Bachelor of Medical Science (Honours) 2018 Projects
Central Clinical School
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Monash University’s Central Clinical School (CCS) undertakes translational research – developing insights from laboratory bench research for use in clinical therapies and treatments. Our departments and research affiliates have strong links with health care providers, ensuring that our research rapidly translates to clinical practice.

Undertaking the BMedSc(Honours) research year with us will give you a wide range of opportunities to continue your studies with the accelerated PhD program and develop your career path into many areas of medical and clinical research.

Projects are listed under the following headings
- Australian Centre for Blood Diseases (ACBD)
- Burnet Institute
- Department of Diabetes
- Department of Immunology and Pathology
- Department of Infectious Diseases
- Department of Medicine
- Melbourne Sexual Health Centre (MSHC)
- Monash Alfred Psychiatry research centre (MAPrc)
- Department of Neuroscience
- Department of Surgery

How to use this index booklet
This index booklet lists the Honours and PhD projects on offer for 2018. For further information about a particular research project, see the project description in the online database at:

studentresearchprojects.med.monash.edu.au/

For further information regarding individual research projects, students should approach the nominated researcher associated with that project. This booklet is meant as a guide only, as project ideas will be refined between student and supervisor.

Making your application
Applications are completed centrally through Monash University. Prospective applicants should complete an application form, which can be downloaded or obtained from the Faculty Office. Numbers are capped at 65. Applications close 8 August 2017.

Links for further information and entry requirements:
- Faculty BMedSc(Hons)
- BMedSc(Hons) at CCS
- AMREP Scholarships

For information regarding BMedSc(Hons) and postgraduate study at CCS
Professors Karin Jandeleit-Dahm and Merlin Thomas
CCS BMedSc(Hons) coordinators:
E: karin.jandeleit-dahm@monash.edu / merlin.thomas@monash.edu
T: 03 9903 0008 / 9903 0099

For general information regarding Honours and postgraduate study at CCS
CCS Student Services Officer:
E: hdr.ccs@monash.edu
T: 03 9903 0368

Further links
- www.study.monash/courses/finding-a-course/2017/medical-science-m3701
- www.study.monash/fees-scholarships/scholarships/find/international-student-scholarships/amrep
Medical education/PhD pathways at the Central Clinical School

Notes

1. MBBS – qualify as a registered medical practitioner
2. MBBS plus BMedSc(Hons) – do a one year research project in the area of your interest, then return to complete your MBBS
3. BMedSc(Hons) + PhD then return to your MBBS. If you enrol in the PhD back-to-back, the BMedSc(Honours) is credited to your PhD and will not appear as a separate qualification.

See more:
- www.study.monash/courses/find-a-course/2017/medical-science-m3701
- www.med.monash.edu.au/bmedsc-hons/
The Australian Centre for Blood Diseases (ACBD) is a national and international blood diseases centre with recognised research, treatment, and educational programs for blood diseases. ACBD is affiliated with Monash University, The Alfred hospital, Eastern Health and Southern Health, and is organised into three integrated divisions:

- Clinical and Diagnostic Haematology/Oncology
- Clinical and Basic Research Programs
- Teaching and Education

The ACBD’s research falls into two main areas, Non-Malignant Haematology, and Malignant Haematology & Stem Cell Transplantation.

See more: [www.acbd.monash.org/](http://www.acbd.monash.org/)

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**Projects Available:**

**Novel nanotheranostics for cancer**
Supervisor(s): Dr Karen Alt and A/Prof Christoph Hagemeyer
Email: karen.alt@monash.edu

**Platelet Analysis**
Supervisor(s): A/Prof Robert Andrews
Email: rob.andrews@monash.edu

**Investigating the role of the methyltransferase Prmt5 in haematopoietic cells**
Supervisor(s): A/Prof David Curtis and Dr Stefan Sonderegger
Email: david.curtis@monash.edu

**Stimulating cell cycle to sensitize leukemic cells to chemotherapy**
Supervisor(s): A/Prof David Curtis and Dr Cedric Tremblay
Email: david.curtis@monash.edu

**Impact of Prmt5-mediated inhibition of splice factors on Myelodysplastic syndrome**
Supervisor(s): A/Prof David Curtis and Dr Christina Tebartz
Email: david.curtis@monash.edu

**Releasing the differentiation block in acute myeloid leukaemia**
Supervisor(s): A/Prof Ross Dickins and A/Prof Matthew McCormack
Email: ross.dickins@monash.edu

**Targeting (homing) stem cells for the treatment of atherosclerosis, myocardial infarction and stroke**
Supervisor(s): A/Prof Christoph Hagemeyer and Dr Thomas Bonnard
Email: christoph.hagemeyer@monash.edu

**Single-chain antibody-targeted nanoparticles for diagnosis of vascular diseases**
Supervisor(s): A/Prof Christoph Hagemeyer and Dr Karen Alt
Email: christoph.hagemeyer@monash.edu

**Targeted virus particles for genetic transfer of fusion proteins to inhibit atherosclerosis**
Supervisor(s): A/Prof Christoph Hagemeyer and Ms Hannah Pearce
Email: christoph.hagemeyer@monash.edu
Glucose responsive insulin nanoparticle for the treatment of diabetes
Supervisor(s): A/Prof Christoph Hagemeyer and Dr Ting-Yi Wang
Email: christoph.hagemeyer@monash.edu

Recombinant agents for efficient and safe anticoagulation and thrombolysis
Supervisor(s): A/Prof Christoph Hagemeyer and Dr Thomas Bonnard
Email: christoph.hagemeyer@monash.edu

Understanding the role of Snai1 in hematopoiesis and leukemic transformation
Supervisor(s): Assoc Prof Jody Haigh and Dr Catherine Carmichael
Email: jody.haigh@monash.edu

Characterizing the role of the transcription factors Zeb1/2 in leukaemia
Supervisor(s): Assoc Prof Jody Haigh, Dr Catherine Carmichael and Dr Jackie Wang
Email: jody.haigh@monash.edu

Inhibition of the platelet thrombin receptor PAR4 to prevent thrombosis in coronary artery disease
Supervisor(s): Dr Justin Hamilton and Prof Harshal Nandurkar
Email: Justin.Hamilton@monash.edu

Targeting a novel anti-platelet mechanism for improved anti-thrombotic therapy
Supervisor(s): Dr Justin Hamilton and Prof Harshal Nandurkar
Email: Justin.Hamilton@monash.edu

Cytokine signalling in myeloid leukaemia
Supervisor(s): Dr Anissa Jabbour and Dr Mark Guthridge
Email: anissa.jabbour@monash.edu

The role of the homeobox transcription factor Hhex in Acute Myeloid Leukaemia
Supervisor(s): A/Prof Matthew McCormack and Dr Benjamin Shields
Email: matthew.mccormack@monash.edu

The effect of anti-fibrinolytic agents on the immune and inflammatory response following major trauma
Supervisor(s): Prof Robert Medcalf and Dr Dominik Draxler
Email: robert.medcalf@monash.edu

t-PA effects on the blood-brain barrier in a mouse model of ischaemic stroke; evaluation of new drug delivery system
Supervisor(s): Prof Robert Medcalf, Prof Ben Boyd (MIPS) and Dr Be‘er’i Niego
Email: robert.medcalf@monash.edu

Rho-kinase and LDL-receptor inhibition as a novel strategy to protect the blood-brain barrier during ischaemic stroke; an in vitro study
Supervisor(s): Prof Robert Medcalf and Dr Be‘er’i Niego
Email: robert.medcalf@monash.edu

To evaluate new drugs to improve the response to traumatic brain injury
Supervisor(s): Prof Robert Medcalf, Prof Ben Boyd and Dr Dominik Draxler
Email: robert.medcalf@monash.edu

Identification of self-renewal networks in T-cell leukaemia
Supervisor(s): A/Prof Matthew McCormack and Dr Benjamin Shields
Email: matthew.mccormack@monash.edu

Development and engineering of novel automated microfluidic systems for high content drug screening
Supervisor(s): Dr Warwick Nesbitt and Prof Harshal Nandurkar
Email: warwick.nesbitt@monash.edu

Analysing new targets of JAK-STAT signalling in normal blood development and blood cancers
Supervisor(s): Prof Andrew Perkins and Dr Kevin Gillinder
Email: andrew.perkins@monash.edu

Gene editing of a master regulator of transcription to cure sickle cell disease
Supervisor(s): Prof Andrew Perkins and Dr Kevin Gillinder
Email: andrew.perkins@monash.edu

Reprogramming differentiated adult cells into hematopoietic stem cells
Supervisor(s): Prof Andrew Perkins and A/Prof Jody Haigh
Email: andrew.perkins@monash.edu

Developing humanized models of hematopoiesis and leukaemia
Supervisor(s): Assoc Prof Andrew Wei and Dr Jessica Salmon
Email: a.wei@alfred.org.au
Burnet Institute

The Burnet Institute combines medical research in the laboratory and at a population level with public health action and advocacy to address major health issues of disadvantaged populations in Australia and communities in the developing world. Three major health themes underpin the Burnet’s work: Infectious diseases, maternal and child health, and young people’s health.

See more:
https://www.burnet.edu.au/

Projects Available:

Discovering the mechanisms and targets of immunity against malaria
Supervisor(s): Prof James Beeson and Dr Philippe Boeuf
Email: james.beeson@burnet.edu.au

Developing vaccines against malaria
Supervisor(s): Prof James Beeson and Dr Jack Richards
Email: james.beeson@burnet.edu.au

Understanding malaria transmission and immunity to inform malaria elimination
Supervisor(s): Prof James Beeson and Dr Jack Richards
Email: james.beeson@burnet.edu.au

Healthy Mothers, Healthy Babies: maternal nutrition and inflammation and their impact on pregnancy outcomes
Supervisor(s): Prof James Beeson and Dr Philippe Boeuf
Email: james.beeson@burnet.edu.au

Investigating how monocytes drive increased cardiovascular disease in HIV infection
Supervisor(s): Dr Anna Hearps and A/Prof Anthony Jaworowski
Email: annah@burnet.edu.au

Killing HIV-infected macrophages as part of a strategy to cure HIV
Supervisor(s): A/Prof Anthony Jaworowski and Dr Anna Hearps
Email: anthony.jaworowski@burnet.edu.au
Department of Diabetes

The newly instituted Monash University Department of Diabetes has a broad range of translational research investigating both causes and clinical therapies for diabetes and its complications.


**Projects Available:**

- **Characterization of the prototype inhibitor of CDA1, CHA-061, in diabetic nephropathy in Akita mice**
  Supervisor(s): Dr Zhonglin Chai and Prof Mark Cooper
  Email: zhonglin.chai@monash.edu

- **Characterization of the prototype inhibitor of CDA1, CHA-061, in diabetic nephropathy in db/db mice**
  Supervisor(s): Dr Zhonglin Chai and Prof Mark Cooper
  Email: zhonglin.chai@monash.edu

- **To improve the potency of CHA-061, the prototype peptide inhibitor of CDA1**
  Supervisor(s): Dr Zhonglin Chai and Prof Mark Cooper
  Email: zhonglin.chai@monash.edu

- **Exploring the molecular consequences of processed food intake**
  Supervisor(s): A/Prof Melinda Coughlan
  Email: melinda.coughlan@monash.edu

- **Targeting the C5a-CD88 axis in diabetic nephropathy**
  Supervisor(s): A/Prof Melinda Coughlan and Dr Min Tan
  Email: melinda.coughlan@monash.edu

- **Investigating pathways of mitochondrial quality control in diabetic kidney disease**
  Supervisor(s): A/Prof Melinda Coughlan and Dr Gavin Higgins
  Email: melinda.coughlan@monash.edu

- **Epigenetics of diabetes, mapping the human methylome and building the epigenomic atlas of Type 1 Diabetes**
  Supervisor(s): Prof Sam El-Osta, Dr Jun Okabe and Dr Mark Ziemann
  Email: sam.el-osta@monash.edu

- **The legacy of memory**
  Supervisor(s): Prof Sam El-Osta, Dr Jun Okabe and Dr Mark Ziemann
  Email: sam.el-osta@monash.edu

- **Set7 methyltransferase as a target to reduce the burden of diabetic complications**
  Supervisor(s): Prof Sam El-Osta, Dr Jun Okabe and Dr Haloom Rafiei
  Email: sam.el-osta@monash.edu

- **Clinical epigenetics and molecular based therapies**
  Supervisor(s): Prof Sam El-Osta, Dr Hari Kn and Dr Mark Ziemann
  Email: sam.el-osta@monash.edu

- **Role of non-coding RNAs in vascular disease**
  Supervisor(s): Prof Sam El-Osta, Dr Haloom Rafiei and Dr Mark Ziemann
  Email: sam.el-osta@monash.edu

- **NOX5 as a new target in human diabetic nephropathy**
  Supervisor(s): Prof Karin Jandeleit-Dahm, Dr Jay Chandra Jha and Dr Anna Watson
  Email: karin.jandeleit-dahm@monash.edu

- **Role of pro-oxidant enzyme Nox5 in diabetic kidney disease**
  Supervisor(s): Prof Karin Jandeleit-Dahm and Dr Jay C Jha
  Email: karin.jandeleit-dahm@monash.edu

- **Role of Nox5 in diabetes-associated atherosclerosis**
  Supervisor(s): Prof Karin Jandeleit-Dahm and Dr Geetha Mathew
  Email: karin.jandeleit-dahm@monash.edu

- **The protective effects of Lipoxin A4 against diabetic nephropathy**
  Supervisor(s): Dr Phillip Kantharidis, Prof Karin Jandeleit-Dahm and Prof Mark Cooper
  Email: philip.kantharidis@monash.edu
Novel anti-inflammatory agents targeting atherosclerosis development in diabetes
Supervisor(s): Dr Phillip Kantharidis, Prof Karin Jandeleit-Dahm and Prof Mark Cooper
Email: phillip.kantharidis@monash.edu

RNA biomarkers predictive of the development of diabetic nephropathy
Supervisor(s): Dr Phillip Kantharidis, Prof Karin Jandeleit-Dahm and Prof Mark Cooper
Email: phillip.kantharidis@monash.edu

Topical wound healing formulations in the context of diabetic complications
Supervisor(s): Dr Tom Karagiannis and Dr Ken Ng
Email: tom.karagiannis@monash.edu

Molecular mechanisms of action of dietary antioxidants and chromatin modifying compounds
Supervisor(s): Dr Tom Karagiannis and Dr Ken Ng
Email: tom.karagiannis@monash.edu

Augmenting the expression and activity of glyoxalase-1 as a means to slow ageing
Supervisor(s): Prof Merlin Thomas and Dr Raelene Pickering
Email: Merlin.Thomas@monash.edu

Cell penetrating peptides as a means to deliver intracrine hormones
Supervisor(s): Prof Merlin Thomas and Dr Carlos Rosado
Email: Merlin.Thomas@monash.edu

Modulating ACE2 shedding to prevent diabetic complications
Supervisor(s): Prof Merlin Thomas and Dr Christos Tikellis
Email: Merlin.Thomas@monash.edu

Does renal dopamine help or hinder diabetic kidney disease?
Supervisor(s): Dr Anna Watson and Prof Karin Jandeleit-Dahm
Email: Anna.Watson@monash.edu

Do diabetes and hypertension contribute to changes in the control of the sympathetic nervous system?
Supervisor(s): Dr Anna Watson and Prof Karin Jandeleit-Dahm
Email: Anna.Watson@monash.edu

Lipoxins, a novel treatment to attenuate inflammation and sight-threatening retinopathy in diabetes
Supervisor(s): Prof Jennifer Wilkinson-Berka, Prof Karin Jandeleit-Dahm and Dr Phillip Kantharidis
Email: jennifer.wilkinson-berka@monash.edu
The Monash University Department of Immunology and Pathology is internationally renowned for its combined expertise in research, teaching and service delivery in immunology and immunopathology.

There are extensive research programs in basic and translational immunology, including highly successful collaborations with The Alfred hospital and other AMREP partners. The department’s research activities target diseases including allergy, asthma, autoimmunity, inflammation, diabetes, lupus, organ fibrosis, cancer and malaria. The department also focuses on engineering novel treatments such as nanoparticle-based vaccines in cancer and infection.

See more: http://med.monash.edu.au/immunology/

Projects Available:

**Inhibition of the NLRP3-inflammasome as a novel strategy to limit diabetic cardiomyopathy**
Supervisor(s): A/Prof Judy B. de Haan and A/Prof Rebecca Ritchie
Email: judy.dehaan@baker.edu.au

**Activating the major regulator of oxidative stress, Nrf2, with novel small molecules to limit diabetic vascular disease**
Supervisor(s): A/Prof Judy B. de Haan, Dr Geetha Mathew and Dr Arpeeta Sharma
Email: judy.dehaan@baker.edu.au

**Improving endothelial dysfunction through the use of Nrf2 activators as a novel treatment strategy to lessen diabetes-associated hypertension**
Supervisor(s): A/Prof Judy B. de Haan, Prof Geoff Head, Dr Arpeeta Sharma and Dr Geetha Mathew
Email: judy.dehaan@baker.edu.au

**The link between Trauma, Mental Illness and Immunology**
Supervisor(s): Prof Magdalena Plebanski, Prof Jayashri Kulkarni, Dr Caroline Gurvich and Dr Natalie Thomas
Email: magdalena.plebanski@monash.edu

**New insights into the biology of brain tumours (glioblastoma) and vaccine design**
Supervisor(s): Prof Magdalena Plebanski, Prof Martin Hunn and Dr Jennifer Boer
Email: magdalena.plebanski@monash.edu

**Optimising treatment against ovarian cancer**
Supervisor(s): Prof Magdalena Plebanski, A/Prof Clare Scott and Dr Nirmala Kampan
Email: magdalena.plebanski@monash.edu

**Optimising the use of vaccines in the vulnerable elderly**
Supervisor(s): Prof Magdalena Plebanski, A/Prof Katie Flanagan and Dr Kirsty Wilson
Email: magdalena.plebanski@monash.edu

**Impact of Multidisciplinary Meeting on quality and value of care for lung cancer patients**
Supervisor(s): Assoc Prof Rob Stirling and Dr Julian Gooi
Email: r.stirling@alfred.org.au

**Understanding How Antibodies Contribute to Lung Transplant Rejection**
Supervisor(s): Prof David Tarlinton and A/Prof Glen Westall
Email: david.tarlinton@monash.edu

**How Does the Absence of One Enzyme Block an Entire Immune Response?**
Supervisor(s): Prof David Tarlinton and A/Prof Margaret Hibbs
Email: david.tarlinton@monash.edu

**Resolving the conundrum of antibody deficiency and autoimmunity in patients with primary immunodeficiency**
Supervisor(s): A/Prof Menno van Zelm, Prof Robyn O’Hehir and Dr. Raffi Gugasyan
Email: menno.vanzelm@monash.edu
B-cell – T-cell interactions driving granulomatous inflammation in Crohn’s disease
Supervisor(s): A/Prof Menno van Zelm, Prof Peter Gibson and A/Prof Margatet Hibbs
Email: menno.vanzelm@monash.edu

Specificity and memory in allergic responses to bee venom
Supervisor(s): A/Prof Menno van Zelm, Dr Craig McKenzie and Prof Robyn O’Hehir
Email: menno.vanzelm@monash.edu
Department of Infectious Diseases

Dr Orla Morrissey at the highly successful 2016 Advanced Course on Infections in the Immunocompromised Host

The Department of Infectious Diseases (DID), Central Clinical School and Alfred Health, incorporates a large clinical service with active research programs in the fields of HIV, viral hepatitis, infections in the immunosuppressed (such as those with malignancy, in intensive care and post-splenectomy), influenza, drug resistant organisms, antibiotic use and infection prevention and hospital epidemiology. DID integrates clinical services with clinical and basic science research. It offers undergraduate and postgraduate study programs.

See more: www.med.monash.edu.au/cecs/infectious-diseases/

Projects Available:

Prevalence of hepatitis B infection in Australian Prisons
Supervisor(s): Dr Joseph Doyle, Dr Jessica Howell and Prof Alex Thompson
Email: joseph.doyle@monash.edu

Barriers to hepatocellular carcinoma screening uptake in Victoria
Supervisor(s): Dr Joseph Doyle, Dr Jessica Howell and Prof Alex Thompson
Email: joseph.doyle@monash.edu

Clinical utility and cost-effectiveness of screening for latent tuberculosis among health care workers in Australia
Supervisor(s): Dr Joseph Doyle and Prof Allen Cheng
Email: joseph.doyle@monash.edu

Hepatitis B screening and antiviral prophylaxis during immunosuppression: understanding current clinical practice and acceptability of clinical guidelines
Supervisor(s): Dr Joseph Doyle and Prof Anton Peleg
Email: joseph.doyle@monash.edu

Predicting and reducing hepatitis C reinfection following treatment among people who injecting drugs
Supervisor(s): Dr Joseph Doyle and Prof Margaret Hellard
Email: joseph.doyle@monash.edu

Eliminating hepatitis C infection in Victoria through treatment scale up: helping prescribers initiate treatment
Supervisor(s): Dr Joseph Doyle and Prof Margaret Hellard
Email: joseph.doyle@monash.edu

Examining hepatitis C reinfection following treatment among HIV co-infected gay and bisexual men
Supervisor(s): Dr Joseph Doyle and Prof Margaret Hellard
Email: joseph.doyle@monash.edu

How does ageing impact on quality of life measures, mental health, relationships, sexual activity and alcohol and drug use among HIV positive and HIV negative men?
Supervisor(s): A/Prof Michelle Giles and A/Prof Kathy Petoumenos
Email: m.giles@alfred.org.au

A mobile, outreach vaccination program to increase influenza vaccination coverage among vulnerable populations
Supervisor(s): A/Prof Michelle Giles and Prof Allen Cheng
Email: michelle.giles@monash.edu

What are healthcare provider and consumer attitudes to breastfeeding by women infected with HIV in a high income setting?
Supervisor(s): A/Prof Michelle Giles and Prof Jennifer Hoy
Email: michelle.giles@monash.edu

Understanding and reducing the barriers to community based point of care hepatitis C testing in people who inject drugs
Supervisor(s): Prof Margaret Hellard and Dr Joseph Doyle
Email: hellard@burnet.edu.au
HIV and Heart Disease  
Supervisor(s): Prof Jennifer Hoy and Dr Anna Hearps  
Email: Jennifer.Hoy@monash.edu

The Impact of Infections on the Development of Chronic Rejection Post-Lung Transplantation  
Supervisor(s): Dr Orla Morrissey, Prof Anton Peleg, Prof Greg Snell and A/Prof Andy Fisher  
Email: o.morrissey@alfred.org.au

Determining the Impact of Host Immune Responses to Aspergillus and Aspergillus Genotypes on Patients Post-Lung Transplantation: A Roadmap to Developing Improved Antifungal Strategies  
Supervisor(s): Dr Orla Morrissey, A/Prof Rose Ffrench, Prof. Greg Snell, Dr Harini de Silva and A/Prof Glen Westall  
Email: o.morrissey@alfred.org.au

Elucidating Immune Function in Haematology Patients undergoing Chemotherapy: Novel Methods for Developing Improved Antifungal Strategies  
Supervisor(s): Dr Orla Morrissey, A/Prof Rose Ffrench, Dr Harini de Silva, Prof Andrew Spencer and A/Prof Erica Wood  
Email: o.morrissey@alfred.org.au

Clinical and Molecular Epidemiology of Mycobacterium Abscessus Isolation Pre- and Post-Lung Transplantation  
Supervisor(s): Dr Orla Morrissey, Prof Greg Snell, Dr. Cameron Wolfe and Prof Anton Peleg  
Email: o.morrissey@alfred.org.au

Tracking functional immune reconstitution following allogeneic haematopoietic stem cell transplantation to guide optimal timing for antimicrobial prophylaxis and post-transplant vaccination  
Supervisor(s): Dr Orla Morrissey, A/Prof Rose Ffrench and Dr Harini de Silva  
Email: o.morrissey@alfred.org.au

Orthopaedic Surgical Site Infection Study  
Supervisor(s): Dr Trisha Peel and Prof Anton Peleg  
Email: Trisha.Peel@monash.edu.au

Cardiac Surgery Surgical Site Infection Study  
Supervisor(s): Dr Trisha Peel and Prof Anton Peleg  
Email: Trisha.Peel@monash.edu.au

Community Acquired Pneumonia Management  
Supervisor(s): Dr Trisha Peel and Prof Anton Peleg  
Email: Trisha.Peel@monash.edu.au

Qualitative perspective on the Patient, Surgeon and Physician views on surgical site infections  
Supervisor(s): Dr Trisha Peel and Prof Anton Peleg  
Email: Trisha.Peel@monash.edu
The Central Clinical School’s Department of Medicine within the Division of Clinical Sciences is based at the Alfred Medical Research and Education Precinct (AMREP). Co-located with a number of world class research institutions and Alfred Health, the Department of Medicine is a premier centre for clinical and biomedical research and education, offering undergraduate and postgraduate study programs.

Research in the Department of Medicine encompasses programs in Dermatology, Developmental biology, Hormones and Vasculature, Molecular Endocrinology, Neuroscience, Oncology, Pathology and Skin Cancer. Many of the research programs are integrated with clinical services at Alfred Health, facilitating the translation of basic research findings to medical practice, therapeutics and improved health care.


### Projects Available:

- **Exploring the molecular basis of spina bifida and anencephaly using mouse models**
  Supervisor(s): Dr Marina Carpinelli and Prof Stephen Jane  
  Email: marina.carpinelli@monash.edu

- **Exploring the molecular basis of spina bifida and anencephaly using cell lines**
  Supervisor(s): Dr Marina Carpinelli and Prof Stephen Jane  
  Email: marina.carpinelli@monash.edu

- **Therapeutic targeting of Grhl3 dependent pathways in Head and Neck SCC**
  Supervisor(s): Dr Smitha Georgy and Prof Stephen Jane  
  Email: smitha.georgy@monash.edu

- **Oesophageal Squamous Cell Carcinoma-identification of molecular pathogenesis**
  Supervisor(s): Dr Smitha Georgy and Prof Stephen Jane  
  Email: smitha.georgy@monash.edu

- **Development of new therapeutic approaches the target airway remodelling in asthma**
  Supervisor(s): Dr Simon Royce and A/Prof Chrishan Samuel  
  Email: simon.royce@monash.edu

- **Potential anti-fibrotic treatment for idiopathic pulmonary fibrosis and chronic lung allograft dysfunction**
  Supervisor(s): Dr Simon Royce and A/Prof Chrishan Samuel  
  Email: simon.royce@monash.edu

- **Therapeutic targeting of Grhl3 dependent pathways in Head and Neck SCC**
  Supervisor(s): Dr Smitha Georgy and Prof Stephen Jane  
  Email: smitha.georgy@monash.edu

- **Targeting effector memory T cells to treat inflammatory bowel disease**
  Supervisor(s): Dr Simon Royce, Prof Ray Norton and Dr Mayur Garg  
  Email: simon.royce@monash.edu

- **Dissecting cellular hierarchies in normal and neoplastic melanocytic development**
  Supervisor(s): Prof Mark Shackleton  
  Email: Mark.Shackleton@petermac.org

- **Studying the patterns of emergency call-out and outcomes for older people living with a personal alarm**
  Supervisor(s): Prof Velandai Srikanth  
  Email: velandai.srikanth@monash.edu
Department of Neuroscience

Professor Terence O’Brien will be the new Head of the Department of Neuroscience and Van Cleef Roet Chair from October 2017. The specialist areas of the department will be investigation of neurological, neuroscience, neurobehavioural, pharmacological and imaging with respect to cognition and various brain disorders including epilepsy, neuroinflammation, neurodegenerative diseases, brain tumours, stroke and traumatic brain injury.

Projects Available:

Plasma biomarkers for epileptogenesis and epileptic seizures
Supervisor(s): Dr Idrish Ali, Dr Kim Powell, Prof Terry O’Brien, Dr Pablo Casillas and A/Prof Nigel Jones
Email: idrish.ali@monash.edu

Neurogenesis in epilepsy—protective or disruptive?
Supervisor(s): Dr Idrish Ali, Prof Terry O’Brien and Dr Chris French
Email: idrish.ali@monash.edu

The effect of epilepsy on bone
Dr Rhys Brady, A/Prof Sandy Shultz, Prof Terence O’Brien, Dr Pablo Casillas-Espinosa
Email: rhys.brady@monash.edu

Investigating the role of a Cav3.2 calcium channel mutation in contributing to the epileptic phenotype using congenic rat strains
Supervisor(s): Dr Pablo Casillas-Espinosa, Dr Kim Powell and Prof Terry O’Brien
Email: pablo.casillas@unimelb.edu.au

Biomarkers of epileptogenesis and epilepsy disease progression
Dr Pablo Casillas-Espinosa, Prof Terence O’Brien, A/Prof Sandy Shultz, Prof Nigel Jones, Dr David Wright, Dr Idrish Ali, Dr Kim Powell
Email: pablo.casillas@unimelb.edu.au

Neuropharmacological strategies for disease modification and prevention of the development of epilepsy
Dr Pablo Casillas-Espinosa, A/Prof Sandy Shultz, A/Prof Nigel Jones, Dr Kim Powell, Prof Terence O’Brien
Email: pablo.casillas@unimelb.edu.au

Seizure characterization and validation of genetically inbred strains FAST and SLOW as models of acquired epilepsy
Dr Pablo Casillas-Espinosa, Dr Kim Powell, Prof Terry O’Brien
Email: pablo.casillas@unimelb.edu.au

How do Anti-Epileptic Drugs Work?
Supervisor(s): Dr Chris French, Prof Terry O’Brien and Prof David Williams
Email: Christopher.French1@monash.edu

How do Antipsychotic Drugs Trigger Seizures?
Supervisor(s): Dr Chris French, Prof David Williams and Prof Terry O’Brien
Email: Christopher.French1@monash.edu

Multi-Electrode Recording in the Rat Brain
Supervisor(s): Dr Chris French and Dr Idrish Ali
Email: Christopher.French1@monash.edu

Keeping the Brain and the Heart in Sync – HERG channels in the CNS
Supervisor(s): Dr Chris French and Prof David Williams
Email: Christopher.French1@monash.edu

Modelling Epilepsy and Epilepsy Drug Effects–Computational Neuroscience Project
Supervisor(s): Dr Chris French and Mr Patrick O’Brien
Email: Christopher.French1@monash.edu

Sodium Channels in Epilepsy
Supervisor(s): Dr Chris French and Prof Terry O’Brien
Email: Christopher.French1@monash.edu

Network Activity in Brain Tissue Recorded with Combined Calcium, Voltage-Sensitive Dye and Genetically Encoded Voltage Sensors and Electrophysiology
Supervisor(s): Dr Chris French and Prof David Williams
Email: Christopher.French1@monash.edu
Effects of Drugs on Gamma Frequencies and other Cognition-Related Signals in the Rat
Supervisor(s): Dr Chris French and A/Prof Anthony Hannan
Email: Christopher.French1@monash.edu

Does stress contribute to epilepsy?
Supervisor(s): A/Prof Nigel Jones and Dr. Idrish Ali
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Neural oscillations and cognition
Supervisor(s): A/Prof Nigel Jones and Dr Jess Nithianantharajah
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Development of a low cost, point-of-care diagnostic platform
Supervisor(s): Prof Patrick Kwan and Dr Jianxiong Chan
Email: jianxiong.chan@monash.edu

Acquired epilepsy in Alzheimer’s disease
Supervisor(s): Prof Patrick Kwan, A/Prof Nigel Jones and Dr Jianxiong Chan
Email: jianxiong.chan@monash.edu

Microglial activation and neurological disease
Supervisor(s): Dr Mastura Monif and Prof Terry O’Brien
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The contribution of P2X7R and microglial activation in the neurological deficits of temporal lobe epilepsy
Supervisor(s): Dr Mastura Monif and Prof Terry O’Brien
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Monocytes in Multiple Sclerosis
Supervisor(s): Dr Mastura Monif and Prof Terry O’Brien
Email: Mastura.Monif@monash.edu

A Pharmacogenomics study of the teratogenicity of valproate based on the prospective Australian Register for Anti-epileptic Drugs in Pregnancy
Supervisor(s): Prof Terence O’Brien, Prof Frank Vajda and A/Prof Nigel Jones
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Defining antiepileptic drug treatment responses in patients with epilepsy
Supervisor(s): Dr Piero Perucca
Email: piero.perucca@mh.org.au

Electroencephalographic biomarkers of epilepsy after traumatic brain injury in humans and animal models
Supervisor(s): Dr Piero Perucca, Dr Pablo Casillas-Espinosa, Prof Terence O’Brien, Prof Patrick Kwan
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Investigating molecular and physiological determinants of Sudden Unexplained Death in Epilepsy in acquired and genetic animal models of epilepsy
Supervisor(s): Dr Kim Powell and Prof Terry O’Brien
Email: kim.powell@monash.edu

Does epilepsy cause a secondary cardiac channelopathy?
Supervisor(s): Dr Kim Powell and Prof Terry O’Brien
Email: kim.powell@monash.edu

Seizure characterization and validation of genetically inbred strains FAST and SLOW as models of acquired epilepsy
Supervisor(s): Dr Kim Powell, Prof Terry O’Brien and Dr Pablo Casillas-Espinosa
Email: kim.powell@monash.edu

Neuroimaging and neuropathological biomarkers of social dysfunction after paediatric brain injury
Dr Bridgette Semple, Dr Sandy Shultz, Dr David Wright
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Social rehabilitation to rescue social deficits after paediatric brain injury
Dr Bridgette Semple, Prof Terry O’Brien
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Does peripheral inflammation contribute to epileptogenesis after traumatic brain injury?
Dr Bridgette Semple, Prof Terence O’Brien, Dr Pablo Espinosa
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Seizure susceptibility and inflammation as risk factors for post-traumatic epilepsy
Dr Bridgette Semple, Prof Terence O’Brien, Dr Pablo Espinosa
Email: Bridgette.Semple@monash.edu

Myelin repair after traumatic brain injury in early life
Dr Bridgette Semple, Dr Jessica Fletcher
Email: Bridgette.Semple@monash.edu
Investigating whether mild traumatic brain injuries cause neurodegenerative disease
Supervisor(s): A/Prof Sandy Shultz, Prof Terry O’Brien and Mr David Wright
Email: Sandy.Shultz@monash.edu

How does aging affect traumatic brain injury pathology and outcomes?
Supervisor(s): A/Prof Sandy Shultz, Dr Bridgette Semple and Mr David Wright
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Can a common parasite alter brain injury outcomes?
Supervisor(s): A/Prof Sandy Shultz, Mr Rhys Brady and Mr David Wright
Email: Sandy.Shultz@monash.edu

Biomarkers for sports concussion
Supervisor(s): A/Prof Sandy Shultz, Dr Bridgette Semple and Mr David Wright
Email: Sandy.Shultz@monash.edu

The role and treatment of inflammation in brain injury and polytrauma
Supervisor(s): A/Prof Sandy Shultz, Mr Rhys Brady and Dr Bridgette Semple
Email: Sandy.Shultz@monash.edu

Source localisation of deep brain neuronal activity from scalp EEG
Supervisor(s): Prof Dominic Thyagarajan, Prof Terry O’Brien and Dr Tim Guruyev
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New Biomarkers for mild Traumatic Brain Injury: CEST MRI
Supervisor(s): Dr David Wright, A/Prof Sandy Shultz and Prof Terry O’Brien
Email: david.wright@monash.edu

Sodium Imaging in mild Traumatic Brain Injury
Supervisor(s): Dr David Wright, A/Prof Sandy Shultz, Prof Terry O’Brien and A/Prof Leigh Johnston
Email: david.wright@monash.edu

Assessing Glymphatic Pathway function in Motor Neuron Disease using MRI
Supervisor(s): Dr David Wright, A/Prof Sandy Shultz and Prof Terry O’Brien
Email: david.wright@monash.edu
Melbourne Sexual Health Centre

The Melbourne Sexual Health Centre (MSHC) is a specialised unit for the diagnosis and treatment of sexually transmissible infections (STI/HIV) and is a principal centre for training health professionals in Victoria. The Centre conducts epidemiological, public health and clinical research primarily aimed at improving the services offered at MSHC.

See more: www.mshc.org.au

Projects Available:

**Pattern of HIV serosorting in men who have sex with men**
Supervisor(s): Dr Eric Chow and Prof Christopher Fairley
Email: echow@mshc.org.au

**Is kissing associated with pharyngeal gonorrhoea?**
Supervisor(s): Dr Eric Chow and Prof Christopher Fairley
Email: echow@mshc.org.au

**Is kissing associated with pharyngeal chlamydia?**
Supervisor(s): Dr Eric Chow and Prof Christopher Fairley
Email: echow@mshc.org.au

**Trends in gonorrhoea positivity among heterosexual men who had sex overseas**
Supervisor(s): Dr Eric Chow and Prof Christopher Fairley
Email: echow@mshc.org.au

**Sequence of sexual activities among men who have sex with men**
Supervisor(s): Dr Eric Chow and Prof Christopher Fairley
Email: echow@mshc.org.au

**Risk factors for pharyngeal gonorrhoea in female sex workers**
Supervisor(s): Dr Eric Chow and Prof Christopher Fairley
Email: echow@mshc.org.au

**Understanding the pattern of kissing by age in men**
Supervisor(s): Dr Eric Chow and Prof Christopher Fairley
Email: echow@mshc.org.au

**Evaluation of the implementation of an express HIV/STI testing clinic for men who have sex with men**
Supervisor(s): Dr Eric Chow and Prof Christopher Fairley
Email: echow@mshc.org.au

**Party drugs, intimacy and sex**
Supervisor(s): Dr Eric Chow and Prof Christopher Fairley
Email: echow@mshc.org.au

**Studies in Sexual Health Medicine**
Supervisor(s): Prof Christopher Fairley and Dr Eric Chow
Email: cfairley@mshc.org.au

**Exploring the potential population impacts of pre-exposure prophylaxis for sexually transmitted infections in men who have sex with men in Australia**
Supervisor(s): A/Prof Lei Zhang and Prof Christopher Fairley
Email: lei.zhang1@monash.edu

**Screening asymptomatic sexually transmitted infections among men who have sex with men in Australia**
Supervisor(s): A/Prof Lei Zhang and Prof Christopher Fairley
Email: lei.zhang1@monash.edu

**Can ceasing azithromycin use for sexually transmitted infection syndromes reduce the incidence of macrolide resistance developing in mycoplasma genitalium in men who have sex with men in Australia?**
Supervisor(s): A/Prof Lei Zhang, A/Prof Catriona Bradshaw and Prof Christopher Fairley
Email: lei.zhang1@monash.edu
Monash Alfred Psychiatry Research Centre

Monash Alfred Psychiatry research centre (MAPrc) is one of Australia’s largest clinical research centres in psychiatry. The centre has a long track record of producing world class research with direct clinical translation.

The key goal of MAPrc is to conduct clinical research aimed at developing new treatments with direct, effective, and immediate applications. The research covers all ages and many different mental illnesses. MAPrc research is integrated with clinical practice, based in the Alfred Hospital in affiliation with Monash University.

We have a multidisciplinary group of researchers with a research agenda that meets clinical and social needs and has a short 1-5 year timeline to real clinical impact.

See more: www.maprc.org.au/

Projects Available:

- **Exploring the neurobiology of depression with brain stimulation**
  Supervisor(s): Dr Robin Cash and Prof Paul Fitzgerald
  Email: robin.cash@monash.edu

- **Enhancing plasticity induction using brain stimulation**
  Supervisor(s): Dr Robin Cash and Prof Paul Fitzgerald
  Email: robin.cash@monash.edu

- **The influence of genetics on neuroplasticity**
  Supervisor(s): Dr Robin Cash and Prof Paul Fitzgerald
  Email: robin.cash@monash.edu

- **The neurobiology of borderline personality disorder**
  Supervisor(s): Dr Robin Cash, Prof Paul Fitzgerald, Prof Jayashri Kulkarni, Dr Natalie Thomas
  Email: robin.cash@monash.edu

- **Exploring cognition and personality and its role in pain modulation following transcranial Direct Current Stimulation (tDCS)**
  Supervisor(s): Dr Bernadette Fitzgibbon and A/Prof Kate Hoy
  Email: bernadette.fitzgibbon@monash.edu

- **Pain Perception in psychiatric and neurological disorders**
  Supervisor(s): Dr Bernadette Fitzgibbon
  Email: bernadette.fitzgibbon@monash.edu

- **Brain stimulation combined with an adjunctive non-pharmaceutical treatment for the relief of persistent pain**
  Supervisor(s): Dr Bernadette Fitzgibbon
  Email: bernadette.fitzgibbon@monash.edu

- **An investigation of Ultra-Runners**
  Supervisor(s): Dr Bernadette Fitzgibbon and Dr Donna Urquhart
  Email: bernadette.fitzgibbon@monash.edu

- **Impact of type and timing of childhood trauma on adult cognition and emotion regulating in borderline personality disorder (BPD)**
  Supervisor(s): Dr Caroline Gurvich and Prof Jayashri Kulkarni
  Email: caroline.gurvich@monash.edu
Cognitive functioning and emotion processing associated with perimenopausal depression (healthy control subjects compared with depressed patient data)

Supervisor(s): Dr Caroline Gurvich and Prof Jayashri Kulkarni
Email: caroline.gurvich@monash.edu

Increasing the speed of thought: Using brain stimulation to enhance speed of information processing

Supervisor(s): A/Prof Kate Hoy and Dr Bernadette Fitzgibbon
Email: Kate.hoy@monash.edu

Lost in translation: assessing the applicability of motor cortical tDCS findings to the DLPFC

Supervisor(s): A/Prof Kate Hoy and Prof Paul Fitzgerald
Email: Kate.hoy@monash.edu

Investigating the neurobiology of chemotherapy induced cognitive impairment (CICI) using non-invasive brain stimulation

Supervisor(s): A/Prof Kate Hoy and Dr Stuart Lee
Email: manreena.kaur@monash.edu

A First Investigation of Temporal Cortex Inhibition Using TMS-EEG

Supervisor(s): Dr Manreena Kaur and Prof Paul Fitzgerald
Email: manreena.kaur@monash.edu

Depression and the oral contraceptive pill – substudy of types of pill used and depressive mood

Supervisor(s): Prof Jayashri Kulkarni and Dr Natalie Thomas
Email: jayashri.kulkarni@monash.edu

Case control study of neonatal intensive care / special care nursery (NICU/SCN) admissions and antipsychotic exposure using data from the National Register of Antipsychotic Use in Pregnancy (NRAMP)

Supervisor(s): Prof Jayashri Kulkarni and Dr Carolyn Breadon
Email: jayashri.kulkarni@monash.edu

Cross sectional study of borderline personality disorder symptomatology and trauma history in women with polycystic ovary syndrome compared to healthy controls

Supervisor(s): Prof Jayashri Kulkarni and Ms Emmy Gavrilidis
Email: jayashri.kulkarni@monash.edu

Study of premenstrual dysphoric disorder (PMDD) in women with borderline personality disorder (BPD)

Supervisor(s): Prof Jayashri Kulkarni and Dr Natalie Thomas
Email: jayashri.kulkarni@monash.edu

Toddler and pre-school development in children (1-5 years) born to women who took antipsychotic medication during pregnancy, using data from the National Register of Antipsychotic Medication in Pregnancy (NRAMP)

Supervisor(s): Prof Jayashri Kulkarni and Dr Carolyn Breadon
Email: jayashri.kulkarni@monash.edu

Characterisation of perimenopausal anxiety in women

Supervisor(s): Prof Jayashri Kulkarni and Ms Emmy Gavrilidis
Email: jayashri.kulkarni@monash.edu

Comparing what clinical factors drive occupational violence and aggression and its consequences across three public hospitals

Supervisor(s): Dr Stuart Lee and Dr Michelle Ananda-Rajan
Email: Stuart.lee@monash.edu

Assessing the reliability and validity of a new measure of functional independence for people with severe mental illness and factors that predict level of independence and rehabilitation progress

Supervisor(s): Dr Stuart Lee, Mr Daniel Cartlidge and Mr Justin Rowe
Email: Stuart.lee@monash.edu
Department of Surgery

The Department of Surgery is a premier centre for clinical and surgical research and education, contributing to Monash's medical education program and offering postgraduate study programs. Research in the Department of Surgery includes programs in a wide variety of areas including trauma, burns, cardiothoracic, colorectal, endocrine, upper gastrointestinal, urology, orthopaedics, spine injury, general surgery and neurosurgery specialisations. The Department of Surgery is closely associated with the National Trauma Research Institute.

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Projects Available:

Management of gastro-oesophageal reflux in obese patients
Supervisor(s): Prof Wendy Brown and Dr Paul Burton
Email: wendy.brown@monash.edu

Patients’ Expectations and Satisfaction following Bariatric Surgery – a pilot study exploring the feasibility of including patient reported outcome measures in a national bariatric surgery registry
Supervisor(s): Prof Wendy Brown, A/Prof Andrew MacCormick and Prof Ian Caterson
Email: Wendy.Brown@monash.edu

Resolution of hypertension with weight loss
Supervisor(s): Prof Wendy Brown and Prof Michael Cowley
Email: Wendy.Brown@monash.edu

Measuring the inflammatory response to bariatric surgery

Evidence based research guides surgery at the Alfred

Outcomes of gastro-oesophageal cancer in Victoria
Supervisor(s): Dr Paul Burton, A/Prof Peter Nottle and Prof Wendy Brown
Email: paul.burton@monash.edu

Obesity related systemic inflammation as a driver of Non-alcoholic fatty liver disease
Supervisor(s): Dr Paul Burton, Prof Matt Watt and Prof Wendy Brown
Email: paul.burton@monash.edu

Examining the inflammatory profile of adipose tissue in oesophageal cancer
Supervisor(s): Dr Paul Burton, Prof Matt Watt and Prof Wendy Brown
Email: paul.burton@monash.edu

Comparative Outcomes of sleeve gastrectomy and adjustable gastric banding
Supervisor(s): Dr Paul Burton, Prof Wendy Brown and A/Prof Peter Nottle
Email: Paul.Burton@monash.edu

Outcomes of major bariatric surgical procedures
Supervisor(s): Dr Paul Burton and A/Prof Peter Nottle
Email: wendy.brown@monash.edu

Reviewing the impact of The Alfred international trauma training programs
Supervisor(s): Prof Mark Fitzgerald and Mr Joseph Mathews
Email: m.fitzgerald@alfred.org.au

Intravenous Access for Traumatic Shock
Supervisor(s): Prof Mark Fitzgerald and Dr Peter Finnegan
Email: m.fitzgerald@alfred.org.au

Monash University Endocrine Surgery Unit
Supervisor(s): Dr James Lee, Prof Jonathan Serpell, Mr Simon Grodski and Ms Meei Yeung
Email: James.Lee@monash.edu

Development of specific trauma triage guidelines for elderly patients
Supervisor(s): Dr Joseph Mathew, Prof Mark Fitzgerald and Prof Biswadev Mitra
Email: joseph.mathew@monash.edu

Early prognostication of severe trauma brain injury based on sentinel signs and radiological severity
Supervisor(s): Dr Joseph Mathew, Prof Biswadev Mitra and Prof Mark Fitzgerald
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How to find us