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

Associate Professor Jonine Jancey
Research Lead, Collaboration for Evidence, Research and Impact in Public Health
PHHonours@curtin.edu.au

Dr Justine Leavy
Senior Lecturer
PHHonours@curtin.edu.au

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.
EVALUATING THE IMPACT OF AN ADULT FOOD LITERACY PROGRAM

SUPERVISOR/S
Andrea Begley
Contact: A.Begley@curtin.edu.au

PROJECT DESCRIPTION
Food literacy programs aim to improve adults' knowledge and skills required to plan, select and prepare a healthy diet. One of the limitations of judging the impact of these types of programs is the lack of some type of control group and measurement of dietary intake change. Traditional dietary intakes measurement tools require time and can have high respondent burden. The ASA24 (Automated Self-Administered) 24 hour recall tool is a web-based software tool adapted for use in Australia. The US version has been through several cognitive and usability tests during development with the intention for the tool to be self-administered. The objectives of this honours project would be to

a. recruit a control group with similar demographic characteristics
b. compare food literacy behaviour change between intervention vs control group.
c. compare dietary intake change between intervention vs control group.

METHODS
Subject recruitment, Database management, Dietary analysis using the ASA24 (interview administered), SPSS analysis skills

NECESSARY SKILLS/KNOWLEDGE
Excellent interpersonal skills, Knowledge of food literacy components, Interest in dietary assessment methods
DIETARY BEHAVIOURS RELATED TO SLEEP IN OVERWEIGHT AND OBESE ADULTS ENROLLED IN THE LIVELIGHTER ‘TODAY’ PROJECT

SUPERVISOR/S
Deborah Kerr, Satvinder Dhaliwal and Rhiannon Halse
Contact: d.kerr@curtin.edu.au

PROJECT DESCRIPTION
There is increasing interest in the role of short sleep duration in obesity and T2DM. Other factors such as diet, lifestyle, depression and stress may also play a role. This project will leverage existing funding from Healthway for a project “Tailored Online Diet and Activity (TODAY) study” which is a 1-year randomised controlled trial to investigate whether diet and physical activity behaviours can be improved with tailoring in an overweight population enrolled in the LiveLighter campaign. The study started in September 2017 and is due to complete in July 2019. The primary outcomes are changes in body weight, junk food consumption (sugar-sweetened beverages, alcohol, take away and other junk foods) and daily moderate to vigorous physical activity (MVPA) and sedentary time. The objective of this honours project is to examine associations of sleep duration with dietary behaviours among adults who are overweight/obese. Participants will have their diet assessed with a 4-day mobile food record and the Australian Eating Survey Food Frequency Questionnaire. Sleep is assessed by questionnaire using the Sleep Quality Assessment (PSQI).

METHODS
Being part of a research team, skills in conducting interventions targeting diet and physical activity behaviours, SPSS analysis skills

NECESSARY SKILLS/KNOWLEDGE
Nutrition/ Health Promotion background

IDENTIFYING ATTITUDES AND BEHAVIOURS REGARDING VITAMIN D AND SUN EXPOSURE IN AFRICAN PEOPLE LIVING IN PERTH

SUPERVISOR/S
Andrea Begley
Contact: A.Begley@curtin.edu.au

PROJECT DESCRIPTION
There is a high prevalence of vitamin D deficiency in people with dark skin living in Australia. Sun exposure guidelines for the general population may not be appropriate for people with dark skin, and dietary sources of vitamin D are limited to specific foods (namely oily fish, meat, eggs, dairy and mushrooms). The Cancer Council WA has identified a need to reach members of the African population living in WA with educational resources about sun exposure and vitamin D deficiency. Advice on cultural norms with respect to sun exposure and diet, and advice on appropriate messaging for African people, is needed to inform the development of such a campaign. Working closely with Cancer Council WA and the Organisation of African Community of WA (OAC-WA, a not-for-profit organisation that provides support, services and representation for all Africans in WA), we will conduct focus groups involving African people living in Perth and surrounding areas. Participants will be recruited with the help of the OAC-WA community network. The student will be required to travel to various locations in Perth to coordinate focus groups, with the help of experienced staff. The aim of the project is develop an understanding of cultural norms and knowledge of/attitudes towards vitamin D deficiency, sun exposure, dietary vitamin D and supplementation, in order to develop a targeted campaign to improve vitamin D status in African people living in WA.

METHODS
Qualitative research methods including question design and focus groups facilitation, analysis using NVivo and manuscript preparation.

NECESSARY SKILLS/KNOWLEDGE
Excellent interpersonal skills. Previous study in sociology and its application to nutrition (e.g. has completed NUTR3000 Nutrition Education and Sociology or equivalent). Interest in the application of qualitative research methods.
SKIN COLOUR AS A MARKER OF FRUIT AND VEGETABLE INTAKE

SUPERVISOR/S
Karin Clark and Tony James
Contact: karin.clark@curtin.edu.au

PROJECT DESCRIPTION
Current dietary assessment methods are prone to subjective bias, highlighting the demand for an objective marker of fruit and vegetable (F/V) intake. Dietary carotenoids from fruit and vegetable consumption accumulate in the tissue beneath the skin and impart a yellow pigment. Skin colour can be measured objectively and non-invasively using reflectance spectroscopy.

We recently reported that skin colour is strongly correlated with both carotenoid and fruit and vegetable intake in young Caucasian men. The proposed study will investigate whether measuring skin reflectance properties can predict fruit and vegetable intake across a wider population group.

This knowledge would open up the possibility of using skin colour as a non-invasive biomarker to predict carotenoid intake, and therefore fruit and vegetable intake from skin colour.


METHODS
Literature searching, defining a research question, questionnaire design and dietary analysis, subject recruitment, spectrophotometer technique, SPSS and Excel analysis skills, project management skills.

NECESSARY SKILLS/KNOWLEDGE
B-NUTR or BB-HPRNTR qualification.
Knowledge of Australian foods, ability to conduct and/or develop a FFQs.
SPSS and Excel analysis skills, literature searching, critical appraisal and scientific writing.
COMPARISON BETWEEN 24-h URINARY SODIUM EXCRETION AND MARKERS OF BONE HEALTH

SUPERVISOR/S
Karin Clark and Tony James
Contact: karin.clark@curtin.edu.au

PROJECT DESCRIPTION
The World Health Organization states that a reduction in dietary sodium would aid in prevention of non-communicable diseases.

Dietary sodium has been proposed to impact on bone health potentially by increasing urinary calcium excretion. Calcium losses are predicted to lower bone mineral density, which over time can lead to osteoporosis and a greater risk of bone fracture and frailty. The majority of the literature on markers of bone health is conducted in post menopausal women as this is when greatest bone mineral losses are likely. Since peak bone mass is thought to be achieved by age 20, there is merit in assessing these biomarkers in younger women.

The current project will use the gold standard method for assessing dietary sodium intake (output from a 24-hour urine collection) as well as urinary calcium excretion and hip bone mineral density in young healthy females. This Honours project will add to existing cross-sectional data. The student will develop a research question and methods of interpretation in relation to the project hypothesis.

METHODS
Literature searching, defining a research question, questionnaire design and dietary analysis, subject recruitment, SPSS and Excel analysis skills, project management skills.

NECESSARY SKILLS/KNOWLEDGE
B-NUTR or BB-HPRNTR qualification.
Knowledge of Australian foods, ability to conduct dietary analysis and laboratory work.
SPSS and Excel analysis skills, literature searching, critical appraisal and scientific writing.
INVENTORY OF PHYSICAL ACTIVITY, NUTRITION AND OVERWEIGHT / OBESITY ACTIVITIES IN AN AREA HEALTH SERVICE

SUPERVISOR/S
Jonine Jancey and Krysten Blackford
Contact: j.jancey@curtin.edu.au

PROJECT DESCRIPTION
Poor diet, physical inactivity and overweight/obesity are leading causes of the burden of disease in Australia. To address these complex issues and associated chronic diseases, it is imperative to understand the community system. The Systems Thinking approach acknowledges the complexities of risk factors and determinants and ensures the interactions between individuals, groups, communities, and national efforts are considered.

This project will use systems methodology to understand the services, identify gaps and opportunities for health promotion activities to improve physical activity, nutrition and overweight/obesity in an area health service.

The study aims to:

a. Describe the chronic disease and risk factor prevalence, health status and health risks profile of residents
b. Identify local physical activity, nutrition and overweight/obesity activities.
c. Identify relevant stakeholders and networks and their interaction.
d. Identify gaps in service delivery.

METHODS
Project management skills, data base search, report writing, data management, data analysis (SPSS & UCINET), critical appraisal and synthesis of data

NECESSARY SKILLS/KNOWLEDGE
Good organisational skills, good communication skills, SPSS skill and willingness to learn.
RETIREMENT VILLAGES AND COMMUNITY CONNECTEDNESS

SUPERVISOR/S
Jonine Jancey and Gavin Pereira
Contact: j.jancey@curtin.edu.au

PROJECT DESCRIPTION
Retirement villages (RVs) are purpose-built housing for older adults. In Australia RV residents are functionally mobile and independent, requiring no or a very low level of domiciliary care. RVs are becoming an increasingly popular residential choice for adults aged over 60 years, with those choosing to reside in RVs expected to increase in coming decades. However, residents of RVs are typically sedentary. This is unfortunate as being physically active has many benefits, such as reducing chronic disease, improving mental health and supporting social connectedness. Co-locating RVs close to amenities required for daily living (e.g. shopping centres, parks and recreation centres), offers an opportunity for incidental and leisure time physical activity and in turn supports positive health outcomes.

This study aims to identify the amenities around retirement villages located in the Perth Metropolitan area to determine the integration of the RVs into the community and the area’s walkability.

This study requires
   a) Geographical Information System (GIS) mapping of areas around a sample of retirement villages (e.g. recreational facilities, shopping centres, cafe, restaurants, green space, roads); and
   b) Establishing the characteristics of the RVs (time built, land area, number of units, number of residents, resident demographics).

METHODS
Project management skills, data base searching, happy to work on computers and explore google maps

NECESSARY SKILLS/KNOWLEDGE
Good organisational skills, good computer skills

EXPLORING WATER SAFETY AMONGST OLDER ADULTS IN WESTERN AUSTRALIA

SUPERVISOR/S
Justine Leavy; Gemma Crawford; Lauren Nimmo and Ashley Ridge
Contact: j.leavy@curtin.edu.au

PROJECT DESCRIPTION
There has been increasing rates of drowning recorded over recent years amongst older adults aged 65+ years in Western Australia. The project aims to better understand the current level of water safety awareness and knowledge amongst older adults and to identify current levels of participation in aquatic activities and key water safety priority issues affecting the older age group. The project will include the collection of data through phone surveys and focus groups. The information from this research will inform the development of water safety programs targeting older adults.

METHODS
Skills in subject recruitment, survey design and qualitative research

NECESSARY SKILLS/KNOWLEDGE
Must be able to swim, have a current drivers license, experience with SPSS
WATCH AROUND WATER - CHILD SUPERVISION STUDY

SUPERVISOR/S
Justine Leavy and Lauren Nimmo (Royal Lifesaving WA):
Contact: j.leavy@curtin.edu.au

PROJECT DESCRIPTION
Parents have a crucial role to play in keeping children safe at public swimming pools, with the most common factor contributing to childhood drowning is a lapse in adult supervision. The Royal Life Saving Society of Western Australia have implemented the Watch Around Water campaign across WA swimming pools which educates the public about the importance of active supervision, and encourages parents / guardians to take on shared responsibility for this supervision along with lifeguards employed at the pool to reduce the drowning and injury.

The aim of the Watch Around Water - Child Supervision Study is to investigate current behaviour relating to child supervision and program implementation at a minimum of five public swimming pools located in the Perth metropolitan area. The study will use a mixed methods approach including parent interviews/surveys and observational research. This will be a pilot study and results and recommendations will guide the future expansion of the research into all pools promoting the Watch Around Water program in WA.

METHODS
Students will have the opportunity to undertake quantitative and qualitative research gaining a broad range skills and experience in literature searching, critical appraisal, questionnaire design, subject recruitment, SPSS analysis skills, database management, conducting interviews and Nvivo analysis skills.

NECESSARY SKILLS/KNOWLEDGE
• Background knowledge in relevant areas (such as health promotion, public health, population health or social science)
• Exceptional interpersonal and communication skills
• Knowledge of quantitative and qualitative research design, implement and analysis would be beneficial

STORYTELLING FOR MENTAL HEALTH PROMOTION

SUPERVISOR/S
Linda Portsmouth and Janine Ripper
Contact: l.portsmouth@curtin.edu.au

PROJECT DESCRIPTION
The Act-Belong-Commit campaign has developed a series of storytelling testimonial videos as part of its social marketing strategy to encourage people to take action to improve their mental health and wellbeing. The student will devise a methodology to evaluate the impact of storytelling, including written vs. video storytelling (using social media platform/s). The project will require the development of an online survey and quantitative data collection and analysis. The project will also require the recruitment of participants for focus groups, and qualitative data collection and analysis. The outcomes from this project will contribute towards the evidence base for Act-Belong-Commit mental health promotion campaign and be used as a guide for the campaign’s social marketing strategy.

METHODS
Literature searching; online questionnaire design using Qualtrics and quantitative analysis of responses; participant recruitment, planning and conducting focus groups with qualitative data analysis of responses (using NVIVO).

NECESSARY SKILLS/KNOWLEDGE
Excellent written and interpersonal communication skills and experience as a user of social media.
MENTAL HEALTH PROMOTION IN THE WORKPLACE

SUPERVISOR/S
Geoffrey Jalleh and Caroline Jackson Pierce
Contact: g.jalleh@curtin.edu.au

PROJECT DESCRIPTION
The Act-Belong-Commit team have developed a package for workplace partners to promote the Act-Belong-Commit mental health promotion message in the workplace. It is intended that this package will be trialled and evaluated with at least five workplaces. The student will devise a methodology to evaluate the impact of the toolkit, employee and employer presentations and use of Act-Belong-Commit resources. The project will require development of a pre and post questionnaire and recruitment for focus groups and qualitative data collection and analysis. The outcomes from this project will contribute towards the evidence base for Act-Belong-Commit and be used as a guide for the workplace partnership program.

METHODS
Literature search, needs analysis, critical analysis, questionnaire design, subject recruitment, conducting focus groups, qualitative data analysis

NECESSARY SKILLS/KNOWLEDGE
Excellent written and interpersonal skills
THE IMPACT OF SERIOUS DISEASE ONSET ON SOCIAL MOBILITY

SUPERVISOR/S
Rachael Moorin and David Youens
Contact: r.moorin@curtin.edu.au

PROJECT DESCRIPTION
Previous work by the supervisor has demonstrated that the onset of serious illness is associated with a reduction in migration to Perth amongst those living in rural and remote Western Australia. This might be caused by illness removing the usual incentives for urbanisation such as employment opportunities, or might reflect a reduction in economic means making a move more difficult. Regardless of the cause, the implication is that rural and remote populations with serious illness appear unable to migrate centrally to access services which they may require for their condition.

The current project aims to identify how the onset of serious disease may influence individual’s social mobility and contact with General Practitioners (GPs). The supervisor holds data including all hospitalisations and general practitioner visits for all West Australian residents. Hospital data will be used to identify the onset of serious disease, based on the first recorded admission for serious chronic illness. General practice data include patient postcodes, which can inform social disadvantage based on the Socio-Economic Index for Areas (SEIFA). The impact of the onset of serious illness on social mobility and continuity of GP contact will be analysed using regression models controlling for a range of covariates in the data.

METHODS
The student will further develop their skills in biostatistics and interpreting analysis results. The student will work with existing hospital and Medicare data and will learn about the development of these data and their use in research. The project will involve a literature review so will allow the student to develop their skills in searching and critically appraising the literature.

NECESSARY SKILLS/KNOWLEDGE
This project requires a student with strengths in epidemiology and biostatistics. Prerequisites are a credit or higher in undergraduate biostatistics, epidemiology and research methods units (EPID1000, PUBH2001, PUBH3001). Data management skills would also be very helpful.
GEOGRAPHICAL VARIATION IN CANCER SURVIVAL

SUPERVISOR/S
Rachael Moorin and David Youens
Contact: r.moorin@curtin.edu.au

PROJECT DESCRIPTION
Recently a growing body of literature is suggesting that there can be substantial variation between geographical regions, even at a relatively small scale, in diagnoses, in the treatments provided for certain conditions and in outcomes of care. These phenomena have been observed even within homogenous, publicly funded systems which aim to provide a consistent quality of care to all. This project will examine variation in cancer survival between regions of Western Australia and across types of cancer for those diagnosed between 1982 and 2017.

The supervisor currently holds linked administrative data (WA Cancer Registry, WA Death Registry, WA Hospital Morbidity Data Collection & Emergency Department Data Collection) on all incident cancer diagnoses in Western Australia from 1982 to 2017 inclusive. Data include type of cancer, date of diagnosis, postcode of residence at diagnosis, date of death (if relevant), hospital use (from 1997 +), emergency presentations (from 2002) and a range of socio-demographic information. Specific analytical methods used can be agreed by the student and supervisor, and will depend on the student’s level of knowledge and experience.

METHODS
The student will further develop their skills in biostatistics and interpreting analysis results. The student will work with existing hospital and Medicare data and will learn about the development of these data and their use in research. The project will involve a literature review so will allow the student to develop their skills in searching and critically appraising the literature.

NECESSARY SKILLS/KNOWLEDGE
This project requires a student with strengths in epidemiology and biostatistics. Prerequisites are a credit or higher in undergraduate biostatistics, epidemiology and research methods units (EPID1000, PUBH2001, PUBH3001). Data management skills would also be very helpful.
DO INTERPREGANCY INTERVALS AND PREGNANCY OUTCOMES VARY BY SOCIOECONOMIC STATUS OR ETHNICITY?

SUPERVISOR/S
Luke Marinovich and Amanuel Gebremedhin
Contact: luke.marinovich@curtin.edu.au

PROJECT DESCRIPTION
The interpregnancy interval (IPI; time between birth and conception of the next child) is a potentially modifiable risk factor for adverse pregnancy outcomes. Short and long IPIs have been linked to such outcomes as maternal mortality, preterm birth, and low birth weight. However, there is concern that traditional epidemiological studies showing an effect of IPI may be subject to confounding; that is, a spurious association may result if other risk factors are causally associated with adverse pregnancy outcomes, and are also independently associated with IPI. Using linked population health data from the WA Midwives Notification System, with near complete coverage of all births in WA from 1980-2015, this project will aim to investigate whether perinatal health outcomes and IPI vary by factors such as socioeconomic status and ethnicity. In addition, a literature review will be undertaken to describe what is known about how these maternal characteristics affect IPI and health outcomes, and a report will be produced presenting findings of the research. This project will therefore contribute to understanding the extent to which socioeconomic status and ethnicity may contribute to confounding in studies of the effect of IPI.

METHODS
Literature searching, critical appraisal, develop skills with statistical software, report writing/manuscript preparation.

NECESSARY SKILLS/KNOWLEDGE
Experience with statistical analysis software, spreadsheets and/or database management is desirable, but not essential.
FOOD INSECURITY NORTHERN GOLDFIELDS / MIDWEST

SUPERVISOR/S
Suzanne Robinson:
Contact: suzanne.robinson@curtin.edu.au

PROJECT DESCRIPTION
To research the extent and the consequence of food insecurity in the Goldfields/Midwest region, particularly for children. How can health service funders and providers better address food insecurity?

The research aims are:
- To review existing data
- Collect further quantitative and qualitative data from remote, disadvantaged communities in the Goldfields/Midwest region.
- Make recommendations for policy makers on how health services providers, state & local government and Aboriginal organisations can address food insecurity.

The 2010 West Australian Food Access and Cost Survey found that the cost of an average basket of healthy food was 23.5% higher in very remote areas compared with major cities. Welfare recipients needed to spend about 50% of their income on food compared with 16% for the average person, and the quality and range of healthy foods decreased with remoteness.

Remote stores often have a limited range of foods, particularly perishable foods such as fresh fruit, vegetables and dairy foods and the purchase prices are usually higher. Within the Goldfields/Midwest, the community surrounding and towns of Leonora, Laverton, Menzies, Wiluna and Ngaanyatjarra are particularly vulnerable.

Evidence suggests that people living in poverty tend to maximise calories per dollar spend on food. Energy dense foods rich in fats, refined starches and sugars represent the lowest cost options and the longest shelf life (important factor in remote living). While healthy diets based on lean meats, whole grains and fresh vegetables and fruits are costlier and more difficult to access. People in vulnerable groups therefore simultaneously maybe overweight or obese and experience food insecurity.

Persons who experience food insecurity face significant potential health concerns, which include increased risk of developing kidney disease, nutrient deficiencies, mental health problems and higher levels of risk factors for cardiovascular diseases and diabetes. There is also the additional emotional and social cost of food insecurity, which affects all aspects of modern life. The cost of treating nutrition-related illness and chronic disease will continue to increase with rises in food insecurity – in Australia, treating diabetes alone costs six billion dollars annually.

METHODS
Skills the student will develop: Literature review, Data review, Survey design and evaluation, Interviewing skills, Dietary Analysis.
**OCCUPATIONAL HEALTH AND EPIDEMIOLOGY PROJECTS**

**WORKING CONDITIONS OF NEW ZEALANDERS IN AUSTRALIA - EXAMINATION OF EXPOSURE TO CARCINOGENS AND PSYCHOSOCIAL HAZARDS**

**SUPERVISOR/S**
Alison Reid and Sonia El-Zaemey  
Contact: alison.reid@curtin.edu.au

**PROJECT DESCRIPTION**
Work-related injuries and injury fatalities are higher in New Zealand than in Australia. Our earlier work found that compared with Australian-born workers, New Zealand workers in Australia had higher work-related fatalities and hospital admissions for a work-related injury. We want to explore this area in more detail and so in 2017 we collected data on exposure to workplace hazards in migrant and Australian-born workers in Australia, including New Zealanders.

The aim of this project is to examine why New Zealanders might have more work-related fatalities and injuries than Australian-born workers. The specific objectives are to explore: how hazardous is work for New Zealanders in Australia? What sort of jobs are they working in in Australia? Are they exposed to more workplace hazards (e.g. exposure to carcinogens, or bullying, job strain, discrimination etc.) than Australian-born? Are there differences between Maori and Pakeha New Zealanders?

**METHODS**
Literature searching, statistical analysis skills

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

**THE ACCURACY OF INCIDENCE DATA FOR THE MYELOPROLIFEATIVE NEOPLASMS**

**SUPERVISOR/S**
Sonia Lin Fritschi and Sonia El-Zaemey  
Contact: lin.fritschi@curtin.edu.au

**PROJECT DESCRIPTION**
The myeloproliferative neoplasms (MPNs) are a group of rare blood cancers associated with some specific genetic mutations. Traditionally, MPN diagnosis has been made from a bone marrow biopsy which is a painful, invasive procedure. With increasing understanding of the genetics of the MPNs, and the availability of a definitive genetic test, some clinicians no longer undertake bone marrow biopsies in patients with MPNs. Cancer registries usually obtain notifications from anatomical pathology laboratories (which examine bone marrow biopsies but do not undertake genetic testing). As such, if no bone marrow biopsy is performed, the case would not be reported to a cancer registry and so rates of the MPNs would appear to be decreasing.

In this project we will compare data from the WA cancer registry and the genetic laboratories during one year to determine how many cases of MPNs are likely to be missed by the cancer registry. We will use our estimates of under-reporting to estimate the true rate of MPNs in Australia.

**METHODS**
Gain an understanding of the processes undertaken by disease registries. Learn about blood cancers, particularly MPNs. Generic skills such as literature searching, critical appraisal, database management, dealing with confidentiality and privacy issues, analysing data and writing up results.
FACTORS ASSOCIATED WITH PARTICIPATION IN BREAST SCREENING PRACTICES AMONG POPULATION SUBGROUPS: A SYSTEMATIC REVIEW AND META-ANALYSIS

SUPERVISOR/S
Renee Carey and Sonia El-Zaemey
Contact: renee.carey@curtin.edu.au

PROJECT DESCRIPTION
Some subgroups of the population, including Aboriginal and Torres Strait Islanders and migrants, have significantly lower rates of participation in breast cancer screening (including mammography and breast examination). This project will examine the factors associated with participation in breast cancer screening practices among either migrant or Aboriginal and Torres Strait Islander women (or potentially another population subgroups of the student’s interest). The student will undertake a systematic literature review to identify barriers to and facilitators of participation in breast cancer screening in the subgroup of interest. They will also conduct a meta-analysis to calculate the rate of breast cancer screening participation in the relevant subgroup. This project will be undertaken within a research team working on related projects and the student may have the opportunity to contribute to other publications and projects.

METHODS
Literature searching

NECESSARY SKILLS/KNOWLEDGE
Good writing skills. Statistical experience
WHAT DO PEOPLE WITH MULTIPLE SCLEROSIS THINK ABOUT A MINDFULNESS PROGRAM?

SUPERVISOR/S
Jun Chih, Lucinda Black and Richard Norman
Contact: h.chih@curtin.edu.au

PROJECT DESCRIPTION
There is a high prevalence of depression and anxiety in people with MS. Mindfulness-based stress reduction (MBSR) program has promising potential in managing the psychological comorbidities in people with chronic diseases, although robust research (such as randomised controlled trials, RCT) in people with MS is limited. The aims of this study are to test: 1) feasibility of a RCT of MBSR in people with MS, and 2) acceptability of the MBSR program, its effect on mental health and quality of life, and enablers/barriers to practising mindfulness through focus groups. The findings will be disseminated to people with MS, researchers and MS societies, and will inform the development of a larger multi-centre RCT.

METHODS
Literature searching, critical appraisal, subject recruitment, interview questions design, qualitative research skills.

NECESSARY SKILLS/KNOWLEDGE
Good literature searching skill through database; Excellent organisation and time management skill; Excellent critical reading and thinking skills and preferably scored >74 in PUBH3001

MINDFUL OR MIND-FULL? A STRESS-REDUCTION PROGRAM FOR PEOPLE WITH MULTIPLE SCLEROSIS

SUPERVISOR/S
Jun Chih, Lucinda Black and Richard Norman
Contact: h.chih@curtin.edu.au

PROJECT DESCRIPTION
There is a high prevalence of depression and anxiety in people with MS. Mindfulness-based stress reduction (MBSR) program has promising potential in managing the psychological comorbidities in people with chronic diseases, although robust research (such as randomised controlled trials, RCT) in people with MS is limited. The aims of this study are to: 1) assess if there is improvement in mental health and quality of life scores in participants from baseline and immediately at the conclusion and over a three-month follow-up after the MBSR program; and 2) evaluate economic data. The findings will be disseminated to people with MS, researchers and MS societies, and will inform the development of a larger multi-centre RCT.

METHODS
Literature searching, critical appraisal, subject recruitment, quantitative analysis skills.

NECESSARY SKILLS/KNOWLEDGE
Good literature searching skill through database; Excellent organisation and time management skill; Excellent critical reading and thinking skills and preferably scored >74 in PUBH3001
EVALUATION AND COMPARISON OF DIFFERENT PARTICLE MEASUREMENT DEVICES

SUPERVISOR/S
Ryan Mead-Hunter and Ben Mullins
Contact: r.mead-hunter@curtin.edu.au

PROJECT DESCRIPTION
Traditional occupational hygiene methods for dust sampling, involve the collection and weighing of a sample, and the determination of an average airborne concentration. While this is a useful mass based measure, there is a growing body of evidence to suggest that health effects of small particles may be better correlated with surface area, and hence the number of particles. This work will explore the use of a number of direct reading dust measurement devices to evaluate their effectiveness in the measurement of a range of dusts.

METHODS
Students will develop skills in constructing literature reviews, data analysis, and will learn how to use a range of advanced scientific instruments.

NECESSARY SKILLS/KNOWLEDGE
A basic understanding of particle measurement and characterisation would be advantageous.

INFLUENCE OF VIBRATION ON THE EFFICIENCY OF RESPIRATOR FILTERS

SUPERVISOR/S
Ryan Mead-Hunter and Ben Mullins
Contact: r.mead-hunter@curtin.edu.au

PROJECT DESCRIPTION
Respirators are an important piece of personal protective equipment (PPE) and have widespread applications in OHS. It is therefore critical that respirator filters perform according to their classification at all times. While current filter test measures cover common dust sizes and a worst case scenario flow rate, they do not consider other factors which may influence filter capture efficiency. Vibration is one such factor, which has been shown to alter filter efficiency. Given that a number of occupational tasks, which subject the worker to vibration, may also produce significant amounts of dust; there is a potential weakness in the current test standards for respirator filters. This project will explore the influence of vibration on the efficiency of a number of common respirator filters, to determine whether they still perform according to the relevant standards.

METHODS
The student will gain skills in experimental design and the use of advanced aerosol measurement technology.
PROJECT DESCRIPTION
Pregnant women, because of their immunological status, are particularly susceptible to influenza infection. In 2012, the World Health Organization recommended that pregnant women receive seasonal influenza vaccination. Maternal influenza immunisation has been shown to have recognised benefits in preventing influenza illness in the mother and their infants. Studies have also suggested that maternal influenza vaccination may prevent adverse birth outcomes such as preterm birth and stillbirth. However, evidence for these additional benefits is inconsistent and based largely on observational studies with many methodological limitations.

To address this question, this study will link together data from several different datasets to bring together information on pregnancies in WA from 2012-2017. This information will be used to compare the risk of stillbirth in women with seasonal influenza illness during pregnancy to women who did not. In addition, other factors such as the stage of pregnancy when the infection occurs, the severity of the infection, and the type of influenza virus, will be examined. Results from this study will allow us to better estimate whether women who experience an influenza infection during pregnancy have a higher risk of stillbirth compared to women who do not.

METHODS
Literature searching, critical appraisal, SPSS or other statistical software analytical skills, data and database management, writing skills.

NECESSARY SKILLS/KNOWLEDGE
Basic knowledge of Microsoft Office and a statistical software package such as SPSS or Stata.
ARE OROPHARYNGEAL AND GUT MICROBIOME PROFILES ASSOCIATED WITH TLR PATHWAY IMMUNE RESPONSE IN CHINESE IMMIGRANTS?

SUPERVISOR/S
Brad Zhang
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PROJECT DESCRIPTION
Like most Western developed countries, Australia has a significantly higher prevalence of asthma and allergy than Eastern developing countries with a more than tenfold variation between countries. ‘Western’ environmental influences may alter the human microbiome, thereby changing the immune response capacity such as the innate immune pathway of TLR. It is these changes that most likely cause higher allergy and asthma rates in Western countries. Investigating the relationship between the microbiome changes and TLR pathway response may hold the key to understanding why asthma and allergy are more common in Western developed countries.

We have collected oropharyngeal and gut samples from Chinese immigrants and measured 23 cytokines related to the TLR pathway. The Honours project is to analyse the relationship between the relative bacterial abundance and levels of these cytokines in Chinese immigrants.

METHODS
SPSS analysis and R language

NECESSARY SKILLS/KNOWLEDGE
Experience in data analysis.
INVESTIGATING DNA METHYLATION IN CHINESE IMMIGRANTS

SUPERVISOR/S
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PROJECT DESCRIPTION
Prevalence patterns for asthma and allergy have consistently been found to be significantly higher in Western countries, including Australia, than in developing countries, including China, and to be higher in urban than in farming/rural areas. These different prevalences cannot be explained by genetic dissimilarity between ancestral populations or rapid genetic changes. Methylation, which is an environmentally induced epigenetic code, has essential roles in cellular processes including genome regulation, development and disease. We, therefore, hypothesize that "Western" environmental influences have altered methylation profiles in Chinese children in Australia and this is the mechanism by which allergy and asthma have increased in countries like Australia in the past several decades.

We have measured DNA methylation for Chinese immigrant children in Australia and Chinese children in China using Illumina EPIC platform. There are more than 300 asthma candidate genes that have been reported. The Honours project is to extract the methylation levels (β values or M values) of these asthma candidate genes from the Illumina EPIC datasets. These methylation levels will be compared between Chinese children in Australia and Chinese children in China.

METHODS
SPSS analysis and R language

NECESSARY SKILLS/KNOWLEDGE
Experience in data analysis.

PSYCHOPHYSIOLOGIC EFFECTS OF KETONE BODIES IN HUMANS

SUPERVISOR/S
Matthew Albrecht:
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PROJECT DESCRIPTION
Ketones are naturally synthesised in the human body via the metabolism of fatty acids and are increasingly being researched for potentially positive effects in a variety metabolic, psychiatric, and neurological disorders. Synthesis of ketones increases during either prolonged periods of fasting (usually > 24 hours) or through a low carbohydrate diet ketogenic diet, the latter has been successfully used for decades for the treatment of epilepsy. The positive psychiatric benefits of ketones may be through central alterations in the concentrations of GABA and glutamate. The project will investigate whether the widely available ketone nutritional supplement, beta-hydroxybutyrate, induces measurable alterations in psychological state and cognitive performance in healthy volunteers.

METHODS
The project involves a randomised placebo-controlled double-blinded pilot study on the psychoactive effects of ketone supplementation. Students will learn about all aspects of running a blinded controlled trial, psychological state testing through questionnaires, human cognitive performance testing, time-course effects and relating psychological and cognitive measures to blood levels of the active agent. Statistical analysis will be conducted in the highly flexible statistical environment R.

NECESSARY SKILLS/KNOWLEDGE
Good interpersonal and time management skills for liaising with participants. Interest in alterations in psychological states and/or an interest in psychiatric nutrition.
EVALUATION OF POTENTIAL PROSOCIAL PHARMACOTHERAPIES FOR AUTISM SPECTRUM DISORDERS IN RODENTS

SUPERVISOR/S
Matthew Albrecht
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PROJECT DESCRIPTION
Autism spectrum disorders (ASD) are a range of neurodevelopmental disorders characterised by repetitive behaviours, cognitive restriction and social-affective impairment. These behaviours present a substantial financial and psychological burden to the person, their family/carers and society. Unfortunately, no gold-standard treatments exist to aid the core socio-behavioural impairments of ASD, and the need remains to understand the potential of therapeutics in targeting primary ASD social impairments. Using an animal model of ASD, the proposed project will aim to evaluate the novel prosocial drug 3,4-methylenedioxymethamphetamine (MDMA) or the currently FDA approved antipsychotic risperidone for enhancement of social behaviours in rodents.

METHODS
The project is an animal lab based project. Prospective student will develop an appreciation for interspecies comparisons in psychiatry and the strengths and weaknesses of translational neuroscience. Develop expertise in experimental design, behavioural task design, animal testing, rodent handling procedures, rodent drug administration, and statistical analysis with R.

NECESSARY SKILLS/KNOWLEDGE
A strong interest in autism, neurodevelopmental disorders, mechanisms involved in psychiatric disturbances and their treatments and animal behaviour is required. Students should also be willing to work with rodents.

EVALUATION OF AN ANIMAL MODEL OF SCHIZOPHRENIA

SUPERVISOR/S
Matthew Albrecht:
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PROJECT DESCRIPTION
Schizophrenia is a debilitating neuropsychiatric disorder affecting 1% of the world’s population with no known aetiology or cure. The most recognisable features of schizophrenia include a set of symptoms associated with a distorted perception of reality termed the ‘positive symptoms’, that primarily include hallucinations and delusions. Negative symptoms (e.g., anhedonia, and amotivation) and cognitive deficits (e.g., episodic memory and perceptual speed impairments) are also a cause significant functional impairment. However, translational models that attempt to capture these symptoms in animals have significant issues and have not kept up to date with the most recent literature. This project will test several novel animal behavioural assessments derived from the most recent clinical literature using common neurodevelopmental rodent models of schizophrenia.

METHODS
The project is an animal lab based project. Prospective student will develop an appreciation for interspecies comparisons in psychiatry and the strengths and weaknesses of translational neuroscience. Develop expertise in experimental design, behavioural task design, animal testing, rodent handling procedures, rodent drug administration, and statistical analysis with R.

NECESSARY SKILLS/KNOWLEDGE
A strong interest in schizophrenia, neurodevelopmental disorders, mechanisms involved in psychiatric disturbances and their treatments and animal behaviour is required. Students should also be willing to work with rodents.
AUTOMATIC CLASSIFICATION / QUANTITATION OF IMMUNOFLUORESCENT IMAGES THROUGH MACHINE LEARNING AND CONVOLUTIONAL NEURAL NETWORKS

SUPERVISOR/S
Matthew Albrecht:
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PROJECT DESCRIPTION
We have collected, and continue to collect, thousands of images obtained from NHMRC funded projects with the primary purpose of determining blood brain barrier (BBB) permeability. These images are collected in mouse models using interventions that impair, restore, and/or maintain BBB integrity. The images are generated by fluorescence staining of brain slices for the protein IgG (other proteins may also be used). This enables visualization of brain capillary structures due to the protein IgG being contained within the capillaries under normal/intact BBB conditions. Our target, is the amount of ‘leakage’ of IgG out of the capillary, through the BBB, and into the brain. In our images, capillaries present as distinct branch like structures with a relatively well defined (albeit meandering) trajectory. By contrast, BBB-leakage presents as diffuse fluorescence with little definable form. Quantitating these images for BBB-leakage is time consuming, taking weeks for a person to classify the data obtained within a single study with the accumulated expenditure of personnel costs to undertake the classification. Our aim therefore is to utilise deep learning models to process in a more consistent, reliable, and cost effective way immunofluorescent data.

METHODS
The project entails formulating, testing, and validating complex machine learning algorithms for the detection of blood brain barrier leakage from already obtained images. The student will learn the programming language Python as the interface to the most state-of-the-art deep learning libraries. Students will also learn about the biological models of blood brain integrity and the processes used to generate these images.

NECESSARY SKILLS/KNOWLEDGE
Some experience with coding essential (Python, Matlab, R, etc). As well as a good statistical and validation mindset.
EFFECT OF DIETARY FATS ON BLOOD BIOMARKERS FOR ALZHEIMER’S DISEASE RISK

SUPERVISOR/S
John Mamo & Ryu Takechi:
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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
Contact

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