Honours Projects (M3703) 2020

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. Please check the Handbook for entry requirements https://www.monash.edu/study/courses/find-a-course/2020/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

Phone: +61 3 9902 4269
Email: kate.huggins@monash.edu

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

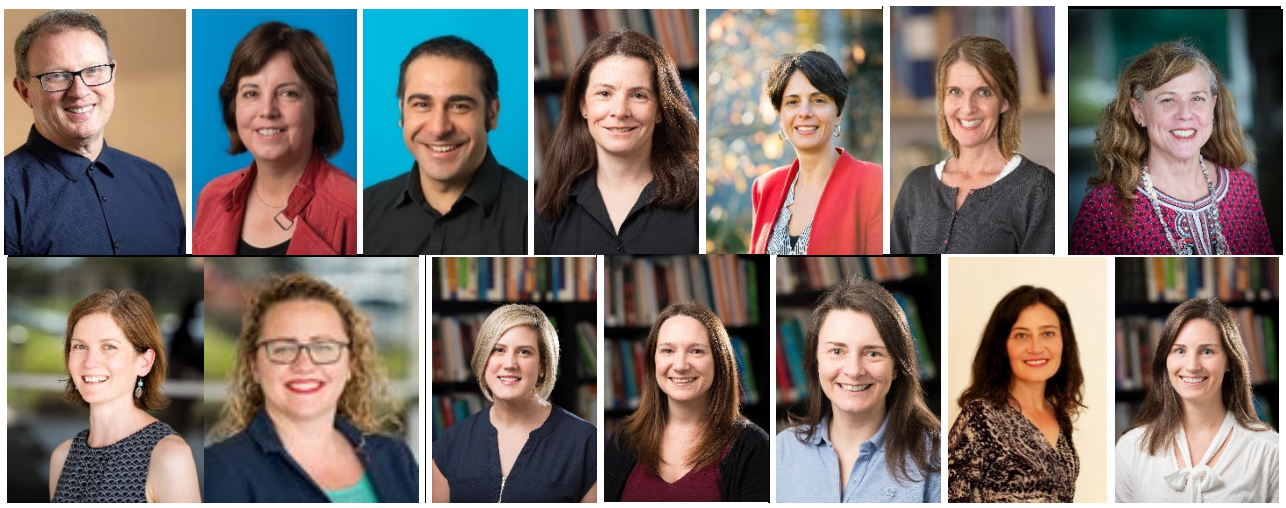
Aims to discover and evaluate innovative ways to educate nutrition and dietetic professionals to be exceptional leaders in practice, with capability to lead multi-disciplinary teams which are required to manage the complex nutrition problems our communities face.

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 leaders in the department include:



Left to right: Professor Gary Williamson, Professor Helen Truby, Dr Ricardo Costa (graduate coordinator); A/Prof Maxine Bonham, A/Prof Claire Palermo, Dr Simone Gibson, A/Prof Julie Brimblecombe, Dr Kate Huggins, Dr Tracy McCaffrey, Dr Zoe Davidson, Dr Aimee Dordevic, Dr Nicole Kellow, A/Prof Judi Porter and Dr Jorja Collins

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 exiting 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)

Project titles

https://www.monash.edu/medicine/scs/nutrition/study/bachelor-of-nutrition-honours

Contents

RESEARCH THEME: CLINICAL NUTRITION

1. Development of an early pregnancy screening tool for women at high risk of gestational diabetes mellitus

Supervisors:	Prof. Helen Truby and Ms. Christie Bennett
Contact details:	Helen.truby@monash.edu and Christie.bennett@monash.edu

PROJECT SUMMARY:
Impaired glucose tolerance is associated with increased adverse pregnancy outcomes. Gestational diabetes mellitus (GDM) is both a short and long-term public health concern globally. Early excessive gestational weight gain (GWG) and lifestyle management are key factors in GDM prevention. In Australia GDM screening occurs between 24-28 weeks gestation, after which treatment is offered. Interventions that start in the first trimester (first 12 weeks) have been shown to be more effective in reducing GDM risk. Therefore, current practices are implemented too late and are falling short of the mark.

An early intervention screening tool has been created which should identify women at high risk of GDM in very early pregnancy. This tool incorporates modifiable lifestyle behaviours such as dietary intake, physical activity, sleep and non-modifiable factors such as ethnicity and age. This tool was designed to be used in early pregnancy, to identify high risk women which would target them for early intervention – the overarching aim would be to reduce incidence of GDM.

This project will aim to test this screening tool in clinical practice settings. We expect this project to be run from the Royal Women's Hospital and possibly from Ballarat Hospital, recruiting for this study from the antenatal clinics of these hospitals and also accessing medical records to ascertain glucose tolerance of the participants at 26 weeks gestation.
This project would sits as a part of a larger body of work relating to sleep and diet in pregnancy.

Skills acquired: Communication skills with both the public and with other health professionals, project management skills, data acquisition from medical records, quantitative data analysis and interpretation

2. What do youth seeking weight management actually eat? An analysis of food records and diet quality in adolescents taking part in a weight management program

Supervisors:	Prof. Helen Truby, Dr Justin Brown, Alan McCubbin and Prof Clare Collins
Contact details:	Helen.truby@monash.edu

PROJECT SUMMARY:
This project is connected to an on-going multi-site research project examining the potential efficacy of intermittent energy restriction compared to continuous energy restriction (standard care) for treatment seeking adolescents with metabolic complications associated with being above a healthy weight.

As part of the intervention data is collected using ASA24, an online automated 24 hour recall program and augmented by the Australian Eating Survey. This project will explore the changes in nutrient profile, energy intake and diet quality in adolescents during their weight loss journey. Data will be provided in the form of an SPSS data base and will undergo quantitative analysis and interpretation.

This project would sits as a part of a larger body of work relating to informing weight loss interventions in adolescents seeking weight management.

Skills acquired: Quantitative data analysis and interpretation and scientific writing skills.

RESEARCH THEME: METABOLISM

3. Effects of plant-based foods on type 2 diabetes – is there a latte more to coffee and berries than you might think, or will the health claims fall flat-white?

Supervisors:	Dr Michael Houghton, Dr Eglantine Balland, Dr Elizabeth Barber, Prof Gary Williamson
Contact details:	Michael.Houghton@monash.edu Gary.Williamson1@monash.edu

PROJECT SUMMARY:
One Australian develops type 2 diabetes (T2D) every five minutes. It is thought that around 1.7 million Australians (and more than 420 million people globally) have diabetes, a burden that costs $14.6 billion each year in Australia alone [1]. T2D is caused primarily by a poor, energy-excessive diet and, while there is currently no cure, it can be managed by medication and lifestyle changes.

Data from epidemiological, animal and human intervention studies suggest a diet rich in plant-based bioactive compounds can have a beneficial impact on the prevention and management of T2D [2], by regulating spikes in post-prandial blood glucose for example [3]. Mechanistic studies using cell models provide strong evidence that some of these compounds can improve various dysfunctional biochemical

pathways involved in the development of insulin resistance and T2D, by lowering cellular oxidative stress, chronic inflammation and lipid accumulation [4-6].

A recent study from our lab demonstrated that several (poly)phenol compounds, shown previously to circulate in blood following consumption of coffee or berries [7-8], increase glucose uptake into skeletal muscle cells [9] and therefore these compounds could help regulate blood glucose levels in humans.

The aim of this project is to explore this hypothesis with an appropriate human intervention study. A meal rich in appropriate (poly)phenol compounds is to be designed, with sensory acceptance assessed. Nutritional content will be determined, including sugars and (poly)phenol profile by chromatography, and the potential effects of the meal on post-prandial glycaemic responses will be measured in healthy volunteers by the finger prick glucometer method. If time allows, further biochemical assays can be performed *in vitro* to explore potential mechanisms involved in carbohydrate metabolism, such as effects on digestive enzymes and glucose absorption in the gut.

Pre-requisites: NUT1011 or NUT2102 would be preferable.

Skills acquired:
Recipe design and preparation, sensory analysis, nutrient analysis, diet and body composition analysis, human intervention study procedures including ethical implications, blood analysis with glucometer, high-pressure liquid/ion chromatography, enzymatic assays, cell culture and associated assays, data analysis and interpretation, statistics, communication skills, including scientific writing, plus other transferrable skills.

References:

1. https://www.diabetesaustralia.com.au/diabetes-in-australia
2. Kim Y, Keogh JB and Clifton PM (2016). Nutrients **8**(1).
3. Nyambe-Silavwe H and Williamson G (2016). Br J Nutr **116**(3): 443-450.
4. Kerimi A and Williamson G (2016). Mol Nutr Food Res **60**(8): 1770-1788.
5. Hoek-van den Hil EF, van Schothorst, EM, et al (2014). Genes Nutr **9**(5): 418.
6. Del Rio D, Rodriguez-Mateos A, et al (2013). Antioxid Redox Signal **18**(14): 1818-1892.
7. Pimpao RC, Ventura MR, et al (2015). Br J Nutr **113**(3): 454-463.
8. Stalmach A, Mullen W, et al (2009). Drug Metab Dispos **37**(8): 1749-1758.
9. Houghton MJ, Kerimi A, et al (2019). FASEB J **33**(2): 1887-1898

4. Understanding the health benefit of polyphenols naturally present in food

Supervisors:	Dr Eglantine Balland, Prof Gary Williamson, Dr Michael Houghton, Dr Elizabeth Barber
Contact details:	eglantine.balland@monash.edu gary.williamson1@monash.edu

Project summary:

The regulation of blood glucose, or glycemia, is a physiological process essential to life. Following a meal, blood glucose transiently raises before decreasing while glucose is taken up in various organs, particularly muscle, adipose tissue and liver. If glycemia fails to fluctuate after a glucose load and remains constantly high, this can lead to the development of insulin resistance and type 2 diabetes (T2D).
Over a million Australians are affected by T2D and more than 500 million people worldwide. T2D is a chronic disease that represents a real public health and economical burden.

Polyphenols are a group of small bioactive compounds naturally present in plant-based food and have multiple health benefits, such as anti-inflammatory properties, redox activity that prevents cellular oxidative stress, maintenance of a "healthy" gut microbiota and prevention of chronic disease such as hypertension and T2D. Recently, some polyphenols naturally present in food were shown to have the ability of decreasing post-prandial glucose spikes (Kerimi et al 2019a, Kerimi et al 2019b, Gauer et al 2018, Villa-Rodriguez et al 2017).

The aim of this project is to understand the molecular mechanisms by which polyphenols exert health benefits and in particular how polyphenols interact with cellular metabolism to modulate glycemia.
To realise this project, various molecular techniques will be used, mainly involving the administration of polyphenols to human cell lines. Hepatocytes, myoblasts, adipocytes, colon or kidney cells will be treated in conditions mimicking a physiological stress caused by a poor diet (high glucose for instance) and the cellular responses will be measured at the level of gene and protein expression and enzymatic activity regulation, with or without the polyphenols. If time allows, this project could be accompanied by human studies where nutritional intervention with foods containing the polyphenols of interest would be tested on blood glucose regulation.

Skills acquired:

Molecular biology: RNA extraction, RNA dosage, digital droplet PCR
Biochemistry: protein extraction, protein dosage, capillary western blot, enzymatic assays
Data analysis and interpretation, Statistics, scientific writing, use of EndNotes and GraphPad Prism

5. Incorporation of polyphenols in bread

Supervisors:	Dr Elizabeth Barber, Dr Eglantine Balland, Dr Michael Houghton, Prof Gary Williamson
Contact details:	Elizabeth.barber@monash.edu, gary.williamson1@monash.edu

PROJECT SUMMARY:
Intake of fresh colourful polyphenol-rich fruit and vegetables is significantly low in many adults and children in Australia and worldwide. Since bread is a staple food consumed regularly, bread enriched with polyphenols may provide a healthier option that benefits postprandial metabolic responses in humans besides being a promising vehicle to add colour and bioactive compounds beneficial for health in their diet.

Polyphenols are a colourful group of non-nutrient but essential bioactive molecules naturally present in plants. Polyphenols have various health benefits including anti-inflammatory, redox activity that prevents oxidative stress, protection against chronic diseases such as hypertension or type 2 diabetes and improved brain function, therefore increased consumption through nutraceuticals and functional foods represents a simple and economical alternative for better health. Polyphenols can be incorporated in functional beverages or in dough used for baked goods, including breads and muffins, which may influence the sensory properties.

Since some polyphenols have low thermal stability, the incorporation in bread may affect the bioavailability, bread aroma (1) or flavour formed from Maillard reaction (2), or interact with proteins or starch and affect the final texture (3, 4). Conversely, polyphenols in bread can increase the shelf-life by scavenging foodborne microorganisms (5). Importantly, some polyphenols possess the ability of reducing postprandial hyperglycaemia (6-8), hence the action of polyphenol-enriched bread on postprandial glycaemic response will be assessed in human volunteers.

The aim of this project is to study the effects of various polyphenols in enriched bread on the sensory properties (colour, texture, flavour and acceptance), shelf life, nutrient composition and potential reduction of postprandial glycaemic spike. The chemical properties of total and co-existing polyphenol content will be determined using chromatography. The effect of the polyphenol-enriched bread on postprandial glycaemic response will be measured using finger-pricking method.

Pre-requisites: NUT1011 or NUT2012 preferable
Skills acquired: Dietary assessment and analysis, food preparation, recipe modification, communication, sensory analysis, quantitative data analysis and interpretation, scientific writing and general professional transferable skills

1. Zain MZM, Baba AS, Shori AB, 2018. Journal of King Saud University-Science, 30: 278-282
2. Jiang D, Chiaro C, et al., (2009). Journal of Agricultural and Food Chemistry, 57:9932-9943
3. Amoako D, Awika JM, 2016. Current Opinion in Food Science, 8:14-18
4. Gammoh S, Alu'datt MH, et al. (2018). Food Bioscience, 24:50-55
5. Vasileva I, Denkova R et al. (2018). Food Chemistry 253: 13-21.
6. Kerimi A, Gauer JS et al. (2019). Br J Nutr: doi: 10.1017/S0007114519000084
7. Kerimi A, Nyambe-Silavwe H et al. (2017). Am J Clin Nutr. 106: 1384-1393.
8. Villa-Rodriquez JA, Kerimi A et al. (2018). Sci. Rep. 8 (1): 5471 doi: 10.1038/s41598-018-23736-1.

6. Should you be eating that? Is diet quality associated with the accumulation of Advanced Glycation End-products (AGEs) in the body?

Supervisors:	Dr Nicole Kellow
Contact details:	nicole.kellow@monash.edu

PROJECT SUMMARY:
AGEs form naturally in our bodies when reducing sugars react with the free amino groups on proteins. However, AGE formation is accelerated under conditions of hyperglycemia, hyperlipidemia and increased oxidative stress. These metabolic conditions are frequently observed in people with obesity, type 2 diabetes and cardiovascular disease. Excessive AGE levels in the circulation and body tissues cause damage by increasing protein cross-linking, up-regulating the production of reactive oxygen species and enhancing chronic inflammation by interacting with the receptor for advanced glycation end-products, RAGE.

Apart from endogenous AGE formation, AGEs and their highly reactive precursors are absorbed by the body from dietary sources through 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, heat processed cereal-based products (bread, biscuits, bakery products, and extruded breakfast cereals), roasted coffee beans, nuts, sweet sauces, honey and carbonated soft drinks containing high fructose corn syrup.

Aim: To determine whether "diet quality" is associated with the long-term accumulation of AGEs in the human body.

Adult volunteers will periodically complete an electronic dietary intake record, in addition to completing surveys to estimate diet quality (eg. Dietary Inflammatory Index, NOVA). Volunteers will also have their body composition assessed 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, providing more information regarding the body's total AGE content and degree of disease risk than a single plasma AGE concentration. AGE deposition in skin tissue can be measured in skin biopsies, however this is an invasive and time-consuming procedure with limited application in large cross-sectional studies. The fluorescent nature of many AGEs at specific ultra-violet wavelengths allow for their detection in skin rapidly and non-invasively by the AGE Reader.

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. This work will also contribute to the development and validation of a dietary AGE Food Frequency Questionnaire, which will enable high quality epidemiological research investigating the health impacts of long-term dietary AGE consumption in large cohorts to move forward internationally.

Skills acquired: collection of accurate dietary intake and survey information, measurement of body composition, quantitative statistical analysis, dietary analysis (Foodworks), scientific writing.

7. Dietary intake of Advanced Glycation End-products (AGEs) in obese infertile women

Supervisors:	Dr Nicole Kellow & Dr Jemma Evans
Contact details:	nicole.kellow@monash.edu

PROJECT SUMMARY:
Want to participate in research aimed at improving fertility outcomes in the 15% of Australian couples who experience infertility? Advanced Glycation End-products (AGEs) are compounds formed when sugars attach to proteins. Excessive AGE levels in body tissues cause damage through increased protein cross-linking, elevated production of reactive oxygen species and enhancing chronic inflammation by interacting with RAGE, the Receptor for Advanced Glycation End-products. AGEs are generated during the production of highly processed food, some of which are gastrointestinally absorbed during consumption of these foods. It was recently discovered that women with obesity have four-fold greater concentrations of AGEs in their uterine cavity than women with healthy body weights. AGEs in the uterus negatively impact endometrial function and prevent embryo implantation, potentially contributing to the increased rate of infertility observed in obese women.

This project aims to determine whether infertile obese women consume more dietary AGEs than women within the healthy weight range, and investigate whether dietary AGE consumption is associated with body composition or other metabolic markers such as fasting glucose, lipid levels or insulin resistance (HOMA-IR). The project will involve collection of detailed dietary and body composition information from a group of women of reproductive age, analysis of dietary intake using a nutritional analysis database, determination of dietary AGE intake using validated food AGE databases, and statistical analyses to determine whether any relationships exist between dietary AGE intake, body composition and serum markers of metabolic dysfunction. We will also collect dietary and body composition information from the male partners of the women participating in the study, to determine whether a high AGE diet detrimentally affects sperm quality.

Work on this project will be based at the Department of Nutrition, Dietetics & Food, with data collection undertaken at Monash IVF (Monash Medical Centre). **Skills acquired:** collection of accurate dietary intake information, measurement of body composition using BIA (Bioelectrical Impedance Analysis), quantitative statistical analysis, dietary analysis (Foodworks), scientific writing.

8. Understanding 24 hour metabolism in a 24 hour society

Supervisors:	A/Prof Maxine Bonham & Dr Kate Huggins
Contact details:	Maxine.bonham@monash.edu; Kate.Huggins@monash.edu

PROJECT SUMMARY:
Shift workers by virtue of their profession are at a greater risk of chronic diseases such as type 2 diabetes, cancer and cardiovascular disease. It remains to be determined what factors associated with shift work contribute to the increased risk of chronic disease and the aetiology is likely to be multifaceted. Altered eating times, snacking behaviour and food choice may play a role. We propose a holistic approach to assess eating behaviour in shift workers with the aim of providing evidence for the development and implementation of dietary guidelines for shift workers. We have a number of studies ongoing in this area ranging from ecological studies to understand the food environment of shift workers compared with day workers, to exploring the metabolic responses to foods at different times of the day and night.

SKILLS ACQUIRED*:
Indirect calorimetry, body composition assessment, dietary assessment, participant recruitment, assessment of appetite and satiety, acute post-prandial assessment, including biochemical measurements.
*NB: skills acquired will be project-dependent and you may not acquire all these skills. Some projects may require you to work outside of usual business hours.

9. The impact of shift work on the diet and well-being of newly recruited paramedic graduates

Supervisors:	A/Prof Maxine Bonham & Mr Ben Meadley
Contact details:	Maxine.bonham@monash.edu; Benjamin.meadley@monash.edu

PROJECT SUMMARY:
Shift workers have no choice but to eat at times when the body is programmed to sleep. Eating out of synchronisation with our body clock is associated with a greater risk of developing Type 2 Diabetes. Paramedics are a group of shift workers essential to a 24 hr society, whose own health is impacted by their career choice. When and what they eat is important in trying to understanding their health risks. This study follows up a group of newly recruited paramedic students in their first year of work. Baseline data on diet (food frequency questionnaire), biochemical and fitness data have been collected as part of a PhD project with follow-up data to be collected in 2020. The aim of this project is to extend the dietary data collection to include detailed information not only on what is eaten whilst on shift work but when food is consumed. This information is imperative to try and provide dietary advice for this at risk population group. The student will be working alongside a senior paramedic and part time PhD student.

SKILLS ACQUIRED*: Dietary assessment, body composition assessment, participant engagement and assessment of appetite and satiety. The assessment of biochemical measures such as glucose and lipids may also form part of the project. *NB: skills acquired will be project-dependent and you may not acquire all these skills. Some projects may require you to work outside of usual business hours.

10. The impact of eating across the 24 hour day on blood glucose levels in rotating shift workers

Supervisors:	A/Prof Maxine Bonham & Mr Ben Meadley
Contact details:	Maxine.bonham@monash.edu; Benjamin.meadley@monash.edu

PROJECT SUMMARY:

Eating at night time, as is common in shift working populations, results in postprandial glucose levels that are similar to those experienced by people with pre-diabetes. However most of the research in this area has been undertaken in healthy non-shift working volunteers. There is limited data on the challenges to blood glucose levels experienced by shift workers whilst in a free-living environment. At Monash University a group of newly recruited paramedics are being followed for one year to see how shift work impacts their health, dietary habits and physical fitness. This study will recruit a subset of the participants (known as the nutrition cohort) and fit them with 24 hr blood glucose monitors. This data will provide direct evidence of the metabolic risk our shift workers face whilst on night shift and aid in developing dietary guidance on when and what to eat whilst on night shift.

The student will be working alongside a senior paramedic and part time PhD student.

SKILLS ACQUIRED*: Participant recruitment, blood handling, 24 hr blood glucose monitoring, body composition assessment. *NB: skills acquired will be project-dependent and you may not acquire all these skills. Some projects may require you to work outside of usual business hours.

RESEARCH THEME: PUBLIC HEALTH

11. Exploring determinants of food choice among Chinese Australians

Supervisors:	Dr Tammie Choi
Contact details:	tammie.choi@monash.edu

PROJECT SUMMARY:

The food choices people make determine their food intake and influence their nutritional status. Food choice is made based on a range of determinants including sensory attributes, cultural habits, lifestyle factors and food trends (1). While food habits are systematically interrelated with one's traditional cultural behaviour (2), it is also recognised that food habits continually change as people travel, migrate and are exposed to a different environment (3). It was previously highlighted that Chinese people demonstrated a clear difference from other ethnic groups, for having health as one of the strongest food choice determinant (4). However, when Chinese individuals immigrate to Australia, they are faced with a sudden shift in food availability, lifestyle and dietary culture, which may contribute new factors to the complexity of making food choice. Given Chinese Australians are at high risk for cardiometabolic diseases including diabetes and cardiovascular diseases, it is believed that understanding these cultural-specific determinants of food choice would inform more culturally appropriate healthy messages and support of risk-reduction behaviour change.

This study will employ a mixed methods research approach. A diverse sample of 15-20 Chinese Australian volunteers will be invited to (i) complete a food choice questionnaire, and (ii) participate in an individual in-depth interview to explore determinants of food choice and post-migration change over time. The project will involve participant recruitment, translation of food choice questionnaire, collection of questionnaire and interview data, analysis of collected data and potential peer-reviewed manuscript preparation. Data collection will be largely conducted at the BASE facility with potential travelling off-site for recruitment and data collection.

Reference:

1. Asp EH (1999) Factors affecting food decisions made by individual consumers. Food Policy 24: 287-294.
2. Mead M (1943) The Problem of Changing Food Habits: With Suggestions for Psychoanalytic Contributions. B Menninger Clin 7: 57.
3. Kittler PG, Sucher KP, Nelms MN (2012) Food and Culture. 6thedn, Wadsworth Cengage Learning, USA.
4. Prescott J, Young O, O'Neill L, Yau NJN, Stevens R (2002) Motives for food choice: a comparison of consumers from Japan, Taiwan, Malaysia and New Zealand. Food Qual Prefer 13: 489-495.

Pre-requisites: Applicants must be able to speak, read and write Chinese.

Skills acquired: Qualitative data collection and analysis skills, skills related to questionnaire analysis, working with a culturally and linguistically diverse group, scientific writing

12. Harnessing community expertise in designing decision support systems to understand and act on food insecurity in local government settings in the UK and Australia.

Supervisors	Dr Sue Kleve Assoc Prof Julie Brimblecome
Contact details:	suzanne.kleve@monash.edu

PROJECT SUMMARY:

Household food insecurity is a complex public health problem; its causes are multifaceted and interrelated and is highly prevalent even in high-income countries. The current dominant response across high-income countries is to provide emergency food relief, which neither prevents nor addresses the causes of household food insecurity. What is required is a range of responses that includes interventions and policies to address the causes. Those working with communities impacted by food insecurity recognise the limitations of the current responses and actively want to address this issue and improve the health, wellbeing, and civic capacity.

To establish how best to intervene effectively, an understanding is required of the nature of food insecurity causes and their interactions. However, the difficulty is the available data and other evidence about these causes comes from a range of sources, with varying quality, and uncertainty. Monash University (Dept. of Nutrition and Dietetics) and University of Warwick,UK (Dept. of Statistics) have developed an integrated food security decision support system (IDSS) that has the capacity to bring together uncertain evidence related to the causes of food insecurity and assist decision making. While this theoretically has capacity and flexibility to support decision making about the best approaches to address food insecurity within geographic contexts, it is yet to be further developed and piloted in a working system for use by policy and decision makers. For this, policymakers and other experts, including those experiencing food insecurity, must be engaged and consulted, to ensure the model describing the causes addresses their needs and reflects the local policymaking landscape.

Using qualitative methods-focus groups and in-depth interviews the focus of this honours project is to consult with key stakeholders including those from local government, health, welfare and education organisations and those experiencing food insecurity in 2 case study settings Cardinia Shire Council, Vic and Warwickshire Council, UK, to identify gaps and further refine the IDSS food security model. Both of these settings are grappling with the issue of food insecurity within their respective communities and how best to respond.

The outcome of this research is to support an IDSS that is practical and will then be ready for the next phase of testing to identify potential policies and interventions to address food insecurity.

Skills acquired: Qualitative methods- data collection, analysis. Group model building techniques.

13.Representation of food literacy in cooking interventions in Australia

Supervisors:	Assoc Prof Claire Palermo Dr Sue Kleve
Contact details:	claire.palermo@monash.edu

PROJECT SUMMARY:
Cooking programs that combine the provision of food literacy skills with nutrition education are a popular intervention that improve cooking confidence, decrease energy-dense, nutrient poor ready-made food and increase fruit and vegetable intake. Systematic review recommendations of their effectiveness show improvements in nutritional intake in the short term but provide limited recommendations for future programs due to the heterogeneous nature of the studies included in these reviews. Policy analysis is typically a qualitative research approach that provides a method for understanding how and why authorities endorse certain policies or programs. Policy analysis has been recommended as a method for developing evidence to support advocacy efforts that will lead to better population health outcomes. In this study policy analysis will examine documents from current cooking programs in Australia and determine how the problem of poor food literacy is represented. It will also aim to seek further meaning from the program documentation to understand why cooking interventions appear to be a popular choice for improving food literacy over other strategies.

Skills acquired: policy analysis, qualitative research methods, nvivo software.

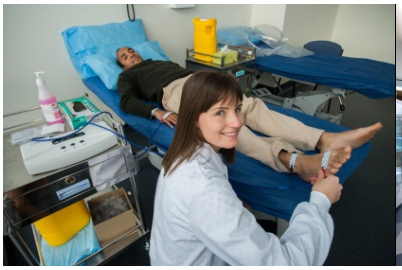
RESEARCH THEME: EDUCATION

14.Exploring students' motivation for studying nutrition science

Supervisors:	Simone Gibson, Aimee Dordevic & Claire Palermo
Contact details:	simone.gibson@monash.edu aimee.dordevic@monash.edu claire.palermo@monash.edu

The landscape for employment of nutrition and dietetics graduates is evolving and universities must meet the needs of students, graduates and the communities they serve. Understanding student perceptions of their future roles and where nutrition and dietetics graduates are currently working will provide evidence to help ensure these needs are met. This project will explore students' motivations for studying nutrition science and dietetics and their views of future employment destinations. It will also investigate employment categories of Monash nutrition and dietetics graduates. This project will utilise a sequential explanatory design and analyse existing data collected from Monash Nutrition and Dietetics alumni and first year student surveys and then use this to inform qualitative interviews or focus groups to more deeply explore what informs graduate destinations.

Skills acquired: systematic literature review, survey design, descriptive statistical analysis, qualitative content analysis, qualitative data collection and thematic analysis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Twitter: MonashNutrition

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: _____

(5) How many honours students have you supervised? _____

Signature _____ Date:_____

<u>Honours Co-ordinator of Department/Centre/Institution to complete</u>

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: _____

(5) How many honours students have you supervised? _____

Signature _____Date:_____

<u>Honours Co-ordinator of Department/Centre/Institution to complete</u>

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: _____

(5) How many honours students have you supervised? _____

Signature _____ Date: _____

<u>Honours Co-ordinator of Department/Centre/Institution to complete</u>

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: _____