MONASH University

MONASH
CLINICAL AND
MOLECULAR
MEDICINE

POSTGRADUATE AND HONOURS RESEARCH PROJECTS

2027 – 2028

The Sub-Faculty of Clinical and Molecular Medicine is based within the Faculty of Medicine, Nursing and Health Sciences and represents the University's research and teaching activities embedded at Monash Health, Victoria's largest health service. It comprises the School of Clinical Sciences at Monash Health, Monash Centre for Health Research and Implementation, Victorian Heart Institute based at the new Victorian Heart Hospital, and the University activities of the Hudson Institute of Medical Research.

It drives cutting-edge research across the lifespan from fertility to end of life, and across the continuum from discovery and clinical research to implementation and health services research. We generate ~25% of the Faculty of Medicine, Nursing and Health Sciences' research revenue.

The Sub-Faculty produces world-leading health outcomes and has a strong track record of entrepreneurialism and commercialisation.

CONTENTS

WHY DO YOUR GRADUATE RESEARCH AT THE SUB-FACULTY OF CLINICAL AND MOLECULAR MEDICINE (SF-CaMM)?

IGNITE PASSION

Forever change the way you perceive the process of how medical knowledge is advanced. We can ignite the passion for a career in biomedical research or help you create opportunities that support evidence-based healthcare delivery.

WORK WITH THE BEST

Our supervisors have international reputations for excellence in their fields.

SIZE IS IMPORTANT

Thousands of research students have been successfully guided to completion, through a well-established infrastructure conducive to success.

A CLINICAL FLAVOUR

Many of our projects relate directly to disease and are supervised by clinician-scientists. There is also plenty of opportunity for important basic science projects that study the fundamental mechanisms of disease.

MAKE A DIFFERENCE

Basic science projects and clinical studies focus on diseases within our Sub-Faculty. Use your knowledge and skills to have an impact and improve human health.

NEXT STEPS

MAKE THE DECISION

to do a research project.

SELECT

a topic that captivates your interest.

MAKE CONTACT

with potential supervisors and/or unit heads offering a project or conducting research in areas that interest you.

ACT!

For research degree applications (PhD and Masters) go to Monash University Institute of Graduate Research: **monash.edu/graduate-research/future-students/apply**

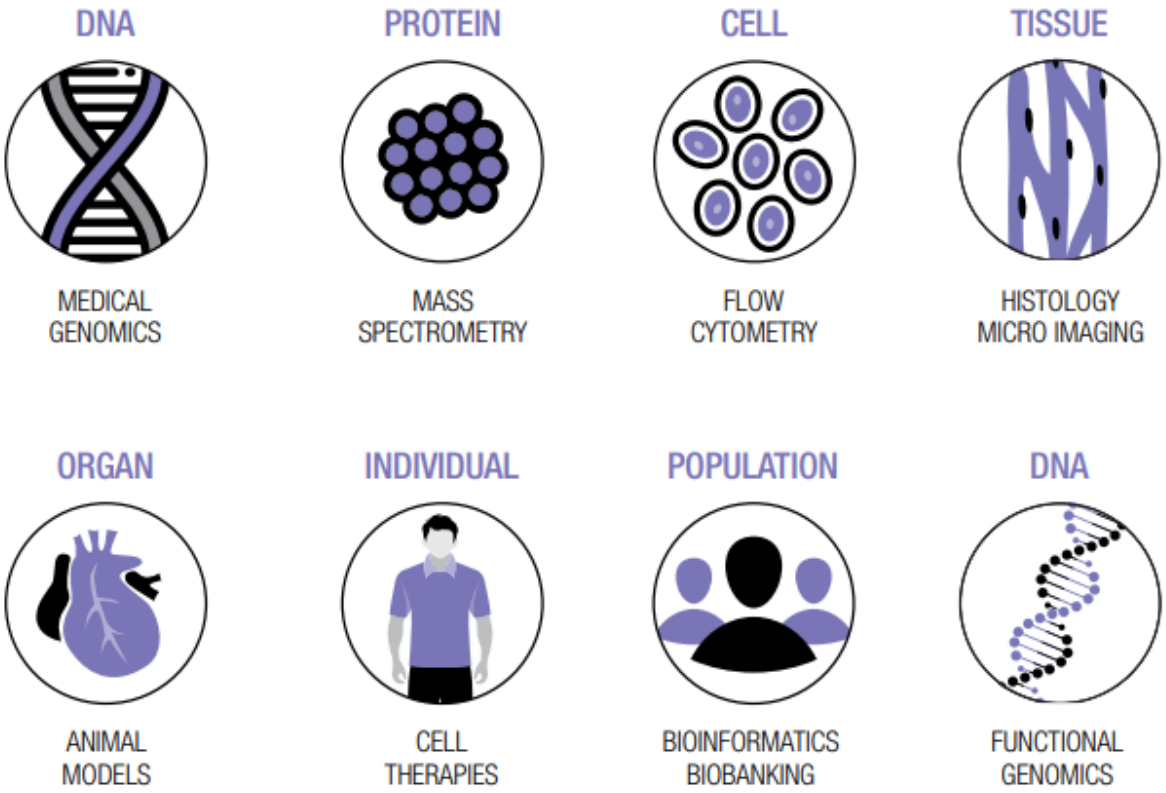
For Bachelor of Medical Science (Honours) applications go to: **monash.edu/medicine/som/bmedsc-hons/how-to-apply**

For Honours degree applications go to: **monash.edu/study/courses**

(Find more detailed information about the application process on the following pages.)

TECHNOLOGY PLATFORMS

Scientists are supported by world-leading technology platforms at the SF-CaMM and at Monash University, so that they can pursue innovative approaches and advances in medical research by generating evidence and data. Find out more:
monash.edu/medicine/scs/research-facilities



A MESSAGE FROM THE DEAN, PROFESSOR EUAN WALLACE AM

The Sub-Faculty of Clinical and Molecular Medicine represents the University's recognition of the extraordinary scale, scope and excellence of research and education in our partnership with Monash Health. Like the clinical care of Monash Health, our research covers the entire lifespan from fertility through pregnancy, infancy, childhood adolescence and adulthood with Medicine, Surgery, Psychiatry, Gynaecology, Paediatrics and Radiology all included as well as Nutrition. From the lab bench to the clinic and back again our studies have a strong focus on directly impacting on patient outcomes. This includes very downstream research in healthcare implementation as well as research focused on heart disease at the Victorian Heart Institute.

We are proud of our record of training research students at all levels, in all disciplines and all research types, and we look forward to you joining our productive and happy family at the Sub-Faculty of Clinical and Molecular Medicine.

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 across Monash Health campuses, Victoria's largest hospital network.

SCS is at the forefront of clinical and translational research with demonstrated strengths in cancer, cardiovascular disease, endocrinology, infectious and inflammatory diseases, neurosciences, nutrition, and women's and children's health. Many of our senior academic staff are health professionals who work closely with colleagues in Monash Health, translating scientific discoveries into clinical practice in an innovative and collaborative environment.

SCS AT A GLANCE

970+
PUBLICATIONS ANNUALLY

190+
PhD STUDENTS

$95m+
RESEARCH INCOME ANNUALLY

1000+
RESEARCHERS

130+
RESEARCH GROUPS

80+
PHYSICIAN SCIENTISTS

A MESSAGE FROM THE ACTING HEAD OF SCHOOL, PROFESSOR JUDY BAUER

The School of Clinical Sciences at Monash Health comprises the Faculty of Medicine, Nursing & Health Sciences' academic departments based at Monash Health. It is the Faculty's largest clinical school. There is close integration between Monash Health clinical services and the departments including Medicine, Psychiatry, Surgery, Paediatrics, Obstetrics & Gynaecology, Imaging and Nutrition, Dietetics & Food. Moreover, the School has extensive laboratory-based research programs that are integrated with clinical research activities across multiple disciplines and hosts two major University Centres of Excellence: The Centre for Inflammatory Diseases and The Ritchie Centre. Many group leaders are recognised as national and international leaders in their disciplines.

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, utilising a state-of-the-art Clinical Trials Centre. In parallel, major clinical research programs and hundreds of clinical trials complete the translational research spectrum at SCS. Education-focused research examines competency-based education, programmatic assessment and the development and assessment of professionalism in health professions education.

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

SCS is proud of its partnership with Monash Health, Victoria's largest and most comprehensive health service. Together, our basic and clinical research are equal to the best in the world. In addition, we foster a supportive and collaborative workplace culture. For basic, translational or education-focused research in a clinically enriched environment, you will not find a more impactful or welcoming place than SCS.

MONASH CENTRE FOR HEALTH RESEARCH AND IMPLEMENTATION (MCHRI)

The Monash Centre for Health Research and Implementation (MCHRI) aspires to Better Care, Better Equity, Better Health, and is committed to making a difference and improving health, for women and their families.

MCHRI is a women's health and implementation centre, founded on a partnership across Monash University, our primary partner Monash Health and over 100 other healthcare stakeholders. It has 140+ clinicians, researchers, students and staff.

MCHRI IMPACT: MAKING A DIFFERENCE TO HEALTH

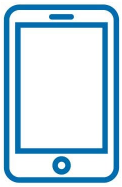
200+
PUBLICATIONS ANNUALLY

120+
PARTNERSHIPS DEDICATED TO DIRECTLY IMPROVING HEALTH THROUGH RESEARCH

$150m+
***Over 10 years**
RESEARCH INCOME OFFERING MANY OPPORTUNITIES FOR STUDENTS

3
NHMRC CENTRES OF RESEARCH EXCELLENCE

3
INTERNATIONAL GUIDELINES - 71 COUNTRIES ENGAGED



110K
USERS OF OUR DIGITAL APPS IN 195 COUNTRIES

A MESSAGE FROM THE DIRECTOR, MONASH CENTRE FOR HEALTH RESEARCH AND IMPLEMENTATION, PROFESSOR HELENA TEEDE AM

Our mission is to deliver health impact through multidisciplinary, large-scale research, across mechanistic human biomarkers, risk prediction, advanced statistics and data analytics, epidemiology, clinical trials, implementation science and public health research. We partner to implement these solutions through practice and systems change to improve women's health and deliver impact.

We have specific research programs underpinned by cross-cutting research and translation-enabling platforms.

Research areas include:
Women's Reproductive Health; Maternity Care; Healthy Pregnancy; PCOS, Infertility, Early Menopause; Public Health Lifestyle Prevention; Diabetes & Heart Disease; Public Mental Health & Wellbeing; Gender Equity in Healthcare; Endocrinology and Women's Healthy Ageing.

Research platforms include:
Implementation & Healthcare Improvement; Digital Health; Health Economics, Consumer & Community Involvement, Policy and Priorities; Big Data and Advanced Analytics; Clinical Trials, Clinical Research & Public Health Interventions; Best Practice Evidence, Guidelines and Translation and Education.

Our Implementation Science Program leads national capacity and capability in vital skills for improvement in our health system, using best evidence-based practice methods.

Our large data sets and human sample biobanks cover a range of condition, providing extensive research opportunities.

MCHRI provides research training in an integrated environment across Monash University and Monash Health, with support from a diverse team with varied clinical and research expertise (endocrinology, reproductive health, obstetrics, dietetics, exercise physiology, health promotion, evidence synthesis, biostatistics, qualitative methodology, health services research, health economics, implementation, evaluation and translation)

We have an active and engaging discovery, clinical, health services and public health research education program that trains, mentors and builds the careers of those aiming to improve women's clinical health outcomes.

Students are supervised by a team of experienced senior clinician researchers and are supported in a collegial environment. They play an active role in MCHRI's research seminars and activities and have the opportunity to work within MCHRI's multi-disciplinary areas of research.

VICTORIAN HEART INSTITUTE

The Monash Victorian Heart Institute located in the Victorian Heart Hospital on the Clayton Campus, pioneers bold, cross-sector solutions to cardiovascular disease by working beyond traditional health and medical boundaries. By uniting diverse expertise from research, industry and the broader innovation ecosystem, the Institute drives practical breakthroughs that improve lives and strengthen communities.

Our vision is to transform cardiovascular health through collaborative research, education and innovation that enhances care and outcomes.

Our mission is to advance evidence-based, interdisciplinary and community-informed research and training to accelerate real-world impact.

The combined efforts accelerate the discovery, creation and translation of the next generation of medicines and technologies to the community and clinical settings, making the VHI an ideal partner for industry and international collaborations. Led by Professor Stephen Nicholls, the VHI brings together brilliant minds from across wide research, teaching and clinical community to create the cardiovascular health solutions of the future.

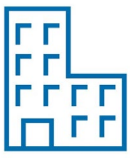
VHI AT A GLANCE

110+

MONASH UNIVERSITY RESEARCHERS LOCATED ONSITE

60

CLINICAL TRIALS UNDERWAY THAT ARE TRANSLATING RESEARCH INTO REAL-WORLD OUTCOMES



6,000m2

OF LAB, TEACHING AND EDUCATION SPACE AT THE VICTORIAN HEART HOSPITAL

15+

ACTIVE INDUCTRY EDUCATION PARTNERSHIPS ENGAGED ACROSS PHARMA, MEDTECH AND DIAGNOSTICS

PROFESSOR STEPHEN NICHOLLS, DIRECTOR, VICTORIAN HEART INSTITUTE

Professor Stephen Nicholls is Program Director of the Victorian Heart Hospital at Monash Health, Professor of Cardiology and Director of the Victorian Heart Institute and Velos Accelerator at Monash University.

He is a preventive cardiologist whose research interests span the translational spectrum, with a focus on the impact of metabolic risk factors on atherosclerosis, plaque imaging, leadership of clinical trials of novel therapies, and the development of research acceleration platforms to deliver research discoveries to impact.

His research output includes more than $165M in funding and more than 1160 peer-reviewed manuscripts, book chapters and conference proceedings.

He is a Past-President of the Cardiac Society of Australia and New Zealand, Past-President of the Australian Atherosclerosis Society and Founding Chair of the Asia Pacific Cardiometabolic Consortium.

He is a Fellow of the Australian Academy of Health and Medical Sciences, has received research prizes from the Royal Australasian College of Physicians, Cardiac Society of Australia and New Zealand and the European Atherosclerosis Society and has been recognised by Clarivate as one of the World's Most Influential Researchers in Clinical Medicine.

HUDSON INSTITUTE OF MEDICAL RESEARCH

Hudson Institute is a leading Australian medical research institute recognised internationally for its research in inflammation, cancer and women's and newborn health.

Our 440 scientists, clinicians and graduate students come from around the world to pursue a shared vision – to improve human health through innovative and collaborative medical research.

Located at the Monash Medical Centre campus, Hudson Institute scientists work alongside clinical and industry colleagues to ensure our research is informed by patient need and is well positioned to impact healthcare.

Our expertise covers the complete translation pipeline from scientific discovery to clinical testing and commercialising of new treatments, diagnostics and devices for patients. We are also at the forefront of technologies that support the understanding of disease mechanisms and development of new therapeutics, including RNA technologies, cell therapies, microbiome science and the use of AI and big data approaches in medical research.

HUDSON INSTITUTE AT A GLANCE

240+

RESEARCH PUBLICATIONS ANNUALLY

271

INSTITUTION STAFF

43

RESEARCH GROUPS

176

STUDENTS

127 PhD
18 Masters
31 Honours

A MESSAGE FROM THE CEO AND INSTITUTE DIRECTOR, HUDSON INSTITUTE OF MEDICAL RESEARCH, PROFESSOR ELIZABETH HARTLAND AM FAHMS

Hudson Institute's research programs span the full spectrum of translational research from discovery to clinical trials. While excellence in biomedical research is at our core, every scientist and student at Hudson Institute has the opportunity to see their research have real-world impact.

Why choose Hudson Institute of Medical Research?
As part of a vibrant medical research hub, our scientists work alongside Monash Health clinicians and staff. This fundamental science-clinic-patient connection means our scientific discoveries are informed by patient needs and positioned for clinical development into new drugs, devices or treatments that improve lives. Our game-changing outcomes for Australian and global health are the result of these essential partnerships.

As a leading medical research institute, we have the welcome duty of training brilliant young minds to reach their full potential. Our students are valued members of our 43 research groups. We believe every student has the potential to become a research leader - the people who will solve today's health problems and build tomorrow's industries.

As members of a world-class research group, our students thrive in an international research community and, through one-on-one supervision and mentorship, develop confidence, technical skills, robust scientific research methods and critical thinking – all necessary traits for future research careers.

Our training also equips students with a range of dynamic and transferrable skills for careers in the biomedical and clinical research sectors and beyond, from commercialisation to the pharmaceutical industry.

Mentorship and networking programs, seminars and a dynamic student society are a big part of student life at Hudson Institute. In addition, our academic partnership with Monash University, Australia's largest university, ensures our students have access to comprehensive training programs and shared state-of-the-art research facilities.

Hudson Institute provides an outstanding environment for discovery and applied biomedical research. I am proud of the work of our incredible researchers and students, and know you'll be warmly welcomed when contacting a supervisor for advice at any stage.

"Being at Hudson Institute is great experience because everyone is knowledgeable in different things, so there is always an expert to ask, and they are always willing to help." - Liesl Bramberger, PhD Student.

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)

Dr Simon Chu
E: **simon.chu@hudson.org.au**

Dr Paul King
E: **paul.king@monash.edu**

Alice Frederick
E: **hudson.studentadmin@hudson.org.au**
T: 03 8572 2552

Bachelor of Medical Science (Honours)

A/Prof Rimma Goldberg
E: **Rimma.Goldberg@monash.edu**

Ms Pianca Schwarz
E: **BMedSc.Hons.SCS@monash.edu**
T: 03 8572 2771

GRADUATE RESEARCH PROGRAMS

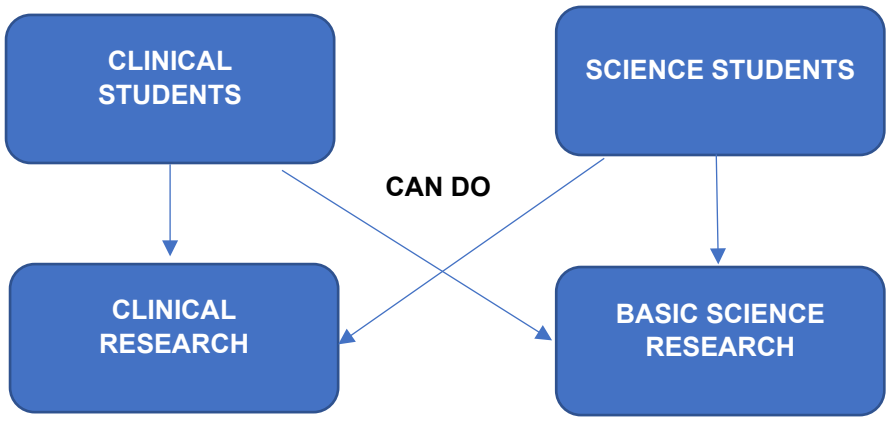
- Doctor of Philosophy
- Doctor of Medicine
- Research Masters
- Masters of Reproductive Sciences

For further information about Masters or PhD projects, contact:

Professor Patrick Western
Head of Graduate Research
E: **patrick.western@monash.edu**

Graduate Research General Enquiries

Graduate Research Programs Officer
E: **sf-camm.gradresearch@monash.edu**
T: 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 usually requires a Distinction-grade average (70% or above) in 24 points of studies in relevant level-three units. 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 the Hudson Institute.

The Honours application form can be downloaded from: **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 usually requires 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 downloaded from: **monash.edu/discovery-institute/honours**

Apply online at E-Admissions: **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 3 years of medical studies. There is also the opportunity to convert the BMedSc(Hons) to a PhD. This new initiative of MD-PhD allows students to accelerate their research studies and complete a PhD in 2 rather than 3 years. Eligible students require a mark of H1 for their BMedSc(Hons) project and can apply for a scholarship to complete their 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 Director of Medical Student Research **megan.wallace@monash.edu**

Students undertaking a medicine program at a university other than Monash must have completed equivalent studies corresponding to a minimum of 3 years of the Monash University undergraduate BMedSc/MD program.

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

Information regarding the program is available online: **monash.edu/medicine/som/bmedsc-hons**

BIOMEDICAL SCIENCE (HONOURS) – NUTRITION DISCIPLINE

This program is for top-ranking graduates of a dietetics 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. This contributes towards the successful completion of a research project.

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

More information is available here:
monash.edu/medicine/scs/nutrition/study/bbs

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 Distinction-grade average (70% or above) across 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:
monash.edu/medicine/psych

DOCTOR OF PHILOSOPHY (PHD)/ RESEARCH MASTERS DEGREES

Students wishing to complete advanced research training should enrol in 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 programs available across the Faculty of Medicine, Nursing and Health Sciences and students can tailor their program to suit their individual needs.

The minimum duration of PhD candidature enrolment is three years of full-time. Typically, a PhD candidate holds a scholarship that provides support for a maximum of 3.5 years. Thesis assessment is conducted by examiners external to the department in which the candidate is 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: **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: monash.edu.au/scholarships

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 trials (including placement), good clinical practice, human ethics approval
- Bioinformatics, data analysis, coding in R and Python
- Research translation (commercialisation, industry engagement, investment potential)
- Translational medicine, identifying unmet needs and strategies to address them.

For more information:
monash.edu/medicine/translational/translational

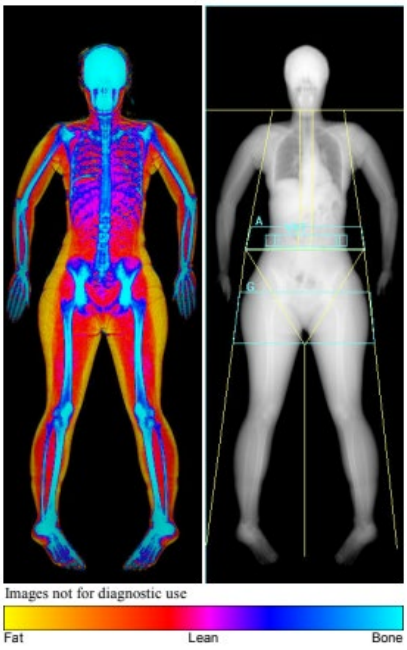
GRADUATE STUDENT COMMITTEE

Each enrolling Department has a local Coordinator to support graduate research students, and they work collectively as a committee to ensure that each student is able to manage their workload, expectations, career development and any issues that may arise. The Committee, headed by Prof Patrick Western, coordinates PhD scholarship and thesis excellence award applications, has oversight of Graduate Research annual Milestone Reviews, and ensures that supervisors and students are kept abreast of Monash University opportunities and policies relating to Graduate Research. It runs instructional sessions on candidature management, thesis writing and well-being. In addition to annual monitoring of student progress, students are encouraged to engage with peers in the Sub-Faculty by participating in the annual HDR Poster Presentation Day, the 3-Minute Thesis and PhD Student Showcase Symposium, as well as by joining in the Sub-Faculty (CAMMunity) and local student societies.

RESEARCH THEMES

BONE AND MUSCLE HEALTH

The Bone and Muscle Research Group conducts clinical trials of both new and current pharmaceuticals on muscle and bone, the effect of calcium, vitamin D and exercise on musculoskeletal health, and undertakes population-based studies of osteoporosis, sarcopenia and obesity in older adults from ethnic and underserved populations.



Key areas include:

- **Study of Indigenous Muscle and Bone Ageing (SIMBA):** identifying risk factors for increased falls and fractures in Aboriginal and Torres Strait Islander people
- **The Haemophilia Osteoporosis Registry (THOR):** identifying mechanisms of bone loss in haemophilia
- **MS Bone:** improving musculoskeletal health in people with multiple sclerosis
- **CVD + BONE:** Associations between cardiovascular risk factors and bone mineral density in older adults
- **Parkinson's:** Managing osteoporosis, bone and muscle strength in people with Parkinson's disease
- **ATHLETES:** what are the effects of elite sports (rowing and cycling) on bone mineral density?

AVAILABLE PROJECTS

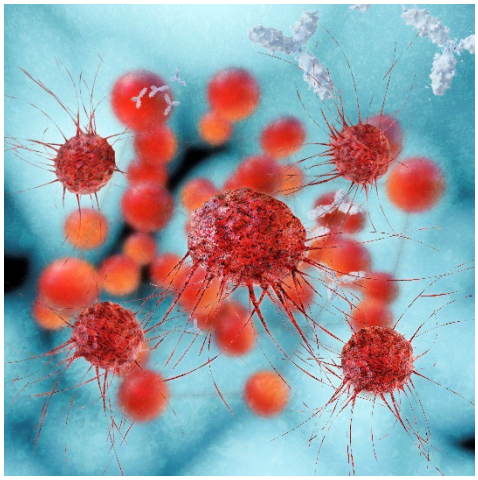
Dr Alexander Rodriguez
Alexander.Rodriguez@monash.edu

Dr Rodriguez's projects:
tinyurl.com/n2b4pawb

Dr Ayse Zengin
Ayse.Zengin@monash.edu

Dr Zengin's projects:
tinyurl.com/5n8xdnrf

CANCER



Cancer is a disease that can develop in almost every part of the human body, affecting hundreds of thousands of Australians every year. It is characterised by abnormal and uncontrolled growth of cells caused by changes (mutations) in their DNA to form a tumour, a process called tumorigenesis. These tumours can metastasise or spread to other parts of the body, often resulting in devastating health consequences and in most cases, death.

Cutting edge research is vital to discovering a cure for cancer and developing better treatments. Our cancer researchers lead the way in tackling the most pressing challenges in understanding, diagnosing and treating cancers in adults and children.

Through basic and translational research, we are exploring the molecular mechanisms behind tumour development, growth and metastasis, as well as how these tumours interact with the adaptive immune system and the tumour microenvironment. The ultimate goal is to uncover the fundamental mechanisms of tumour biology to inform the development of innovative cancer therapies and biomarkers.

AVAILABLE PROJECTS

Dr Maree Bilandzic
maree.bilandzic@hudson.org.au

Dr Bilandzic's projects:
tinyurl.com/yc5hh7z5

A/Prof Jason Cain
jason.cain@hudson.org.au

A/Prof Cain's projects:
tinyurl.com/5bunsk5u

Dr Nicole Campbell
nicole.campbell@monash.edu

Dr Campbell's projects:
tinyurl.com/5x5azjav

Dr Catherine Carmichael
Catherine.Carmichael@monash.edu

Dr Carmichael's projects:
tinyurl.com/mrs4dkes

A/Prof Simon Chu
simon.chu@hudson.org.au

A/Prof Chu's projects:
tinyurl.com/3e3jd72z

Dr Paul Daniel
Paul.Daniel@hudson.org.au

Dr Daniel's projects:
tinyurl.com/bhxef7ks

Dr Marius Dannappel
Marius.Dannappel@hudson.org.au

Dr Dannappel's projects:
tinyurl.com/2w4xs336

Dr Pouya Faridi
Pouya.Faridi@monash.edu

Dr Faridi's projects:
tinyurl.com/k6tr32vm

Dr Ron Firestein
ron.firestein@hudson.org.au

Dr Firestein's projects:
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Dr Garama's projects:
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A/Prof Daniel Gough
daniel.gough@monash.edu

A/Prof Gough's projects:
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Dr Terry Lim
Terry.Lim@monash.edu

Dr Lim's projects:
tinyurl.com/4b5yav8a

Dr Geraldine Ooi
geraldine.ooi@monash.edu

Dr Ooi's projects:
tinyurl.com/mr3bxvzy

Dr Tima Shamekhi
Tima.Shamekhi@monash.edu

Dr Shamekhi's projects:
tinyurl.com/yffdsy78

Prof Melissa Southey
Melissa.Southey@monash.edu

Prof Southey's projects:
tinyurl.com/43kjfnc2

Dr Sean Tan
Sean.Tan@monash.edu

Dr Tan's projects:
tinyurl.com/mv4rkpn3

Dr Jim Vadolas
Jim.Vadolas@hudson.org.au

Dr Vadolas's projects:
tinyurl.com/3m6dba6e

CARDIOVASCULAR

Monash Victorian Heart Institute

The Victorian Heart Institute (VHI) delivers excellence in cardiovascular research, education and training, which result in meaningful changes to the prevention, treatment and management of all forms of heart disease.

Co-located within Australia's first dedicated cardiac hospital – the Victorian Heart Hospital (VHH), a partnership with Monash Health on Monash University's Clayton campus, the VHI is uniquely positioned to integrate research and clinical activities under one roof.

Our areas of strength include transcatheter aortic valve implantation, intra-coronary imaging, testing of novel coronary stent designs, arterial function and coronary CT imaging.

There is an 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 Stephen Nicholls, Director, Victorian Heart Institute and Victorian Heart Hospital at: vhi.research@monash.edu

Hudson Institute

At Hudson Institute, we undertake basic research to improve understanding of the roles 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.

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EMERGENCY CARE RESEARCH

Adult Emergency Care Research interests include:

Monash Health is the largest health service in Victoria and includes four diverse adult Emergency Departments including the recently opened Cardiac Emergency at the Victorian Heart Hospital, and an acute Toxicology service. This provides opportunities for involvement in investigator-initiated clinical research projects and a number of funded, multi-centre national projects.

We work with regional and national bodies including the Australian Commission for Safety and Quality in Healthcare, Australasian College for Emergency Medicine (ACEM), College of Emergency Nursing Australasia (CENA), Monash Partners, Safer Care Victoria and the Monash Centre for Health Research and Implementation. Our work focuses on implementation research and pragmatic trial design aimed at influencing practice and policy, with the ultimate aim of improving healthcare for the community we serve.

Unique opportunities are facilitated for students to work with designers at Monash Art, Design & Architecture (MADA) Design Health Collab to apply design thinking to address complex unmet clinical needs and optimise healthcare system complexity. Opportunities are available for BMedSc(Hons), Honours, Masters and PhD candidates.

We also provide opportunities for undergraduate research projects. Current areas of interest include:

- Implementation science
- Design thinking
- Health systems
- Sepsis and critical care
- Emergency cardiovascular care
- Diagnostic excellence
- Silver trauma
- Public health
- Interventions aimed at reducing low-value care
- Alcohol and other drugs
- Toxicology
- Mental health
- Vascular access
- Respiratory care, with a focus on pneumothorax

Please contact Professor Diana Egerton-Warburton (diana.egerton-warburton@monash.edu) with any enquiries relating to Adult Emergency Care research.

Paediatric Emergency Care Research:

The Paediatric Emergency Department at Monash Medical Centre is involved in a large number of clinical research projects, ranging from single-centre studies to national and international multicentre randomised clinical trials and observational studies, as well as “big data” studies.

Our department is closely involved with the Australia-NZ Paediatric Research in Emergency Departments International Collaborative (PREDICT) Network and also collaborates with other research networks globally through the Paediatric Emergency Research Networks (PERN). Opportunities are available for BMedSc(Hons), Honours, Masters and PhD candidates.

We also provide opportunities for short-term placements as part of undergraduate degrees in Medicine, Science and Information Technology.

Current clinical research topics include acute asthma, acute limp, management of procedural pain and distress, recognition and response to acute deterioration, sepsis, febrile convulsions, mental health presentations, investigations of deaths, critical illness and adverse events in paediatric care, and many quality and safety projects.

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ENDOCRINOLOGY AND METABOLISM

The elegant but complex endocrine system impacts all aspects of health and disease. Our goal is to improve understanding of the roles of hormones in human biology and disease to tackle key health challenges facing Australian and global communities. These challenges include chronic disorders in reproductive health, metabolic bone disease, hypertension and cardiovascular disease, diabetes, endocrine cancer and obesity.

Clinical translation of our findings to improve diagnosis, therapeutic intervention and prevention of disease remains a key focus. The *Australian* Research Magazine recognised endocrinology research at Monash University as the best in Australia and Professor Peter R Ebeling AO as Australia's best endocrinology researcher. Professor Helena Teede AM is the top-ranked reproductive health researcher and an endocrinologist. Strong supervisory teams ensure a supportive environment, a critical mass for research success and opportunities for national and international collaborations during your research higher degree studies at Monash University.

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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. 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, ADHA and schizophrenia. A hallmark of this work is the translation of basic science research into clinically useful tools that improve patient health.

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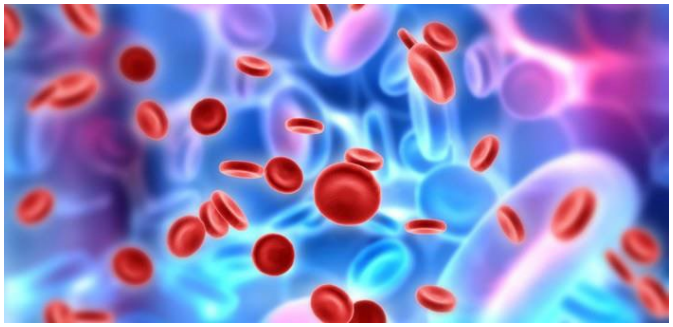
HAEMATOLOGY



Haematology research at the School of Clinical Sciences at Monash Health spans the whole translational spectrum from pre-clinical laboratory discovery through to genomic biomarker studies and phase I-IV clinical trials. Areas of research focus including multiple myeloma, myelodysplasia, acute leukaemia, non-Hodgkin lymphoma and haemoglobinopathies.

Within the Haematology research program, the **Blood Cancer Therapeutics Laboratory**, headed by Professor Jake Shortt, seeks to define new cancer targets and develop new drugs for the treatment of leukaemia, myeloma and lymphoma. The laboratory also performs genomic analyses of patient samples from clinical trials.

Examples of recent research outputs with contributions from students within his laboratory include:

Hooking myeloma by the GILZ: separating the efficacy and toxicity of steroids for the treatment of multiple myeloma and acute lymphoblastic leukaemia

Developing a Y-chromosome targeted therapeutic for lymphomas bearing mutations of X-encoded tumour suppressors

Evaluating dual PI3K/BET bromodomain inhibitors for the treatment of T-cell lymphoma

The **Blood Cancer Biomarkers Laboratory**, headed by Dr Paul Yeh, seeks to discover novel biomarkers which can be used in clinical practice to improve outcomes in patients with blood cancers. To achieve this, the laboratory performs a variety of sequencing techniques on patient samples including whole genome, whole exome, whole transcriptome and targeted sequencing to better understand blood cancers. The laboratory also develops and employs sophisticated bioinformatic tools in analysing these large data sets to identify molecular “signatures” that can be used to predict clinical outcomes. Examples of current projects in the laboratory include:

Identifying actionable immunopeptides from liquid biopsy in Acute Myeloid Leukaemia

Monitoring transcriptional evolution in acute myeloid leukaemia and peripheral T-cell lymphoma using circulating tumour DNA

Defining de novo intratumoural mutational profiles associated with response to novel therapies in Mantle Cell Lymphoma

Blood-based detection and monitoring of pre-malignant clonal haematopoiesis in the immunocompromised

The **Lymphoma Research Group**, headed by Dr Gareth Gregory, is a virtual group that encompasses translational, clinical and observational research to improve outcomes for patients with lymphoma. The Group bridges the gap between the large Haematology Clinical Research Unit at Monash Health, the Blood Cancer Laboratories within the Monash Health Translation Precinct and other internal and external collaborators including the Lymphoma and Related Diseases Registry at Monash University and the Australasian Lymphoma Alliance.

Dr Jim Vadolas and Dr George Grigoriadis co-lead the **Immunohaematology Group**, where their research focuses on understanding the complex interactions between chronic anaemia and immune dysregulation. Specifically, they investigate how chronic anaemia can disrupt immune homeostasis, potentially rendering patients more susceptible to infections and malignancies, which in turn complicates the clinical management of these conditions.

A major aspect of their laboratory also includes the development of cutting-edge therapeutic strategies, with a particular emphasis on advanced molecular technique such as gene therapy, RNA

interference (RNAi) and genome editing. These approaches are being explored to not only prevent and treat, but also to potentially cure various chronic haematological disorders. Their research aims to address the underlying pathophysiology of these diseases at the molecular and cellular levels with a focus on improving therapeutic outcomes for patients. Through this translational approach, Dr Vadolas and Dr Grigoriadis seek to bridge the gap between basic science and clinical practice, developing novel treatment modalities that can significantly improve patient health and quality of life.

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IMMUNOLOGY, INFECTION AND INFLAMMATORY DISEASES

The immune response is important to nearly every disease you research, study or treat in your career as a basic scientist or clinician-scientist. Therefore, 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.

Choosing a research project with one of the supervisors below will provide you with outstanding training in infectious and inflammatory disease research. You will conduct high quality discovery and clinical research using the latest technologies, contributing to the translation of research into prevention, diagnostics and treatments for patients. You will also have the opportunity to publish your research in leading journals.

Diseases we study include:

Autoimmune diseases: Systemic lupus erythematosus (SLE), glomerulonephritis, vasculitis, rheumatoid arthritis and hepatitis. Causes of kidney, liver and lung scarring and loss of function are a focus.
Infectious disease: HIV, influenza, Chlamydia, Helicobacter pylori, herpes simplex virus, human metapneumovirus, respiratory syncytial virus and bacterial infections.
Inflammation-based disorders: Stroke, sepsis, inflammatory bowel disease, COPD, autoinflammatory diseases and dermatitis.
Cancers with an inflammatory component: These include pancreatic, lung, breast, ovarian, endometrial and gastric cancers.

The techniques covered in our PhD program include 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 and practice in inflammatory diseases. As a student in this program, you will also receive training in science communication (written & oral), 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)
- A choice of over 60 research projects covering topics ranging from preclinical discovery to clinical translation

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NEUROSCIENCE AND PSYCHIATRY

The Translational Molecular Psychiatry Program is engaged in psychiatric neuroscience research, which is an exciting and emerging field of work that attempts to identify the molecular abnormalities in the brain that underpin psychiatric disorders. We focus on the major psychotic and neurodevelopmental disorders such as schizophrenia, autism and major depression, and use a range of clinical 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, post-mortem human brain studies examining expression profiles of genes of interest, transgenic animals modelling brain specific genetic risk factors, stem cell models and clinical protein and molecular biomarkers.

The **Behavioural Neuroscience Laboratory** encompasses a large multi-disciplinary program that spans the translational continuum, combining advanced neuroscience techniques with molecular biology, human clinical genomics and clinical studies. The laboratory explores both genetic and environmental risk factors associated with neurodevelopmental disorders such as schizophrenia and autism to identify biological pathways to target therapeutic application. We are currently offering projects in human genetics, neuronal dendrite mapping, molecular biology of the brain and behavioural neuroscience and brain electrophysiology.

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).

The **Clinical Psychedelic Laboratory** is Australia's first laboratory dedicated to trialling psychedelic agents in mental disorders. Based at the Notting Hill site, it is purpose-built to provide an optimal therapeutic and research environment to investigate how agents such as psilocybin, MDMA, 5-MeO-DMT and other psychedelics can be used in disorders such as PTSD, major depression, generalised anxiety disorder and related disorders.

The **Refugee and Asylum Seeker Mental Health Research** program investigates the psychological and psychiatric issues in forcibly displaced people seeking asylum. By examining social, policy and legislative factors and how they impact asylum seekers and refugees it seeks to identify mechanisms of mental ill-health and protective factors and resilience in this cohort. Major projects include studying the impacts of immigration detention and utility of general screening for mental disorders in asylum seekers.

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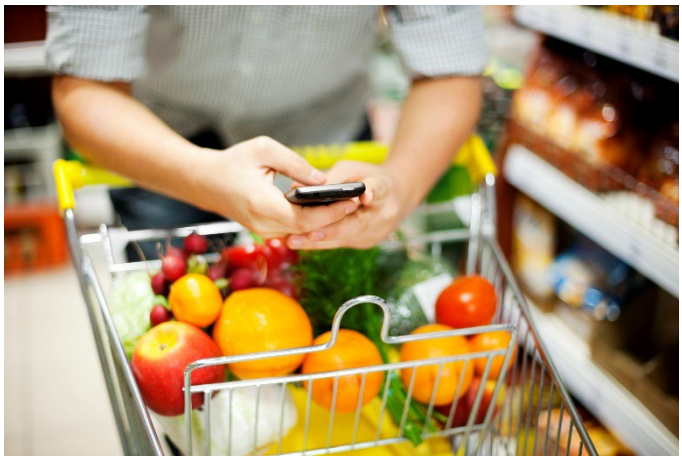
NUTRITION, DIETETICS AND FOOD



Judy Bauer is Professor and Discipline Lead of Nutrition & Dietetics within the Department of Nutrition, Dietetics and Food. She is internationally recognised for her contributions to discovery and translational research in nutrition screening, assessment, innovative nutrition intervention programs and the development of evidence-based practice guidelines particularly in oncology and malnutrition.

Research in the Department of Nutrition, Dietetics and Food covers the themes of:

- *Clinical Nutrition* from paediatrics to the ageing population
- *Metabolism* including exploring the link between dietary components (especially polyphenols) and carbohydrate / energy metabolism, 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; and
- *Teaching and Learning* with a focus on competency-based education, programmatic assessment and professionalism

The Department receives research funding from multiple sources including NHMRC project grants and research fellowships, National Heart Foundation, Sports Medicine Australia, state Departments of Health, MRFF and several industry partners. The Department is located at the 'Be Active, Sleep and Eat' (BASE) Facility in Notting Hill. The facility comprises a state-of-the-art iDXA for bone and body composition assessment, phlebotomy facilities, clinical chemistry analysis, a commercial kitchen, exercise physiology testing and consulting suites - providing comprehensive infrastructure to support multidisciplinary research. The Department also has a Molecular Nutrition laboratory at the Victorian Heart Hospital. Students are provided with a dedicated workspace and a laptop for the duration of their PhD.

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PAEDIATRICS (INCLUDING FETAL, NEWBORN, CHILDREN AND YOUTH)

The research we conduct in the Department of Paediatrics spans basic laboratory discovery research through to clinical and population health research. It covers the full age spectrum from conception to adolescence, and the entire lifespan in collaboration with our local partners. These include:

- Hudson Institute of Medical Research
- The Ritchie Centre (a Joint centre of Monash University and Hudson)
- Turner Institute
- Monash Health

At our state-of-the-art education and research centre at Monash Children's Hospital, we provide an ideal environment for research students from medical and science backgrounds.

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PRECISION MEDICINE

Precision Medicine takes innovative approaches to integrating information about an individual's genome, environment and lifestyle to guide decisions related to their medical management including disease prevention, screening, diagnosis and treatment.

Precision Medicine aims to maintain good health and improve health outcomes should disease occur by targeting health interventions to individuals who are most likely to benefit, underpinned by a better understanding of individual diversity.

Monash University's first Chair of Precision Medicine is Professor Melissa Southey, who is a highly cited author who joined Monash to lead this discipline.

Cancer exemplifies both the opportunities and challenges for precision health research. Our team has been pivotal in establishing large epidemiological research resources that are now being utilized to address key questions in cancer research.

These resources include highly selected groups of men and women and their families that support the identification of heritable risk factors (genomic and epigenomic) and large population-based studies in Australia and internationally. Together, these enable research to further characterise the prevalence and penetrance of risk factors for cancer and disease risk.

Our work is providing the foundation for the emerging Precision Public Health era and enabling the clinical translation of new information to better inform healthcare policy including future screening programs that incorporate genomic information.

Precision cancer medicine: With an initial focus on common cancers such as breast and prostate cancer, we now aim to impact key stages across the disease and life course. Projects available to students include:

- identifying heritable methylation marks and their risk implications using innovative family study designs
- classifying the pathogenicity of genetic variants identified in our large-scale research resources and returning the results to our research participants
- utilising molecular pathology and functional genomics to further characterise the consequence of genetic variation associated with increased cancer risk
- informing best-practice guidelines and driving necessary policy change
- assessing feasibility, acceptability, utility and cost-effectiveness of population genomic risk screening programs

Molecular epidemiology: Bringing epidemiology and genomics / epigenomics together to use insights at the molecular level to sharpen our understanding of disease at the population level. We focus on the aetiology, distribution, prediction and prevention of disease, mainly cancer, within families and across populations. Our research uses sound study designs coupled with complex statistical methods and the integration of lifestyle, administrative, clinical and -omic data, with the aim of:

- identifying molecular markers that are most predictive of disease/cancer and mortality risk
- understanding the features of ageing at the biological level, using emerging biomarkers such as epigenetic ageing ‘clocks’, markers of inflammation and the tryptophan-kynurenine pathway
- defining methylation marks of exposure to health risk factors to capture current and past exposures and reflect differences in individual responses to exposure
- improving the molecular characterisation of breast and prostate cancer, and prediction of outcomes, using genome-wide tumour genetic and epigenetic data

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PUBLIC HEALTH INITIATIVES

MAKING DIRECT IMPACT ON WOMEN'S HEALTH THROUGH IMPLEMENTATION RESEARCH

The Monash Centre for Health Research and Implementation (MCHRI) delivers health impact by partnering with community, clinicians and researchers to co-create knowledge, and uses implementation to drive equitable, quality healthcare and public health.

MCHRI is founded on a partnership across Monash University, our primary partner Monash Health and over 100 other healthcare stakeholders. It has 140+ clinicians, researchers, students and staff.

MCHRI has an active and engaging discovery, clinical, health services and public health research education program that trains, mentors and builds the careers of those aiming to improve clinical health outcomes. Clinical trials, implementation, innovative data driven and public and digital health research to directly impact health.

We cover women's health across the lifespan including pregnancy, endocrinology and diabetes, mental health, lifestyle, healthy ageing, dietetics and nutrition. We welcome all disciplines from healthcare, as well as engineering, IT and social sciences.

Aspiring to Better Care, Better Equity, Better Health, MCHRI is committed to making a difference and improving health, for women and their families. Read about us on the Monash University website at **monash.edu/medicine/mchri/home.** MCHRI's consumers website highlighting our research and resources for consumers and health professionals is at mchri.org.au.

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REHABILITATION

The Unit aims to conduct innovative medical research to provide insight on best practices in rehabilitation management. This core purpose will inform translational policy and practice, which can be implemented in the care of patients in the rehabilitation phase.

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REPRODUCTIVE HEALTH AND BIOLOGY

Reproductive health is a key global challenge that affects present and future generations. Recent breakthroughs in our discipline have provided compelling evidence that an individual's lifelong health is influenced by events prior to conception and during fetal life. These effects are transmitted by the mother and father via the oocyte and sperm and are influenced by the in-utero environment and placental function. The need to increase our understanding of reproductive health is also underlined by an increasing number of couples seeking assisted reproductive technologies and the rapidly increasing world population. Our research program extends directly into clincial trials, implementation research, epidemiology and public health through the Monash Centre for Health Research and Implementation.

Using basic and translational science, Reproductive Health and Biology researchers are making discoveries about sperm and egg formation, the impacts of environmental contaminants, drugs and emerging infections on oocytes, sperm, testis and ovary function, and how these factors affect an individual's health and the development of their future children. Our work also seeks to determine how cancers form from early sperm cells and how each of these affects human development and health.

We have developed a wide range of animal and cell culture models to address these needs and use our approaches to reveal the cellular, molecular and biochemical mechanisms underpinning reproductive health. Advances in reproductive sciences translate to allied fields: cancer biology, animal food production and conservation of endangered species. In addition, mechanisms involved in the regulation of reproduction have wider actions, influencing inflammation and tissue repair in a variety of organs. As our work is focussed on new discoveries and clinical problems, we expect our studies to lead to new approaches from improved diagnosis, prevention or treatment of disease.

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RHEUMATOLOGY

The Rheumatology Group includes clinicians and scientists with backgrounds across the spectrum of rheumatology from basic immunology all the way to clinical trials. We study lupus, scleroderma, Sjögren's disease, fibromyalgia, psoriatic arthritis and vasculitis. Our group also has a strong interest in Aboriginal and Torres Strait Islander health research.

Close collaboration between clinical, discovery and translational scientists creates a unique environment that has fostered significant outcomes including commercialisations.

In the lab, we principally study the role of glucocorticoid-induced molecules in human diseases like systemic lupus erythematosus (SLE, lupus). Glucocorticoids have broad-spectrum effects on immune-inflammatory activation and are widely used in the treatment of inflammatory diseases, but their use is complicated by significant toxicity due to non-anti-inflammatory effects. Our work includes clinico-pathological correlations using human samples, animal models of disease including novel gene knockout mice, and *in vitro* work on signal transduction pathways. It is our hypothesis that a greater understanding of the actions of glucocorticoids will lead to the development of new therapeutic agents for the treatment of inflammatory diseases, and we are now in the early stages of commercialisation of novel drug target to achieve this goal.

In the clinic, the Australian Lupus Registry and Biobank (ALRB) is a collaboration between centres all over Australia, headquartered at Monash, to improve treatment and outcomes for people suffering from lupus. The ALRB Monash biobank is a multi-thousand sample asset in which we are using unbiased multi-omics approaches to better understand the biological foundations underpinning lupus pathogenesis. We are also the headquarters of the Asia Pacific Lupus Collaboration (APLC), the largest cohort of SLE patients being followed worldwide, which provides a huge dataset for epidemiology and data science approaches; we are using multiple approaches to develop new instruments for clinical measurement in SLE.

We have similar large-scale clinical projects in diseases including scleroderma, Sjögren's disease and fibromyalgia, including biomarker and clinical outcome studies. In scleroderma, we are part of the national disease registry and biobank and undertake studies both as part of that collaboration and also independently. In fibromyalgia we hold the largest clinical dataset in Australia, and one of the largest in the world, and use it for multiple important outcome studies. In Sjögren's disease, we collaborate with interstate scientists hosting the largest Sjögren's disease registry and biobank in Australia, to undertake biomarker discovery and clinical outcome studies.

AVAILABLE PROJECTS

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SLEEP AND RESPIRATORY

Adult sleep medicine projects span both clinical sleep medicine and the underlying pathophysiology of sleep disorders. The major focus of our research is on obstructive sleep apnoea (OSA). OSA is a highly prevalent condition, which is associated with symptoms of excessive daytime sleepiness, as well as an increased risk of hypertension, cardiovascular disease, depression and cognitive impairment.

The major risk factor for OSA is obesity. Our research interests include but are not limited to:

1) Understanding OSA physiology as a means of predicting treatment response and exploring new treatment approaches
2) Investigating the interaction between obesity and sleep

Our current research strategy is built around the idea that the pathogenesis of OSA is driven by the interaction of several physiological traits. These traits provide multiple targets for individual or combination interventions that could effectively treat this disorder on an individual-patient basis.

We work closely with the Department of Physiology at the BASE (Be Active Sleep and Eat) facility, as well as the Department of Nutrition and Dietetics at BASE.

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STROKE

The Stroke and Ageing Research Group (STAR) adopts a transdisciplinary approach to 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 our experts lead divisions in clinical trials, geomapping for health system optimisation, 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).

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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, supportive care for chronic diseases, aged care, palliative care and end-of-life care, to telemedicine, patient reported outcomes and virtual care. A highly dynamic and broadly experienced team including palliative care physicians, PhD candidates, post-doctoral /research fellows and research assistants are currently focusing on the following areas of research:

- Telemedicine & Enhanced Digital Health
- Electronic Patient Reported Outcomes
- Aged Care Palliative Care
- Refractory Pain
- Refractory Symptoms
- End of Life Care

AVAILABLE PROJECTS

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SURGERY

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

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, paediatric surgery, plastic and reconstructive 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.

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WOMEN'S HEALTH

Department of Obstetrics and Gynaecology

The Department of Obstetrics and Gynaecology at Monash University leads a dynamic research program in women's health within the School of Clinical Sciences, working closely with the Ritchie Centre and collaborating across the University and with partners worldwide. Our students engage in research at every stage of their academic journey, from early exploration to advanced investigation.

Our work spans discovery science and clinical research across the entire spectrum of women's health, from the embryo through to adulthood and beyond. Recognised as one of Australia's premier departments in this field, our reputation is built on the excellence of our researchers and the impact of our scientific contributions. We aim to inspire in every student a lasting passion for research that shapes their future.

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