THE FLOREY MEDICAL RESEARCH FOUNDATION

Raising funds for medical research for 20 years.
‘All we did, was to have some experiments and have the luck to hit on a substance with astonishing properties’

Lord Howard Florey - following his development of penicillin – the first antibiotic used successfully to treat people with serious infectious diseases.

20 years of raising funds for medical research!
The Florey Medical Research Foundation is named in honour of Nobel Prize winner and medical graduate of the University of Adelaide, Lord Howard Florey. For more than twenty years, the Foundation has been raising funds to support medical research of the highest calibre.

Of note is the funding of numerous research scholarships – projects ranging from the largest genetic study of cerebral palsy in the world to an investigation into the use of complementary and alternative medicine in men with cancer. The Foundation has contributed to major long term projects, such as the Florey Adelaide Male Ageing Study - a longitudinal study of Adelaide men examining issues affecting men’s health as they age. What’s more, in 2012, the first full time Florey Research Fellow was appointed and commenced work - exploring health issues in pregnant asthmatic women in the northern suburbs of Adelaide.

Every donation counts and thanks to our generous donors, many young researchers are not only realising their own goals but working to make a lasting difference to the lives of everyday people. I invite and encourage you to read about these dedicated young researchers.

As we continue to embrace diversity, innovation and opportunity, our goals remain to raise funds to support the brightest research minds by funding undergraduate and postgraduate research scholarships and further long term fellowships.

Thank you for your valuable and continued support.

Professor Justin Beilby
Executive Dean Faculty of Health Sciences
President – Florey Medical Research Foundation
In 2011, the Foundation set itself a goal - to raise funds to appoint its first early career fellow.

In January 2012, Dr Annette Osei-Kumah, based at the Robinson Institute, Lyell McEwin Hospital was welcomed as the inaugural Florey Early Career Northern Health Research Fellow.

Dr Osei-Kumah is nationally and internationally recognised for her work and is expected to be one of Australia’s future leaders in respiratory and reproductive research. Her work is focussed on improving the care of pregnant asthmatic women by understanding what causes the disease to worsen during pregnancy.

Asthma during pregnancy impacts significantly on the mother and foetus and can contribute to preterm deliveries and adverse neonatal outcomes including intrauterine growth restriction and stillbirths. The South Australian Social Health Atlas* indicates that most of the worst outcomes in pregnancy occur in the northern suburbs, and a third of those poor outcomes are the result of maternal asthma during pregnancy. Asthma has a high prevalence in the northern communities of Adelaide.

Annette hopes to identify why asthma worsens with pregnancy and how to improve or prevent the poor outcomes observed in this population of pregnant women.

What does this mean long term?

Annette’s work will fill in significant gaps in understanding why asthma worsens during pregnancy and identify which treatment may help to improve the management of asthma during pregnancy. Annette’s work will be immediately translated into improving the clinical care of asthmatic women and their babies attending the Lyell McEwin Hospital. The findings of her work will also have wider implications for obstetric care both nationally and internationally.

* PHIDU, A Social Health Atlas of South Australia, 2006
UNDERGRADUATE AND POSTGRADUATE SCHOLARSHIP AWARDS

Awarded by the Florey Medical Research Foundation

Recipients of funding 2011/12
Rachael Lumb
Dr Sony Sebastian Thazhath
Jennifer Li Sim
Dr Michael O’Callaghan
Lauren Giorgio
Kathleen Pishas
Nadja Klafke
Lachlan Frost
Chloe Story
Nikhil Thyagarajan
Noor Lokman
RESEARCH PROJECTS

The Role of Plexins in Neurodevelopment

*Rachael Lumb*

Rachael’s area of interest is developmental biology. She says, “Understanding the processes of embryonic development is a vital key to identifying and understanding the mechanisms giving rise to congenital birth defects and the potential to develop novel treatments. I hope to identify key processes that stem cells undergo in the formation of neurons.

The peripheral nervous system arises from a population of stem cells known as neural crest cells. Forming early in development these cells migrate extensively through the embryo to specific sites where neurodevelopment occurs. With the aid of mouse models our lab has recently identified key signalling cues that guide neural crest cells, ensuring they arrive at their correct sites within the embryo. My project aims to identify how neural crest cells receive and respond to these signalling cues. The knowledge gained from this project is not limited to developmental processes but is cross-translational to other medical research fields.”

Upper gastrointestinal function and Diabetes mellitus

*Dr Sony Sebastian Thazhath*

Disordered gastrointestinal function occurs commonly in patients with type 1 and type 2 diabetes mellitus, and can be associated with symptoms such as vomiting, bloating, and abdominal pain. The pathogenesis of this complex disorder is still not well understood.

Sony’s project will focus on the principle that the function of the upper gut is central to blood glucose control in diabetes. Type 2 diabetes is an increasing burden throughout the world and is associated with premature death and morbidity from heart, vascular, kidney, eye and nervous system complications. Sony’s research will aim to develop new ways of modulating gut function and hormone secretion in order to improve blood glucose control and reduce the impact of diabetes.

Sony states, “My studies will aim to improve understanding of the pathophysiology of disordered gut function in diabetes, and investigate ways of modulating gastrointestinal function in diabetes so as to improve blood glucose control and reduce the risk of complications of this disorder.”

The effect of critical illness on glucose absorption, superior mesenteric artery blood flow and systemic blood pressure during intraduodenal glucose infusion in older patients

*Jennifer Li Sim*

“Inadequate nutrition is a significant cause of increased morbidity and mortality in the critically ill. Despite current therapies to increase nutrient delivery many patients are still unable to reach caloric targets.

My study explored a possible mechanism of nutrient malabsorption, attenuation of blood flow...
to the absorptive surface of the small intestine, and found a relationship between superior mesenteric artery blood flow and glucose absorption. I was trained to measure superior mesenteric artery blood flow using Doppler ultrasound by a world leader in the field - Professor Tryvge Hausken, from the University of Bergen of Norway. This is a novel study in the field of critical care and an important step in improving treatment of ICU patients."

Clinical and genetic risk factors for cerebral palsy

Dr Michael O’Callaghan

“I have recently completed my PhD in Obstetrics and Gynaecology, studying genetic and clinical contributions to cerebral palsy. A better understanding of the causes of cerebral palsy may lead to preventions in the future. My study is currently the largest genetic study of cerebral palsy in the world. Funding awarded by the Florey Medical Research Foundation allowed me to present the results of this study at a conference in the UK. I was also able to visit leading researchers in the field at Oxford University, the Leeds Institute of Molecular Medicine and the Perinatal Institute."

Therapeutic targeting of Chemokine Signalling in Prostate Cancer

Lauren Giorgio

“I have been investigating the potential of curcumin, a component of the Indian spice turmeric, as a treatment for prostate cancer. Prostate cancer is the second leading cause of cancer-related death in men worldwide yet there are no effective treatment options for advanced disease. The only treatment currently
available is hormonal therapy which almost always fails. Curcumin is a natural agent that has already been proven safe in clinical trials. As a result, this project may pave the way for rapid translation into a clinical setting that could see immediate improvement in prostate cancer patient outcome. I am very grateful to the Florey Medical Research Foundation for providing me with the extra funding to help support my research and also the opportunity to share it with the wider community."

Funding from the Florey Medical Research Foundation has enabled me to present my findings at the 6th International MDM2 conference in New York. Findings from my research will benefit the wider community and will lead to novel discoveries that will improve the outcomes for patients diagnosed with sarcoma and related tumours.”

Interpersonal factors impacting the decision to (continue to) use complementary and alternative medicine (CAM) by men diagnosed with cancer

Nadja Klafke

Psychology PhD student Nadja Klafke says an Adelaide questionnaire of 400 men with various types of cancer shows that many of them modify their diet in conjunction with conventional treatment, as well as turning to meditation, yoga and exercise.

Treatment of Ewing’s sarcoma family of tumours through the pharmacological activation of p53

Kathleen Pishas

“The Ewing’s sarcoma family of tumours constitutes one of the most aggressive solid bone and soft tissue malignancies. Despite multi-modal treatment strategies comprising chemotherapy, radiation and surgery, significant improvement in survival rates have not been achieved over the past thirty years, particularly for patients with metastatic disease. There is an urgent need for more effective targeted modalities and, as such, the primary focus of my PhD has been to investigate the therapeutic potential of novel compounds as a treatment for sarcomas.

Our laboratory has recently published in the Journal of Clinical Cancer Research that a drug named Nutlin can effectively kill Ewing’s sarcoma cell lines and can enhance the cytotoxic effects of chemotherapeutic agents currently used in the treatment protocols for Ewing’s sarcoma patients."
We will be investigating two IVUS platforms (iMap, Boston Scientific and VH-IVUS, Volcano Therapeutics) to see which has the greater accuracy of identifying plaque components. My study will also be investigating endothelial function and specifically how it relates to plaque structure. Receiving the Higher Degree Top up Scholarship from the Florey Foundation has helped me to continue with my passion of cardiovascular research.

**Investigating the role of PRDM-1 in T Regulatory Cells**

**Chloe Story**

My project is to investigate the role of the transcription factor PRDM1/blimp-1 in the development and function of T regulatory cells (Treg) a rare subset of T cells critical for maintaining immune tolerance. Previous experiments to identify genes important for human Treg function led us to identify the transcription factor called PRDM1/Blimp1. In many cases of autoimmunity and inflammatory disease, Treg function has been found to be abnormal and this is one reason disease occurs. Therefore, manipulating Treg cell numbers and function to control such diseases is an attractive proposal. Knowledge about how Tregs function and particularly how they control different immune responses will be critical for developing effective Treg therapies.

My work will allow us to establish the function of PRDM1 in Tregs by dissecting the specific Treg responses that are affected when PRDM1 is lost. In the future this knowledge can be used to examine its role in autoimmune and inflammatory disease to determine if measuring and/or manipulating PRDM1 expression may have diagnostic and therapeutic value.
Pancreatic islet transplantation – a potential cure for Type 1 Diabetes

Nikhil Thyagarajan

Nikhil says, “Insulin is produced in a type of cell in the pancreas known as a β cell, which lies in clusters of cells known as the Islets of Langerhans, or pancreatic islets. In Type 1 Diabetes there is a gradual destruction of β cells and hence an insulin deficiency. The consequent loss of glucose control has a large impact on a person’s health and bears long-term consequences such as cardiovascular disease, kidney disease, visual impairment, stroke, and neurological problems.

The causes of this β cell destruction are highly complex and largely unknown, so any potential cure is an attractive target for research. Pancreatic islet transplantation involves the transplantation of islets from a donor into a diabetic patient. This aims to restore insulin production and glucose control. It is also far less invasive and risky than alternatives such as whole pancreas transplantation. While there has been much research and many breakthroughs over the last 50 years, islet transplantation still has poor success, with many patients losing their new-found insulin control within a few years.

I will be looking at how an enzyme called sphingosine kinase may help. I plan to examine sphingosine kinase’s role in islets that have been isolated from mice and are now growing in cell culture. I then plan to transplant islets with either increased or decreased sphingosine kinase levels into diabetic mice and see what effect this has on their diabetes.

From this research I hope to learn much about diabetes and transplantation, and hopefully contribute to an important and worthwhile therapy.”

The role of annexin A2 in ovarian cancer metastasis

Noor Lokman

“My research has assessed the important role of the protein annexin A2 in ovarian cancer invasion and metastasis. Ovarian cancer is commonly diagnosed at advanced stage and currently there is no early detection test for ovarian cancer. The high mortality rate of this disease is a result of metastasis of ovarian cancer cells to the peritoneal cells which lines the abdominal cavity. Annexin A2 was identified in our laboratory using a novel proteomic approach to examine the ovarian cancer-peritoneal cell interaction. My project aims are to characterize annexin A2 expression in human ovarian cancer tissues and cell lines and to evaluate the functional roles of annexin A2 in ovarian cancer cell motility, invasion and adhesion to the peritoneal cells.

My findings have demonstrated that annexin A2 is expressed in epithelial cancer cells, the cancer associated stromal cells and peritoneal mesothelial cells. Significantly increased levels of annexin A2 were observed in the stromal of human ovarian cancer tissues compared with the non-invasive borderline ovarian tumours. The knockdown of annexin A2 expression decreased human ovarian cancer cell motility and invasion in vitro. Ongoing studies will determine whether annexin A2 plays an important role in invasion in vivo using the chicken CAM model. These studies will determine whether annexin A2 is a potential therapeutic target for ovarian cancer.”
Medical research – an investment in life and discovery

The Florey Medical Research Foundation has set itself a goal – to raise funds to support five full time Research fellows. But to do this, we need your help. If you would like to make a donation simply complete the donation form and return to us in the reply paid envelope.

You can also make an online donation by going to www.florey.adelaide.edu.au and visiting the ‘Make a donation’ link on the home page.

The Florey Medical Research Foundation relies entirely on voluntary donations from individuals, local community groups and the corporate sector.

Thank you for your support.

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Contact Details

If you would like to contact the Florey Medical Research Foundation, please call 08 8313 3995 to speak to the Fundraising Manager or write to us at:

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