THE UNIVERSITY of ADELAIDE

2020 RESEARCH OPPORTUNITIES GUIDE

Faculty of Health and Medical Sciences

health.adelaide.edu.au

CONTENTS

THIRD YEAR RESEARCH PLACEMENTS

The purpose of the Research Placement course is to provide small group research experiences (in consecutive semesters, as parts 1 and 2) for all third year Bachelor of Health and Medical Sciences (BHMS), Bachelor of Health and Medical Sciences (Advanced) and Bachelor of Health Sciences (Advanced) students, supervised by academic and research staff. A cross-disciplinary research conference event will be a highlight of the course.

This Research Opportunities Guide provides a link to available projects for 2020 via individual's researcher profiles.

How to apply

Students will be invited by email to nominate their project preferences online during a single week in January for students who are starting part 1 at the beginning of the year (semester 1). Most of the communication will be via MyUni so it is important that you enrol for Part 1 of the Research Placement course as soon as possible.

(Mid-year entries into part 1 will be invited to nominate project preferences during a time window before semester 2, to be announced closer to the date).

Other Information

Students can only be placed in projects for which they are eligible, based on majors and other criteria as listed in the project descriptions. Students who enrol after the preference round, who do not submit preferences, or whose preferences cannot be accommodated, will be assigned by course coordinators into projects that are appropriate to their majors.

Assignments into projects by course coordinators will be final, and not open to requests for reassignment.

Students are allowed to contact supervisors only after their placement with that supervisor has been confirmed in mid February.

To best fit to the field of work, research activities may be spaced weekly, or packed into a shorter span of days, to achieve 20 hours of research contact time per semester, as determined by the supervisor in consultation with the students in the group.

Special requirements

Note that police clearances, immunisations, or other special requirements if specified in the guide must be organised by students in advance of the research project start date, at their own expense.

Timeline

- At the end of November the Research Placement Guide will be posted online.
- Mid-January: project preferences will be accepted from students (online poll website) for a limited time only. The precise dates will be posted on MyUni.
- Mid-February: Students will be notified of their project group by e-mail.
- Week 3 of the semester: Students have their introductory meetings with their supervisors, setting the planned schedule of contact meetings for the semester, discussing relevant reports or literature to be read, and completing orientation and induction requirements as needed for the research project.

WHY STUDY HONOURS OR A HIGHER DEGREE BY RESEARCH?

Study with us and open the door to a range of rewarding career opportunities. Become a part of a community of alumni that includes Nobel Prize winners, pioneering researchers and world-renowned leaders in health. Our research programs are held in high regard, their quality and impact respected by peers and the community.

Studying Honours or a Higher Degree by Research can provide you with the skills and experience to pursue different career opportunities, particularly a career in research. Employers recognise that the research ability and broad range of transferable skills which University of Adelaide graduates possess equip them well for challenging and diverse roles in industry, government and business, as well as in research and academic organisations.

By undertaking a research degree with us, you will be involved in discovery, innovation and cutting-edge research. Our strong focus on addressing global challenges creates a highly stimulating setting for our postgraduate students interested in changing the world.

APPLYING FOR HONOURS

Three easy steps in applying for honours

1

Identify an area of interest

Discover current research opportunities in this publication, or browse our research areas on the **Faculty of Health and Medical Sciences website**.

2

Complete the relevant form

To initiate an expression of interest, download and **complete the relevant form** according to the instructions for the honours program you wish to undertake.

3

Submit

Submit your completed expression of interest, a copy of your academic transcript, and any other additional documents required to **fhsresed@adelaide.edu.au**

Further information

Please note: To be considered for the below scholarships, applicants are strongly encouraged to submit an expression of interest by 30 November (semester 1 start) or July 1 (semester 2 start). All Semester 2 applicants will be ranked with the following years Semester 1 applications.

The University offers **scholarships** to undergraduate students. These scholarships, as well as many others funded by industry and non-profit organisations, are available to potential and currently enrolled students.

Students enrolled in the Bachelor of Medicine and Bachelor of Surgery degree at the University of Adelaide will need to apply for a leave of absence and supply a banding letter. Students can request this by emailing **fhsassessment@adelaide.edu.au**

Are you currently studying at another university?

If you are completing undergraduate studies at another institution, you will need to provide a copy of your academic transcript once your final results are available.

Closing deadlines and next steps

Once final results for the semester are available (in July or December), Honours coordinators will finalise their recommendations for honours projects. Successful students will then be emailed with instructions to submit a formal application for admission to the honours degree via a university internal transfer or, for external applicants, via SATAC.

APPLYING FOR A HIGHER DEGREE BY RESEARCH (HDR)

1

Determine what type of HDR you wish to apply for, and check the entry requirements.

Information on the different degrees and their eligibility is available on the Degree Finder website at **adelaide.edu.au/degree-finder**

Information on scholarships is available at **adelaide.edu.au/scholarships**

2

HDR PORTFOLIO SUBMISSION

To be considered by a Postgraduate Coordinator for Higher Degree by Research studies in one of our Schools, prospective students must submit a portfolio, including all of the below listed items in a single PDF formatted file.

What degree are you applying for – e.g. Doctor of Philosophy/Master of Philosophy/Master of Clinical Science.
Refer to **adelaide.edu.au/degree-finder**

1. The names of up to three potential Supervisors from the School with which you wish to study.
   More information on our Researchers and their availability to Supervise is online: **researchers.adelaide.edu.au**
2. A short statement of your research interests and what you would like to research for your degree (maximum 200 words)
3. Your English Proficiency Certificate. We only accept IELTS/TOEFL/PTE/CAE with scores per **adelaide.edu.au/graduatecentre/future-students/how-to-apply/english-language-requirements**
4. Your academic resume;
5. Your Google Scholar ID and/or ORCiD ID; and
6. Your academic transcripts for your undergraduate and postgraduate studies;
7. Your certificates for all your university degrees and diplomas (please do not include any other certificates, such as merit awards or for non-degree training);
8. A summary of the main findings from the research component of any Masters and/or Honours degree, and from any other research experience;
9. Include the full Vancouver or Harvard reference of any peer-reviewed publications with a statement regarding your contribution to each;
10. The names and contact details of two academic referees who can comment on your research performance to date and on your aptitude for HDR studies; at least one of these referees should be able to comment on the research component of any Masters and/or Honours degree, preferably having been your principal supervisor.

Important: Please note that incomplete portfolios or documents that are not combined into a single pdf file, will not be considered further. PDF converters are available for you to download from the Adelaide Graduate Centre website: **adelaide.edu.au/graduatecentre/orbit-help-pages/pdf-conversion-utilities**

3

Refining your research topic and supervisor interview

After circulating your portfolio to the academic staff within the school, supervisors who are interested in your portfolio will contact you directly. The supervisor will discuss your research topic with you, and will book a time to interview you (either in person or via Skype). If the supervisor then agrees to support your application, you will receive written confirmation to proceed with your application.

4

Apply online

Having secured the support of your school, supervisor and postgraduate coordinator, the next step is to formally apply online through the Adelaide Graduate Centre at **adelaide.edu.au/graduatecentre**

Note that domestic and international scholarships have specific closing dates. You will be required to upload many of the documents that you have previously provided to the school, referee reports, and the written confirmation from your supervisors that they have agreed to support your project.

5

University ranking and award

Scholarship applications undergo ranking and selection through a series of faculty and university selection panels. There is intense competition for scholarship places, so preparing a compelling application (per steps 1-3 above) is essential. The administration and admission of HDR students is managed through the Adelaide Graduate Centre **adelaide.edu.au/graduatecentre**

Further information direct all inquiries to **fhsresed@adelaide.edu.au**

INTERNATIONAL STUDY OPPORTUNITIES FOR PHD STUDENTS

In 2015, the University of Adelaide and our priority partners, Nagoya University (Japan) and the University of Freiburg (Germany) signed formal agreements to offer Joint PhD programs in the area of medical and biomedical research. In these programs, PhD students are enrolled in both the University of Adelaide and the respective partner university and will be supervised by experts from each university. At PhD completion, students will receive a jointly awarded PhD degree.

Students undertaking the joint PhD program will spend most of their candidature at the University of Adelaide and at least one year under academic supervision within the School of Medicine, Nagoya University or International Spemann Graduate School of Biology and Medicine at the Albert-Ludwigs-University/University of Freiburg. All instruction is undertaken in English.

For more information, visit:
health.adelaide.edu.au/our-research/honours-and-higher-degrees-by-research#higher-degrees-by-research

CANCER BIOLOGY AND CLINICAL ONCOLOGY

CANCER BIOLOGY AND CLINICAL ONCOLOGY RESEARCH GROUPS

Cancer is a general term for more than 100 diseases that are characterised by the abnormal growth of cells. Cancer affects a large portion of Australians, with one in two diagnosed by the age of 85.

Our cancer biology research seeks to understand the fundamental mechanisms by which cancers arise, progress and respond to treatment.

Clinical oncology consists of three primary disciplines: medical oncology (the treatment of cancer with medicine, including chemotherapy); surgical oncology (the surgical aspects of cancer, including biopsy, staging, and surgical resection of tumours); and radiation oncology (the treatment of cancer with therapeutic radiation).

Understanding the causes of cancer will enable the development of innovative approaches to treat both liquid cancers (leukaemia and myeloma) and solid cancers (breast, prostate, ovarian and gastrointestinal cancer).

Researchers across the faculty are focused on:

- identifying the molecular and cellular basis of cancer
- developing preclinical models that closely resemble human cancer
- understanding the mechanisms involved in cancer spread and resistance to chemotherapy
- identifying novel biomarkers for detection of cancer
- developing and evaluating new drugs to treat cancer.

CANCER BIOLOGY AND CLINICAL ONCOLOGY RESEARCH OPPORTUNITIES

ACUTE LYMPHOBLASTIC LEUKAEMIA (ALL) – CANCER PROGRAM / PRECISION MEDICINE THEME – SAHMRI

Lead Researcher: Professor Deborah White

Contact: deborah.white@sahmri.com

Research Summary

Acute Lymphoblastic Leukaemia (ALL) is the most common childhood cancer and leading cause of non-traumatic death in children. Adolescents and young adults (AYA) with ALL the therapeutic outcomes are poor. Most older adults will die of their disease.

Genomic studies have identified new lesions known to confer high-risk for which the biological and clinical implications remain unclear. In addition, recent studies have implicated the human microbiome in ALL development, treatment response and life-long comorbidities. The aim is to incorporate genomic knowledge into clinical care and to systematically identify druggable targets to improve patient outcomes. In addition, immunotherapies have shown efficacy in some settings. However, not all high-risk/relapsed ALL patients are eligible for immunotherapy with 50% of patients experiencing hypersensitivity reactions. As the National Referral Centre for genomic screening of ALL cases we sequence a large number of patients, identifying a significant number of alterations and novel gene fusions for investigation.

All projects will involve a range of techniques which may include genomic sequencing, flow cytometry, cytokine measurement, molecular biology and cloning techniques including primer design, PCR Sanger sequencing, bacterial work and tissue culture. In addition, patient derived xenografts (PDX)/mouse avatars/germ free mice) models of ALL may be used.

For available projects please view Professor White's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/deborah.l.white

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

3

Category

Wet Laboratory

Research Areas

Cancer Biology and Clinical Oncology

Professor Deborah White

AQUAPORIN PHYSIOLOGY AND DRUG DISCOVERY RESEARCH PROGRAM

Lead Researcher: Professor Andrea Yool

Contact: andrea.yool@adelaide.edu.au

Research Summary

Our goals are to define the molecular basis of the dual water and ion channel functions of aquaporins, to understand the roles of AQPs in physiological systems, and to build a definitive portfolio of AQP antagonist and agonist compounds as tools for basic research and clinical innovation. Aquaporins are currently being uncovered as essential components of rapid cell migration in wound healing and cancer metastasis, particularly in aggressive cancers such as glioblastoma and colon cancers. We have shown molecular knockdown or pharmacological blockade of AQP1 can slow or stop aggressive cancer cell movement. Our work over the past decade has challenged the original dogma that the archetypal channel AQP1 is rigid and constitutively open. Our focus on AQP pharmacology defined the first library of pharmacological agents in the world, based on arylsulfonamide scaffolds showing differential activities on the ion and the water pores. We are also discovering new pharmacological AQP modulators from traditional Chinese and Indian herbal medicines, identifying the active chemical components and defining their molecular targets of action on AQP gating domains. Our findings could offer exciting opportunities for clinical intervention in cancer metastasis, brain oedema, and other fluid transport disorders.

For available projects please view Professor Yool's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/andrea.yool

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

4

Category

Wet Laboratory

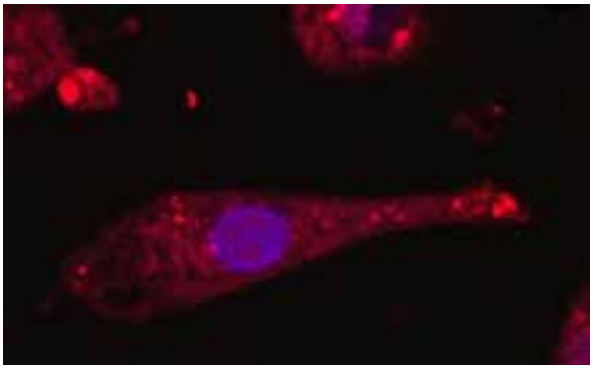
Research Areas

Cancer Biology and Clinical Oncology

Neuroscience, Behaviour and Brain Health

Innovative Therapeutics

Cardiac, Respiratory and Vascular Health



Hot spots show ion currents in real time, carried by aquaporin-1 channels localised in the leading edges of migrating colon cancer cells. (Pei et al, 2019, Molecular Pharmacology May 2019, 95 (5) 573-583; DOI: https://doi.org/10.1124/mol.118.115428)

BREAST BIOLOGY AND CANCER UNIT

Lead Researcher: Associate Professor Wendy Ingman

Contact: wendy.ingman@adelaide.edu.au

Research Summary

The breast is a unique organ, because it goes through the majority of its development a long time after birth. The major phases of breast development occur during puberty, where the cellular structures develop to maturity, and pregnancy where the cells become altered, so as to enable milk production during lactation. The extensive changes that occur in the breast pose some unique immunological challenges. The immune system is programmed to maintain the status quo by mounting attacks against invading bacteria and viruses, and preventing rogue cells from developing into tumours. So when a tissue undergoes such extensive changes as the breast does, the immune system must develop particular strategies to allow this to happen. Our research investigates the immunology of the breast and how immune system cells affect cancer risk and development of mastitis.

For available projects please view Associate Professor Ingman's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/wendy.ingman

Projects available for

Honours; HDR; DPhil

Maximum Number of Students

Flexible

Category

Wet Laboratory; Human Research

Research Areas

Cancer Biology and Clinical Oncology

Immunology and Infection

Early Origins of Health

Associate Professor Wendy Ingman

Amita Ghadge, Joe Wrin, Pallave Dasari, Leigh Hodson, Maddison Archer, Sarah Bernhardt, and Wendy Ingman

BREAST AND PROSTATE CANCER RESEARCH – DAME ROMA MITCHELL CANCER RESEARCH LABORATORIES

Lead Researchers: Professor Wayne Tilley and Associate Professor Theresa Hickey

Contact: wayne.tilley@adelaide.edu.au; theresa.hickey@adelaide.edu.au

Research Summary

The Dame Roma Mitchell Cancer Research Laboratories (DRMCRL) have an international reputation for research into sex hormone action in hormone-dependent cancers, with a particular emphasis on breast and prostate cancers.

This world-class cancer research centre brings together expertise spanning more than 30 years in basic and translational prostate and breast cancer research. It is the leading centre in Australia with a multidisciplinary team of scientists, clinicians and patient advocates dedicated to understanding how sex hormones and their receptors control tumour behaviour in both disease contexts with research programs spanning discovery, drug development and clinical translation.

Our laboratory has pioneered integration of genomic technologies with unique preclinical models of human breast and prostate cancers, especially patient-derived explant cultures and xenograft models, to better understand disease mechanisms and facilitate translation of breast and prostate cancer research into the clinic.

We publish in high impact journals and our research is well supported by funding from nationally and internationally competitive grants. The DRMCRL offers students a wide array of projects that span cutting-edge biomedical research using contemporary pre-clinical models, genome-wide technologies and access to large proteomic/genomic databases.

For available projects please view Professor Wayne Tilley and Dr Theresa Hickey's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/wayne.tilley

researchers.adelaide.edu.au/profile/theresa.hickey

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

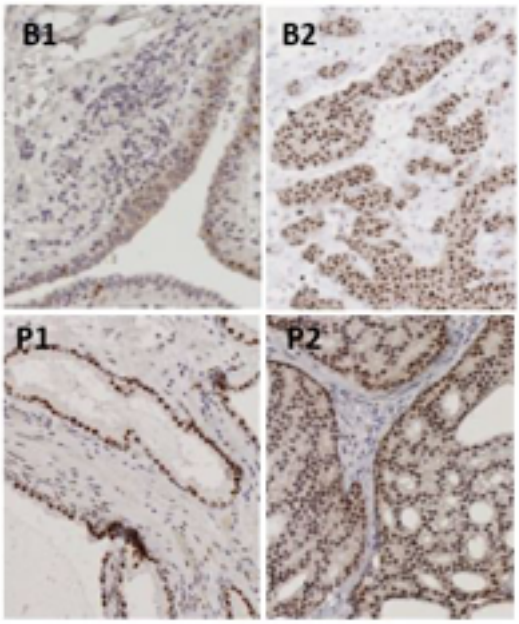
Wet Laboratory; Dry Laboratory

Research Areas

Cancer Biology and Clinical Oncology

Innovative Therapeutics

Translational Health Outcomes



Immunostaining of androgen receptor (AR). Brown spots represent cells that express AR in normal breast (B1) and prostate (P1) vs. cancerous breast (B2) and prostate (P2) tissue.

Professor Wayne Tilley

Associate Professor Theresa Hickey

CANCER TREATMENT TOXICITIES GROUP

Lead Researcher: Associate Professor Joanne Bowen

Contact: joanne.bowen@adelaide.edu.au

Research Summary

The group investigates underlying mechanisms and treatments for some of the most common toxicities of cancer therapies, including diarrhoea, vomiting, and neuroinflammation. My particular interest is how the gastrointestinal tract responds to exposure to chemotherapy, radiation and small molecule inhibitors used in treatment of solid tumours. My current projects focus on establishing new interventions for mitigation of gastrointestinal side effects that target interactions between the gut microbiome and immune system at the level of the mucosal barrier. We work with industry partners and conduct studies from the in vitro level through to clinical trials.

For available projects please view Associate Professor Bowen's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/joanne.bowen

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

8

Category

Wet Laboratory; Human Research

Research Areas

Cancer Biology and Clinical Oncology

Nutrition and Metabolic Health

Neuroscience, Behaviour and Brain Health

Cancer Treatment Toxicities Group members

CHRONIC MYELOID LEUKAEMIA (CML) – CANCER PROGRAM/PRECISION MEDICINE THEME – SAHMRI

Lead Researcher: Professor Timothy Hughes

Contact: tim.hughes@sahmri.com

Research Summary

The treatment of chronic myeloid leukaemia (CML) has been one of the most remarkable cancer success stories this century. The improvement in 10-year survival for CML patients from 20% in the 1990s to over 80% today has been achieved through the clinical application of tyrosine kinase inhibitors (TKI) therapy targeting BCR-ABL1. Despite the improvements in outcomes, around 30% of CML patients respond poorly to TKI therapy. Even among those patients who respond well, many will remain dependent on TKI therapy for life, leading to a massive cost burden, organ damage, and impairment of quality of life. The current focus of research in CML centres on the following:

1. Identification of patients at risk of failing frontline therapy and working out whether these patients may benefit from novel anti-CML therapy. An inter-related question concerns patients who have suboptimal responses - can adding novel agents to TKI therapy further improve disease response?

2. Patients who have responded well to TKIs usually have undetectable circulating disease. Some patients in this group can stop therapy without disease recurrence, whilst others experience rapid relapse. Identifying differences between these patients may hold the key to minimizing the proportion of patients who need lifelong therapy.

For available projects please view Professor Timothy Hughes' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/timothy.hughes

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

2

Category

Wet Laboratory

Research Areas

Cancer Biology and Clinical Oncology

Translational Health Outcomes

Professor Timothy P. Hughes

GENE REGULATION IN CANCER LABORATORY

Lead Researcher: Dr Philip Gregory

Contact: philip.gregory@adelaide.edu.au

Research Summary

In the last decade, our conception of the complexity of the mammalian transcriptome has been revolutionized by the annotation of the human genome and the advent of deep sequencing technologies. It is now clear that the majority of the genome is transcribed into protein-coding and non-coding regulatory RNAs, however the functional consequences of the majority of these RNAs remains unknown.

During cancer progression, tumour cells undergo significant changes in cellular function. For epithelial tumour cells to metastasise they must acquire abilities to invade, survive and then colonise distant sites.

Epithelial cell plasticity (or epithelial-mesenchymal transition) plays a major role in the metastatic cascade. Our lab is examining how EMT and cancer metastasis are regulated by non-coding RNAs. In particular, our research focusses on how microRNAs alter the cancer cell transcriptome using in vitro and in vivo cancer models coupled with next generation sequencing.

For available projects please see Dr Gregory's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/philip.gregory

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

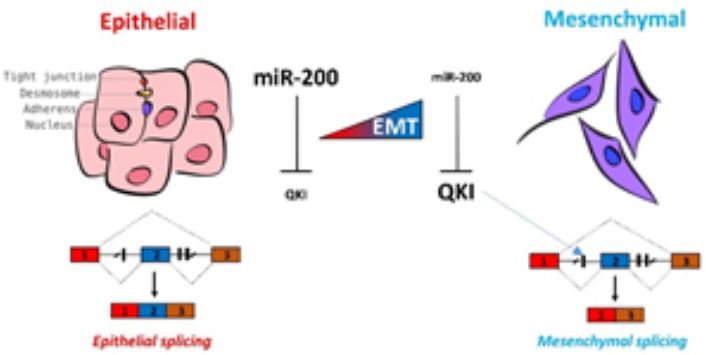
3

Category

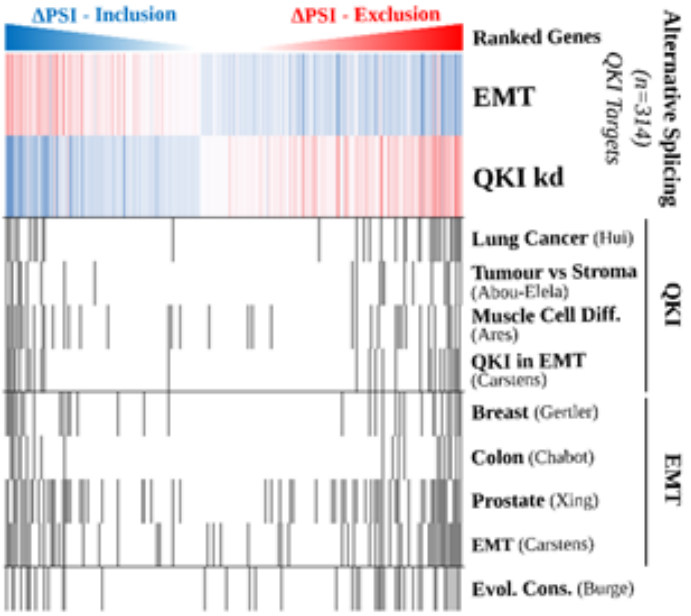
Wet Laboratory; Dry Laboratory

Research Areas

Cancer Biology and Clinical Oncology



Regulation of alternative splicing during epithelial-mesenchymal transition



Heat map showing conservation of alternative splicing during epithelial-mesenchymal transition

GENE REGULATION NETWORKS GROUP

Lead Researcher: Dr Cameron Bracken

Contact: cameron.bracken@adelaide.edu.au

Research Summary

Because they have many targets, microRNAs are ideally suited to act as network regulators via their simultaneous targeting of multiple components within a signalling pathway. Utilising cutting-edge methodologies and mass sequencing techniques, we are investigating how microRNAs select and regulate their target genes and how these genes interact to regulate the invasive capacity of cancer cells. We are also investigating new or poorly understood roles for microRNAs in cancer, including the impact of naturally occurring microRNA sequence variants and the potential for microRNAs to directly regulate transcription within the nucleus, a mechanism for which there is good evidence but little recognition. We aim to publish high impact papers of direct relevance to microRNA function in the context of human cancer.

For available projects please view Dr Bracken's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/cameron.bracken

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

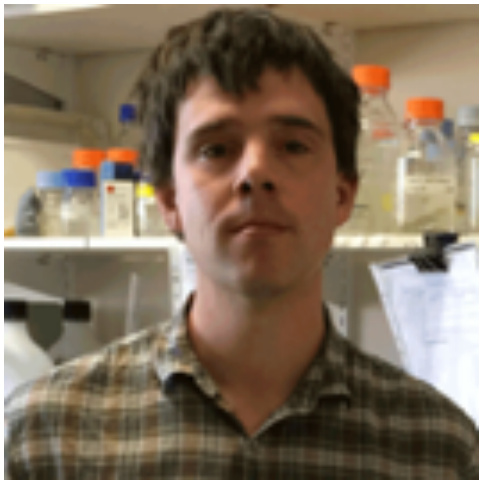
Flexible

Category

Wet Laboratory

Research Areas

Cancer Biology and Clinical Oncology



Dr Cameron Bracken

GUT CANCER RESEARCH GROUP

Lead Researcher: Dr Susan Woods

Contact: susan.woods@adelaide.edu.au

Research Summary

Projects in the lab focus on finding the hidden, early cancers that are not found by current population bowel cancer screening tests. We combine recent technological advances to develop new tests to better detect these lesions and predict which will become killers. We will rapidly move our best candidates to existing clinical cohorts for evaluation, to expedite translation to the clinic.

Together with our Australian research and US-based corporate partners, we also assess personalised treatment regimes for advanced disease using patient samples grown in a dish. If this works, it will guide therapy choice for patients, reducing unwarranted side-effects and picking the treatment that will work most effectively for each patient.

Projects in the lab also investigate how the bacterial community in our gut is changed in cancer, and the role this plays in promoting this disease. This may lead to a probiotic supplement for high risk people to assist with bowel cancer detection or prevention in the future.

For available projects please see Dr Wood's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/susan.woods

Projects available for

Honours; HDR

Maximum Number of Students

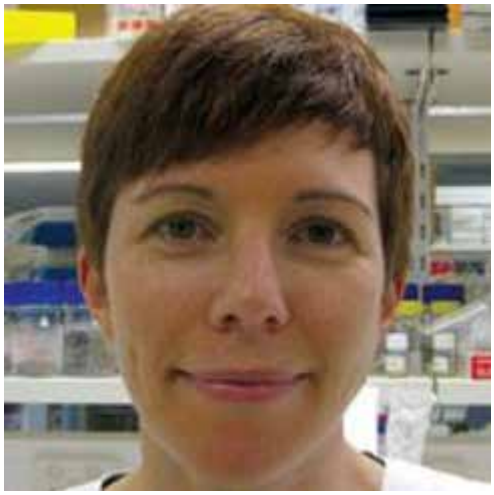
3

Category

Wet Laboratory; Dry Laboratory; Human Research

Research Areas

Cancer Biology and Clinical Oncology



Dr Susan Woods

LEUKAEMIA RESEARCH GROUP, SAHMRI CANCER PROGRAM, PRECISION MEDICINE

Lead Researcher: Dr Laura Eadie

Contact: laura.eadie@sahmri.com

Research Summary

Acute Lymphoblastic Leukaemia (ALL) is an extremely heterogeneous disease with subtypes of patients exhibiting a diverse range of genetic mutations. Certain subtypes of ALL can be treated with drugs already in clinical use. Laura undertook her Fulbright fellowship (2016-2017) at St. Jude Children's Research Hospital in Memphis, Tennessee where she learned mouse models of high-risk ALL. Laura is now leading in vivo mouse studies for high-risk ALL with a specific focus on T-cell ALL. Laura research assesses targeted therapies in mouse models of ALL through ongoing generation of 1) patient derived xenografts from patient samples received in our laboratory and 2) transgenic models. This will enable the evaluation of novel and combination therapeutic approaches compared with the current standard of care. Mouse models of drug resistance will also be developed and pre-emptive intervention in the resistant disease setting investigated. These studies will ultimately inform clinical practice, impacting significantly on response to therapy and overall survival of adults and children with high-risk ALL.

For available projects please see Dr Eadie's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/laura.eadie

Projects available for

HDR; Mphil

Maximum Number of Students

1

Category

Wet Laboratory

Research Areas

Cancer Biology and Clinical Oncology

Dr Laura Eadie

MYELOID METABOLISM AND EPIGENETICS

Lead Researcher: Dr Daniel Thomas

Contact: daniel.thomas@adelaide.edu.au

Research Summary

The way we understand and treat cancer is changing rapidly due to next generation sequencing and new insights into cancer stem cell epigenetics and metabolism. My research studies acute myeloid leukemia as a test-bed for precision oncology to assign the best non-chemotherapeutic treatment to the right patient. Acute myeloid leukemia is a poor prognosis blood cancer with a high recurrent mutation rate, stable karyotype and intra-clonal heterogeneity but a low total mutation burden, making it a perfect disease to discover and design mutation-specific therapies for cancer. My lab uses drug screens, CRISPR/Cas9, humanized mouse models, bioinformatics, Seahorse analyser and pre-leukemic stem cells to discover novel metabolic vulnerabilities that are specific to recurrent mutations in cancer. Our work has discovered several new targets for the IDH1 mutation in cancer and novel epigenetic druggable pathways for WT1 mutations, IDH2 mutations and TET2 mutations. Hopefully these discoveries will translate into effective therapy for solid cancers as well!

For available projects please see Dr Thomas' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/daniel.thomas

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

Flexible

Category

Wet Laboratory; Dry Laboratory; Human Research; Systematic Review; Meta-analysis

Research Areas

Cancer Biology and Clinical Oncology

Dr Daniel Thomas

MYELOMA RESEARCH LABORATORY

Lead Researcher: Dr Kate Vandyke

Contact: kate.vandyke@adelaide.edu.au

Research Summary

My primary research interest involves understanding why up to one quarter of patients with the haematological cancer multiple myeloma do very poorly, surviving less than three years from diagnosis. In particular, my research focuses on the role that tumour dissemination plays in disease progression and relapse following therapy in these patients. Ultimately, we aim to identify new therapeutic targets to improve outcomes for these high-risk patients.

For available projects please view Dr Vandyke's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/kate.vandyke

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Wet Laboratory

Research Areas

Cancer Biology and Clinical Oncology

Dr Kate Vandyke

ONCOGASTROENTEROLOGY RESEARCH GROUP

Lead Researcher: Dr Hannah Wardill

Contact: hannah.wardill@adelaide.edu.au

Research Summary

The human gut is home to trillions of bacteria, viruses and fungi, collectively termed the microbiome. Dr Wardill's research aims to understand how the microbiome influences the outcomes of cancer therapy and how host-microbe interactions can be exploited to predict and prevent complications of cancer therapy. Dr Wardill is currently leading several collaborative research projects aiming to

1) establish a faecal transplantation service for people with blood cancer, and

2) develop a paediatric biobank for the comprehensive evaluation of the factors that determine a child's response to chemotherapy, and their risk of long-term health implications after treatment.

In addition her clinical research projects, Hannah is also working on developing a murine model of graft versus host disease in which she is refine faecal transplantation processes for optimal clinical translation.

For available projects please view Dr Wardill's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/hannah.wardill

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

4

Category

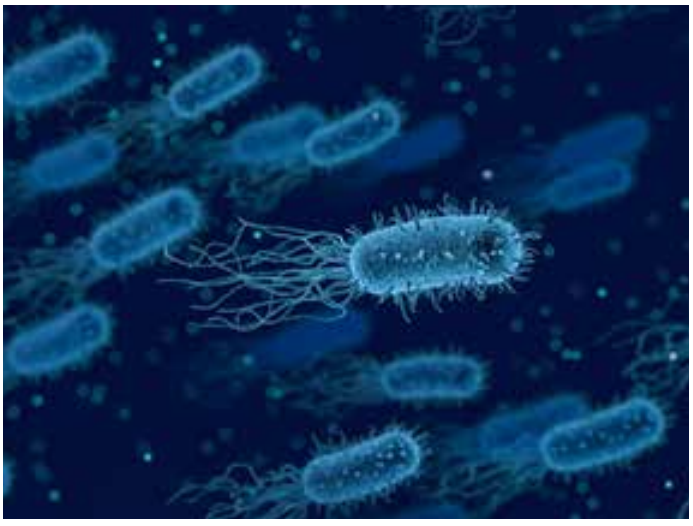
Wet Laboratory; Dry Laboratory; Human Research

Research Areas

Cancer Biology and Clinical Oncology

Immunology and Infection

Nutrition and Metabolic Health



E coli: one of trillions of bacteria that are found within the human gut

REPRODUCTIVE CANCER RESEARCH GROUP

Lead Researcher: Dr Carmela Ricciardelli

Contact: carmela.ricciardelli@adelaide.edu.au

Research Summary

Ovarian cancer is a devastating disease and the leading cause of death from gynaecological malignancies, affecting approximately 1 in 90 women in Australia. Over 70% of patients present with advanced disease, and despite improvements in surgery and new developments in chemotherapy, ovarian cancer mortality rates have not changed dramatically over the last decade. Significant improvement in ovarian cancer survival will require the development of novel ovarian cancer biomarkers for early detection and more effective molecularly targeted therapeutics.

The Reproductive Cancer Group seeks to understand the mechanisms involved in ovarian cancer spread, resistance to chemotherapy and the identification of novel biomarkers for early detection.

For available projects please view Dr Carmela Ricciardelli's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/carmela.ricciardelli

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

2

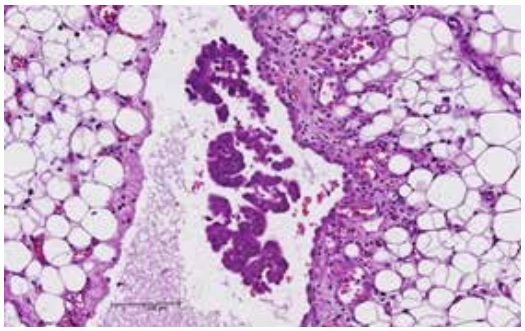
Category

Wet Laboratory

Research Areas

Cancer Biology and Clinical Oncology

Dr Carmela Ricciardelli



Ovarian cancer peritoneal implant

ROYAL ADELAIDE HOSPITAL COLORECTAL RESEARCH GROUP

Lead Researcher: Associate Professor Tarik Sammour

Contact: tarik.sammour@gmail.com

Research Summary

Colorectal cancer is estimated to become the second most commonly diagnosed cancer in Australia by the end of this year, and it is currently the second most common cause of cancer related mortality. Similarly, benign colorectal conditions such as diverticulitis and inflammatory bowel disease, also constitute a considerable patient burden with well documented quality of life implications. The impact of surgery on colorectal patient care, both in terms of short and long-term outcomes is significant, and for many patients this episode of care may be the single most important event in their treatment journey. However, despite this, the quality and extent of clinical outcomes based research activity in colorectal surgery has historically been lacking, particularly in comparison to efforts underway in medical oncology, molecular biology, and basic science research.

We have identified several patient centred outcomes that are in need of urgent investigation and have formulated both short and long-term plans to address these within our unit.

Details can be found here: colorectalresearch.org

For available projects please view Associate Professor Sammour's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/tarik.sammour

Projects available for

HDR; Masters

Maximum Number of Students

Flexible

Category

Systematic Reviews; Meta-analysis; Human Research

Research Areas

Cancer Biology and Clinical Oncology

Surgical and Health Systems Innovation

Translational Health Outcomes

Royal Adelaide Hospital

SOLID TUMOUR GROUP

Lead Researcher: Dr Jennifer Hardingham

Contact: jenny.hardingham@sa.gov.au

Research Summary

Our work is focused on novel treatments for metastatic colorectal and breast cancer. Themes include identification and development of new therapeutic agents for the treatment of colorectal cancer and breast cancer, development of new biomarkers of drug resistance and therapeutic targets, mouse models of breast and colon cancer to test the efficacies of novel inhibitors.

For available projects please view Dr Jennifer Hardingham's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/jennifer.hardingham

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

2

Category

Wet Laboratory; Systematic Reviews; Meta-analysis; Human Research

Research Areas

Cancer Biology and Clinical Oncology

Innovative Therapeutics

Translational Health Outcomes

SOLID TUMOUR GROUP, BASIL HETZEL INSTITUTE

Lead Researcher: Dr Eric Smith

Contact: eric.smith@adelaide.edu.au

Research Summary

The Solid Tumour Group, incorporating the SAHMRI Colorectal Cancer Node, is headed by Professor Timothy Price, and investigates the molecular and cellular mechanisms underlying the carcinogenesis and therapeutic resistance of solid tumours, to identify novel prognostic and predictive factors, biomarkers of drug resistance, therapeutic targets, and to develop and trial new therapeutic agents in pre-clinical models, with translation to the clinical setting.

For available projects please view Dr Smith's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/eric.smith

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

2

Category

Wet Laboratory

Research Areas

Cancer Biology and Clinical Oncology

Solid Tumour Group, Basil Hetzel Institute, The Queen Elizabeth Hospital

CARDIAC, RESPIRATORY AND VASCULAR HEALTH

CARDIAC, RESPIRATORY AND VASCULAR HEALTH RESEARCH GROUPS

Healthy heart, lungs, arteries and veins are vital to overall good health. Despite being largely preventable, cardiovascular disease is one of Australia's leading health problems, affecting one in six people and accounting for nearly 30% of deaths.

Our researchers conduct interdisciplinary research to understand the mechanisms which underlie the development of coronary heart disease, peripheral arterial disease, and vascular and heart rhythm disorders. Utilising the skills of physicians, bioengineers, research scientists and computational modelers, research is focused on translating biomedical discoveries to clinical practice.

Furthermore, researchers undertake clinical trials and epidemiological studies into cardiovascular disorders with the objective of improving health outcomes for patients.

Researchers across the faculty are focused on:

- understanding the molecular and cellular mechanisms underlying cardiac and vascular disorders including peripheral arterial disease, atherosclerosis and cardiac arrhythmias
- exploring the relationship between atrial fibrillation, blood clotting and stroke
- developing improved cardiovascular imaging and disease detection methods
- understanding the relationship between high density lipoproteins (HDL) and cardiovascular risk
- developing strategies to modify cardiovascular risk through the control of obesity and obesity-related conditions
- applying evidence-based medicine, recommendations and guidelines to target education and improve health outcomes for at risk cardiac patients
- developing new approaches to treat airway inflammation in asthma and chronic obstructive pulmonary disease (COPD)
- developing cell and gene therapy approaches for diseases affecting lung blood vessels (pulmonary hypertension) and lung transplant.

CARDIAC, RESPIRATORY AND VASCULAR HEALTH RESEARCH OPPORTUNITIES

CARDIOVASCULAR DISEASES, PATHOGENESIS AND THERAPEUTICS GROUP

Lead Researcher: Dr Thanh Ha Nguyen

Contact: thanh.h.nguyen@adelaide.edu.au

Dr Thanh Ha Nguyen

Research Summary

My current research relates to diagnosis, pathogenesis and treatment of

(i) aortic valve disease,

(ii) Takotsubo syndrome (TS), and

(iii) coronary artery spasm (CAS).

As regards aortic valve disease, my research has focus on

a) the roles of inflammatory activation and impaired nitric oxide signalling in valve degeneration in patients with BAV, and

b) the potential for therapeutic retardation of valve disease progression.

Within the area of TS, I have identified the utility of measuring inflammatory release of brain natriuretic peptide (BNP) and N-terminal proBNP as accessories to expedite diagnosis. I have also contributed to the concept that nitrosative stress may underlie the condition and have established that prolonged inflammation results in slow recovery in such patients.

As regards CAS, we have recently shown that platelet resistance to NO is markedly reduced. We now aim to delineate the pathogenesis of CAS per se and to identify ways of expediting both its diagnosis and potential therapeutic options.

For available projects please view Dr Nguyen's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/thanh.h.nguyen

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Wet Laboratory; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

CARDIOVASCULAR PATHOPHYSIOLOGY AND THERAPEUTICS GROUP

Lead Researcher: Dr Cher-Rin Chong

Contact: cher-rin.chong@adelaide.edu.au

Research Summary

We want to find ways to prevent heart disease in patients with diabetes. Patients with diabetes are 6 times more likely to die from heart disease than those without. Therefore, interventions to reduce the impact of diabetes are much needed. We are particularly interested at investigating how the DNA repair mechanism affects the abnormal metabolism of the diabetic heart, and whether or not intervening this pathway can affect the transcription, post-translational modification and enzymatic activity of the diabetic heart.

For available projects please view Dr Chong's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/cher-rin.chong

Projects available for

Third Year; Honours

Maximum Number of Students

Flexible

Category

Wet Laboratory; Human Research

Research Areas

Cancer Biology and Clinical Oncology

Nutrition and Metabolic Health

Innovative Therapeutics

Dr Cher-Rin Chong

CARDIOVASCULAR PATHOPHYSIOLOGY AND THERAPEUTICS GROUP

Lead Researcher: Dr Yuliy Y. Chirkov

Contact: yuliy.chirkov@adelaide.edu.au

Research Summary

I have a major interest in platelet responsiveness to cyclic nucleotides, which mediate anti-aggregatory responses. In particular, platelets from patients with angina, heart failure and diabetes are "resistant" to the effects of nitric oxide and prostacyclin. I am now extending these observations to evaluate the causes of coronary artery spasm and of the development of heart failure in patients affected by influenza.

Furthermore, I have recently demonstrated that agents which are intended to prevent thrombosis after coronary artery stenting have variable effects related to post-receptor signaling, and it is likely that this variability impinges on the safety of such drugs: this is under ongoing investigation.

For available projects please view Dr Chirkov's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/yuliy.chirkov

Projects available for

Honours; HDR; Masters

Maximum Number of Students

3

Category

Wet Laboratory; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

Dr Yuliy Chirkov

CARDIOVASCULAR PATHOPHYSIOLOGY AND THERAPEUTICS GROUP

Lead Researcher: Dr Saifei Liu

Contact: saifei.liu@adelaide.edu.au

Research Summary

My current research relates to three areas:

1) Chemotherapy induced cardiotoxicity,

2) B-type natriuretic peptide physiology and pathophysiology in heart failure, and

3) Mechanistic interactions of inflammatory activation and glycocalyx shedding in cardiovascular disease.

For available projects please view Dr Liu's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/saifei.liu

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Wet Laboratory; Dry Laboratory; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

Cancer Biology and Clinical Oncology

Cardiovascular Pathophysiology & Therapeutics Group

Dr Saifei Liu (MD, M.Biotech, PhD)

CARDIOVASCULAR PATHOPHYSIOLOGY AND THERAPEUTICS GROUP

Lead Researcher: Emeritus Professor John D. Horowitz

Contact: john.horowitz@adelaide.edu.au

Research Summary

The Cardiovascular Pathophysiology and Therapeutics Group reflects the combined interests of members of The Queen Elizabeth Hospital's (TQEH) cardiology and clinical pharmacology groups. This research collaboration has existed for over the past 20 years at TQEH.

We are mainly interested in developing a better understanding of the" new' cardiovascular epidemics of the 21st century, including atrial fibrillation, systolic hypertension, aortic valve disease, stress" Tako-Tsubo' syndrome and metabolic heart disease. We recognise that these conditions are responsible for impaired quality of life, as well as increased mortality rates. Therefore, we consider the development of effective treatment modalities as a major priority.

For available projects please view Emeritus Professor Horowitz's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/john.horowitz

Projects available for

Honours; HDR; Masters

Maximum Number of Students

4

Category

Wet Laboratory; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

Professor John Horowitz

CENTRE FOR HEART RHYTHM DISORDERS

Lead Researcher: Dr Adrian Elliott

Contact: adrian.elliott@adelaide.edu.au

Research Summary

The Centre for Heart Rhythm Disorders (CHRD) is an internationally-renowned group of research focussing on prevalence, mechanisms and treatment of cardiac arrhythmias and sudden cardiac death. The Exercise and Integrative Physiology Group within CHRD has a specific focus on

1) the physiological mechanisms promoting arrhythmias,

2) the benefit of exercise interventions in the management of patients with cardiac arrhythmias and/or heart failure,

3) the mechanisms promoting clinical symptoms and exercise intolerance amongst arrhythmia patients and

4) the prevalence and mechanisms of cardiac arrhythmias amongst endurance athletes.

These interests are investigated using a wide range of techniques including; cardiopulmonary exercise testing, exercise-based cardiac imaging (echocardiography and MRI), invasive haemodynamic assessment, and blood analysis. We have also developed expertise in autonomic nervous system assessment.

For available projects please view Dr Elliott's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/adrian.elliott

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Human Research; Wet Laboratory

Research Areas

Cardiac, Respiratory and Vascular Health

Translational Health Outcomes

Dr Adrian Elliott

CENTRE FOR HEART RHYTHM DISORDERS

Lead Researcher: Dr Jeroen Hendriks

Contact: jeroen.hendriks@adelaide.edu.au

Research Summary

The Centre for Heart Rhythm Disorders is an internationally-renowned group of research focussing on prevalence, mechanisms and treatment of cardiac arrhythmias and sudden cardiac death. Our multidisciplinary team includes cardiologists, basic scientists, allied health professionals and exercise physiologists. We have a broad range of interests using novel research approaches that lead to scientific discovery and the improvement of patient outcomes.

Specific projects can be viewed with the research profiles of our team; **Professor Prash Sanders**, **Associate Professor Dennis Lau**, **Dr Jeroen Hendriks**, **Dr Adrian Elliott**, **Dr Celine Gallagher**, **Associate Professor Dominik Linz**, **Dr Christopher Wong**, **Dr Melissa Middeldorp**, **Dr Rajiv Mahajan**.

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Human Research; Wet Laboratory

Research Areas

Cardiac, Respiratory and Vascular Health

Translational Health Outcomes

Dr Jeroen Hendriks

CENTRE FOR HEART RHYTHM DISORDERS

Lead Researcher: Associate Professor Dennis Lau

Contact: dennis.lau@adelaide.edu.au

Research Summary

The Centre for Heart Rhythm Disorders is an internationally-renowned group of research focussing on prevalence, mechanisms and treatment of cardiac arrhythmias and sudden cardiac death. Our multidisciplinary team includes cardiologists, basic scientists, allied health professionals and exercise physiologists. We have a broad range of interests using novel research approaches that lead to scientific discovery and the improvement of patient outcomes

Specific projects can be viewed with the research profiles of our team; **Professor Prash Sanders**, **Associate Professor Dennis Lau**, **Dr Jeroen Hendriks**, **Dr Adrian Elliott**, **Dr Celine Gallagher**, **Associate Professor Dominik Linz**, **Dr Christopher Wong**, **Dr Melissa Middeldorp**, **Dr Rajiv Mahajan**.

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Human Research; Wet Laboratory

Research Areas

Cardiac, Respiratory and Vascular Health

Translational Health Outcomes

Associate Professor Dennis Lau

CENTRE FOR HEART RHYTHM DISORDERS

Lead Researcher: Associate Professor Dominik Linz

Contact: dominik.linz@adelaide.edu.au

Research Summary

The Centre for Heart Rhythm Disorders is an internationally-renowned group of research focussing on prevalence, mechanisms and treatment of cardiac arrhythmias and sudden cardiac death. Our multidisciplinary team includes cardiologists, basic scientists, allied health professionals and exercise physiologists. We have a broad range of interests using novel research approaches that lead to scientific discovery and the improvement of patient outcomes

Specific projects can be viewed with the research profiles of our team; **Professor Prash Sanders**, **Associate Professor Dennis Lau**, **Dr Jeroen Hendriks**, **Dr Adrian Elliott**, **Dr Celine Gallagher**, **Associate Professor Dominik Linz**, **Dr Christopher Wong**, **Dr Melissa Middeldorp**, **Dr Rajiv Mahajan**.

Projects available for

Honours; HDR

Maximum Number of Students

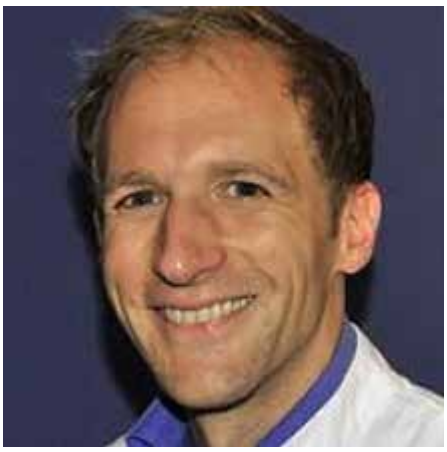
Flexible

Category

Wet Laboratory; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health



Associate Professor Dominik Linz

CENTRE FOR HEART RHYTHM DISORDERS

Lead Researcher: Dr Melissa Middeldorp

Contact: melissa.middeldorp@adelaide.edu.au

Research Summary

The Centre for Heart Rhythm Disorders is an internationally-renowned group of research focussing on prevalence, mechanisms and treatment of cardiac arrhythmias and sudden cardiac death. Our multidisciplinary team includes cardiologists, basic scientists, allied health professionals and exercise physiologists. We have a broad range of interests using novel research approaches that lead to scientific discovery and the improvement of patient outcomes.

Specific projects can be viewed with the research profiles of our team; **Professor Prash Sanders**, **Associate Professor Dennis Lau**, **Dr Jeroen Hendriks**, **Dr Adrian Elliott**, **Dr Celine Gallagher**, **Associate Professor Dominik Linz**, **Dr Christoher Wong**, **Dr Melissa Middeldorp**, **Dr Rajiv Mahajan**.

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Human Research; Wet Laboratory

Research Areas

Cardiac, Respiratory and Vascular Health

Translational Health Outcomes

Dr Melissa Middeldorp

CENTRE FOR HEART RHYTHM DISORDERS

Lead Researcher: Professor Prashanthan Sanders

Contact: prash.sanders@adelaide.edu.au

Research Summary

The Centre for Heart Rhythm Disorders is an internationally-renowned group of research focussing on prevalence, mechanisms and treatment of cardiac arrhythmias and sudden cardiac death. Our multidisciplinary team includes cardiologists, basic scientists, allied health professionals and exercise physiologists. We have a broad range of interests using novel research approaches that lead to scientific discovery and the improvement of patient outcomes. Specific projects can be viewed with the research profiles of our team; **Professor Prash Sanders**, **Associate Professor Dennis Lau**, **Dr Jeroen Hendriks**, **Dr Adrian Elliott**, **Dr Celine Gallagher**, **Associate Professor Dominik Linz**, **Dr Christopher Wong**, **Dr Melissa Middeldorp**, **Dr Rajiv Mahajan**

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Wet Laboratory; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

Translational Health Outcomes

Professor Prashanthan Sanders

CENTRE FOR HEART RHYTHM DISORDERS

Lead Researcher: Dr Christopher X. Wong

Contact: c.wong@adelaide.edu.au

Research Summary

The Centre for Heart Rhythm Disorders is an internationally-renowned group of research focussing on prevalence, mechanisms and treatment of cardiac arrhythmias and sudden cardiac death. Our multidisciplinary team includes cardiologists, basic scientists, allied health professionals and exercise physiologists. We have a broad range of interests using novel research approaches that lead to scientific discovery and the improvement of patient outcomes. Specific projects can be viewed with the research profiles of our team; **Professor Prash Sanders**, **Associate Professor Dennis Lau**, **Dr Jeroen Hendriks**, **Dr Adrian Elliott**, **Dr Celine Gallagher**, **Associate Professor Dominik Linz**, **Dr Christopher Wong**, **Dr Melissa Middeldorp**, **Dr Rajiv Mahajan**

Projects available for

Honours; Masters; HDR

Maximum Number of Students

Flexible

Category

Human Research; Dry Laboratory; Wet Laboratory; Systematic Reviews; Meta-Analysis

Research Areas

Cardiac, Respiratory and Vascular Health

Translational Health Outcomes

Indigenous and Disadvantaged Health

Nutrition and Metabolic Health

Innovative Therapeutics

Dr Christopher X. Wong

CENTRE FOR HEART RHYTHM DISORDERS

Lead Researcher: Dr Celine Gallagher

Contact: celine.gallagher@adelaide.edu.au

Research Summary

The Centre for Heart Rhythm Disorders is an internationally-renowned group of research focussing on prevalence, mechanisms and treatment of cardiac arrhythmias and sudden cardiac death. Our multidisciplinary team includes cardiologists, basic scientists, allied health professionals and exercise physiologists. We have a broad range of interests using novel research approaches that lead to scientific discovery and the improvement of patient outcomes. Specific projects can be viewed with the research profiles of our team; **Professor Prash Sanders**, **Associate Professor Dennis Lau**, **Dr Jeroen Hendriks**, **Dr Adrian Elliott**, **Dr Celine Gallagher**, **Associate Professor Dominik Linz**, **Dr Christopher Wong**, **Dr Melissa Middeldorp**, **Dr Rajiv Mahajan**

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Wet Laboratory; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

Translational Health Outcomes

Dr Celine Gallagher

CHRONIC INFLAMMATORY LUNG DISEASE RESEARCH GROUP

Lead Researcher: Professor Sandra Hodge

Contact: sandra.hodge@adelaide.edu.au

Research Summary

We are part of the Lung Research Unit, at the Department of Thoracic Medicine at the Royal Adelaide Hospital and The University of Adelaide. Our research program largely focusses on macrophage-targeted therapeutic approaches for severe chronic lung diseases that are resistant to current therapies.

Funded collaborative projects include those in (COPD/emphysema), lung transplant rejection, steroid-resistant asthma and bronchiectasis in Indigenous children. Our multi-discipline and internationally recognised team was the first to describe failed clearance of apoptotic cells by airway macrophages (efferocytosis) in COPD that underlies the chronic inflammation and tissue damage and is not resolved with cessation of cigarette smoking once the disease is established.

We have already shown, in human clinical studies and/or murine models that several macrophage-targeted therapies including macrolide antibiotics have properties that restore airway function in this context, beyond combatting microbial infection. In a recent large randomised controlled clinical trial of the macrolide antibiotic Azithromycin (published in Thorax 2017) we and our national collaborators identified Azithromycin as a useful add-on therapy in persistent severe symptomatic asthma. However, bacterial resistance following long-term macrolide treatment necessitates new approaches, and we are now investigating new macrolides, which lack antibiotic but retain anti-inflammatory properties (in collaboration with Gilead Sciences, USA).

For available projects please view Professor Hodge's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/sandra.hodge

Projects available for

Honours; HDR

Maximum Number of Students

2

Category

Wet Laboratory; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

The Chronic Inflammatory Lung Disease Research Team

Professor Sandra Hodge

CYSTIC FIBROSIS AIRWAY RESEARCH GROUP (CFARG)

Lead Researcher: Dr Martin Donnelley

Contact: martin.donnelley@adelaide.edu.au

Research Summary

- Cystic fibrosis (CF) is the most common genetic disorder in the Caucasian population, and is caused by mutations in the CFTR gene. Lung disease greatly affects their quality of life and is the overwhelming cause of early death.
- Our group is developing a gene therapy to correct CF airway disease. We utilise a lentiviral (LV) vectors to produce safe and effective gene delivery into airway cells in animal models. We use reporter genes such as LacZ, luciferase and GFP, and the therapeutic CFTR gene.
- We also develop X-ray imaging methods for determining how well our treatments work. We assess airway surface health at the SPring-8 Synchrotron in Japan, and perform imaging-based lung function studies at the Australian Synchrotron.
- In 2016-17 we established a CF rat colony in Adelaide to improve the testing of our genetic treatments for CF. This colony now forms the basis of many projects over the next few years.
- We have a dedicated, state-of-the-art research laboratory at the WCH, for plasmid and LV production, molecular assays, histological processing, and cell culture work for developing, testing and measuring our gene and cell therapies in vivo.
- Our 2020 Honours and HDR projects can be tailored to any aspect of this work.

For available projects please view Dr Donnelley's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/martin.donnelley

Projects available for

Honours; HDR

Maximum Number of Students

3

Category

Wet Laboratory; Systematic Reviews

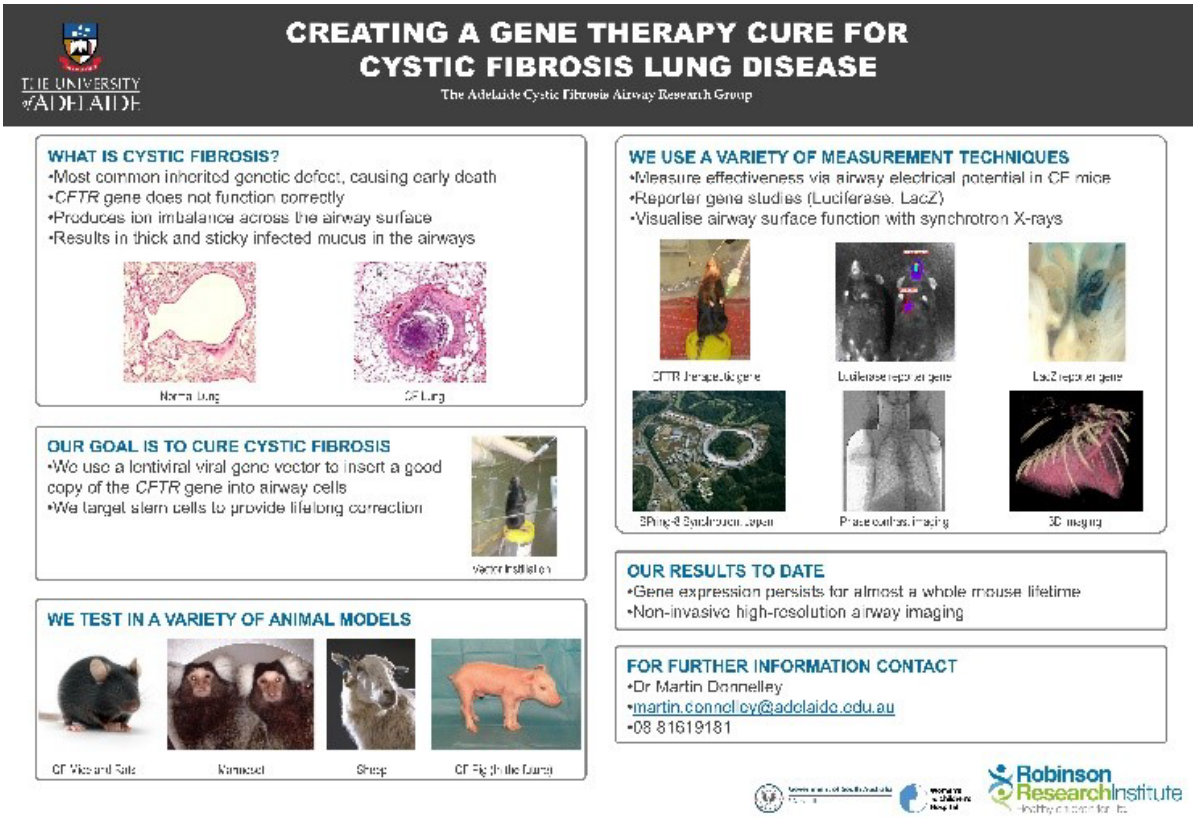
Research Areas

Cardiac, Respiratory and Vascular Health

Child and Adolescent Health

Innovative Therapeutics

The CFARG Team in our WCH laboratory



What we do

MOLECULAR PHYSIOLOGY OF VASCULAR FUNCTION RESEARCH GROUP

Lead Researcher: Dr David P Wilson

Contact: david.p.wilson@adelaide.edu.au

Research Summary

The objectives of our research group are to identify and investigate mechanisms and therapies for vasomotor disorders. The research involves investigation of vasospasm of large or small vessels and mechanisms contributing to vasodilatory septic shock. The research team is involved in both preclinical, basic research, and translational research using a three-pronged approach, which includes:

- Clinical characterization of vasomotor disorders
- Discovery of underlying molecular mechanisms
- Exploring novel therapies in basic & clinical studies.

For available projects please view Dr Wilson's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/david.p.wilson

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

4

Category

Wet Laboratory; Dry Laboratory; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

Dr David P Wilson

NORTHERN CARDIOVASCULAR RESEARCH GROUP

Lead Researcher: Associate Professor Margaret Arstall

Contact: margaret.arstall@sa.gov.au or emily.aldridge@adelaide.edu.au

Research Summary

Our research group aims to improve outcomes for people with cardiovascular disease in northern Adelaide. Our main research themes include management of coronary heart disease, pregnancy complications and postpartum health, and heart disease in women. We are a passionate team of clinicians and scientists with a strong focus on collaborative clinical research in a hospital setting. The diversity of our research strengths and methods means that there are many opportunities for students to explore and develop their own research interests. Our group currently has more than 15 projects ranging from observational clinical studies, laboratory and banking projects, clinical trials, and registries.

For available projects please see Associate Professor Arstall's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/margaret.arstall

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Wet Laboratory; Systematic Reviews; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

Pregnancy and Birth

The Northern Cardiovascular Research Group

PRIMARY CARE AND HEALTH SERVICES RESEARCH GROUP

Lead Researcher: : Dr Carla Bernardo

Contact: carla.bernardo@adelaide.edu.au

Research Summary

Dr Carla Bernardo is an epidemiologist with vast experience managing and analysing large datasets in general practice and is responsible for creating algorithms for data extraction using codes and free text information from electronic medical records. She also has experience in quantitative study designs (cohorts, cross-sectional and before-after studies) and supervising population-based studies.

Dr Bernardo works with chronic (obesity, hypertension, diabetes) and infectious (influenza, pneumococcal, herpes zoster) diseases prevention, General Practice management (screening and medicine prescribing) and health informatics. Some of her current projects are: Coverage of influenza and pneumococcal vaccination in Australia, Influenza-like illness and antimicrobial prescribing, General practice management of physical and psychological trauma resulting from road traffic accident, and Management of Diabetes in Australian general practice.

For available projects please view Dr Bernardo's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/carla.bernardo

Projects available for

Third Year

Maximum Number of Students

2

Category

Human Research; Systematic Reviews

Research Areas

Cardiac, Respiratory and Vascular Health

Nutrition and Metabolic Health

Translational Health Outcomes

Dr Carla Bernardo

TRANSLATIONAL VASCULAR FUNCTION RESEARCH COLLABORATIVE

Lead Researcher: : Professor John Beltrame

Contact: john.beltrame@adelaide.edu.au

Research Summary

The Translational Vascular Function Research Group's objective is to improve the health outcomes for patients with coronary heart disease and peripheral artery disease.

Our current research undertakes basic, clinical and epidemiological studies into cardiovascular disorders, approaches that can be applied to other vascular disorders.

We conduct interdisciplinary research using a collaborative approach and directly integrate our results into clinical practice, so we can see the impact on patients' lives. This involves a combination of different types of research, including:

- Integrated laboratory and clinical research, or "bench to bedside" research, which sees discoveries generated in the laboratory and then developed through clinical trials.
- Exploring ways of applying evidence-based medicine, recommendations or guidelines to clinical practice in order to yield knowledge about real world settings.

Our team consists of both physicians and medical scientists located at the Basil Hetzel Institute, University of Adelaide Medical School, and various teaching hospitals. The integrative nature of the group ensures that our innovative research is translated from bench to bedside to health outcome's as well as the reverse.

For available projects please view Professor Beltrame's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/john.beltrame

Projects available for

Honours; HDR

Maximum Number of Students

2

Category

Wet Laboratory; Dry Laboratory; Meta-analysis; Human Research

Research Areas

Cardiac, Respiratory and Vascular Health

Translational Health Outcomes

Members of the Translational Vascular Function Research Collaborative based at the Basil Hetzel Institute for Translational Health Research

VASCULAR RESEARCH CENTRE, SAHMRI

Lead Researcher: Dr Achini Vidanapathirana

Contact: achini.vidanapathirana@sahmri.com

Research Summary

As a researcher of the ARC Centre of Excellence for Nanoscale Biophotonics and SAHMRI, Dr. Vidanapathirana's current research focus biological and biomedical applications of light based novel technologies in early detection and treatment of cardiovascular disease.

Three research projects are available for Honours or HDR (with Dr. Christina Bursill).

1) Biological sensing of cellular changes in atherosclerosis using novel nanoscale sensors. Our local and international collaborations provide access to novel nanoscale sensors with different imaging capabilities. This project broadly involves molecular and nanoscale fluorescent sensors, which will be tested first in in vitro and in vivo models, prior to future human/clinical applications in cardiovascular disease.

2) Novel platforms for wound healing and angiogenesis. This project incorporates bio-compatibility assessments and identifying properties of novel scaffolds and senor platforms to support wound healing.

3) Understanding the role of asialoglycoprotein receptor 1 (ASGR1) in the development and progression of atherosclerosis.

For available projects please view Dr Vidanapathirana's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/achini.vidanapathirana

Projects available for

Honours; HDR

Maximum Number of Students

2

Category

Wet Laboratory

Research Areas

Cardiac, Respiratory and Vascular Health

Dr Achini Vidanapathirana

VASCULAR RESEARCH CENTRE

Lead Researcher: Dr Christina Bursill

Contact: Christina.Bursill@sahmri.com

Research Summary

Our Group investigates new mechanisms or targets involved in the development of fatty streaks within the arteries of the heart, a process called atherosclerosis, that causes heart attacks. We are also interested in the regulation of new blood vessel formation (angiogenesis), which is an important determinant of how well a heart attack patient recovers. We have multiple pathophysiologically relevant in vitro and in vivo models. Our work spans from detailed mechanistic analysis of atherosclerosis and angiogenesis pathways, through to cellular functional assessments and to in vivo models of disease. Our projects can be catered (mostly) to suit the interests of students interested in doing a project in the field of atherosclerosis or angiogenesis. The student will have the opportunity to learn a broad range of techniques in a lab situated in the heart of the BioMed City at SAHMRI.

For available projects please see Dr Bursill's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/christina.bursill

Projects available for

Honours

Maximum Number of Students

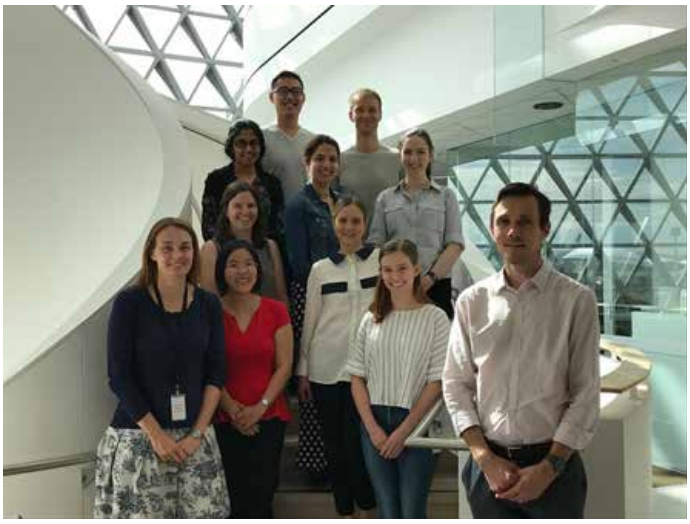
Flexible

Category

Wet Laboratory

Research Areas

Cardiac, Respiratory and Vascular Health



Team led by Christina Bursill within the Vascular Research Centre

CHILD AND ADOLESCENT HEALTH

CHILD AND ADOLESCENT HEALTH RESEARCH GROUPS

Research is ongoing to detect, prevent and treat the many chronic physical and mental disorders that originate in childhood, to improve the health of all children and adolescents.

Internationally, the Robinson Research Institute is known for achieving advances in childhood and adolescent mental health and diabetes. It is also recognised nationally as being at the forefront of immunisation research.

The Robinson Research Institute leads our child and adolescent health research, and an in-depth explanation of this research area is available on the **Robinson Research Institute's website**.

CHILD AND ADOLESCENT HEALTH RESEARCH OPPORTUNITIES

BETTERSTART

Lead Researcher: Dr Clare Hume

Contact: clare.hume@adelaide.edu.au

Research Summary

I am interested in social and environmental influences on children's health behaviours. How these behaviours, and the influences on these behaviours change over time, is of particular interest. Additionally, I am interested in the development of unique intervention strategies to promote physical activity and reduce sedentary behaviours among children in both the family and school settings.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/clare.hume**

Projects available for

Honours; Masters; Mphil

Maximum Number of Students

2

Category

Systematic Reviews; Human Research

Research Areas

Child and Adolescent Health

Dr Clare Hume

BETTERSTART CHILD HEALTH AND DEVELOPMENT RESEARCH GROUP

Lead Researcher: Professor John Lynch

Contact: betterstart@adelaide.edu.au

Research Summary

Research conducted by the BetterStart group aims to understand how to ensure infants and children have the best start to life. Our studies focus on ways to enhance health and development throughout their life course. This interdisciplinary group consists of researchers with common interests in early childhood health and development. The group has backgrounds in epidemiology, public health, nutrition, paediatrics, biostatistics and psychology. Collectively, the BetterStart group have expertise in observational studies, randomised controlled trials, pragmatic trials, data linkage and translational research activities in South Australia, nationally and internationally. Members of the group also conduct methodological research in biostatistics and epidemiology.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/john.lynch**

Projects available for

Honours; HDR; PhD; Mphil

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Child and Adolescent Health

Pregnancy and Birth

Nutrition and Metabolic Health

BetterStart Child Health and Development Research Group

COUNSELLING AND PSYCHOTHERAPY RESEARCH GROUP

Lead Researcher: Dr Alexandra Bloch-Atefi

Contact: alexandra.bloch-atefi@adelaide.edu.au

Research Summary

Application and use of Trauma-Informed Care and Practice in Australia.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/alexandra.bloch-atefi**

Projects available for

HDR; Masters; Mphil

Maximum Number of Students

Flexible

Category

Systematic Reviews; Meta-analysis; Human Research

Research Areas

Child and Adolescent Health

Dr Alexandra Bloch-Atefi

HEALTH POLICY CENTRE

Lead Researcher: Dr Jacqueline Bowden

Contact: jacqueline.bowden@sahmri.com

Research Summary

Dr Jacqueline Bowden is Deputy Director of the Health Policy Centre at the South Australian Health and Medical Research Institute (SAHMRI). This centre undertakes programs of research in public health, specialising in tobacco control, obesity prevention and alcohol consumption. The group delivers evidence to inform public health policy and population-based interventions to reduce the preventable burden of non-communicable diseases. Dr Bowden is also a NHMRC Early Career Fellow investigating ways to prevent parental supply of alcohol to adolescents and has a broader research interest in ways to reduce the impact of alcohol on public health.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/jacqueline.bowden**

Projects available for

Honours; HDR; Masters

Maximum Number of Students

2

Category

Human Research

Research Areas

Child and Adolescent Health

Nutrition and Metabolic Health

Dr Jacqueline Bowden

PSYCHOLOGY

Lead Researcher: Dr Alyssa Sawyer

Contact: alyssa.sawyer@adelaide.edu.au

Research Summary

My research focuses broadly on children's development and mental health, postnatal mental health and support for new parents, and epidemiology. I have an interest in using population data from longitudinal cohorts and surveys, and population-level interventions designed to improve outcomes for children. I am interested in providing supervision for students who wish to focus their research on the mental health of children, adolescents or families.

For available projects please view Dr Sawyer's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/alyssa.sawyer

Projects available for

Honours; Masters; HDR

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Child and Adolescent Health

Dr Alyssa Sawyer

WOMEN'S AND CHILDREN'S HOSPITAL ORTHOPAEDICS

Lead Researcher: Dr Christy Graff

Contact: chygraff@gmail.com

Research Summary

Dr Christy Graff is a paediatric orthopaedic surgeon at the Women's and Children's Hospital in North Adelaide. She is especially interested in investigating areas of paediatric orthopaedics associated with paediatric trauma. She is currently undertaking two systematic reviews, as well as reviewing the hospital's data, in paediatric supracondylar fractures and paediatric re-fractures of radius and/or ulna fractures.

For available projects please see Dr Graff's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/christy.graff

Projects available for

Third Year; Honours; Masters

Maximum Number of Students

4

Category

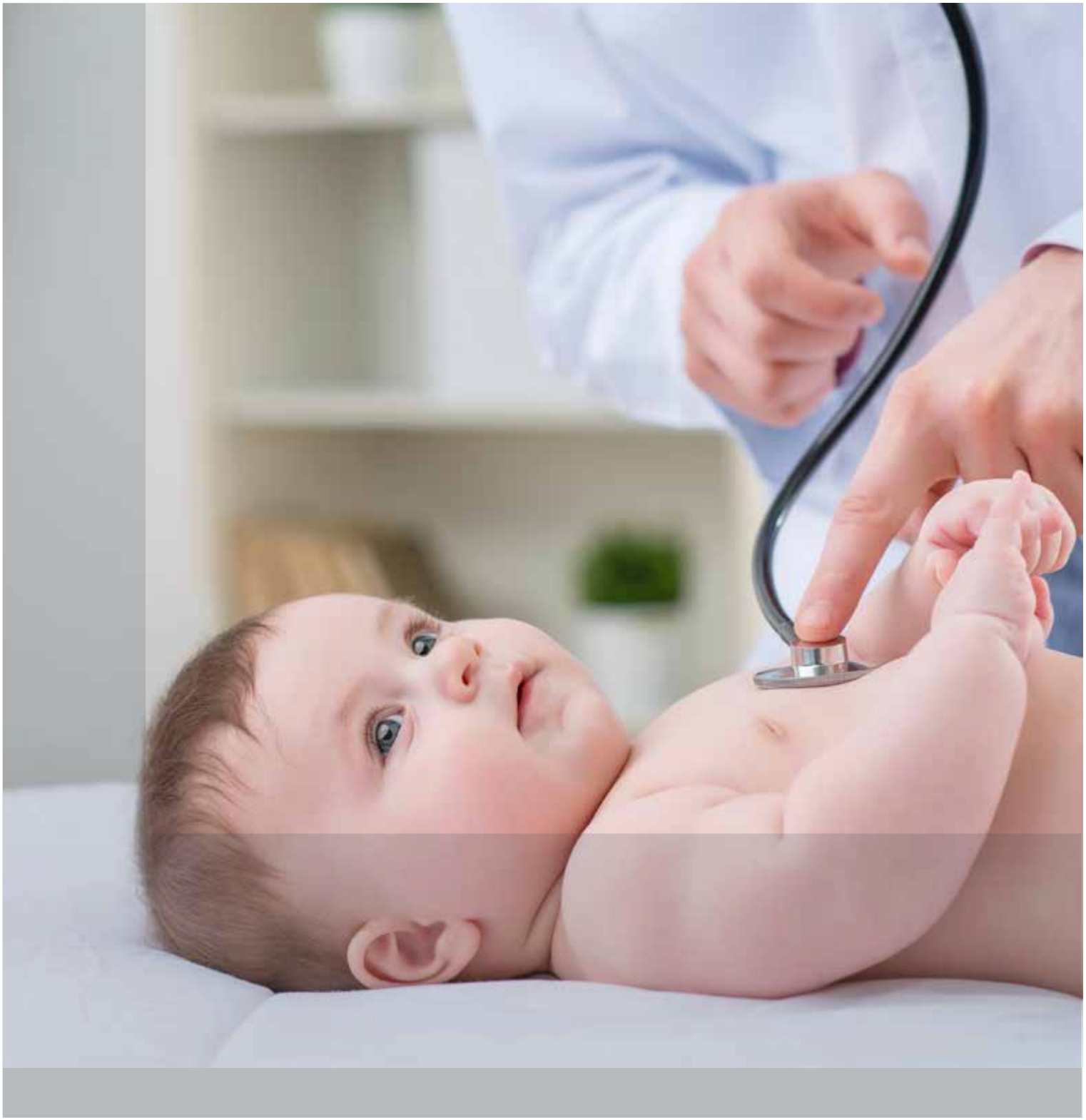
Human Research

Research Areas

Child and Adolescent Health

Musculoskeletal Health

Dr Christy Graff MBBS MHMSc FRCS FRACS



EARLY ORIGINS OF HEALTH

EARLY ORIGINS OF HEALTH RESEARCH GROUPS

The health trajectory of every child—including their metabolic, cardiovascular, immune and reproductive health, and neurological function—is profoundly influenced by their parents' health and wellbeing prior to conception, throughout pregnancy, and during early postnatal life.

The Robinson Research Institute leads our research in the early origins of health and is well placed to tackle this challenge, having conducted some of the largest trials in the world investigating interventions in pregnant women and newborn infants to improve outcomes for the mother and child.

A more in-depth explanation of this research area is available on the **Robinson Research Institute's website**.

EARLY ORIGINS OF HEALTH RESEARCH OPPORTUNITIES

CRANIOFACIAL BIOLOGY RESEARCH GROUP

Lead Researcher: Ms Michelle Bockmann

Contact: michelle.bockmann@adelaide.edu.au

Research Summary

My research focuses on understanding health and disease states, and how humans grow and develop.

I am interested in understanding how the interplay between genes, epigenome, environment, behaviour and the commensal bacteria (the microbiome) can influence the health and well-being outcomes of children and young adolescents.

Key current research areas include:

1.The role of the oral microbiome in health and disease

2.Pre-natal influences on oral health in mid-childhood

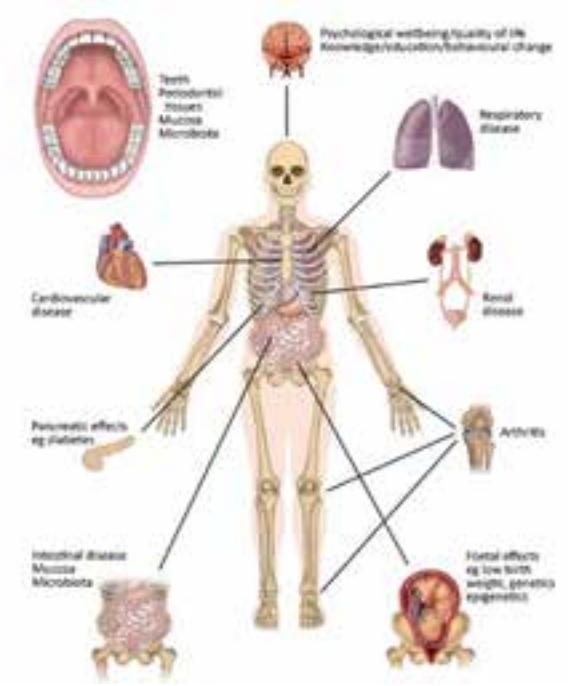
3.The role of diet in early development

4.Dental anthropology and forensics

Our group has a broad range of projects available that enable students to tailor their experience to attain specific skills. We operate both wet and dry laboratories, have a strong track record in bioinformatics and big data analysis, and have some very active collaborations with other groups (and potential co-supervisors) in Sydney and the USA.

For available projects please view Ms Bockmann's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/michelle.bockmann



Diagramatic representation of reported associations between oral disease and systemic diseases and disorders

Projects available for

Third Year; Honours

Maximum Number of Students

3

Category

Wet Laboratory; Dry Laboratory; Human Research

Research Areas

Early Origins of Health

Child and Adolescent Health

Oral Health

Nutrition and Metabolic Health

CRANIOFACIAL BIOLOGY RESEARCH GROUP

Lead Researcher: Associate Professor Toby Hughes

Contact: toby.hughes@adelaide.edu.au

Research Summary

My research has a broad focus on early life factors that influence health and development throughout childhood and early adult life. I am interested in the nexus between oral and systemic conditions, and specifically in interactions between the genome, the epigenome, the environment and the commensal bacteria (the microbiome). Key current research areas include:

1) The role of the oral microbiome in health and disease

2) Speech development and the role of the oral anatomy

3) Pre-natal influences on oral health in mid-childhood

4) The role of diet in early development

5) Craniofacial development in children

6) Physical anthropology and forensics

My group has a broad range of projects available that enable students to tailor their experience to attain specific skills. We operate both wet and dry laboratories, have a strong track record in bioinformatics and big data analysis, and have some very active collaborations with other groups (and potential co-supervisors) in Sydney, Melbourne and the USA.

For available projects please view Associate Professor Hughes' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/toby.hughes

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

Flexible

Category

Wet Laboratory; Dry Laboratory; Systematic Reviews; Meta-analysis; Human Research

Research Areas

Early Origins of Health

Child and Adolescent Health

Oral Health

Nutrition and Metabolic Health

Oral and systemic health represent a complex interaction between an individual's genetics, their environment and their microbiome

Cell Host & Microbe
Article

Host Genetic Control of the Oral Microbiome in Health and Disease

Andres Gomez,[1,8] Josh L. Espinoza,[2,8] Derek M. Harkins,[3] Pamela Leong,[4] Richard Saffery,[4] Michelle Bockmann,[5] Manolito Torralba,[1] Claire Kuelbs,[1] Rohith Kodukula,[6] Jason Inman,[3] Toby Hughes,[5] Jeffrey M. Craig,[4] Sarah K. Highlander,[1] Marcus B. Jones,[7] Chris L. Dupont,[2] and Karen E. Nelson[1,3,9,*]

[1]Departments of Human Biology and Genomic Medicine, J. Craig Venter Institute, La Jolla, CA 92037, USA
[2]Department of Microbial and Environmental Genomics, J. Craig Venter Institute, La Jolla, CA 92037, USA
[3]Departments of Human Biology and Genomic Medicine, J. Craig Venter Institute, Rockville, MD 20850, USA
[4]Murdoch Children's Research Institute and Department of Pediatrics, University of Melbourne, Royal Children's Hospital, Parkville, VIC 3052, Australia
[5]School of Dentistry, The University of Adelaide, Adelaide, SA 5005, Australia
[6]JCVI Summer Intern Program, Torrey Pines High School, San Diego, CA 9213, USA
[7]Human Longevity Institute, La Jolla, CA 92037, USA
[8]These authors contributed equally
[9]Lead Contact
*Correspondence: kenelson@jcvi.org
http://dx.doi.org/10.1016/j.chom.2017.08.013

SUMMARY

Host-associated microbial communities are influenced by both host genetics and environmental factors. However, factors controlling the human oral microbiome and their impact on disease remain to be investigated. To determine the combined and relative effects of host genotype and environment on oral microbiome composition and caries phenotypes, we profiled the supragingival plaque microbiome of 485 dizygotic and monozygotic twins aged 5–11. Oral microbiome similarity always increased with shared host genotype, regardless of caries state. Additionally, although most of the variation in the oral microbiome was determined by environmental factors, highly heritable oral taxa were identified. The most heritable oral bacteria were not associated with caries state, did not tend to co-occur with other taxa, and decreased in abundance with age and sugar consumption frequency. Thus, while the human oral microbiome composition is influenced by host genetic background, potentially cariogenic taxa are likely not controlled by genetic factors.

INTRODUCTION

Although there has been a tremendous expansion in human microbiome research, with hundreds of projects underway globally (Blaser, 2014; Human Microbiome Project Consortium, 2012), the oral microbiome has not received the same level of attention as its gut counterpart. Indeed, this microbial ecosystem is a critical component of oral and systemic human health. For instance, although dental caries, the most common chronic disease in children (Benjamin, 2010), is of a multifactorial nature, it usually occurs when frequent sugar intake is metabolized by a specific bacterial milieu in the oral cavity, resulting in increased acidity and dental demineralization (Takahashi and Nyvad, 2011). In periodontitis, a chronic disease affecting adults, specific bacterial ecology elicits inflammatory responses in the host, leading to the destruction of periodontal tissue, pocket formation, and tooth loss (Loesche, 2011). Likewise, non-plaque-associated bacteria, viruses, and fungi can trigger gingival lesions associated with herpes and candidiasis (Holmstrup, 1999), and there is mounting evidence pointing to a specific microecosystem characterizing cancerous tissue in oral cancer (Schmidt et al., 2014). Interestingly, the connections between oral microbes and health extend beyond the oral cavity, as cardiometabolic, respiratory, and immunological disorders; gastrointestinal cancers; and obstetric complications are thought to have oral microbial associations (Beck et al., 2000; Rubinstein et al., 2013; Seymour et al., 2007).

Consequently, unraveling the forces that shape and define the oral microbiome is crucial for the understanding of both oral and broader systemic health. Research on development and maturation of the human microbiome in the early years of postnatal life has mainly been centered on the gut, pointing at mode of delivery and breastfeeding as important early driving forces (Azad et al., 2013; Dominguez-Bello et al., 2010) and diet and environment as subsequent determinants (Walter and Ley, 2011). Moreover, twin studies have shown that the gut microbiome similarity increases with host genetic background, that some gut taxa are driven by additive genetic effects, and that the abundance of specific gut taxa is linked to genes associated with immune and metabolic functions in the host (Goodrich et al., 2014, 2016). Nonetheless, the available evidence on the forces shaping the oral microbiome is scarce. For example, just as in the gut, oral microbial communities seem to be initially influenced by perinatal factors (Holgerson et al., 2013; Lif Holgerson et al., 2011, 2015). However, reports on the heritable fraction of the oral microbiome are conflicting. For instance, contrary to what has been found in the gut, twin studies on the genetic control of the oral microbiome (saliva and plaque) have shown less or no apparent influence of additive genetic factors (Papapostolou et al., 2011; Stahringer et al., 2012). Yet other twin studies have focused on the abundance

A recent article from our group in Cell Host & Microbe

EARLY ORIGINS OF HEALTH AND DISEASE RESEARCH GROUP

Lead Researcher: Dr Kathy Gatford

Contact: kathy.gatford@adelaide.edu.au

Research Summary

The Early Origins of Health and Disease Research Group aims to understand how exposures in pregnancy impact later health, and to develop and test interventions during and after pregnancy to reduce the impact of these exposures and improve health of offspring from birth to adulthood. We use intensive studies in preclinical models with a large network of collaborators to investigate mechanisms and evaluate interventions independent of potential confounding, as well as evaluating evidence from human cohorts.

For available projects please see Dr Gatford's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/kathy.gatford

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Early Origins of Health

Dr Kathy Gatford

NEUROGENETICS

Lead Researcher: Professor Jozef Gecz

Contact: jozef.gecz@adelaide.edu.au

Research Summary

The Neurogenetics Group aims to understand the neurobiology of human brain function by studying major neurological disorders which are genetically determined. By identifying and characterising the mutations implicated in intellectual disability, epilepsy and cerebral palsy, a greater understanding of the role of specific genes and proteins in normal brain function can be discovered.

Identification of genes and understanding of molecular mechanisms leading to intellectual disabilities, autisms and some epilepsies represents a challenge of significant medical importance. With a broad range of state-of-the-art human genetics and genomics skills, our team has discovered or contributed to the discovery of more than 200 different genes. Many of these genes pointed to new and unexpected biological pathways essential for normal brain function (e.g. non-sense mediated mRNA decay, NMD).

The four key areas of our research focus are:

- genomics and bioinformatics
- molecular mechanisms of neurodevelopmental disability
- molecular neuroscience

The NEURO team is complemented by a large number of national and international clinical and basic science collaborators.

For available projects please view Professor Gecz's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/jozef.gecz

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

2

Category

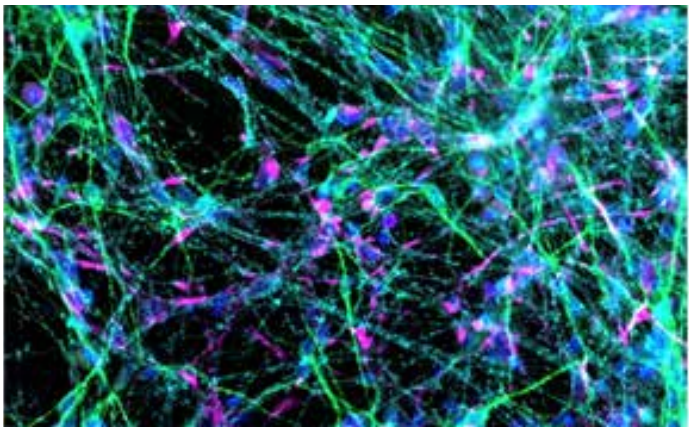
Wet Laboratory; Dry Laboratory

Research Areas

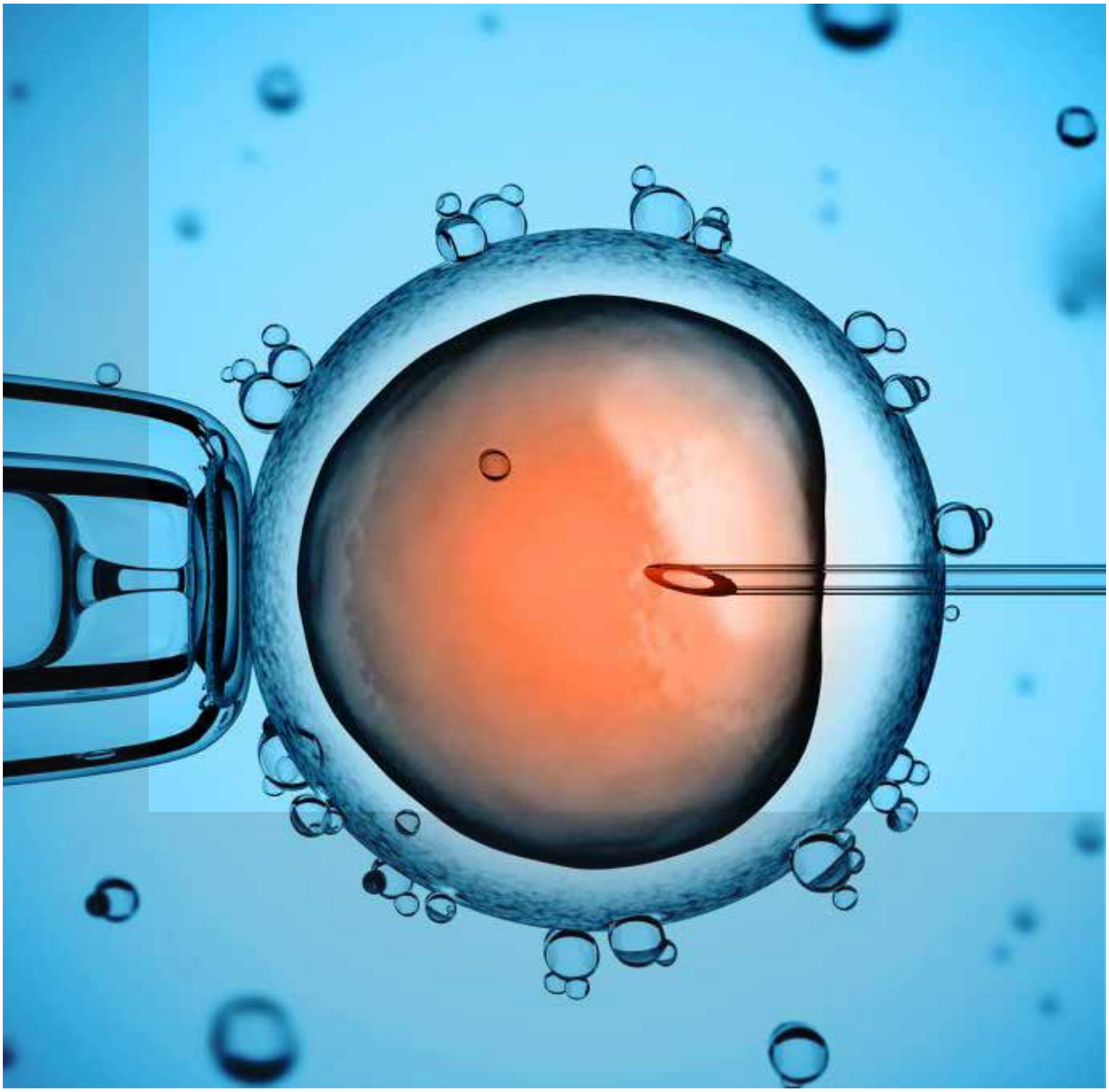
Early Origins of Health

Neuroscience, Behaviour and Brain Health

Translational Health Outcomes



iPSC-Derived Human Cortical Neurons. Claire Homan, PhD student.

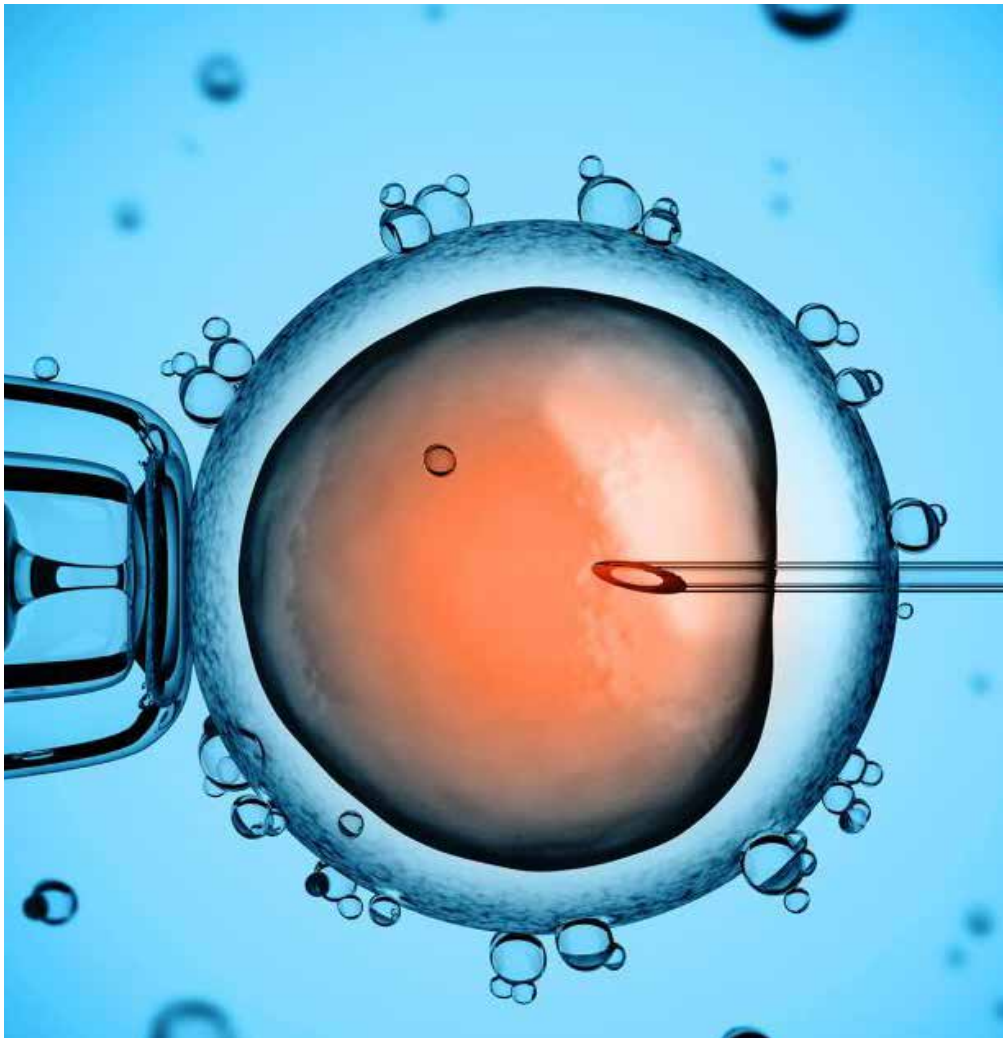


FERTILITY AND CONCEPTION

FERTILITY AND CONCEPTION RESEARCH GROUPS

Conception is the foundation event for each new life, with every child's development, growth trajectory and health over the life course set in motion from the moment sperm and oocyte unite to form an embryo.

Our research in this area is led by the Robinson Research Institute, which is internationally recognised for its work in fertility and conception. A more in-depth explanation of this research area is available on the **Robinson Research Institute's website.**



FERTILITY AND CONCEPTION RESEARCH OPPORTUNITIES

ENDOMETRIOSIS AND ENDOMETRIUM

Lead Researcher: Associate Professor Louise Hull

Contact: louise.hull@adelaide.edu.au

Research Summary

Improving diagnostics and therapeutics in endometriosis. Projects include assessing imaging modalities for endometriosis, Cochrane reviews for endometriosis diagnostics, a digital platform co-creation project and exploring the efficacy of physiotherapy and novel pharmacological agents in the treatment of endometriosis.

Improved management of recurrent implantation failure and recurrent pregnancy loss. Exploring receptivity markers for implantation, new immune diagnostics for recurrent implantation failure and miscarriage, and novel therapeutic pathways and genetic assessment in miscarriage. Using models to determine the impact of immunotherapeutics on placentation disorders in concpetion and early pregnancy.

For available projects please see Associate Professor Hull's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/louise.hull

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

2

Category

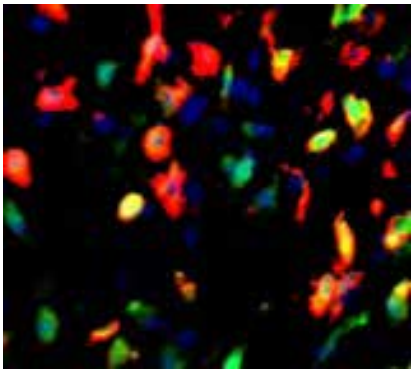
Wet laboratory; Systematic Reviews; Meta-analysis; Human Research

Research Areas

Fertility and Conception

Pregnancy and Birth

Immunology and Infection



Macrophages in an endometriosis lesion

FEMALE REPRODUCTIVE FUNCTION

Lead Researcher: Professor Raymond Rodgers

Contact: ray.rodgers@adelaide.edu.au

Research Summary

Ray Rodgers undertakes novel and internationally competitive research (>140 publications) in the area of female reproductive function, particularly ovarian function. Each step of his research career has resulted in novel discoveries, and ones in which many other researchers have followed. His strength has been to mount multidisciplinary approaches to areas not tackled previously, or not successfully. Developing new areas is generally less productive but more rewarding if successful. Ray Rodgers has been singularly successful at doing both. His earlier discoveries are now in textbooks.

Since the early 1980's, Ray Rodgers has made many unique and substantial contributions to our understanding of how ovaries produce hormones and it is now very clear that the regulation of hormone production is unlike that of any other endocrine organ. The pattern of hormone secretion by the ovary changes on a day-to-day basis depending on the state of the development or regression of the endocrine organs, follicles and corpora lutea, within the ovary. Tissue development remodeling and regression involve cell division, differentiation, migration and apoptosis and Ray Rodgers has used several experimental strategies, including physiology, histology, electron microscopy, morphometry, cell isolation and culture and molecular biology, to study these processes.

For available projects please view Professor Rodgers' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/ray.rodgers

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Human Research; Systematic Reviews; Wet Laboratory; Dry Laboratory

Research Areas

Fertility and Conception

Early Origins of Health

Professor Ray Rodgers

HEALTH, DISABILITY AND LIFESPAN DEVELOPMENT RESEARCH GROUP

Lead Researcher: Dr Melissa Oxlad

Contact: melissa.oxlad@adelaide.edu.au

Research Summary

My research interests involve the contributions psychology can make to reproductive health and to people living with chronic illness. With regards to reproductive health my areas of interest include fertility knowledge, motivations for parenthood, attitudes to fertility preservation, attitudes to infertility and infertility treatments, help-seeking in relation to infertility, coping with infertility, health behaviours to aid conception, donor conception, surrogacy, pregnancy-related anxiety, pregnancy loss and stillbirth. In the area of chronic illness my interests include how people make sense of, adjust to, and live with chronic illness, health literacy, health information seeking, help-seeking behaviour, health communication and peer support for people with migraine, cancer, diabetes and cardiac health issues. I undertake research using quantitative, qualitative or mixed methods.

For available projects please view Dr Oxlad's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/melissa.oxlad

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Dry Laboratory; Human Research

Research Areas

Fertility and Conception

Pregnancy and Birth

Cancer Biology and Clinical Oncology

Cardiac, Respiratory and Vascular Health

Dr Melissa Oxlad

MITOCHONDRIAL GENETICS GROUP

Lead Researcher: Professor Jus St John

Contact: jus.stjohn@adelaide.edu.au

Research Summary

Our research focuses on how the nuclear and mitochondrial genomes interact during development in order that cells, tissues and organs function efficiently. We are applying this knowledge to develop reproductive strategies for women that suffer from repeated failed fertilisation outcome or embryo developmental arrest; and enhanced genetics for animal breeding purposes. We also focus on the role that mitochondrial DNA plays in tumour formation.

For available projects please view Professor St John's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/jus.stjohn

Projects available for

Honours; HDR; Masters; Mphil; PhD

Maximum Number of Students

Flexible

Category

Wet Laboratory

Research Areas

Fertility and Conception

Professor Jus St John

OVARIAN CELL BIOLOGY AND EMBRYOLOGY

Lead Researcher: Professor Rebecca Robker

Contact: rebecca.robker@adelaide.edu.au

Research Summary

The Ovarian Cell Biology and Embryology research group is led by Prof Rebecca Robker. The team investigates biological mechanisms by which cells in the ovary nurture the oocyte, endow it with the essential components to form an embryo, and trigger its release into the oviduct for fertilisation. Discovering this information is essential for understanding the foundations of reproduction and the earliest stages of embryogenesis.

We are investigating the cellular mechanisms that control when the oocyte is released from the ovary (ovulation), focusing on how hormones induce proteolytic genes in ovarian cells. Our studies are also examining how oocytes and sperm are affected by obesity and age, and the impact on embryogenesis and offspring health. We are actively involved in identifying therapies, both pharmaceutical and lifestyle, that can rejuvenate damaged gametes and improve embryo development. We use mouse models for our basic research and collaborate with human fertility clinics to translate our findings.

Our vision is to discover cellular mechanisms by which maternal physiological signals influence ovarian cells, to control ovulation and the healthy development of offspring. We use this knowledge to improve female (and male) reproductive health, generate new approaches to treat infertility and optimise embryo growth in all pregnancies.

For available projects please view Professor Robker's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/rebecca.robker

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

Flexible

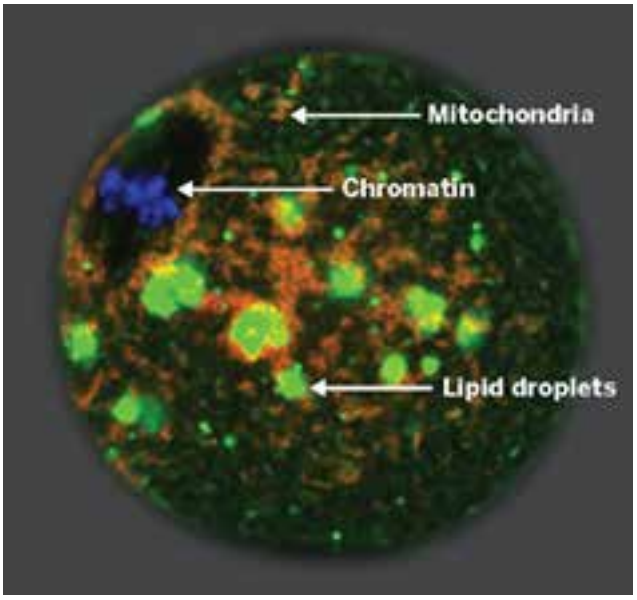
Category

Wet Laboratory; Human Research

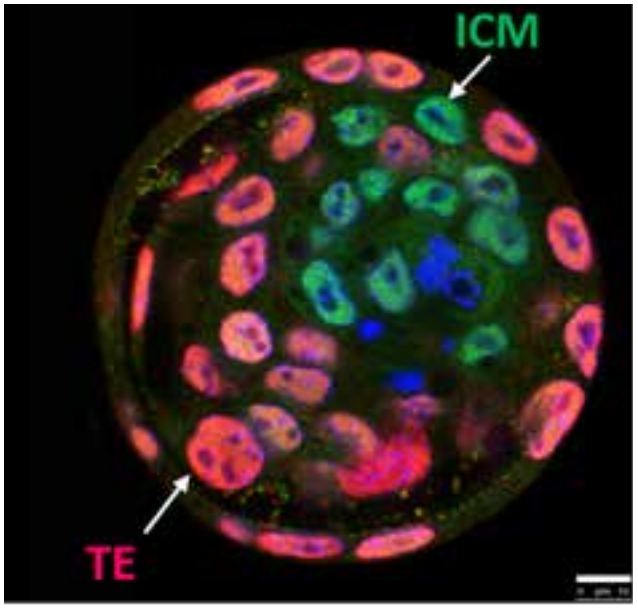
Research Areas

Fertility and Conception

Early Origins of Health



Oocytes contain lipid droplets (green), mitochondria (red) and DNA. Our lab is investigating how obesity and age affect oocytes and their abiltiy to form an embryo.



A blastocyst stage embryo contains the Inner Cell Mass (ICM) which becomes the fetus and the trophectoderm cells (TE) which form the placenta. Our lab identifies potential therapies to improve embryogenesis and fertility.

REPRODUCTIVE BIOLOGY RESEARCH GROUP

Lead Researcher: Dr Sean O'Leary

Contact: sean.oleary@adelaide.edu.au

Research Summary

My research focuses broadly on the factors that influence pregnancy success leading to healthy outcomes for mothers and babies, and developing reproductive strategies to improve livestock production.

Research Interests:

- Improving reproductive strategies in livestock species
- Investigating the role of ovarian factors as predictors of fertility and pregnancy success
- The role of progesterone during pregnancy and the endocrine/immune crosstalk between the ovary, fetus, placenta and endometrium
- Nutritional determinants of pregnancy success and how lifestyle factors including maternal micronutrient status and obesity can lead to complications of pregnancy
- Factors in seminal plasma that drive early responses in the maternal reproductive tract leading to increased embryo survival
- Developing surgical techniques in large animal models to facilitate the study of human genetic diseases and infertility

For available projects please view Dr O'Leary's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/sean.oleary

Projects available for

Third Year; Honours; HDR; Masters; Mphil; PhD

Maximum Number of Students

3

Category

Wet Laboratory

Research Areas

Fertility and Conception

Dr Sean O'Leary

REPRODUCTIVE BIOTECHNOLOGY GROUP

Lead Researcher: Associate Professor Mark Nottle

Contact: mark.nottle@adelaide.edu.au

Research Summary

The Reproductive Biotechnology Group has an international reputation in the general areas of reproductive biology and the development of associated technologies for biomedical and agricultural applications. In collaboration with a number of university, institute and hospital research groups in Australia as well as overseas, current research is focused in the general area of regenerative medicine in particular stem cell research. Research is also focused on the development of human assisted reproductive technologies in particular in vitro oocyte maturation as a safer, patient friendly and more cost effective alternative to hormonal stimulation to produce multiple eggs for human IVF.

For available projects please view Associate Professor Nottle's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/mark.nottle

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

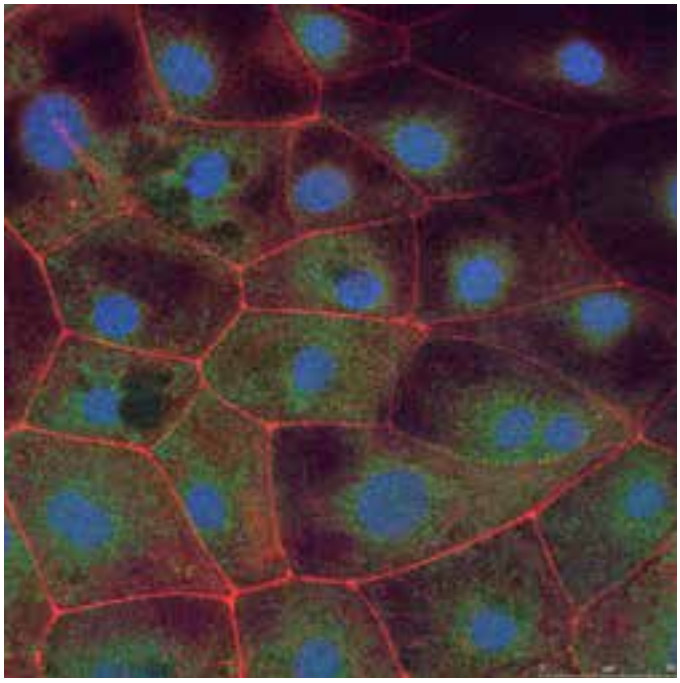
Wet Laboratory

Research Areas

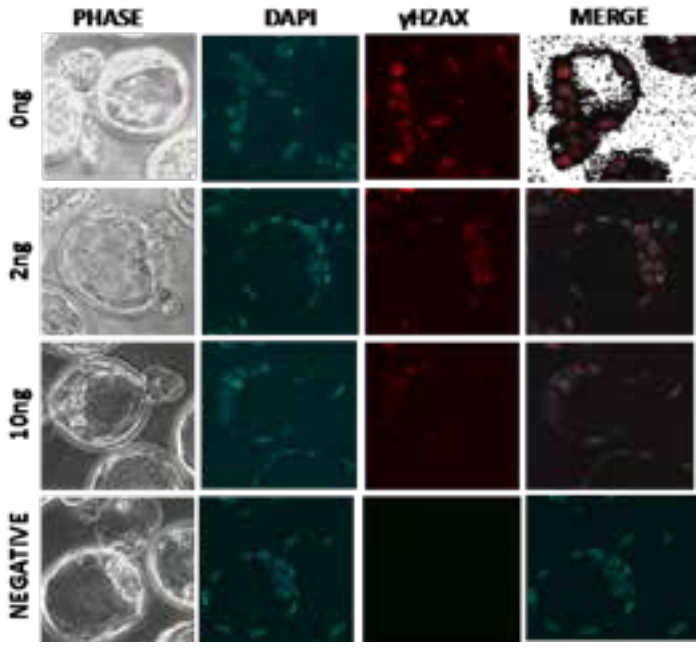
Fertility and Conception

Innovative Therapeutics

Pregnancy and Birth



Porcine retinal pigment epithelial cells derived from a new type of stem cell isolated in our Laboratory.



DNA damage in mouse blastocysts produced using oocytes matured in different media.

REPRODUCTIVE IMMUNOLOGY

Lead Researcher: Professor Sarah Robertson

Contact: sarah.robertson@adelaide.edu.au

Research Summary

The focus of research in the Reproductive Immunology group is immune regulation of fertility and pregnancy, and its contribution to mammalian reproduction and development, particularly in human and mouse models. Our work strives to advance understanding of the fundamental immunobiology of conception, embryo implantation and early development, and to apply this to develop new approaches for managing infertility and pregnancy disorders.

The research by the Reproductive Immunology group centres on three related themes:

- Immune control of female reproductive investment and function
- Pregnancy tolerance and its impact on embryo implantation, placental development, and pregnancy and offspring outcomes
- Male seminal fluid factors that influence female pregnancy tolerance

We are working to understand how the immune system enables healthy conception and pregnancy and is the key in infertility and inflammatory disorders of pregnancy, including preeclampsia, fetal growth and restriction and preterm birth.

For available projects please view Professor Robertson's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/sarah.robertson

Projects available for

Third Year; Honours; HDR; Masters; MPhil

Maximum Number of Students

4

Category

Human Research; Wet Laboratory

Research Areas

Fertility and Conception

Pregnancy and Birth

Early Origins of Health

Immunology and Infection

Professor Sarah Robertson

REPRODUCTIVE SUCCESS

Lead Researcher: Dr Kylie Dunning

Contact: kylie.dunning@adelaide.edu.au

Research Summary

Increasingly, people are delaying starting a family until later in life. The expectation of conceiving children is often disrupted by infertility (1 in 6 Australian couples). Such a diagnosis can lead to reduced productivity, financial hardship, relationship breakdown and mental illness. Infertility is typically addressed by in vitro fertilization (IVF). Whilst IVF has seen major advancements, it still faces numerous challenges, most notably low success rates: only 18% of Australian and New Zealand initiated IVF cycles deliver a live birth. One of the reasons for the low success rate is the inability to select the healthiest embryo. In this project you will utilise cutting edge microscopy techniques combined with post-imaging assessments to better understand the pre-implantation embryo development period. You will be comparing normal healthy embryos with poor quality embryos: those which fail to complete the preimplantation period or lead to implantation failure or pregnancy loss. Our research is clinically relevant, and we are passionate about translating outcomes into the human IVF clinic and in agriculture. Don't hesitate to contact us to discuss further.

For available projects please view Dr Dunning's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/kylie.dunning

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

2

Category

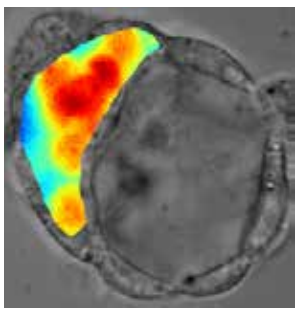
Wet Laboratory

Research Areas

Fertility and Conception

Early Origins of Health

Reproductive Success Lab Group



FAD intensity within inner cell mass of a mouse blastocyst

SPERM AND EMBRYO BIOLOGY

Lead Researcher: Dr Nicole McPherson

Contact: nicole.mcpherson@adelaide.edu.au

Dr Nicole McPherson

Research Summary

The Sperm and Embryo Biology Group run by Dr Nicole McPherson is a part of the Robinson Research Institute, Freemasons Centre for Men's Health and School of Medicine at the University of Adelaide. The group's main research themes encompasses lifestyle factors and male fertility, improving IVF technologies through choosing the best sperm, paternal programming of embryo and offspring health, early fertilisation events and basic and comparative sperm biology. The research group works in very close collaboration with the Monash IVF group and Repromed in SA, which allows access to clinical samples and ensures our research stays clinically translatable. Many of the research projects from this group are in collaboration with the Clinical Researchers and Scientific Directors of the Monash IVF group.

For available projects please view Dr McPherson's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/nicole.mcpherson

Projects available for

Third Year; Honours

Maximum Number of Students

Flexible

Category

Wet Laboratory; Human Research

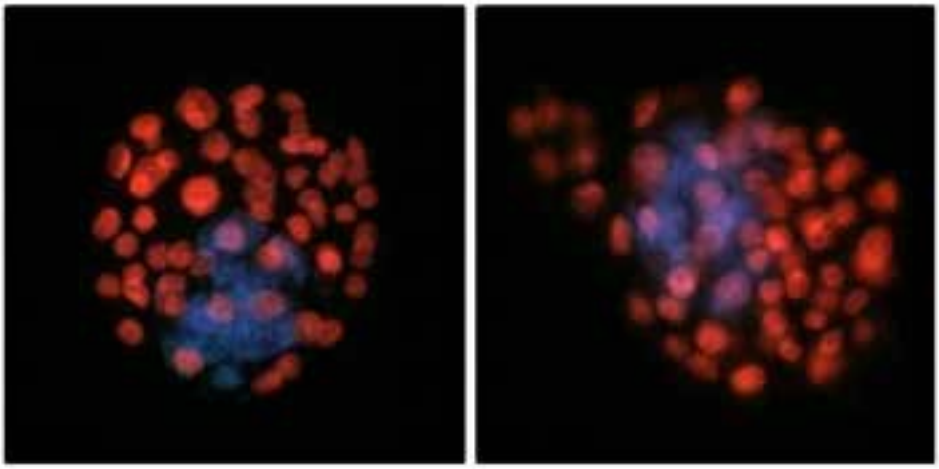
Research Areas

Fertility and Conception

Men's Health

Early Origins of Health

Translational Health Outcomes



Blastocyst mouse embryos

IMMUNOLOGY AND INFECTION

IMMUNOLOGY AND INFECTION RESEARCH GROUPS

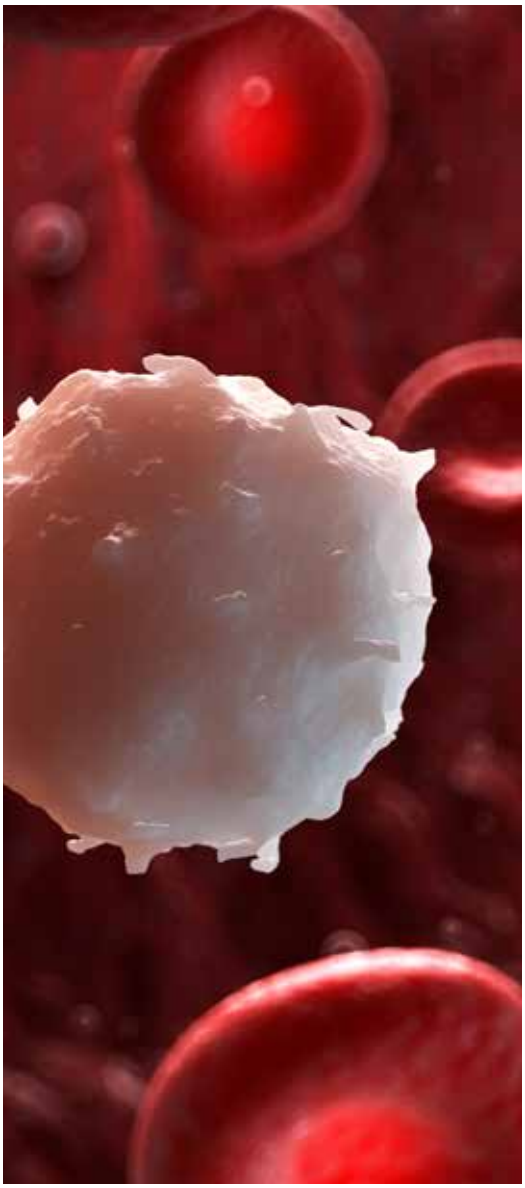
Our immune system is at the front line for controlling infection from foreign pathogens, including bacteria and viruses. A healthy, functioning immune system is fundamental to our overall health and wellbeing.

Our research is focused on understanding how our body's elaborate, innate and adaptive immune systems can distinguish foreign pathogens from self-tissue. Malfunction of the immune system can result in the development of autoimmune disorders including type 1 diabetes, inflammatory bowel disease, multiple sclerosis, psoriasis and rheumatoid arthritis.

Furthermore, inappropriate immune responses are also implicated in central nervous system diseases such as anxiety, depression, epilepsy and stroke and have been proposed to play a role in addictions and pain. Understanding immune responses, and how to control and modulate them is crucial to the successful treatment of patients requiring life-saving transplantation therapies. It is also critical for the development of safe and effective vaccines, which enable significant improvements worldwide in the health status of many communities.

Researchers across the faculty are focused on:

- developing new vaccines
- identifying novel targets in autoimmune diseases such as rheumatoid arthritis
- understanding the role of immune cells in neural tissue (glial cells) in normal healthy brains to elucidate their role in chronic pain, drug addiction and epilepsy and identifying new targets to treat these conditions
- developing immune interventions to prevent or modulate pathologies of pregnancy and graft rejection (in transplantation settings)
- conducting clinical trials to evaluate tolerability, safety and effectiveness of new agents to control infections in patients suffering chronic infections.



IMMUNOLOGY AND INFECTION RESEARCH OPPORTUNITIES

VACCINOLOGY AND IMMUNOLOGY RESEARCH TRIALS UNIT

Lead Researcher: Professor Helen Marshall

Contact: helen.marshall@adelaide.edu.au

Professor Helen Marshall, Director of Vaccinology and Immunology Research Trials Unit

Research Summary

The research program at the Vaccinology and Immunology Research Trials Unit (VIRTU) is directed to address urgent priorities in infectious disease prevention and includes clinical trials in investigational vaccines, infectious and social epidemiology and public health. VIRTU conducts ongoing research on meningococcal, influenza, pneumococcal and pertussis vaccines and suitable HDR projects within these broad areas can be developed after discussion with Prof. Helen Marshall, Director of the Unit. One of the main areas of current research at VIRTU includes meningococcal disease.

Meningococcal disease causes significant morbidity and mortality worldwide and invasive meningococcal disease can result in long-term disability. VIRTU currently conducts several projects on meningococcal disease including the following:

1.The "B Part of It study, the largest study of its kind globally assessing the herd immunity impact of meningococcal B vaccine.

2.Assessing long-term physical, neurocognitive, economic and societal impact of invasive meningococcal disease in Australian adolescents and young adults

3.Evaluation of the newly implemented South Australian immunisation program against meningococcal B disease

In addition to projects suitable for HDR students, VIRTU routinely conducts systematic reviews and meta-analyses on infectious diseases and vaccines which are suitable for third year undergraduate research students.

For further information please see Professor Marshall's Researcher Profile

researchers.adelaide.edu.au/profile/helen.marshall

Projects available for

Third Year; HDR; Honours; Masters; Mphil

Maximum Number of Students

5

Category

Systematic Reviews; Meta-analysis; Human Research

Research Areas

Immunology and Infection

VIROLOGY LABORATORY

Lead Researcher: Dr Branka Grubor-Bauk

Contact: branka.grubor@adelaide.edu.au

Research Summary

Our research is focused on novel strategies to develop vaccines for different flaviviruses such as Zika, dengue, hepatitis C virus and human immunodeficiency virus (HIV). Consequently our research involves , aspects of:

- molecular biology to generate recombinant DNA vaccines and recombinant viral vector vaccines
- classical virology to culture and quantitate recombinant viruses, and
- immunology to assess the efficacy of the experimental vaccines in animal models

We have strong links with industry and conduct a number of collaborative projects with overseas companies as well as many collaborators interstate and internationally, who actively participate in our research projects.

Interested, dedicated postgraduate students who wish to study virology and/or immunology are welcome to join our group.

For available projects please view Dr Grubor-Bauk's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/branka.grubor

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Wet Laboratory

Research Areas

Immunology and Infection

Pregnancy and Birth

Professor Eric Gowans and Dr Branka Grubor-Bauk

INDIGENOUS HEALTH AND HEALTH EQUITY

INDIGENOUS HEALTH AND HEALTH EQUITY

Closing the gap in health equality between Aboriginal, Torres Strait Islander people and other disadvantaged Australians is a national priority. Focused effort is required to understand and resolve the underlying basis for the inequalities of health care and health care outcomes across our most vulnerable Australian community members.

There are many factors impeding the availability and delivery of health care to ensure good health outcomes for Indigenous and disadvantaged groups in Australia. These include: physical access to services for rural and remote communities; cultural appropriateness of treatment; education on the maintenance of health; and financial restrictions.

Our researchers are investigating ways to overcome these barriers and provide an improved understanding of the health and health care amongst Indigenous and disadvantaged communities. This understanding is essential for the development and implementation of informed, effective public health policy.

Researchers across the faculty are focused on:

- reducing the burden of disease and health inequalities, arising from chronic dental diseases among Indigenous children
- monitoring and surveying Indigenous oral health and use of dental services
- working with Indigenous women to develop culturally-appropriate care in order to improve the outcomes for mothers and their babies
- working with the Indigenous community to use existing knowledge on best-practice chronic disease prevention and treatment to improve the coverage and appropriateness of health services and care
- conducting interventional clinical trials to provide evidence for optimal management of HIV/AIDS across high-, middle- and low-income communities.

INDIGENOUS HEALTH AND HEALTH EQUITY

INDIGENOUS HEALTH AND EQUITY

Lead Researcher: Dr Janet Kelly

Contact: janet.kelly@adelaide.edu.au

Research Summary

Dr Janet Kelly is a nurse researcher and course coordinator focusing on improving health care and outcomes for and with Aboriginal people. Over the last ten years she has co-designed Aboriginal patient journey mapping tools to identify barriers and enablers, gaps and strategies in care. These ground up tools are flexible and adaptable and can be used for diverse journey types. They are now used for quality improvement, reflective practice, education and training in renal care, cardiac care, nursing, midwifery and medicine. In 2019 Dr Kelly was funded to begin the aKction – Aboriginal Kidney Care Together – Improving Outcomes Now through the Medical Research Future Fund and Health Translation SA. This implementation project brings together Aboriginal kidney patients and their families, health professionals, academics, researchers and other key stakeholders to identify strengths and gaps and improve care.

Janet began her nursing career at the Royal Adelaide Hospital, and then practiced midwifery, child and youth health, adolescent health, Aboriginal health and women's and sexual health in a range of urban and regional settings, before focusing on research and teaching. She explored the role of sexual health nurses working with young Aboriginal women in urban areas through a Master of Nursing and Aboriginal women's health and collaboration in her PhD studies. She co-designed a culturally respectful participatory action research approach with Aboriginal community women that involved repeated cycles of Look & Listen, Think and Discuss, and Take Action Together. This approach continues to underpin her collaborative work.

For available projects please view Dr Kelly's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/janet.kelly

Dr Janet Kelly

Projects available for

Third Year; Honours; Masters; HDR; MPhil

Maximum Number of Students

Flexible

Category

Human Research; Systematic Reviews

Research Areas

Indigenous Health and Equity

Cardiac, Respiratory and Vascular Health

Surgical and Health Systems Innovation

LYELL MCEWIN HOSPITAL CLINICAL RESEARCH PROGRAM

Lead Researcher: Professor Mark Boyd

Contact: mark.boyd@adelaide.edu.au

Research Summary

We have a rapidly growing and diverse research portfolio. Given the substantial disadvantage of many of the inhabitants of the catchment area the hospital serves we have a particular interest in addressing the social determinants of health. It is well known and understood that the social environment exerts substantial influence on the health and well being of communities and individuals. Despite that, the healthcare system tends to stick with biomedical aspects of health. For many clinicians working at the Lyell McEwin Hospital, they feel that they simply patch people up and send them back into a war without addressing that war.

In similar high-income countries around the world there is a movement towards a transformation in healthcare in which the healthcare system not only implements biomedical 'fixes' (e.g tablets) but effectively addresses significant social stressors. This is not simple as the healthcare system is large and cumbersome and change is not readily accepted or implemented. Nevertheless there is a growing belief that genuinely transformational improvements in human health in the future will not simply come from more pharmaceutical magic bullets, but with a concerted, collaborative effort to improve people's social situation and context. This is the research we prosecute.

For available projects please view Professor Boyd's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/mark.boyd

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

3

Category

Human Research

Research Areas

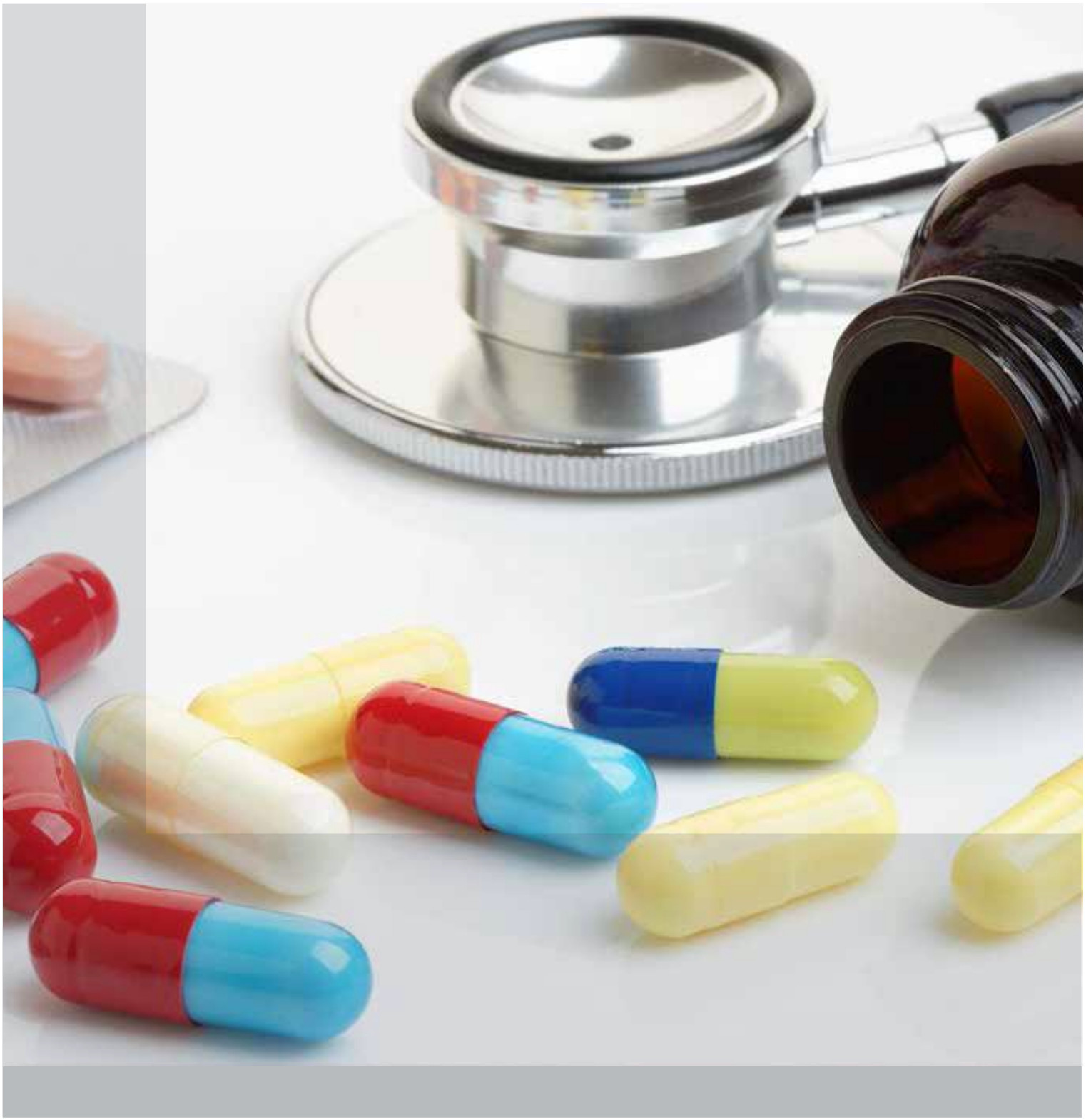
Indigenous Health and Health Equity

Immunology and Infection

Innovative Therapeutics

Child and Adolescent Health

Professor Mark Boyd BA, BM, BS, MD, FRACP



INNOVATIVE THERAPEUTICS

INNOVATIVE THERAPEUTICS RESEARCH GROUPS

Research in innovative therapeutics aims to identify new, economically sustainable therapeutic approaches that can deliver better outcomes for patients and the community.

From 2001 to 2014, health care expenditure in Australia doubled to $140 billion (9.5% GDP), and has since been increasing at a rate of 7.7% per annum. The various tiers of government fund 68% of these costs, 11.5% of which can be attributed to pharmaceuticals alone.

The development of new and cost-effective therapeutics is critical for sustaining and advancing the delivery of health care to the Australian community. Our research aims to produce novel therapeutic approaches to enhance efficacy and specificity; lower the side effects; provide greater safety; and reduced need for hospitalisation or other health services.

Researchers across the faculty are focused on:

- identifying novel targets for therapy to prevent metastasis and modulate the progression of cancers
- identifying new biomarkers to identify disease, predict disease trajectories and monitor response to treatment
- developing tissue regeneration technologies to address tissue injuries and disease
- developing cost-effective in vitro models to replace animal models for testing therapeutic efficacy
- developing rigorous clinical evaluation approaches of novel combinations of existing therapeutic agents, including development of novel modes of delivery.

INNOVATIVE THERAPEUTICS RESEARCH OPPORTUNITIES

ADELAIDE HEALTH TECHNOLOGY ASSESSMENT

Lead Researcher: Dr Drew Carter

Contact: drew.carter@adelaide.edu.au

Research Summary

My current research focusses on ethical resource allocation. I am analysing the ethical principles that ought to inform intensive care unit (ICU) admission and discharge, especially when the ICU is full and additional patients require admission. I am researching the ethics of managed-entry agreements, where governments provisionally fund new health interventions on the condition that research is undertaken to reduce uncertainty concerning the intervention's effectiveness or cost-effectiveness, for example. I am also researching how national bodies such as the Pharmaceutical Benefits Advisory Committee (PBAC) and the Medical Services Advisory Committee (MSAC) ought to include more than conventional cost-effectiveness in their judgements of the value for money that a health intervention provides. Finally, I am interested in developing a framework that evaluation agencies can use to more easily assess the ethical dimensions of genomic health technologies.

For available projects please view Dr Carter's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/drew.carter

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

4

Category

Systematic Reviews

Research Areas

Innovative Therapeutics

Surgical and Health Systems Innovation

Translational Health Outcomes

Dr Drew Carter

CLINICAL PHARMACOLOGY, BASIL HETZEL INSTITUTE

Lead Researcher: Professor Betty Sallustio

Contact: benedetta.sallustio@sa.gov.au

Research Summary

As part of The Queen Elizabeth Hospital, researchers at the Basil Hetzel Institute for Translational Health Research can work closely with the hospitalâ€™s clinical divisions, and this has led to a focus on translational health research, an innovative â€˜bench to bedsideâ€™ approach in which scientific discoveries can be quickly translated into improved patient care and treatment. Prof Sallustio heads the Clinical Pharmacology Unit, which is affiliated with the Discipline of Pharmacology of the University of Adelaide. It provides a clinical therapeutic drug monitoring service coupled with an active research program in the areas of heart disease, kidney transplantation and cancer. Specific research projects include:

Developing New Treatments for Heart Disease and Cancer

1) Investigating the efficacy of new myocardial metabolic agents in the treatment of heart failure and ischaemic heart disease.

2) Developing new therapies for chemotherapy-induced myocardial toxicity in cancer patients

Individualising Immunosuppressant Therapy in Transplantation

1) Investigating how genetic variability in both kidney donors and recipients determines intra-renal and intra-lymphocyte exposure to immunosuppressants, and its association with rejection and long-term function of the transplanted kidney.

2) Investigating how immunosuppressant therapy can be better monitored in transplant recipients who become pregnant to improve safety for both mother and baby.

For available projects please view Professor Sallustio's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/benedetta.sallustio

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Wet Laboratory; Human Research

Research Areas

Innovative Therapeutics

Cardiac, Respiratory and Vascular Health

Cancer Biology and Clinical Oncology

Immunology and Infection

The Clinical Pharmacology team headed by Prof Sallustio (centre) at the Basil Hetzel Institute.

CPHRG

Lead Researcher: Ms Paula Gillespie-Fotheringham

Contact: paula.gillespie-fotheringham@adelaide.edu.au

Research Summary

Art psychotherapy, play therapy, family therapy, child development, developmental trauma, attachment related issues.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here:

researchers.adelaide.edu.au/profile/paula.gillespie-fotheringham

Projects available for

Third Year; Honours; Masters

Maximum Number of Students

2

Category

Systematic reviews

Research Areas

Innovative Therapeutics

Surgical and Health Systems Innovation

Translational Health Outcomes

NEURODEGENERATIVE AND GASTROINTESTINAL THERAPIES

Lead Researcher: Dr Scott Smid

Contact: scott.smid@adelaide.edu.au

Research Summary

Current research interests span a number of projects in the medical cannabis space. Cannabis contains hundreds of phyto-cannabinoids aside from just THC and we have very little information on their effectiveness and safety, either individually or collectively. More Australians will be expected to access cannabis for medicinal purposes and as complementary medicines, so research in this area will assist the emergent industry and provide further clinical insight and patient and community awareness.

We have a range of in vitro projects characterising novel cannabis phytochemicals for neuroprotective (e.g. dementia) and gastrointestinal (e.g. anti-inflammatory) applications, in addition to projects aimed at understanding toxicity related to cannabis-drug interactions. We also have other natural product research interests; some projects can be tailored to student interests in this field or more generally in experimental therapeutics with applications in dementia and GI research.

For available projects please see Dr Smid's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/scott.smid

Projects available for

Honours; HDR

Maximum Number of Students

2

Category

Wet Laboratory

Research Areas

Innovative Therapeutics

Neuroscience, Behaviour and Brain Health

Nutrition and Metabolic Health

Dr Scott Smid

PERINATAL AND INFANT MENTAL HEALTH SERVICES, WOMENS AND CHILDREN'S HEALTH NETWORK

Lead Researcher: Dr Anne Sved Williams

Contact: Anne.SvedWilliams@sa.gov.au

Research Summary

Perinatal borderline personality disorder (PBPD) has previously been extremely under-identified and concerns raised about inadequate management of women with this condition and the flow-on effects for their infants. Thus a new treatment programs to treat PBPD and significant emotional dysregulation has been developed (mother-infant dialectical behaviour therapy) and is currently being further refined with analysis of qualitative interviews following group completion and at one year follow-up. Comparison with other therapy groups is under way.

A recent development is the production of a shorter form of MI-DBT (7 sessions compared to the original 24) in parents attending a child protection agency. If initial evaluation shows benefit for this approach, further evaluation is planned, using a comparison group to enable an understanding of its benefits.

Research projects available:

- Antenatal identification of borderline personality disorder in an antenatal clinic and prospective follow-up to evaluate birth outcomes
- Postnatal follow-up of identified women to evaluate progress in postnatal year including use of services and effects on infants
- Identification of rates of undiagnosed BPD in perinatal women attending primary care practitioners for mental health support
- Identification of rates of undiagnosed BPD in women seeking help for their infants in child-based services

For available projects please see Dr William's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/anne.williams

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

3

Category

Human Research

Research Areas

Innovative Therapeutics

Early Origins of Health

Pregnancy and Birth

Dr Anne Sved Williams

MUSCULOSKELETAL HEALTH

MUSCULOSKELETAL HEALTH RESEARCH GROUPS

Good musculoskeletal health is important at every stage of life and plays a vital role in keeping us on our feet. More than six million Australians (approximately 14% of the population) suffer from some kind of musculoskeletal condition, such as back pain, arthritis, osteoporosis and fractures.

Musculoskeletal health is a multidisciplinary area of research involving connective tissue biology (including bone, cartilage and muscle), diseases of connective tissue (including arthritis and osteoporosis), biomechanics and surgical/clinical interventions to treat traumatic bone injury and other conditions.

Researchers across the faculty are focused on:

- understating the cellular and molecular basis of normal and pathological bone turnover
- how to best repair fractures after traumatic injury with novel surgical approaches and post-operative management
- how to optimise the outcomes of joint replacement surgery in order to provide better and longer lasting outcomes for patients
- performing gait analysis and activity monitoring to evaluate the success of interventions across all musculoskeletal conditions
- developing better ways to manage spinal cord injury patients to improve their outcomes
- identifying links between bone cells and the molecules they produce and bone health.

MUSCULOSKELETAL HEALTH RESEARCH OPPORTUNITIES

BONE AND JOINT OSTEOIMMUNOLOGY GROUP

Lead Researcher: Associate Professor Tania Crotti

Contact: tania.crotti@adelaide.edu.au

Research Summary

The Bone and Joint Osteoimmunology Laboratory is focused on understanding and regulating the mechanisms responsible for pathological bone remodelling in inflammatory conditions such as Rheumatoid Arthritis (RA), Periodontal Disease and Peri-implant osteolysis associated with failed orthopaedic implants. In collaboration with clinicians at the Royal Adelaide Hospital, Dental Hospital and Flinders Clinical Centre and the Centre for Nanoscalebiophotonics the laboratory carries out analysis on human tissues retrieved during surgery to understand the pathways involved. Complementary in vivo and in vitro models of these diseases are employed to further unravel processes and response to treatments. Techniques include hyperspectral imaging, real-time quantitative PCR, ELISA and microCT imaging.

In collaboration with the Paediatric Rheumatology Clinic at the WCH research is also being carried out to better understand the patient experience and clinical outcomes of our patients with Juvenile Idiopathic Arthritis using a recently established data bank.

For available projects please view Associate Professor Crotti's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/tania.crotti

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

3

Category

Wet Laboratory; Dry Laboratory; Human Research; Systematic Review; Meta-analysis

Research Areas

Musculoskeletal Health

Oral Health

Child and Adolescent Health

Immunology and Infection

Associate Professor Tania Crotti

MicroComputer Tomography (microCT) imaging of bone and paw inflammation in a model of inflammatory arthritis (provided by Bonnie Williams)

BONE AND JOINT RESEARCH GROUP, CENTRE FOR ORTHOPAEDIC AND TRAUMA RESEARCH

Lead Researcher: Dr Julia Kuliwaba

Contact: julia.kuliwaba@adelaide.edu.au

Dr Julia Kuliwaba

Research Summary

The Centre for Orthopaedic and Trauma Research (COTR) was formed in 2012 and its members include orthopaedic surgeons, clinical researchers, and biomedical scientists and engineers. This diverse combination of researcher expertise enables the scientific study of highly clinically relevant topics pertaining to the human musculoskeletal system. The research aims to better understand bone and joint diseases and conditions, including osteoarthritis and joint replacement, pathological bone loss, infection, spinal conditions and fracture.

The COTR team of biomedical scientists and engineers and their laboratories are located in the new Adelaide Health and Medical Sciences building (AHMS) on North Terrace.

The Bone and Joint Research Group focus on understanding the pathobiology of osteoarthritis, osteoporosis, and other musculoskeletal conditions. The laboratory is internationally recognised for human tissue-level analyses, utilising a well-established human musculoskeletal tissue bank. The research involves a multidisciplinary approach utilising numerous tissue-level techniques: ranging from molecular to microstructural to clinical imaging.

For available projects please view Dr Kuliwaba's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/julia.kuliwaba

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

10

Category

Wet Laboratory; Dry Laboratory; Human Research

Research Areas

Musculoskeletal Health

Ageing, Frailty and Mobility

Nutrition and Metabolic Health

Translational Health Outcomes

CENTRE FOR ORTHOPAEDIC & TRAUMA RESEARCH – SPINAL RESEARCH GROUP

Lead Researcher: Dr Claire Jones

Contact: claire.jones@adelaide.edu.au

Research Summary

My team engages in diverse research themes across orthopaedics and injury, predominantly related to spinal disorders and trauma, and neurotrauma. Our research bridges medicine and engineering, and we develop and use experimental methods using cadaveric and animal models, medical imaging, computer models, clinical data and human volunteers. Some of our current research projects include understanding the injury mechanisms of cervical spine facet dislocation and fracture, determining the relationship between imaging biomarkers of spinal osteoarthritis and bone biomechanics, the mechanical properties of spinal and cranial dura, and animal models of spinal cord injury and concussion.

For available projects please view Dr Jones' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/claire.jones

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

8

Category

Wet Laboratory; Dry Laboratory; Human Research

Research Areas

Musculoskeletal Health

Neuroscience, Behaviour and Brain Health

Ageing, Frailty and Mobility

Dr Claire Jones

CENTRE FOR ORTHOPAEDIC AND TRAUMA RESEARCH (MUSCULOSKELETAL MODELLING GROUP)

Lead Researcher: Associate Professor Dominic Thewlis

Contact: dominic.thewlis@adelaide.edu.au

Research Summary

I use a combination of experimental and computational methods to better understand the aetiology of musculoskeletal disease, improve outcomes for joint replacement surgery, refine techniques and improve outcomes for orthopaedic trauma. My group has core programs of research on:

1) Hip replacement outcomes;

2) Neck of femur fracture outcomes;

3) Lower leg fractures (work on shaft and joint injury);

4) Novel image-based biomechanical modelling challenges; and

5) Novel uses of machine learning in orthopaedics and biomechanics.

For available projects please view Associate Professor Thewlis' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/dominic.thewlis

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

5

Category

Human Research

Research Areas

Musculoskeletal Health

Ageing, Frailty and Mobility

Using machine learning to model musculoskeletal function

ENVIRONMENTAL AND OCCUPATIONAL HEALTH SCIENCES: OCCUPATIONAL HEALTH

Lead Researcher: Dr Paul Rothmore

Contact: paul.rothmore@adelaide.edu.au

Research Summary

We are interested in the link between work, the working environment and worker health and safety. We have diverse backgrounds in ergonomics, workplace injury and illness management and public health and we employ an array of quantitative and qualitative methodologies. We work closely with industry and government to develop, design and evaluate evidence-based interventions to improve the health, safety and longevity of working populations.

Current research projects include:

- The ageing workforce
- Heat and work injury
- The design and evaluation of evidence-based workplace interventions
- Behavioural approaches to workplace injury prevention

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/paul.rothmore**

Projects available for

Honours; Masters

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Musculoskeletal Health

Dr Paul Rothmore

MESENCHYMAL STEM CELL GROUP

Lead Researcher: Professor Stan Gronthos

Contact: stan.gronthos@adelaide.edu.au

Research Summary

Postnatal mesenchymal stem cells (MSC) derived from connective tissues are capable of developing into multiple cell lineages (myelosupportive stroma, adipocytes, smooth muscle cells, myoblasts, ligament cells, chondrocytes and osteoblasts). Our Lab examines the transcriptional, epigenetic and signalling factors that regulate MSC self-renewal, proliferation, multi-differentiation and immune cell modulation. These molecular processes are being investigated as underlying mechanisms mediating tissue repair, inflammation, tumour cell development and aged related diseases.

For available projects please view Professor Gronthos' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/stan.gronthos

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

Flexible

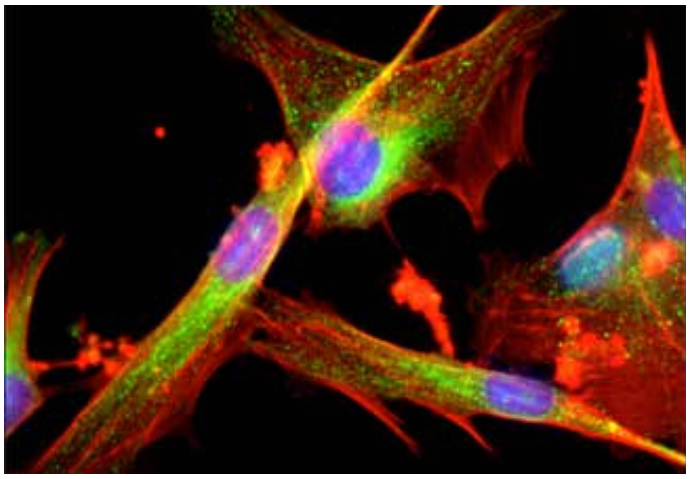
Category

Wet Laboratory

Research Areas

Musculoskeletal Health

Cancer Biology and Clinical Oncology



Skeletal Stem Cells

NORTH WEST ADELAIDE HEALTH STUDY MUSCULOSKELETAL HEALTH GROUP

Lead Researcher: Dr Tiffany Gill

Contact: tiffany.gill@adelaide.edu.au

Research Summary

My research is in the area of musculoskeletal epidemiology. I use data collected as part of the North West Adelaide Health Study, a cohort study with 20 years of data collection in the northern and western suburbs, which has one of the largest population-based musculoskeletal data collections in Australia. The data enable us to examine the prevalence, incidence, risk and other factors associated with musculoskeletal conditions in the population.

For available projects please view Dr Gill's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/tiffany.gill

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Musculoskeletal Health

Dr Tiffany Gill

WCH PAEDIATRIC ORTHOPAEDIC CLINICAL RESEARCH TEAM

Lead Researcher: Associate Professor Nicole Williams

Contact: nicole.williams01@adelaide.edu.au

Research Summary

The Research Team at the Department of Orthopaedic Surgery, Women's and Children's Hospital (WCH) comprises orthopaedic surgeons, doctors-in-training, medical and research/higher degree students. It is supported by a Clinical Research Manager, Research Scientist and Research Assistant. The Department has a long track record of internationally recognised research activity and publications including basic science and clinical research investigating a range of paediatric musculoskeletal conditions.

Current areas of interest for the Research Team at the WCH Department of Orthopaedics include mechanisms of bone growth and repair, paediatric musculoskeletal infections, the management of congenital and developmental musculoskeletal deformities such as scoliosis and lower limb deformity and paediatric trauma.

Clinical Research aims to provide the benchmarks for clinical audit and quality management issues to be undertaken in a structured manner. The Department of Orthopaedic Surgery has a high clinical workload, which enhances the opportunities for organised clinical orthopaedic research.

For available projects please view Associate Professor Williams' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/nicole.williams01

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

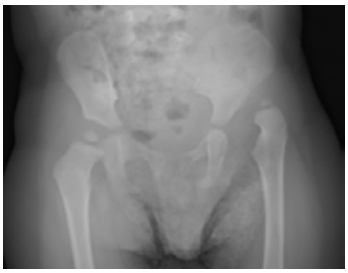
Category

Systematic reviews; Meta-analysis; Human Research

Research Areas

Musculoskeletal Health

Child and Adolescent Health



Late diagnosed dislocation and dysplasia of left hip in a 2 year old child

Dr Nicole Williams

NEUROSCIENCE, BEHAVIOUR AND BRAIN HEALTH

NEUROSCIENCE, BEHAVIOUR & BRAIN HEALTH RESEARCH GROUPS

NEUROSCIENCE, BEHAVIOUR AND BRAIN HEALTH RESEARCH

The brain and spinal cord comprise the central nervous system of the body. Damage and disease of the brain or spinal cord can lead to developmental delay, intellectual or physical disability, loss of cognitive function and behavioural and psychological disorders.

Neuroscience is an interdisciplinary science that focuses on the study of neurochemistry and experimental psychology. It deals with the structure and normal function of the nervous system and brain that impact on behaviour, cognitive function and neurological dysfunction.

Our researchers investigate these areas with the aim of developing therapies and informing improved health service provision for individuals.

Researchers across the faculty are focused on:

- understanding the function of genes that cause neurodevelopmental disorders, such as intellectual disability and epilepsy
- investigating the causes of diseases of the brain, spine or nervous system (including Parkinson's disease and Alzheimer's disease) to inform diagnosis, prevention and treatment
- understanding the cellular and molecular basis of cognition, perception and neuropsychology
- developing therapies, and translating results into the treatment and prevention of neurological diseases
- understanding the health psychology, healthy development across the lifespan, and disability to inform and assess rehabilitation and health service delivery
- developing innovative biological computation technologies to enable large-scale epidemiological studies that can inform health care policy and service provision.

NEUROSCIENCE, BEHAVIOUR AND BRAIN HEALTH RESEARCH OPPORTUNITIES

ADELAIDE BRAIN AND COGNITIVE DEVELOPMENT

Lead Researcher: Dr Mark Kohler

Contact: mark.kohler@adelaide.edu.au

Research Summary

My research broadly focuses on cognitive and behavioural development and psychophysiology. I have specific expertise in the areas of child sleep and cognition, sleep disorders, and memory and learning, as well as interest in the interaction of child health, lifestyle factors and well-being. More recently I have been investigating the use of nature in child learning, and plan to continue this work through 2020. My work comprises laboratory-based experiments, field work, and survey work. Students are encouraged to talk to me about any area of potential research that falls into the above description.

For further information please view Dr Kohler's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/mark.kohler

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Child and Adolescent Health

ABCD
Adelaide Brain and Cognitive Development
Laboratory

The ABCD lab investigates cognitive development

APPLIED COGNITION AND EXPERIMENTAL PSYCHOLOGY

Lead Researcher: Associate Professor Carolyn Semmler

Contact: carolyn.semmler@adelaide.edu.au

Research Summary

The Applied Cognition and Experimental Psychology (ACEP) research group focuses on the application of theories and models of cognition, judgement and decision-making to defence, legal and medical contexts. We are interested in understanding human interaction with intelligent agents using computational models to describe and explain human-machine interaction.

We use experimental methods and modelling of cognitive processes to understand and improve human decision-making in important contexts, such as health, policing and national security. Our research is focused on understanding how individuals who are proficient in unfamiliar face matching achieve high levels of performance and how technology might be used to enhance proficiency. We are working to improve the decisions of people in areas of law, including police, eyewitnesses and jurors. In doing so, we hope to improve the use of forensic science evidence in legal settings and the accuracy and efficiency of decisions made by our courts. We are also active in areas of health, where our focus is on methods to improve the decisions of health consumers and health care workers in relation to vaccination.

For available projects please view Associate Professor Semmler's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/carolyn.semmler

Projects available for

Honours; HDR

Maximum Number of Students

5

Category

Dry Laboratory; Meta-analysis; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Associate Professor Carolyn Semmler

BEHAVIOURAL NEUROSCIENCE

Lead Researcher: Dr Alexandra Whittaker

Contact: alexandra.whittaker@adelaide.edu.au

Research Summary

Current work is examining chemotherapy-induced cognitive impairment. This common condition experienced by cancer patients treated with chemotherapy causes a long-lasting reduction in cognitive and executive functions, and attention. Effects range from subtle to profound with a consequent impact on quality of life. We believe that, akin to other neurodegenerative conditions such as Alzheimers, this cognitive dysfunction may be brought about through neuroimmune changes occurring in the brain bringing about neurotoxicity. If we can better understand the mechanism of this action we may be in a position to prevent its onset at the time of chemotherapy treatment. This could potentially prevent cognitive decline occurring.

For available projects please view Dr Whittaker's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/alexandra.whittaker

Projects available for

Third Year; Honours

Maximum Number of Students

3

Category

Wet Laboratory; Dry Laboratory; Systematic reviews

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Whittaker

BRAIN AND COGNITION RESEARCH

Lead Researcher: Dr Lance Storm

Contact: lance.storm@adelaide.edu.au

Research Summary

Anomalistic Psychology, including Parapsychology: Testing parapsychological effects, including synchronicity, alleged psychic ability, intuition, and presentiment. The psychology of parapsychology, including

1) quantitative analyses of theories and constructs that attempt to explain alleged paranormal phenomena (a.k.a. psi),

2) quantitative investigations into the psychology of paranormal belief (e.g., testing correlates of psi belief), and

3) interpretations of alleged paranormal phenomena in academia and the wider community.

Analytical Psychology: Archetype Theory and meaningfulness. Research into the qualitative aspects of symbols, including numbers and images, and their psychological impact and relevance to various cultures.

Personality and Individual Differences: Includes comparative studies of psychological types using various Jungian "type" measures and other personality measures. Self-reported (explicit) measurement of beliefs and attitudes towards outcomes, transliminality and their correlates.

For available projects please see Dr Storm's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/lance.storm

Projects available for

Honours

Maximum Number of Students

2

Category

Meta-analysis; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Lance Storm

BRAIN AND COGNITION RESEARCH GROUP

Lead Researcher: Dr Matthew Dry

Contact: matthew.dry@adelaide.edu.au

Research Summary

Honours project opportunities.

1.Predictors of academic achievement: Investigating the role of personality,intellectual ability and factors such as stress, motivation, metacognition, creativity, perfectionism, etc on academic outcomes such as grades, satisfaction, post-graduate employment etc.

2.Human performance on the Traveling Salesperson Problem (TSP): The TSP is a computationally difficult optimization problem - understanding the cognitive processes underlying human performance on this task provides insight into our ability to perform computationally difficult tasks with apparent ease.

For available projects please view Dr Dry's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/matthew.dry

Projects available for

Honours

Maximum Number of Students

4

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Matt Dry

BRAIN STIMULATION, IMAGING AND COGNITION GROUP

Lead Researcher: Dr Nigel Rogasch

Contact: nigel.rogasch@adelaide.edu.au

Research Summary

The brain is a remarkably dynamic organ that is continually reorganising and adapting its structure and function. These rapid and long term changes give rise to our thoughts, govern how we perceive our environment and allow us to either retain information in our mind for brief periods or to store information over many years. Even subtle disruptions in the mechanisms governing brain dynamics can have devastating effects on social and cognitive functioning and possibly underlie mental illnesses such as schizophrenia.

One method particularly suited to studying the dynamic brain is transcranial magnetic stimulation (TMS), a non-invasive method of stimulating cortical brain regions in living humans. TMS is a versatile technique which can be used to probe specific excitatory and inhibitory cortical circuits, to map connectivity between brain regions and to temporarily alter brain function by inducing neuroplasticity (i.e. transiently reorganising brain circuits).

My research concentrates on combining TMS with neuroimaging techniques (EEG, MRI) to understand the role of excitatory/inhibitory mechanisms, brain organisation (oscillations, connectivity) and plasticity in healthy and unhealthy brain function. I have a particular focus on the neural mechanisms underlying short-term memory and psychiatric disorders such as schizophrenia and depression.

For available projects please see Dr Rogasch's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/nigel.rogasch

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Innovative Therapeutics

Dr Nigel Rogasch

COGNITION, AGEING AND NEURODEGENERATIVE DISEASE LABORATORY (CANDL)

Lead Researcher: Dr Lyndsey Collins-Praino

Contact: lyndsey.collins-praino@adelaide.edu.au

Research Summary

Within CANDL, our research utilises an innovative "dish to deathbed" approach to identify novel predictors of the risk/rate of cognitive decline both in healthy ageing and in neurodegenerative diseases, such as Alzheimer's and Parkinson's disease. We are particularly interested on the role of neuroinflammation in this process.

Currently, there are a number of projects ongoing. Some of these include

1. Investigation of whether targeting aberrant neuroinflammation can improve functional outcomes and slow dopamine neuron degeneration in pre-clinical models of Parkinson's disease.

2. Identification of novel methods to prevent the spread of pathological proteins in neurodegenerative disease.

3. Investigation of whether growth factor administration is able to prevent neurodegeneration and reduce chronic inflammation following traumatic brain injury.

4. Use of novel genomic analyses and cognitive data to predict risk and rate of cognitive decline in healthy ageing and Parkinson's disease.

5. Investigation of whether a neuroinflammatory signature is predictive of conversion to dementia in Parkinson's disease.

6. Assessment of the role of microglia in pathological transmission of alpha synuclein.

7. Use of cognitive training to improve cognitive function in Parkinson's disease.

8. Tracking the evolution of parkinsonian like-pathology following traumatic brain injury.

For available projects please view Dr Collins-Praino's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/lyndsey.collins-praino

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Wet Laboratory; Dry Laboratory; Systematic reviews; Meta-analysis; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Ageing, Frailty and Mobility

CANDL

Dr Lyndsey Collins-Praino, Head of CANDL

COGNITIVE NEURAL SCIENCES LABORATORY

Lead Researcher: Dr Irina Baetu

Contact: irina.baetu@adelaide.edu.au

Research Summary

My research focuses on understanding the mechanisms that underpin human learning and memory. I supervise projects that investigate learning and memory processes in healthy individuals. This involves running lab-based experiments in which participants learn by trial-and-error to perform correct responses, or to associate co-occurring stimuli. The aim of this research is to test different theories of learning (oftentimes mathematical models), or to investigate individual differences in learning that may be related to variables such as impulsivity or subclinical anxiety.

For available projects please view Dr Baetu's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/irina.baetu

Projects available for

Honours

Maximum Number of Students

Flexible

Category

Dry Laboratory; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Irina Baetu

DASSA-WHO COLLABORATING CENTRE

Lead Researcher: Associate Professor Linda Gowing

Contact: linda.gowing@adelaide.edu.au

Research Summary

My primary research focus is the translation of evidence into best practice in the treatment of alcohol and other drug dependence. This work includes the preparation of systematic reviews, but my current focus is on drawing together the findings of systematic reviews and other types of research to form a view on the efficacy, effectiveness and safety of different interventions for treating addiction. From time to time I also undertake case note audits and other research projects at Drug and Alcohol Services South Australia where I hold the position of Principal Research Officer. Current projects include reviewing the evidence on baclofen and disulfiram for alcohol dependence, types of psychosocial intervention in outpatient settings, and assessment of acute sleep disturbance during amphetamine withdrawal.

For available projects please view Associate Professor Gowing's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/linda.gowing

Projects available for

Third Year; Honours

Maximum Number of Students

Flexible

Category

Systematic reviews; Meta-analysis; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Associate Professor Linda Gowing

DASSA-WHO COLLABORATING CENTRE FOR RESEARCH IN THE TREATMENT OF DRUG AND ALCOHOL PROBLEMS

Lead Researcher: Associate Professor Robert Ali

Contact: robert.ali@adelaide.edu.au

Research Summary

My research interests include screening for substance use disorders, medication assisted treatment for opioid dependence and the management of amphetamine type stimulant dependence.

For available projects please view Associate Professor Ali and Ms Harland's Researcher Profiles under "My Research"

researchers.adelaide.edu.au/profile/robert.ali

researchers.adelaide.edu.au/profile/jennifer.harland

Projects available for

Third Year

Maximum Number of Students

2

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Pregnancy and Birth

Innovative Therapeutics

Associate Professor Robert Ali

DISCIPLINE OF PSYCHIATRY

Lead Researcher: Dr Scott Clark

Contact: scott.clark@adelaide.edu.au

Research Summary

My research broadly focuses on two key areas:

1. Modelling of medication response, cognition and function in severe mental illness combining blood based (-omics), EEG and clinical data for personalised psychiatry.

2. Epidemiology and monitoring of adverse health outcomes in serious mental illness: Myocarditis, Severe infection

For available projects please view Dr Clark's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/scott.clark

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

3

Category

Wet Laboratory; Systematic reviews; Meta-analysis; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Child and Adolescent Health

Translational Health Outcomes

Innovative Therapeutics

Dr Scott Clark

DISCIPLINE OF PSYCHIATRY

Lead Researcher: Dr Natalie Mills

Contact: natalie.mills@adelaide.edu.au

Research Summary

Anxiety disorders are very common, yet very few studies have investigated novel biological factors which may be responsible for treatment refractory illness. The project 'Investigating the longitudinal relationship between inflammation and anxiety disorders'aims to examine the role of the immune system in anxiety disorders. Although research has shown increased activity of the immune system in depression and psychosis, there is little research examining immune activity in people with anxiety-based disorders other than posttraumatic stress disorder. The project investigates the role of the immune system by measuring inflammatory markers (small proteins in the blood) over time and inflammatory marker genes, in individuals with and without a history of anxiety disorders. Clinical and biological data are collected at baseline, and at follow-up 6 months later. Clinical data assesses for anxiety disorders, and anxiety severity. The blood sample at each visit collects serum for measurement of inflammatory markers (including cytokines), DNA for genotyping, and RNA for gene expression. This research addresses a significant gap in the literature, and will inform new avenues for treatment, which in future studies can be translated into improved treatment outcomes.

Collaborators: Associate Professor Scott (UQ), Professor Galletly, Dr Toben, Dr Jawahar, Dr Clark, Associate Professor Schubert

For available projects please view Dr Mill's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/natalie.mills

Projects available for

HDR

Maximum Number of Students

1

Category

Wet Laboratory; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Natalie Mills

DISCIPLINE OF PSYCHIATRY

Lead Researcher: Associate Professor Oliver Schubert

Contact: oliver.schubert@adelaide.edu.au

Research Summary

My research focuses on 3 broad areas:

1.'Omics' for Mental Health

I undertake genomic, transcriptomic, and proteomic studies that explore the molecular underpinnings of schizophrenia, bipolar disorder, and major depression. The aim is to define biological signatures of homogenous patient subgroups within these diagnostic entities, and to detect genetic and molecular substrates associated with treatment response. These biomarkers might be of use for personalised prescribing and for development of novel treatments in psychiatry.

2. Longitudinal Mental Health Research in Youth

Measuring mental health outcomes repeatedly over time adds valuable information to cross-sectional clinical assessments. In large datasets, longitudinal research can delineate typical trajectories of treatment response, recovery, or deterioration; my projects aim to predict trajectories for individual patients so treatments can be better tailored to their needs, and to identify and improve gaps in current service provision.

3. The Interface of Mental Health and Physical Illness

The importance of mental health factors for outcomes in medicine at large is widely recognized. I conduct collaborative studies with colleagues working in anaesthesia, O&G, respiratory medicine, infections diseases, and rheumatology with the aim of improving treatment outcomes by assessing and addressing mental health concerns in their patient populations.

For available projects please view Associate Professor Schubert's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/oliver.schubert

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

3

Category

Wet Laboratory; Dry Laboratory; Systematic reviews; Meta-analysis; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Translational Health Outcomes

Pregnancy and Birth

Innovative Therapeutics

Associate Professor Oliver Schubert

DISCIPLINE OF PSYCHIATRY

Lead Researcher: Dr Catherine Toben

Contact: catherine.toben@adelaide.edu.au

Research Summary

A strong association between stressful life events and the onset of mental health disorders is often linked with chronic low grade inflammation. As a molecular immunobiologist I am particularly interested in gaining a better understanding of the bidirectional and molecular link between brain function and immune system responses to stress. Specifically my work focuses on the identification of transcriptomic and proteomic signatures associated with alterations in particular symptom domains (such as cognition) of psychiatric disorders including depression, PTSD and schizophrenia. A further research focus is how interventions such as altered nutrition and/or mindfulness based practices can harness inherent neuro – regenerative and protective immune mechanisms to reduce stress induced psychiatric symptoms. Ongoing collection of empirical data from clinical cohorts as well as animal models of early and later life chronic stress is an important component of my methodology.

For available projects please view Dr Toben's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/catherine.toben

Projects available for

Third Year; Honours

Maximum Number of Students

Flexible

Category

Wet Laboratory; Systematic reviews; Meta-analysis; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Catherine Toben

EXPERT COGNITION LAB

Lead Researcher: Dr Rachel Searston

Contact: rachel.searston@adelaide.edu.au

Research Summary

Professionals in a variety of domains are capable of extraordinary feats of expertise. What gives rise to the ability to diagnose a rare disease, develop an elegant solution to a programming problem, spot a suspect's face in a crowd, or discriminate highly degraded samples of evidence left at a crime-scene? How do experts' mental representations and decision processes differ from novices' in these areas? What predicts expert performance? What is the best way to optimise the development of expertise with training and experience?

The Expert Cognition Lab focuses on fundamental questions about the nature and development of expertise as they apply to practical problems in industry. We are interested in understanding how best to create expert performance in contexts such as medicine, forensic science, security, and education. We are working to develop a scientific basis for the selection, training, and assessment of expert performers.

For further information please view Dr Searston's Researcher Profile

researchers.adelaide.edu.au/profile/rachel.searston

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Fingerprint expert challenge

HEALTH, DISABILITY AND LIFESPAN DEVELOPMENT RESEARCH GROUP

Lead Researcher: Dr Elise Devlin

Contact: elise.devlin@adelaide.edu.au

Research Summary

: I investigate connections between cognitive processes and physical symptoms/side effects (such as pain, fatigue, and nausea). In particular, the impact of patients expectations before treatment (e.g. nocebo effects); patient perspectives during healthcare encounters, and communication between patients and healthcare workers. I am also interested in potential expectancy-based side effect reduction interventions including, placebos (and open-label placebos), information framing (during the informed consent process), social influences, and other forms of suggestion.

For available projects please view Dr Devlin's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/elise.devlin

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Meta-analysis; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Translational Health Outcomes

Dr Elise Devlin

INTEGRATIVE HUMAN NEUROPHYSIOLOGY LAB

Lead Researcher: Dr Simran Sidhu

Contact: simran.sidhu@adelaide.edu.au

Research Summary

Dr Sidhu's research bridges three disciplines: neuroscience, physiology, and exercise science - with a focus on elucidating neurophysiological mechanisms of exercise intolerance. In addition to the application of non-invasive neurophysiological tools at the cutting edge of integrative neurophysiology (e.g. transcranial magnetic stimulation; TMS), Dr Sidhu has acquired strong experience in cardiopulmonary and autonomic physiology; underpinning her success in conducting integrative studies in healthy, aged, and diseased populations that are world-recognised.

For available projects please view Dr Sidhu's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/simran.sidhu

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

3

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Ageing, Frailty and Mobility

Dr Simran Sidhu

INTELLECTUAL DISABILITY – MOLECULAR MECHANISMS OF DISEASE

Lead Researcher: Associate Professor Cheryl Shoubridge

Contact: cheryl.shoubridge@adelaide.edu.au

Research Summary

Children with intellectual disability have a high incidence of seizures, movement disorders and autism. Identifying which genetic mutation(s) contributes to these disease symptoms is a substantial challenge. Even with a genetic diagnosis, there are limited treatment options available, highlighting a critical need to develop disease-modifying therapies for these debilitating life-long disorders.

My investigations establish the drivers of cellular and molecular deficits of intellectual disability and childhood seizures due to genetic mutations. I interrogate the genetic data from patients and use clinically relevant experimental models to reveal the basis of pathogenesis. For example, investigating the effect of severe loss-of-function mutations driving the phenotype in patients, including the emerging female-specific phenotype using a mouse modelling the knockout (KO) of Iqsec2 that we have generated. These approaches are necessary to translate knowledge from basic research through to clinical utility.

We interrogate the capacity of potential treatments to improve disease pathology. We use measures at the level of neurons in the cell culture dish through to complex models of cognition, seizures and behavior, including animal models of genetic disease. These approaches provide platforms to comprehensively and robustly identify and evaluate potential therapeutic approaches to improve disease outcomes due to these genetic causes.

For available projects please view Associate Professor Shoubridge's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/cheryl.shoubridge

Projects available for

Honours; HDR

Maximum Number of Students

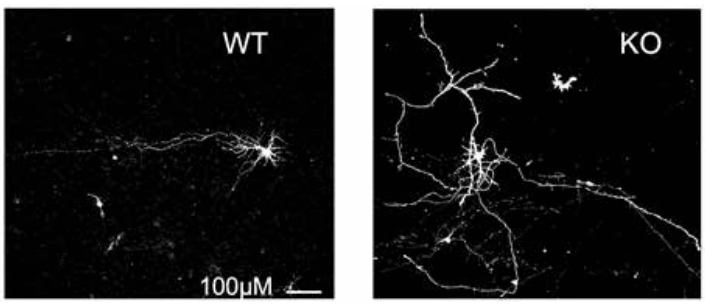
Flexible

Category

Wet Laboratory

Research Areas

Neuroscience, Behaviour and Brain Health



Cortical neurons from Iqsec2 knockout (KO) mice demonstrate early gross morphological changes compared to wild-type (WT) counterparts.

LANGUAGE, COGNITION AND NEUROSCIENCE

Lead Researcher: Dr Conrad Perry

Contact: conrad.perry@adelaide.edu.au

Research Summary

My research focuses largely on written and spoken language processing. I use ideas from cognitive psychology, linguistics, neuroscience, and mathematics to examine both theoretical and practical questions, such as what causes dyslexia and the best way children with it can be helped. I also examine other aspects of higher-level cognition that are typically but not always related to language processing including semantics, emotion, theory of mind and altruism.

I have experience running behavioural and neuroscience experiments on both normal and disordered groups. I am also interested in examining data using more modern machine learning techniques.

More specific research areas: Cognitive science, cognitive neuroscience, reading, bilingualism, education, prosody, phonology, theory of mind, altruism.

For available projects please see Dr Conrad's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/conrad.perry

Projects available for

Honours; HDR

Maximum Number of Students

2

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Conrad Perry

MORAL EMOTIONS RESEARCH GROUP

Lead Researcher: Dr Michael Proeve

Contact: michael.proeve@adelaide.edu.au

Research Summary

The Moral Emotions Research Group is concerned with the impact of moral emotions in mental health, interpersonal relationships, and the legal system. These emotions include the influence of shame, guilt and compassion in mental health and interpersonal relationships, and the influence of remorse in the legal system and in rehabilitation of offenders. Studies include investigation of relationships between these emotions and mental health outcomes in community and clinical participants, and the influence of psychological interventions, in particular mindfulness-related interventions, on shame. Studies in legal and offender rehabilitation domains include the influence of remorse in sentencing and the relevance of moral emotions for offender rehabilitation.

For available projects please view Dr Proeve's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/michael.proeve

Projects available for

Honours; HDR; Masters

Maximum Number of Students

8

Category

Systematic reviews; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Michael Proeve

NEIL SACHSE CENTRE FOR SPINAL CORD RESEARCH

Lead Researcher: Dr Ryan O'Hare Doig

Contact: ryan.doig@sahmri.com

Research Summary

Dr. O'Hare Doig's lab looks to help develop novel techniques to provide a more accurate diagnosis and prognosis of spinal cord injury (e.g. PET-CT imaging), identify potential treatment strategies for clinical settings (e.g. stem cell therapy), and improve the quality of life (e.g. sexual function) of individuals with spinal cord injury.

Key research areas of his group include: Molecular biology, neuroinflammation, nuclear imaging (PET-CT), functional imaging (fMRI), nanomedicine and stem cell biology.

For available projects please see Dr O'Hare Doig's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/ryan.oharedoig

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

5

Category

Wet Laboratory; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Ryan O'Hare Doig

NEUROIMMUNOPHARMACOLOGY GROUP

Lead Researcher: Professor Mark Hutchinson

Contact: mark.hutchinson@adelaide.edu.au

Research Summary

This series of projects aim to create an objective blood test to measure pain in livestock and to create a new drug treatment for persistent pain by targeting the immunology of the brain and spinal cord. This series of projects expects to generate new knowledge of the involvement of the neuro-immune system in the creation and maintenance of persistent pain and how this can be quantified through the innovative use of peripheral blood tests. Expected outcomes of this project include a blood test capable of quantifying the extent of the current pain experience, and a cumulative life measure of pain an animal has experienced. This should provide significant benefits to the Australian livestock industry by improving best practice. Additionally, new treatments that are created will have immediate translational utility in managing pain associated with animal husbandry practices. Clearly, the lessons learnt from these projects have immediate relevance to the human pain patient population.

For available projects please view Professor Hutchinson's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/mark.hutchinson

Projects available for

HDR

Maximum Number of Students

5

Category

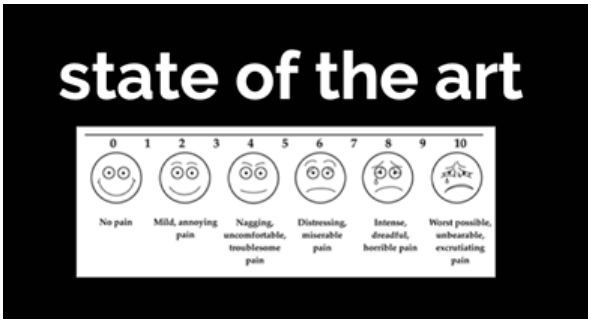
Wet Laboratory; Dry Laboratory

Research Areas

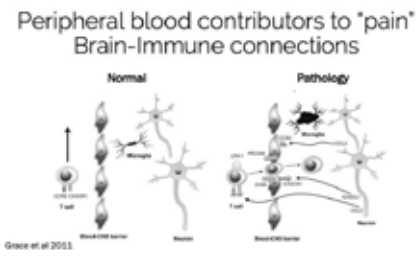
Neuroscience, Behaviour and Brain Health

Immunology and Infection

Surgical and Health Systems Innovation



State of the art measurement of pain in humans.



Can we identify a signature from the peripheral blood that predicts pain?

NEUROMOTOR PLASTICITY AND DEVELOPMENT RESEARCH GROUP

Lead Researcher: Dr Carolyn Berryman

Contact: carolyn.berryman@adelaide.edu.au

Research Summary

My current research focus is to determine the contribution of neuronal plasticity to pain conditions such as chronic pain, complex regional pain syndrome, and fibromyalgia. I use non-invasive brain stimulation techniques in combination with electroencephalography (EEG) and magnetic resonance imaging to assess and quantify cortical neuroplastic responses.

For available projects please view Dr Berryman's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/carolyn.berryman

Projects available for

Honours; HDR; Masters

Maximum Number of Students

2

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Musculoskeletal Health

Translational Health Outcomes

Early Origins of Health

Non-invasive Brain Stimulation techniques

NEUROPAD

Lead Researcher: Dr Mitchell Goldsworthy

Contact: mitchell.goldsworthy@adelaide.edu.au

Research Summary

My research employs various non-invasive brain stimulation (TMS, tES) and recording (EEG) techniques to characterise the neurophysiological determinants of cognitive function in healthy ageing and dementia. The overarching aim of this research is to provide new mechanistic insights into the roles of brain connectivity and plasticity in supporting late life cognitive health, with the potential to inform novel strategies for dementia prevention and therapy.

For available projects please view Dr Goldsworthy's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/mitchell.goldsworthy

Projects available for

Honours; HDR

Maximum Number of Students

2

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Ageing, Frailty and Mobility

Dr Mitchell Goldsworthy

NEUROPHYSIOLOGY OF HUMAN MOVEMENT GROUP

Lead Researcher: Associate Professor John Semmler

Contact: john.semmler@adelaide.edu.au

Research Summary

Have you ever been mesmerised by the skills of an Olympic athlete, fascinated by the ability of the brain to change itself, or wondered how the brain functions under extreme conditions? If so, then this research area is for you!

Research in this laboratory focuses on the neural mechanisms responsible for changes in human movement throughout the life span. We specialise in the use of brain stimulation techniques to painlessly and non-invasively measure and modify the brainâ€™s control of skeletal muscles under diverse conditions, such as ageing, exercise, training and fatigue. The overall goal is to understand how the healthy nervous system functions to control movements in different situations, and how it may adapt in conditions involving neuromuscular injury or disease.

For available projects please view Associate Professor Semmler's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/john.semmler

Projects available for

Dry Laboratory; Human Research

Maximum Number of Students

3

Category

Wet Laboratory; Dry Laboratory

Research Areas

Neuroscience, Behaviour and Brain Health

Ageing, Frailty and Mobility

Associate Professor John Semmler

NEUROPHYSIOLOGY OF HUMAN MOVEMENT

Lead Researcher: Dr George Opie

Contact: george.opie@adelaide.edu.au

Research Summary

My research utilises non-invasive brain stimulation techniques in conjunction with advanced neuroimaging to better understand how neurophysiological processes contribute to function. In particular, I am interested in how mild forms of traumatic brain injury modify the brain, and how these changes cause the development of symptoms post-injury. The overarching aim of this work is to develop techniques that may be clinically relevant for identifying individuals that are neurophysiologically compromised post injury. This information will be critical for the development of brain stimulation-based interventions for managing the recovery from head injury.

For available projects please view Dr Opie's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/george.opie

Projects available for

Honours; HDR; Masters

Maximum Number of Students

2

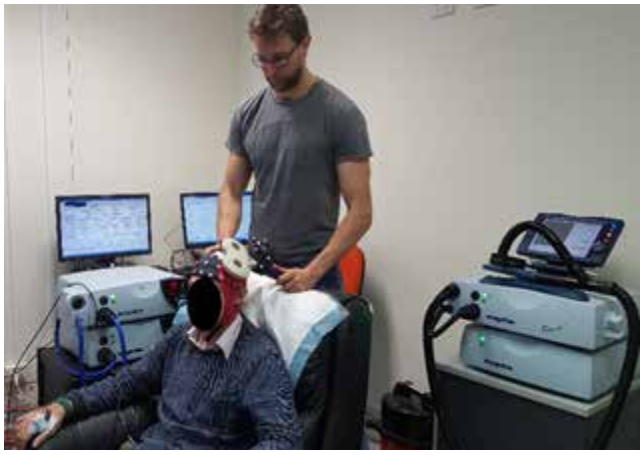
Category

Dry Laboratory; Systematic reviews; Meta-analysis; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Ageing, Frailty and Mobility



Participant receiving brain stimulation with EEG

OPHTHALMOLOGY

Lead Researcher: Professor Robert Casson

Contact: robert.casson@adelaide.edu.au

Research Summary

Our lab are world leaders in retinal neuroprotection and its translation to the clinic. We are particularly focussed on bioenergetic neuroprotection and unravelling the basic science of retinal metabolism. We have state-of-the-art retinal imaging equipment and molecular biology tools. We have the world's best retinal immunohistochemistry and retinal cell cultures. We are have a number of in vitro and in vivo models of disease and collaborate with local industry. Students have the opportunity to engage in and publish world leading ophthalmic research.

For available projects please see Professor Casson's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/robert.casson

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

3

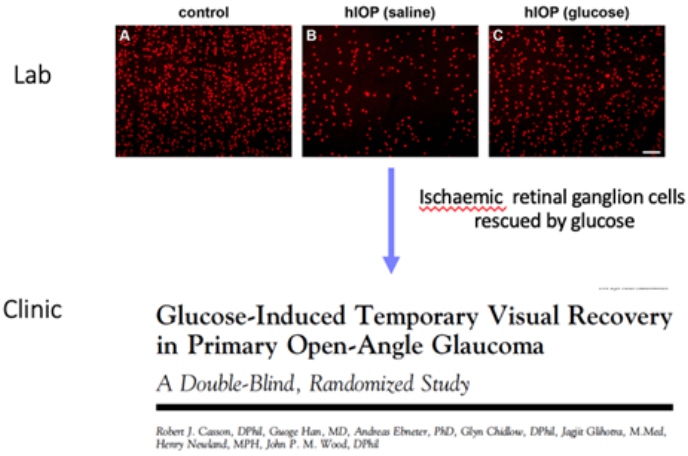
Category

Wet Laboratory; Systematic Reviews; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Innovative Therapeutics



Bioenergetic Clinical Translation

PSYCHO-ONCOLOGY

Lead Researcher: Professor Ian Olver

Contact: ian.olver@adelaide.edu.au

Research Summary

I am a medical oncologist and bioethicist by background with an interest in supportive care in cancer. My recent research focuses on psychosocial support and survivorship.

I employ qualitative methodology to explore the needs of patients and their relatives and carers across the spectrum of their cancer experience to design interventions to improve their quality of life and increasing the support available. I have projects to create and test on-line learning modules to better explain cancer and its treatment to Aboriginal patients and a study exploring end of life issues in that populations. With collaborators I have a database of supportive care requirements for the patients and carers perspective.

I collaborate widely interstate and internationally and am happy to consider ideas that HDR students may wish to pursue.

I will add projects to my Researcher profile as they become available

researchers.adelaide.edu.au/profile/ian.olver

Projects available for

Honours; HDR; Masters

Maximum Number of Students

2

Category

Human Research; Systematic Reviews

Research Areas

Neuroscience, Behaviour and Brain Health

Translational Health Outcomes

Indigenous and Disadvantaged Health

Innovative Therapeutics

Professor Ian Olver

PSYCHOLOGY EDUCATION RESEARCH GROUP

Lead Researcher: Professor Anna Chur-Hansen

Contact: anna.churhansen@adelaide.edu.au

Research Summary

I am a Health Psychologist, who studies food and eating, sex and relationships, pain, and death and dying within a biopsychosociocultural framework. I also study the relationship between humans and animals, such as the human-animal bond and how that impacts mental and physical health. In addition, I am very interested in research on teaching and learning in the health profession (so, medical education and psychology education, for example).

I use qualitative methods (mostly thematic analysis), systematic review, and surveys. I am happy to collaborate with other researchers using quantitative and mixed methods.

I am very happy to discuss ideas with students and in fact, I prefer that we arrive upon a study together, rather than me offering a set topic although I am willing to do that too.

For further information please view Professor Chur-Hansen's Researcher Profile

researchers.adelaide.edu.au/profile/anna.churhansen

Projects available for

Honours; HDR; Masters

Maximum Number of Students

5

Category

Systematic Reviews; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Professor Anna Chur-Hansen

REASONING AND DECISIONS LAB

Lead Researcher: Dr Rachel Stephens

Contact: rachel.stephens@adelaide.edu.au

Research Summary

My primary research interest is human reasoning and its underlying cognitive processes, with the overarching question: how do people make predictions or inferences about novel situations based on existing knowledge?

My current main projects are testing influential dual-process theories, which propose that two qualitatively different kinds of cognitive processes contribute to human reasoning, judgment, and decision-making. One is often characterized as fast and intuitive, while the other is described as slow and deliberative. A major project involves testing whether dual-process theories are needed to account for inductive and deductive reasoning – assessments of whether an inference is 'plausible' based on some given information, or 'logically follows' from particular information, respectively.

For available projects please view Dr Stephens' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/rachel.stephens

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Rachel Stephens

ROYAL ADELAIDE HOSPITAL OPHTHALMOLOGY AND OPHTHALMIC RESEARCH

Lead Researchers: Professor Dinesh Selva and Dr Michelle Sun

Contact: michelle.sun@adelaide.edu.au

Research Summary

Bioengineering is the future of regenerative medicine and the potential applications within ophthalmology have vision-restoring implications. The potential impact is tremendous. Our research investigates how we can utilise various bioengineering techniques to tackle various eye diseases. Current structures under investigation include the eyelid, lacrimal gland and retinal tissue utilising bioengineered scaffolds and various cell culture techniques. Both animal and human studies are under investigation. Students will have the unique opportunity to participate in both clinical and laboratory-based research - 'from lab to the patient'.

For available projects please see Dr Sun's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/michelle.sun

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

2

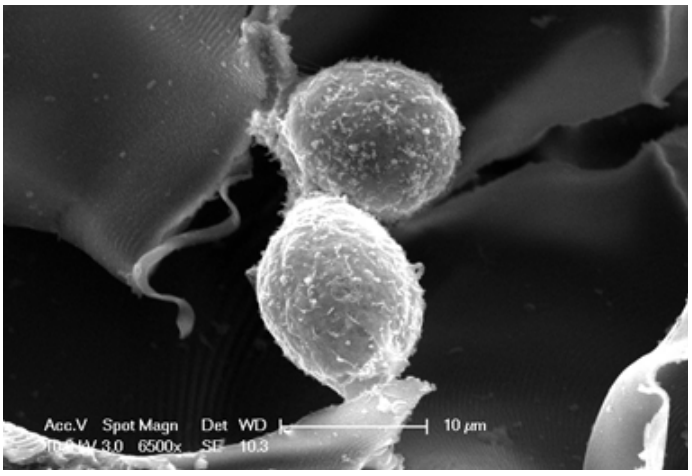
Category

Wet Laboratory; Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Surgical and Health Systems Innovation



Human eyelid fibroblasts cultured onto a bioengineered scaffold - a bioengineered eyelid

SOCIAL AND ORGANISATIONAL

Lead Researcher: Dr Aspa Sarris

Contact: aspa.sarris@adelaide.edu.au

Research Summary

My current research projects, including those of my research students, are within the broad area of work and organisational psychology and are designed to contribute to our understanding of the factors in the workplace that impact upon individual and organisational well-being.

This research generally uses quantitative, and on occasion, mixed-method approaches. My specific areas of research interest include organisational culture case studies, individual and organisational health and well being, the assessment of work safety and issues relating to family caregiving work.

I am happy to discuss possible supervision Honours, Masters or Phd supervision for research in an area or topic that interests you relating to work/organisational or social research.

For available projects please view Dr Sarris' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/aspa.sarris

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Neuroscience, Behaviour and Brain Health

Dr Aspa Sarris

SPINAL CORD INJURY RESEARCH GROUP

Lead Researcher: Dr Anna Leonard

Contact: anna.leonard@adelaide.edu.au

Research Summary

The spinal cord injury research group (SCIRG) is led by Dr Anna Leonard, a research active lecturer in the Adelaide Medical School and a division of the Translational Neuropathology Research Group, led by A/Prof Renee Turner. The SCIRG is focused on understanding the secondary injury processes that occur post-SCI and how these can be targeted to improve outcome. We have recently developed a clinically relevant large animal model of SCI, the first in Australia, which allows us to investigate more clinically relevant outcome measures and potentially improve translation into the clinic. We also work with small animal models (rodent) to help understand the secondary injury processes post-SCI, with a particular focus on neuroinflammation, oedema and pressure.

For available projects please view Dr Leonard's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/anna.leonard

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Wet Laboratory

Research Areas

Neuroscience, Behaviour and Brain Health

Translational Health Outcomes

Dr Anna Leonard

STROKE RESEARCH PROGRAM

Lead Researcher: Professor Simon Koblar

Contact: simon.koblar@adelaide.edu.au

Professor Simon Koblar

Research Summary

Our major areas of current research are in stroke prevention, the molecular and cellular mechanisms underlying ischaemic stroke, and the translation of stroke management pathways in the clinical domain. We are currently involved in discovering a plasma protein/s which may tell the clinician when a patient is at risk of stroke following a transient ischaemic attack (TIA) so immediate treatment can be instigated. Stroke is the leading cause of adult disability and we aim to find out how to repair the brain following an ischaemic stroke. We have found that a stem cell from the tooth, Dental Pulp Stem Cell (DPSC), is able to general neurons and improve function when injected into the rodent brain following a stroke. There is a major need to understand the underlying mechanisms of stem cell therapy as different stem cells are used around the world in clinical trials. It is assumed that a neural stem cell maybe the optimum cell for therapy in the brain and so we are using molecular techniques to redirect DPSC into a neural stem cell. Finally, we research how to better translate stroke discoveries into the clinic for better patient outcomes.

For available projects please see Professor Koblar's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/simon.koblar

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

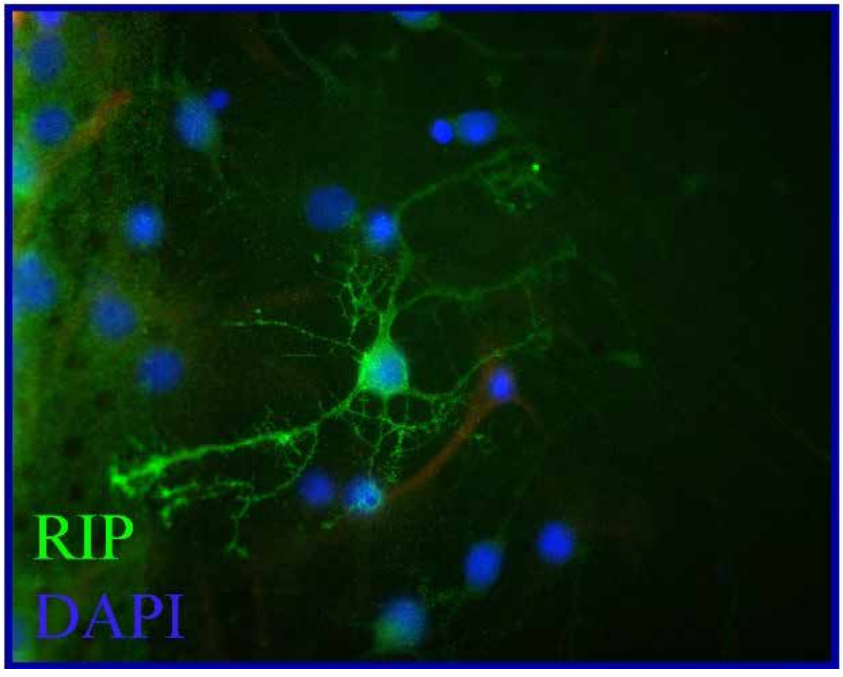
3

Category

Wet Laboratory; Dry Laboratory

Research Areas

Neuroscience, Behaviour and Brain Health



Neuron in culture differentiated from Dental Pulp Stem Cells

TRANSLATIONAL NEUROPATHOLOGY LABORATORY

Lead Researcher: Associate Professor Renée Turner

Contact: renee.turner@adelaide.edu.au

Research Summary

Associate Professor Renée Turner's overarching research goal is to improve clinical translation in the treatment of neurological conditions such as stroke and traumatic brain injury. In particular, her research seeks to understand the mechanisms underlying injury progression to identify novel treatment targets. Her laboratory is currently investigating the role of blood-brain barrier disruption and neuroinflammation in the development of complications including cerebral oedema and elevated ICP, gastrointestinal disturbances, and delayed neurodegeneration following stroke and traumatic brain injury.

For available projects please see Professor Turner's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/renee.turner

Projects available for

Honours; HDR

Maximum Number of Students

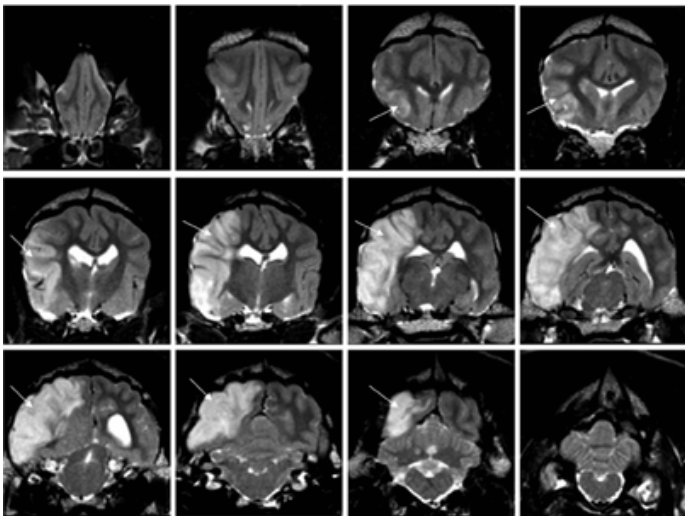
3

Category

Wet Laboratory

Research Areas

Neuroscience, Behaviour and Brain Health



Large middle cerebral artery stroke seen on MRI (Image: ResearchGate)

VASCULAR & BRAIN HEALTH

Lead Researcher: Dr Phillip Tully

Contact: phillip.tully@adelaide.edu.au

Research Summary

Our research themes advance understandings of the interplay between vascular factors and brain health. Taking a broad approach, our group researches cardiovascular and cardiometabolic diseases and related risk factors such as high blood pressure, examining the bidirectional links with pertinent brain outcomes. Examples include cerebrovascular diseases, markers of small vessel disease on MRI, depression disorders, cognitive impairment and dementia. Our group also leads and coordinates a large international consortium examining blood pressure, and its variability, in relation to cerebral small vessel disease markers on MRI, cognitive impairment, dementia, as well as depression and brain atrophy. Consequently, there is a large and rich dataset from collaborators in the USA, UK, France, The Netherlands, Japan and Australia, with potential to arrange international laboratory visits or post-doctoral exchanges for interested students. Our group affiliation is the Freemasons Foundation Centre for Men's Health, which offers a dynamic and multidisciplinary research environment with an established support network for students.

For available projects please view Dr Tully's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/phillip.tully

Projects available for

Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Systematic Reviews; Meta-analysis; Human Research

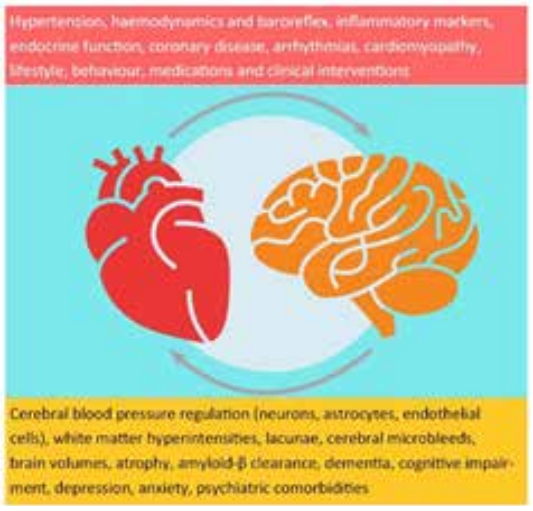
Research Areas

Neuroscience, Behaviour and Brain Health

Cardiac, Respiratory and Vascular Health

Ageing, Frailty and Mobility

Men's Health



Our group focusses on the bidirectional association between vascular health and brain function

VISUAL PHYSIOLOGY & NEUROBOTICS LABORATORY

Lead Researcher: Dr Steven Wiederman

Contact: steven.wiederman@adelaide.edu.au

Research Summary

In the Visual Physiology and Neurobotics Laboratory (VPNL), we study how the brain processes visual information. Consider a human catching a ball, a dog leaping at a Frisbee or a dragonfly hunting prey amidst a swarm. Brains large and small evolved the ability to predictively, focus attention on a moving target, whilst ignoring distracters and background clutter. We use electrophysiological techniques to investigate how flying insects see the world and build autonomous robots that emulate these neuronal principles.

1. Use electrophysiological recording techniques to characterise neuronal physiology.

2. Use neuroanatomical techniques to examine the underlying neuronal architecture.

3. Develop computational models that mimic complex biological behaviors.

4. Design autonomous robots based on bio-inspired sensory and control processes.

For available projects please view Dr Wiederman's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/steven.wiederman

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

Flexible

Category

Wet Laboratory; Dry Laboratory

Research Areas

Neuroscience, Behaviour and Brain Health

Dragonflies exhibit complex behaviours, detecting prey in clutter, predicting the target's future location and selecting one, from amidst a swarm. Using electrophysiological techniques, we study how the brain underlies these abilities.

From our physiological experiments, we develop neuro-inspired, autonomous robots. This ground vehicle autonomously chases moving objects, even amidst distracters.

NUTRITION AND METABOLIC HEALTH

NUTRITION AND METABOLIC HEALTH RESEARCH GROUPS

The effects of nutrition quality and availability on metabolic processes not only plays a significant role in the incidence of many serious illnesses, but can drastically influence our general health and wellbeing throughout our lives.

The links between nutrition, metabolism and human health are complex, and our researchers—from basic scientists, human physiologists, clinicians and population health specialists—are working to enhance our understanding of these links.

Our researchers are investigating the associations between diet and sleep, pregnancy, foetal growth and mortality, and serious illnesses such as coronary heart disease, stroke, hypertension, atherosclerosis, obesity, cancer, type 2 diabetes, osteoporosis, dental caries, gall bladder disease, dementia and nutritional anaemias.

Our overarching goal is to develop and validate innovative diets to promote health and wellbeing, and deliver improved health outcomes to the community in a range of areas.

Researchers across the faculty are focused on:

- determining the effects of modifying diet on metabolic health
- developing strategies to prevent and manage obesity and type 2 diabetes
- studying the molecular and cellular basis of appetite regulation
- understanding immune function and pain-sensing in the gut
- exploring how nutrition interacts with sleep patterns and metabolic disorders
- investigating metabolism in liver, muscle, fat tissue and bone tissue
- understanding nutrition in vulnerable populations such as the elderly, and determining the association between nutritional intake and chronic disease
- conducting longitudinal, large cohort studies to assess associations between diet and chronic diseases.

NUTRITION AND METABOLIC HEALTH RESEARCH OPPORTUNITIES

CENTRE OF RESEARCH EXCELLENCE IN TRANSLATING NUTRITIONAL SCIENCE TO GOOD HEALTH – GASTROINTESTINAL FUNCTION IN DIABETES

Lead Researcher: Professor Chris Rayner

Contact: chris.rayner@adelaide.edu.au

Professor Chris Rayner

Research Summary

Professor Chris Rayner works closely with Professors Michael Horowitz and Karen Jones in a group that has a well-established program of research focussing on gastrointestinal function in diabetes. Our Centre of Research Excellence in Translating Nutritional Science to Good Health, established with NHMRC funding in 2007, is a focal point for researchers who have an interest in nutrition and gut function, particularly in relation to diabetes, obesity, critical illness, and aging.

Professor Rayner' major research interest concerns nutrient-gut interactions, including the regulation of gastrointestinal motility, with an emphasis on the role of upper gut function in diabetes. His work seeks to develop an understanding of the mechanisms of nutrient sensing and incretin hormone release in the gut, and how these can be manipulated for therapeutic gain.

Current projects include:

- Role of the incretin hormone GIP in health and type 2 diabetes, using a human GIP receptor antagonist - in collaboration with Dr Simon Veedfald/Prof Jens Holst (University of Copenhagen)
- Role of the sweet taste receptor in the small intestine – in collaboration with A/Prof Richard Young (SAHMRI)
- Intestinal bitter taste receptors – a potential treatment approach for type 2 diabetes – in collaboration with Dr Tongzhi Wu.

For available projects please see Professor Rayner's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/chris.rayner

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Nutrition and Metabolic Health

CENTRE OF RESEARCH EXCELLENCE TRANSLATING NUTRITIONAL SCIENCE TO GOOD HEALTH

Lead Researcher: Professor Michael Horowitz

Contact: michael.horowitz@adelaide.edu.au

Research Summary

Professor Michael Horowitz is a leading international authority in the area of GLP-1 in diabetes. He is author of 714 papers and 40 book chapters. His papers have been cited 44,893 times and his 'h' index is 114 (Google Scholar), - he is currently ranked 2061 in the world and 42 in Australia (Consejo Superior de Investigationes Cientificae list of highly cited researchers). Professor Horowitz has been the recipient of numerous awards, including the Kellion Award of the Australian Diabetes Society for outstanding contributions to diabetes research in 2009.

Professor Horowitz was the first to demonstrate:
(i) the high prevalence of delayed gastric emptying in complicated T1D and T2D;
(ii) that hyperglycaemia and hypoglycaemia modulate GE;
(iii) that novel prokinetic drugs, cisapride and domperidone, are effective in the management of gastroparesis;
(iv) that GE is a major determinant of postprandial glycaemic excursions; and
(v) that in pharmacological doses GLP-1 slows GE and this is the major mechanism for postprandial glucose lowering.

For available projects please see Professor Horowitz's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/michael.horowitz

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

1

Category

Human Research

Research Areas

Nutrition and Metabolic Health

Translational health outcomes

Professor Michael Horowitz

CRE IN TRANSLATING NUTRITIONAL PHYSIOLOGY TO GOOD HEALTH – POSTPRANDIAL HYPOTENSION GROUP

Lead Researcher: Professor Karen Jones

Contact: karen.jones@adelaide.edu.au

Research Summary

Postprandial hypotension (PPH) a substantial, meal-induced, fall in blood pressure (BP) occurs in ~15% of healthy older people, ~40% of nursing home residents and ~30-40% of people with type 2 diabetes.

PPH is important as it associated with a markedly increased risk of falls and is a risk factor for death.

There is currently no satisfactory treatment.

Our research group, led by Prof Karen Jones, is recognised internationally. It has led to a fundamental shift in understanding PPH ie PPH is more a 'gastrointestinal', than a 'cardiovascular', disorder. These fundamental insights can now be translated to the development of novel dietary and pharmacological approaches to management of PPH. Specifically, we have shown that the fall in BP following a meal is greater when the stomach empties more rapidly, while distending the stomach with a drink of water reduces the fall. An exciting recent observation is that intravenous administration of the gut hormone, glucagon-like peptide-1 (GLP-1), prevents the fall in BP after a meal.

Our research, conducted in the Clinical Research Facility (CRF) in the AHMS Building, capitalises on sophisticated imaging techniques, particularly scintigraphy and ultrasound. We welcome the involvement of enthusiastic students - previous students have been highly successful.

For available projects please see Professor Jones' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/karen.jones

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

2

Category

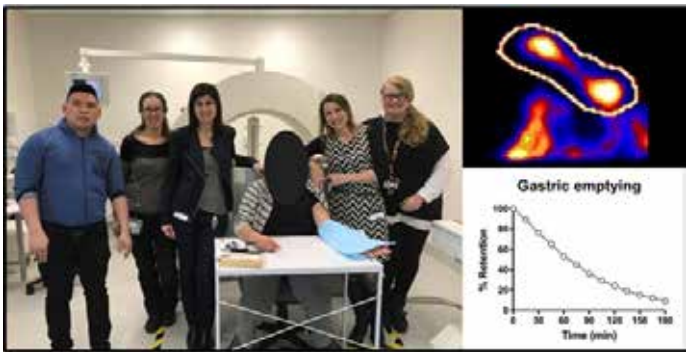
Human Research

Research Areas

Nutrition and Metabolic Health

Cardiac, Respiratory and Vascular Health

Ageing, Frailty and Mobility



A volunteer being studied in the Gamma Camera Suite of the CRF. Scintigraphy is used to evaluate novel approaches to management for PPH. A region is drawn around the stomach and a gastric emptying curve generated.

CRE IN TRANSLATING NUTRITIONAL PHYSIOLOGY TO GOOD HEALTH – TYPE 2 DIABETES RESEARCH GROUP

Lead Researcher: Dr Tongzhi Wu

Contact: tongzhi.wu@adelaide.edu.au

Research Summary

The gut (stomach and intestines) is central to the control of blood glucose and appetite. Understanding better how nutrients and specific drugs interact with the gut, and how we can modify this process to advantage, will be the key to finding effective and affordable new treatments for type 2 diabetes.

Our recent work has shown that intestinal "taste" (particularly bitter) sensing holds great potential for stimulating gastrointestinal hormones and controlling blood glucose and energy intake in health and type 2 diabetes, and that the most widely used antidiabetic drug, metformin, exerts numerous gastrointestinal effects key to its anti-diabetic action.

Supported by the NHMRC and Diabetes Australia, our group is now undertaking a program of studies to:

a) define the roles of intestinal bitter taste sensing in the regulation of gastrointestinal hormone secretion, energy intake and postprandial glycaemia, and the implications for T2DM therapy; and

b) clarify the role of bile acids in the anti-diabetic action of metformin.

This work spans experiments on the benchtop at SAHMRI utilising biopsies taken from patients coming to the RAH for endoscopy, to clinical trials at the AHMS Clinical Research Facilities of the University of Adelaide in volunteers with and without type 2 diabetes.

For available projects please see Dr Wu's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/tongzhi.wu

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

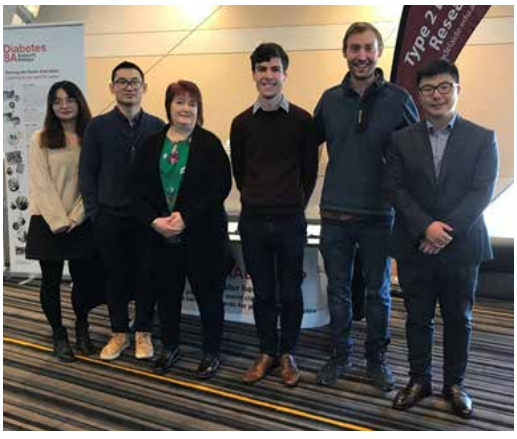
3

Category

Wet Laboratory; Human Research

Research Areas

Nutrition and Metabolic Health



The research team at the Diabetes SA education session.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

Lead Researcher: Dr Domenico Sergi

Contact: domenico.sergi@csiro.au

Research Summary

Medium-chain fatty acids have been shown to be β-oxidised at a higher rate compared to long-chain saturated fatty acids suggesting they may be able to modulate mitochondrial function and prevent lipotoxicity-induced insulin resistance. Thus, the aim of this project is to investigate the impact of medium-chain fatty acids on mitochondrial function, insulin sensitivity and the activation of pathways known to regulate mitochondrial biogenesis, function and fatty acid catabolism. This project will employ an in vitro cell-based model of human skeletal muscle myotubes which closely mimics in vivo physiology. Cells will be challenged with medium-chain fatty acids and the following endpoints will be evaluated. Insulin signalling will be assessed by investigating AKT/Protein kinase B phosphorylation by Western blot. This technique will be also used to quantify specific protein of the mitochondrial electron transport chain complexes and the phosphorylation and activation of AMPK which is known as a critical node in promoting oxidative metabolism. Furthermore, we will assess changes in mitochondrial dynamics (i.e. fusion and fission) by fluorescence microscopy using fluorescent probes or immunocytochemistry to target skeletal muscle mitochondria. Finally, the expression of genes involved in skeletal muscle oxidative metabolism and mitochondrial function will be investigated by real-time PCR.

For available projects please see Dr Sergi's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/domenico.sergi

Projects available for

Third Year; Honours; Masters

Maximum Number of Students

2

Category

Wet Laboratory

Research Areas

Nutrition and Metabolic Health

Dr Domenico Sergi

GASTROINTESTINAL FUNCTION AND APPETITE REGULATION GROUP

Lead Researcher: Professor Christine Feinle-Bisset

Contact: christine.feinle@adelaide.edu.au

Research Summary

Professor Christine Feinle-Bisset is a nutritional scientist in the Adelaide Medical School. She has an international reputation for clinical research relating to the impact of nutrients on appetite, gastrointestinal motility and perception in health, obesity and functional dyspepsia. Her work has contributed significantly to current knowledge of the role of small intestinal mechanisms in appetite regulation, with a particularly focus on dietary fatty acids and amino acids.

Excess weight is a major risk factor for a number of diseases, and obesity has significant health, economic and psychosocial implications. Thus, effective strategies to manage, prevent and treat excess weight gain continue to be required urgently. Our research has contributed substantially to current knowledge on how specific dietary nutrients interact with gastrointestinal functions to regulate appetite and energy intake.

The overarching aim of our research is to understand the effects of dietary nutrients in the upper gastrointestinal tract and the relationship with appetite regulation, in order to develop novel, nutrient-based therapeutic agents to assist in the management, treatment and prevention of these disorders.

For available projects please see Professor Feinle-Bisset's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/christine.feinle

Projects available for

Honours; HDR

Maximum Number of Students

1

Category

Human Research

Research Areas

Nutrition and Metabolic Health

Gastrointestinal Function and Appetite Regulation Group

INTESTINAL NUTRIENT SENSING GROUP

Lead Researcher: Associate Professor Richard L. Young

Contact: richard.young@adelaide.edu.au

Research Summary

My group investigates how nutrients are detected and absorbed in the digestive tract, and the biology of these interactions within the gut wall and with gut bacteria. These are essential processes that control blood glucose levels and deliver nutrients. We have shown these processes are changed by diet supplementation with low-calorie sweeteners in healthy subjects, and defective in patients with type 2 diabetes - both of which can impair control of blood glucose levels. We aim to understand these defects to prevent and better manage type 2 diabetes.

Our research group has a strong clinical focus, access to patients and models of disease, and broad expertise in state-of-the-art laboratory techniques. We are part of the NHMRC Centre of Research Excellence in Translating Nutritional Science to Good Health, one of the strongest groups in Nutritional Physiology internationally.

For available projects please view Associate Professor Young's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/richard.young

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

2

Category

Wet Laboratory; Human Research

Research Areas

Nutrition and Metabolic Health

Innovative Therapeutics

Translational Health Outcomes

Intestinal Nutrient Sensing Group, SAHMRI Left to right: Nada Cvijanovic (Postdoc), Nicole Isaacs (Research support), Richard Young (Leader), Nektaria Pezos (Research support). Absent: Denise Kreuch (PhD candidate)

Intestinal Nutrient Sensing Group, SAHMRI

OBESITY AND METABOLISM GROUP

Lead Researcher: Associate Professor Leonie Heilbronn

Contact: leonie.heilbronn@adelaide.edu.au

Research Summary

The Obesity and Metabolism lab at the University of Adelaide is led by A/Prof Leonie Heilbronn and based within the Nutrition and Metabolism Theme at the South Australian Health and Medical Research Institute (SAHMRI). The research is focussed on identifying optimal, sustainable, eating patterns that will prevent the development of type 2 diabetes in at-risk populations. Recently, intermittent fasting, and time restricted feeding have emerged as tools that improve glucose metabolism in mouse models, and reset peripheral clocks. Whether these tools improve glycaemic health in humans, and be sustainable, is unclear. We also seek to understand the mechanisms underpinning these relationships in humans and in preclinical studies.

For available projects please view Associate Professor Heilbronn's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/leonie.heilbronn

Projects available for

Honours; HDR

Maximum Number of Students

2

Category

Wet Laboratory; Human Research

Research Areas

Nutrition and Metabolic Health

Obesity and Metabolism Group

POSTPRANDIAL GLYCAEMIA, HAEMODYNAMICS AND GUT-INCRETIN AXIS

Lead Researcher: Dr Liza Phillips

Contact: liza.phillips@adelaide.edu.au

Research Summary

Dr Phillips is an endocrinologist with an interest in physiological studies evaluating the interaction between the gut and glycaemia and translational work in the field of diabetes. Previous work has included the evaluation of glycaemic targets and follow up care in the ICU as well as epidemiology data linkage projects in the field of endocrinology. In her current position in the Centre of Research Excellence in Translating Nutritional Science to Good Health she collaborates with a number of senior researchers, including gastroenterologists, basic scientists, nuclear technologists and medical imaging specialists.

For available projects please see Dr Phillips' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/liza.phillips

Projects available for

Honours; HDR; Masters

Maximum Number of Students

2

Category

Human Research

Research Areas

Nutrition and Metabolic Health

Cardiac, Respiratory and Vascular Health

Translational Health Outcomes

The CRE is located on the 4th floor of the AHMS building

PRIMARY CARE AND HEALTH SERVICES RESEARCH GROUP

Lead Researcher: Dr David Gonzalez-Chica

Contact: david.gonzalez@adelaide.edu.au

Research Summary

Dr David Gonzalez is a medical doctor and senior epidemiologist with international experience in quantitative study designs (cohorts, cross-sectional studies, RCT), data management, and advanced statistical skills. MSc and PhD in Epidemiology (life-course epidemiology, Brazil), he is specialist in Paediatrics (Instituto de Salud Carlos III, Spain) and Professional Education (Brazil). Senior Lecturer at the Discipline of General Practice (2015) and Head of Research at the Adelaide Rural Clinical School (2018). He has 112 peer-reviewed publications (54 in the last five years), an H-index=22 and more than 1500 citations. He has also supervised to completion five master degree and one PhD students and co-supervised other six master and six PhD candidates, as well as two researchers during their postdoctoral training in research methods. He works with chronic disease prevention, health-related quality of life, health literacy, risk reduction, and health informatics. Some of his current projects are Preventing obesity in childhood and adolescence: weight and height screening in Australian general practice, Cardiovascular disease in adults: primary and secondary prevention in Australian general practice, Assessing quality of life to evaluate the course of chronic diseases in Australian adults, and evaluating the Integrated Primary Health Care Services Program coordinated by PHN Country SA.

For available projects please view Dr Gonzalez's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/david.gonzalez

Projects available for

Honours; HDR; Masters

Maximum Number of Students

3

Category

Human Research

Research Areas

Nutrition and Metabolic Health

Cardiac, Respiratory and Vascular Health

Musculoskeletal Health

Translational Health Outcomes

Dr David Gonzalez, Dr Elizabeth Hoon and Dr Oliver Frank

SAHMRI HEALTH POLICY CENTRE

Lead Researcher: Professor Caroline Miller

Contact: caroline.miller@adelaide.edu.au

Research Summary

Professor Caroline Miller leads the Health Policy Centre based at SAHMRI. The Centre undertakes research in obesity prevention, tobacco control, drug and alcohol, and the psychosocial impact of cancer. Professor Miller is interested in supervising projects in tobacco control and in obesity prevention policy, particularly relating to sugar-sweetened beverages.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: researchers.adelaide.edu.au/profile/caroline.miller

Projects available for

Honours

Maximum Number of Students

1

Category

Human Research

Research Areas

Nutrition and Metabolic Health

Professor Caroline Miller, SAHMRI Health Policy Centre

VAGAL AFFERENT RESEARCH GROUP

Lead Researcher: Professor Amanda Page

Contact: amanda.page@adelaide.edu.au

Research Summary

The acquisition of nutrients in order to maintain life requires the intake of food. As a consequence, evolution has developed a sophisticated and well integrated multilevel system to finely control energy intake. Although great advances have been made in our basic understanding of this system the finer complexities remain a mystery. We know the gut-brain axis (i.e. vagal afferent sensory nerves innervating the gastrointestinal (GI) tract) plays an important role in the: 1) regulation of GI motility and secretions to optimise absorption of nutrients, and 2) regulation of appetite to control meal size. However, there is inadequate knowledge of the mechanisms involved in initiating these signals, the plasticity of these mechanisms under normal physiological conditions (i.e. pregnancy) and whether changes in these mechanisms are associated with diseases such as obesity or functional dyspepsia. Understanding the mechanisms that drive exaggerated or dampened vagal afferent sensory signalling from the GI tract will lead to new diet regimes and/or pharmacotherapies for treatment of diseases such as obesity and functional dyspepsia.

For available projects please view Professor Page's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/amanda.page

Projects available for

Third Year; Honours; HDR

Maximum Number of Students

2

Category

Wet Laboratory; Dry Laboratory

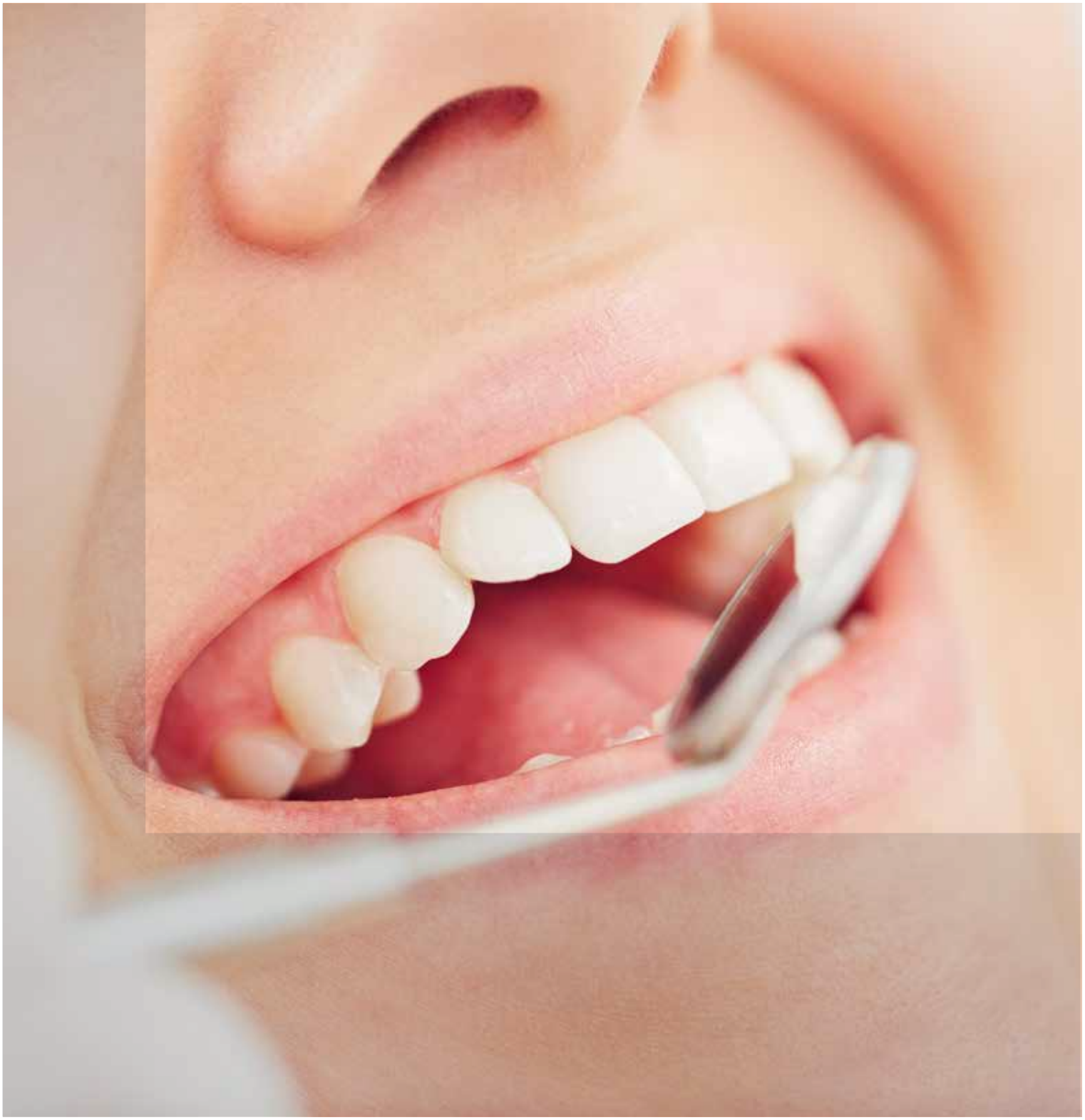
Research Areas

Nutrition and Metabolic Health

Neuroscience, Behaviour and Brain Health

Pregnancy and Birth

Professor Amanda Page



ORAL HEALTH

ORAL HEALTH RESEARCH GROUPS

Oral health is an essential component to a healthy life. Oral health is not only concerned with teeth, but the health of oral and related tissues that enables an individual to eat, speak and socialise without active disease, discomfort or embarrassment, and that contributes to general wellbeing.

Oral health research seeks to understand population and individual dental health to prevent or manage oral disease and to educate our community to maintain optimal oral health throughout their lives.

Our research spans a broad range of fields including: dental education; endodontics and pulp biology (stem cell research); periodontics; orthodontics; craniofacial biology; oral and maxillofacial surgery; forensic odontology; population oral health; and cancer treatment.

Our research activity also includes epidemiological studies focusing on the efficacy of population oral health interventions, oral health services and oral health policy analysis in relation to oral disease prevention and provision of optimal dental health services.

Researchers across the faculty are focused on:

- assessing intergenerational change in oral health in Australia
- monitoring of Indigenous oral health and the use of dental services
- performing population-based studies focusing on socioeconomic and psychosocial factors related to the use of dental services
- investigating patient-reported outcomes of dental care, such as oral health impact, health utility and quality of life.

ORAL HEALTH RESEARCH OPPORTUNITIES

FORENSIC ODONTOLOGY GROUP

Lead Researcher: Dr Denice Higgins

Contact: denice.higgins@adelaide.edu.au

Research Summary

This group undertakes research in the areas of forensic science, human identification, craniofacial biology, forensic odontology and forensic biology. Our research interests are aimed at specific real-world applications within the field of forensic science. With our primary focus being on identification of human remains and retrieval and repatriation of decease people. We have also undertaken considerable research into preservation and analysis of highly degraded or incinerated remains. The recent scrutiny of the scientific basis of current methodologies has made validation of techniques to a standard accepted by the courts of law a priority in our research.

Research projects looking at interpretation of injuries caused by teeth and to oral structures are also available.

For available projects please see Dr Higgins' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/denice.higgins

Projects available for

Honours; Graduate Diploma; HDR; MPhil

Maximum Number of Students

Flexible

Category

Human Research; Dry Laboratory; Meta-analysis

Research Areas

Oral Health

Human skull

NUTRITION & ORAL HEALTH

Lead Researcher: Professor Paula Moynihan

Contact: paula.moynihan@adelaide.edu.au

Research Summary

My research focuses on the interrelationship between nutrition and oral health across the life-course, including the impact of compromised oral health on nutritional wellbeing in both older people and in children. My research explores the impact of tooth loss and wearing dentures on dietary intake and eating related quality of life and how this information can be used to develop dietary interventions to support those who experience tooth loss to eat better. I am also interested in exploring compromised oral function as a risk factor contributing to undernutrition in older people. My research also encompasses the impact of diet and nutrition on the development of dental caries and in developing dietary interventions for use in dental practice with children and young adolescents.

For available projects please view Professor Moynihan's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/paula.moynihan

Projects available for

Honours; HDR

Maximum Number of Students

3

Category

Human Research

Research Areas

Oral Health

Nutrition and Metabolic Health

Ageing, Frailty and Mobility

Child and Adolescent Health

Professor Paula Moynihan

ORAL EPIDEMIOLOGY

Lead Researcher: Professor Loc Do

Contact: loc.do@adelaide.edu.au

Research Summary

Early life determinants are important for child dental health. Understanding interrelationship between general and dental health is also important. Influences of maternal health and behaviours on their offsprings' health and behaviours are not well studied.

Our group currently conducts two NHMRC-funded population-based research projects involving children. One is a large population-based birth cohort study of young children and their mothers. The cohort was established in 2013 and will continue to at least 2022. Longitudinal data on socioeconomic status, health behaviours and practices, dietary patterns, dental service use, clinical oral health status , and anthropometric measures of the children and their mothers are available.

The second project is a follow-up phase of over 24 thousand children who participated in the National Child Oral Health Study 2012-14. This project aims to examine interrelationship between child dental health and general health and development.

Opportunities exist for Honours and HDR candidates to work on number of research topics linked to the projects.

For further information please see Professor Do's Researcher Profile

researchers.adelaide.edu.au/profile/loc.do

Projects available for

Honours; HDR; Mphil

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Oral Health

Child and Adolescent Health

The National Child Oral Health Study 2012-14 book

POPULATION ORAL HEALTH

Lead Researcher: Dr Meghashyam Bhat, Honorary Visiting Research Fellow

Contact: meghashyam.bhat@adelaide.edu.au

Research Summary

I investigate the risk indicators for oral diseases. My interests are in the area of Periodontal Diseases, Dental Caries, Oral Cancer and Oral Health Related Quality of Life.

For further information please see Dr Bhat's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/meghashyam.bhat

Projects available for

Honours; PhD; Masters

Maximum Number of Students

Flexible

Category

Systematic Reviews; Human Research

Research Areas

Oral Health

Dr Meghashyam Bhat BDS, MDS, Ph.D

TRANSLATIONAL RESEARCH IN ORAL HEALTH SCIENCE

Lead Researcher: Dr Peter Zilm

Contact: peter.zilm@adelaide.edu.au

Research Summary

My core area of research investigates the phenotypic and molecular changes in bacteria are when growing as biofilms and at relevant growth rates found in nature. All projects are supported with the latest technology utilising cellular impedance, (exCELLigence©) continuous culture, proteomics, metabolomics and new generation sequencing. Our research is focussed on bacteria that are linked to oral disease such as tooth decay (caries) and periodontal disease and which grow as biofilms on soft and hard surfaces. Recent published research has linked the potential for the systemic migration of oral bacteria (Porphyromonas gingivalis and Fusobacterium nucleatum) from the mouth which potentially leads to diseases such as cardiovascular disease, pregnancy implications and cancer.

We also have major collaborations with chemical engineers and industry in developing nano-technology as antimicrobial and anti-biofilm agents (intelligent particles) and coatings for surfaces on medical devices.

Other major collaborative projects with the Faculty of Science investigates the stress response to antimicrobials by the major pathogens, Staphylococcus aureus and Enterococcus faecalis.

For available projects please see Dr Zilm's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/peter.zilm

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

2

Category

Wet Laboratory

Research Areas

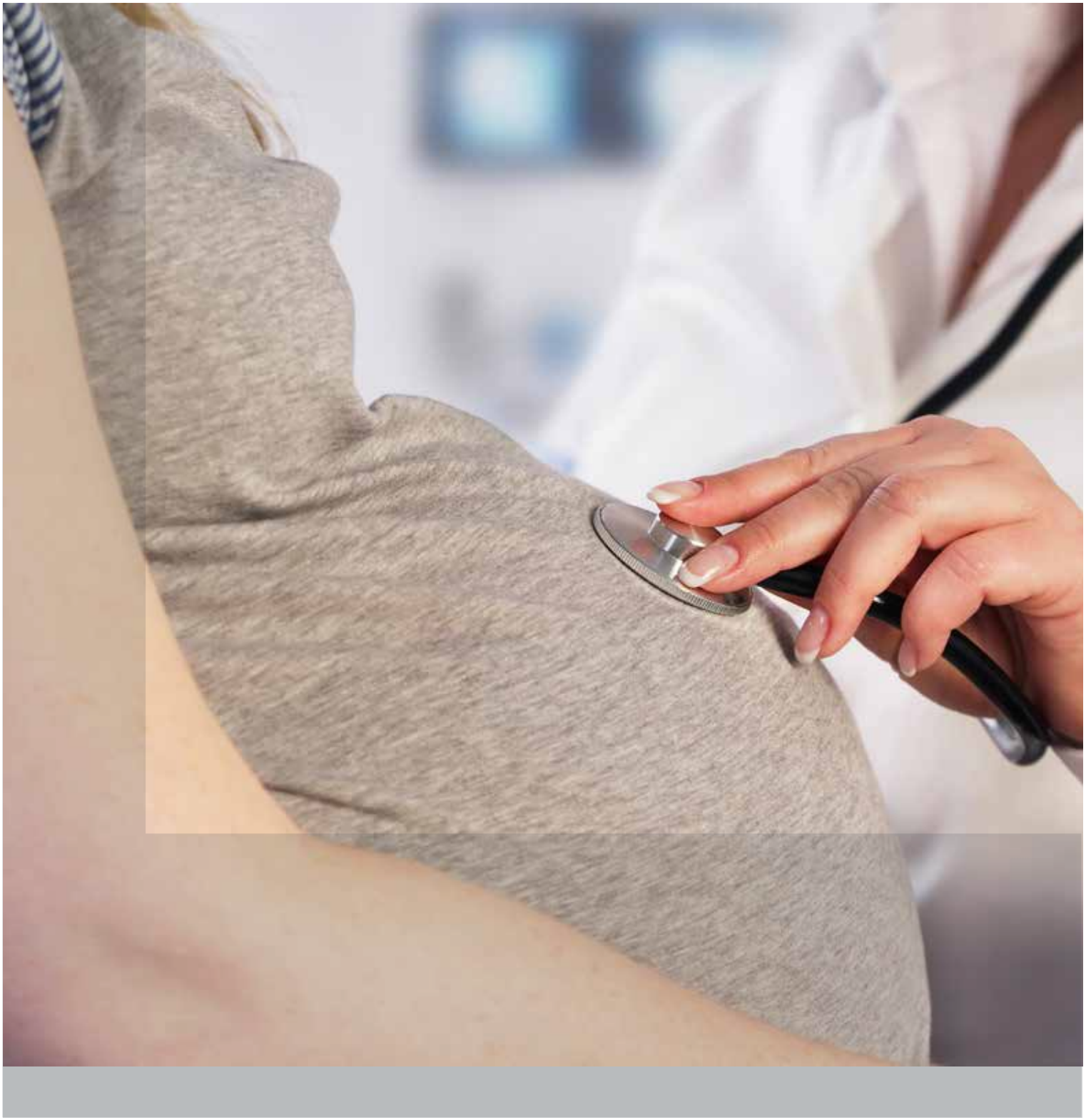
Oral Health

Translational Health Outcomes

Innovative Therapeutics

Cardiac, Respiratory and Vascular Health

Dr Peter Zilm



PREGNANCY AND BIRTH

PREGNANCY AND BIRTH RESEARCH GROUPS

Most prospective mothers anticipate healthy and problem-free pregnancies. However, in reality complications are common, with a quarter of Australian pregnancies affected by one or more conditions that can have serious, lifelong health implications for the mother and her baby.

The most common conditions affecting Australian pregnancies are preeclampsia, preterm birth, foetal growth restriction and gestational diabetes. Their cost for individuals, families and communities is enormous, and can last a lifetime.

The Robinson Research Institute leads our research in pregnancy and birth and has an outstanding record of success in the area. This success relates to the cross-disciplinary capability and bench-to-bedside approach, which has led to major improvements in the health outcomes of mothers and babies. A more in-depth explanation of this research area is available on the **Robinson Research Institute's website**.

PREGNANCY AND BIRTH RESEARCH OPPORTUNITIES

BETTERSTART

Lead Researcher: Dr Jessica Grieger

Contact: jessica.grieger@adelaide.edu.au

Research Summary

My current research focuses on nutrition in pregnancy and my research direction is in understanding how diet and metabolic profile impact pregnancy and birth outcomes. My current research projects include how different maternal exposures associate with time to pregnancy, and pregnancy complications; dietary modelling methods; and diet in relation to gestational diabetes.

For available projects please see Dr Grieger's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/jessica.grieger

Projects available for

Honours; HDR

Maximum Number of Students

1

Category

Human Research

Research Areas

Pregnancy and Birth

Nutrition and Metabolic Health

Dr Jessica Grieger

CRITICAL AND ETHICAL MENTAL HEALTH RESEARCH GROUP

Lead Researcher: Professor Jon Jureidini

Contact: jon.jureidini@adelaide.edu.au

Research Summary

The Maternal Looking Guide (MLG) is a clinical tool for midwives to be used for early assessment and decision-making about the mother-infant relationship.

Midwives are ideally placed to interact with a mother and her newborn and provide immediate and effective support.

There is a need to address the relatively low-risk but high prevalence of maternal anxiety and depression for the maternal-infant relationship in the first 1000 days with a feasible, low-cost intervention.

This project aims to:

- validate the MLG on a larger population
- confirm its negligible risk status
- expand the current MLG training package to encompass a simple intervention by the midwife with suitable mothers
- measure the impact of that intervention on outcomes for the baby.

It is proposed to recruit and train 40 midwives from WCHN to administer the MLG.

300 newly delivered first-time mothers will receive one of:

1) care as usual (neither MLG nor intervention)

2) assessment with the MLG by midwives, who are not yet trained in the intervention

3) assessment with the MLG, by midwives who have been trained in the intervention.

For available projects please see Professor Jureidini's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/jon.jureidini

Projects available for

HDR; Masters; Mphil

Maximum Number of Students

2

Category

Human Research

Research Areas

Pregnancy and Birth

Early Origins of Health

The Maternal Looking Guide

HEALTH, DISABILITY AND LIFESPAN DEVELOPMENT RESEARCH GROUP

Lead Researcher: Dr Clemence Due

Contact: clemence.due@adelaide.edu.au

Research Summary

My current research focuses on the health and wellbeing of vulnerable groups of people with a particularly focus on refugee and migrant mental health, maternity care and stillbirth and developmental disorders.

For available projects please view Dr Due's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/clemence.due

Projects available for

Honours; HDR; Masters

Maximum Number of Students

6

Category

Systematic Reviews; Human Research

Research Areas

Pregnancy and Birth

Indigenous Health and Health Equity

Translational Health Outcomes

Men's Health

Dr Clemence Due

HEALTH, DISABILITY AND LIFESPAN DEVELOPMENT RESEARCH GROUP

Lead Researcher: Professor Deborah Turnbull

Contact: deborah.turnbull@adelaide.edu.au

Research Summary

A series of projects are being offered via the partnership between the School of Psychology and the Freemason's Foundation Centre for Men's Health. Data sources include the Florey Adelaide Male Ageing Cohort, a prospective cohort of randomly selected men, aged between 35-88 years, from the northern and western suburbs of Adelaide, South Australia. Student researchers will also have access to a register of men who have agreed to participate in health research. This opportunity would suit someone with interests in areas such as masculinity, chronic disease and prevention. Students would be encouraged to identify their own topics of interest. There will be possibilities for undertaking qualitative, quantitative and mixed methods research.

For available projects please view Professor Turnbull's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/deborah.turnbull

Projects available for

Honours

Maximum Number of Students

Flexible

Category

Systematic Reviews; Human Research

Research Areas

Pregnancy and Birth

Child and Adolescent Health

Men's Health

Professor Deborah Turnbull

PAEDIATRIC AND PERINATAL EPIDEMIOLOGY

Lead Researcher: Associate Professor Lisa Smithers

Contact: lisa.smithers@adelaide.edu.au

Research Summary

There are three core foci of my current research: the impact of perinatal events on children's health and development, food advertising to children, and Indigenous children's diets, health and development. Much of my work involves analysis of observational data (from cohort and population-based databases) and systematic reviews, and less frequently, randomised controlled trials. I routinely use advanced epidemiological concepts in my research, such as multiple imputation for missing information, propensity scores for balancing confounding or weighting treatment effects, directed acyclic graphs for informing confounder selection and marginal structural models.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here:

researchers.adelaide.edu.au/profile/lisa.smithers

Projects available for

HDR

Maximum Number of Students

1

Category

Systematic Reviews; Meta-analysis; Human Research

Research Areas

Pregnancy and Birth

Nutrition and Metabolic Health

Associate Professor Lisa Smithers

QUALITY OF CARE, MATERNAL HEALTH AND PREGNANCY OUTCOMES IN DEVELOPING COUNTRIES

Lead Researcher: Dr Mohammad Afzal Mahmood

Contact: afzal.mahmood@adelaide.edu.au

Research Summary

The research focuses on factors affecting access to and quality of antenatal, intrapartum and postnatal care in regions with persistently high maternal mortality. The research, with the public sector services, University of Airlangga and Australian research partners, is based in East Kalimantan and East Java, Indonesia. Recent research in an East Kalimantan district pointed to organisational, personnel, and personal factors influencing quality. The research is now expanded to include analysis of provincial level data, and review of health care in tertiary hospitals in East Java, with planning to introduce changes and assess the impact. With eclampsia as one of the main direct causes of maternal deaths, an honours project may focus on health system response to eclampsia. Another potential honours research could be about association between healthcare quality and low birth weight.

Another is a Rotary Club of Morialta project in Papua New Guinea, in collaboration with PNG Midwifery Society, Australian College of Midwifery, and researchers at the University of Adelaide and Monash University. The project is aimed at improving midwifery and midwifery leadership skills. This project may provide an honours research opportunity for an evaluation research assessing impact in terms of knowledge and skills and improved healthcare.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: researchers.adelaide.edu.au/profile/afzal.mahmood

Projects available for

Honours

Maximum Number of Students

2

Category

Human Research

Research Areas

Pregnancy and Birth

Maternal Health Health Research & Development Team, Kukar District, East Kalimantan

Some of the members of East Kalimantan and East Java Maternal Health Research & Development Team

SAHMRI BIOINFORMATICS CORE

Lead Researcher: Dr Jimmy Breen

Contact: jimmy.breen@sahmri.com

Research Summary

I am a Bioinformatician/Computational Biologist at the University of Adelaide with experience in plant genomics, ancient DNA, epigenetics and next-generation sequencing (NGS) analysis. I am currently lead the Bioinformatics Core team at the South Australian Health & Medical Research Institute (SAHMRI) and am group leader in Computational Biology at the Robinson Research Institute. I am also co-lecturer of the Master's level Bioinformatics unit (7005 - Bioinformatics and System Modelling) in the MSc Biotechnology course offered at the University of Adelaide.

My research aims to develop computational tools and methods to study the human genome and other model systems. I have a strong emphasis on identifying basic biological insights that can translate to diagnostic applications. My team works on datasets from medical disorders such as placental and pregnancy complications, acute lymphoblastic leukemia, autoimmune disease, glaucoma and cerebral palsy. Additionally we help researchers analyse large genomics datasets in a cost-for-service capacity.

For available projects please view Dr Breen's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/jimmy.breen

Projects available for

Honours

Maximum Number of Students

2

Category

Dry Laboratory; Human Research

Research Areas

Pregnancy and Birth

Cancer Biology and Clinical Oncology

Immunology and Infection

SAHMRI Bioinformatics Core Team: Jacqueline Rehn, Melanie Smith, Jimmy Breen, Ning Liu, Nader Aryamanesh (absent)

VASCULAR IMMUNOLOGY OF PREGNANCY

Lead Researcher: Dr Alison Care

Contact: alison.care@adelaide.edu.au

Research Summary

Our research in Vascular Physiology and Immunology of pregnancy investigates maternal immune regulation of vascular adaptations during pregnancy, with a particular focus on uterine artery function and placental development; and the effects of a complicated pregnancy on the long-term cardiovascular health of offspring (Developmental Origins of Health and Disease), as well as the impact on maternal health postpartum.

We have a particular interest in the pregnancy complication preeclampsia, which affects 4 million women each year and leads to significant morbidity and mortality for the women and their infants. Women and their offspring have an increased risk of developing cardiovascular disease following a preeclamptic pregnancy. Preeclampsia arises when the maternal cardiovascular system does not adapt appropriately to pregnancy. Our research is focused on the role of the maternal immune system in driving maternal vascular adaptations to pregnancy.

For available projects please see Dr Care's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/alison.care

Projects available for

Honours; HDR; Masters

Maximum Number of Students

2

Category

Wet Laboratory

Research Areas

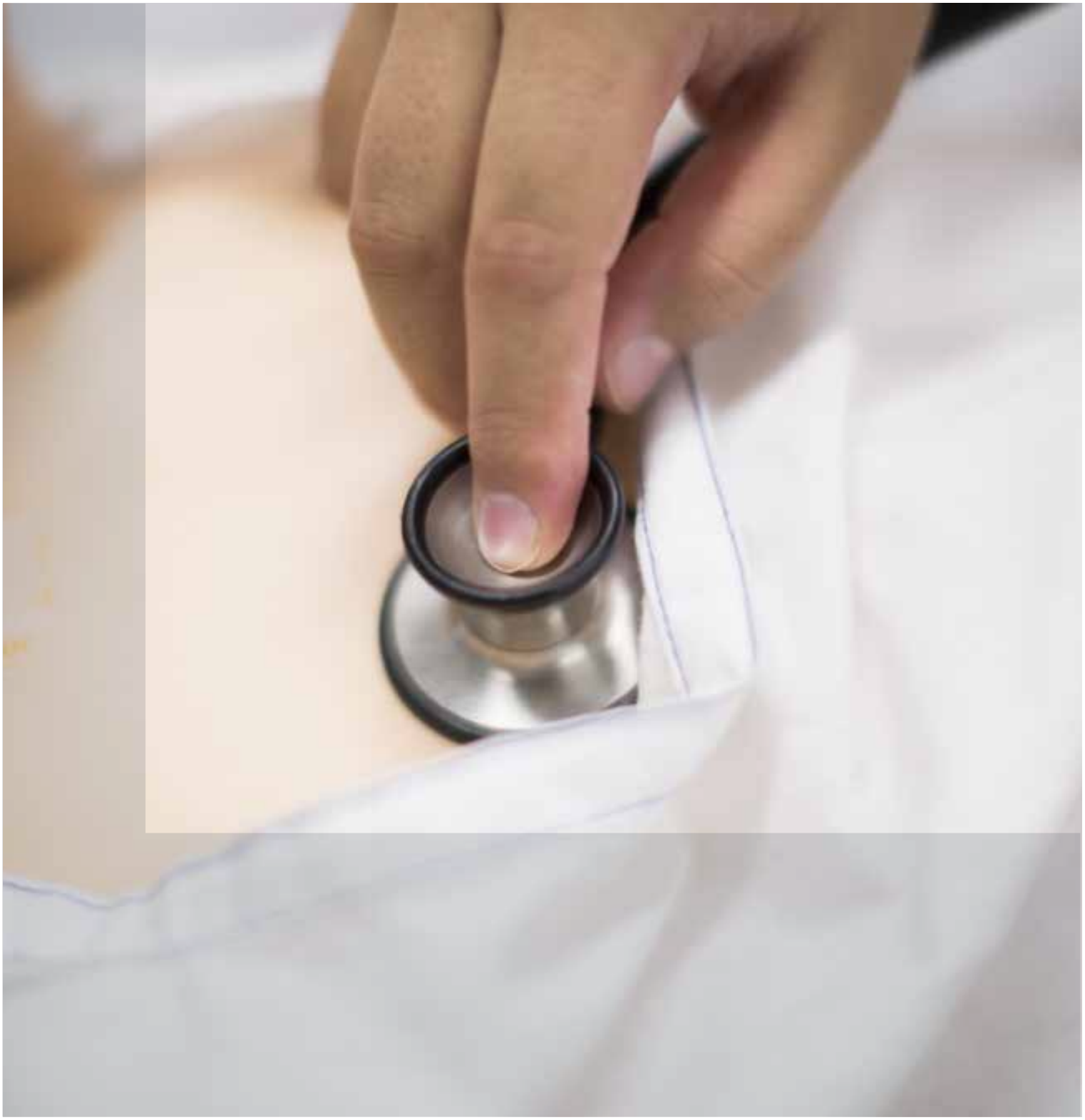
Pregnancy and Birth

Immunology and Infection

Early Origins of Health

Cardiac, Respiratory and Vascular Health

Using ultrasound to assess blood flow in the uterus and placenta during pregnancy



SURGICAL AND HEALTH SYSTEMS INNOVATION

SURGICAL AND HEALTH SYSTEMS INNOVATION RESEARCH GROUPS

Surgical innovation, and indeed all innovation in the health system, significantly enhances the quality and length of life for many in our community, and enables health services to reach more of our community.

Our researchers are working to enhance the quality, effectiveness and sustainability of surgical and health systems innovation at all levels. Our research addresses the many challenges of bringing health innovations into practice, including validating the innovation, justifying the economics, influencing the policies and spreading the knowledge to implement these new approaches.

Using evidence-based assessment, researchers test the efficacy and safety of the innovation, model the costs of implementation, and finally garner the support of the health industry, health service providers, policymakers and the community to implement the innovation. This exciting and challenging field can yield highly rewarding results that benefit society for years to come.

Researchers across the faculty are focused on:

- developing and evaluating the efficacy of new therapeutics
- evaluating new, less invasive diagnostic technologies to lower patient risk, improve the patient experience and reduce health service costs
- performing large-scale, multi-centre clinical trials to rigorously assess treatments and predictive diagnostic tests
- performing longitudinal studies to monitor patient health status and quality of care to identify problems in the health system's delivery of services
- performing long-term analysis of total-joint-replacement patients to analyse prosthetic failure, assessing the device, the biomaterials and methodology
- assessing the impacts of health policies and implementation of preventative health interventions.

SURGICAL AND HEALTH SYSTEMS INNOVATION RESEARCH OPPORTUNITIES

BIOENGINEERING IMAGING GROUP

Lead Researcher: Professor Robert McLaughlin

Contact: robert.mclaughlin@adelaide.edu.au

Research Summary

The Bioengineering Imaging Group is a world-leader in the development of the imaging needle technology for clinical use.

Our team design and build highly miniaturised imaging probes to help diagnose disease and enable safer surgery. Our imaging needles consist of a tiny fibre-optic probe encased in a hypodermic needle. These devices are able to provide guidance deep within the body with fluorescence imaging and optical coherence tomography.

Based in the ARC Centre of Excellence for Nanoscale Biophotonics cnbp.org.au (CNBP), which is part of the Institute for Photonics and Advanced Sensing (IPAS), the Bioengineering Imaging Group has strong research programs in the development of new optical imaging technologies and clinical translation.

Our research team is a multi-disciplinary group of engineers, physicists and computer scientists who work together with clinicians. Our skills complement the expertise already within the CNBP. Together, we are exploring novel applications and deployment of optical fibre sensing and imaging across medicine and physiology.

For available projects please see Professor McLaughlin's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/robert.mclaughlin

Projects available for

Honours; HDR

Maximum Number of Students

Flexible

Category

Human Research

Research Areas

Surgical and Health Systems Innovation

Professor Robert McLaughlin

ENDOSCOPIC RESEARCH GROUP

Lead Researcher: Professor Rajvinder Singh

Contact: rajvinder.singh@sa.gov.au

Research Summary

Professor Rajvinder Singh MBBS MPhil FRACP AM FRCP is the Director of Gastroenterology at the Lyell McEwin and Modbury Hospitals, South Australia and a Professor of Medicine at the University of Adelaide.

He has a keen interest in Endoscopic research focusing mainly on Advanced Endoscopic Imaging Techniques and Endoscopic Treatment of premalignant and malignant lesions in the gastrointestinal tract.

Professor Singh has been successful in obtaining various grants nationally to further investigate the utility of novel endoscopic imaging techniques in the detection of dysplasia and early cancer.

His research interests include Detection and (Endoscopic) treatment of early gastrointestinal tract pre-malignant and malignant lesions. This includes detecting dysplasia or early cancer in Barrett's oesophagus, squamous cell cancer/dysplasia of the oesophagus, early gastric cancer, duodenal polyps, colon polyps and early colon cancers. He also has interest in various endoscopic treatment modalities including Endoscopic Mucosal Resection, Endoscopic Submucosal Dissection, Radio Frequency Ablation, Luminal stenting, Full Thickness Resection and Endoscopic closure of defects in the GI wall.

For more information please view Professor Singh's Researcher Profile

researchers.adelaide.edu.au/profile/rajvinder.singh

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

3

Category

Clinical Research; Human Research

Research Areas

Surgical and Health Systems Innovation

Cancer Biology and Clinical Oncology

Professor Rajvinder Singh

ENT SURGERY RESEARCH GROUP

Lead Researcher: Associate Professor Sarah Vreugde

Contact: sarah.vreugde@adelaide.edu.au

Research Summary

The Department of Otolaryngology, Head and Neck Surgery at The Queen Elizabeth Hospital is committed to excellence in translational research and education. Research in our department is focused mainly on understanding the pathogenesis of chronic rhinosinusitis (CRS), using a multidisciplinary approach, aimed at identifying new diagnostic/prognostic markers and treatment strategies to the benefit of our patients. Research projects cover all aspects of rhinological research from pathophysiological aspects of CRS to the identification and validation of new treatment strategies in vitro and in vivo, bringing research from bench to bedside.

For available projects please view Associate Professor Vreugde's Researcher Profile

researchers.adelaide.edu.au/profile/sarah.vreugde

Projects available for

Third Year; Honours; Masters; HDR; MPhil

Maximum Number of Students

Flexible

Category

Human Research; Systematic Reviews; Wet Laboratory; Dry Laboratory; Meta-analysis

Research Areas

Surgical and Health Systems Innovation

Immunology and Infection

Translational Health Outcomes

Innovative Therapeutics

Associate Professor Sarah Vreugde

FORENSIC SCIENCE SA

Lead Researcher: Associate Professor Neil Langlois

Contact: neil.langlois@sa.gov.au

Research Summary

Forensic Pathology

1.Data acquisition and analysis - these projects require extraction of information from autopsy reports from Coronial post-mortem examinations.

2.Investigation of determining age of bruises - these projects are more practical, using experimental model systems

For available projects please see Associate Professor Langlois' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/neil.langlois

Projects available for

Third Year

Maximum Number of Students

1

Category

Systematic Reviews; Human Research

Research Areas

Surgical and Health Systems Innovation

Associate Professor Neil Langlois

JOINT REPLACEMENT RESEARCH UNIT

Lead Researcher: Stuart Callary

Contact: stuart.callary@sa.gov.au

Research Summary

The Joint Replacement Research Unit is based at the Royal Adelaide Hospital under the Centre for Orthopaedic and Trauma Research. Our aim is to translate research findings into improved clinical outcomes that benefit both the health care system and individual patients who have undergone joint replacement surgery.

We have a number of exciting new projects that use the latest imaging technology including radiographs, radiostereometric analysis, MRI and CT. New implants are introduced to hip and knee replacement surgery every year in Australia. We offer pre-clinical testing and early surveillance of these newly introduced prosthesis to ensure patients are not put at risk of receiving inferior implant designs. We also investigate long term outcomes so that surgeons can make evidence-based informed decisions.

For available projects please view Mr Callary's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/stuart.callary

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

4

Category

Dry Laboratory; Human Research

Research Areas

Surgical and Health Systems Innovation

Ageing, Frailty and Mobility

Musculoskeletal Health

Translational Health Outcomes

Stuart Callary

MACHINE LEARNING IN MEDICINE

Lead Researcher: Professor Lyle Plamer

Contact: lyle.palmer@adelaide.edu.au

Research Summary

Research conducted by the Machine Learning in Medicine group aims to apply new advances in machine learning (and deep learning in particular) to the analysis of medical images. We have a strong translational focus, and work closely with multiple government agencies and clinical teams in SA and nationally. We are active in developing improved diagnostic/prognostic algorithms in breast cancer screening, glaucoma progression, fractures, and the prediction of 5-year mortality. Our multidisciplinary team have backgrounds in computer science, epidemiology, biostatistics, public health, medicine, radiology, clinical genetics, paediatrics, and genetic epidemiology. We lead the Precision Healthcare Flagship of the Australian Alliance for Artificial Intelligence in Healthcare.

Collectively, our team have expertise in computer vision, randomised trials, data linkage, and translational research activities in South Australia, nationally, and internationally. Members of the group also conduct methodological research in machine learning and computer vision.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here:

researchers.adelaide.edu.au/profile/lyle.palmer

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

5

Category

Dry Laboratory; Human Research

Research Areas

Surgical and Health Systems Innovation

Cardiac, Respiratory and Vascular Health

Cancer Biology and Clinical Oncology

Translational Health Outcomes

Professor Lyle Plamer

ROYAL ADELAIDE HOSPITAL INTENSIVE CARE UNIT RESEARCH

Lead Researcher: Dr Samuel Gluck

Contact: samuel.gluck@adelaide.edu.au

Research Summary

I am interested in the use of technology to record patient experience and outcomes. I am particularly interested in using smartphone data in the automatic measurement of patient outcomes and patient risk. We are working to use electronic record data to predict hospital length of stay, and risk of readmission and then using step and GPS data to determine when that re-admission may occur. We are also interested in assessing preoperative risk using step and GPS data to define and predict patient centred long term outcomes following surgery.

For available projects please see Samuel Gluck's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/samuel.gluck

Projects available for

Honours; HDR; Masters; Mphil

Maximum Number of Students

3

Category

Dry Laboratory; Human Research

Research Areas

Surgical and Health Systems Innovation

Translational Health Outcomes

Ageing, Frailty and Mobility

Dr Sam Gluck

SURGICAL SCIENCE RESEARCH GROUP

Lead Researcher: Professor Guy Maddern

Contact: guy.maddern@adelaide.edu.au

Research Summary

Laparoscopic Simulation Skills Program (LSSP)

- The aim of the LSSP is to develop and assess the efficacy and feasibility of a self-directed simulation-based training program, and to determine if a period of more formal (supervised) training is required.

Coaching to Enhance Surgeons' Non-Technical Skills

- This project is investigating whether surgical coaching is a potentially valuable tool to enhance surgeons' non-technical skills

Developing novel diagnostic tools and preventative therapies for metastatic colorectal cancer

- Validating potential proteomic and lipidomic targets from stored tissue and blood of CRC patients

Systematic reviews of surgical topics

- The use of antibiotic coated sutures
- What is informed consent
- Do Multi-Disciplinary Teams Meetings work?
- Should asymptomatic contra-lateral inguinal hernias found at laparotomy be repaired?
- Tele-surgery: what is the evidence?
- Audit of surgical mortality
- Trocar injury deaths in Australia
- Deaths in patients under 30 years of age
- Surgical deaths in the patients older than 90
- Surgical deaths following delay in transfer

Health System Research

- How to deliver rural general surgery
- Advanced recovery programs
- What is the surgical learning curve for a liver resection, oesophagectomy, inguinal hernia repair, Whipples resection, open abdominal aortic aneurysm

Health Technology Assessment

- Reviews of new surgical Health Technology Assessment reports

For available projects please view Professor Maddern's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/guy.maddern

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

Flexible

Category

Wet Laboratory; Dry Laboratory; Systematic Reviews; Meta-analysis; Human Research

Research Areas

Surgical and Health Systems Innovation

Cancer Biology and Clinical Oncology

Translational Health Outcomes

Surgical Science Research Group

TRANSLATIONAL HEALTH OUTCOMES

TRANSLATIONAL HEALTH OUTCOMES RESEARCH GROUPS

Translational health research applies basic scientific findings from laboratory and preclinical studies to enhance human health and wellbeing at the personal and community level—taking experimental findings 'from bench to bedside' through new treatments and improved health policy.

High quality preclinical, clinical and epidemiological research is the foundation stone of optimised health care provision that serves to improve the quality of life of patients who are managed in the health system. Effective translational research is crucial to the continued improvement and sustainability of the Australian health system, and requires significant engagement with industry and service sectors within government.

Our researchers are developing new and innovative ways to transfer new knowledge to health service professionals, to: change practice; improve skills; and influence policy and procedures system-wide.

Researchers across the faculty are focused on:

- undertaking population surveys to develop and test new interventions to improve the mental health of children and adolescents
- undertaking evidence-based practice development to manage at-risk populations for trauma and mental disorders across the lifespan
- elucidating genetic factors that may serve as new targets for therapy, or are predictive of responses to pharmaceutical treatments
- performing longitudinal studies of patients undergoing invasive procedures to review and improve standard practice in the health care system
- developing evidence-based assessments of novel surgical techniques and postoperative care to enhance skills and promote knowledge transfer to health service professionals.

TRANSLATIONAL HEALTH OUTCOMES RESEARCH OPPORTUNITIES

ADELAIDE EXPOSURE SCIENCE AND HEALTH

Lead Researcher: Dr Sharyn Gaskin

Contact: sharyn.gaskin@adelaide.edu.au

Research Summary

Our research interests primarily focus on Occupational and Environmental Health Science including industry-wide studies in healthcare, agriculture, manufacturing, emergency services and mining industries. We have expertise in public health, exposure science, environmental and medical epidemiology and we work closely with government and industry stakeholders. We work in the assessment and control of health hazards in workplaces and the environment including hazardous chemical management.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: researchers.adelaide.edu.au/profile/sharyn.gaskin

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

6

Category

Wet Laboratory; Dry Laboratory; Systematic Reviews; Human Research

Research Areas

Translational Health Outcomes

Cardiac, Respiratory and Vascular Health

Pregnancy and Birth

Dr Sharyn Gaskin

ADELAIDE EXPOSURE SCIENCE AND HEALTH

Lead Researcher: Professor Dino Pisaniello

Contact: dino.pisaniello@adelaide.edu.au

Research Summary

Dino works at the intersection of occupational health, environmental health and emergency response.

He works with various professional and industry groups to translate evidence into practice in order to advance the health and wellbeing of communities in Australia and internationally.

His research address hazards in mining, manufacturing, defence, healthcare, agriculture, domestic and office environments, work and vision and climate change impacts on health. He has expertise in chemical hazard risk assessment and management, occupational and environmental epidemiology, intervention research, and health and safety education.

Research project opportunities exist in the areas of work and vision, chemical exposure science and environmental epidemiology.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: researchers.adelaide.edu.au/index.php/profile/dino.pisaniello

Projects available for

Honours; HDR; Mphil

Maximum Number of Students

2

Category

Wet Laboratory; Human Research

Research Areas

Translational Health Outcomes

Cardiac, Respiratory and Vascular Health

Professor Dino Pisaniello

ADELAIDE EXPOSURE SCIENCE AND HEALTH

Lead Researcher: Dr Leigh Thredgold

Contact: leigh.thredgold@adelaide.edu.au

Research Summary

Dr Thredgold's current research leverages his background in analytical chemistry to explore the pathways and impacts of environmental and occupational hazards on human health and society, and leads to the development of effective interventions to control and prevent exposure to hazards. In particular, with Dr Gaskin, he investigates the science of dermal exposure to toxic chemicals using in-vitro human skin models which is translated into practical outcomes and decision making software tools for collaborators and other industries. This collaborative research is industry focussed with wide applicability across the defence, emergency services, HAZMAT and public health sectors.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: researchers.adelaide.edu.au/profile/leigh.thredgold

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

Flexible

Category

Wet Laboratory; Systematic Reviews

Research Areas

Translational Health Outcomes

Pregnancy and Birth

Dr Leigh Thredgold

ADELAIDE HEALTH TECHNOLOGY ASSESSMENT

Lead Researcher: Professor Tracy Merlin

Contact: tracy.merlin@adelaide.edu.au

Research Summary

Adelaide Health Technology Assessment (AHTA) is an applied research group with a national and international reputation in Health Technology Assessment (HTA). AHTA has undertaken $45 million in applied/contract research since its inception, primarily for the Australian Government Department of Health, to evaluate health services, medicines and other interventions to inform health policy and public funding decisions. This includes assessing the safety, effectiveness and cost-effectiveness of medical services that are being considered for Medicare funding; and the appraisal of pharmaceuticals to determine whether they warrant funding under the Pharmaceutical Benefits Scheme.

Our research interests include:

- Evaluating the clinical and/or cost-effectiveness of different types of medical services, delivery of health services, devices, medical tests, public health programs or medicines to help policy-makers decide whether they should be made available and/or publicly funded
- Evaluating medical services or health interventions to inform health professionals and clinicians make the best choice when diagnosing or treating a patient
- Developing new methods for translating clinical evidence into policy or decision-making

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: researchers.adelaide.edu.au/index.php/profile/tracy.merlin

Projects available for

Honours; HDR; Mphil; Mclin

Maximum Number of Students

Flexible

Category

Systematic Reviews; Human Research

Research Areas

Translational Health Outcomes

Innovative Therapeutics

Cancer Biology and Clinical Oncology

Surgical and Health Systems Innovation

Professor Tracy Merlin

CLIMATE CHANGE; ECOSYSTEM HEALTH AND INFECTIOUS DISEASE EPIDEMIOLOGY

Lead Researcher: Professor Peng Bi

Contact: adriana.milazzo@adelaide.edu.au

Research Summary

We are interested in the nexus between the environment, society and human health. With diverse backgrounds in environmental and medical epidemiology, public health, occupational health physiotherapy, infectious disease, social psychology and statistics, we employ an array of quantitative and qualitative methodologies and work closely with government and non-government stakeholders. We provide an empirical evidence base for strategic policy development and planning on public health issues and have close collaborative relationships with public health and infectious disease specialists in China.

Climate change; ecosystem health and infectious disease epidemiology offers a number of research opportunities for students at a variety of levels.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: researchers.adelaide.edu.au/profile/peng.bi#my-research

Projects available for

Honours

Maximum Number of Students

Flexible

Category

Systematic Reviews; Human Research

Research Areas

Translational Health Outcomes

Dr Adriana Milazzo

CLIMATE CHANGE; ECOSYSTEM HEALTH AND INFECTIOUS DISEASE EPIDEMIOLOGY

Lead Researcher: Professor Peng Bi

Contact: peng.bi@adelaide.edu.au

Research Summary

We are interested in the nexus between the environment, society and human health. With diverse backgrounds in environmental and medical epidemiology, public health, occupational health physiotherapy, infectious disease, social psychology and statistics, we employ an array of quantitative and qualitative methodologies and work closely with government and non-government stakeholders. We provide an empirical evidence base for strategic policy development and planning on public health issues and have close collaborative relationships with public health and infectious disease specialists in China. Climate change; ecosystem health and infectious disease epidemiology offers a number of research opportunities for students at a variety of levels.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: researchers.adelaide.edu.au/profile/peng.bi#my-research

Projects available for

Honours

Maximum Number of Students

Flexible

Category

Systematic Reviews; Human Research

Research Areas

Translational Health Outcomes

Dr Michael Tong

CLIMATE CHANGE; ECOSYSTEM HEALTH AND INFECTIOUS DISEASE EPIDEMIOLOGY

Lead Researcher: Professor Peng Bi

Contact: peng.bi@adelaide.edu.au

Research Summary

We are interested in the nexus between the environment, society and human health. With diverse backgrounds in environmental and medical epidemiology, public health, occupational health physiotherapy, infectious disease, social psychology and statistics, we employ an array of quantitative and qualitative methodologies and work closely with government and non-government stakeholders. We provide an empirical evidence base for strategic policy development and planning on public health issues and have close collaborative relationships with public health and infectious disease specialists in China. Climate change; ecosystem health and infectious disease epidemiology offers a number of research opportunities for students at a variety of levels.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/peng.bi#my-research**

Projects available for

Honours

Maximum Number of Students

Flexible

Category

Systematic Reviews; Human Research

Research Areas

Translational Health Outcomes

Men's Health

Dr Jianjun Xiang

CLINICAL PHARMACOGENOMICS RESEARCH GROUP

Lead Researcher: Professor Andrew Somogyi

Contact: andrew.somogyi@adelaide.edu.au

Research Summary

My research is focussed on the genetics determinants of severe and life threatening adverse reactions to medications and why some medicines do not work in some people. The specific areas are in indigenous populations: Aboriginal Australians and Papua New Guineans. The disease areas are: mental health (antidepressants); postsurgical pain; acute pain, chronic pain; infectious diseases (HIV, TB, Malaria); cancer (childhood leukaemia); kidney transplantation. I work with clinicians in Adelaide, Australia and internationally to unravel why some medicines don't work and why some can cause significant harm. This is mainly done by examining the patients genetics in relation to medicines, often called pharmacogenomics which is an important component of Precision Medicine. We have blood or saliva collected, isolate and quantify the DNA and then use genetic testing to determine the patients variant allele frequency and relate this to their phenotype and response (good and bad) to the medicine. We also recruit large populations, for example we are involved in a trial looking at ketamine as a new therapy for treatment-resistant depression which involves over 300 patients in Australia,

For available projects please view Professor Somogyi's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/andrew.somogyi

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

5

Category

Wet Laboratory; Meta-analysis; Human Research

Research Areas

Translational Health Outcomes

Innovative Therapeutics

Indigenous Health and Health Equity

Neuroscience, Behaviour and Brain Health

ProfessorAndrew Somogyi- head of the clinical pharmacogenomiocs lab

DASSA WHO COLLABORATING CENTRE

Lead Researcher: Associate Professor Robert Ali

Contact: robert.ali@adelaide.edu.au

Research Summary

Our group is currently involved in research in the following areas:

- Screening and early intervention for substance use disorders in pregnancy
- Developing a spoken word smartphone app for self monitoring substance use in ATSI populations
- Implementation research of depot buprenorphine for the treatment of opioid dependence
- Validation study of ICD-ll for substance use disorders
- Comparison of the ASSIST-Lite diagnostic accuracy for substance use disorder in DSM-V and ICD-II

For available projects please view Associate Professor Ali's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/robert.ali

Projects available for

HDR; Masters

Maximum Number of Students

3

Category

Human Research

Research Areas

Translational Health Outcomes

Indigenous Health and Health Equity

Pregnancy and Birth

Screening for substance use disorders

END OF LIFE CARE

Lead Researcher: Associate Professor Jaklin Eliott

Contact: jaklin.eliott@adelaide.edu.au

Research Summary

Our research examines how communities respond to health issues and participate in healthcare, with emphasis on public health. We prioritise including views and experiences of community members (patients, consumers and stakeholders) in health research, policy, and service delivery.

Our methodological expertise includes qualitative and quantitative methods, used in research and the evaluation of health services and policy. We have extensive experience working with international, national, and state governments, different NGOs, and community-based organisations.

We sit within Social and Behavioural Sciences, focusing on the social context of health and community perspectives on health and wellbeing. We consider how culture intersects with: health behaviours, health providers, and health policy and the provision of, and access to, health services; and explore how these influence health outcomes for people and their communities.

End of Life Care research focuses on several areas including end-of-life care in vulnerable populations, the ethics and values underpinning end-of-life care and advance care planning, community and professional perspectives regarding end-of-life care, and how the health system supports people approaching the end of their life.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: researchers.adelaide.edu.au/profile/jaklin.eliott

Projects available for

Honours; HDR; Mphil; Mclin

Maximum Number of Students

Flexible

Category

Systematic Reviews; Human Research

Research Areas

Translational Health Outcomes

Associate Professor Jaklin Eliott

HEALTH WORKFORCE PLANNING GROUP

Lead Researcher: Professor Caroline Laurence

Contact: caroline.laurence@adelaide.edu.au

Research Summary

Caroline's research interests is in the area of ealth workforce planning, particularly for the primary care sector. Her research has contributed to a greater understanding of the workforce pipeline in Australia including career decision making, workforce maldistribution, retention issues, changing workforce profiles and workforce policy analysis. Her current research projects include: the GP Graduate Tracking Study which is determining the practice location of graduates after training; a study investigating the perceptions of general practice as a career by medical students and junior doctors; and a study on embedding cost and benefits into workforce planning models. Most of her reserach undertaken with and funded by industry partners.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/caroline.laurence**

Projects available for

Third Year; Honours; HDR; Masters; Mphil

Maximum Number of Students

8

Category

Dry Laboratory; Human Research

Research Areas

Translational Health Outcomes

Surgical and Health Systems Innovation

Professor Caroline Laurence

IMPLEMENTING EVIDENCE-BASED CARE

Lead Researcher: Professor Gill Harvey

Contact: gillian.harvey@adelaide.edu.au

Research Summary

Our focus is on applied health services research to improve the quality of care. In particular, we are interested in how to achieve impact through research by studying methods and processes that can enhance the translation of research evidence into practice and policy. Examples of current research projects include: using co-design methods to improve the uptake of stroke rehabilitation guidelines; improving care transitions between hospital and home for older people; implementing appropriate care in hospital for patients at the end-of-life; preventing unnecessary hospital admissions of aged care residents; improving neonatal care in South Kalimantan, Indonesia. The common thread in these studies is building the knowledge base about how to implement evidence into practice and policy, in order to address an important translational gap.

For available projects please see Professor Harvey's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/gillian.harvey

Projects available for

Honours; HDR; Mphil

Maximum Number of Students

3

Category

Human Research

Research Areas

Translational Health Outcomes

Ageing, Frailty and Mobility

Surgical and Health Systems Innovation

Co-design workshop with older people to improve the experience of care transitions between hospital and home

Professor Gill Harvey

IMPLEMENTATION SCIENCE

Lead Researcher: Associate Professor Craig Lockwood

Contact: craig.lockwood@adelaide.edu.au

Research Summary

My program of research encompasses two core domains: Qualitative Systematic Reviews and Implementation Science in healthcare policy and practice. PhD ready applicants only.

Systematic Reviews

Qualitative synthesis is my core program of investigation, and includes philosophy, methodology and methods for synthesis of qualitative data. While open to new projects in this field, I have existing work on all aspects of qualitative synthesis using meta-aggregation, including protocol development, searching, critical appraisal, data extraction and synthesis, evaluation of confidence in qualitative findings, and reporting standards.

Implementation Science

Methodology, method and frameworks for implementation and implementation science, including the study of:

- behaviour change models and mechanisms,
- barriers, facilitators and implementation strategies
- Context analysis, Facilitation of Change and Evaluation of process and outcome in Implementation Science

For available projects please view Associate Professor Lockwood's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/craig.lockwood

Projects available for

HDR

Maximum Number of Students

3

Category

Systematic Reviews; Meta-analysis; Human Research

Research Areas

Translational Health Outcomes

Associate Professor Craig Lockwood

JBI SYNTHESIS SCIENCE

Lead Researcher: Associate Professor Edoardo Aromataris

Contact: ed.aromataris@adelaide.edu.au

Research Summary

Our program of research is focused on evidence synthesis and across methodologies and methods of systematic reviews for health care and health services.

This includes reviews of the effectiveness of an intervention or therapy, reviews assessing exposures and risk factors, the prevalence of conditions, as well as reviews that are appropriate for qualitative synthesis or synthesis of data derived from text and opinion or a mix of methods, including umbrella reviews.

Projects may encompass application of evidence synthesis methodologies and methods to answer a question relevant to health practice or policy.

Projects focused on methodological issues pertinent to the development and application of these multiple methods of synthesis are also available.

For available projects please view Associate Professor Aromataris' Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/ed.aromataris

Projects available for

HDR; Masters

Maximum Number of Students

Flexible

Category

Systematic Reviews; Meta-analysis

Research Areas

Translational Health Outcomes

Associate Professor Edoardo Aromataris

JBI TRANSFER SCIENCE TEAM, ADELAIDE GRADE CENTRE

Lead Researcher: Associate Professor Zachary Munn

Contact: zachary.munn@adelaide.edu.au

Research Summary

Associate Professor Munn conducts projects investigating:

- Effective and efficient health practices
- Evidence-based healthcare
- Systematic review methodology
- Clinical guideline development methods
- Grading and evaluating evidence and developing recommendations
- Evidence implementation
- Evidence transfer and knowledge translation

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/zachary.munn**

Projects available for

Masters; Mphil

Maximum Number of Students

5

Category

Systematic Reviews; Meta-analysis

Research Areas

Translational Health Outcomes

Associate Professor Zachary Munn

PRIMARY CARE AND HEALTH SERVICES RESEARCH GROUP

Lead Researcher: Dr Oliver Frank

Contact: oliver.frank@adelaide.edu.au

Research Summary

My current research activities are in exploring how GPs' computer systems can help them to do their job better, particularly in increasing the performance of preventive activities and the quality, safety and efficiency of care. In May 2019, I am engaged also in projects aimed at helping patients to learn to sleep better and at helping people who are too fat to increase their health literacy as part of learning how to become slimmer.

For available projects please view Dr Frank's Researcher Profile under "My Research"

researchers.adelaide.edu.au/profile/oliver.frank

Projects available for

Third Year

Maximum Number of Students

2

Category

Human Research

Research Areas

Translational Health Outcomes

Dr Oliver Frank

SAHMRI HEALTH POLICY CENTRE

Lead Researcher: Dr Kerry Ettridge

Contact: kerry.ettridge@sahmri.com

Research Summary

I am based in the Health Policy Centre at the South Australian Health and Medical Research Institute (SAHMRI) and am a visiting research fellow in the School of Psychology. My work incorporates behavioural, public health and quality of life approaches to improve well-being and reduce risk of chronic disease, including cancer. I am specifically interested in research to underpin the development of interventions to curb obesity related behaviour. This can range from researching the best ways in which health effects information regarding health risk behaviour can be communicated (such as sugary drink consumption), to developing a deeper understanding of drivers of that behavior.

I also have an interest in quality of life research among people experiencing cancer, with a focus on psychosocial domains. I am interested in research regarding the development and implementation of patient reported outcome measures for assessing psychosocial outcomes among those with cancer, as well as identifying the barriers to seeking support for psychosocial issues.

I work closely with and often co-supervise with Professor Caroline Miller who is based in the School Public Health, and is the Director of the Health Policy Centre.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/kerry.ettridge**

Projects available for

Third Year; Honours; HDR; Masters

Maximum Number of Students

3

Category

Human Research

Research Areas

Translational Health Outcomes

Nutrition and Metabolic Health

Child and Adolescent Health

Dr Kerry Ettridge

SOCIAL AND BEHAVIOURAL HEALTH SCIENCES: COUNSELLING AND PSYCHOTHERAPY

Lead Researcher: Associate Professor Jaklin Eliott

Contact: jaklin.eliott@adelaide.edu.au

Research Summary

Our research sits within Social and Behavioural Sciences, focusing on the social context of health and community perspectives on health and wellbeing. We consider how culture intersects with: health behaviours, health providers, and health policy and the provision of, and access to, health services; and explore how these influence health outcomes for people and their communities. We prioritise including views and experiences of community members (patients, consumers and stakeholders) in health research, policy, and service delivery.

Our methodological expertise includes qualitative and quantitative methods, used in research and the evaluation of health services and policy. We have extensive experience working with international, national, and state governments, different NGOs, and community-based organisations.

Counselling and Psychotherapy research focuses on issues related to the health and wellbeing of the community, specifically where this provides insight for counselling practice. Current topics of research include: hope in counselling, representations of counselling in the media, multicultural counselling training, spiritual distress, support for children with parents diagnosed with PTSD, and art therapy in residential aged care.

Details of specific projects can be found in the School of Public Health Student Research Projects Handbook which you can access here: **researchers.adelaide.edu.au/profile/jaklin.eliott**

Projects available for

Honours; HDR; Mphil, Mclin

Maximum Number of Students

Flexible

Category

Systematic reviews; Human Research

Research Areas

Translational Health Outcomes

Child and Adolescent Health

Associate Professor Jaklin Eliott

FOR FURTHER ENQUIRIES

The University of Adelaide SA 5005 Australia

ENQUIRIES future.ask.adelaide.edu.au

TELEPHONE +61 8 8313 7335

FREE-CALL 1800 061 459

health.adelaide.edu.au

uoa.health

uniofadelaide_health_

Published September 2019
CRICOS 00123M

SOUTH AUSTRALIA