



Curtin University



## 2024 PROJECTS

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# WELCOME

## 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 COORDINATOR



Professor Jonine Jancey  
PHHonours@curtin.edu.au

## INSTRUCTIONS TO STUDENTS

We encourage you to review the available projects listed under the School of Population 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 POPULATION HEALTH

The School of Population Health is one of four schools within the Faculty of Health Sciences and was formed in a recent merger of the Schools of Public Health and Psychology. We teach and conduct cutting edge, world-class research across six themes: Nutrition and Dietetics, Occupation, Environment and Safety, Health Economics and Data Analytics, Health Promotion and Sexology, Mental Health Psychology, and General Psychology. The breadth these themes provide, gives opportunities for the School to excel in cross-disciplinary, end-user focused research.

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.







# HEALTH PROMOTION & SEXOLOGY PROJECTS

## PROJECT TITLE

**Examining the vulnerability of culturally and linguistically diverse (CaLD) populations to homelessness in a Western Australian context**

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Dr Gemma Crawford - g.crawford@curtin.edu.au Secondary Supervisor: Dr Krysten Blackford - k.blackford@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

People from culturally and linguistically diverse (CaLD) groups, including international students, are vulnerable to homelessness in Australia. However, this group is not currently well recognised in current prevention efforts and policies.

This project will explore insights from CaLD people regarding homelessness prevention, and barriers and enablers to accessing homelessness services for both themselves and their communities in the Perth metropolitan area. It will also review the appropriateness of current homelessness evaluation tools for CaLD groups in Australia.

The research objectives are to:

- examine perceptions of homelessness prevention from CaLD people;
- explore barriers & enablers to accessing homelessness services amongst CaLD people;
- review the appropriateness of homelessness evaluation tools for CaLD people; and
- develop recommendations for homelessness prevention resources and evaluation tools specifically designed for people from CaLD backgrounds and their communities.

This research will employ a mixed methods design. A literature review will be conducted to explore current homelessness prevention, service use, and evaluation methods for CaLD populations. Participants will be recruited from community organisations with established CaLD populations and will be invited to participate in qualitative data collection (e.g., semi-structured interviews or focus groups). A semi-structured discussion guide will be developed, pilot tested with the target group, and refined prior to implementation. Commonly used homelessness evaluation tools will be assessed for use in CaLD groups in an Australian context.

The information from this research will assist with developing recommendations for homelessness prevention, service provision and evaluation for CaLD groups in WA.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Crawford, G., Connor, E., McCausland, K., Reeves, K., & Blackford, K. (2022). A scoping review on housing, mental health, and cultural and linguistic diversity. *International Journal of Environmental Research and Public Health* 19(24). <https://www.mdpi.com/1660-4601/19/24/16946>

Blackford, K., Crawford, G., McCausland, K., & Zhao, Y. (2023). Describing homelessness risk among people from culturally and linguistically diverse backgrounds in Western Australia: A cluster analysis approach. *Health Promotion Journal of Australia*. <https://doi.org/10.1002/hpja.704> [IF 2.033]

## GENERAL METHODOLOGICAL SUMMARY

Mixed methods

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

Yes

## ETHICS

Ethics approval required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Requires experience with SPSS and a current driver's license and the ability to travel within Perth to collect data.

## NUMBER OF STUDENTS FOR PROJECT

1

## PROJECT TITLE

**A cocktail of advertising, access, availability, and aquatic environments: exploring the use of zero-alcohol beverages by young Western Australians.**

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: A/Prof Justine Leavy - j.leavy@curtin.edu.au Secondary Supervisor:  
Dr Gemma Crawford- g.crawford@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

Alcohol use amongst young people has declined over the past three decades, however, there has been little change in risky drinking. Alcohol use in and around water is a risk factor for injuries, including fatal and non-fatal drowning. In Western Australia, young people are over-represented in water-related injury statistics and drowning deaths. Young people are regularly exposed to the pervasive effects of alcohol advertising. One emerging industry strategy of concern is the availability and marketing of 'zero alcohol'. 'Zero alcohol' refers to beverages that contain no or negligible amounts of alcohol. These beverages are designed as alternatives to alcoholic beverages, providing individuals with options that mimic the taste, appearance, and social experience of alcoholic beverages, without the intoxicating effects. The project aims to: 1) explore the presence and content of 'zero alcohol' beverage advertising in coastal locations in Western Australia (WA); and 2) explore what impact consumption of 'zero- alcohol' beverages in youth has on social norms and initiation of alcohol consumption.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Leavy, J. E., Della Bona, M., Abercromby, M., & Crawford, G. (2022). Drinking and swimming around waterways: the role of alcohol, sensation-seeking, peer influence and risk in young people. PLoS one, 17(11), e0276558.

Abercromby, M., Leavy, J. E., Tohotoa, J., Della Bona, M., Nimmo, L., & Crawford, G. (2021). "Go hard or go home": exploring young people's knowledge, attitudes and behaviours of alcohol use and water safety in Western Australia using the Health Belief Model. International journal of health promotion and education, 59(3), 174- 191.

## GENERAL METHODOLOGICAL SUMMARY

A mixed-methods, parallel exploratory design will be used. The final quantitative and qualitative data collections tools will be decided in consultation with the successful Honours candidate.

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

Yes

## ETHICS

Ethics approval required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Excellent critical reading and writing skills, strong oral communication skills, self- directed, enthusiastic, likes water-based activities, SPSS proficient, current driver's license.

## NUMBER OF STUDENTS FOR PROJECT

1 - 2

## PROJECT TITLE

Reflection on a long-term community sexual health clinic for MSM trans, gender diverse and non-binary people

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Dr Rochelle Tobin - rochelle.tobin@curtin.edu.au Secondary Supervisor: Dr Daniel Vujcich - daniel.vujcich@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

The M Clinic is a Perth-based sexual health clinic that provides STI, HIV, and BBV testing and treatment for men who have sex with men (MSM), trans, gender diverse and non-binary people. The M Clinic was established in July 2010. It is a WAAC (formerly the WA AIDS Council) service and receives funding from the Department of Health. To learn more about the M Clinic visit [https:// www.mclinic.org.au/](https://www.mclinic.org.au/).

The communities that the M Clinic services are diverse in their sexual and gender identities, sexual behaviours, and sexual health service needs. These identities, behaviours and service needs have changed over time. There is a need to understand the current needs of M Clinic clients and reflect on how M Clinic is meeting these needs and identify opportunities for improvement within the current service model.

This project aims to:

- 1) Explore how M Clinic's aims and services have changed since 2010
- 2) Examine the sexual health, screening and treatment needs of M Clinic clients
- 3) Reflect on how M Clinic is meeting the needs of its clients in 2024 and make recommendations for improvement within the current service model.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Selvey LA, Slimings C, Adams E, and Manuel J. 2018. Incidence and predictors of HIV, chlamydia and gonorrhoea among men who have sex with men attending a peer-based clinic. Sexual Health 15(5) 451-459 <https://doi.org/10.1071/SH17181>

Minas BC, Giele CM, Laing SC, Bastian L, Burry AW, Sales KJ, Mak DB. 2015. Early diagnosis of HIV among men who have sex with men in Western Australia: impact of a peer-led sexually transmissible infection testing service. Sexual Health .12: 360-3. <https://doi.org/10.1071/SH14214>

## GENERAL METHODOLOGICAL SUMMARY

Mixed methods: Literature review, focus groups and online survey

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Ethics approval required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Understanding of the diversity within men who have sex with men (MSM), trans, gender diverse and non-binary communities.

Excellent verbal and written communication skills.

Ability to learn how to use data analysis software such as SPSS or NVivo.

## NUMBER OF STUDENTS FOR PROJECT

1



## PROJECT TITLE

### Advocacy, Action, Research and Hazardous Products

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Prof Jonine Jancey - j.jancey@curtin.edu.au Secondary Supervisors:  
Kahlia McCausland - k.Mccausland@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

"Advocacy is the deliberate attempt to influence decision makers and other stakeholders to support or implement policies and practices that contribute to improving health equity using evidence"(1). Changing policy and practice is one of the most effective ways to improve public health on a population-wide scale.

Advocacy seeks to change upstream factors, and opportunities for advocacy are broad. These include, positive changes to regulations, policies and institutional practices, prices, service delivery and product standards that influence the personal health choices of communities; promotion of behaviour change in communities to improve wellness; raising awareness of the impact on population health on social and environmental factors (e.g., housing, education, employment, cultural identity, transport), enabling public health advocacy to facilitate systematic change in these areas; and empowering public health professionals to be actively involved in decision-making, health policy and other initiatives.

Public health advocacy includes a range of strategies, such as communication, negotiation, consensus, and debate to advance public policies, and services in the pursuit of improved health and wellbeing. Public Health advocates may find themselves engaged in public conflict with sometimes powerful interest groups or governments determined to resist change. Areas where advocacy is directed may include hazardous products, such as tobacco, e-cigarettes, alcohol, gambling, and unhealthy food.

However, to be an effective public health advocate requires appropriate up-to-date information to support and enable your position. Advocacy research is carried out with the intention of providing evidence and arguments that can be used to support a particular cause or position, providing advocates with the evidence, enabling a willing for more people to listen. Advocacy research usually begins with a narrowly drawn topic and issue; and the researcher is encouraged to report only those findings that will inform and enable advocacy work.

This study aims to identify priority public health advocacy research areas in consultation with public health advocates, informing public health advocacy for hazardous products (tobacco control, alcohol, gambling, and unhealthy food).

(1) Farrer, L., Marinetti, C., Cavaco, Y. K., & Costongs, C. (2015). Advocacy for health equity: a synthesis review. *Milbank Q*, 93(2), 392-437. DOI:10.1111/1468- 0009.12112]

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Stoneham, M., Vidler, A., & Edmunds, M. (2019). *Advocacy in Action: A Toolkit for Public Health Professionals* (4th ed.)

## GENERAL METHODOLOGY SUMMARY

Predominantly qualitative: Literature review, interviews & online survey

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Ethics approval required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Sound verbal and written communication skills. Interest in qualitative research.

Ability to learn how to use data analysis software such as NVivo.

## NUMBER OF STUDENTS FOR PROJECT

1

## PROJECT TITLE

### Greenwashing and Tobacco Companies

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Prof Jonine Jancey- [j.jancey@curtin.edu.au](mailto:j.jancey@curtin.edu.au) Secondary Supervisor: Kahlia McCausland - [k.McCausland@curtin.edu.au](mailto:k.McCausland@curtin.edu.au)

## PROJECT BACKGROUND & OBJECTIVES

Greenwashing is a misleading marketing practice used by companies or organisations to make their products, services, or overall business appear more environmentally friendly or sustainable. The term "greenwashing" is a blend of "green" (referring to environmentalism or eco-friendliness) and whitewashing" (referring to glossing over negative information).

The purpose of greenwashing is to attract environmentally conscious consumers and improve the company's public image without necessarily implementing substantial changes in their practices or operations. By creating a false perception of eco-friendliness, these companies hope to boost sales, increase brand loyalty, and gain positive media coverage. There are various ways in which greenwashing can occur: misleading labels and claims, incomplete information; distraction from real issues; emphasising a single positive environmental initiative while diverting attention away from more significant environmental problems associated with the company; and unsubstantiated claims.

Transnational tobacco companies (e.g., Phillip Morris International, British American Tobacco, Japan Tobacco International, Imperial Brands and Altria) are keen to position themselves as responsible corporations who care about the environmental sustainability.

This study aims to identify greenwashing by tobacco companies exploring their social media accounts, such as LinkedIn and Twitter

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Australian Competition and Consumer Commission 2023. Greenwashing by business in Australia - Findings of the ACCC's internet sweep of environmental claims. Located at <https://www.accc.gov.au/system/files/Greenwashing%20by%20businesses%20in%20Australia.pdf>

Tobacco Tactics: Greenwashing (Bath University) <https://tobaccotactics.org/article/greenwashing/>

## GENERAL METHODOLOGICAL SUMMARY

Predominantly qualitative: literature review and content analysis

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

Yes

## ETHICS

Does not require ethics approval (does not involve humans or animals)

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Sound verbal and written communication skills, an interest in qualitative/ quantitative research and an ability to learn how to use data analysis software such as SPSS.

## NUMBER OF STUDENTS FOR PROJECT

1

## PROJECT TITLE

Women, health equity, and the commercial determinants of health

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Dr Jonathan Hallett - j.hallett@curtin.edu.au

Secondary Supervisor: Dr Simone McCarthy/Professor Samantha Thomas (Deakin University)

## PROJECT BACKGROUND & OBJECTIVES

The negative health impacts associated with the Commercial Determinants of Health (CDoH) include cancers, diabetes, and serious mental health problems.<sup>1-5</sup> Four industries - tobacco, ultra-processed food, fossil fuel, and alcohol - account for over 1/3 of global deaths. Women are especially vulnerable to the tactics of these industries, as well new stressors such as gambling and the cost-of-living crisis. The National Women's Health Strategy (2020-2030) highlights that women are at increased risk of significant health inequalities, and seeks to prevent key risk factors by focusing on the social and structural drivers of gendered health inequalities. However, there is limited focus on the role of CDoH in the Strategy. Researchers argue that clear gaps in understanding how CDoH create gendered inequalities, limits the ability of health policies and prevention activities to counter the powerful corporate practices that negatively influence women's health and wellbeing. This qualitative study explores how the health of women in WA may be specifically negatively impacted by existing and emerging CDoH. It will develop a practical implementation framework to guide future health promotion action in WA aimed at counteracting CDoH that may specifically create and exacerbate health inequalities for women.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Background on the topic:

McCarthy, S., Pitt, H., Hennessy, M., Njiro, B. J., & Thomas, S. (2023). Women and the commercial determinants of health. *Health Promotion International*, 38(4), daad076.

Example of qualitative research:

McCarthy, S., Thomas, S., Pitt, H., Marko, S., Randle, M., Cowlshaw, S., ... & Daube, M. (2023). Young women's engagement with gambling: A critical qualitative inquiry of risk conceptualisations and motivations to gamble. *Health Promotion Journal of Australia*, 34(1), 129-137.

## GENERAL METHODOLOGICAL SUMMARY

Qualitative survey, focus groups and policy analysis

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Requires ethics approval.

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Strong verbal and written communication skills, an interest in qualitative research and an interest in research with direct links to policy and advocacy.

## NUMBER OF STUDENTS FOR PROJECT

1



## PROJECT TITLE

Enhancing community safety through action research with local government

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Dr Gemma Crawford G.Crawford@curtin.edu.au

Secondary Supervisor: Prof Jonine Jancey J.Jancey@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

The project will implement and evaluate a pilot of Healthy Active by Design in the suburb of Karawara. Karawara includes a neighbourhood designed using the Radburn principle, which has created a sense of community, shared space and public safety in other locations, including the Perth suburb of Thornlie. However, the implementation is regarded as less successful in Karawara. The suburb has a significantly lower SEIFA index than other areas within the City of South Perth, indicating a high level of socio-economic disadvantage. Karawara has good public transport links and a shopping centre with numerous food options. The suburb hosts the highly popular Manning Farmers Markets every Saturday morning, has skate park, leisure centre, nature trails and planned future bicycle pump track development. A medical centre will be opened shortly, and Curtin University is within walking distance. This project will combine a desktop audit of all current and future activities within the suburb, environmental scan and evaluation of Karawara using the Healthy Active by Design checklist. Community involvement and partnerships with local agencies will be encouraged. The project will identify gaps and implement small-scale infrastructure initiatives in the area and evaluate impact on reduction in public safety complaints. This project is a partnership with the City of South Perth through the City's Public Health Reference Group. The project will build on the Heart Foundation's Healthy Active by Design initiative <https://www.healthyactivebydesign.com.au/>.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

What Australia Wants: Living locally in walkable neighbourhoods. [https://irp.cdn-website.com/541aa469/files/uploaded/What\\_Australia\\_Wants\\_Report\\_.pdf](https://irp.cdn-website.com/541aa469/files/uploaded/What_Australia_Wants_Report_.pdf)

Sepe M (2020) Regenerating places sustainably: the healthy urban design. doi: 10.2495/SDP-V15-N1-14-27

## GENERAL METHODOLOGICAL SUMMARY

Mixed methods, including literature review, environmental scan and desktop audit to undertake gap analysis, and evaluation of intervention impact using combination of qualitative and quantitative methods.

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

Yes

## ETHICS

Requires ethics approval.

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Strong verbal and written communication skills, an interest in qualitative and quantitative research.

## NUMBER OF STUDENTS FOR PROJECT

1







# BIOTECHNOLOGY PROJECTS



## PROJECT TITLE

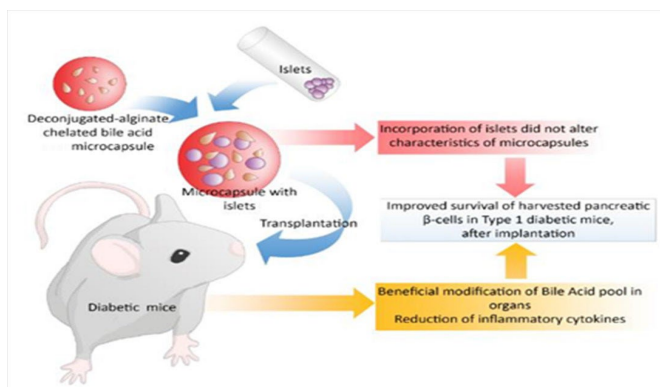
Organ-on-a-chip: the design of an artificial organ using cutting-edge bio-nanotechnologies and bio-printing platforms

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisors: A/Professor Hani Al-Salami - hani.al-salami@curtin.edu.au and A/Professor Ryu Takechi - R.Takechi@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

Multiple chronic disorders remain untreated despite the best effort and ongoing research to design new therapies. A chronic disease that remains untreated, and a contributing factor to many disorders including hearing impairment, is diabetes. Diabetes is an epidemic and its incidence is rising by 2% every year in Australia and the world. It is costing the Australian government \$10 billion a year with one Australian being diagnosed with diabetes every 5 minutes. There are three types of diabetes mellitus, Type-1 diabetes (T1D), Type-2 diabetes (T2D) and Gestational diabetes (GD). Current antidiabetic drugs remain ineffective in treating the disease and its complications as well as in improving long-term prognosis. Insulin is a widely used antidiabetic drug, and is currently being prescribed for all T1D patients, more than one-third T2D patients and the majority of GD patients. Insulin is administered by injections and since its discovery in 1921, its route of administration has remained largely unchanged. Due to its current way of administration, insulin has many side effects and limitations, which compromise its antidiabetic effects. Ways to revolutionise insulin delivery include either designing a device that measures glucose continuously and pumps insulin from a reservoir carried out by patients, or by creating a healthy pancreas that can be transplanted and replaces currently damaged pancreas (known as islet transplantation). Over the last a few years, cell encapsulation and bio-printing have become new scientific adventures and are gaining significant interest as new technologies revolutionise islet (and organ) transplantation. In 2014, Dr Al-Salami was the first in the world to introduce a new concept of bile acid incorporation via bio-nanotechnologies to enable organ creation and islet transplantation. This project builds on current findings and will focus on carrying out specific sets of experiments appropriate for innovative and timely completion of an Honours degree.



## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Armin Mooranian, Corina Mihaela Ionescu, Susbin Raj Wagle, Bozica Kovacevic, Daniel Walker, Melissa Jones, Jacqueline Chester, Thomas Foster, Edan Johnston, Momir Mikov, Marcus D. Atlas, Hani Al-Salami. ProbucoI Pharmacological and Bio- Nanotechnological Effects on Surgically Transplanted Graft Due to Powerful Anti- Inflammatory, Anti-Fibrotic and Potential Bile Acid Modulatory Actions. *Pharmaceutics*, 13, 8, 10.3390/pharmaceutics13081304

## GENERAL METHODOLOGICAL SUMMARY

Basic lab skills can be taught during induction and all needed training will be provided during the first two months.

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

Yes

## ETHICS

Does not require ethics approval (does not involve humans or animals)

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Highly motivated to learn lab-based medically oriented projects.

## NUMBER OF STUDENTS FOR PROJECT

1 - 2

## PROJECT TITLE

Transforming current drug uptake in patients, via using advanced biotechnologies.

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisors: A/Professor Hani Al-Salami - hani.al-salami@curtin.edu.au and A/Professor Ryu Takechi - R.Takechi@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

Since early 1900s, oral drugs have been formulated in tablets or capsules to optimise drugs' stability and to control drugs' release (either immediate release for fast effects or slow/controlled release for extended effects). Oral drug absorption occurs when a drug (in a tablet or a capsule) is swallowed and the tablet/capsule breaks down and drug is released in the upper part of the gut, where it moves down until it reaches a specific segment of the lower gut where the drug permeates the gut-membrane into the blood (i.e., absorbed). Different drugs are maximally absorbed from different segments of the gut, with antidiabetic drugs being absorbed mostly from the lower part of the small intestine. Diabetes mellitus is one of the most common chronic diseases in children, occurring more frequently than cancer, cystic fibrosis, multiple sclerosis and muscular dystrophy. Most antidiabetic drugs are not completely absorbed into the body after oral administration in tablets/capsules due to either (1) being degraded during their gut-passage and before reaching the specific gut-segment with maximum drug absorbability, or (2) once reaching the specific gut-segment with best absorbability, fail to permeate gut-membrane and reach blood/ systemic circulation. Accordingly, current tablets/capsules carrying antidiabetic drugs are often loaded with far more drug than what patients actually need, in order to compensate and accommodate for two things: (1) poor gut-targeting: inefficient delivery of the tablet/capsule to the drug, to the best gut-segment where most of the drug will be absorbed, and (2) poor gut tissue-permeation: insufficient amount of drug permeating through the gut membrane and reaching blood. Due to both points, current tablets and capsules cause many side effects and damage to healthy tissues. Thus, to date and despite new and sophisticated pharmaceutical formulations, lack of tissue-specificity remains a serious health concern and hence, for every dollar spent on acquiring drugs, another dollar is spent fixing/treating side effects. In order to revolutionise current oral drug administration in diabetes treatment, the new delivery system needs to possess: (1) gut-targeting property, so the drug is released with pin-point accuracy in the specific gut-segment with maximum drug absorbability for optimum effects and safety profile, and (2) the ability to enhance drug gut-membrane permeation and force drug molecules through the cell membrane via direct effect on cellular protein transporters. This project aims at examining new ways to improve how drugs work using nanotechnology.



## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Armin Mooranian, Nassim Zamani, Momir Mikov, Svetlana Goločorbin-Kon, Goran Stojanovic, Frank Arfuso, Bozica Kovacevic, Hani Al-Salami. A second-generation micro/nano capsules of an endogenous primary un-metabolised bile acid, stabilized by Eudragit-alginate complex with antioxidant compounds. Saudi Pharmaceutical Journal, doi.org/10.1016/j.jsps.2019.11.017

## GENERAL METHODOLOGICAL SUMMARY

Basic lab skills can be taught during induction and all needed training will be provided during the first two months.

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT? Yes

## ETHICS

Does not require ethics approval (does not involve humans or animals)

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Highly motivated to learn lab-based medically oriented projects.

## NUMBER OF STUDENTS FOR PROJECT

1 - 2

## PROJECT TITLE

Creation of new therapies for hearing-impaired patients using nanotechnologies with pin-point accuracy: advanced chemical drug analysis using cutting-edge analytical methods for medical applications

## SUPERVISOR/S & CONTACT DETAILS

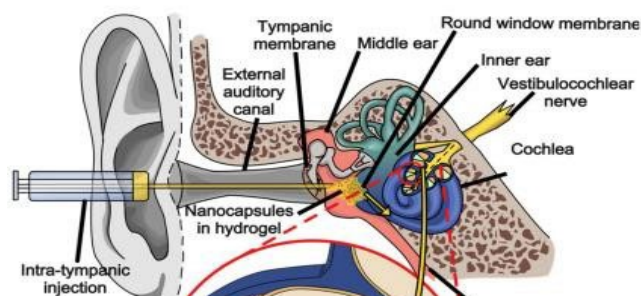
Primary Supervisors: A/Professor Hani Al-Salami - hani.al-salami@curtin.edu.au and A/Professor Ryu Takechi - R.Takechi@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

Hearing disorders are affecting significant number of people in Australia and worldwide with the prevalence rising at an alarming rate. Steroids are widely prescribed to treat a range of Hearing and Balance Disorders, such as: Autoimmune Inner Ear Disease, Sudden Sensorineural Hearing Loss, Acoustic Trauma, Meniere's disease, Labyrinthitis and Cochlear Implantation with residual hearing. Steroids can either be delivered systemically or via injection through the eardrum. However, the efficacy and safety profiles of current therapy lacks robustness and consistency and varies greatly between individuals, and this is generally due to the poor permeation and transport of steroids into fluids, compartments, and tissues in the inner ear. Recent research is aimed at developing techniques that enhance the transfer of steroids into the inner ear, and to assess the impact of these techniques the level of steroids in the inner ear fluids or tissues must be measured. The inner ear is very small and poses a limit on the accuracy of drug level measurement, particularly in the smaller compartments of the inner ear, which are nonetheless vital to the inner ears function.

To date, none of recently developed techniques for inner-ear steroids-targeted delivery, or robust steroids' analytical methods have proved that effective, and hence, this project explores new and highly innovative ways to use nano and micro technologies to target-deliver steroids and enable development of unique HPLC/LCMS analytical systems

for measuring steroid permeation and delivery (within the available time frame for Honours). Accordingly, in this project, we will develop new delivery matrices and optimise HPLC/LCMS methods for the detection of the commonly used steroid, dexamethasone, in inner ear, and demonstrate the practicality of measuring dexamethasone in the smallest of tissue spaces in the inner ear.



## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Armin Mooranian, Nassim Zamani, Momir Mikov, Svetlana Golocorbin-Kon, Goran Stojanovic, Frank Arfuso, Bozica Kovacevic, Hani Al-Salami. Bio Micro-Nano Technologies of Antioxidants Optimised Their Pharmacological and Cellular Effects, ex vivo, in Pancreatic  $\beta$ -Cells. Nanotechnology, Science and Applications, doi.org/10.2147/NSA.S212323

## GENERAL METHODOLOGICAL SUMMARY

Basic lab skills can be taught during induction and all needed training will be provided during the first two months.

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

Yes

## ETHICS

Does not require ethics approval (does not involve humans or animals)

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Highly motivated to learn lab-based medically oriented projects.

## NUMBER OF STUDENTS FOR PROJECT

1 or 2





# HEALTH ECONOMICS & DATA ANALYTICS PROJECTS

## PROJECT TITLE

Climate-related exposure and health: what would it take to change our conclusions?

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Prof Gavin Pereira - gavin.f.pereira@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

There is an abundance of studies that have demonstrated associations between climate-related exposures (notably temperature and air pollution) and health. Some inconsistency in findings from observational studies is inevitable due to differences in the study populations and levels of exposure. These differences have motivated researchers to conduct more studies. The consequence of this feedback is a burgeoning research effort that results in marginal gains and increases confusion. Policy makers might interpret inconsistency in findings between as evidence that we are not certain whether a climate-related effect exists, when in fact we are relatively confident of harm, but we are not certain as to the magnitude of the harm.

Aim: The aim of this honours project is to establish the stability of associations between climate-related exposures and health as they have been published over time. Or stated another way, to assess what would it take for a new study to change our conclusions?

Method: The approach to undertake the proposed analysis was developed at Curtin.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Ignore the mathematical detail. Focus on the message of the Abstract and story conveyed in the figures of this paper: Int. J. Environ. Res. Public Health 2022, 19(4), 2036; <https://doi.org/10.3390/ijerph19042036>

## GENERAL METHODOLOGICAL SUMMARY

Quantitative synthesis (i.e., clever averaging) of results from previously published studies

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Does not require ethics approval (does not involve humans or animals)

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Basic knowledge of environmental determinants of health. Experience using any statistical software package.

## NUMBER OF STUDENTS FOR PROJECT

2

## PROJECT TITLE

Assessing the impact of a preterm birth prevention initiative on child outcomes in Western Australia

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Dr Amanuel Gebremedhin - a.gebremedhin@curtin.edu.au Secondary Supervisor: Mrs Jennifer Dunne - jennifer.dunne1@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

More than 26,000 babies are born preterm (< 37 gestational week of pregnancy) every year in Australia. The rates of preterm birth are almost double among Aboriginal Australians and disadvantaged populations. Preterm birth is the single greatest cause of death and disability in children up to 5 years in the developed world.

Being born too soon is associated with perinatal mortality, admission to neonatal intensive care, severe morbidity in the first weeks of life and prolonged hospital stay, as well as readmission to hospital during the first year of life and increased risk of the development of chronic lung disease and neurological disability (including cerebral palsy).

In response to the adverse effects of preterm birth, the Western Australian Preterm Birth Initiative was launched 2014. In the first year (2015), it was estimated that this initiative reduced the rate of preterm birth in Western Australia by almost 8%.

The primary aim of this study is to identify reduction in morbidity from birth to age 5 years using existing Western Australian data since the adoption of the prevention initiative in 2015.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Orefice, R., Smythe, J., Doherty, D.A., & Lim, B. (2021). Preventing early births in a regional tertiary maternity unit: Evaluating preterm and early term birth rates before and after implementation of the Preterm Birth Prevention Initiative in the Australian Capital Territory. Australian and New Zealand Journal of Obstetrics and Gynaecology 61(5), 693-699. <https://pubmed.ncbi.nlm.nih.gov/33759176/>

## GENERAL METHODOLOGICAL SUMMARY

Quantitative research project involving analysis of existing data

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Ethics approval required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Interest or experience with statistical analysis

## NUMBER OF STUDENTS FOR PROJECT

1 - 2

## PROJECT TITLE

**Past, Present and Future of Vision Testing for Glaucoma in Western Australia**

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Professor Andrew Turpin - [andrew.turpin@curtin.edu.au](mailto:andrew.turpin@curtin.edu.au) Secondary Supervisor: Professor Allison McKendrick - [allison.mckendrick@lei.org.au](mailto:allison.mckendrick@lei.org.au)

## PROJECT BACKGROUND & OBJECTIVES

Measuring both peripheral and central vision with visual field machines is currently part of standard procedures for diagnosing and monitoring the eye disease glaucoma. The spatial pattern of testing, frequency of testing, and the measurement algorithm used to assess visual fields have all varied globally over the last three decades. This project will examine how visual field testing has been used in Western Australia over that period using approximately 50,000 tests collected at the Lions Eye Institute glaucoma clinic over the last 30 years. Of particular interest is the stage of disease at which testing commences, the estimated time to blindness for those tested, demographic differences in testing, and changes in visual field practice over the period. Given the data set size and complexity (each test consists of at least 50 measurements), computational data manipulation (data science methods) will be essential. The results from this study will inform optometrists and ophthalmologists on current practice in WA in relation to global best practice guidelines, and will help inform development of new, more effective and efficient visual field tests for glaucoma.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

<https://pubmed.ncbi.nlm.nih.gov/24282228/>

<https://pubmed.ncbi.nlm.nih.gov/25642569/>

<https://pubmed.ncbi.nlm.nih.gov/23613506/>

<https://pubmed.ncbi.nlm.nih.gov/27862125/>

## GENERAL METHODOLOGICAL SUMMARY

Quantitative, data science

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Ethics approval required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Some experience with R, Python or some scripting language capable of manipulating large data sets.

## NUMBER OF STUDENTS FOR PROJECT

1



## PROJECT TITLE

How predictable is malaria? Using model-free methods to assess predictability of malaria incidence time-series

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Tasmin Symons - [tasmin.symons@telethonkids.org.au](mailto:tasmin.symons@telethonkids.org.au)

Secondary Supervisor: Peter Gething - [peter.gething@telethonkids.org.au](mailto:peter.gething@telethonkids.org.au)

## PROJECT BACKGROUND & OBJECTIVES

Malaria is a preventable and curable disease caused by Plasmodium parasites and transmitted via mosquito vectors. In 2021, there were an estimated 234 million cases of malaria world-wide leading to over half a million deaths, disproportionately in African children. A key but underutilised intervention against malaria is the health system itself – both its strength on the ground in treating disease, but also – crucially – its unique capacity to provide decision makers with almost-real-time situational awareness. In recent years, malaria endemic countries in Africa have invested in digital platforms recording detailed time-series of incidence collected via routine interactions with the health system.

This project addresses a central question – how predictable are these time-series? Could they support intervention planning? Simply applying out-of-sample statistical tests to model predictions is insufficient – the realised predictive ability of any given model is not the same as the inherent predictability of the system under study. This project will apply novel statistical methods, assessing the inherent statistical ability of routinely collected malaria data to support intervention planning.

Completing this project means

1. Applying existing methods for assessing intrinsic predictability of time-series to routine malaria case data
2. (Optional) extending the methods to leverage spatially correlated data

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

F. Pennekamp, et al. "The intrinsic predictability of ecological time series and its potential to guide forecasting." Ecological Monographs 89.2 (2019): e01359.

R. Arambepola, P. Gething, and E. Cameron. Nonparametric Causal Feature Selection for Spatiotemporal Risk Mapping of Malaria Incidence in Madagascar. 2020. <http://arxiv.org/abs/2001.07745>. ArXiv preprint: <http://arxiv.org/abs/2001.0774>

A. Alegana, E. A. Okiro, and R. W. Snow. Routine data for malaria morbidity estimation in Africa: challenges and prospects. BMC Medicine, 18(1):1–13, 2020.

## GENERAL METHODOLOGICAL SUMMARY

Quantitative study involving analysis of routinely collected (pre-anonymised and aggregated) malaria case data.

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Does not require ethics approval (does not involve humans or animals)

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Students should have taken courses in time-series analysis and Bayesian statistics, and be very interested in developing skills in statistical modelling.

Experience of R/Python (or similar) essential.

Courses in dynamical systems will be helpful but are not essential prerequisites. Knowledge of malaria epidemiology is helpful but not required.

## NUMBER OF STUDENTS FOR PROJECT

1

## PROJECT TITLE

### Disease burden and government spending on promoting healthy living

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: A/Prof Delia Hendrie - d.v.hendrie@curtin.edu.au  
Secondary Supervisor: Professor Janine Jancey - j.jancey@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

In Western Australia, the joint effect of risk factors on the burden of disease is 39%, with two of the leading causes being tobacco (9%) and alcohol and illicit drug use (9%). Reducing risk behaviours is a public health function, yet relatively little is spent on this compared to treatment of patients with conditions caused by these behaviours (e.g., diseases stemming from tobacco). Additionally, the extent to which spending across risk behaviours relates to the burden of associated conditions is not known. The purpose of this research is to assess health spending on risk factors for leading causes of disease burden, including smoking, harmful levels of alcohol consumption and gambling. Expenditure will be compared with the health impact of these conditions, for example, the number of life years lost, and the cost of treating these conditions. Findings of the study will be shared with health agencies responsible for promoting healthy living, which will provide these agencies with crucial information with which to advocate for additional resources to counter marketing by corporates involved in production and distribution of products negatively impacting on health and well-being. The extent of this marketing will also be explored. More generally, findings will potentially contribute to improving population health and the allocative efficiency of health spending.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Very little research has addressed the question of efficient allocation of health spending on reducing adverse health outcomes. The following paper is instructive in comparing disease burden and government spending on selected disorders. Vigo et al. Disease burden and government spending on mental, neurological, and substance use disorders, and self-harm. *Lancet Public Health*. 2019;4:e89-96.

## GENERAL METHODOLOGICAL SUMMARY

Mixed methods including literature/document review, interviews, and descriptive (and possibly analytical) statistical methods

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Ethics approval required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Skills in accessing and reviewing literature/documents. Basic statistical methods. Good communication and inter-personal skills.

## NUMBER OF STUDENTS FOR PROJECT

1

## PROJECT TITLE

**Predicting unplanned neonatal readmission using machine learning**

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Dr Kim Betts - kim.betts@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

A recent trend in maternal/neonatal care has been a move towards rapid discharge from hospital of both mother and baby following delivery, especially for uncomplicated pregnancies/deliveries. Although being an effective method of reducing inpatient resourcing, the trade-off has been that some mothers and/or babies are now sent home prior to identifying important health conditions, requiring prompt readmission and resulting in delayed treatment. This project leverages health administrative data collections and advances in machine learning with the aim of developing prediction models which can identify mothers and babies at need of delayed discharge (in other words at risk of prompt unplanned readmission). Due to the heterogeneous nature of conditions leading to readmission, the project will also draw on unsupervised machine learning techniques to identify common groups at risk of readmission.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Betts KS, Kisely S, Alati R. Predicting neonatal respiratory distress syndrome and hypoglycaemia prior to discharge: Leveraging health administrative data and machine learning. Journal of Biomedical Informatics. 2021 Feb 1;114:103651.

## GENERAL METHODOLOGICAL SUMMARY

Supervised and unsupervised machine learning in the R language (quantitative)

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Project already has ethics approval

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Student will require a keen interest in quantitative analysis, big data sets and machine learning, plus experience carrying out data analysis in the R language.

## NUMBER OF STUDENTS FOR PROJECT

1









# NUTRITION PROJECTS

## PROJECT TITLE

Exploring attitudes regarding diet and nutrition education needs of health professionals working with people with multiple sclerosis

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Dr Rebecca Russell - rebecca.russell@curtin.edu.au

## PROJECT BACKGROUND & OBJECTIVES

The dietary attitudes of health professionals who work with people with multiple sclerosis (MS) — along with their perception of the impact of a range of diets, including conventional healthy eating guidelines and restrictive diets, and their nutrition education needs — will be explored through a qualitative research approach.

Our previous qualitative research has focused on people with MS and neurologists. We found that people with MS are motivated to make dietary changes and would prefer to receive dietary advice from their neurologist rather than online. However, neurologists indicated that they have difficulty juggling the conflicting dietary advice promoted for people with MS; hence, people with MS tend to rely on other sources of information that may not be evidence-based. Discussions amongst our project Stakeholder Reference Group (people with MS and MS health professionals) has revealed that people with MS discuss diet with a range of health professionals, but the dietary advice provided, their perceptions on the role of diet, and their nutrition education needs are unknown.

Since qualitative methods are useful for generating ideas about how to improve information and education, the findings will inform the development of resources and content for a nutrition education program for MS health professionals.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Russell RD, Black LJ, Begley A. The unresolved role of the neurologist in providing dietary advice to people with multiple sclerosis. Mult Scler Relat Dis. 2020;44:102304.

## GENERAL METHODOLOGICAL SUMMARY

Qualitative

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

Yes

## ETHICS

Ethics approval required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

An interest in qualitative research

## NUMBER OF STUDENTS FOR PROJECT

1

## PROJECT TITLE

How to engage consumers in osteoporosis and bone health recommendations: Assessing knowledge, attitudes and intentions.

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Prof Deborah Kerr - d.kerr@curtin.edu.au

Secondary Supervisors: A/Prof Christina Pollard -c.pollard@curtin.edu.au Emeritus Prof Satvinder Dhaliwal - S.Dhaliwal@curtin.edu.au; Prof Richard Prince

## PROJECT BACKGROUND & OBJECTIVES

Osteoporosis remains essentially undiagnosed with suboptimal prevention and management of the condition being widely acknowledged [1]. Factors identified in The National Strategic Action Plan for Osteoporosis include limited awareness around risks of osteoporosis by consumers and health professionals, "... operational silos across the healthcare system and a lack of focus on osteoporosis compared to other chronic diseases. There is a major mismatch between the burden of disease associated with osteoporosis and its prioritisation in policy and resourcing which must be addressed" [1, p4]. These concerns are strongly supported by a 2020 comprehensive metanalysis of publications in this area that could only find 25 suitable publications, including one from Australia in 2006, that reported "Although there was general awareness of osteoporosis, many misconceptions and concerns were evident" [2]. Given this surprising lack of available information to inform health resources, campaign messages and policy, the limited community understanding of the importance of osteoporosis prevention and management and what people can do to improve and prioritise their bone health throughout their lives, this needs to be urgently tackled. Lived experience is increasingly sought to inform strategies to address consumer and health professional behaviour and practice. Effective communications rely on a contemporary understanding of the relative importance of consumer concerns and conflicting interests.

This project explores beliefs and concerns about osteoporosis and how these concerns are influenced by other co-existing chronic health conditions. It will explore how consumers' level of concern is prioritised and provide insights and guidance on potential opportunities for policy and practice. This is a serious and unmet research priority, and this project will identify and provide guidance on ways to address contemporary issues that undermine osteoporosis prevention and clinical practice.

Study objectives:

1. To develop and validate a questionnaire to identify awareness and concerns regarding osteoporosis in relation to other diseases.
2. Explore awareness, intentions and concerns regarding osteoporosis and lifestyle behaviours in relation to other diseases amongst 1200 Australians aged over 50 years.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

[1] Department of Health, Australian Government. National Strategic Action Plan for Osteoporosis 2019. <https://www.health.gov.au/resources/publications/national-strategic-action-plan-for-osteoporosis-2019>.

[2] des Bordes J, Prasad S, Pratt G, Suarez-Almazor ME, Lopez-Olivo MA. Knowledge, beliefs, and concerns about bone health from a systematic review and metasynthesis of qualitative studies. PLoS one 2020;15:e0227765.

## GENERAL METHODOLOGICAL SUMMARY

The project will involve questionnaire design & validation, knowledge of bone health, health messaging statistical evaluation of data

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

Yes

## ETHICS

Ethics approval required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Advantageous for the student to have a background in statistical analysis and /or nutrition/health promotion or psychology, as well as an interest in bone health in relation to other health disorders. However, if the student only has one of these, they will be supported over the project.

## NUMBER OF STUDENTS FOR PROJECT - 1



# OCCUPATIONAL ENVIRONMENTAL AND SAFETY PROJECTS



## PROJECT TITLE

What codes the development of asthma in children?

### SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: A/Professor Guicheng (Brad) Zhang - Brad.Zhang@curtin.edu.au

Secondary Supervisors: Peter LeSouef, Ingrid Dias, Ryan Mead-Hunter - r.mead-hunter@curtin.edu.au

### PROJECT BACKGROUND & OBJECTIVES

We use novel advanced epigenome molecular analysis approaches: Illumina Infinium EPIC methylation array and next-generation sequencing techniques to explore the whole methylome and miRNAome of peripheral blood mononuclear cells and nasal epithelial cells. The two important epigenetic features — methylation and miRNAs — will be thoroughly investigated in young children with early acute wheezing. The whole epigenome method has great advantages over the traditional candidate-gene epigenetic investigation method. The systemic (blood cells) and local (nasal cells) epigenetic variations will all be unveiled and examined for their contribution to the aetiology of persistent wheezing/asthma. If epigenetic biomarkers are identified by using the whole epigenome method, our studies will 1: guide translational clinical trials that will seek to impose an extremely substantial shift in treating and managing paediatric patients with asthma, e.g., a biomarker-targeted treatment protocol; 2: define subgroups of children with early wheezing and targeted or personal- tailored prevention strategy can be implemented accordingly to prevent the development of asthma; 3. these epigenetic biomarkers will provide new key regulatory checkpoints that can be targeted for novel asthma therapies and new drug development.

### EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Children with nut allergies have impaired gene expression of Toll-like receptors pathway. Poole A, Song Y, O'Sullivan M, Lee KH, Metcalfe J, Guo J, Brown H, Mullins B, Loh R, Zhang GB. *Pediatr Allergy Immunol*. 2020 Aug;31(6):671-677. doi: 10.1111/pai.13246. Epub 2020 Apr 8.

Cellular and molecular mechanisms of vitamin D in food allergy. Poole A, Song Y, Brown H, Hart PH, Zhang GB. *J Cell Mol Med*. 2018 Jul;22(7):3270-3277. doi: 10.1111/jcmm.13607. Epub 2018 Mar 25.

Western environment/lifestyle is associated with increased genome methylation and decreased gene expression in Chinese immigrants living in Australia. Zhang G, Wang K, Schultz E, Khoo SK, Zhang X, Annamalai A, Laing IA, Hales BJ, Goldblatt J, Le Souëf PN. *Environ Mol Mutagen*. 2016 Jan;57(1):65-73. doi: 10.1002/em.21989. Epub 2015 Dec 16.

### GENERAL METHODOLOGICAL SUMMARY

Using quantitative methods to investigate the epigenetic mechanisms for asthma in children.

### APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

### ETHICS

Does not require ethics approval (does not involve humans or animals)

### ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Biomedical skills and data analysis.

### NUMBER OF STUDENTS FOR PROJECT

1

## PROJECT TITLE

**E-cigarettes: prevalence and attitudes among WA university students according to age and socioeconomic background**

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: A/Professor Krassi Rumchev - [k.rumchev@curtin.edu.au](mailto:k.rumchev@curtin.edu.au)

Secondary Supervisors: Dr Sue Gilbey - [sue.gilbey@curtin.edu.au](mailto:sue.gilbey@curtin.edu.au)

## PROJECT BACKGROUND & OBJECTIVES

Electronic cigarettes (e-cigarettes) are a means of recreational use that can potentially eliminate the need to smoke tobacco. Little is known about the prevalence of use among university students in Western Australia and their attitudes toward e-cigarettes. There is growing evidence that e-cigarette vapour is not safe and can lead to serious health problems. Of particular concern is the popularity of these devices among younger populations, especially considering how little is known about the content of the e-liquid and the flavours, as well as the long-term health impacts. This study aims to investigate the use of and attitudes toward e-cigarettes among Western Australian university students with different socioeconomic background.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Soneji, S., Barrington-Trimis, J. L., Wills, T. A., Leventhal, A. M., Unger, J. B., Gibson, L. A., Yang, J., Primack, B. A., Andrew, J. A., Miech, R. A., Spindle, T. R., Dick, D. M., Eissenberg, T., Hornik, R. C., Dang, R., & Sargent, J. D. (2017). Association between initial use of e-cigarettes and subsequent cigarette smoking among adolescents and young adults: A systematic review and meta-analysis. *JAMA Pediatrics*, 171(8), 788-797. doi.org/10.1001/jamapediatrics.2017.1488

## GENERAL METHODOLOGICAL SUMMARY

Participants will be asked to complete an online anonymous questionnaire about their use of and attitude towards e-cigarettes. The study will involve quantitative method for data analysis.

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

No

## ETHICS

Ethics is required

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

The research project will offer students the opportunity to apply their knowledge and technical skills in a supervised research project. They will further develop their skills in problem-solving, critical thinking capacities in the context of research, communication skills and the ethical approval processes. Knowledge in quantitative research methods and data analysis.

## NUMBER OF STUDENTS FOR PROJECT

1



# PSYCHOLOGY PROJECTS

## PROJECT TITLE

**Health outcomes After Release from Prison: a multi-jurisdictional, prospective cohort study**

## SUPERVISOR/S & CONTACT DETAILS

Primary Supervisor: Prof Stuart Kinner - [stuart.kinner@curtin.edu.au](mailto:stuart.kinner@curtin.edu.au) Secondary Supervisors: Dr Matt Legge - [matthew.legge@curtin.edu.au](mailto:matthew.legge@curtin.edu.au) Ms Lindsay Pearce - [lindsay.pearce@curtin.edu.au](mailto:lindsay.pearce@curtin.edu.au)

## PROJECT BACKGROUND & OBJECTIVES

People who experience incarceration are distinguished by a high prevalence of complex, co-occurring health needs that interact in a syndemic fashion and are set against a backdrop of entrenched disadvantage. The Health After Release from Prison (HARP4) study is the world's largest prospective cohort study of health outcomes for people who experience incarceration. The cohort includes 4,135 adults (1,493 Indigenous, 873 female) recruited from prisons in WA, QLD, NSW, and VIC. Data from detailed baseline interviews and abstracted information from prison medical records have been linked, retrospectively and prospectively, with administrative health and correctional records, providing a median of 9.3 years of follow-up. Survey domains include socio-demographic information, physical and mental health status, substance use and other health risk behaviours, social support, and plans and expectations regarding release. Administrative health records include statewide ambulance, emergency department, hospital, ambulatory mental health, alcohol, and other drug treatment, notifiable disease, Medicare, PBS, and death records. Honours projects will involve either cross-sectional analysis of baseline data or longitudinal analysis involving both baseline and prospectively linked administrative data, depending on the student's skills and interests. Specific research questions will be developed in collaboration with the student, accounting for their interests.

Students will be expected to have experience with quantitative data analysis, although some mentoring in the appropriate methods will be provided by the supervisory team. Students will be expected and supported to adapt their thesis for publication in a peer-reviewed journal.

## EXAMPLE PAPER THAT REFLECTS THE PROJECT / TOPIC

Kinner SA & Young JT (2018). Understanding and improving the health of people who experience incarceration: An overview and synthesis. *Epidemiologic Reviews*, 40(1), 4-11.

## GENERAL METHODOLOGICAL SUMMARY

Quantitative (e.g., logistic regression, Cox regression).

## APPROPRIATE FOR A PSYCHOLOGY HONOURS STUDENT?

Yes

## ETHICS

Project has ethics approval

## ESSENTIAL SKILLS / PRE-REQUISITE / REQUIREMENTS OF STUDENT

Students should have basic training in epidemiology and quantitative methods. Data will be analysed using Stata; prior experience with Stata is an advantage but is not essential.

## NUMBER OF STUDENTS FOR PROJECT

4



