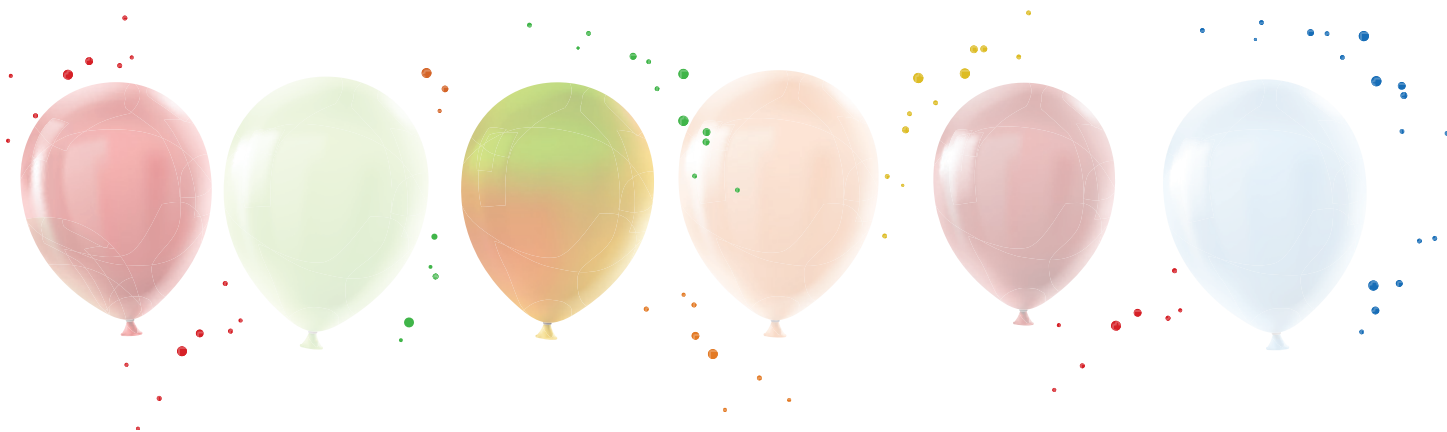


MONTHLY UPDATE

DEPARTMENT OF BIOCHEMISTRY

September 2018



STOP PRESS

Huge congratulations to Lynette Brownfield and Andrew Cridge, each of whom has been awarded an MBIE Smart Ideas grant of ~ \$1M.

There will be a celebratory morning tea in the staff common room at 10am this Friday.

Welcome to the September Update. Catherine is having a break from editorialising for a couple of months - we have a surprise "Special Edition" planned for October, but for September we thought we would highlight some of the work done by our PhD students and early career scientists who have been to interesting places and/or achieved interesting things recently. We have people who have travelled far and wide, and people who have travelled short distances, some of them came home with awards of one sort or another (some prize-winning posters, and "posters of talks" are appended to this newsletter), but they all, every single one of them, came home with more valuable knowledge and experience than they left with.

We are very lucky in having Queenstown Research Week almost on our doorstep each year, giving all of our postgrad students the opportunity to attend at least one conference annually. However there are also many international conferences on offer, so it is important that postgrads apply for funding to attend these, and also to visit overseas labs. Well done Hamish McMillan and McKenzie Lovegrove for making the most of these opportunities this year.

Catherine would particularly like me to emphasise that there is quite a lot of money available to fund student travel to conferences and overseas laboratories. There are the Marjorie McCallum Travel awards that are offered biannually, and which both Hamish and McKenzie used to help fund their travels. There is the Elman Poole Travelling Scholarship, awarded annually, and which Hamish has won (showing that yes, you can combine awards to fund a trip). The Division of Health Sciences has up to \$2,000 to assist each PhD student to get to an overseas conference once during PhD study, and the Department will match this if extra funding is needed. There are many other options available, some of which are outlined in the PhD handbook, downloadable from the Department intranet.

McKenzie Lovegrove, whose PhD supervisors are Peter Dearden and Elizabeth Duncan, was away for 3.5 months, in which time she went to four conferences in four different countries. The first was the Biology and Genomics of Social Insects meeting at Cold Spring Harbour in New York where she gave a conference talk. She presented at the Leedsomics meeting (in Leeds) where she won the Student Speaker Prize. She also attended The European Evolution and Development Meeting in Galway, Ireland, where she presented a poster. Finally, she went to the Social Insect meeting in Brazil, where she gave another conference talk.

McKenzie spent most of her time in Leeds working with Elizabeth Duncan where her main goal was to learn how to detect biogenic amines from incredibly small samples with HPLC. She also learnt how to do brain dissections in *Drosophila* and tested ovarian response to dopamine exposure, and learnt how to carry out caged bee trials, which were used to characterise behavioural and ovarian responses to dopamine and ancestral like social insect pheromones. While she was away, she also attended the Wellcome *Drosophila* Course in Cambridge, and was invited to give two seminars, one at Leeds, and the other at Cambridge, where she was the invited speaker for the summer Evolution and Ecology seminar series.

Hamish McMillan, who is studying for a PhD with Anita Dunbier and Peter Mace, won the European Society for Medical Oncology award at the New Zealand Society for Oncology Conference, for his talk “**The Role of Pseudokinase *TRIB1* in Breast Cancer**”. The ESMO award gives him a trip to Singapore to the ESMO Asia meeting. Hamish says “The ESMO Asia Congress does have a strong clinical focus but it is a great opportunity to be exposed to cutting edge science that is entering the clinic for the first time. Gaining exposure to the clinical perspective is also interesting as it reveals how the science that we do can eventually go on to have a real impact on clinical outcomes.” Hamish has also recently been awarded an Elman Poole travel scholarship and a Marjorie McCallum travel award, that will combine to take him to England to work in Dr Jason Carroll’s lab at Cancer Research UK Cambridge. He will be learning a currently unpublished quantitative version of a technique called RIME which has been developed to examine protein-protein interactions. Hamish also won a poster prize in China earlier in the year.

Jody Hazlett, who is currently an assistant research fellow with Anita Dunbier, won the Marbrook Award at the Australasian Society for Immunology Meeting for her talk “**Investigation of combination treatment of an aromatase inhibitor and anti-inflammatory treatment in a model of oestrogen receptor positive breast cancer**”. She also presented a poster of the same work. Her work is on the immune response in breast cancer, and she has shown that a combination of anti-inflammatory and anti-oestrogen drugs are effective in reducing both tumour growth and CD11b+ cell infiltration into tumours in a mouse model.

Yasmin Nouri, a Masters student with Parry Guilford, won the best poster prize at the New Zealand Society for Oncology meeting for her poster “**The establishment and characterisation of gastric organoids as a model for hereditary diffuse gastric cancer.**” which describes the same work that won her the National Three Minute Thesis Masters Award last month. Yasmin has made “mini-stomachs” from mouse cells to use for testing anti-cancer compounds, and has used the drug PI-103, a PI3K inhibitor, to show that the system works.

Anubrita Das (PhD student with Catherine Day), Martina Foglizzo (Post-doc with Peter Mace), and Matthias Fellner (Post-doc with Peter Mace) each presented posters which won one of the seven prizes awarded by the Biomolecular Interactions Centre.

Anu’s poster “**Understanding the extent of TRAF RING heterodimerisation**” shows that one end of tumour necrosis factor receptor associated factors (TRAFs) requires dimerisation for activity, despite the other end existing as trimers. A vision of TRAFs playing Twister springs to mind.

Martina’s poster was called “**A bidentate polycomb repressive-deubiquitinase complex is required for efficient activity on nucleosomes**”. Martina investigated the structure of the polycomb repressive-deubiquitinase (PR-DUB) complex from both *Drosophila* and human, discovering that the active complex is a dimer of heterodimers.

Matthias’s poster, “**Lactate racemization, a story of so much more than just a nickel**” was based on work he did while working as a postdoctoral fellow in the USA. It combines work published in four journal articles looking into the structures and functional mechanisms of three of the five proteins in the *lar* operon of *Lactobacillus plantarum*.

MSc completions:

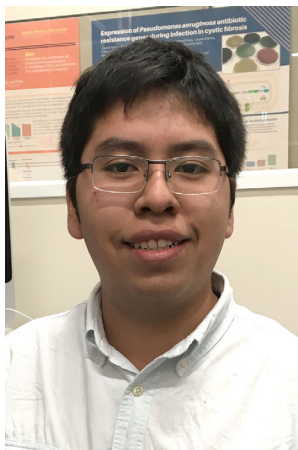
Brooke Hayes (Wilbanks Lab) Brooke has moved to Melbourne with her partner and is working as a research technician while applying to do a PhD.

Keresoma Leaupepe (Merriman Lab) is teaching first-year genetics and biochemistry for the National University of Samoa School of Medicine.

New arrivals



Ben Clarkson is working as an ARF in the Krause Lab until he commences his PhD early next year.



Emir Padilla is a genomics student from Mexico City visiting the Brown Lab until the end of October.



Sharla McTavish is a new RA in the Lamont lab.

New Equipment

A new CD (circular dichroism) spectrophotometer Jasco J-1500 has been installed in the Department very recently. This instrument allows us to investigate the secondary structure of proteins such as their state of folding and unfolding. It can be used to analyse small sample volumes of 300 μ L and protein concentrations down to the low μ g/ml range. The CD spectrophotometer can be used to:

- i) measure conformational changes in proteins upon ligand binding and perform binding kinetics,
- ii) determine the stability of protein structure/conformation under changing conditions such as an increase in temperature or
- iii) simply confirm the correct folding of a protein in comparison to a reference such as mutant versus wild type protein.

The instrument is housed in room 219 and for any enquires contact Helen Opel-Reading (helen.opel-reading@otago.ac.nz) or Kurt Krause (kurt.krause@otago.ac.nz).

**SOME OF THE
RECENT PRIZE-
WINNING
POSTERS, AND
POSTERS THAT
ACCOMPANIED
PRIZE-WINNING
TALKS ARE
INCLUDED ON
THE FOLLOWING
PAGES.**