

**MHTP**  
Monash Health  
Translation Precinct



**MONASH**  
University

**HUDSON**  
INSTITUTE OF MEDICAL RESEARCH

# POSTGRADUATE AND HONOURS RESEARCH PROJECTS 2018

SCHOOL OF CLINICAL SCIENCES AT MONASH HEALTH  
HUDSON INSTITUTE OF MEDICAL RESEARCH



The Monash Health Translation Precinct's Translational Research Facility (TRF) is a purpose-built research space designed to foster innovation and health translation and the result of an \$87.5 million investment in translational medicine.

Set across six levels, the TRF co-locates researchers from Monash University and Hudson Institute with clinicians from Monash Health to enhance collaboration and links between basic and clinical research and patient care to expedite translation of vital discoveries to the bedside.



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# Why do your graduate research at the Monash Health Translation Precinct (MHTP)?

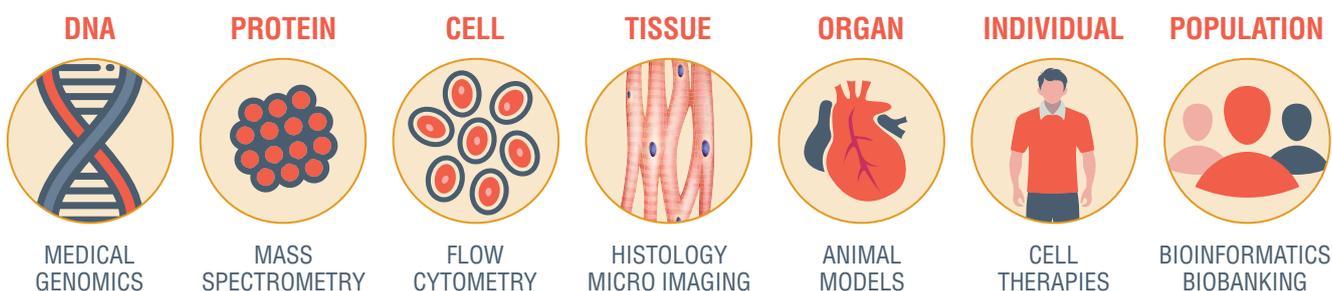
- 1 IGNITE PASSION:**  
Forever change the way you perceive the process of how medical knowledge is advanced. In some it will ignite the passion for a career in biomedical research.
- 2 WORK WITH THE BEST:**  
Our supervisors have international reputations for excellence in their field.
- 3 SIZE IS IMPORTANT:**  
A large number of research students have been successfully guided to completion, with a well-established infrastructure conducive to success.
- 4 A CLINICAL FLAVOUR:**  
Many of our projects relate to clinical topics and are supervised by clinician-scientists. However there is also plenty of opportunity for important basic science projects, studying fundamental mechanisms of disease.
- 5 MAKE A DIFFERENCE:**  
Basic science projects and clinical studies focus on health conditions and diseases. Use your knowledge and skills to improve human health.

## Next Steps

- 1 MAKE THE DECISION**  
to do a research project.
- 2 MAKE CONTACT**  
with a potential supervisor or the head of the unit in which you are interested.
- 3 SELECT**  
a topic.
- 4 ACT!**  
For research degree applications (PhD and Masters) go to Monash University Institute of Graduate Research:  
[www.monash.edu/graduate-research/future-students/apply](http://www.monash.edu/graduate-research/future-students/apply)  
For Bachelor of Medical Science (Honours) applications go to:  
[www.med.monash.edu.au/bmedsc-hons](http://www.med.monash.edu.au/bmedsc-hons)  
For Honours degree applications go to:  
[www.study.monash/courses](http://www.study.monash/courses)  
(Find more detailed information about the application process on following pages.)

## Technology Platforms

Our world-leading technology platform facility supports scientists to pursue innovative approaches and advances in medical research by generating evidence and data



# The School of Clinical Sciences at Monash Health (SCS)

The School of Clinical Sciences at Monash Health (SCS) is a health professional school and research centre of excellence based at campuses of Monash Health; Victoria's largest hospital network. SCS is at the forefront of clinical translational research with demonstrated research strengths in cancer, cardiovascular disease, clinical medicine, endo-crinology, infectious and inflammatory diseases, neurosciences, nutrition, and women's and children's health. Our senior academic staff are mostly health professionals who work closely with colleagues in Monash Health, translating scientific discoveries into clinical practice in an innovative and collaborative environment. The Monash Health Translation Precinct (MHTP) consists of SCS, the Hudson Institute of Medical Research, and Monash Health, and provides exceptional collaboration opportunities.



## SCS AT A GLANCE



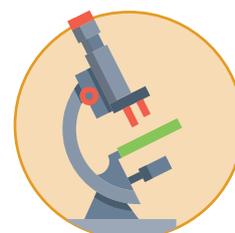
**700+**  
RESEARCH  
PUBLICATIONS



**200+**  
PHD  
STUDENTS



**\$30M+**  
RESEARCH  
INCOME  
ANNUALLY



**700**  
RESEARCHERS



**100+**  
RESEARCH  
GROUPS



# Hudson Institute of Medical Research

Hudson Institute is a leading Australian medical research institute located in the heart of the Monash Health Translation Precinct, alongside the main hospital in Victoria's largest healthcare network and with close links to Monash University.

We bring together almost 250 researchers and nearly 190 students who undertake a wide range of research activities, from basic science through to clinical research. Together, they work across 51 research laboratories clustered under six specialist centres covering cancer, innate immunity and infectious diseases, women's health, fetal, infant and children's health, reproductive health and biology, endocrinology and metabolism, and genetic diseases.

Our open structure encourages collaboration between research groups and provides a wide range of perspectives and opportunities for scientists and students to spark out-of-the-box discoveries.

As productive members of world-class research groups, our students develop the confidence and skills necessary to thrive in research, while expanding their thinking to push discovery science and publish innovative work.

We access a suite of nine state-of-the-art technology platforms and a clinical trials centre in one 'walk-in' location. The support of the talented staff in these facilities opens up new opportunities for research and enables it to progress quickly, breaking down traditional barriers to new discoveries and clinical translation.

One of the key goals at Hudson Institute is to nurture and inspire the next generation of science leaders. Our vibrant student population is encouraged to pursue excellence and innovation in their own scientific endeavours. Supported by strong mentorship programs, extensive on-site training, seminars, and networking and social programs, the learning environment at Hudson Institute support students to pursue their goals.

## HUDSON INSTITUTE AT A GLANCE



**303**  
INSTITUTE  
STAFF



**69**  
DISEASES IMPACTED  
BY OUR RESEARCH



**333**  
RESEARCH  
PUBLICATIONS



**183**  
STUDENTS



**51**  
PHD AND  
HONOURS  
GRADUATES



**35**  
STUDENTS WITH  
MEDICAL TRAINING



**75**  
STUDENT  
FIRST AUTHOR  
PUBLICATIONS  
(23% OF ALL INSTITUTE  
PUBLICATIONS)



# A message from the Head of School, Professor Eric Morand

The School of Clinical Sciences in the Faculty of Medicine, Nursing & Health Sciences comprises the Faculty's academic departments based at Monash Health. It is the Faculty's largest medical clinical school and also hosts its Nutrition & Dietetics department (based at Notting Hill). There is close integration between Monash Health clinical services and the departments including Medicine, Psychiatry, Surgery, Paediatrics, Obstetrics & Gynaecology, Imaging, and Nutrition and Dietetics. Moreover, the School has extensive laboratory-based research programs that are integrated with clinical research activities across multiple disciplines, and also hosts three major University Centres of Excellence: the Centre for Inflammatory Diseases, Ritchie Centre for Baby Health Research (jointly with Hudson Institute), and the Monash Cardiovascular Research Centre. Many group leaders are recognised as international leaders in their fields.

There is a strong focus on both basic and translational research with real clinical issues driving research questions addressed in the laboratories. Similarly, laboratory-derived discoveries can be rapidly tested in relevant clinical settings.

The School has a strong track record of welcoming and supporting research students in productive graduate (Honours and Doctoral) programs. A growing number of gifted students have progressed from Honours or BMedSc through successful PhDs and Postdocs to become successful, independent researchers and biomedical professionals in the School and beyond.

SCS is proud of its partnership with Monash Health, Victoria's largest and most comprehensive health service, and the Hudson Institute, and its basic and clinical research is equal to the best in the world. Somehow we manage to have a happy workplace culture too – I think this is because we all know we are doing good. So for research in a clinically-enriched environment, you will not find a more high-impact, or welcoming, place than SCS.



# A message from the CEO and Institute Director, Hudson Institute of Medical Research, Professor Elizabeth Hartland

Excellence in biomedical research is at our core, but we are also incredibly fortunate to see our research applied to improve human health. Thanks to the opportunities offered by our strong clinical and translational links, every scientist and student at Hudson Institute has the opportunity to see their research underpin real-world change.

Whether you're interested in basic or clinical science, at the level of an Honours degree, BMedSci(Hons), Masters or PhD, the Hudson Institute provides an outstanding environment for discovery and applied biomedical research.

We attract ambitious researchers from around the world by offering a unique and collaborative environment on the Monash Health campus, which supports multi-disciplinary approaches to important biomedical problems.

At Hudson Institute, you can expect an enthusiastic exchange of ideas among world-leading research scientists, students, and clinicians. These conversations reflect a strong desire to work together to solve real-world issues and ensure our research makes a difference where it's most needed.

As a valued member of a world-class research group at Hudson Institute, you will develop the confidence, skills and thinking necessary to pursue scientific discovery and thrive in an international research community.

In 2016, 75 of our students were first authors of research publications. One of our PhD students, Mr William Berry, was the first author of a study in the International Journal of Cancer, whose work has led to a new pancreatic cancer clinical trial.

Our PhD graduates are also found in leading laboratories and companies across the world. Dr Samuel Forster completed his PhD in Professor Paul Hertzog's laboratory in 2015, and is now working as an NHMRC CJ Martin Fellow at the Wellcome Trust Sanger Institute in the UK.

We prepare our students with a range of dynamic and transferrable skills for careers in biomedical and clinical research and beyond, from commercialisation to the pharmaceutical industry.

Mentorship programs, seminars, networking programs and a dynamic student society are a big part of this success. Our academic partnership with Monash University, Australia's largest university, also ensures our students have access to comprehensive training programs and shared state of the art research facilities.

So, I encourage you to consider what the Hudson Institute can offer your research career by contacting one of our project supervisors.



## STUDENT PROFILE

# Jo Lundy

### DEGREE

PhD, first year

### RESEARCH GROUP

Cancer and Immune Signalling,  
CiiiD, Hudson Institute

### AREA OF STUDY

Cancer immunity

### SUPERVISORS

Professor Brendan Jenkins, Dr Daniel Croagh,  
Professor John Zalcberg



### What do you enjoy about your research?

I enjoy getting to work with a great team with access to excellent facilities, while learning new things and being challenged every day. There is a great culture of collaboration between researchers and clinicians at Hudson Institute, and a strong translational focus to ensure the research being undertaken here can have a real world impact.

### What do you hope to achieve (in your research)?

The focus of my research is on improving precision medicine in pancreatic cancer. I will be looking in detail at the genomic landscape of pancreatic cancers, identifying molecular drivers of this disease, and creating models to test new therapeutic agents.

### Why did you choose your research group?

As a clinician, I am acutely aware of the challenges of treating patients with cancer and of the progress yet to be made. This research group allows me to work with a great team of researchers to explore molecular targets and signalling pathways in pancreatic cancer, and has a strong focus on translating our findings into clinically relevant outcomes.

### What is student life like here?

Hudson Institute is a great place for students, and provides a supportive and encouraging environment to undertake research. There is an active student society and plenty of social and educational events throughout the year.

### What have you achieved (or hope to achieve) in your research?

I am in my first year of a PhD, so still have a long way to go! Ultimately, I hope that my research can help us select the right patients for the right treatments in pancreatic cancer, and improve the treatment options and outcomes for patients facing this disease.

### What are the potential clinical benefits of your research?

Pancreatic cancer is a devastating disease with a poor prognosis and few effective treatment options. By advancing our understanding of the mechanisms of this condition and improving our selection of each individual's treatment, there is potential to make a significant impact in improving the outlook for patients facing this disease.



## STUDENT PROFILE

# Paulo Pinares-Garcia

### DEGREE

3 year PhD, started my third year of candidature

### RESEARCH GROUP

Brain and Gender, CEM, Hudson Institute

### AREA OF STUDY

The role of the Y-chromosome gene SRY in male Parkinson's disease

### SUPERVISORS

Dr Joohyung Lee, Professor Vincent Harley



### What do you enjoy about your research?

I enjoy the broad spectrum of work that I can get involved in. No two days are the same, and the novel aspect of my work makes each discovery worthwhile. One day it might be working with animal models, the next sectioning or a RT-PCR-reverse transcription polymerase chain reaction experiment.

### What do you hope to achieve (in your research)?

I hope to further our understanding (even a little bit!) of the genetic mechanisms involved in the progression of Parkinson's- and in particular, understand why more men get the disease. Hopefully, with our research, we can, down the line, establish our drug as a therapeutic target to reduce the progression of Parkinson's in men.

### Why did you choose your research group?

I had always been interested in brain disorders, and was looking for a lab that did neuroscience research as that was also my undergrad major. I had a friend who was the RA at the time in this lab, and she told me about the work my supervisors were doing- the appealing factor was that I had an opportunity to work with an animal model of Parkinson's, and therefore have a much more practical, hands on approach and angle to my honours- and later- PhD.

### What is life like here?

Being based off-campus, student life feels like a community of like-minded students. We're all there to support each other. Being on the Hudson Institute Student Society (HISS) Committee has given me the opportunity to have a greater say in the role of students. From this I've made solid friendships that I hope will be life-long.

### What have you achieved (or hope to achieve) in your research?

I've been able to achieve a true appreciation for the role that medical research plays in our community. We're here to make discoveries that could one day lead to a discovery or cure, and that has given me a tremendous amount of self-belief for the work that I'm doing.

### What are the potential clinical benefits of your research?

SRY inhibition in the male brain may be a novel therapeutic target that prevents the progression of Parkinson's disease in males, who are 2x more susceptible to the disease than women.



## STUDENT PROFILE

# Taylah Bennett

### DEGREE

Degree Bachelor of Science, Honours

### RESEARCH GROUP

Rheumatology Research Group

### AREA OF STUDY

The regulation of cytotoxic T cells in immunity and autoimmunity Specific areas: Immunology, autoimmune disease, inflammation, adaptive immunity)



### What do you enjoy about your research?

My research project has certainly challenged me, which has been great because I've had to think critically and creatively. I hope this will help shape me to be a great scientist. I have also really enjoyed the collaborative nature of my research and have had the opportunity to discuss my project with a number of brilliant scientists.

### What do you hope to achieve (in your research)?

I hope to add knowledge to the field of immunology and to enhance our understanding of how immune cells behave in healthy and diseased situations. I hope this will one day lead to providing more effective therapeutic options for people with autoimmune and inflammatory conditions.

### Why did you choose your research group?

I'm extremely interested in immunology, autoimmune disease and translational research, which is why I was drawn to the Rheumatology Research Group. My supervisor had also lectured me during the final year of my science degree. After meeting her and other members of the lab, I knew I wanted to do my Honours project here.

### What is student life like here?

Student life here is brilliant. It is a very supportive environment, and there is always someone who can offer their expertise when I am planning my experiments. I feel that I am altogether challenged, encouraged and supported by the senior researchers here. The student cohort is also immensely supportive of one another. We often meet in the tea room for a cuppa, or walk to Clayton Road to get some dumplings. We support each other during stressful days, and celebrate when we reach a milestone or get an exciting result.

### What have you achieved (or hope to achieve) in your research?

I have been investigating how a protein believed to act as a 'molecular brake' plays a role in a specific type of lymphocyte, called a cytotoxic T cell. I have made some progress in starting to delineate how this protein may regulate cytotoxic T cells. The results of some of my experiments have directed us to ask questions that we hadn't previously considered. This is quite exciting and is a testament to the dynamic nature of science! Ultimately, I hope this research will enhance knowledge of how immune cells are regulated in health and disease, and this may pave the way to providing more effective treatments for people with autoimmune and inflammatory diseases.

### What are the potential clinical benefits of your research?

Cytotoxic T cells provide us with crucial defence against intracellular pathogens and they also eliminate infected and foreign cells. However, they can also contribute to tissue damage and inflammation in the context of autoimmune disease. Recent reports by our group and others have suggested that the glucocorticoid-induced leucine zipper (GILZ) contributes to setting a 'molecular brake' that must be switched off for lymphocytes to become activated. Enhancing our understanding of how GILZ regulates cytotoxic T cells may lead to the development of new therapeutic options that promote cellular immune responses, or suppresses cytotoxic T cell activity in autoimmune disease.



## STUDENT PROFILE

# Raymond Shim

### DEGREE

PhD (Completed BSc(Hons))

### RESEARCH GROUP

Neuroinflammation research group

### AREA OF STUDY

Stroke and the immune system



### What do you enjoy about your research?

During high school and even my undergraduate degree, we had always been taught about the nervous system and the immune system as two completely separate entities. It was only during my honours year and experiences in the lab where I found how vastly interconnected these systems are in health and disease. This finding blew my mind and I wanted to know more about how the nervous system and immune system communicate, and how we can use this knowledge to fight and prevent diseases.

### What do you hope to achieve (in your research)?

My personal goals during my PhD are to be able to critically think of important scientific questions and become a more independent researcher. I also want to work on my oral and written communication.

### Why did you choose your research group?

I think one of the most important things about choosing a research group is how well you get along with the people you work with. In our group we work hard but we get along incredibly well and know how to have fun – we celebrate birthdays, go out for lunches, and go for the odd escape room every now and then. Since you'll be spending all your time at work and around your colleagues, I strongly recommend looking for a lab you work well with when deciding on an honours project. My advice is to identify a project you may be interested in and then finding a time to meet with the supervisor and anyone in the group you will be working with. How well you get along with your supervisor and lab group can make or break your honours year!

### What is student life like here?

There's a very friendly and supportive student community here. The great thing about this is that you'll have people

who are or have gone through the same things you have during honours and there are always people around help or offer advice when it comes to things like failed experiments or thesis writing. It's not always about work either – the social clubs are really good at putting on special events like Christmas in July and balls. A lot of us even go out for food down on Clayton Rd for some tasty Indian food or juicy dumplings. So while the honours year can be quite stressful, there's always something to help students relax.

### What have you achieved (or hope to achieve) in your research?

During my research, I've tested a few drugs in their efficacy in reducing infections after stroke. I identified two drugs – one which could reduce infections, another which could reduce brain damage. In the future, I want to further explore how these drugs work and hopefully provide a therapeutic to reduce stroke-related deaths.

### What are the potential clinical benefits of your research?

Infections are the most common killer of stroke patients and it's known that stroke patient susceptibility occurs due to immune suppression after stroke. Highly inflammatory events that occur during and after stroke is detrimental to the brain. It's believed that the brain attempts to protect itself from damage by dampening inflammation and suppressing the immune system. However, the induced immune suppression occurs to the extent that the body is unable to fight off pathogens and therefore becomes more susceptible to infections. What we don't know is how the brain induces this immune suppression. My research looks at how injury to the brain after stroke causes the immune suppression seen that predisposes patients to infections. If we can identify a pathway in which immune suppression is induced by the brain, we can potentially develop therapeutics that reduce immune suppression and prevent infectious complications in stroke patients.



# Courses Available

## Honours programs

- Bachelor of Biomedical Science (Honours)
- Bachelor of Science (Honours) – including Bachelor of Biotechnology (Honours)
- Bachelor of Medical Science (Honours)
- Bachelor of Nutrition (Honours)
- Bachelor of Behavioural Neuroscience (Honours)

For further information about an Honours program contact:

### Bachelor of Biomedical Science (Honours)

Assoc Prof Mark Hedger

**Email:** mark.hedger@hudson.org.au

Dr Paul King

**Email:** paul.king@monash.edu

Ms Roseline Acker

**Email:** roseline.acker@hudson.org.au

**Tel:** 03 8572 2552

### Bachelor of Medical Science (Honours)

Dr Tony White

**Email:** bmedsci.scs@monash.edu

**Tel:** 03 8572 2771

## Postgraduate research programs

- Doctor of Philosophy
- Doctor of Medicine
- Research Masters
- Master of Reproductive Sciences

For further information about Masters or PhD projects contact:

Professor Kate Loveland

Head of Postgraduate Studies

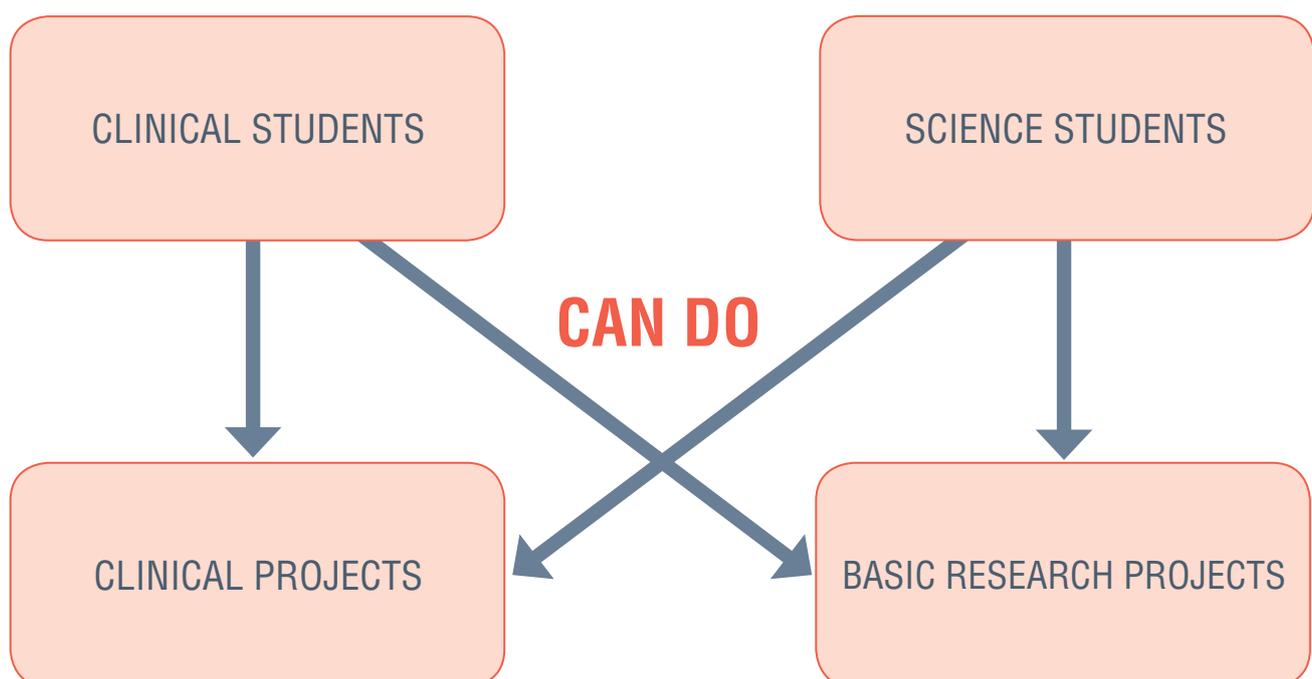
**Email:** phd.scs@monash.edu

### Postgraduate Enquiries

Postgraduate Research Programs Officer

**Email:** phd.scs@monash.edu

**Tel:** 03 8572 2787



# How to Apply

## External Applications (non-Monash students)

Applications from external students (both international and Australian) are very welcome. In addition to the information in the following pages, you will need to provide details of courses you have studied and a certified transcript of your academic record so Monash University can give you appropriate credit.

## Honours

The Honours courses aim to provide students with a higher level of experience in independent analysis and research in their chosen area of expertise.

Each Honours course has its own requirements and deadlines. Therefore it is advisable to check the relevant Faculty and department websites and begin looking for potential research projects/supervisors early in second semester.

## Bachelor of Science (Honours)

You must meet the requirements of the department in which you intend to undertake the coursework component of the degree. This is usually a Distinction-grade average (70%), or above, in 24 points of studies in relevant units at level three. The coursework component of your Honours year will be run by the department in which you enrol. This will be the one most appropriate to your research component, and need not necessarily be the one in which you undertook your level three major studies. Your research component can also be carried out at Hudson Institute.

The Honours application form can be downloaded from:  
[www.monash.edu/science/future-students](http://www.monash.edu/science/future-students)

## Bachelor of Biomedical Science (Honours)

You must meet the requirements of the department in which you have majored; for Monash students this is usually a Distinction-grade average (70%), or above, in BMS2031, BMS3042 and 12-24 points of studies at level three units. Acceptance of external applicants is based on an individual assessment of their academic record in relevant areas of study.

The Biomedical Research Project component of your Honours year (BMS4100) is run by the School of Clinical Sciences (SCS)/ Hudson Institute, based at the Monash Medical Centre. The course work component of the Honours

year (BMS4200) is run jointly by SCS/Hudson Institute and the School of Biomedical Sciences.

The BMS Honours application form can be accessed from  
[www.med.monash.edu.au/biomed/honours](http://www.med.monash.edu.au/biomed/honours)

Apply online at E-Admissions:

[www.monash.edu/admissions/apply/online](http://www.monash.edu/admissions/apply/online) in early November (check the website for the exact date).

## Bachelor of Medical Science (Honours)

This one-year research program is available to students who have successfully completed at least two years of medical studies by the end of 2017. There is also the opportunity to convert the BMedSc(Hons) to a PhD. This new initiative of MBBS/ PhD allows students to accelerate their research studies and complete a PhD in 2.5 rather than 3.5 years. Eligible students require a mark of H1 for their BMedSc project and can apply for a scholarship to complete their PhD. The degree of BMedSc(Hons) is not taken out and the research carried out in

that year is incorporated into the PhD. Students intermit from Medicine whilst pursuing this program. Students wishing to take this opportunity should discuss the possibility with their supervisor early in their BMedSc(Hons) year and also with the Head of Postgraduate Studies [kate.loveland@monash.edu](mailto:kate.loveland@monash.edu)

Students who are undertaking a medicine program at a university other than Monash must have completed equivalent studies corresponding to a minimum of two years of the Monash University undergraduate MBBS program.

There is now the option of completing a BMedSc(Hons) after graduation with an Australian or New Zealand MBBS.

Information regarding the program is available online  
[www.med.monash.edu.au/bmedsc-hons](http://www.med.monash.edu.au/bmedsc-hons)

## Bachelor of Nutrition (Honours)

This program is for top-ranking graduates of a dietetic or nutrition science course. It will allow participants to develop their research skills and competencies, learn specific techniques and gain a deeper understanding of a selected aspect of human nutrition.

The program consists of an individual major research project and a compulsory coursework component. The coursework is conducted in Semester One, and includes modules on literature reviewing, study design, data collection, data analysis, scientific report-writing, and submitting work for peer review. In turn this contributes towards the successful completion of a research project.



Projects are chosen from either clinical or community/population nutrition areas or metabolism and are supervised by an experienced member of staff of the Department of Nutrition, Dietetics and Food.

More information is available here:

[www.monash.edu/medicine/scs/nutrition/teaching/bnd-honours](http://www.monash.edu/medicine/scs/nutrition/teaching/bnd-honours)

## Bachelor of Behavioural Neuroscience (Honours)

The Honours year in Behavioural Neuroscience aims to extend research training in specialised areas of behavioural neuroscience, and to help students acquire sophisticated research skills. It is a course requirement that the research project component of the Honours year has significant 'behavioural neuroscience content' (students must gain course coordinator's approval prior to the initiation of the research project).

Honours in the Bachelor of Behavioural Neuroscience is offered to students who have completed the undergraduate BBNSc degree with 70% average or better in 24 credit points of core third year behavioural neuroscience subjects, as well as meeting entry requirements for their chosen program.

Information regarding the program is available from the Online Handbook: [www.med.monash.edu/psych](http://www.med.monash.edu/psych)

## Doctor of Philosophy (PhD)/ Research Masters Degrees

Students wishing to complete advanced research training should enrol for either a Research Masters or PhD degree. The pre-requisite for enrolment in these programs is an Honours degree H2A or above, or equivalent.

Introduced in 2015, the new Monash Doctoral Program includes a coursework or professional development component, setting the Monash PhD apart from all other Australian PhDs. There are three different programs available across the Faculty of Medicine Nursing and Health Sciences and students can tailor their program to suit their individual needs.

The duration of full-time PhD candidature is 2-4 years. Typically, a PhD candidate holds a scholarship, which provides support for a maximum of 3.5 years. Thesis assessment is made by examiners external to the department in which you are studying and selected because of their expertise in the candidate's field of research.

Applications for PhD and Masters can be made any time throughout the year. It is essential to have obtained a supervisor before commencing the application process.

There are four scholarship rounds per year offered by Monash University. Closing dates are:

31 March – International Applicants

31 May – Domestic Applicants

31 August – International Applicants

31 October – Domestic Applicants

To apply for either candidature or a scholarship, please refer to: [www.monash.edu/graduate-research/future-students/apply](http://www.monash.edu/graduate-research/future-students/apply)

There may be departmental scholarships available. Contact individual supervisors for details of these. Information regarding Monash University Research scholarships is available through the Monash University website: [www.monash.edu.au/scholarships](http://www.monash.edu.au/scholarships)

## New Graduate Certificate and Doctoral program in Translational Research

Unique to Monash University, this program delivers the 'know-how' to bring your work from bench to bedside.

Topics include:

- Clinical trial, good clinical practice, bioethics
- Bioinformatics, bioprocessing, biobanking, bioimaging
- Phenomics
- Industry engagement, research commercialization, new biomedical technologies, intellectual property
- Dissemination of translational research

For more information:

[www.med.monash.edu/cecs/education/translational/index.html](http://www.med.monash.edu/cecs/education/translational/index.html)

## Postgraduate Student Committee

The Committee aims to ensure that each student is able to manage their workload, expectations, career development and any conflict issues that may arise. The Committee coordinates Graduate Research confirmations, progress reviews, final reviews seminars and PhD scholarship applications. It also runs instructional sessions on time management, thesis writing and scholarship applications. Students are monitored annually and have the opportunity to present at the annual SCS/Hudson Institute Student Symposium.





## Student Support Services

### Student Vacation Placement Program

The Student Vacation Placement Program is a scheme designed to give undergraduate and Honour students experience in an area of research and an insight into future career opportunities. This is supplemented by a scholarship payment for the placement period. Placements are tenable for 6-8 weeks, the exact length is to be negotiated between the student and their nominated supervisor. Applicants are required to nominate one of the three available intake start dates between November and January. The placements are not intended to support the employment of students for routine work.

### Eligibility

Only one application per student is permitted. Project preferences should be indicated on the online application form. If a student accepts an offer of another student vacation scholarship, this will preclude that applicant from a Vacation Placement Program.

### Application Process

For further details about this program please see the Hudson Institute website:

<http://hudson.org.au/students/student-vacation-placement-program-2016-2017/>



# RESEARCH THEMES



# Bone and Muscle Health

The Bone and Muscle Health Group conducts clinical trials investigating effects of new and current pharmaceuticals, calcium, vitamin D, and exercise on bone structure, body composition, physical function, falls and fractures. We conduct observational studies into determinants and consequences of osteoporosis and sarcopenia in older adults. We also investigate the ethnic differences in musculoskeletal health to gain a better understanding of the prevalence of osteoporosis and sarcopenia.

We offer diagnostic tools to support a comprehensive platform for bone health and body composition assessment including DXA (Dual-energy X-ray Absorptiometry), used primarily to evaluate bone mineral density and total body composition, and high-resolution peripheral quantitative computed tomography, which assesses peripheral bone mineral density, geometry and microarchitecture.

## Publications arising from student projects:

- › Rodriguez A, Scott D, Khan B, Khan N, Hodge A, English DR, Giles GG, Ebeling PR. Associations between hip bone mineral density, aortic calcification and cardiac workload in community-dwelling older Australians. *Osteoporosis International* (Accepted for publication 28/03/2017).
- › Rodriguez A, Scott D, Ebeling PR. Effect of weight loss induced by energy restriction on measures of arterial compliance: A systematic review and meta-analysis. *Atherosclerosis* (2016) 252:201-2.
- › Scott D, Chandrasekara SD, Laslett LL, Cicuttini F, Ebeling PR, Jones G. Associations of sarcopenic obesity and dynapenic obesity with bone mineral density and incident fractures over five to 10 years in community-dwelling older adults. *Calcified Tissue International* (2016) 99(1):30-42.

## Available projects:



### Dr David Scott

[david.scott@monash.edu](mailto:david.scott@monash.edu)

- › Wearable sensors for improving bone health through exercise in older adults
- › Vitamin D supplementation for enhancing exercise responsiveness in obese older adults
- › ExerciSe for PREvention of falls in Sarcopenic Obesity (ESPRESSO)



### Dr Ayse Zengin

[ayse.zengin@monash.edu](mailto:ayse.zengin@monash.edu)

- › Musculoskeletal health of remote ageing Aboriginal men and women
- › Differences in bone geometry between Gambian (West African) and Australian ageing men and women
- › The effects of muscle force and power on bone geometry in Gambian and British ageing men



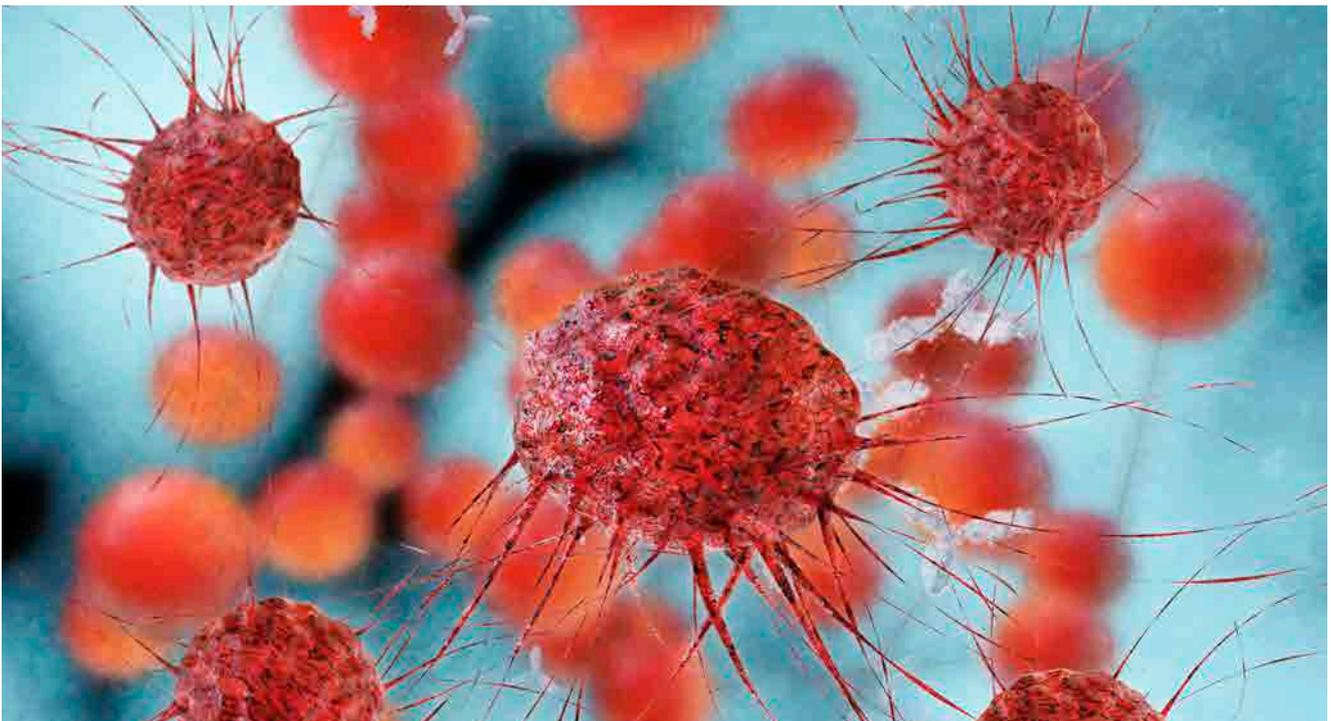
# Cancer and Haematology

Cancer researchers tackle the most pressing challenges in the diagnosis and treatment of adult and childhood cancers. They undertake basic and translational research into the molecular mechanisms underlying the development, growth and metastasis of tumours, as well as the relationship between the innate immune system and cancer. The goal is to explain the fundamental mechanisms of tumour biology and to use research discoveries for the development of novel cancer therapies and biomarkers of cancer.

The Oncology and Haematology units at Monash Health have one of Australia's largest and most active clinical trial centres, performing Phase I-IV trials in multiple disease types. Biospecimens from these trials are a rich source of specimens that can be studied to understand the causes, progression and response to treatment of these tumours.

## Recent publications resulting from student projects

- Muscat A, Popovski D, Jayasekara WS, Rossello FJ, Ferguson M, Marini KD, Alamgeer M, Algar EM, Downie P, Watkins DN, Cain JE, Ashley DM (2017) Low-dose histone deacetylase inhibitor treatment leads to tumor growth arrest and multi-lineage differentiation of malignant rhabdoid tumors. *Clin Cancer Res* 22:3560-3570.
- Samardzija C, Greening DW, Escalona R, Chen M, Bilandzic M, Luwor R, Kannourakis G, Findlay JK, Ahmed N (2017) Knockdown of stem cell regulator Oct4A in ovarian cancer reveals cellular reprogramming associated with key regulators of cytoskeleton-extracellular matrix remodelling. *Sci Rep* 7:46312.
- CDK9 inhibition by dinaciclib potently suppresses Mcl-1 to induce durable apoptotic responses in aggressive MYC-driven B-cell lymphoma *in vivo*. Gregory GP, Hogg SJ, Kats LM, Vidacs E, Baker AJ, Gilan O, Lefebure M, Martin BP, Dawson MA, Johnstone RW, Shortt J. *Leukemia*. 2015 Jun;29(6):1437-41. doi: 10.1038/leu.2015.10. Epub 2014 Jan 12. No abstract available.



## Available projects:



### Associate Professor Arun Azad

[arun.azad@monash.edu](mailto:arun.azad@monash.edu)

- › Profiling circulating DNA and RNA to identify mechanisms of therapeutic resistance and response in metastatic castration-resistant prostate cancer
  - › PCAT1 enhancer RNA as a cancer driver and predictive biomarker of BET inhibitor therapy
- 



### Associate Professor Jake Shortt

[jake.shortt@monash.edu](mailto:jake.shortt@monash.edu)

- › Identifying new drug targets in multiple myeloma
  - › Overcoming resistance to bromodomain inhibition in aggressive lymphoma
  - › Rational targeting of DNA-methylation machinery in T-cell lymphoma
- 



### Professor Eva Segelov

[eva.segelov@monash.edu](mailto:eva.segelov@monash.edu)

- › Translational research from various clinical trials including ASCOLT (adjuvant aspirin)
  - › Investigator initiated clinical trials using novel therapies
  - › GI cancers including Neuroendocrine tumours
  - › Cancer quality measures including Patient Reported Outcome Measures (PROMS) and Patient Reported Experience Measures (PREMS)
- 



### Dr George Grigoriadis

[george.grigoriadis@monash.edu](mailto:george.grigoriadis@monash.edu)

Secondary theme: Haematology

- › Role of bone marrow inflammation in the progression of myelodysplastic syndrome
  - › Role of NF- $\kappa$ B in haematological malignancies
- 





## Dr Maree Bilandzic

[maree.bilandzic@hudson.org.au](mailto:maree.bilandzic@hudson.org.au)

**Secondary theme:** Women's and Children's Health

- › Mechanisms of ovarian cancer metastasis – characterising molecules expressed during early cancer invasion
- 



## Dr Simon Chu

[simon.chu@hudson.org.au](mailto:simon.chu@hudson.org.au)

**Secondary theme:** Endocrinology and Metabolism

- › Role of XIAP in endocrine cancer (ovarian and thyroid)
  - › Molecular pathogenesis of granulosa cell tumours of the ovary
  - › Role of XIAP in normal ovarian folliculogenesis
- 



## Dr Jason Cain

[jason.cain@hudson.org.au](mailto:jason.cain@hudson.org.au)

**Secondary theme:** Infant and Child Health

- › Histone deacetylase inhibitors as a differentiation therapy for solid tumours
  - › Defining the roles of epigenetic dysregulation in diffuse intrinsic pontine glioma (DIPG)
- 



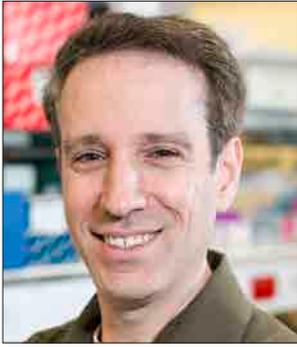
## Associate Professor Colin Clyne

[colin.clyne@hudson.org.au](mailto:colin.clyne@hudson.org.au)

**Secondary theme:** Endocrinology and Metabolism

- › Nuclear receptor pharmacology
  - › Understanding resistance to breast cancer therapies
- 





## Associate Professor Ron Firestein

[ron.firestein@hudson.org.au](mailto:ron.firestein@hudson.org.au)

**Secondary theme:** Genetic Diseases

- › Development of new 3-dimensional models of cancer to model drug resistance and develop new cancer treatment
- › Functional genomic screens to identify new therapeutic targets for bowel cancer
- › How can we do a better job detecting cancer in patients? Devising new strategies and technologies using blood-based biomarkers
- › PCAT1 and CCAT1 enhancer RNAs as cancer drivers and predictive biomarkers of BET inhibitor therapy
- › Transcriptional regulators as cancer targets: new models and therapeutic approaches
- › Understanding cancer resistance to chemotherapy



## Dr Daniel Gough

[daniel.gough@hudson.org.au](mailto:daniel.gough@hudson.org.au)

- › Identifying new therapies for the treatment of paediatric brain cancer



## Dr Anthony Sadler

[anthony.sadler@hudson.org.au](mailto:anthony.sadler@hudson.org.au)

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases

- › Development of broad spectrum antivirals
- › Kinase capture

**Secondary theme:** Endocrinology and Metabolism

- › Role of PKR in obesity



## Professor Brendan Jenkins

[brendan.jenkins@hudson.org.au](mailto:brendan.jenkins@hudson.org.au)

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases, Sleep and Respiratory

- › Identification of interleukin-6 signalling as a therapeutic target in emphysema/COPD and lung cancer
- › Identification of novel immune regulators in stomach inflammation and cancer
- › Role of Toll-like receptors in pancreatic and stomach cancers





## Dr Andrew Stephens

**andrew.n.stephens@hudson.org.au**

- › Exploring chemokine inactivation in the ovarian tumour microenvironment
  - › Photodynamic therapy as a novel approach to cancer treatment
  - › Role of DPP4 in spheroid-mediated ovarian cancer metastasis
  - › SP17 immunotherapy for ovarian cancer
  - › Targeting DPP4 as a novel therapeutic strategy for ovarian cancer management
  - › Therapeutic antibodies to block ovarian cancer spread
  - › Validation of a novel theranostic assay for ovarian cancer
- 

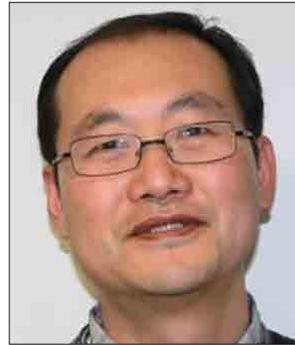


## Professor Bryan Williams

**bryan.williams@hudson.org.au**

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases

- › Role of the inflammatory microenvironment in development of colon cancer
- 



## Dr Dakang Xu

**dakang.xu@hudson.org.au**

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases

- › Epigenetic control of inflammatory disease
  - › Regulation of inflammation in cancer
- 

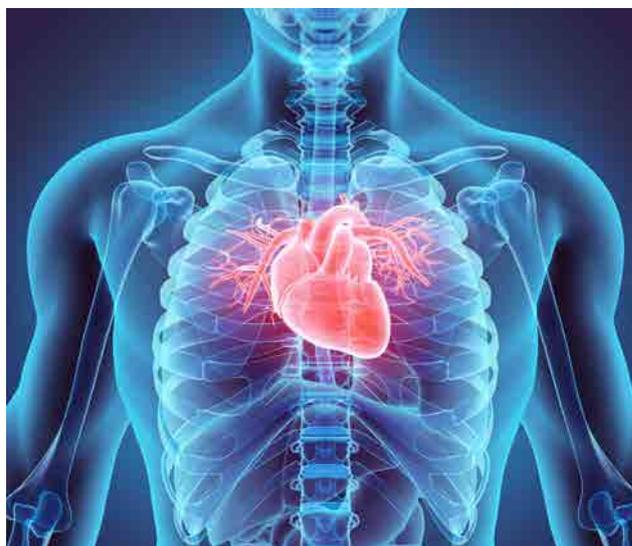




# Cardiovascular

Monash Cardiovascular Research Centre (MCRC) is the research entity of MonashHeart. MCRC coordinates a very active program of clinically oriented research with an international reputation for first-in-human studies and novel percutaneous techniques for structural heart disease. Areas of particular strength include Transcatheter aortic valve implantation, intra-coronary imaging, testing of novel coronary stent designs, arterial function and coronary CT imaging. There is a very active training program for registrars and fellows, as well as generally 2-3 PhD candidates and 1-2 BMedSc(Hons) students. If you are interested in BMedSc(Hons) or other postgraduate research opportunities in the cardiology field, please contact Professor James Cameron, Director of MCRC ([james.cameron@monash.edu](mailto:james.cameron@monash.edu)).

At Hudson Institute, we undertake basic research to improve understanding of the role of steroid hormones and their receptors in heart disease and other metabolic conditions. We are seeking to determine the mechanisms by which antagonists and coregulators of the mineralocorticoid receptor (MR) reduce symptoms and improve survival in patients with heart failure. In addition to its effects in cardiomyocytes, we are researching the role of the MR in peripheral blood monocytes and tissue macrophages in the pathogenesis of heart failure. We also have projects investigating novel MR signalling pathways in cardiomyocytes and how they can be dysregulated in heart failure. The aim of our work is to determine targets for clinical therapies to reduce heart disease and inflammation with minimal side effects. Please contact Dr Morag Young ([morag.young@hudson.org.au](mailto:morag.young@hudson.org.au)) to discuss projects for Honours, Masters and PhD degrees.



## Recent publications resulting from student projects

- ▶ Midterm Safety and Efficacy of ABSORB Bioresorbable Vascular Scaffold Versus Everolimus-Eluting Metallic Stent: An Updated Meta-Analysis. Ha FJ, Nerlekar N, Cameron JD, Bennett MR, Meredith IT, West NEJ, Brown AJ. *JACC: Cardiovascular Interventions*. 2017 Feb 13;10(3):308-310. Doi:10.1016/j.jcin.2016.11.054.
- ▶ Ethnic differences in coronary plaque and epicardial fat volume quantified using computed tomography. Adams DB, Narayan O, Munnur RK, Cameron JD, Wong DTL, Talman AH, Harper RW, Seneviratne SK, Meredith IT, Ko BS. *International Journal of Cardiovascular Imaging*. 2017 Feb;33(2):241-249. Doi:10.1007/s10554-016-0982-1.
- ▶ Shen JZ, Morgan J, Tesch GH, Rickard AJ, Chrissobolis S, Drummond GR, Fuller PJ, Young MJ (2016) Cardiac Tissue Injury and Remodeling Is Dependent Upon MR Regulation of Activation Pathways in Cardiac Tissue Macrophages. *Endocrinology* 157:3213-23.
- ▶ Fletcher EK, Morgan J, Kennaway D, Bienvenu LA, Rickard AJ, Delbridge LMD, Fuller PJ, Clyne CD, Young MJ (2017) DOC/salt mediated cardiac inflammation and fibrosis requires a functional circadian clock in male mice. *Endocrinology* doi:10.1210/en.2016-1911.



## Available projects:



### Dr Morag Young

[morag.young@hudson.org.au](mailto:morag.young@hudson.org.au)

**Secondary theme:** Endocrinology and Metabolism

- › A search for new biomarkers and therapeutic targets in heart failure
  - › Identification of mineralocorticoid receptor signalling pathways in macrophages; a role in heart disease
  - › Understanding the signalling mechanisms for MR regulation of cardiomyocyte function in heart disease
  - › Nuclear receptor co-regulators in heart disease and inflammation
- 



### Dr Anthony White

[anthony.white@monash.edu](mailto:anthony.white@monash.edu)

- › Genetic analysis of DNA from a mother and daughter both with spontaneous coronary artery dissection
  - › Use of a novel biomembrane to measure the strength and rate of contraction of cultured cardiac muscle cells
- 



### Professor Julian Smith

[julian.smith@monash.edu](mailto:julian.smith@monash.edu)

- › ANZSCTS Victorian Cardiac Surgery Database project
  - › Pain management after thoracic surgery – evaluation of different analgesic delivery systems and analgesic agents
  - › Projects in cardiovascular perfusion – inflammatory response to cardiopulmonary bypass
  - › Projects in vascular biology – the immunobiology of atherosclerosis including the role of activins
  - › Trials of sutureless bioprostheses for valve replacement in the aortic position
- 



# Emergency Medicine

Adult emergency medicine research interests include:

- › Clinical decision rule application and validation
- › Treatment and assessment of nausea/vomiting and confirmation of antiemetic effectiveness
- › Alcohol harm and interventions to reduce this
- › Treatment of paracetamol poisoning
- › Assessment of toxicity of emerging and novel pharmaceuticals in deliberate self-poisoning
- › Toxicovigilance and poisoning trends and outcomes of poisoning in south-eastern Melbourne

Our paediatric emergency medicine group has wide interests in all aspects of the paediatric emergency care, including critical care and resuscitation, common illnesses and clinical procedures, diagnostic testing, pain management and clinical decision rules.

## Recent publications arising from student projects

### PhD

- › Wong A, Graudins A (2016) Simplification of the standard three-bag intravenous acetylcysteine regimen for paracetamol poisoning results in a lower incidence of adverse drug reactions. *Clin Toxicol (Phila)* 54(2):115–9.
- › Wong A, Sivilotti MLA, Graudins A (2017) Accuracy of the paracetamol-aminotransferase multiplication product to predict hepatotoxicity in modified-release paracetamol overdose. *Clin Toxicol (Phila)* 122:1–6.
- › Wong A, Landersdorfer C, Graudins A (2017) Pharmacokinetic modelling of modified acetylcysteine infusion regimens used in the treatment of paracetamol poisoning. *Eur J Clin Pharmacol. Springer Berlin Heidelberg* 52(10):1032–8.

### Honours

- › Taylor LM, Graudins A (2017) Extended-release (XR) quetiapine overdose is associated with delayed development of peak toxicity and prolonged recovery when compared to immediate-release (IR) quetiapine overdose: a retrospective cohort study. *Clinical Toxicology* 55(5):460–46.

## Available projects:



### Assoc Prof Diana Egerton-Warburton

[diana.egerton-warburton@monash.edu](mailto:diana.egerton-warburton@monash.edu)

- › A multicenter randomised placebo-controlled trial of antiemetic agents in adult emergency department patients. A pilot study
- › Are we doing more harm than good? A prospective study of patients with suspected cervical spine injury



### Dr Gabriel Blecher

[gabriel.blecher@monash.edu](mailto:gabriel.blecher@monash.edu)

- › A randomised trial of nasogastric tube placement in small bowel obstruction
- › Implementation of a revised protocol for ED patients with suspected cervical spine injury: a prospective cohort study
- › Patterns of investigation in abdo pain presentations
- › Does rate control of atrial fibrillation with rapid ventricular response in acutely unwell patients lead to poorer outcomes
- › Patterns of investigation in patients presenting to the ED with abdominal pain



# Endocrinology and Metabolism

The complex endocrine system impacts all aspects of health and disease. Our goal is to improve understanding of the role of hormones in human biology and disease to tackle key health challenges facing Australian and global communities, including reproductive health, metabolic bone disease, hypertension and cardiovascular disease, endocrine cancer and obesity. Clinical translation of our findings to improve diagnosis, therapeutic intervention and prevention of disease remains a key focus.

## Recent publications resulting from student projects

- Aleksova J, Wong P, Mulley WR, Choy KW, McLachlan R, Ebeling PR, Kerr PG, Milat F (2017) Serum phosphorus levels and fracture following renal transplantation. *Clin Endocrinol (Oxf)* 87:141-148.
- Alexiadis M, Chu S, Leung D, Gould JA, Jobling T, Fuller PJ (2016) Transcriptomic analysis of stage 1 versus advanced adult granulosa cell tumors. *Oncotarget* 7:14207-19.
- Leung DT, Fuller PJ, Chu S (2016) Impact of FOXL2 mutations on signaling in ovarian granulosa cell tumors. *Int J Biochem Cell Biol* 72:51-4 Review.
- Trinh A, Chan I, Alexiadis M, Pell M, Kumar B, Fuller PJ (2016) Adrenal Cushing's syndrome in pregnancy: Clinical and molecular characterisation of a case. *Obstet Med* 9:43-5.

## Available projects:



### Professor Peter Fuller

[peter.fuller@hudson.org.au](mailto:peter.fuller@hudson.org.au)

**Secondary theme:** Cancer

- Structure-function relationships of the mineralocorticoid receptor
- Mineralocorticoid receptor regulation of gene expression in ovarian tissue
- Mineralocorticoid receptor regulation of gene expression in breast cancer



### Associate Professor Frances Milat

[fran.milat@hudson.org.au](mailto:fran.milat@hudson.org.au)

**Secondary theme:** Bone and Muscle Health

- Osteoporosis and metabolic bone disorders



### Dr Jun Yang

[jun.yang@hudson.org.au](mailto:jun.yang@hudson.org.au)

**Secondary theme:** Cardiovascular

- Evaluating the prevalence of primary aldosteronism in our community





# Fetal, Infant and Child Health

The Fetal, Infant and Child Health theme encompasses five key research areas:

## **Respiratory and Cardiovascular**

Research projects include: improving the transition at birth in asphyxiated infants, fetal lung growth and development, and imaging the entry of air into the lungs at birth.

## **Brain injury and Neurodevelopmental**

Research projects include: new therapies for neonatal seizures, neuro-steroids as brain growth and protection factors, causes of perinatal brain injury and how to prevent them, and prenatal origins of cerebral palsy and mental disorders (autism, schizophrenia).

## **Infant and Child Health**

Research projects include: sudden infant death syndrome, infant cardio-respiratory development, and childhood sleep disorders.

## **Cell Therapy and Regenerative Medicine**

Current research projects include: placental stem cells, lung and brain repair, neural and blood vessel regeneration, cerebral palsy, biomatrices and stem cells, and stem cell expansion.

## **Infection, Inflammation and Immunity**

Research projects include: early life inflammation and cardiovascular disease, maternal immunisation against whooping cough – effect on fetal and postnatal brain development, effect of maternal asthma on fetal/neonatal lung development and function, vaccine safety for use in general practice, and novel anti-inflammatory approaches for currently untreatable diseases of the preterm baby.



## Recent publications resulting from student projects

- ▶ Chan KY, LaRosa DA, Tolcos M, Li A, Zahra VA, Polglase GR, Barton SK (2017) Optimizing the Dose of Erythropoietin Required to Prevent Acute Ventilation-Induced Cerebral White Matter Injury in Preterm Lambs. *Dev Neurosci*. DOI: 10.1159/000459620.
- ▶ Blank DA, Kamlin COF, Rogerson SR, Fox LM, Lorenz L, Kane SC, Polglase GR, Hooper SB, Davis PG (2017) Lung ultrasound immediately after birth to describe normal neonatal transition: an observational study. *Arch Dis Child Fetal Neonatal Ed*. DOI: 10.1136/archdischild-2017-312818.
- ▶ Cohen E, Wong FY, Wallace EM, Mockler JC, Odoi A, Hollis S, Horne RSC, Yiallourou SR (2017) Fetal growth restriction alters autonomic cardiovascular control in the immediate postnatal period but not during infancy. *Pediatric Research*. DOI: 10.1038/pr.2017.105.
- ▶ Vandeleur M, Walter LM, Armstrong D, Robinson P, Nixon GM, Horne RSC (2017) What keeps children with cystic fibrosis awake at night? *J Cystic Fibrosis*. DOI: 10.1016/j.jcf.2017.04.012.



## Available projects:



### Dr Beth Allison

[beth.allison@hudson.org.au](mailto:beth.allison@hudson.org.au)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Interrogating the NO pathway in the growth-restricted fetus
  - › Sildenafil treatment in growth-restricted fetuses; What are the effects on brain structure?
  - › The effects of cord blood stem cells on the lungs following fetal inflammation
- 



### Professor Jim Buttery

[jim.buttery@monash.edu](mailto:jim.buttery@monash.edu)

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases

- › SYNTRACK: Linking ED data to detect outbreaks and vaccine safety signals
  - › Vaccine safety in general practice: can representation rates be used as an early warning surrogate for adverse event rates?
  - › SNOTWATCH: Real time seasonal viral information for health providers
- 



### Dr Rob Bischof

[rob.bischof@hudson.org.au](mailto:rob.bischof@hudson.org.au)

- › Effect of maternal asthma on fetal/neonatal lung development and function
  - › Therapeutic application of human amnion epithelial cells in allergic asthma
- 



### Associate Professor Margot Davey

[margot.davey@monashhealth.org](mailto:margot.davey@monashhealth.org)

**Secondary theme:** Sleep and respiratory

- › Mobile phone video clips to aid diagnosis of obstructive sleep apnoea in children
- 





## Dr Robert Galinsky

[robert.galinsky@monash.edu](mailto:robert.galinsky@monash.edu)

- › Targeting IL-1 $\beta$  for prevention of inflammation-induced brain injury in premature infants
- 



## Professor Stuart Hooper

[stuart.hooper@monash.edu](mailto:stuart.hooper@monash.edu)

- › Transition to life after birth
  - › Imaging the entry of air into the lungs at birth
- 



## Professor Rosemary Horne

[rosemary.horne@monash.edu](mailto:rosemary.horne@monash.edu)

**Secondary theme:** Sleep and Respiratory

- › Bad sleep is bad for your cardiovascular health
  - › The effects of preterm birth on the development and consequences of obstructive sleep apnoea in childhood
- 



## Professor Graham Jenkin

[graham.jenkin@monash.edu](mailto:graham.jenkin@monash.edu)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Isolation and banking of cord blood stem cells and placental tissues for future clinical therapies
  - › Isolation and expansion of umbilical cord blood stem cells for regenerative medicine
  - › Stem cells and tissue scaffolds
  - › Cell-based therapy for the 'ex-vivo' reconditioning of donor lungs prior to lung transplantation
- 



## Dr Mirja Krause

[mirja.krause@hudson.org.au](mailto:mirja.krause@hudson.org.au)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Angiogenesis potential of exosomes
- 





## Dr Rebecca Lim

[rebecca.lim@hudson.org.au](mailto:rebecca.lim@hudson.org.au)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Activating the stem cell niche
  - › Stem cell-based nanomedicine
  - › Stem cell therapy for necrotising enterocolitis
- 



## Dr Courtney McDonald

[courtney.mcdonald@hudson.org.au](mailto:courtney.mcdonald@hudson.org.au)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Tracking stem cells '*in vivo*' in regenerative medicine
  - › How do umbilical cord blood stem cells reduce neuroinflammation and perinatal brain injury?
  - › Stem cells as a novel therapy for perinatal stroke
- 



## Dr Angela McCullagh

[angela.mccullagh@monashhealth.org](mailto:angela.mccullagh@monashhealth.org)

**Secondary theme:** Infectious and inflammatory Diseases

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases

- › TESTOV pneumo – evaluation of the effectiveness of the 13-valent pneumococcal conjugate vaccine against pneumococcal pneumonia in children
- 



## Dr Atul Malhotra

[atul.malhotra@monash.edu](mailto:atul.malhotra@monash.edu)

**Secondary theme:** Neonatology

- › Digital stethoscope auscultation of breath sounds in neonates
  - › Investigating the growth restricted infant brain
- 





## Associate Professor Suzie Miller

[suzie.miller@monash.edu](mailto:suzie.miller@monash.edu)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Do cord blood stem cells protect the neuro-vascular unit and promote neuro-regeneration in preterm brain injury?
  - › Do cord blood stem cells reduce cerebrovascular brain injury?
  - › Cord blood-derived stem cells as therapy for brain and lung inflammation in preterm newborns
- 

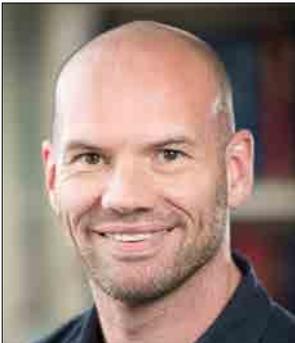


## Associate Professor Gillian Nixon

[gillian.nixon@monashhealth.org](mailto:gillian.nixon@monashhealth.org)

**Secondary theme:** Sleep and Respiratory

- › Secondary theme: Infant and Child Health
  - › A clinical tool for the detection of children at high risk of obstructive sleep apnoea
  - › Obstructive sleep apnoea in children with down syndrome
  - › Tonsillectomy for children in Victoria
- 



## Associate Professor Tim Moss

[tim.moss@monash.edu](mailto:tim.moss@monash.edu)

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases

- › Amniotic fluid infection/inflammation: effects on brain development and postnatal behaviour
  - › Early life inflammation and cardiovascular disease
  - › Maternal immunisation against whooping cough: effect on brain development and postnatal behaviour
  - › Mediators of fetal lung surfactant production
  - › Human amnion epithelial cells to prevent adverse outcomes of perinatal inflammation
- 



## Associate Professor Claudia Nold

[Claudia.nold@hudson.org.au](mailto:Claudia.nold@hudson.org.au)

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases

- › Novel anti-inflammatory approaches for currently untreatable diseases of the preterm baby: IL-1Ra and IL-37 in animal models of bronchopulmonary dysplasia and necrotising enterocolitis
  - › Molecular characterisation of regulation and mechanism of action of the anti-inflammatory cytokine interleukin 37
- 





## Associate Professor Marcel Nold

[marcel.nold@monash.edu](mailto:marcel.nold@monash.edu)

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases

- › Exploring a new frontier: the immune and coagulation systems of the premature infant and their relevance for the risk of the major diseases of prematurity
  - › The first '*in vivo*' exploration of interleukin 38 in systemic lupus erythematosus
  - › Molecular tracking of the cytokine IL-37 in anti-inflammatory signalling
- 



## Associate Professor Graeme Polglase

[graeme.polglase@hudson.org.au](mailto:graeme.polglase@hudson.org.au)

- › Improving the transition at birth in asphyxiated infants
  - › Protecting the brain from injury at preterm delivery
- 



## Dr Jean Tan

[jean.tan@hudson.org.au](mailto:jean.tan@hudson.org.au)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Treatment of critical limb ischaemia with stem cell-based nanomedicine
- 



## Dr Kenneth Tan

[kenneth.tan@monash.edu](mailto:kenneth.tan@monash.edu)

**Secondary theme:** Neonatology

- › Preterm infants in the NICU – mechanisms of oxygen desaturation
  - › The early recognition of the deteriorating neonate – investigating the utility of statistical or machine learning models
- 



## Professor Helen Truby

[helen.truby@monash.edu](mailto:helen.truby@monash.edu)

**Secondary theme:** Nutrition and Dietetics

- › Investigating the impact of modified fasting dieting on energy expenditure, inflammation and the epigenome in adolescent obesity
- 





## Dr Megan Wallace

[megan.wallace@monash.edu](mailto:megan.wallace@monash.edu)

- › Characterising the role of Trop2 in fetal development
  - › Fetal lung growth and development
  - › Preventing lung disease in very premature babies
  - › The role of Trop2 in trophoblast invasion, placental development and preeclampsia
- 



## Associate Professor Flora Wong

[flora.wong@monash.edu](mailto:flora.wong@monash.edu)

**Secondary theme:** Neonatology

- › Are sick preterm infants sleeping in prone position at risk of low brain oxygen levels?
  - › Effect of clinical treatments on brain activity and brain blood flow in the preterm brain
  - › Impact of dopamine in the immature brain
- 



## Dr Lisa Walter

[lisa.walter@hudson.org.au](mailto:lisa.walter@hudson.org.au)

**Secondary theme:** Sleep and Respiratory

- › Are sleep spindles associated with neurocognitive deficits in children with sleep disordered breathing?
- 



## Dr Tamara Yawno

[tamara.yawno@hudson.org.au](mailto:tamara.yawno@hudson.org.au)

- › Ganaxolone: a new treatment for neonatal seizures
  - › The effects of betamethasone in single and repeat doses on the developing brain
- 



# Genetic Diseases

Many of the diseases that affect us originate from changes present at or just after fertilisation and are known as inherited disorders. It was originally thought that these diseases were primarily caused by mutations to the genes inherited from our parents. However, it is becoming increasingly evident that many diseases also arise from the number of copies of a gene present in our cells and the changes to epigenetic regulators, which are factors that control how and if the gene is expressed.

By looking into the very earliest stages of development, when genetic and epigenetic disorders first manifest, we can understand the underlying mechanisms of disease and provide a platform for the development of tomorrow's therapies and clinical practices.

Our aim is to provide explanations for how a large number of diseases are passed from one generation to the next.

Researchers investigate how very early epigenetic markers in sperm and eggs are controlled during development, and how they will affect our children and their children, if they are poorly regulated.

Researchers are developing technologies to increase the number of crucial disease-protecting mitochondrial DNA in the eggs of women deficient in mitochondrial DNA. Eggs with low mitochondrial DNA copy number are predisposed to develop diseases such as obesity and diabetes. Another research focus is how faults in mitochondrial proteins cause energy production defects that result in mitochondrial disease.

Another area of research looks at genetic perturbations in sex-specific pathways in the gonads and the brain that lead to clinical disorders, including intersex conditions and gender dysphoria, and sex bias in neurological conditions such as Parkinson's disease, ADHD and schizophrenia. A hallmark of this work is the translation of basic science research into clinically useful tools that improve patient health.

## Recent publications that have arisen from student projects:

- ▶ Rahmoun M, Lavery R, Laurent-Chaballier S, Bellora N, Philip GK, Rossitto M, Symon A, Pailhoux E, Cammas F, Chung J, Bagheri-Fam S, Murphy M, Bardwell V, Zarkower D, Boizet-Bonhoure B, Clair P, Harley VR, Poulat F (2017) In mammalian foetal testes, SOX9 regulates expression of its target genes by binding to genomic regions with conserved signatures. *Nucleic Acids Res* doi:10.1093/nar/gkx328.
- ▶ Prokopuk L, Stringer JM, Hogg K, Elgass KD, Western PS (2017) PRC2 is required for extensive reorganization of H3K27me3 during epigenetic reprogramming in mouse fetal germ cells. *Epigenetics Chromatin* doi:10.1186/s13072-017-0113-9.
- ▶ Cagnone GL, Tsai TS, Makanji Y, Matthews P, Gould J, Bonkowski MS, Elgass KD, Wong AS, Wu LE, McKenzie M, Sinclair DA, St. John JC (2016) Restoration of normal embryogenesis by mitochondrial supplementation in pig oocytes exhibiting mitochondrial DNA deficiency. *Sci Rep* doi: 10.1038/srep23229.
- ▶ Lim SC, Hroudová J, Van Bergen NJ, Lopez Sanchez MI, Trounce IA, McKenzie M (2016) Loss of the Mitochondrial DNA-encoded protein ND1 results in the disruption of Complex I biogenesis during the early stages of its assembly. *FASEB J* (6):2236-48.



## Available projects:



### Professor Vincent Harley

[vincent.harley@hudson.org.au](mailto:vincent.harley@hudson.org.au)

**Secondary theme:** Neuroscience and Psychiatry

- › *SRY*: A risk factor for Parkinson's disease in males?
  - › How are male and female brains different?
  - › The biological basis of gender identity
  - › Identifying the genes responsible for disorders of sex development (DSD)
  - › FGF signalling and sex reversal
  - › Characterisation of novel gonadal targets of *Sox9*
  - › ATR-X syndrome and gonadal development
- 



### Dr Matthew McKenzie

[matthew.mckenzie@hudson.org.au](mailto:matthew.mckenzie@hudson.org.au)

**Secondary theme:** Cancer

- › MicroRNA regulation of mitochondrial function
- Secondary theme:** Endocrinology and Metabolism
- › The assembly of mitochondrial protein complexes and defects in human disease
- 



### Professor Justin St. John

[justin.stjohn@hudson.org.au](mailto:justin.stjohn@hudson.org.au)

**Secondary theme:** Reproductive Health and Biology

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Defining the role played by mitochondrial DNA in fertilisation outcome
  - › Understanding the regulation of mitochondrial DNA copy number in undifferentiated and differentiating embryonic stem cells
- 



### Dr Patrick Western

[patrick.western@hudson.org.au](mailto:patrick.western@hudson.org.au)

**Secondary theme:** Women's and Children's Health Research

- › Pharmaceutical impacts on germline epigenetics and offspring health and development
- 



# Infectious and Inflammatory Diseases and Immunology

The immune response will be important to nearly every disease you research, study or treat in your career as a basic scientist or clinician-scientist. Understanding immunology and the clinical and experimental techniques used to study infectious and inflammatory diseases and cancer will be invaluable to your development as a scientist or clinician. Choose a research project with one of the supervisors below to conduct high quality discovery and clinical research using the latest technologies, to contribute to translating research into preventions, diagnostics and treatments for patients, and to have the opportunity to publish in leading journals.

Diseases we study include:

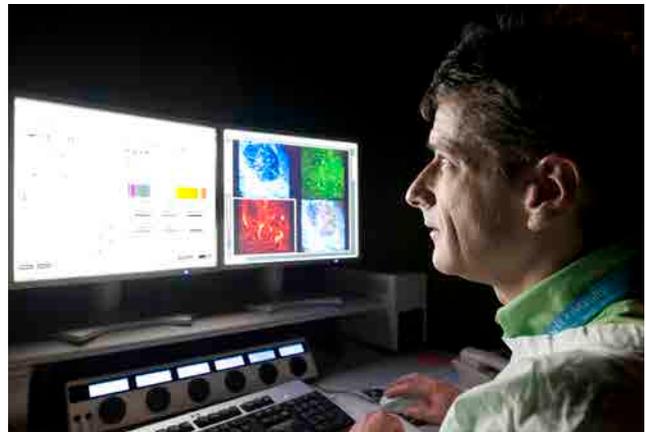
Autoimmune diseases: vasculitis, glomerulonephritis, systemic lupus erythematosus and rheumatoid arthritis. Causes of liver, kidney and lung scarring and loss of function are a focus.

Infectious disease: HIV, Zika virus, Influenza, Chlamydia, Helicobacter pylori, Herpes simplex virus, Human metapneumovirus, Respiratory syncytial virus.

Cancers with an inflammatory component: pancreatic, lung, breast, ovarian, endometrial, gastric.

Inflammation-based disorders: sepsis, COPD, inflammatory bowel disease.

Our training includes experimental immunology, innate immunity, biochemistry, protein interactions and signal transduction,



molecular and cell biology, bacteriology, functional genomics and bioinformatics, preclinical models of disease, clinical research, clinical practice in inflammatory diseases, and communication, organisational and other professional skills

A project in immunology, infectious or inflammatory diseases or cancers with an inflammatory component offers:

- Internationally recognised researchers and clinician-scientists as your supervisors.
- Strong links to Monash Health clinical departments (Departments of Nephrology, Rheumatology, Gastroenterology and Hepatology, Monash Infectious Diseases, Clinical Immunology and Monash Lung and Sleep).
- Access to world class infrastructure and technologies (functional genomics, flow cytometry, imaging and clinical trials facility).
- Preclinical discovery projects to clinical translation.
- A choice of over 60 research projects.



## Recent publications resulting from student projects

- Ooi JD, Petersen J, Tan YH, Huynh M, Willett ZJ, Ramarathinam SH, Eggenhuizen PJ, Loh KL, Watson KA, Gan PY, Alikhan MA, Dudek NL, Handel A, Hudson BG, Fugger L, Power DA, Holt SG, Coates PT, Gregersen JW, Purcell AW, Holdsworth SR, La Gruta NL, Reid HH, Rossjohn J, Kitching AR (2017) Dominant protection from HLA-linked autoimmunity by antigen-specific regulatory T cells. *Nature* 545:243-247.
- Clinical associations of IL-10 and IL-37 in systemic lupus erythematosus. Godsell J, Rudloff I, Kandane-Rathnayake R, Hoi A, Nold MF, Morand EF, Harris J. *Sci Rep*. 2016 Oct 6;6:34604.
- Brooks GD, McLeod L, Alhassani S, Miller A, Russell PA, Ferlin W, Rose-John S, Ruwanpura S, Jenkins BJ (2016) IL6 Trans-signaling Promotes KRAS-Driven Lung Carcinogenesis. *Cancer Res*,76(4):866-76.
- Pinar A, Dowling JK, Bitto NJ, Robertson AA, Latz E, Stewart CR, Drummond GR, Cooper MA, McAuley JL, Tate MD, Mansell A (2017) PB1-F2 Peptide Derived from Avian Influenza A Virus H7N9 Induces Inflammation via Activation of the NLRP3 Inflammasome. *J Biol Chem*, 292(3):826-836.



## Available projects:



### Professor Phil Bardin

[belinda.thomas@monash.edu](mailto:belinda.thomas@monash.edu)

- Characterisation of innate immune responses to virus-induced exacerbation of asthma and COPD



### Dr Sam Forster

[sam.forster@hudson.org.au](mailto:sam.forster@hudson.org.au)

- Characterisation of microbiota composition in paediatric inflammatory bowel disease
- Discovery of antibiotic resistance gene dispersal networks in the human gastrointestinal microbiota
- Complex interactions between the gastrointestinal microbiota and the innate immune system





## Associate Professor Richard Ferrero

[richard.ferrero@hudson.org.au](mailto:richard.ferrero@hudson.org.au)

**Secondary theme:** Cancer

- › Defining the immunomodulatory properties of extracellular vesicles
  - › Regulation and biological functions of a novel NOD-like receptor protein
  - › The role of NOD1 sensing in cell survival responses favouring *Helicobacter pylori* survival
  - › Understanding how *Helicobacter pylori* regulates host immune responses
- 



## Dr Poh-Yi Gan

[Poh-yi.gan@monash.edu](mailto:Poh-yi.gan@monash.edu)

- › Effector T cell cytokines in several autoimmune vasculitis and kidney disease
- 



## Dr Michael Gantier

[michael.gantier@hudson.org.au](mailto:michael.gantier@hudson.org.au)

- › Auto-immune sensing of DNA damage
  - › Modulating microRNA levels in inflammation
- 



## Dr Edward Giles

[edward.giles@monashhealth.org](mailto:edward.giles@monashhealth.org)

**Secondary theme:** Women's and Children's Health Research

- › Mucosal Immunology in Paediatric Inflammatory Bowel Disease
- 



## Dr James Harris

[jim.harris@monash.edu](mailto:jim.harris@monash.edu)

- › Analysis of IL-38 expression in human immune cells
  - › Hsp90 and Inflammation
  - › Investigating cytokines in scleroderma
  - › Novel roles of MIF in Inflammation
  - › Role of autophagy in autoimmune diseases
  - › What happens to autophagosomes when cells die?
  - › Investigating novel secretory pathways in macrophages
- 





## Professor Elizabeth Hartland

[elizabeth.hartland@hudson.org.au](mailto:elizabeth.hartland@hudson.org.au)

- › Cell intrinsic responses to intracellular bacterial infection
  - › Pathogen suppression of host innate immunity
- 



## Professor Michael Hickey

[michael.hickey@monash.edu](mailto:michael.hickey@monash.edu)

- › Investigating leukocyte trafficking in the chronically-inflamed glomerulus
  - › Regulatory T cells – how do they restrict skin inflammation?
  - › Mechanisms of *Candida albicans* infection in the kidney
- 



## Professor Paul Hertzog

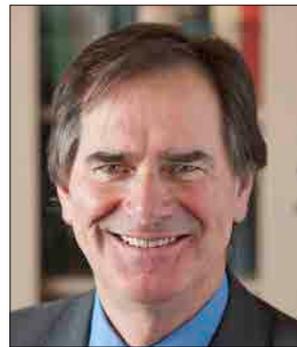
[paul.hertzog@hudson.org.au](mailto:paul.hertzog@hudson.org.au)

- › Systems biology of innate immune signalling
- › Interferons in immunity to infection

**Secondary theme:** Cancer

**Secondary theme:** Women's and Children's Health Research

- › New regulators of the immune response to reproductive tract cancers
- 



## Professor Stephen Holdsworth

[stephen.holdsworth@monash.edu](mailto:stephen.holdsworth@monash.edu)

- › Cytokine inhibition as a therapy for anti-MPO autoimmune vasculitis
  - › The role of mast cells in autoimmune anti-MPO glomerulonephritis
- 





## Dr Sarah Jones

[sarah.a.jones@monash.edu](mailto:sarah.a.jones@monash.edu)

**Secondary theme:** Haematology

- › Regulation of cytotoxic T cells in the contexts of immunity and autoimmunity
  - › The immunology of B cells in the contexts of immunity and autoimmunity
  - › The immunology of T cells in the contexts of immunity and autoimmunity
  - › B cell behaviour in Lupus
  - › How does myeloid cell autophagy influence antibody responses?
  - › Transcriptional profiling in lupus B cells
- 



## Dr Tali Lang

[tali.lang@monash.edu](mailto:tali.lang@monash.edu)

- › The role of macrophage migration inhibitory factor in fibrosis
- 



## Dr Niamh Mangan

[niamh.mangan@hudson.org.au](mailto:niamh.mangan@hudson.org.au)

**Secondary theme:** Women's and Children's Health Research

- › Novel regulators of mucosal immunity in the reproductive and gastrointestinal tracts
  - › The role of a novel cytokine in endometrial and cervical cancer
  - › Investigation of a novel cytokine in female reproductive tract infections
  - › Interferon-epsilon: a novel interferon in endometrial function
- 



## Professor Richard Kitching

[richard.kitching@monash.edu](mailto:richard.kitching@monash.edu)

- › Mechanisms of tolerance to autoantigens in renal disease[RK1]
  - › Genetic determinants in autoimmune vasculitis
- 





## Associate Professor Ashley Mansell

[ashley.mansell@hudson.org.au](mailto:ashley.mansell@hudson.org.au)

- › Regulation of Pattern Recognition Receptor signalling in mouse models of inflammatory disease
  - › The inflammasome and hyperinflammation in emerging infectious diseases
- 



## Associate Professor David Nikolic-Paterson

[david.nikolic-paterson@monash.edu](mailto:david.nikolic-paterson@monash.edu)

- › Macrophage to myofibroblast transition (MMT) in renal fibrosis
  - › Spleen tyrosine kinase as a novel signalling molecule in tissue fibrosis
- 



## Professor Eric Morand

[eric.morand@monash.edu](mailto:eric.morand@monash.edu)

- › Genes and outcomes in SLE (lupus)
  - › Serum cytokines in SLE (lupus)
  - › Mechanisms of glucocorticoid action in immune disease
  - › From target to drug – making a screening assay for a safe glucocorticoid mimetic
  - › Informatics and 'big data' in the assessment of autoimmune disease
  - › Analysis of SLE outcomes in a large multinational registry
  - › Association of renal disease with long term outcomes in SLE
- 



## Dr Dragana Odobasic

[dragana.odobasic@monash.edu](mailto:dragana.odobasic@monash.edu)

- › Human amniotic epithelial stem cells as a therapy in glomerulonephritis
  - › Myeloid-derived suppressor cells in kidney inflammation
  - › The role of myeloperoxidase in cisplatin-induced acute kidney injury
- 





## Dr Joshua Ooi

[joshua.ooi@monash.edu](mailto:joshua.ooi@monash.edu)

- › Determination of human immunodominant MPO T cell epitope
  - › The role of antigen specific memory T cells in autoimmune anti-GBM disease
- 



## Dr Ina Rudloff

[ina.rudloff@hudson.org.au](mailto:ina.rudloff@hudson.org.au)

- › The first '*in vivo*' exploration of interleukin 38 in systemic lupus erythematosus
  - › Molecular characterisation of regulation and mechanism of action of the anti-inflammatory cytokine interleukin 37
- 



## Dr Jaclyn Pearson

[jaclyn.pearson@hudson.org.au](mailto:jaclyn.pearson@hudson.org.au)

- › Host cell death signaling in bacterial gut infection
  - › Cross-disciplinary approaches to understanding Salmonella virulence
- 



## Dr Saleela Ruwanpura

[saleela.ruwanpura@hudson.org.au](mailto:saleela.ruwanpura@hudson.org.au)

- › Inflammasome in lung diseases
- 



## Dr Benjamin A Rogers

[ben.rogers@monash.edu](mailto:ben.rogers@monash.edu)

- › Solving the Superbug: Identifying and managing patients with Carbapenem Resistant Enterobacteriaceae
  - › The role of new antibiotics in treatment of gram-negative blood-stream infection
- 



## Dr Michelle Tate

[michelle.tate@hudson.org.au](mailto:michelle.tate@hudson.org.au)

- › The role of innate immune responses in modulating disease during influenza virus infections
  - › Understanding the role of a innate cytokine receptors in cell responses
- 





## Associate Professor Greg Tesch

[greg.tesch@monash.edu](mailto:greg.tesch@monash.edu)

**Secondary theme:** Cardiovascular

- › Mineralocorticoid receptor signalling in the progression of kidney disease
  - › Role of apoptosis signalling kinase-1 (ASK-1) in the development of diabetic kidney injury
  - › Role of apoptosis signalling kinase-1 (ASK-1) in the development of diabetic cardiac injury
- 



## Dr Connie Wong

[connie.wong@monash.edu](mailto:connie.wong@monash.edu)

**Secondary theme:** Neuroscience and Psychiatry

- › Contribution of neuroinflammation in dementia pathogenesis in T2D
  - › Modulation of host immune system after stroke
  - › Secondary theme: Cardiovascular
  - › Diet modification of gut intravascular immunity
- 



## Dr Nicky De Weerd

[nicole.deweerd@hudson.org.au](mailto:nicole.deweerd@hudson.org.au)

- › Biochemistry and structure of type I interferons and their receptors
- 

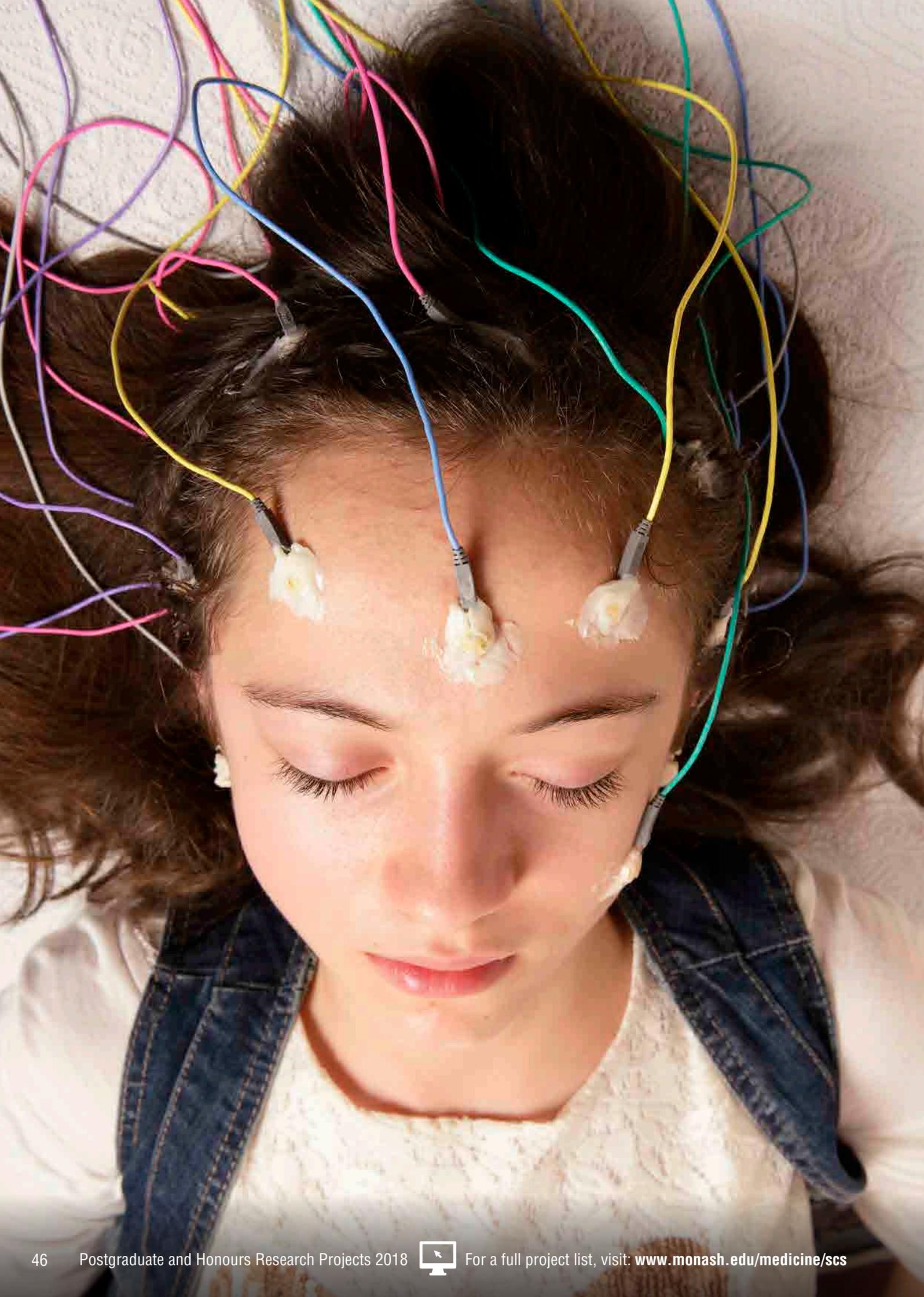


## Dr Ian Woolley

[ian.woolley@monash.edu](mailto:ian.woolley@monash.edu)

- › An antiretroviral medication complexity index in 2017
  - › Phenotypic and genotypic manifestations of congenital asplenia
  - › Use of an oral health index to detect frailty in an HIV positive population
- 





# Neuroscience and Psychiatry

Psychiatric neuroscience is an exciting and emerging field of research that attempts to identify the molecular abnormalities in the brain that underpin psychiatric disorders. The Translational Molecular Psychiatry program focuses on the major psychotic disorders such as schizophrenia, bipolar disorder and major depression and uses a range of clinical, genetic, molecular, cellular techniques and animal models to better understand their pathology with a view to the development of biomarkers and novel drugs. Such approaches include clinical characterisation and whole exome sequencing of families affected by these disorders; post-mortem human brain studies examining expression profiles of genes of interest; and transgenic animals modelling brain specific genetic risk factors.

The Centre for Developmental Psychiatry and Psychology (CDPP) undertakes research with a particular focus on child, adolescent and family mental health. We work in close affiliation with the clinical services provided by the Monash Health Mental Health Program including the Early in Life Mental Health Service. Our special areas of interest include mental health in children and young people with developmental and intellectual disabilities, autism spectrum disorders, disorders of infancy, school refusal, refugees, anxiety, depression, and suicide risk.

The Psycho-Oncology Research Unit collaboratively conduct studies of coping and adjustment in patients with cancer and their families. Areas of interest include studies of existential distress, morale and coping; meaning and purpose therapy; family interventions; studies of end-of-life decision-making; communication

studies; mindfulness compassion therapies; and use of advanced care planning.

The intersection between neurology and psychiatry and the neuroscience of psychiatric disorders is an evolving and increasingly relevant field of research. Other research includes studies into progressive neurological diseases (PND) such as Huntington's disease and Motor Neurone Disease, neuroimaging biomarkers to track disease progression, and the psychological and social aspects of PND.

Southern Synergy, a research centre co-located at Dandenong Hospital, focuses on mindfulness, refugee mental health, epidemiology of mental health disorders, policy relevant research into health services particularly for vulnerable populations, and population need and wellbeing research using large-data registry interrogation and national surveys. Particular strengths of Southern Synergy lie in a unique combination of research, training and clinical academic staff with close linkage to collaborators responsible for mental health service delivery in the Monash Health catchment area. Our multidisciplinary team consists of members from psychiatry, clinical psychology, social work, epidemiology and biostatistics, health economics and sociology.

The Brain and Gender laboratory at Hudson Institute focuses on unravelling the genetic differences between the male and female brain. The laboratory uses a combination of cellular, whole animal, and clinical approaches to better understand the sex differences in disorders such as Parkinson's disease, ADHD, and autism and to identify novel sex-specific therapeutic targets (e.g Y chromosome genes).



## Recent publications that have arisen from student projects:

- › Notaras M, Du X, Gogos J, van den Buuse M, Hill R, 'The BDNF Val66Met Polymorphism Regulates Glucocorticoid-Induced Corticohippocampal Remodelling and Behavioral Despair', accepted *Translational Psychiatry*, 5th July 2017.
- › Schroeder A, Hudson M, Wu YWC, Du X, Nakamura J, van den Buuse M, Jones N, Hill RA. 'Estradiol and raloxifene modulate hippocampal gamma power during a spatial memory task'. *Psychoneuroendocrinology*, 2017. Jan 23;78:85-92. doi: 10.1016/j.psyneuen.2017.01.022
- › Notaras, M., Hill RA, Gogos JA, van den Buuse M. 'BDNF Val66Met Genotype interacts with a history of simulated stress exposure to regulate sensorimotor gating and startle reflex'. *Schizophrenia Bulletin*. 2016 Jun 4. Epub ahead of print.
- › Notaras, M., Hill RA, van den Buuse. 'BDNF Val66Met Genotype Potentiates Memory of Fear via Glucocorticoid Signaling'. *Molecular Psychiatry* 2016, Jun;21(6):730-2.
- › Jones N.C., Foreman J., Hudson M., Rind G, Hill R.A., Manning E.E., van den Buuse M. 'Impaired high-frequency cortical brain oscillations in a BDNF-haploinsufficient model of schizophrenia'. Accepted with minor revisions, *European Journal of Neuroscience*, 2/08/ 2017.
- › Christiansz, J., Gray, K.M., Taffe, J.R., Tonge, B.J. (2016). Autism Spectrum Disorder in the DSM-5: Diagnostic sensitivity and specificity in early childhood, *Journal of Autism and Developmental Disorders*, 46(6), 2054-2063.

## Available projects:



### Dr Phyllis Chua

[phyllis.chua@monash.edu](mailto:phyllis.chua@monash.edu)

- › A longitudinal neuroimaging study of motor neurone disease (MND) phenotypes
- › The impact of progressive neurological diseases (PND) on family life



### Dr Joanne Enticott

[joanne.enticott@monash.edu](mailto:joanne.enticott@monash.edu)

- › Investigating enduring good mental health and wellbeing in 1,000 older people aged 65+ yrs: a 16 year longitudinal epidemiological cohort study
- › The longitudinal nature of refugees' mental health in a large Australian cohort of over 2,000 refugees; to identify factors associated with the 25% who had enduring good mental health in 3 consecutive waves.



### Dr Joohyung Lee

[joohyung.lee@hudson.org.au](mailto:joohyung.lee@hudson.org.au)

**Secondary theme:** Genetic Diseases

- › Biological basis of sex differences in the healthy and diseased brain
- › De-masculinising the male brain
- › Novel therapeutic targets for Parkinson's disease
- › Why are boys more susceptible to attention-deficit hyperactive disorder (ADHD) than girls?





## Associate Professor Kylie Gray and Dr Glenn Melvin

**kylie.gray@monash.edu;**  
**glenn.melvin@monash.edu**

- › Education and academic outcomes of children with autism and developmental delay
  - › School attendance in children with intellectual and developmental disabilities and/or autism spectrum disorder
  - › Suicide risk, depression and anxiety in children, adolescents and young people
- 



## Associate Professor Udaya Seneviratne

**wusenevi@optusnet.com.au**

**Secondary theme:** Emergency Medicine

- › A prospective study of seizure triggers
  - › Mining medical records of patients presenting with seizures
- 



## Professor Graham Meadows

**graham.meadows@monash.edu**

- › Implementing recovery-oriented mental health practices in the PULSAR intervention: A mixed-methods investigation of barriers and enablers in primary care settings
- 



## Dr Frances Shawyer

**frances.shawyer@monash.edu**

- › The role of gender in mindfulness-based interventions: an epidemiological and qualitative examination of attendance and outcome
  - › Advancing translational research in mindfulness-based interventions: an updated and systematic review of the literature
- 





# Nutrition, Dietetics and Food

Research in the Department of Nutrition and Dietetics covers the themes of: Clinical Nutrition including paediatrics and developing clinical collaborations to facilitate research translation; Metabolism including sport and exercise nutrition, circadian rhythms and sleep, weight loss and maintenance, appetite regulation and energy expenditure; Public Health including communicating health messages using technology and innovation in food and food systems; Teaching and Learning with a focus on competency based education and assessment of professionalism.

Recently the Department has received research funding from a number of sources including three NHMRC funded projects, National Heart Foundation, Sports Medicine Australia, Queensland Department of Health and a Victorian Department of Health and Human Services project grant.

The Department is located at the 'Be Active Sleep and Eat' (BASE) Facility in Notting Hill ([www.med.monash.edu/base](http://www.med.monash.edu/base)). The facility comprises of a state of-the-art iDXA for bone and body composition assessment, phlebotomy facilities, clinical chemistry analysis, a 4 room sleep laboratory, a commercial kitchen, environmental chamber, exercise physiology testing, and consulting suites which provided the infrastructure to supports research work. Students also have access to a desk, phone and each have a laptop provided.

## Recent publications that have arisen from student projects:

- Ashby S, Kleve S, Ramsey R, Palermo C. Measurement of the dimensions of food insecurity in developed countries: A systematic literature review. *Public Health Nutrition*. 2016;19(16):2887-2896.
- Snipe R, Khoo A, Kitic C, Gibson P, Costa R. Carbohydrate and protein intake during exertional-heat stress ameliorates intestinal epithelial injury and small intestine permeability. *Applied Physiology, Nutrition, and Metabolism*. 2017 (In press).
- Evans M, Truby H, Boneh A. The relationship between dietary intake, growth and body composition in Inborn Errors of Intermediary Protein Metabolism *The Journal of Pediatrics* accepted 15th May
- Bennett C, Truby H, Zia Z, Cain S, Blumfield ML (2016) Investigating the association between sleep and macronutrient intake in women of childbearing age. *European Journal of Clinical Nutrition* 2017 doi:10.1038/ejcn.2016.145

## Available projects:



### Dr Chiara Murgia

[chiara.murgia@monash.edu](mailto:chiara.murgia@monash.edu)

- Is dietary zinc intake associated with insulin secretion in overweight adults?
- The effect of meal timing on gene activity





## Associate Professor Claire Palermo

[claire.palermo@monash.edu](mailto:claire.palermo@monash.edu)

- › Legislative and policy action to address household food insecurity in Australia
- 



## Dr Judi Porter

[judi.porter@monash.edu](mailto:judi.porter@monash.edu)

- › Patient-centred meal service systems – how do we get it right?
- 



## Professor Helen Truby

[helen.truby@monash.edu](mailto:helen.truby@monash.edu)

- › Improving dietary methodologies: finding the key to unlock dietetic practice
  - › Modified fasting diets for adolescent obesity: The FAST-TRACK to health study
  - › The global relevance of basic anthropometric and food intake measures for nutrition screening in a rapidly industrialised society: from under to over nutrition in Chinese children
  - › Using marketing and social media to positively the impact and adoption of health messages by young adults to prevent obesity
  - › Weight gain prevention; implementation and translation
- 



## Dr Kate Huggins

[kate.huggins@monash.edu](mailto:kate.huggins@monash.edu)

- › Is meal timing related to body weight in children?
- 



## Associate Professor Maxine Bonham

[maxine.bonham@monash.edu](mailto:maxine.bonham@monash.edu)

- › Do marine polyphenols reduce the risk of type diabetes?
  - › Pilot testing of nutrition education material targeting night shift workers at risk of type 2 diabetes
  - › A good time to eat: Assessing dietary eating, food choice and barriers to healthy eating in shift workers
- 





## Dr Ricardo Costa

[ricardo.costa@monash.edu](mailto:ricardo.costa@monash.edu)

- › Does the FODMAP (Fermentable Oligo-, Di- and Mono-saccharides And Polyols) content of diet impact on exercise-induced gastrointestinal damage, symptoms, malabsorption and exercise performance: A low vs high FODMAP diet approach
- › Effect of sodium intake on gastrointestinal symptoms during endurance exercise
- › Gut training- improving performance by reducing gastrointestinal symptoms and enhancing carbohydrate absorption.



## Dr Tracy McCaffrey

[tracy.mccaffrey@monash.edu](mailto:tracy.mccaffrey@monash.edu)

- › Communicating health: optimising engagement and retention using social media
- › Using technology to assess dietary intake in culturally and linguistically diverse groups



# Reproductive Health and Biology

Reproductive health is a key global challenge that affects every individual, as it both reflects and determines the health of present and future generations.

Recent breakthroughs in our discipline have provided unequivocal proof that an individual's lifelong health is determined by events which occurred prior to their conception; their effects are transmitted by both mother and father via the placenta, oocyte and sperm.

Using basic and translational science, Reproductive Health and Biology researchers are making discoveries about sperm and egg development, formation of the embryo and its implantation into the womb, formation of the placenta and its impact on fetal development. We study how each of these affects human development and health, and use animal and cell culture models to reveal the cellular, molecular and biochemical mechanisms involved.

With an increasing number of couples seeking the use of assisted reproductive technologies and the rapidly increasing world population, new approaches are needed in the field of fertility research.

Advances in reproductive sciences translate to allied fields: cancer biology, animal food production, and conservation of endangered species. In addition, proteins involved in the regulation of reproduction have wider actions, influencing inflammation and tissue repair in a variety of organs. Due to our focus on clinical problems, we expect our studies to lead to new approaches for improved diagnosis, prevention or treatment of disease.



## Recent publications that have arisen from student projects:

- ▶ Winship, AL, Sorby, K, Correia, J, Rainczuk, A, Yap, J, Dimitriadis E. (2017) Interleukin-11 up-regulates endoplasmic reticulum stress induced target, PDIA4 in human first trimester placenta and *in vivo* in mice. *Placenta* 53:92-100.
- ▶ Nicolas, N, Michel, V, Bhushan, S, Wahle, E, Hayward, S, Ludlow, H, de Kretser, DM, Loveland, KL, Schuppe, HC, Meinhardt, A, Hedger, MP, Fijak, M. (2017) Testicular activin and follistatin levels are elevated during the course of experimental autoimmune epididymo-orchitis in mice. *Sci Rep* 7:42391. doi: 10.1038/srep42391.
- ▶ Heng, S, Evans, J, Salamonsen, LA, Jobling, TW, Nie, G. (2017) The significance of post-translational removal of a-DG-N in early stage endometrial cancer development. *Oncotarget*. doi: 10.18632/oncotarget.17286.
- ▶ Winship, A, Van Sinderen, M, Rainczuk, K, Dimitriadis, E. (2017) Therapeutically blocking Interleukin-11 receptor- $\alpha$  enhances doxorubicin cytotoxicity in high grade type I endometrioid tumours. *Oncotarget* 8(14):22716-22729.
- ▶ Klein, B, Schuppe, HC, Bergmann, M, Hedger, MP, Loveland, BE, Loveland, KL. (2017) An *in vitro* model demonstrates the potential of neoplastic human germ cells to influence the tumour microenvironment. *Andrology* 5(4):763-770.
- ▶ Wang, Y, Chen, Q, Zhao, M, Walton, K, Harrison, C, Nie, G. (2017) Multiple soluble TGF- $\beta$  receptors in addition to soluble endoglin are elevated in preeclamptic serum and they synergistically inhibit TGF- $\beta$  signalling. *J Clin Endocrinol Metab*. doi: 10.1210/jc.2017-01150



## Available projects:



### Professor Eva Dimitriadis

[evdokia.dimitriadis@hudson.org.au](mailto:evdokia.dimitriadis@hudson.org.au)

**Secondary theme:** Women's and Children's Health Research

- › Embryo non-coding RNAs required for IVF success
  - › Is IVF associated with pregnancy complications and how can we prevent them?
  - › Nanoparticles targeting the uterus and placenta to treat infertility and preeclampsia
  - › Secreted microRNA as biomarkers of preeclampsia, miscarriage and infertility
  - › Development of a new treatment strategy for endometrial cancer that preserves fertility
  - › New treatments for recurrent miscarriage
- 



### Dr Jemma Evans

[jemma.evans@hudson.org.au](mailto:jemma.evans@hudson.org.au)

- › Scratching the surface
  - › The obesity epidemic and its impact on fertility
- 



### Associate Professor Mark Hedger

[mark.hedger@hudson.org.au](mailto:mark.hedger@hudson.org.au)

- › Investigation of inflammation of the male reproductive tract and infertility
  - › Investigation of the novel phenotype of testicular macrophages
  - › Investigation of the regulation of the male reproductive tract in health and disease
- 



### Dr Tracey Edgell

[tracey.edgell@hudson.org.au](mailto:tracey.edgell@hudson.org.au)

- › Hormonal regulation of orosmuroid-1 glycoforms and significance to endometrial condition
  - › CSF3 actions on the endometrium: critical for embryo implantation into the womb
  - › CSF3 glycoforms and CSF3 receptor expression
- 





## Professor Kate Loveland

[kate.loveland@monash.edu](mailto:kate.loveland@monash.edu)

**Secondary theme:** Immunology, Infectious and Inflammatory diseases

- › Growth factor signalling and pathway crosstalk in testis development and disease
  - › Immune cell regulation of male fertility and testicular cancer progression
  - › Regulation of the germline and fetal organ growth by environmental cues
  - › The contribution of TGFbeta superfamily signalling crosstalk to male fertility
- 



## Professor Lois Salamonsen

[lois.salamonsen@hudson.org.au](mailto:lois.salamonsen@hudson.org.au)

**Secondary theme:** Women's and Children's Health Research

- › Defining uterine receptivity for embryo implantation
  - › The role of exosomal proteins in embryo implantation
- 



## Associate Professor Guiying Nie

[guiying.nie@hudson.org.au](mailto:guiying.nie@hudson.org.au)

**Secondary theme:** Cardiovascular

**Secondary theme:** Women's and Children's Health Research

- › Blood vessel endothelial aging and pregnancy disease preeclampsia
  - › Stress-related genes in pregnancy disease preeclampsia
  - › Uterine surface remodelling for embryo implantation and IVF success
- 



## Dr Peter Stanton

[peter.stanton@hudson.org.au](mailto:peter.stanton@hudson.org.au)

- › Developing better tests and treatment for male infertility
  - › Male germ cells and the blood-testis barrier
  - › How does activin regulate adult testis function?
- 



# Sleep and Respiratory



## Associate Professor Garun Hamilton

[garun.hamilton@monash.edu](mailto:garun.hamilton@monash.edu)

- › Respiratory phenotyping for obstructive sleep apnoea
  - › Understanding why obesity causes sleep problems
  - › Assessing the dynamic changes in the sensitivity of the respiratory control system during sleep
- 



# Stroke

The Stroke and Ageing Research Group (STAR) adopts a trans-disciplinary approach towards research and clinical translation in the fields of cerebrovascular disease (acute stroke, imaging, small vessel disease, stroke prevention, health services research and public health) and brain ageing. Within STAR we have experts who head divisions in clinical trials, imaging and informatics; epidemiology and prevention; and translational public health including economic evaluation, implementation science and analysis of 'big data' i.e. (linked clinical registry and government datasets).

## Recent publications that have arisen from student projects:

- ▶ Olaiya MT, Cadilhac DA, Kim J, Ung D, Nelson MR, Srikanth VK, Bladin CF, Gerraty RP, Fitzgerald SM, Phan T, Frayne J, Thrift AG (2017) Effectiveness of an intervention to improve risk factor knowledge in patients with stroke: a randomized controlled trial. *Stroke* 48:1101-1103.
- ▶ Olaiya MT, Cadilhac DA, Kim J, Nelson MR, Srikanth VK, Bladin CF, Gerraty RP, Fitzgerald SM, Phan T, Frayne J, Thrift AG (2017) A comprehensive assessment of long-term unmet needs and associated factors in community-dwelling survivors of stroke or transient ischaemic attack. *Neurology* 89:1-8, 2017.
- ▶ Busingye D, Arabshahi S, Evans RG, Srikanth VK, Kartik K, Kalyanram K, Riddell MA, Zhu X, Suresh O, Thrift AG (2017) Factors associated with awareness, treatment and control of hypertension in a rural South Indian population. *Journal of Human Hypertension* 31(5):347-353. DOI: 10.1038/jhh.2016.85.
- ▶ Liu N, Cadilhac DA, Andrew NE, Zeng L, Li Z, Li J, Li Y, Yu X, Mi B, Li Z, Xu H, Chen Y, Wang J, Yao W, Li K, Yan F, Wang J (2014) Randomized controlled trial of early rehabilitation after intracerebral hemorrhage stroke: difference in outcomes within 6 months of stroke. *Stroke* 45(12):3502-7, doi:10.1161/STROKEAHA.114.005661 (visiting PhD student from China).

## Available projects:



### Dominique Cadilhac

[dominique.cadilhac@monash.edu](mailto:dominique.cadilhac@monash.edu)

- ▶ Various observational studies can be undertaken using merged de-identified datasets with over 16,000 episodes of care to answer various research questions for example: "Hospital care and outcomes in patient with intracerebral haemorrhage"
- ▶ Pilot RCT of an electronic health message system to support recovery after stroke
- ▶ Acute hospital quality improvement (knowledge translation) intervention with a step-wedge randomised design



### Professor Mandy Thrift

[amanda.thrift@monash.edu](mailto:amanda.thrift@monash.edu)

- ▶ Cost-effectiveness of implementing a chronic disease management plan after stroke
- ▶ Shared Team Approach between Nurses and Doctors For Improved Risk factor Management (STAND FIRM)
- ▶ Identifying factors associated with hypertension, and barriers to the control of hypertension in the setting of poverty, overcrowding and infection





## Dr Joosup Kim

[joosup.kim@monash.edu](mailto:joosup.kim@monash.edu)

**Secondary theme:** Cardiovascular

- › Hospital-based healthcare utilisation in the first year following acute stroke or TIA:
  - › Hospital readmissions and Emergency Department contacts and factors associated with the frequency of health service use
- 



## Professor Thanh Phan

[thanh.phan@monash.edu](mailto:thanh.phan@monash.edu)

- › Googling disease map of stroke, heart disease, cancer and hip fracture
  - › Mining literature on atherosclerosis
  - › Optimisation of telemedicine network
  - › Refining the ischaemic penumbra
- 



## Dr Monique Kilkenny

[monique.kilkenny@monash.edu](mailto:monique.kilkenny@monash.edu)

**Secondary theme:** Cardiovascular

- › Hospital readmission following stroke or TIA and factors associated with hospital readmissions
- 





# Supportive and Palliative Care

The Supportive and Palliative Care Unit has a strong focus on both clinical and health service translational research. Research addresses issues from complex pain, symptom management and end-of-life care, to “big data” analysis and telemedicine. A highly dynamic and broadly experienced team including palliative care physicians, PhD candidates and research assistant are currently focusing on the following areas of research:

- › Tele-palliative care to rural Victoria
- › “Big Data and Intelligent Learning” analysis of Victorian linked health data
- › Ketamine for refractory pain and its effects upon mood and depression
- › Refractory cancer pain management in an ambulatory care setting
- › Improving utilisation of specialist palliative care services in geriatric and rehabilitation units
- › Delirium and utilisation of non-pharmacological interventions in its management.
- › Subcutaneous lymphoedema drainage for refractory lymphoedema.
- › Palliative and Supportive care for Chronic Disease.

## Recent publications that have arisen from student projects:

- › Hosking S, Franco M, Poon P, William L. Bilateral cordotomy post-failure of intrathecal analgesia in a palliative care setting. *Internal Medicine Journal* 2015, 45(5): 586-587

- › Sulistio M, Franco M, William M, Vo A, and Poon P. Hospital Rapid Response Team and Patients with Life Limiting Illness: A Multicentre Retrospective Cohort Study. *Palliative Medicine* 2015; 29: 302-309  
(awarded Editors choice)

## Available projects:



### Associate Professor Peter Poon

[peter.poon@monashhealth.org](mailto:peter.poon@monashhealth.org)

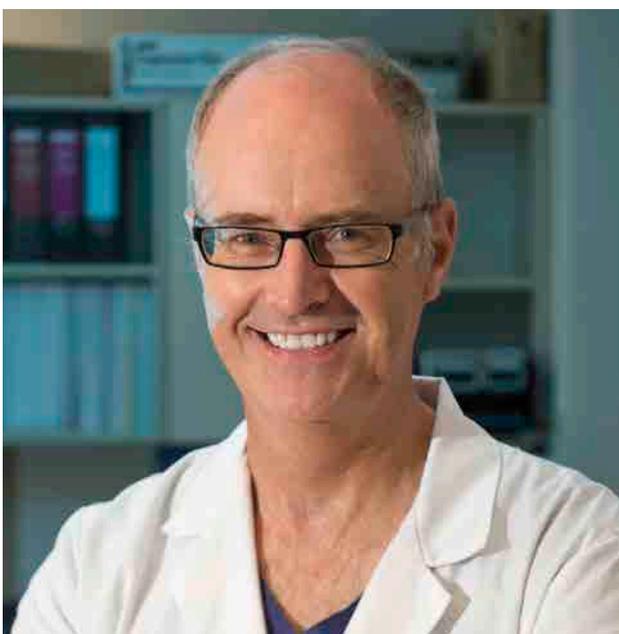
- › A prospective audit of the effects of ketamine in palliative care patients with refractory pain
- › Determining the risk factors for presentation of palliative patients to the Emergency Department
- › Efficacy of low-dose methadone as an antitussive for patients with malignancy
- › Telemedicine: its effectiveness in supporting palliative medicine in rural Victoria
- › Subcutaneous lymphoedema drainage (Lymphocentesis) for refractory lymphoedema. A multicentre study
- › The effectiveness of palliative care pathways and guidelines in facilitating end-of-life care in acute medical wards
- › The impact of specialist palliative care upon geriatric patients and carers
- › Hospital Rapid Response Team, Goals of Medical Care and Life Limiting Illness: a retrospective cohort study
- › The use of technology to facilitate management of delirium in an inpatient palliative care unit
- › Supportive care for patients with complex life-limiting chronic conditions in the last year of life: developing a patient centred model of care across the care continuum





# Surgery

The Department of Surgery offers research projects centred in both the laboratory and clinical domains which will ultimately aim to improve our understanding of and the practice of surgery. Students with special interests are invited to discuss these with the Head of Department, Professor Julian Smith.



Current research interests and activities include: breast surgery, cardiothoracic surgery, colorectal surgery, dental and oral maxillofacial surgery, ear, nose, throat/head and neck surgery, intensive care, neurosurgery, surgical oncology, ophthalmology, orthopaedics, paediatrics, plastic surgery, respiratory and thoracic surgery, upper gastrointestinal and hepatobiliary surgery, urology, vascular and transplantation surgery. There have been strong recent collaborations through the Monash Institute of Medical Engineering with a focus on minimally invasive techniques, robotic assisted surgery and surgical simulation.

## Available projects:

### Mr Ram Nataraja

[ram.nataraja@monash.edu](mailto:ram.nataraja@monash.edu)

**Secondary theme:** Fetal, Infant and Child Health

- The Effects of Pre-Operative Carbohydrate Drinks on Immediate Post-Operative Outcome After Day Surgery in Children; A Randomised Controlled Trial.
- Clinical outcomes of congenital diaphragmatic hernia patients and patch predictive score.
- Development of a simulation programme involving both the patient journey and consent process in paediatric surgery.
- Acquisition of Core Laparoscopic Skills in Novices; Factors that influence The Retention of Skills.
- Randomised controlled trial examining the incidence of intra-abdominal abscesses (IAA) following either laparoscopic or open appendectomies.
- Does a home-based laparoscopic simulation programme lead to a better acquisition and retention of skills; A Randomised Controlled Trial.
- Does the implementation of an events lead discharge protocol affect the post-operative pathway for simple appendicitis?
- Assessing the long-term Risk Factors for antenatally diagnosed Congenital Pulmonary Airway Malformations (CPAM); a prospective trial.

### Mr Alan Saunder

[alan.saunder@monash.edu](mailto:alan.saunder@monash.edu)

- Combined kidney and pancreas transplantation for type I diabetics with end-stage renal failure
- Endoluminal stent graft repair of aortic aneurysms
- Prospective database for vascular access in dialysis patients
- The effectiveness of endo-vascular intervention on peripheral vascular disease
- Varicose vein project



## Associate Professor Bruce Waxman

**bruce.waxman@monashhealth.org**

- › The effectiveness of the DCAS (Developing a career in Academic Surgery) Course
- 

## Mr Daniel Croagh

**dan.croagh@monash.edu**

- › Examination of the effect of EGFR inhibitors on KRAS wildtype pancreatic cancer in a Victorian Pancreatic Cancer Biobank.
  - › Examination of the genomic differences between KRAS wildtype and mutant pancreatic
  - › The role of body composition in surgical conditions of the gastrointestinal tract
- 

## Mr David Hunter-Smith

**david.hunter-smith@monash.edu**

- › Does Collagenase treatment for Dupuytren's Disease influence skin healing and scar formation?
  - › Does steroid treatment improve the outcome of Collagenase treatment of Dupuytren's Disease?
  - › What does long-term follow-up of Dupuytren's clinic patients tell us about disease recurrence after different treatments?
  - › Do we need to generate a new algorithm to decide appropriate treatment for Dupuytren's Disease
  - › Assessing Patient reported vs Clinician reported outcome measures and outcome-related performance indicators for Dupuytren's Disease – who to listen to?
  - › Can we use perforasome characteristics to select tissues to be harvested for composite flaps and avoid fat necrosis?
  - › 3D imaging in Plastic surgery for planning – holograms and beyond
  - › Sterilisation techniques of 3D-printed surgical equipment
  - › Templating and 3D modelling in plastic and reconstruction surgery: concepts and the future
  - › Public economic burden of complications of cosmetic breast implants
  - › Does mastectomy and breast hypertrophy alter gait?
  - › Building a bespoke 3D bio-printed Trapezium – in conjunction with MIME – many studies to be performed.
  - › Oblique talus project – orthopaedics
  - › League Tables for Surgeon
  - › Holstein Lewis fractures
  - › 3D printing in orthopaedic surgery
- 

## Dr Debbie Phyland

**debra.phyland@monashhealth.org**

- › Quality of life in children before and after adeno-tonsillectomy with or without obstructive sleep apnoea
  - › Serial intra-lesional steroid (SILSI) injections for subglottic stenosis using a new steroid polymer
  - › The development and use of 3D-printed prototype temporal bones in surgical training
  - › Microbacterial profiling of vocal fold process granulomas
  - › Inflammatory factors in a) chronic sinusitis b) benign laryngeal lesions c) subglottic stenosis
  - › 'Comparing Salivary Pepsin Measurement to 24-hour dual probe oropharyngeal/oesophageal pH/Impedence monitoring in patients with a clinical diagnosis of Laryngopharyngeal Reflux: a prospective study
  - › Predictors of surgical outcomes in tongue ablation surgery for obstructive sleep apnoea'
  - › Quality of life for persons with Hereditary haemorrhagic telangiectasias (Osler-Weber-Rendu Syndrome)
- 

## Associate Professor Geoffrey Parkin

**geoffrey.parkin@monashhealth.org**

- › The Open and Closed Loop Control of Water Balance
- 

## Mr Ricky Kumar

**rickumar@gmail.com**

- › The correction of asymmetrical surgical maxillary expansion (S.A.M.E) by Le Fort I osteotomy
  - › Orthognathic surgery planning in the edentulous maxilla and mandible
- 



## Associate Professor Simon Bell

[snbell@bigpond.net.au](mailto:snbell@bigpond.net.au)

- › Comparison of radiolucent lines around a 2-pegged, biconcave, cemented, all polyethylene glenoid when used with a short stem (stemless) ceramic head or a long stem metal head humeral component.
  - › Development of a technique using the Kinect system to assess proprioception following anterior shoulder stabilisation
  - › Evaluation of the outcomes following the use of Orthikine (interleukin-1 inhibitor) injections for shoulder joint osteoarthritis
  - › Incidence, significance and treatment of acromio-clavicular joint pain following Total Shoulder Replacement.
  - › Long term radiological outcomes in patients receiving a reverse shoulder prosthesis for total shoulder replacement
  - › Mid term radiographic and clinical results of total shoulder arthroplasty using a short humeral stem (stemless) with a ceramic head prosthesis and a 2-pegged, biconcave, cemented, all polyethylene glenoid
  - › Outcomes following platelet-rich plasma injection for distal biceps tendinopathy
  - › Sensitivity and specificity of 4 methods of shoulder assessment in the stiff painful shoulder
  - › The role of the Laterjet procedure in young contact athlete outcomes following anterior shoulder stabilisation
  - › Outcomes of anterior interosseous nerve injury following shoulder surgery
- 

## Mr Ton Tran

[ton.tran@monashhealth.org](mailto:ton.tran@monashhealth.org)

- › At what level of pre-operative haemoglobin can a THR/TKR be done without the patient needing a blood transfusion
  - › Australian and New Zealand Hip Fracture Registry (ANZHFR)
  - › Early aquatic physiotherapy for adults following total hip and total knee replacement surgery
  - › Prosthetic joint infection in Australia and New Zealand Observational (PIANO) study
- 

## Assoc. Professor Tony Goldschlager

[tony.goldschlager@monash.edu](mailto:tony.goldschlager@monash.edu)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › A collaborative study with engineering assessing sitting with novel technology and its effect on spinal health
  - › Endoscopic pituitary surgery outcome measures are being collected and there are opportunities for publication in collaboration with a large New York Centre
  - › Microdiscectomy – a clinical study on post-operative management
  - › Neuro-oncology treatment algorithms are being implemented, the outcomes of which will be studied
  - › Stem cell tracking by novel MRI and histological methods
  - › The utility of 4D CT – a novel technique in studying stability in the cervical spine
  - › Tissue engineering pre-clinical studies in spinal disc repair
  - › Spinal outcome measures are being collected and there are opportunities for publication in collaboration with a large Canadian centre
- 

## Associate Professor Warren Rozen

[warrenrozen@hotmail.com](mailto:warrenrozen@hotmail.com)

- › Haptic and 3D-printed models for improving surgical consent
  - › The use of holographic CT angiography for mapping vascular anatomy
- 

## Mr William Besley

[wjb@wjbesly.com.au](mailto:wjb@wjbesly.com.au)

- › The role of cone beam CT (CBCT) in alveolar cleft graft planning and assessment
- 

## Mr William Teoh

[william.teoh@monashhealth.org](mailto:william.teoh@monashhealth.org)

- › Compound topical ointment vs placebo for post-haemorrhoidectomy analgesia – a prospective double-blinded randomised controlled trial
- 



# Women's Health

The Ritchie Centre is Australia's premier clinical and research Centre for women, babies and children. Strategically located within the Monash Medical Centre and full integration with the hospital enables our scientists to develop research responses to the complications that present in the clinical setting and undertake translational research.

The Centre's mission to improve the health of women, infants and children through innovative research is achieved through its unique associations as the principal research Centre of the Monash University Department of Obstetrics and Gynaecology and the Department of Paediatrics, Monash Women's Services, Monash Newborn and Melbourne Children's Sleep Centre.

It is also a major research partner of the Monash Children's Hospital. The Ritchie Centre has over 150 research staff and students, including fetal physiologists, sleep physiologists, immunologists, stem cell biologists, neonatologists, paediatricians, obstetricians, gynaecologists, and radiologists.

## Recent publications that have arisen from student projects:

- › Emmerson S, Young N, Rosamilia A, Parkinson L, Edwards SL, Vashi AV, Davies-Tuck M, White J, Elgass K, Lo C, Arkwright J, Werkmeister JA, Gargett CE (2017) Ovine multiparity is associated with diminished vaginal muscularis, increased elastic fibres and vaginal wall weakness: implication for pelvic organ prolapse. *Sci Rep* 7:45709. doi: 10.1038/srep45709.
- › Skinner S, Davies-Tuck M, Wallace E, Hodges R (2017) Perinatal and Maternal Outcomes After Training Residents in Forceps Before Vacuum Instrumental Birth. *Obstet Gynecol* 130:151-158. doi: 10.1097/AOG.0000000000002097.
- › Abd Rahman R, DeKoninck P, Murthi P, Wallace EM (2017) Treatment of preeclampsia with hydroxychloroquine: a review. *J Matern Fetal Neonatal Med* 1-5. doi: 10.1080/14767058.2017.1289511.

## Available projects:



### Dr James Deane

[james.deane@hudson.org.au](mailto:james.deane@hudson.org.au)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Do endometrial mesenchymal stem cells (MSC) have immunomodulatory properties that can be harnessed to treat human disease?
- › How are endometrial stem cells regulated?
- › Telomerase activity as a stem cell marker in the endometrium
- › Investigating the requirement for notch and hedgehog signalling in the endometrial stem/progenitor populations that cause endometriosis





## Associate Professor Caroline Gargett

[caroline.gargett@hudson.org.au](mailto:caroline.gargett@hudson.org.au)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Characterising the niche of endometrial stem/progenitor cells in endometriosis
  - › Nanotechnology and tissue engineering strategies to uncover causes and treat pelvic floor disorders
  - › Organoids from human and mouse endometrial epithelial stem/progenitor cell populations
  - › Role of endometrial stem/progenitor cells in endometrial injury-induced doubling of pregnancy rates in IVF procedures
  - › Testing the '*in vivo*' regenerative potential of putative stem cell populations from the endometrium
  - › Developing a large animal pre-clinical model of pelvic organ prolapse for assessing the effect of a cell-based therapy
- 



## Dr Hayley Dickinson

[hayley.dickinson@hudson.org.au](mailto:hayley.dickinson@hudson.org.au)

**Secondary theme:** Fetal, Infant and Child Health

- › Brain creatine levels in preterm infants
  - › Prenatal origins of infertility
  - › Establishing the placental phenotype in a spiny mouse model of reduced fetal growth
  - › Using 'ex vivo' perfusion of the term human placenta to measure placental creatine transport
  - › Placental pathology of births at Monash Health
- 

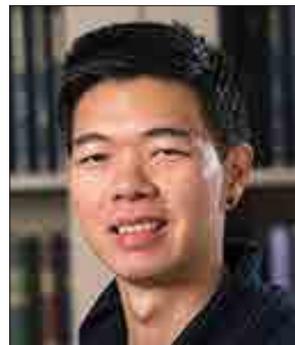


## Associate Professor Michelle Giles

[michelle.giles@monash.edu](mailto:michelle.giles@monash.edu)

**Secondary theme:** Immunology, Infectious and Inflammatory Diseases

- › A randomised controlled trial of text message reminders and health information to pregnant women to improve coverage of influenza vaccine
  - › Are attitudes to breastfeeding by HIV positive mothers in high income settings changing?
  - › A study exploring the transition from a risk factor based approach to Group B streptococcus in pregnant women to a universal screening approach: barriers and facilitators
- 



## Dr Bryan Leaw

[bryan.leaw@hudson.org.au](mailto:bryan.leaw@hudson.org.au)

**Secondary theme:** Cell Therapy and Regenerative Medicine

- › Amnion cells for the treatment of cerebral palsy
  - › Novel treatments for preeclampsia
- 





## Dr Kirsten Palmer

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**Secondary theme:** Fetal, Infant and Child Health

- › Improving the prediction and diagnosis of pre-eclampsia: validation of a new biomarker assay
- 



## Dr Padma Murthi

[padma.murthi@monash.edu](mailto:padma.murthi@monash.edu)

**Secondary theme:** Fetal, Infant and Child Health

- › How does maternal vitamin D deficiency during pregnancy contribute to neurocognitive deficits in infants and children?
  - › How does placental insufficiency affect nutrient transport?
  - › How does vitamin D influence feto-placental growth?
- 





## CONTACT US

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Professor Eric Morand

### Executive Officer

Jin Leng Graham  
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### Hudson Institute of Medical Research

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### Director and CEO

Professor Elizabeth Hartland

### SCS Honours Coordinator

Dr Paul King  
**e:** [scs.reception@monash.edu](mailto:scs.reception@monash.edu)

### Hudson Institute Honours Coordinator

Associate Professor Mark Hedger  
**e:** [mark.hedger@hudson.org.au](mailto:mark.hedger@hudson.org.au)

### SCS BMedSc Coordinator

Dr Tony White  
Enquiries: [bmedsci.scs@monash.edu](mailto:bmedsci.scs@monash.edu)

### Head, Postgraduate Research Studies

Professor Kate Loveland  
Enquiries: [phd.scs@monash.edu](mailto:phd.scs@monash.edu)

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