

Honours Projects (M3703) 2021

Department of Nutrition, Dietetics and Food



Are you considering an Honours project? This is an ideal opportunity for students in:

***Nutrition, Biochemistry,
Physiology, Biomedical science,
Chemistry, Immunology***

Monash University
Department of Nutrition, Dietetics & Food,
Be Active Sleep and Eat Facility (BASE),
Level 1 / 264 Ferntree Gully Road
Notting Hill

What is the Bachelor of Nutrition Honours?

Are you in final year of a degree in Nutrition, Dietetics, Biomedical Sciences and don't know what to do after completing your Bachelor degree? Why not consider the Bachelor of Nutrition (Honours) degree within the Department of Nutrition, Dietetics and Food at Monash University? It will allow students to develop their research skills and competencies, learn specific techniques and gain a deeper understanding of a selected aspect of human nutrition, as well as giving you a transferable skills advantage over other graduate job applicants.

This program is for top ranking graduates of a nutrition/dietetic/biomedical sciences courses; or those who have completed a science-based degree with a demonstrated interest in nutrition. To determine eligibility please discuss this with the Honours coordinator and the project supervisor. For more information please refer to:

<http://www.monash.edu/pubs/2019handbooks/courses/M3703.html>

What do I actually have to do for Bachelor of Nutrition (Honours) degree?

The program consists of an individual major research project and a compulsory coursework component. The coursework component will be conducted in semester one (for both Full time and half time enrolments), and includes a unit on project organization, literature reviewing, study design, data collection, data analysis, statistics, scientific report writing, and submitting work for peer review. Students also undertake a systematic literature review which supports their research topic. Learning how to do a systematic review is a key skill that Honours students acquire. These units contribute towards the successful completion of an Honours research project.

Duration of study: Most students complete their Honours during a full time academic year. However, a half time study option is available which enables the student to complete their course work (BND 4111 in Semester 1) and systematic literature review (BND 4121 across Semester 1 and Semester 2) during year 1 and their research project in year 2. Students must complete their Honours course in its entirety within two consecutive years. Not all projects are available for half time study and this needs to be discussed with the relevant supervisor.

Where will I be located for my Honours project?

Department of Nutrition, Dietetics and Food

The Department of Nutrition, Dietetics and Food is located at the state-of-the-art 'Be Active Sleep and Eat' (BASE) Facility in Notting Hill (www.med.monash.edu/base). The BASE Facility is dedicated to advance translation of the science of nutrition, sleep and physical activity to enhance the health lifespan of all Australians. The facility comprises iDXA for bone and body composition assessment, sleep laboratory, a commercial kitchen, exercise and fitness studio and consulting suites. You will utilise the equipment and facilities alongside highly qualified and experienced investigators.

How to apply

Applications for entry into the Bachelor of Nutrition (Honours) program are open and the **first round applications will close on last Friday in October**. Provisional offers will be made 7-10 days

later. Late applications will be considered but not all projects will be available. Please check the Handbook for entry requirements <https://www.monash.edu/study/courses/find-a-course/2021/nutrition-m3703?domestic=true>.

If you are interested in any of the projects being offered please contact the relevant named supervisor to discuss the projects you are interested in and ask them to complete the form at the end of this document. Next apply online: [apply online](#) and included the signed project form.

Further information

Dr Kate Huggins,
Honours Co-coordinator

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What are our research themes?

Clinical Nutrition

Aims to generate high quality evidence of effective interventions to improve nutritional status across a range of clinical conditions and age groups including clinical dietetics research within paediatrics, diabetes and aging. We have expertise with patient-level interventions and systems-based interventions for food services in hospital and aged care settings. We actively translate new evidence that arises from these studies into practice and our teaching.

Metabolism

Aims to generate understanding of how foods and nutrients can influence molecular and physiological mechanisms to improve health and reduce disease. Nutrition is integral to good health and disease prevention and recovery.

Public Health Nutrition

Aims to improve people's diets to reduce chronic diseases and conditions such as diabetes and obesity. Our research focuses on modifying our food environments to improve everyone's health, especially Indigenous populations.

Education

Aims to discover and evaluate innovative ways to educate nutrition and dietetic professionals to be exceptional leaders in practice, with capability to lead multi-disciplinary teams which are required to manage the complex nutrition problems our communities face.

Some of the advances our researchers are working to achieve:

- Better metabolic health for shift workers
- Novel dietary strategies to reduce risk of type 2 diabetes and cardiovascular disease
- Better gut health for ultra-endurance athletes through optimal nutrition and hydration
- Reduction in inflammation through dietary patterns
- Improved fertility and pregnancy outcomes for women
- Novel bioinformatic and molecular to understand complex nutrient-metabolism interactions

- Enhanced food environments which make the healthy choice the easy choice
- Reduce inequities in food supply and improve food security for all Australians
- Optimal nutrition interventions for the elderly population
- Ensure options for those seeking weight management from youth through to adulthood have access to proven effective evidence based advice.

Research supervisors in the department include:



Left to right: Professor Gary Williamson, A/Prof Maxine Bonham, A/Prof Julie Brimblecombe, Dr Aimee Dordevic, Dr Ricardo Costa, A/Prof Claire Palermo, Dr Tracy McCaffrey, Dr Kate Huggins, Dr Michael Houghton, Dr Zoe Davidson, Dr Barbara Cardoso, Dr Sue Kleve, Dr Nicole Kellow, Dr Elizabeth Barber

Researcher profiles can be found at <http://www.monash.edu.au/research/people/profiles/>

What is it really like doing Honours in Nutrition and Dietetics?

We asked some of our former students why they chose to become an Honours student and how it had benefited them.



“Honours gave me a chance to consolidate and crystalize the nutrition science knowledge I had gained in my undergraduate degree. Having the opportunity to focus on an important area of public health, and conduct original research to potentially contribute to the evidence base, was very rewarding.

My project involved planning and executing a clinical study, and the skills and experience developed in project management, interpersonal communication, and problem solving are not only useful in my current PhD research, but will also be transferrable and advantageous beyond academia.

Being new to the department I found the staff and students to be very welcoming and supportive, with many opportunities to participate in department activities and learn about the myriad research projects underway. Ultimately my honours year allowed me to discover a passion for research and develop the confidence to pursue it further, and has given me the opportunity to undertake a PhD in the very exciting field of nutrigenomics and circadian rhythms.”

Rochelle Davis (2016 Graduate and current PhD candidate)



“Prior to beginning my Bachelor of Nutrition (Honours), I was slightly hesitant as to whether I would enjoy a year of research. My Honours year ended up being a highlight of my University experience.

As a component of my research project, I was fortunate to be able to undertake a five month research placement at the University of Surrey in the United Kingdom. This placement enabled me to consolidate my research skills whilst immersing myself in the lifestyle and culture of another country.

I was readily supported to develop my practical research skills with a team of academics from both Australia and the UK. Not only did I learn about the importance and potential of international collaboration, being based in the UK allowed me to travel, gain my independence and meet people from all over the world.

I thoroughly enjoyed my Honours experience and I value the skills that I developed over the course of the year. My Honours year gave me the confidence that I needed to enter the workforce and to ultimately pursue a PhD and a career in Dietetic research.

Sarah Lang (2015 Graduate and current PhD candidate)

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METABOLISM THEME**1. Prevention and management strategies of exercise-induced gastrointestinal syndrome.**

Supervisors:	Dr Ricardo Costa
Contact details:	ricardo.costa@monash.edu
Enrolment Option:	Full time / part time

PROJECT SUMMARY:

Prevention and management strategies of exercise-induced gastrointestinal syndrome (General project scope)- this research project aims to explore pathophysiological mechanisms, advancements in assessment methodologies, and strategies to prevent/ameliorate the detrimental performance and/or health implications of exercise stress on the gastrointestinal tract. Areas of focus include: gastrointestinal epithelial integrity, gastrointestinal functional responses, systemic endotoxin and inflammatory profiles, gut microbiota microorganism composition and bacterial metabolic activity, and associated gastrointestinal symptoms.

Background literature:

Costa et al., (2019). Exertional-heat stress associated gastrointestinal perturbations-management strategies for athletes preparing for and competing in the 2020 Tokyo Olympic Games. *Temp.* 7(1):58-88.

Costa et al., (2017). Systematic review: Exercise-induced gastrointestinal syndrome- Implication for health and disease. *Alim.Therap.Pharmacol.*, 46(3):246-265. doi: 10.1111/apt.14157. PMID: 28589631

2. Good veins: association between dietary intake, tissue advanced glycation end-product (AGE) accumulation and flow mediated dilatation (FMD)

Supervisors:	Dr Aimee Dordevic Dr Nicole Kellow Professor Gary Williamson
Contact details:	aimee.dordevic@monash.edu
Enrolment option:	Full time / part time

PROJECT SUMMARY:

AGEs form naturally in our bodies when sugars react with proteins. However, excessive AGE levels in the circulation and body tissues cause damage to proteins, up-regulate the production of reactive oxygen species and enhance chronic inflammation. AGEs play a role in the development and progression of cardiovascular diseases through the modification of the structure and function of tissues. One of the important markers of cardiovascular health is the ability of the blood vessels to dilate i.e. their flexibility. This is measured using a non-invasive technique called “flow mediated dilatation” (FMD).

Apart from AGE formation inside the body, AGEs are absorbed by the body from dietary sources during consumption of highly processed, heat-treated foods. Browning of food during cooking is used to enhance the quality, flavour, colour and aroma of the diet. This process (the Maillard reaction) generates large quantities of AGEs. High-AGE foods include powdered milk and cheese, meats, fish and chicken cooked by dry heat and heat processed cereal-based products.

Aims: 1. To determine whether “diet quality” is associated with the long-term accumulation of AGEs in the human body, and 2. To investigate whether FMD is correlated with accumulated AGE levels.

Adult volunteers will periodically complete an electronic Food Frequency Questionnaire (Australian Eating Survey), in addition to completing a dietary AGE Food Frequency Questionnaire. Volunteers will also have their body composition assessed, FMD measured, and their tissue AGE concentration measured by a non-invasive device called an AGE Reader. The measurement of AGEs in skin tissue provides an estimate of AGE accumulation over many years.

Significance: This work will be the first of its kind to determine whether diet quality or diet composition is associated with AGE deposition in skin tissue, and its correlation with cardiovascular health.

SKILLS ACQUIRED:

Collection of accurate dietary intake and survey information, measurement of body composition, quantitative statistical analysis, dietary analysis, scientific writing.

3. Chronic systemic inflammation in cardiometabolic disease- role of the gastrointestinal wall and gut bacterial composition in the pathophysiological pathway

Supervisors:	Dr Aimee Dordevic Dr Ricardo Costa
Contact details:	aimee.dordevic@monash.edu
Enrolment option:	Full time / part time

PROJECT SUMMARY:

Gastrointestinal health is a novel viewpoint in the pathophysiology of cardiometabolic diseases (e.g., cardiovascular disease and type 2 diabetes mellitus). The robustness of the gastrointestinal wall, gut microbiota composition, and the ability and competency of the immune system to clear and counter-attack foreign pathogens (e.g., bacterial endotoxins) coming through the gastrointestinal wall into circulation plays a key role in the magnitude of systemic inflammation- a prime factor in cardiometabolic disease risk progression. To date, we now know that strenuous endurance exercise in the heat is needed to substantially disturb normal gastrointestinal and immune status, and promote pronounced systemic inflammation. However, such strenuous exercise is not possible in populations suffering from cardiometabolic risk factors (e.g., obese). This project will therefore investigate the impact of heat with and without exercise on gastrointestinal perturbation and immune markers in non-athletes, and explore dietary factors that can mediate or exacerbate the effects.

Aims:

1. To measure markers of heat- and exercise-induced gastrointestinal and immune stress in sedentary people.
2. To compare the effects of heat only and heat with moderate exercise on gastrointestinal and immune stress markers.
3. To assess the role of diet in heat- and exercise-induced gastrointestinal and immune stress.

Untrained adult volunteers will be recruited to participate in heat and exercise stress tests. People will participate in 3 conditions: heat only, heat + exercise, exercise only. Gastrointestinal and immune stress markers will be measured prior to the onset of exercise, then following exercise.

Significance: This work will be the first of its kind to established an experimental model in testing the link between gastrointestinal health and cardiometabolic disease risk and progression.

Skills acquired: Communication, data analysis and interpretation, dietary analysis and programming, recipe development, thermoregulatory measurement techniques, respiratory gas analysis techniques, fitness assessment protocols, anthropometrical assessment techniques, blood sampling and processing methods, ELISA techniques, and general professional transferable skills.

4. Food for fertility: Can a dietary polyphenol supplement improve sperm quality in subfertile men?

Supervisors:	Dr Nicole Kellow Dr Fabrizio Horta Professor Gary Williamson
Contact details:	nicole.kellow@monash.edu
Enrolment option:	Full time / part time

PROJECT SUMMARY:

Interested in food and nutrition? Want to participate in research aimed at improving fertility outcomes in the 15% of Australian couples who experience infertility? Completing an Honours year in the Department of Nutrition, Dietetics & Food at Monash University provides you with the opportunity to develop research and interpersonal skills within a supportive, world-class research facility.

There is increasing interest in the role of dietary patterns, foods and nutrients in optimising fertility. One of the main contributors to poor sperm quality is increased oxidative stress (ie. the presence of greater levels of reactive oxygen species than the body's antioxidant capacity to neutralise them). Polyphenols are micronutrients which are naturally present in many healthy foods including fruit, vegetables, extra virgin olive oil and tea. Some polyphenols have beneficial effects on health due to their antioxidant and anti-inflammatory properties.

Our department has unique skills in undertaking best practice assessment of dietary intake and nutritional status. In conjunction with collaborators in the Monash Health Department of Obstetrics & Gynaecology and Monash IVF, the aim of this project is to conduct a pilot study to **determine the impact of dietary polyphenol supplements on sperm quality in subfertile men.**

Significance: While many studies have previously explored the effects of antioxidant supplements on male fertility, minimal research has been conducted using dietary polyphenols. This work will provide important preliminary data for larger clinical trials.

SKILLS ACQUIRED: clinical trial co-ordination, quantitative statistical analysis, dietary analysis, laboratory skills, scientific writing.

5. Polyphenol-enriched functional bread – a promising staple for diabetes?

Supervisors:	Dr Elizabeth Barber, Prof Gary Williamson
Contact details:	Elizabeth.barber@monash.edu , gary.williamson1@monash.edu
Enrolment option:	Full time / part time

PROJECT SUMMARY:

The functionality of cereal-based foods can be increased by enriching with natural bioactive compounds from fruits and vegetables to complete the nutritional needs of most populations. This enrichment is known to increase antioxidant activities and total phenolic content in foods. The success of functional foods is influenced by the retention of the bioactive compounds during technological processes in a food matrix until consumption and distribution to the physiological target within the body.

Bread, the mostly consumed cereal-based products, is easily processed and relatively affordable. It has a complex system for endless possibility of enrichment variations. Yeast fermentation is known to increase retention and the bioavailability of some polyphenols (1) and reverse bitter taste of polyphenols (2), with increased shelf-life of end products (3) while others have low thermal stability (4). Limited findings demonstrated reduced glycaemic response by polyphenol-enriched bread (5). The incorporation of these compounds during breadmaking can be challenging, as their presence in the recipe does not warrant their functionality in the end product. Some compounds delayed digestion and increased stability by binding to starch while others decreased antioxidant potential by forming indigestible complexes with bread protein (6,7). Nonetheless, little is known on the differential impact of bioactive compounds and their bioavailability when added as dry powder or fresh pulp during the breadmaking process.

This study aims to **differentiate the antioxidant potential and phenolic content of bread incorporated with dehydrated vs hydrated bioactive compounds at various stages of breadmaking process**. The nutritional quality (including fibre, amylose and amylopectin content), shelf-life and the sensorial properties will be determined, besides testing the postprandial glycaemic response in human volunteers.

1. Zain MZM, Baba AS, Shori AB, 2018. Journal of King Saud University-Science, 30: 278-282
2. Selvamuthukumar M, Pathak YV, 2019. Flavour development for functional foods and nutraceuticals
3. Vasileva I, Denkova R et al., 2018. Food Chemistry 253: 13-21.
4. Jiang D, Chiaro C, et al., 2009. Journal of Agricultural and Food Chemistry, 57:9932-9943
5. Coe S & Ryan L, 2018. Nutrition Research 36: 193-200
6. Sun LJ, Miao M, 2020. Critical Reviews in Food Science & Nutrition 60: 541-555
7. Betoret E & Rosell CM, 2019. Cereal Chemistry 97: 9-19.

SKILLS ACQUIRED:

Food science, recipe modification, communication, sensory analysis, quantitative data analysis and interpretation, scientific writing and general professional transferable skills

6. Can nut intake improve vascular health and cognitive performance in older adults?

Supervisors:	Dr Barbara R Cardoso Prof Gary Williamson
Contact details:	barbara.cardoso@monash.edu
Enrolment option:	Full time / part time

PROJECT SUMMARY:

Cognitive decline is a major health and social issue, as it negatively affects quality of life of older adults, and increases risk of dementia (such as Alzheimer's disease), illness and mortality. Vascular burden is the greatest determinant of late-life cognition, and thus dietary strategies to improve cardiovascular health are pursued in order to mitigate age-associated cognitive decline and dementia. Nuts present a unique nutritional composition, with optimal fatty acid profile, high concentration of fibres, B-vitamins, minerals and antioxidant compounds, and have been associated with reduced cardiovascular risk and improvement of glycaemic control, factors tightly associated with the maintenance of brain health across the lifespan.

Aim: to determine if the consumption of nuts improves endothelial function, a prognostic marker of cardiovascular disease, and cognitive performance in older adults at high risk of dementia.

The study is a nutritional intervention with nuts, and will involve participants recruitment, interview, measurement of body composition, as well as the use of lab techniques to measure glycaemic response and endothelial function.

SKILLS ACQUIRED: Dietary assessment and analysis, communication, quantitative data analysis and interpretation, scientific writing and general professional transferable skills.

7. How much coffee do you drink? Identifying a biomarker of coffee intake.

Supervisors:	Prof Gary Williamson Dr Margaret Murray Prof Louise Bennett
Contact details:	Gary.williamson1@monash.edu
Enrolment option:	Full time / part time

PROJECT SUMMARY:

Have you enjoyed your morning coffee yet? Coffee is one of the most commonly consumed beverages around the world. But apart from being a great wake-up call, for some, coffee also contains various bioactives that impact on human health and disease. These include a class of compounds called phytochemicals, some of which are quite unique to coffee.

Because of the potential health effects of coffee consumption, it is of great interest to be able to accurately assess the coffee intake of individuals, through to large populations. Large scale epidemiological studies would benefit greatly from a reliable biomarker of coffee consumption that enables accurate assessment of coffee intake. This would allow for more accurate calculation of the relationship between coffee intake and certain health effects.

This project will use LC-MS analysis to identify metabolites of certain phytochemicals, found in high levels in coffee, in the urine of volunteers. This will be done by comparing urine samples from before and after coffee consumption. Identified metabolites have the potential to become widely used as accurate biomarkers of coffee intake.

Pre-requisites: some chemistry knowledge, an interest in human health and metabolism

SKILLS ACQUIRED: clinical study coordination, laboratory skills, communication, quantitative data analysis and interpretation, scientific writing and general professional transferable skills

8. A place for nutrition in the war against COVID-19?

Supervisors:	Dr Michael Houghton Prof Gary Williamson
Contact details:	Michael.Houghton@monash.edu
Enrolment option:	Full time / part time

PROJECT SUMMARY:

In the Molecular Nutrition research group, led by Prof Gary Williamson, we are focused on discovering the mechanisms underlying the health benefits of phytonutrients naturally present in plant-based foods. There is emerging evidence that phytonutrients may play a role in offering protection against COVID-19. Natural extracts and compounds have the potential to lower the risk of SARS-CoV2 infection by acting on angiotensin-converting enzyme 2 (ACE2) and transmembrane serine protease 2 (TMPRSS2), two proteins that together mediate coronavirus entry into human cells. Further, once infected, phytonutrients may decrease the severity of the disease by regulating inflammatory pathways. This project will provide students with an insight into lab-based research as a nutrition scientist and a unique opportunity to work on the most important international public health crisis and research effort of our lifetime. An understanding of biochemical molecular mechanisms and prior laboratory experience is essential. The project will involve the use of cultured human cells with biochemical and molecular analyses, including quantification of gene and protein expression, enzymatic assays and the study of protein-protein interactions, using state-of-the-art instruments.

SKILLS ACQUIRED: project planning and coordination, literature review, laboratory skills (including gene, protein and enzymatic assays), quantitative data analysis and interpretation, communication, scientific writing and general transferable skills

Laboratory skills, communication, quantitative data analysis and interpretation, scientific writing and general professional transferable skills

9. Can nut intake improve glycaemic response at night?

Supervisors:	Dr Barbara Cardoso A/Prof Maxine Bonham
Contact details:	Barbara.Cardoso@monash.edu
Enrolment option:	Full time / part time

PROJECT SUMMARY:

Shift workers have greater risk of for obesity, type 2 diabetes, cancer and cardiovascular disease. Our research group has demonstrated that eating late into the night, as is common in shift workers, is associated with metabolic complications such as impaired glucose tolerance and insulin resistance. Therefore, strategies to reduce postprandial glucose response at night have been investigated in order to minimise the negative effects of night-time eating on the metabolism.

Aim: to examine whether a meal enriched with nuts attenuates postprandial glucose at night, compared with a nut-free isocaloric meal.

This study is an acute nutritional intervention, and will involve participants recruitment, interview and the use of lab techniques to measure glycaemic response. This project will advance the understanding of dietary strategies to best support the needs of shift workers to reduce metabolic risk factors.

Skills acquired: Dietary assessment and analysis, communication, quantitative data analysis and interpretation, scientific writing and general professional transferable skills.

10. Protecting cardiovascular function through dietary manipulation of post-prandial metabolism

Supervisors:	Dr Kate Huggins
Contact details:	Kate.Huggins@monash.edu
Enrolment option:	Full time

PROJECT SUMMARY:

We do not fully understand why Type 2 Diabetes (T2D) risk is disproportionately higher in people from culturally and linguistically diverse backgrounds. Because of this knowledge gap, opportunities for early intervention are reduced and more lives will be lost. A deterioration of lipid metabolism is a key mechanism by which Type 2 diabetes (T2D) and cardiovascular disease (CVD) co-exist. T2D-related dyslipidaemia is often diagnosed after insulin resistance is well established, however the onset of dyslipidaemia may occur much earlier in the pathogenesis of T2D and this may be more pronounced in Chinese immigrants due to genetic predisposition and the marked dietary shifts (1,2,3). We are undertaking a study to identify if impaired non-fasting lipid metabolism is an early feature of T2D risk in Chinese immigrants in Australia. The study design is an acute high fat meal challenge to assess post-prandial lipid metabolism. This is a two-group clinical study. In this Honours project you will contribute to recruitment, screening and running of this study. Using data collected, you will investigate secondary outcome measures to explore if there are novel biomarkers indicative of abnormal physiological function. The results of this work will assist diabetes educators and other health professionals in tailoring dietary prescriptions.

POTENTIAL SKILLS ACQUIRED: Participant recruitment, body composition assessment, dietary assessment, assessment of appetite and satiety, acute post-prandial assessment, including biochemical measurements, functional cardiovascular assessment.

1. Lu, Y., Wang, Y., Zou, L., Liang, X., Ong, C., Tavintharan, S., Yuan, J.M., Koh, W.P., Pan, A. (2018). Serum Lipids in Association With Type 2 Diabetes Risk and Prevalence in a Chinese Population. *The Journal of Clinical Endocrinology & Metabolism*, 103(2), 671-680
2. Ma, R., Lin, X., & Jia, W. (2014). Causes of type 2 diabetes in China. *The Lancet. Diabetes & Endocrinology*, 2(12), 980-91.
3. Mackey, R., Mora, S., Bertoni, A., Wassel, C., Carnethon, M., Sibley, C., & Jr., D. (2015). Lipoprotein particles and incident type 2 diabetes in the multi-ethnic study of atherosclerosis. *Diabetes Care*, 38(4), 628-62836.

11. The effect of time restricted feeding on blood glucose

Supervisors:	A/Prof Maxine Bonham
Contact details:	maxine.bonham@monash.edu
Enrolment option:	Full time

PROJECT SUMMARY:

Two million people in Australia have pre-diabetes and as a result are more likely to develop Type 2 Diabetes Mellitus (T2DM). Whilst diet and lifestyle strategies form the backbone of prevention, these behaviours are notoriously difficult to maintain. Over the course of the 24 hour day, the efficiency of metabolic processes reduces, including digestion, energy expenditure, glucose metabolism and insulin sensitivity. These diurnal changes in metabolic processes are driven by the body clock, which sets our circadian rhythm. Typically, glycaemic control tends to peak in the morning, with impairments in glucose tolerance observed into the afternoon and evening. Ideally, our eating habits should align with our body clock (i.e. feeding during the day and fasting during the night). However, at a population level, we are extending our typical feeding period over the 24 hour day which means we now eat later into the night and have a higher proportion of our energy intake at times of the day associated with reduced glucose tolerance. Limiting food intake to defined periods of the day (also known as time restricted feeding), thus avoiding eating later during the day, favourably impacts metabolic health outcomes. Using measure of blood glucose we will investigate the effect of a time restricted eating protocol on metabolic markers of health.

Aim: to determine the impact of a time restricted feeding protocol on continuous blood glucose in adults at risk of diabetes.

The study is a cross over study where participants will be randomized to intervention (usual eating patterns) or TRF (eating within a fixed time frame of 10 hours) . Changes in blood glucose will be measured using an oral glucose tolerance test and/or continuous blood glucose monitoring.

SKILLS ACQUIRED: Dietary assessment and analysis, blood handling, sample analyses, statistical analysis and interpretation, scientific writing and general professional transferable skills.

1. Hutchison AT, Regmi P, Manoogian ENC, Fleischer JG, Wittert G, Panda S, Helibronn LK (2019). Time-Restricted Feeding Improves Glucose Tolerance in Men at Risk for Type 2 Diabetes: A Randomized Crossover Trial. *Obesity*, 27, 724-732.
2. Rothschild J, Hoddy KK, Jambazian P, Varady KA (2014). Time-restricted feeding and risk of metabolic disease: a review of human and animal studies. *Nutr Rev*, 72, 308-318.

EDUCATION RESEARCH THEME

12. How are we preparing our future health professionals to address impacts of climate change?

Supervisors:	A/Prof Claire Palermo
Contact details:	claire.palermo@monash.edu
Enrolment Option:	Full time / part time

PROJECT SUMMARY:

In order to prepare health professionals and health systems for the impacts of climate and environmental change, there is an urgent need to incorporate sustainable healthcare education (SHE) into health professions training. SHE is defined as teaching and learning approaches that equip educators to develop students' knowledge, skills, worldviews, and practices based on the interdependence of ecosystems and human health, in order to contribute to a more sustainable human existence.

This current research aims to document existing SHE teaching and learning activities at Monash University Faculties of Medicine, Nursing and Health Sciences and Pharmacy and Pharmaceutical Sciences as a baseline measure. Methods will include (i) content analysis of course curriculum frameworks, unit handbooks, student learning outcomes and assessment task objectives from all 13 health professional courses, and (ii) an online survey of relevant Unit Coordinators (as identified via content analysis) to gather greater detail about relevant teaching and learning activities including pre/in/post-class activities, assessment tasks and placements.

PRE-REQUISITES: NUT3006 Food Sustainability Systems (or equivalent climate change unit)

SKILLS ACQUIRED: Quantitative and qualitative data analysis skills. Literature review skills.

CLINICAL NUTRITION THEME

13. Where to go for help? Mapping services in Victoria for children who are overweight or obese.

Supervisors:	Dr Zoe Davidson Dr Sue Kleve Natassja Billich
Contact details:	zoe.davidson@monash.edu
Enrolment option:	Full time / part time

PROJECT SUMMARY:

Victoria has the highest rates of childhood overweight and obesity in Australia. Almost one in three children in Victoria are overweight or obese, and this figure is rising. Data from the Australian Institute of Health and Welfare reported that overweight and obesity in children in Victoria increased from 23.4% in 2011 to 30.8% in 2014. This is above the national average of 26.1%.

Whilst prevention of childhood obesity is an area of much research, policies and programs, it is unclear what services are available to manage or treat children who are overweight or obese. Paediatric tertiary hospitals have limited services available and often with long waiting lists. It is unclear what is available through community health or other services.

Helping families to manage overweight and obesity during childhood is essential for optimising health and minimising the risk of chronic disease into adulthood. Studies have clearly shown that children who are overweight or obese remain so into adulthood.

This study will map services available in Victoria for families to access for managing childhood overweight or obesity. It will use a series of review strategies to identify potential contacts in conjunction with a survey of what services are available. Services available through tertiary services, community health as well as private practice will be considered.

SKILLS ACQUIRED: project planning and coordination (including ethics), literature review, consultation and communication skills, survey development, quantitative statistical analysis and interpretation, scientific writing and general professional transferable skills

14. Using group concept mapping to design nutrition services for people with upper gastrointestinal cancer

Supervisors:	Dr Kate Huggins
Contact details:	Kate.huggins@monash.edu
Enrolment option:	Full time

PROJECT SUMMARY:

Weight loss is often the primary cause of concern preceding a cancer diagnosis, which drives people to seek medical advice. Prevalence of clinically significant weight loss (>10% body weight) is reported to range from 15-69% in people with these cancers. Sustained weight loss eventually leads to malnutrition, which is a strong prognostic indicator of mortality, increased risk of post-operative morbidity and mortality, debility, compromised immunity, a higher rate of hospital readmission, a longer duration of hospital stay, and poorer quality of life (1-3). It may also have a negative impact on tolerance to withstand cancer treatment. Delay in treating malnutrition occurs frequently in practice because of the inevitable delay that occurs between diagnosis and commencement of cancer treatment. Delay in commencing nutrition intervention allows nutritional problems to become established which retards later response to nutrition interventions. Therefore nutrition intervention should commence at the time of cancer diagnosis, using best practice strategies, to maintain or improve nutritional status and quality of life. Most nutrition care is provided during hospital admission and there is little access and availability to services post-discharge. This study aims to use the novel method of group concept mapping (4) to design the optimal model of health service delivery for nutrition care to people undergoing cancer treatment. Data will be collected from a range of stakeholders (health professionals, patients, carers and organisations) using qualitative methods. These data are then used in quantitative analyses to identify the important and feasible components of the health service model.

SKILLS ACQUIRED: project planning and coordination, literature review, consultation and communication skills, survey development, mixed methods research using qualitative data collection and quantitative statistical analysis and interpretation, scientific writing and stakeholder engagement.

1. Di Fiore, F., Leclaire, S., Pop, D. et al. 2007. Baseline nutritional status is predictive of response to treatment and survival in patients treated by definitive chemoradiotherapy for a locally advanced esophageal cancer. *Am J Gastroenterol* 102(11) 2557-2563.
2. Odelli, C., et al. 2005. Nutrition support improves patient outcomes, treatment tolerance and admission characteristics in oesophageal cancer. *Clin Oncol (R Coll Radiol)* 17(8) 639-645.
3. Marin Caro, M.M., Laviano, A. and Pichard, C. 2007. Nutritional intervention and quality of life in adult oncology patients. *Clin Nutr* 26(3) 289-301.
4. Carrie J. Petrucci PhD & Kathleen M. Quinlan (2007) Bridging the Research-Practice Gap, *Journal of Social Service Research*, 34:2, 25-42.

PUBLIC HEALTH NUTRITION THEME

15.A cross-country study of the impact of COVID19 on lifestyle factors in women of reproductive age.

Supervisors	Dr. Siew Lim A/Professor Lisa Moran Dr. Kate Huggins
Contact details:	siew.lim1@monash.edu
Enrolment option:	Full time

PROJECT SUMMARY:

The COVID 19 pandemic has unprecedented and widespread impact globally. Restrictions or lockdown may have both immediate and long term effect on lifestyle behaviours such as diet and physical activity as well as on psychological well-being. National emergencies like the COVID 19 pandemic could also affect the ability of people to access safe and healthy food to meet their needs and preferences for an active and healthy life. Women who just had a baby are usually at great need for support from family, friends and health professionals. This support may be curtailed during the pandemic due to restrictions over social distancing or personal choice to avoid visiting health professionals, This project aim to explore the following in women of reproductive age (18-50 years) during COVID 19: 1) food insecurity, 2) diet and physical activity behaviour, 3) anxiety, 4) weight changes, 5) infant feeding; and the relationship of all these with sociodemographic factors. This survey will be implemented across a nationally representative sample across Australia and a comparative sample in Ireland. The candidate will manage and analyse existing data to address the research question.

Keywords: COVID-19, pandemic, lifestyle, women.

16. Understanding and acting on food affordability and availability in Victoria: do local governments have a role to play?

Supervisors	Dr Sue Kleve Assoc Prof Julie Brimblecombe
Contact details:	Suzanne.kleve@monash.edu
Enrolment option:	Full time

PROJECT SUMMARY:

Food security exists when “all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. Food security is comprised of 4 dimensions: food availability, accessibility, utilisation and the stability and sustainability of these over time. Food affordability (cost of food) and availability are two important components of these dimensions supporting community and household food security. Understanding these components in the context of the local food environment is important to inform appropriate responses.

Local governments (LG’s) in Victoria, also known as councils, have become increasingly involved in acting to address food insecurity. There are seventy nine local government areas in Victoria. A national survey of local governments in 2007 found Victorian LG’s were significantly more active in addressing issues of equitable food access compared to other states, particularly through means such as supporting community food services, monitoring data on hunger, and improving physical access to fresh food. Possible motivations for greater LG action to address food insecurity in Victoria include the existence of long-standing legislation requiring all Victorian LGs to develop a Municipal Public Health and Wellbeing Plan (MPHP), and previous state-government funded food security initiatives such as the Victorian Health Promotion Foundation’s (VicHealth’s) Food for All (FFA) program.

Tools such as healthy food basket’s, has been widely used across Australia to monitor food affordability and availability. One example is the Victorian Healthy Food Basket (VHFB), adapted from the Queensland Healthy Food Access Basket model by Monash University, in order to best reflect the food affordability/availability for various family compositions in Victoria. The VHFB is developed based on the nutritional requirements of 4 reference families over a two week period: Family of 4, Single-Parent family, Elderly Woman and Single Male. This tool has been implemented by a number of LG’s to monitor food affordability and food availability but there is limited understanding on how this data is used to inform local decision making.

This research aims to explore the monitoring of food affordability and availability by LG’s within their local food environments. More specifically: to what extent are these monitored, the methods used, how this information is then used and how can this inform local government decision making to support food security.

This research will use a mixed methods approach of online data collection and in-depth interviews.

SKILLS ACQUIRED: a mixed methods research, online survey for quantitative data collection and analysis and in depth interviews, translation of findings for practice, communication skills.

17. Exploring the Victorian Food Relief COVID responses – the who, what, when and how and windows of opportunity

Supervisors:	Dr Sue Kleve
Contact details:	Suzanne.kleve@monash.edu
Enrolment options	Full time

PROJECT SUMMARY:

Food security exists when “all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. An important element of food and nutrition security is that food must be sourced in a dignified and socially acceptable manner and not resort to emergency food relief and/or begging, stealing or scavenging. The continuum of experience of food insecurity ranges from: worry and concern about not having money to put food on the table to changing the types and amounts of foods to skipping meals and going without.

The impacts of COVID have been far reaching including disruption of the basic human right of access to food. As a result of COVID, food insecurity is being increasingly experienced by many Victorians, with many new faces to the experience. The harsh reality is many Victorians who have never faced the challenge of putting food on the table are now having to do so. Furthermore, agencies have spoken of increased demands for food relief, and reported significant challenges in meeting this demand. As in other high-income countries food relief is traditionally the dominant response. While this response is important as an acute response to food insecurity it is not a long-term solution to this complex problem.

The responses to food insecurity both immediate and longer term (COVID normal) can be shaped by the representation of the issue and influenced by a range of actors.

This honours project seeks to explore the Victorian food relief COVID responses – the who, what, when and how and windows of opportunity to create a more resilient system for the future. More specifically through these research questions:

1. Since Covid 19, what and how is the ‘problem’ of food insecurity represented to be in Victorian state government policy and communication?
2. What sectorial responses have resulted and by whom? What systemic barriers and enablers were evident in the response. What worked and what didn’t.
3. What are the windows of opportunities for alternative models to food relief such as The Community Grocer?

This research will use a mixed methods approach, including document analysis, key informant in depth interviews with the outcomes to inform potential practice models and will have input with additional practice advice by Russell Shields, Tess Gardiner, Dr Rebecca Lindberg from The Community Grocer.

SKILLS ACQUIRED: a mixed methods research, including policy and document analysis and key informant in depth interviews, translation of findings for practice, communication skills

18. Can the Store Scout App be used as a benchmarking tool for the retail food environment in Victoria?

Supervisors:	Dr Meaghan Christian A/Prof. Julie Brimblecombe
Contact details:	Meaghan.christian@monash.edu
Enrolment options	Full time

PROJECT SUMMARY:

Research has demonstrated that the food retail environment drives food choice, and that effective in-store strategies to promote healthy eating and limit discretionary food intake via product pricing, availability and promotion, can have a significant effect on the diet of the local community. Store Scout App is a decision-support tool designed to provide a store environment index score and identify areas where action can be focused based on store practice relating to the 4Ps of marketing (Promotion, Price, Product, Placement). It has been designed to promote evidence-informed practice to restrict sales of discretionary products and to increase visibility and boost sales of targeted core foods. The App provides a store environment index score rates out of 100 for key food sections drinks, snack foods, meal/convenience foods, breads & cereal, meat & seafood, dairy & eggs. A high score suggesting the store environment is designed to encourage selection of healthy foods over less healthy foods.

Similarly, the Healthy Choices: food and drink classification guide developed by the Victorian State Government uses the traffic light classification for food (Green, Amber and Red) to increase the availability and promotion of healthier food and drink options in community settings. Green category represents food or drink classified as the best choice, amber food and drink which should be consumed in moderation and red is food and drink that the consumer should rarely consumer, or only in small amounts with limited or no advertising.

Aim: This study will conduct an analysis of the food retail environment based on Monash University Campus using the two food environment assessment methods. Based on the findings, this study will determine how a traffic light system could be applied to the Store Scout scoring index and be used as a benchmarking tool to encourage a shift to healthier food retail environments

SKILLS ACQUIRED: Dietary assessment and analysis, communication, quantitative data analysis and interpretation, scientific writing and general professional transferable skills.

19. An investigation of how traditional food intake of Aboriginal and Torres Strait Islander People is reported In Australia

Supervisors:	A/Prof Julie Brimblecombe
Contact details:	julie.brimblecombe@monash.edu
Enrolment options	Full time

PROJECT SUMMARY:

Indigenous food systems thrive in Australia and provide Aboriginal and Torres Strait Islander peoples with a rich and diverse, nutritious and culturally important food source. Thousands of plant and animal species make up the Australian Indigenous food system in addition to cultivation, harvesting and food preparation and conservation techniques. Peoples access to their natural food sources is impacted by many factors including Native Land Title, land occupation by Indigenous people, environmental degradation, urban development, and government policy on customary food procurement. These factors and differences in availability and use of plant and animal species according to geographical location, environmental habitat and cultural practice contribute to the varied contemporary utilisation of traditional foods by Aboriginal and Torres Strait Islanders peoples across Australia.

Traditional foods have high nutritional, medicinal and cultural value and have always been and continue to be important for Aboriginal and Torres Strait Islander peoples' health and wellbeing. Other than data collected on participation in cultural activity in national social surveys in 1994, 2002, and 2008, including participation in fishing, little data are available at a national level on Aboriginal and Torres Strait Islanders peoples contemporary dietary use of traditional food. Similarly, there is very little data on Aboriginal and Torres Strait Islander peoples' consumption of traditional foods. The 2012-2013 National Aboriginal and Torres Strait Islander Nutrition and Physical survey for the first time in Australia attempted to collect national-level data on consumption of wild harvested foods and included a 'Bush Tucker Prompt Card' and a food model booklet to prompt participants about wild-harvested foods.

Data on Aboriginal and Torres Strait Islander peoples' use of traditional food would seem important to inform policy to protect, promote and support Indigenous food systems, however variation in its use across the hundreds of Aboriginal and Torres Strait Islander cultural groups in Australia could challenge the collection of meaningful data. Cultural consideration in its collection is also paramount to ensure the collection of reliable and valid data that are meaningful and important to Aboriginal and Torres Strait Islander people.

The Australian Bureau of Statistics acknowledges the input of an advisory group in the development of the Aboriginal and Torres Strait Islander Health survey which comprised of experts on health issues, many of whom were Aboriginal and Torres Strait Islander people. There is little known however on how traditional food consumption was considered in the national survey, the selection of some traditional foods to include over others, how data were collected, analysed and reported, and the involvement of Indigenous people in this.

This Honours project will involve a systematic scoping review of peer and grey literature to provide insight in to what is known about traditional food intake in Australia, for what population groups data have been collected, by who and how. This will include review of data collected for the National

Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey and the National Aboriginal Social Surveys.

A policy analysis of the National Aboriginal and Torres Strait Islander health survey policy will be undertaken to investigate how traditional food consumption was considered in the development, implementation and evaluation of the survey. This analysis will involve document analysis, quantitative survey data analysis and potentially interviews with key stakeholders including Indigenous food and nutrition related policy-makers and health advocates to ascertain their perspectives on the collection and use of national level data on Aboriginal and Torres Strait Islander peoples' traditional food consumption.

This research could potentially inform the 2023 National Nutrition surveys currently being planned.

******* PLEASE UPLOAD THIS FORM WITH YOUR ONLINE APPLICATION *******

Project selection (to be completed by applicant and potential supervisor)

The purpose of this form is for you to indicate the projects of your choice. Apart from nominating a preferred project, you should also indicate alternative projects. This will ensure that if you miss out on your preferred project you will have one or two alternatives to pursue. The nominated supervisor(s) makes the decision as to who is selected for a particular project. It is possible that you may miss out on your first (or second) choice even though you have met the eligibility criteria.

Project of First Choice (Compulsory)

Applicant's Name _____

Planned Enrolment status (please circle) Full time or Half time

Project Title _____

Supervisor: _____ Location: _____

Phone: _____ E-mail _____

Primary Supervisor to complete

(1) I have discussed this project with the student and I have advised the student that I will consider him/her for this project (insert date)_____

(2) The supervisory team will consist of the following people:

(3a) Have the appropriate ethics approvals been granted or applied for? Yes No

(3b) Will your project include involved recruiting or data collection at a Health Service or other Government department (schools, emergency services etc.)? Yes No

(3c) Is there an industry partner? Yes No

(4) Do you anticipate being absent for any periods in excess of 2 weeks during the academic year? Yes No

If yes please advise time and duration of absence: _____

Signature _____ Date: _____

Honours Co-ordinator of Department/Centre/Institution to complete

I fully support this application and I am satisfied that appropriate resource/s, permit/s and supervision is/are available in this Department for successful completion of the above named project

Signature _____ Date: _____

Print Name: _____

Project of Second Choice

Applicant's Name _____

Planned Enrolment status (please circle) Full time or Half time

Project Title _____

Supervisor: _____ Location: _____

Phone: _____ E-mail _____

Primary Supervisor to complete

(1) I have discussed this project with the student and I have advised the student that I will consider him/her for this project (insert date) _____

(2) The supervisory team will consist of the following people:

(3a) Have the appropriate ethics approvals been granted or applied for? Yes No

(3b) Will your project include involved recruiting or data collection at a Health Service or other Government department (schools, emergency services etc.)? Yes No

(3c) Is there an industry partner? Yes No

(4) Do you anticipate being absent for any periods in excess of 2 weeks during the academic year? Yes No

If yes please advise time and duration of absence: _____

Signature _____ Date: _____

Honours Co-ordinator of Department/Centre/Institution to complete

I fully support this application and I am satisfied that appropriate resource/s, permit/s and supervision is/are available in this Department for successful completion of the above named project

Signature _____ Date: _____

Print Name: _____

Project of Third Choice

Applicant's Name _____

Planned Enrolment status (please circle) Full time or Half time

Project Title _____

Supervisor: _____ Location: _____

Phone: _____ E-mail _____

Primary Supervisor to complete

(1) I have discussed this project with the student and I have advised the student that I will consider him/her for this project (insert date) _____

(2) The supervisory team will consist of the following people:

(3a) Have the appropriate ethics approvals been granted or applied for? Yes No

(3b) Will your project include involved recruiting or data collection at a Health Service or other Government department (schools, emergency services etc.)? Yes No

(3c) Is there an industry partner? Yes No

(4) Do you anticipate being absent for any periods in excess of 2 weeks during the academic year? Yes No

If yes please advise time and duration of absence: _____

Signature _____ Date: _____

Honours Co-ordinator of Department/Centre/Institution to complete

I fully support this application and I am satisfied that appropriate resource/s, permit/s and supervision is/are available in this Department for successful completion of the above named project

Signature _____ Date: _____

Print Name: _____



**Monash University
Department of Nutrition, Dietetics and Food
Be Active Sleep & Eat (BASE) Facility**

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