

# The University of Melbourne at The Royal Melbourne Hospital

Melbourne Medical School  
Faculty of Medicine, Dentistry & Health Sciences

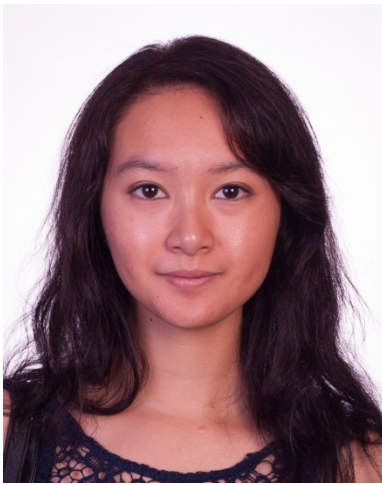
***“Read why our Honours & Master of Biomedical Science students chose their research projects”***

## HONOURS and MASTER OF BIOMEDICAL SCIENCE STUDENTS

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### AFFILIATIONS:

The Royal Melbourne Hospital, The Royal Women’s Hospital, Western Hospital (Footscray & Sunshine) Northern Hospital, The Peter MacCallum Cancer Centre, The Burnet Institute, Melbourne Brain Centre, Florey Neuroscience Institute, Melbourne Neuropsychiatry Centre, Mental Health Research Institute, Baker IDI Heart & Diabetes Institute..



# Tisha Caesandra TWINDYAWARDHANI





Project Site: Department of Medicine (RMH),  
Peter Doherty Institute

Supervisor: Professor Stephen Rogerson

## **PROJECT: Vaccines to Protect Pregnant Women Against Malaria**

*I am to pursue a medical career in maternal/foetal health and the project site is very nice and new!*

*My aims/goals include:*

-  *Increase my GPA*
-  *Get the real life scientific research experience that was not offered in undergrad*
-  *Learn new techniques and skills, both lab and non-lab*
-  *Develop my network in the field of health-related science*

*I think the honours program is definitely a fantastic experience, regardless of whether or not you want a career in research. It's very short and therefore intense, but you will receive endless support from your team and supervisor!*

No photo

# Lauren CRAIG

Project Site: Department of Medicine RMH (CSB)

Supervisors: Professor Patrick Kwan and  
Professor Stan Skafidas

## **PROJECT: Development of a low cost, point-of-care diagnostic test to prevent abacavir hypersensitivity.**

*Why I chose my project: I spend some time with the people in the lab, who explained to me about the project. I meet my supervisors who were very supportive and excited about the project. This project looked novel and interesting application of basic science research. I wanted to do a project that was lab based and allowed me to develop more technical skills in biomedical research.*

**Aims:** *To describe a novel method for patients screening of HLA-B\*57:01 using a selective monoclonal antibody, prior to the prescription for the abacavir.*

*Honours is so different from my undergraduate degree, because for the first time you are in charge of what you are doing. You plan your experiments and manage your time to get everything done within the (deceptively) short time that you have.*



## Georgia CHARLESON

Project Site: Department of Medicine RMH  
Centre for Medical Research (CMR)

Supervisor: Associate Professor Cassandra Szoeki

**PROJECT: The Mediterranean diet and cardiovascular health in Australian women**

*I majored in human nutrition and diet during my undergraduate and thought a project dealing with the influence of whole dietary patterns on health outcomes would best utilize my knowledge base.*

*Aims/goals: To expose myself to research, and to develop an understanding of what full time work is actually like. The bachelor years do not prepare one for nine to five commitment.*

*So far I have developed an appreciation for the researcher, whose tireless analysis forms the basis of both evidence based practice in health care and policy development. I had not anticipated the hours of effort behind one paper! Honours has also encouraged my writing and data analysis capacity, and has discouraged me from skim reading the results section in the future.*



## Anuradha PERERA





Project Site: Department of Colorectal Medicine &  
Genetics, Royal Melbourne Hospital

Supervisors: Professor Finlay Macrae and  
John-Paul Plazzer

**PROJECT: Review of genetic variants of uncertain phenotypic significance in families with a genetic predisposition to cancer: Peutz-Jegher's Syndrome**

*I knew it would be something new, fulfilling and nothing like I have ever been exposed to in my Science Degree. I have since not regretted my decision, with this project allowing me independence, flexibility and a detailed insight into bioinformatics and a very rare disease.*

**Aims/goals:**

-  To review the clinical findings of patients with STK11 mutations
-  To establish a genotype-phenotype correlation, focusing on variants of uncertain significance
-  To further identify the proportions of the types of mutations that occur and to then establish a database of de-identified information to be used by the International Society for Gastrointestinal Hereditary Tumours (InSIGHT).
-  To promote the worldwide centralization of STK11 variants, annotated where possible with clinical and other information, to assist in interpretation.

*Overall, my Honours experience is fulfilling and motivating. The highlights have been the flexibility and independence, the support from my supervisors, staff and students and the research elements that have challenged me. I would highly recommend this program to anyone who is at a crossroad of their future study options like I was.*



# Tayla KONSTAN

Project Site: Department of Medicine, RMH

Supervisors: A/Professor Deb Colville and  
Professor Judy Savage

## **PROJECT: Small Vessel Changes in Patients with Atrial Fibrillation**

*I graduated with a Bachelor of Science majoring in Physiology. I chose this project as it involved patient contact rather than being primarily lab based.*

*My aims for the year include:*

- *To determine if patients with atrial fibrillation have more microvascular retinopathy*
- *To determine if there is an association between small vessel disease and atrial fibrillation*
- *To improve my scientific writing and oral presentation skills*
- *To achieve a high score to enhance my chances of getting into medicine*

*So far, my honours experience has been challenging but very rewarding. I have thoroughly enjoyed meeting different people and learning their stories on a daily basis. I would recommend this project for anyone interested in the medical field looking to gain additional experience.*



# Sarah AKOM

Project Site: Department of Medicine RMH and  
The Northern Hospital

Supervisors: Professor Judy Savage and  
A/Professor Deb Colville

## **PROJECT: Retinal changes in patients with IgA glomerulonephritis and systemic lupus erythematosus**

*I chose this project because I was interested in clinical research following my undergraduate degree in biomedicine, and wanted a project that would provide experience with patients and research techniques.*

*My aims for this project include:*

- ✚ *Gaining experience working in a hospital setting;*
- ✚ *Exposure to the research process and scientific writing;*
- ✚ *Exploring the link between the eye and systemic disease.*

*So far my honours year has been enjoyable but challenging, and has been a great experience in helping me figure out which future study pathways I would like to take. This year has provided invaluable hospital and research experience, and I would recommend an honours degree to anyone who would like to further their studies in science and learn in a completely different way from undergrad*

# Grace HAND

Project Site: Department of Medicine RMH and  
The Northern Hospital

Supervisors: Professor Judy Savige and  
A/Professor Deb Colville

**PROJECT: Retinal microvascular disease predicts coronary artery disease as demonstrated by cardiac CT**

*After completing my Bachelor of Science I was keen to obtain some hands on experience working in a hospital environment while furthering my knowledge and experience in a clinical research setting. I have always been interested in heart disease and its underlying causes, and this project provided a great opportunity to investigate future diagnostic techniques.*

**Aims/goals:**

- ✚ To identify whether changes in the retinal vessels correlate with disease in the heart vessels
- ✚ Whether retinal photography can be used as a possible future avenue in diagnosing coronary artery disease pre-clinically
- ✚ Gaining experience in both a clinical research and hospital setting

*So far my Honours experience has been a challenging but rewarding one. I have enjoyed interacting with patients and learning more about the research process, as well as improving my academic writing skills. I would definitely recommend an Honours year for anyone interested in investigating research as a possible career path*



# Chia SHARPE

Project Site: Department of Medicine, RMH  
ACRF Translational Research Lab.

Supervisors: Dr Joanne Davis, Dr Kylie Mason, and  
Dr Rachel Koldej

**PROJECT: Using novel immunotherapies to control chronic lymphocytic leukaemia responses**

*My interest in the intersection of immunology and pathology led me to seek an Honours project in the field of haematological malignancies. I chose this project in particular because of the clinical aspect and my impressions of the lab and supervisors.*

*My aims for this year were to deepen my understanding of immunotherapies and CLL as well as to get a first hand look at, and to gain experience in real world medical research. So far this year has been exciting, interesting and enjoyable, but also a lot of work. The lab and my supervisors have been exquisitely supportive and have made this a fun and rewarding experience.*





# Shobi Sivathamboo

Project Site: Department of Medicine and  
Department of Neurology, RMH

Supervisors: Professor Terence O'Brien and  
Professor Dennis Velakoulis

**PROJECT:** (a) Time frequency mapping of cardiac and respiratory measures during epileptic and non-epileptic seizures; (b) Primary sleep disorders in patients with epilepsy and psychogenic non-epileptic seizures.

I have always found disorders of the brain to be perplexing, as we still know so little about this integral, yet elusive organ. After graduating with a Bachelor of Biomedical Science in 2011, I worked for a number of years in neurology, respiratory, and sleep medicine as a clinical scientist. I returned to study so that I could undertake a specialized year of research, to use as a foundation for a Doctor of Philosophy. I was drawn to this project as it was clinical in nature and drew an essential bridge between epilepsy, psychiatric disorders, and sleep medicine.

I feel exceptionally privileged to have the supervisors that I have. They set the benchmark within their respective fields, encourage thinking that is outside the box, and dream big. What really sets them apart is that they are even better human beings who have mentored, supported, and encouraged me with incredible patience and kindness – all the while giving me the tools to be independent and self-sufficient which go beyond the limits of this year.

Research is creative, intellectually nourishing, and liberating. There have been many ups and downs along the way, but the feeling that you have at the end of completing each hurdle is incomparable, like nothing is beyond reach when you give it your all. I would recommend this path to anyone who likes to intellectualize scientific concepts, and likes to adapt the way they think and reason as what we know to be true, also evolves.



# Emily MACK

Project Site: Department of Medicine RMH  
Melbourne Brain Centre, KMB

Supervisor: Dr Chris French

**PROJECT:** The effects of antipsychotics on high frequency oscillations in an in vitro brain preparation

*I majored in neuroscience in undergrad and was interested in pursuing research in schizophrenia. The Honours year has been challenging so far, but it is thoroughly enjoyable and fascinating to work in a lab.*



## Ned ROHRT

Project Site: Melbourne Brain Centre @ Royal Melbourne Hospital

Supervisors: Professor Terence O'Brien, Professor Dennis Velakoulis and Dr Nigel Jones

**PROJECT: Investigating the relationship between exposure to early life stress, seizure disorders and methylation of the Glucocorticoid Receptor**

*This project appealed to me as it was both clinically and lab based. It allowed me to interact with patients on a weekly basis but also enhance laboratory techniques learnt during my Bachelor of Biomedicine degree.*

*The aims of the project are:*

- *To investigate the incidence of childhood trauma in patients diagnosed with PNES and other seizure disorders*
- *To analyse patient blood samples for epigenetic changes to the glucocorticoid receptor caused by early life stress.*
- *To develop both my clinical and laboratory skills*

*So far my Honours year has been challenging but extremely rewarding. I have learnt a great deal in regards to research while improving my patient communication skills. I have developed great relationships with other students, clinicians and my supervisors who have ensured the year runs as smoothly as possible. Overall my Honours year has been a fantastic experience and would highly recommend it.*



## Ayen Awan ANUAN

Project Site: Department of Medicine RMH, Peter Doherty Institute

Supervisors: Professor Stephen Rogerson

**PROJECT: Inflammation, Infection and Pregnancy Outcomes in Papua New Guinean Women**

*I graduated with a Bachelor of Biomedical Science at Deakin University. I chose this project because it involved malaria infection during pregnancy and how this infection can lead to detrimental effects on the infants and children. I always wanted to study malaria because it is one of the biggest infectious diseases worldwide that continues to claim lives of many, especially pregnant women and children in my country, South Sudan.*

*I was very fortunate to find my supervisor, who has continued to inspire and encourage me despite the demand of honours studies. Getting into a malaria lab that focus exclusively on malaria has been one of the best experiences of my life, albeit challenging.*

*I would recommend an honours year to anyone who is passionate about research such as infectious diseases.*



# Elysia SOKOLENKO




Project Site: Department of Medicine RMH,  
Melbourne Brain Centre @ KMB

Supervisors: Assoc Professor Nigel Jones

## **PROJECT: Functional disconnections and the pathophysiology of psychosis**

*I came in to this Honours project from a Bachelor of Arts (Psychology)/Bachelor of Science (Biomedical Science) from the University of Queensland. It was always my goal to pursue a research career focused on investigating the pathophysiology behind mental illness. I chose this project because it matched up perfectly with this.*

*Through my project, I aim to:*

-  *Make a meaningful contribution to the schizophrenia literature about a potential therapeutic target*
-  *Develop resilience through things inevitably going wrong and shape my critical thinking skills*
-  *Establish a firm foundation of research skills to take on through to a PhD*

*So far, my project has gone uncharacteristically smoothly. Yes, it is challenging. However, with organisation, passion and some sheer luck with getting a really great project, it doesn't have to be a nightmare of all encompassing, after-hours work that you might think it could be.*



# Matthew LACORCIA

Project Site: Department of Medicine, RMH

Supervisors: Dr Adrian Achuthan

## **PROJECT: Molecular signaling pathways controlling gene expression during chronic disease progression**

*I chose this project foremost because I view the molecular control of chronic inflammatory disease to be situated at the current forefront of both basic biomedical science and clinical research.*

*I liked how this project combines multiple techniques to equip me with the molecular biology skills to begin a career in fundamental scientific research, including practical work investigating both changes in gene expression and post-translational alterations in proteins, while operating within an institute keenly focused on applications with clinical relevance.*





## Venesha RETHNAM

Project Site: Department of Medicine RMH,  
Melbourne Brain Centre @ RMH

Supervisors: A/Professor Bernard Yan,  
A/Professor Peter Mitchell, and  
Dr Richard Dowling

**PROJECT: Continuous monitoring of upper limb motor recovery post-acute stroke: development of a portable wireless accelerometer**

I chose this project because it is clinically based and relevant to the area of neurology, and more specifically stroke. This project allowed greater insight into the modern integration of technology and medicine.

The aim of the project is to investigate the accuracy and comparability of the wireless accelerometer against the gold standard clinical assessment (NIHSS), in detecting deterioration or recovery of upper limb motor function in stroke patients within 48 hours of stroke onset.

This year has been very challenging, requiring a lot of time and effort, but I have thoroughly enjoyed it. The amount of clinical and research knowledge gained from the renowned team at the Melbourne Brain Centre has been immense and I am very grateful for this opportunity.



## Roseanna DOWNIE

Project Site: Department of Medicine RMH,  
Melbourne Brain Centre @ RMH

Supervisors: A/Professor Bernard Yan and  
A/Professor Peter Mitchell

**PROJECT: Pharmacogenetic influence on the effectiveness of antiplatelet on the reduction of recurrent disabling stroke.**

*This year has proven to be challenging yet rewarding. I have enjoyed committing to something worthwhile and learning the ins and outs of my project.*

*Being in a hospital environment has allowed the scope of my learning to be stretched far beyond the specificities of my project and I am very grateful for the opportunity I have been given and the encouragement I have received from my Supervisors, MBC staff and peers alike.*

*I feel as though my Honours year has proven to be a great segue between my undergraduate days and whatever is next in store for me.*



## Lasheta KANESAN

Project Site: Department of Medicine RMH,  
Melbourne Brain Centre @ RMH

Supervisors: A/Professor Bernard Yan,  
A/Professor Peter Mitchell, and  
Dr Richard Dowling

**PROJECT: Influence of delayed time on functional outcome using CT Perfusion Source Images**

*I completed my Bachelor of Science with a Physiology major but also did a few units from the Neurology major, which ignited my curiosity in this project. Being a clinical research project, as opposed to being lab based, I also felt it was more aligned to my interests.*

*My aims for the year were to create a successful means of predicting functional outcome using imaging modalities. I learnt many new skills relating to imaging and was able to apply my pre-existing knowledge from my undergraduate studies to my research. The professional relationships I have developed with senior researches and peers have been motivating and rewarding. The skills I've developed throughout the year will prove to be an asset to my future. Working in the hospital environment has been very enriching and exciting for me thus far!*



## Neal FORREST

Project Site: Department of Medicine, RMH




Supervisors: Professor Cassandra Szoeki

**PROJECT: The role of Anxiety in preclinical Alzheimers disease**

*My project is based on the RMH Womens Healthy Aging Project (WHAP), with Cassandra Szoeki as my principle supervisor. My project examines the role of Anxiety in preclinical Alzheimers disease and changes in cognitive performance. I chose this project because I wanted to be able to work in a clinical setting, and this allowed me to work directly with participants. This project relies on the interviewers ability to interact with our participants, and develop an understanding into their healthy aging and cognitive performance changes from mid life to their later years.*

*My previous experience in research was at Monash University where I completed a Master of Biomedical science research degree at Monash University. This studied the method of action of the Adjustable Gastric Band (AGB), and examined the nervous interaction from the stomach into the brain, focusing on the feedback system in place that regulates satiety. This project found that the mechanical action of the AGB pressures the stomach wall, activating a nerve response*

*My aims for this project were to:*

-  Undertake training for the assessment of cognitive performance (CogState)
-  Develop my understanding of Alzheimer's Disease and brain degeneration
-  Understand the role that anxiety plays in the development of neurocognitive performance losses



# Kalin KEMPSTER




Project Site: Department of Surgery, RMH

Supervisors: Dr Hong-Jian Zhu

## **PROJECT: Developing a novel protein inhibitor of canonical TGF- $\beta$ signaling and EMT**

*Graduating with a Bachelor in Science (Major in Human Structure and Function) and with future intentions to study Medicine, I chose this project in order to explore a practical scientific background in a field of study that is important in the medical profession. With cancer being an epidemic on the rise, partaking in a project looking to therapeutically target any aspect of such a diverse and crippling pathology was an easy choice.*

*My aims for the project are to:*

-  *Develop a function novel inhibitor of TGF- $\beta$  signalling*
-  *Validate the efficacy and specificity of this therapeutic*
-  *Explore the functional properties of the developed inhibitor*

*An Honours year is dedicated to time, effort and keeping your head up. Such devotion to a single project is bound to yield both triumph and frustration. What is important and necessary is to keep moving forward and not get overwhelmed with either. There's always more you can achieve.*

# Kelden RICHARDSON

Project Site: Department of Surgery, RMH

Supervisors: Dr Hong-Jian Zhu

## **PROJECT: Cancer immunotherapy combining vaccinatn and local depletion of the immunosuppressor, TGF-beta**

*I graduated with a Bachelor of Biomedicine, majoring in Pathology. This major required me to understand the nature of many diseases through multiple disciplines including genetics, biochemistry, anatomy and immunology. Cancer was the key condition that caught my attention as it is associated with every faculty of the human body. Understanding and developing better cancer therapeutics requires a multidisciplinary approach, which is why I chose this project.*

*During my Honours year, I aim to develop my understanding and skill in experimental design, data analysis, scientific reading, writing and presenting. I hope to utilise and further develop these skills when I study a PhD after my Honours and subsequent scientific or medical career.*

*My Honours year so far has certainly been a challenge, but an enjoyable one. Every experiment, result and encounter with other researchers has been something I can learn from, lessons I want to apply to help me become a well rounded scientist in the future.*



## Justin GOURLAY

Project Site: Department of Surgery, RMH

Supervisors: Dr Stanley Stylli, Dr Rodney Luwor

**PROJECT: Regulation of invadopodium function and potential involvement in colorectal cancer cell invasion**

*I have come from the undergraduate course of Biomedicine at the University of Melbourne with a major in physiology. I chose this project because the topic of cancer had always greatly interested me during my course. I've always wanted to do more hands on work, as my undergrad was mainly lecture based, having an opportunity to get into a lab and see what it is like was an offer I couldn't pass up. My supervisors are extremely passionate about their work and very helpful, always willing to lend a hand. The lab is an excellent working environment where everyone willing to help out where they can, and I have made some great friends. My aims from my Honours project is to hopefully obtain some data for which further study may be pursued, and achieve the best mark I can as I hope to go onto commencing a PhD.*



## Leon MAO

Project Site: Department of Surgery, RMH

Supervisors: Dr Stanley Stylli, Dr Rodney Luwor

**PROJECT: Evaluating the Role of Therapeutics on Invadopodia in Glioma Cells**

*My name is Leon Mao and I graduated with a Bachelor of Science and majored in physiology. During undergraduate, for me it was very theoretically based and not very hands on or practically orientated. It was important for me to garner some scientific-based work experience before progressing to the next part of my academia. What lead to choose this project was my engaging supervisors and a project topic which particularly interesting to me.*

*My aims for my project:*

- *Develop my scientific writing and research skills.*
- *Experience what working in the biomedical research sector would feel like.*
- *See whether current therapeutic treatment impacts on the invasion of brain cancer cells.*
- *Evaluate prospective career pathways.*
- *Put in as much effort as I can.*

*My honours year has definitely been tough but rewarding. I would definitely recommend taking an honours year for anyone wanting to understand the research industry or to those who simply feel lost coming out of an undergraduate degree*





# Ahmad Azri ZULKIFLI

Project Site: Department of Surgery, RMH

Supervisors: Dr Rodney Luwor

## **PROJECT: Evaluating the Role of IL-11 Signalling in Glioblastoma Multiforme**

*I chose this project because I am interested in signalling pathways in cancer. The aim of this project is to evaluate how IL-11 is involved in glioblastoma tumour progression and resistance to therapy. By the end of my Honours year, I hope to have more understanding of this signalling pathway in Glioblastoma Multiforme. So far, my Honours year has been great. As I was finishing my degree, a number of options were presented to me. The choices are between furthering my studies or dive in straight into working world. After much consideration I opted for Honours as it is a one year course and I think I'll be able to figure what I want to do once I complete it. It did not take long before I realize I love working in a lab. Doing lab work is certainly more fun than attending lectures. The experiences I gained from here will definitely help me in the deciding my future pathways.*



# Matt Lancaster

Project Site: Department of Surgery, RMH

Supervisors: Professor Colin Royse

## **PROJECT: A comparison of neurocognitive assessment battery for assessing POCD versus Post-operative Quality of Recovery Scale (PostopQRS) to assess cognitive recovery in patients undergoing cardiac surgery**

*I chose this project as it was patient focused, rather than lab based, and I wanted experience in this setting to elucidate whether a future in Medicine is something I truly want. Having completed a BSci with Majors in Psychology and Psychophysiology, I felt that I was prepared for a project with a focus on cognition. The project was also preferenced over other projects due my supervisor's history of taking on Honours students, which gave me confidence that I would be well supervised.*

### *Aims/Goals:*

- To assess whether the PostopQRS can be used in future as a screening tool for predicting Post Operative Cognitive Decline (POCD).
- To get experience in hospital and research settings, to gain a better understanding of what field I would like to be in.
- To achieve a high mark, increasing my chance of getting into Post-Grad Medicine.

This year has given me invaluable experience in interacting with people in a medical (and workplace) setting and as part of a research team. While I was a somewhat shy person to begin with, and apprehensive in conversing with patients and medical professionals alike, I am now confident in interacting with both and this has benefitted my confidence in communicating with people across all settings. I am also immensely grateful for the opportunity I was given to view surgery and the insight this has given me into the incredible skills and knowledge possessed by Anesthetists, Surgeons and other medical professionals and technicians.





## Mert GOKOGLU

Project Site: Experimental Cardiology Laboratory,  
Baker IDI Heart and Diabetes Institute

Supervisors: A/Professor Xiao-Jun Du,  
Dr Helen Kiriazis and My-Nhan Nguyen

**PROJECT: Antioxidant therapy of fibrotic cardiomyopathy to limit arrhythmogenesis**

*I chose this project based on my interests from my undergraduate degree and the high reputation of the Baker IDI in the research field. My passion for physiology and anatomy lead me towards an interest in the heart, with research providing an opportunity to investigate potential treatment methods for diseased hearts.*

*My project's aims include:*

- *Apply experience gained from undergrad to a research setting*
- *Further my understanding of the prominence and prevalence of cardiomyopathy and arrhythmias in clinical settings*
- *Develop key analytical and critical thinking skills involved in a research setting*
- *Become proficient in ECG analysis and performing histological assays*

*My experiences so far have been extremely beneficial and rewarding. The shift from a heavily lectured system towards a research setting is very refreshing providing new challenges and learning opportunities. I would highly recommend honours to any student that is interested in a career in research or wants hands on experience after their undergraduate degree*



## Alex BOWDEN

Project Site: Florey Institute

Supervisors: Dr Ben Gu

**PROJECT: Search The P2X7 Related Biomarkers for Alzheimer's disease**

*I chose this project because it looks into an increasingly common neurodegenerative disease that is becoming a growing burden on our aging society. The project aims to search for potential biomarkers in the peripheral blood of human patients through the use of antibody staining. Flow Cytometry is a very interesting tool that is capable of detecting the expression of antibodies through fluorescent-labelling.*

*My aims include:*

- ✚ *To further improve my laboratory technique and report writing skills*
- ✚ *To gain increased efficiency in the use of Flow Cytometer technology*

*Honours year has been a truly rewarding experience, with a lot of learning and improvement. It has been very different from how undergrad was, and quite challenging. However, all the challenges have been worth the time and effort invested as they have helped provide interesting results and a developed sense of knowledge about Alzheimer's as a whole.*



## Jay NAKAMURA

Project Site: Florey Institute of Neuroscience and Mental Health

Supervisors: Dr Rachel Hill

**PROJECT: Behavioural and electrophysiological outcomes in the poly I:C mouse model of schizophrenia following SERM treatment**

*I chose this project for a couple of reasons. Firstly, I was looking to find a project in the field of neuroscience that had potential to be of clinical relevance in the near future. The electrophysiological aspect of the project was also appealing because of the exciting and largely unexplored functions of brain oscillations in cognition. This project delves into multiple areas of research such as neurodevelopment, endocrinology and immunology, broadening my interest and knowledge in these topics. Finally, working with an animal model and running behavioural tests while also being involved in molecular biology and electrophysiology has so far provided a great introduction into various aspects of biomedical research.*

*My goal for the future is to be able to continue this line of research through a PhD. One day, I hope I will be able to contribute to the discovery of the etiology of schizophrenia, the development of better treatments for schizophrenia and a greater understanding of the electrophysiological basis of cognition. Although very busy at times, this year has been enjoyable and stress free (so far).*



## Kelsey SERENA

Project Site: Psychoneuroendocrinology Laboratory  
Florey Institute

Supervisors: Dr Rachel Hill & Dr Xin Du

**PROJECT: Investigating a developmental switch in GABAergic interneuron phenotype in the medial prefrontal cortex**

*Having majored in neuroscience and psychology I have always had an interest in mental health, particularly in its molecular basis. After meeting with Dr Hill I was excited by the direction of research that the PNE lab was undertaking. My particular project focuses on the cognitive deficits found in schizophrenia, which is an area of particular interest to me.*

*Aims/goals: My aim for this year is to produce a quality thesis that I can proud of, as well as gaining some essential skills in laboratory research. This year has been the perfect first step to what I hope will be a successful career in scientific research.*

*My honours year has easily been my favourite year at university so far. I love coming in each day and working with an amazing laboratory of people who are continually inspiring and generating new research ideas! This year has also allowed me to take control and guide my own work and has given me so many transferable skills which I will be able to bring into all of my future work.*



# Therese Mount

Project Site: Florey Institute -KMB

Supervisors: A/Professor Chris Reid,  
A/Professor Steve Petrou

**PROJECT: The role of the HCN2 channel in patients with Generalised Genetic Epilepsy and Febrile Seizures**

*I graduated from the University of Melbourne with an Arts/Science degree in 2010 with majors in Anatomy, Physiology and Spanish.*

*I chose to come back to studying after working full time. After attending an information session at the Florey institute I decided to do a project on epilepsy. I choose this project because I had recently seen through the media how devastating this disease can be and I was also really impressed by the expertise of my supervisors.*

*My project is completely lab based. I am looking at genetic variation of a particular ion channel in patients with epilepsy and seeing how this variation is impacting upon the function of the channel. It is a challenging and interesting project and I am really enjoying the process of running experiments while reading papers and writing a paper. I hope to be able to produce some informative results on a number of variants of this particular ion channel. The Honours year is definitely a shift from undergraduate study. You have to be organised and enthusiastic and ready to go with the flow! Things don't always work out but there is a lot of support. It is a steep learning curve but well worth the effort*



# Hong-Dah ONG

Project Site: Florey Institute

Supervisors: Dr Andrew Gibbons,  
Professor Brian Dean

**PROJECT: Investigating Levels of Cox-1 in Frontal Cortex of a Mouse Model of Psychosis**

*When I was considering potential research projects for my honours year, I happened to come across a research project based at the Florey Institute while at the RMH Student Information Expo. Interestingly, it involved looking at the levels of a protein in the frontal cortex of anti-psychotic treated rats. Previously, this protein was shown to be differentially expressed in the brains of post-mortem Schizophrenia patients. However, these changes could conceivably be due to the effects of the anti-psychotic drug regimen these patients were on previously prior to their deaths; thus the objective of the project was to investigate the effects of anti-psychotics on the protein, if any, in a rat model. Intrigued by the molecular basis of mental illness, I chose the project for my honours year.*

*Honours year turned out to be harder than I thought; I knew it was hard, but you only really get a sense of the difficulty when you experience it for yourself. It's not easy in the sense that things in the lab can get unpredictable e.g. taking longer than expected to carry out a certain procedure; having to re-allocate time for your experiments because they don't work out the first time, or subsequent times, for that matter; modifications to your project; etc. However, I still remember the euphoria that I got from having completed an entire procedure on my own for the first time in the early morning at 3am. Although I was tired, I felt a growing sense of independence. Although I would advise anyone to strive for efficiency, I felt that my previous failures were validated at that point in time. Honours may be challenging but it can also be rewarding, and more importantly, you learn to be more independent.*



# Matthew DANIEL

Project Site: Centre for Health, Exercise and Sports Medicine (CHESM), Department of Physiotherapy

Supervisors: A/Professor Adam Bryant,  
A/Professor Peter Pivonkae

**PROJECT: The influence of athletic footwear on patellofemoral joint loading in young female adults**

*I graduated with a Bachelor of Biomedicine, majoring in Physiology. I have always had a passion in Sports Medicine, and I hope to study medicine with the intention of pursuing a career in Sports Medicine or Orthopedics. Undertaking an Honours year has provided me with a valuable insight into research, a key component of modern medicine, and has taught me skills that will be essential in my development and education.*

*This project and department stood out to me in particular, and early correspondence with potential supervisors really attracted me to this particular area of study. Patellofemoral pain syndrome (PFPS) is extremely prevalent in physically active individuals, particularly high-risk groups such as young female adults, and is the most diagnosed running injury. Combined with the novelty and significance of the study, the opportunity to be at the forefront of such important research was exciting. It has been so inspiring being surrounded by a research team with a similar drive and passion, and their guidance has been instrumental throughout the year.*

*My aims this year include improving my research and academic writing abilities, determining the most beneficial footwear condition for those most at risk of PFPS, and hopefully producing a paper and a high mark for my Honours project, preparing me to begin medical studies next year.*



# Sadiq SAMURI

Project Site: Northern Centre for Health and Education Research, Epping

Supervisors: Professor Terri Jackson

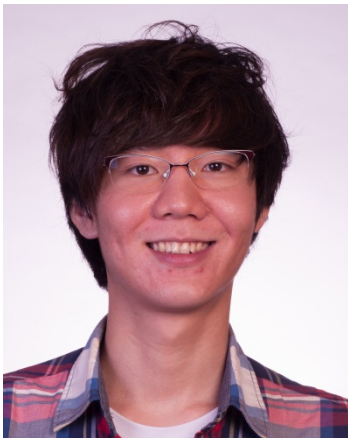
**PROJECT: Hospital-Acquired Electrolyte Disorders**

Having already been exposed to an experimental project in undergrad, I thought it would be refreshing to attempt a clinical project for a change! With an interest in venturing into a clinical setting in the future, this project suited me. It gave me a taste of the nature of clinical research and increased my understanding and appreciation of the broad field of biomedical science.

**Aims/goal:** To be able to complete this project to the best of my ability and harbour some hope that it will help people understand hospital-acquired electrolyte disorders to a greater degree. To improve my research and writing skills. To do the best I can in order to enhance my future prospects, whether it be for employment or otherwise.

So far it's been great. I have had the luxury of meeting people from various areas of biomedical research and have been thoroughly intrigued by some of their work. The people I work with, from my supervisor to a clinical consultant, have been very helpful and keen on imparting their wisdom and knowledge.





# William JEONG

Project Site: The Northern Centre for Health, Education, and Research (NCHER)

Supervisors: Dr Karen Barclay

**PROJECT: The impact of contemporary use of computerized tomography for the assessment of emergency surgical patients with an acute abdomen**

*I chose this project because it is based on surgical research and I thought it will help me to experience more about my future career. Also, I liked my supervisor being so enthusiastic about this project.*

*Personal Aims:*

- *To experience how good it would be working as a researcher in this field and to determine whether I will work on a research in the future.*
- *To improve my writing skills, particularly scientific research articles*
- *To experience and learn how the systems in hospital function and how doctors and physicians take care of patients.*

*My Honours degree has been interesting and rewarding so far, though it is very tiring and occupying a lot of my time. I strongly recommend this degree to anyone who's willing to participate into a future research, because this degree is just a miniature of what a clinical research is like in reality*



# Jake MESINOVIC

Project Site: WCHRE Sunshine Hospital

Supervisors: Dr David Scott and  
Professor Kerrie Sanders

**PROJECT: The metabolic syndrome and musculoskeletal health in older adults**

*I chose this project due to my particular interest in musculoskeletal health maintenance, in addition to a desire to gain experience in a clinical-based research project.*

*My goals include:*

- *Contributing new knowledge to my field of research.*
- *Improving on my clinical-based skills, such as rapport building and communication.*
- *Improving my scientific writing and researching skills.*
- *Producing an excellent thesis.*

*To date, my honours experience has been very positive. In addition to far fewer assignments than a typical undergraduate year, I've met some inspiring colleagues, made some great friends, become significantly more independent with my studies and gained valuable insight into the world of scientific research.*



# Charlie WOOD

Project Site: Sunshine Hospital, St Albans and St Vincent's  
Hospital Clinical Sciences Building, Carlton

Supervisors: Jonathan Gooi

## PROJECT:

*I completed my bachelor of science at the University of Melbourne with a major in Human structure and function. Having a particular interest in the musculoskeletal system, for my project I opted to investigate the molecular relationships between skeletal muscle and bone under the supervision of Jonathan Gooi. Jon and I have had a close relationship and I have benefited from his wealth of knowledge. For me, the diverse opportunities that honours have provided has been the most beneficial aspect of my year thus far. I have had the opportunity to work at three of the largest hospitals in Melbourne with world leaders in medical research. I have learnt practical skills pertaining to my research topic, but have also learnt from other students about the myriad of ways of conducting scientific research. Obviously, the year as a whole is challenging, but the strong network of students and teachers fosters a fantastic learning environment, where you can challenge yourself and others and get a great feel for how your research can create a positive change in someone's life.*



## Liam WILLIAMSON

Project Site: Eastern Hill Academic Centre

Supervisor: Jonathan Gooi

**PROJECT: Assessment of bone adaptation due to mechanical loading in DMP1 gp130KO mice**

*I come from a bioengineering background and this project allowed me to study biomechanics but also gave me the opportunity to look at things from a more biological perspective.*

### *Aims/goals*

*My main goal for this year was to get an idea of whether research is something I enjoy and would be willing to pursue.*

*So far it has been very enjoyable but as to whether I would continue with research I'm still undecided. Research can be very unpredictable which is both a good and bad thing, I'm just not sure which it is more of yet.*



## Ramona SARKIS

Project Site: Department of Obstetrics & Gynaecology,  
Mercy Hospital

Supervisors: Senior Research Fellow Padma Murthi,  
A/Professor Martha Lappas and  
Dr Ratana Lim

**PROJECT: The effects of the proteoglycan, endocan, on gestational diabetes mellitus (GDM)**

*I graduated with a Bachelor of Science with a major in Human Structure and Function.*

*I chose this project because its focus was based on women's health, which is a field that I am particularly interested in. My supervisors were really friendly which was conducive for a working environment as well as being very approachable.*

*My aims include:*

- *Improving my scientific writing skills and research abilities*
- *Achieving the highest mark possible*
- *Learning lab-based techniques*
- *Being exposed to the scientific field of research*

*Thus far, my Honours year has been challenging at times but far more rewarding than I had hoped for. I would recommend Honours year to all that are not particularly sure of what they want to do after their undergraduate*



## Ha TRAN

Project Site: Mercy Hospital for Women

Supervisors: A/Professor Martha Lappas

**PROJECT: The effects of Resveratrol in Gestational Diabetes Mellitus**

I chose this project because I wanted to know and understand the “bench” aspect of the “bench-to-bedside” research notion. I also have an odd interest in diabetes and nutrition, so I thought this was an obvious choice.

Therefore my aims for this year include:

- To learning a range of laboratory skills which I could not and did not develop during my three years undergraduate biomedicine degree
- Improving my research, analytical and scientific writing ability
- To figure out what exactly I wanted to do

The Honours year has been a complete different learning experience, yet very enjoyable. My supervisor, and the researchers are friendly and supportive. Furthermore, many of them are really good bakers!



# Tess COLES

Project Site: Department of Colorectal RMH

Supervisors: Professor Finlay Macrae

**PROJECT: Metabolic effects of StarPlus B: Blood glucose response to butyrylated high amylose maize starch (StarPlus B) in healthy volunteers and adverse events and metabolic changes associated with StarPlus B in the AusFAP trial**

*I graduated from the University of Melbourne with a Bachelor of Science majoring in Food Science. Although I thoroughly enjoyed studying food science, I was really interested in the more nutritive applications in the area and wanted to broaden my experience so I completed a Graduate Certificate in Human Nutrition at Deakin University, which sparked my interest in research.*

*I chose my honours project as it involves the application of a product developed utilising advanced food science in the treatment and prevention of disease. Before starting honours I thought that my year would consist of 9-5 days doing wet laboratory work, but I have been lucky to have a very different research experience at RMH. I have had an excellent introduction to human medical research and clinical trials and have absorbed and observed countless skills from the fabulous researchers in the department, ranging from preparing an ethics proposal to recruiting volunteers to performing the procedures needed to collect data.*



# Qi Hang (Michael) ZHENG

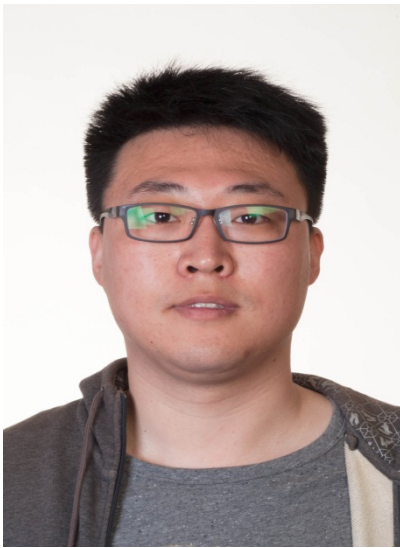
Project Site: Florey Institute

Supervisors: Dr Tara Bautista, Dr Davor Stanic,  
A/Professor Mathias Dutschmann

**PROJECT: Mapping the pons for respiratory function**

*I chose this project as it incorporates a variety of skills including, surgeries, histochemistry and perfusion tuning. More importantly, fascinating experimental preparation, topped up with friendly supervisor.*

*Aims: create a map of the pons in terms of respiratory function, which hopefully can be incorporated in other studies. particularly in that of neurodegenerative diseases, a map of brainstem function could be the spark for presymptom detection of neurodegeneration.*



# Hongyuan JIANG

Master of Biomedical Science

Project Site: Department of Medicine RMH,  
Bone Density Unit

Supervisors: Professor John Wark, Dr Chris Yates

**PROJECT:** Peripheral quantitative computed tomography (pQCT) measures contribute to the understanding of bone fragility in older patients with low trauma fracture

*After obtaining a medical degree in China last year, I started a Master of Biomedical Science here for research experience. I chose this subject as it has close relationship with clinical practices and its potential results could help solve the limited diagnostic value of dual energy X-ray absorptiometry (DXA), which is the diagnostic standard currently. As a new tool for determining bone mineral density, pQCT is not well established as a diagnostic standard for osteoporosis. I am really interested in its role in estimating bone loss and bone fragility.*

*The objectives of this study are:*

- ✚ To express the pQCT variables of low-trauma fracture patients as T-scores, using T-score scales previously obtained from studies of young women's health (in which T scores were calculated using young women's mean and standard deviation values for pQCT variables).*
- ✚ To evaluate the potential clinical utility of pQCT for the assessment of bone fragility.*
- ✚ To identify novel factors that may contribute to the prediction of low-trauma fracture in older patients with osteoporosis.*

*I would like to express my thanks to my supervisors and all staff and students in Dept of Medicine. Their professional supervision and friendly assistance make my research project go smoothly*

# Jancy JOHNSON

MASTER OF BIOMEDICAL SCIENCE

Project Site: Pregnancy Research Centre, RWH

Supervisors: Dr Bill Kalionis

**PROJECT:** Stem Cell Microvesicle Repair of the Damaged Endothelium in Preeclampsia

*My undergraduate degree in Human Anatomy and Physiology opened my eyes to the fascinating world of stem cell research. And so, pursuing a Masters in this field was the obvious choice. So far, my experience as a Masters student has been very exciting. I have received lots of support and guidance from my supervisors as well as from fellow students. The upcoming months promise to be quite challenging, yet rewarding and I am looking forward to it.*



# Laura FINLAYSON-SHORT

MASTER OF BIOMEDICAL SCIENCE

Project Site: Melbourne Neuropsychiatry Centre and Orygen, the National Centre of Excellence in Youth Mental Health

Supervisors: Dr Sarah Whittle, Dr Chris Davey, Dr Martina Jovev and A/Professor Andrew Chanen

**PROJECT: fMRI, Identify Disturbance and Self-Referential Processing in Borderline Personality Disorder**

*I chose this project because the existing options for Master of Biomedical Science students were not quite right for me. I found the research institute that I wanted to work in (MNC) and contacted the Director, Professor Christos Pantelis. After some consultation I found a project that perfectly aligned my interests in psychopathology, working with people and the philosophical side of the mind and brain sciences.*

*My goals for my Masters degree are:*

- ✚ Learn how to analyse fMRI data*
- ✚ Develop my ability to work with and relate to people with a psychiatric disorder*
- ✚ Publish my research in at least one journal*
- ✚ Establish the relationships and get the marks necessary to be accepted into a top-notch PhD program*

*My experience at the University of Melbourne so far has been excellent. My colleagues have been warm and welcoming and I have enjoyed a varied and flexible working week. My supervisors have been very encouraging of my interest in writing a thesis that incorporates my knowledge of philosophy, which is fantastic. I highly recommend the Master of Biomedical Science to those who want to have a career in biomedical research and encourage them to consider building their own projects with their supervisors.*

# Nikhil ARORA

MASTER OF BIOMEDICAL SCIENCE

Project Site: Department of Surgery RMH

Supervisors: Dr Rodney Luwor, Dr Nuzhat Ahmed

**PROJECT: Role of IL-11 in Ovarian Cancer Progression.**

*My name is Nikhil Arora. I graduated with a Bachelor of Technology degree in Biotechnology in India and decided to pursue Master of Biomedical Science at The University of Melbourne. I was always interested in learning Cancer Biology. I developed a special flair for it during my bachelor's degree.*

*I am undertaking a research project on ovarian cancer to understand what role does interleukin 11 play in ovarian cancer. The project will strengthen my research and analytical skills. I get to apply my technical knowledge gained over the years to a real science project. The aim of the project is to propose a novel ovarian cancer therapy targeting IL-11 if its role is clearly understood. The most interesting aspect of the master's degree is that it gives students the freedom to design their own two-year study plan incorporating subjects and a project of their own interest. The staff at the RMH is friendly, supportive and dedicated. They mentor students well and encourage good research practices. Alongside research skills, one develops teamwork, communication and presentation skills. I would recommend the master's programme to anyone who is interested in a research-based career.*



