

# BIOCHEMISTRY

## CELEBRATING OUR POSTGRADUATE STUDENTS



MONTHLY UPDATE SPECIAL OCTOBER 2016

in 2016 we have

**103** postgraduate students:  
**18** 4th year, **37** MSc thesis, **48** PhD

The Department of Biochemistry is host to a vibrant community of postgraduate students in the disciplines of Genetics, Plant Biotechnology, Biomedical Science, and of course Biochemistry. Our students come from a wide variety of backgrounds - we have students whose undergraduate study was undertaken at Otago, at other New Zealand universities, and at universities all over the world. Our students say their study here is intellectually stimulating, and that they are given outstanding support. In the 2015 Otago graduate survey, students placed the Department of Biochemistry highest in developing their problem-solving, communication, and analytical skills.



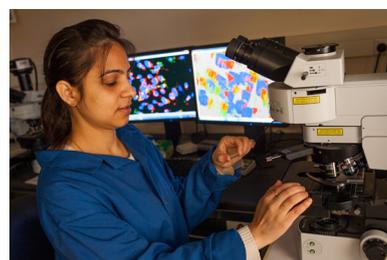
**10** PhD orals completed  
including **3** awarded “Exceptional Thesis” status

PhD graduates have gone to post-doctoral fellowships in **6** countries, a lectureship in Thailand, and have taken positions in New Zealand in Dairy Product Development and as an EPA Advisor. Recent PhD graduate *Manda Safavi* says ““Completing my PhD in the Department of Biochemistry was not only about good research. Parallel to honing my research skills, both my ability and passion for communicating science developed and bloomed. This combination opened a wide range of career opportunities for me, which led me to a position as Advisor with the Environmental Protection Authority.””



**22** travel grants awarded  
for student travel to **13** countries

On a recent conference trip, *Monika Sharma* attended **3** conferences in Austria and the USA. She won **2** prizes for Best Oral Presentation by a student, and **1** Best Student Poster award. *Monika* says “Attending various prestigious conferences was extremely valuable for garnering feedback from experts in the field and to foster my presentation and networking skills. These conferences have also helped me in securing a postdoc position in the USA.”



## 2-weekly postgraduate colloquia

... provide an opportunity for students to build collaborative networks with their peers. Weekly Journal Club meetings feature one postgraduate student and one staff member presenting and critiquing recent publications. Students have presented at the Postgraduate Symposium held in conjunction with the University of Queensland and several have submitted entries to of the Otago Medical School Research Society's Student Prize for Writing . We are keeping our fingers crossed for the results, which are due out very soon. We have a tradition of doing well in this competition.



## 3 MSc scholarships awarded

1 from the University of Otago and 2 Departmental

PhD students have historically been awarded scholarships to cover fees and living expenses during three years of study, while MSc students have been reliant upon student loans and grants. Largely a response to the recent student loan eligibility cutbacks, our new departmental MSc scholarships provide a stipend of \$5000 per year, and cover the cost of fees for the thesis-only second year of study. Inaugural recipient *Ben Morgan* says "An MSc scholarship has taken the pressure off me financially. This has allowed me to focus more intently on postgraduate biochemistry study, without having to spend time supporting myself through other means."

## 4th year dinner

The fourth year dinner is an eagerly anticipated annual tradition, organised by the fourth year students themselves, and held this year on the 15th September. *Hannah Sunde* says "Julian required upwards of 4 reminder emails to be sent to the staff. Well, maybe we didn't send quite that many, we didn't want to nag. The night began with 12 students, 2 supervisors and a very eerie bar down an alleyway. After a couple of drinks and about half an hour's banter we headed up to Etrusco at the Savoy. Julian arrived 25 minutes late, clearly having ignored his own reminders. The students and staff had a great time chatting, laughing and getting to know each other better over 5 courses of delicious food (the pasta being the best), multiple glasses of wine and 3 games of musical chairs."

## 6 brewers from 3 departments

have entered 9 brews in our annual brewing competition

Our department has a strong tradition in the area of yeast metabolic research, and it is an excellent basis for interdepartmental collegiality. The annual brewing competition is organised by the postgraduate students, who also organise 12 Friday evening Happy Hours each year as well as an annual end-of-year quiz evening. Dinners with friends are a regular occurrence, and friendships made during postgraduate study tend to last - they have even been known to culminate in marriage!!

# 17 papers published

so far by student authors

- Wright, J. D.**, Mace, P. D. & Day, C. L. Secondary ubiquitin-RING docking enhances Arkadia and Ark2C E3 ligase activity. *Nat Struct Mol Biol* 23, 45–52 (2016).
- Sharma, M.** ... McCormick, S. *et al.* Chemotherapy Agents Alter Plasma Lipids in Breast Cancer Patients and Show Differential Effects on Lipid Metabolism Genes in Liver Cells. *PLoS ONE* 11, e0148049 (2016).
- Crawford, T. S.**, Hanning, K. R., Chua, J. P. S., Eaton-Rye, J. J. & Summerfield, T. C. Comparison of D1' - and D1-Containing PS II Reaction Centre Complexes Under Different Environmental Conditions in *Synechocystis* sp. PCC 6803. *Plant Cell Environ.* n/a–n/a (2016). doi:10.1111/pce.12738
- Poen, S.** ... Krause, K., *et al.* Exploring the Structure of Glutamate Racemase from *Mycobacterium tuberculosis* as a Template for Anti-mycobacterial Drug Discovery. *Biochem J* 473, 1267–1280 (2016).
- Fellner, M.**, Aloï, S., Tchesnokov, E. P., Wilbanks, S. M. & Jameson, G. N. L. Substrate and pH-Dependent Kinetic Profile of 3-Mercaptopropionate Dioxygenase from *Pseudomonas aeruginosa*. *Biochemistry* 55, 1362–1371 (2016).
- Rasheed, H.** ... Merriman, T. *et al.* The Toll-Like Receptor 4 (TLR4) Variant rs2149356 and Risk of Gout in European and Polynesian Sample Sets. *PLoS ONE* 11, e0147939 (2016).
- Rasheed, H.** ... Merriman, T. *et al.* Replication of association of the apolipoprotein A1-C3-A4 gene cluster with the risk of gout. *Rheumatology* (Oxford) kew057 (2016). doi:10.1093/rheumatology/kew057
- Wilkinson, M. E.**, ... Krause, K., *et al.* Structural plasticity and in vivo activity of Cas1 from the type I-F CRISPR-Cas system. *Biochem J* 473, 1063–1072 (2016).
- Germoni, L. A. P.**, Bremer, P. J. & Lamont, I. L. The Effect of Alginate Lyase on the Gentamicin Resistance of *Pseudomonas aeruginosa* in Mucoid Biofilms. *J. Appl. Microbiol.* 121, 126–135 (2016).
- Ryder, K.**, Bekhit, A. E.-D., McConnell, M. & Carne, A. Towards generation of bioactive peptides from meat industry waste proteins: Generation of peptides using commercial microbial proteases. *Food Chemistry* 208, 42–50 (2016).
- Fellner, M.** ... Wilbanks, S., *et al.* Influence of cysteine 164 on active site structure in rat cysteine dioxygenase. *J Biol Inorg Chem* 21, 501–510 (2016).
- Tchesnokov, E. P., ... **Fellner, M.**, ... Wilbanks, S., *et al.* An iron-oxygen intermediate formed during the catalytic cycle of cysteine dioxygenase. *Chem. Commun. (Camb.)* (2016). doi:10.1039/c6cc03904a
- McCallum, J. ... **Khosa, J. S.**, Macknight, R *et al.* Molecular genetics analysis of onion (*Allium cepa* L.) adaptive physiology of bulb. *Acta Horticulturae* 1110, 71–76 (2016).
- Wright, J. D.**, Mace, P. D. & Day, C. L. Noncovalent Ubiquitin Interactions Regulate the Catalytic Activity of Ubiquitin Writers. *Trends Biochem Sci* (2016). doi:10.1016/j.tibs.2016.08.003
- Foglizzo, M.**, Middleton, A. J. & Day, C. L. Structure and Function of the RING Domains of RNF20 and RNF40, Dimeric E3 Ligases that Monoubiquitylate Histone H2B. *J Mol Biol* (2016). doi:10.1016/j.jmb.2016.07.025
- Morris, J. N.**, Eaton-Rye, J. J. & Summerfield, T. C. Environmental pH and the requirement for the extrinsic proteins of photosystem II in the function of cyanobacterial photosynthesis. *Front Plant Sci* 7, 2117 (2016).
- Crawford, T. S.**, Eaton-Rye, J. J. & Summerfield, T. C. Mutation of Gly195 of the ChlH subunit of Mg-chelatase reduces chlorophyll and further disrupts PS II assembly in a Ycf48-deficient strain of *synechocystis* sp. PCC 6803. *Front Plant Sci* 7, 14812 (2016).