risk factors for CVD include tobacco smoking, high blood pressure, high blood cholesterol, reduced physical activity, illegal/recreational drug use, obesity, poor nutrition and diabetes. Assessing lifestyle and clinical markers of pre-diabetes which may contribute/lead to increased absolute cardiovascular risk in young men and women between 18-35 years of age may identify early predictors of CVD and establish links between health, lifestyle and prevalence of CVD. A number of risk assessment tools have been developed to aid in the prediction of the likelihood of developing CVD. These CV risk screening tools are particularly important as they allow the targeted delivery or primary preventive initiatives and therapies in people who do not already have established CVD and further focused assessment of people who are at high risk of CVD. Given the large modifiable component of CVD it is possible to reduce the burden and impact of CVD through risk factor reduction and identification of early and asymptomatic disease. The first steps in modifying the impact of CVD are assessment and education, thus reducing future health burden. Target number of participants: 100

Study design:
1. Participants will be invited to the clinic, and sign consent.
2. Participants will be invited to fill in a series of questionnaires on lifestyle behaviours and demographics.
3. 24 hr ambulatory blood pressure monitoring (ABPM) will be collected, central arterial wave reflection will be captured, evaluation of ECG using Myovista and 12 lead ECG.
4. Blood samples will be collected for biomarker measurements.
5. Anthropometric measurements will be collected.
HEALTH RISKS OF LITHIUM MINING

SUPERVISOR/S
Lin Fritschi
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PROJECT DESCRIPTION
The value of lithium is increasing because it is a major component of batteries for devices such as smart phones. WA currently supplies 60% of the world’s lithium and an expansion of the Greenbushes mine is underway. There is also the possibility of the construction of a plant to manufacture lithium batteries locally. Despite the increasing demand for lithium, very little is known about the health effects of lithium mining on workers and the surrounding communities.

METHODS
Literature searching, statistical analysis skills, Interviewing key stakeholders in the community.

NECESSARY SKILLS/KNOWLEDGE
Experience using SPSS or Stata. Grade average of 70+.
Contact

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