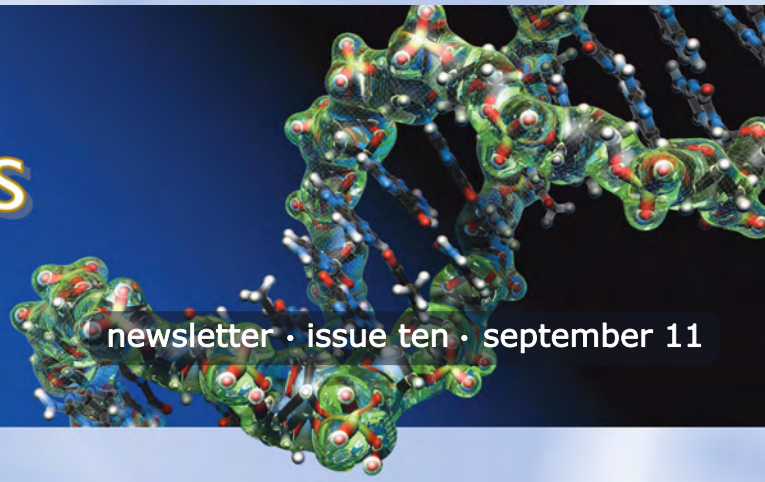




Genetics Otago

newsletter · issue ten · september 11



Hi folks

It certainly has been an eventful few months for Genetics Otago members, what with the mid-year conference season taking a majority of you either overseas or to Queenstown for meetings.

Meanwhile GO has been busy helping organise the GO/OSMS Mid-Winter Poster Evening, as well as being involved in the Queenstown research week Developmental biology satellite meeting. As always, both events went incredibly well.

One of the aims of GO is to improve our international exposure. This exposure occurs mainly through the excellence of our members. I was particularly please to discover, while at a conference in Melbourne, that Dr Catherine Grueber had won the D.G. Catchside prize for the best PhD thesis in genetics in Australasia, a first for a New Zealand researcher. From the comments of people around me at the meeting this is a highly regarded prize, and Catherine a clearly deserving winner.

The fact our international reputation is increasing is demonstrated by the number (23) of quality applications for our International Summer Studentship. We hope that this interest indicates that Otago is coming to be seen as an international force in genetics research.

Many of our researchers, as you will see in the following pages, have won awards and major grants in the last few months. I would like to congratulate them all. I would particularly like to congratulate Jon Waters, a huge supporter of GO, on his promotion to Professor!

I would also like to invite you all to attend this year's Genetics Otago symposium, which will be held in early December and will feature the very excellent Dr Coral Warr and Professor Stephen Robertson as our invited speakers. I look forward to seeing you there.

Peter

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Dunedin

Peter's message

introducing

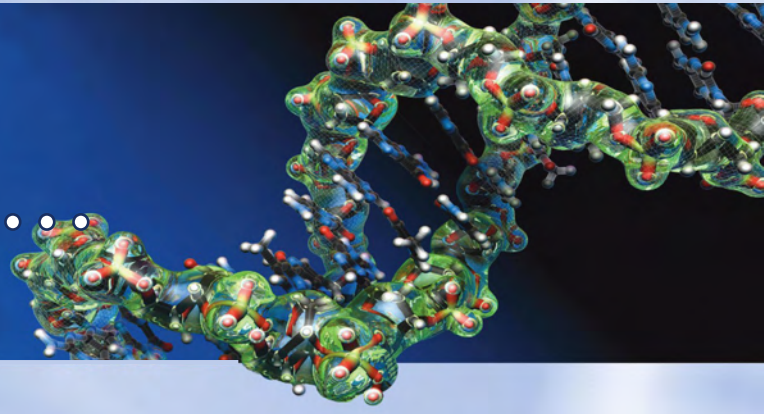
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introducing...



Lynette Brownfield

In this issue we extend a warm welcome to GO's newest member, Dr Lynette Brownfield, a plant biologist with specialist interests in plant sexual reproduction on the male side. Dr Brownfield has recently moved from Switzerland to Dunedin where she has joined Otago's Department of Biochemistry.

After growing up on a small farm in Nar Nar Goon North (just outside Melbourne), Lynette completed her undergraduate and postgraduate studies at Melbourne University, graduating with a PhD in 2005 from the Plant Cell Biology Research Centre in the School of Botany.

After her PhD, Lynette moved to the UK where she completed 3 years post doctoral study with Prof David Twell at the University of Leicester, before venturing further into Europe as an EMBO Postdoctoral Fellow with Professor Claudia Köhler at the ETH in Zurich, Switzerland (2009-2011).

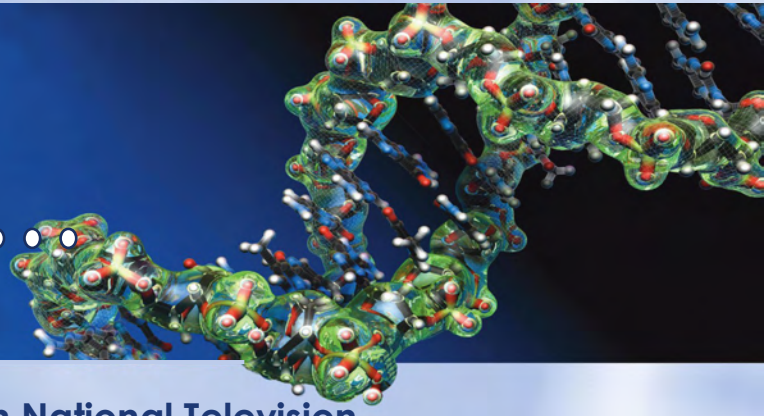
Despite having no intention of becoming a plant scientist, it took only a few undergraduate classes for the study of plants to hold a fascination, with Lynette intrigued by the mechanisms plants have developed to overcome the limitations of a sedentary life: from the ways plants develop so their body plan can adapt to the environment during growth, to the ways plants defend themselves against insect and fungal attack.

Lynette particularly enjoyed studying the evolution of flowers and seeds in higher plants and how this has enabled sexual reproduction with distant individuals in the absence of free water and the wide dispersal of offspring, both of which contribute largely to the dominance of flowering plants we see today. Her interest in plant science was further developed by excellent **mentors who encouraged Lynette's desire to understand how plant development is controlled at the molecular level.**

Lynette's work focuses on understanding the molecular processes underlying the development of the pollen grain, the structure responsible for the generation of male gametes and their delivery to the female tissues. Her research interests include the production of pollen itself during meiosis, with an emphasis on the characterization of mutants that produce diploid rather than haploid pollen. The production of such unreduced pollen can lead to polyploidization, an important process in both plant speciation and breeding. Lynette is also interested in the factors controlling specification and cell cycle progression in the male gametes that are produced within the pollen grain, and has characterized several important regulators of these processes. She plans to continue her work on both meiotic mutants and sperm cell specification at Otago.

When asked why pollen has become her main focus, Lynette believes it is largely due to **the exciting projects on offer, her enjoyment in studying them and the "elegant simplicity of having only three cells to deal with."**

in the news...



GO Members Feature on National Television

TVNZ's 'Ever Wondered' episode on genetics went to air on Thursday 8th September, featuring **Professor Martin Kennedy, Dr Christine Jasoni, Assoc Prof Tony Merriman** and **Assoc Prof Vicky Cameron**, who were interviewed by MacDiarmid's Young Scientist of the Year, Dr John Watt. Aimed at educating the general public, this was an outstanding insight into human genetics, with all credit going to our wonderfully photogenic GO stars who successfully managed to simplify the complicated world of genetics for the audience at large - no mean feat!

For those who missed it you can watch the full episode on TVNZ On Demand: <http://tvnz.co.nz/content/3675226.xhtml>

The episode on bees, featuring **Assoc Prof Peter Dearden**, will screen on **Thursday 22nd of September at 7.05pm.**



Assoc Prof Tony Merriman



Assoc Prof Vicky Cameron



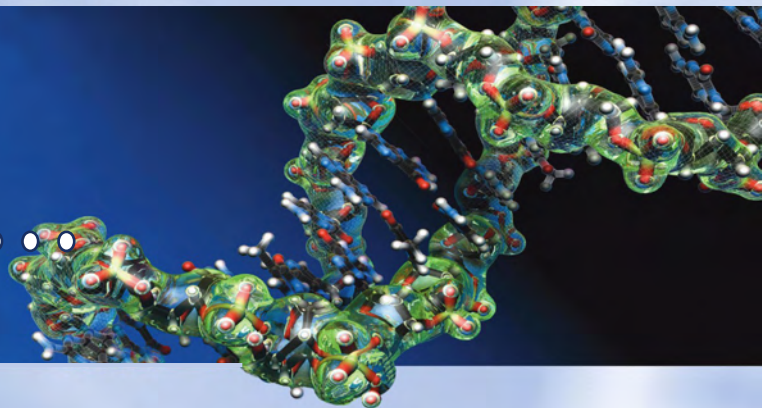
Prof Martin Kennedy



Dr Christine Jasoni and Dr John Watt

Member's

in the news...



RUTHERFORD FELLOWSHIP

Double congratulations to **Dr Peter Fineran** who has been awarded a Rutherford Discovery Fellowship and an **Otago Early Career Award for Distinction in Research**.



The Rutherford Discovery fellowship will help develop a proposed research programme to investigate "how bacterial 'adaptive immune systems' protect microbial cells against viral infection."

Peter was one of ten top researchers who were awarded the highly sought after fellowships administered by the Royal Society of New Zealand.

EARLY CAREER AWARD FOR DISTINCTION IN RESEARCH

Dr Shinichi Nakagawa also received an Otago Early Career Award for Distinction in Research award which recognises outstanding research achievements by staff who are still at an early stage of their academic careers and comes with a grant of \$5000.

QMB WINNERS

Congratulations to **Rosannah McCartney** and **Ajay Nair** who respectively won the Genetics Otago sponsored prizes for best Postgrad Speaker and Best Poster Award at QMB.

The international judging panel were unanimous in their decision, describing Rosannah's talk and Ajay's poster as "outstanding."

KIWIFRUIT DISEASE GENOME DISCOVERED

GO members **Assoc Prof Poulter**, **Professor Iain Lamont**, **Dr Margi Butler**, **Dr Becky Laurie**, and **Mr Les McNoe**, have determined the genomic sequence of the Kiwifruit pathogen PSA.

Spokesman for the group, Assoc Prof Poulter, told news media that there is only one strain of PSA in New Zealand, and the organism that was previously thought to be PSA LV is in fact a different organism which has been renamed PSD.

PSD has only ever been found in New Zealand, and is unlikely to lead to virulent disease in kiwifruit.

[Read the whole story on RadioNZ's website.](#)
[New Zealand Herald article.](#)

GENETICS SOCIETY OF AUSTRALASIA D.G. CATCHESIDE PRIZE

Dr Catherine Grueber is this year's recipient of the D.G. Catcheside prize which was established to honour the memory of the late Professor David Guthrie Catcheside (1907-1994) by recognizing the achievements of the top Australasian doctoral student in the field of Genetics.



Catherine Grueber received her PhD from the University of Otago in August 2010, where she worked with Assoc Prof Ian Jamieson investigating how molecular markers can be used to study the effects of inbreeding in wild, threatened populations.

In addition to a number of high quality publications, **Catherine's research became the basis of informed management decisions for her study species.** In particular, Catherine has worked closely with the **NZ Department of Conservation's Takahe Recovery Group**, for which her genetics work has had significant impacts on the current management program. This collaboration has led to a **major change in the program's direction for managing inbreeding in offshore island populations.**

PROFESSORSHIP

Congratulations to **Jon Waters** who has recently been promoted to full Professor in the Department of Zoology!

HRC FUNDING:

Professor David Fergusson

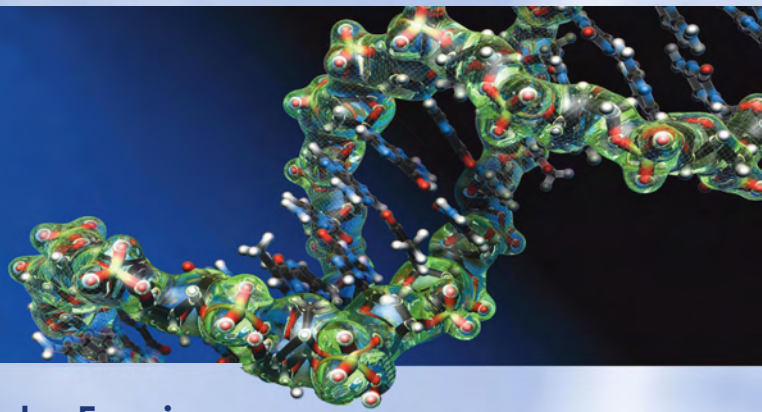
Department of Psychological Medicine, University of Otago, Christchurch
The Christchurch Health and Development Study - Birth to 35 Years. 60 months, \$3,914,157

Associate Professor Parry Guilford

Department of Biochemistry, University of Otago
1) *Single cell RNA profiling for the early detection of urological cancers.* 36 months, \$820,303
2) *Synthetic lethal targeting of the tumour suppression gene CDH1 in common cancers*
36 months, \$1,080,001

Associate Professor Tony Merriman (programme extension) Department of Biochemistry, University of Otago. *Application of genetics to the pathogenesis of common chronic conditions.* 36 months, \$4,765,885

events...



GO & OSMS Poster Evening by Sarah Morgan

The second annual GO/OSMS Mid-Winter Poster Evening kicked off at the newly completed Forsyth Barr Stadium with guests both excited and curious to be in the corporate box at the new stadium.

With sweeping views over the field, over 60 posters on display and guest speaker Prof Jim Sikela from the University of Colorado to seal the deal, the evening was an great success.



Professor Jim Sikela delivers his talk to a near capacity audience

Following Prof Sikela's tales about his quest to determine the Human Element, judges undertook the difficult task of assessing an outstanding group of posters with a wide array of topics and many beautiful designs. It is always apparent at this event just how much each student is involved, inspired by and committed to their work.

The evening concluded with a prize presentation session, with Biochemistry's Rob Day taking out the Thermo Fisher Ultimate Postdoctoral prize. In the student categories, two Biochemistry students, Rowan Herridge and Rhesa Budhidarmo respectively won the Genetics Otago and NZSBMB prizes. The Virology award went to Estelle Baker from Microbiology, the Webster Centre prize was awarded to Babasaheb Yadav from Pharmacology, and the Centre for Reproduction and Genomics sponsored award went to Malinda Tantirigama from Physiology. Angela Clark from Anatomy was awarded the OSMS prize and Mike Fleete, also from Anatomy, took out the Brain Health & Repair award.

We would like to especially thank Prof Sikela who was a thoroughly engaging speaker, illustrating his work with a beautiful correlation between array data and phylogeny. Focusing on DUF 1220, he spoke about his group's experience with the "DUF 1220 wheel of fortune and misfortune".

Prof Sikela also made an interesting remark regarding the Neanderthal - no longer can we consider the species a brute, when it appears he was a much smarter species than ever before thought (you will have to come up with a new nickname for your brother).

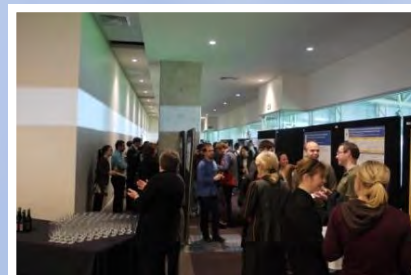
There were no tears from those unlucky enough to have missed out impressing the judges enough, and everyone departed in as high spirits as when they arrived. On the day, science was the winner.



James Smith from Thermo Fisher presents the Post Doctoral prize to Dr Rob Day

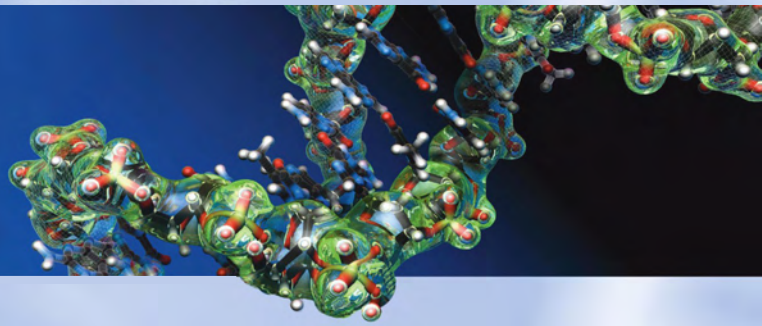


GO Director Assoc Prof Peter Dearden presents the GO award to Rowan Herridge



Guests, judges and an avenue of posters

events...



Evolutionary Genetics Symposium

Organised by **Professor Jon Waters**, the inaugural one-day Evolutionary Genetics Otago Symposium, held at St Margaret's on August 31st was an enormous success with the program including four sessions and encompassing a diverse range of themes such as emerging phylogenetic methods and analysis of ancient-DNA.

The fourteen speakers included representatives from four different departments (Anatomy, Botany, Maths & Stats, and Zoology) and across two divisions. Postgraduate speakers were included in all four sessions. Overall, it was a very positive way of highlighting the cutting-edge evolutionary genetics research being conducted across a range of departments at Otago. It is envisaged that this will be an ongoing forum for forging links across the university's evolutionary research groups.

One immediate outcome of the meeting is that there is now an Evolutionary Genetics at Otago (EGO) mailing list: ego@zoology.otago.ac.nz with about 60 recipients across a number of departments. If you would like to subscribe, please visit: <http://zoo-server.otago.ac.nz/mailman/listinfo/ego>.

This mailing list will circulate information of interest to other evolutionary geneticists at Otago (e.g. visitors to your department, seminars, lab meetings etc). Although Zoology is hosting the e-mail address, it is an inter-departmental resource.

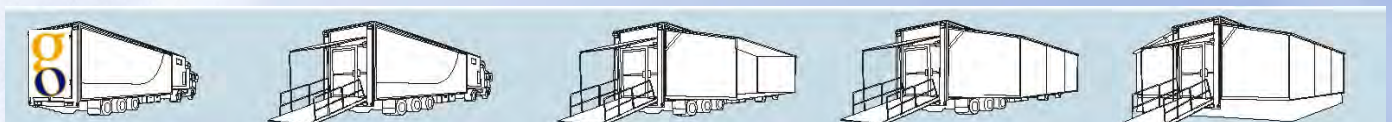
If you would like to post any news and events, please send a message to ego@zoology.otago.ac.nz but please note that you can only post from the e-mail address you subscribed from.



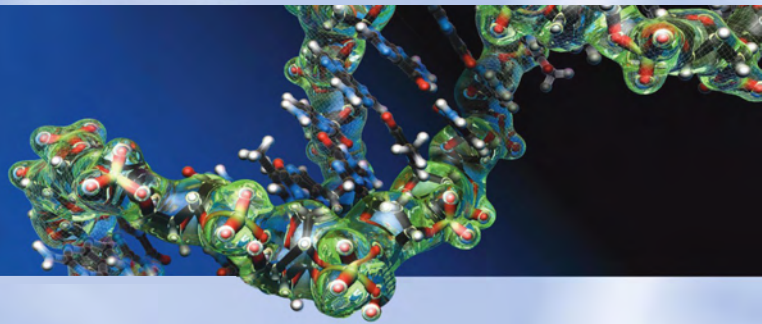
After it became unfeasible for GO to continue with the genetics exhibition at the Otago Museum, we will now be investing a hefty chunk of 2012's budget in creating a 'Southern Science Series' mobile exhibition to tour the South Island in March/April next year. With the aim to educate, inspire and 'wow' the NZ public about the exciting genetics research being conducted here at Otago, GO will spend 3-4 weeks travelling to the provincial centres with a custom designed exhibition in a UPV (Ultimate Promotional Vehicle), featuring a number of GO members and their research from across three Divisions and multiple Departments.

With support from Marketing and Communications and the Liaison Office, GO will be coordinating 'park ups' in schools and public grounds with corresponding lectures given by some of the exhibited researchers.

In what could possibly become a pilot scheme for the University, is hoped that the 'Discoveries to your Doorstep' project will also include a tour of the North Island, however this will depend on funding. Watch this space!



events...



Genetics Post Graduate Colloquia

The Genetics Post Graduate Colloquia is held every **Wednesday fortnight in the Marples Seminar Room at 12pm**. These sessions aim to help students gain confidence in all aspects of their research and to learn about other work by genetics students around campus.

Students are invited to speak about their research and practice their presentation skills in a comfortable environment while receiving advice from their peers.

The sessions also include guest speakers that address some of the issues that arise in post graduate study as well as advice on how to improve skills that are required in post grad study. Sessions this year have included a talk from David Winter on the art of good oral presentation, Ayelet Cohen from HEDC spoke gave advice on how to create effective research poster for conferences and Charles Tustin from graduate research services spoke about the different support services that are on offer for post grad students.

If you would like to take part in the regular colloquia please email the GPG coordinator, Megan Leask on: megan.leask@gmail.com

Genetics Otago Annual Symposium

To be held on the 5th and 6th of December at the Forsyth Barr Stadium, the Genetics Otago Annual Symposium will once again feature an outstanding line-up of both postgraduate and senior researchers across three Divisions and multiple Departments.

We are fortunate to have secured two outstanding keynote speakers: our very own **Professor Stephen Robertson**, Chair of Child Health Research, Dunedin School of Medicine, **Women and Children's Health and the Clinical Genetics Group**; and **Dr Carol Warr**, Deputy Head of Sciences, Monash University, Melbourne.

Dr Warr was a key member of the team that first discovered insect olfactory receptors and is a leading research into their function, activity and evolution.

CRG Symposium

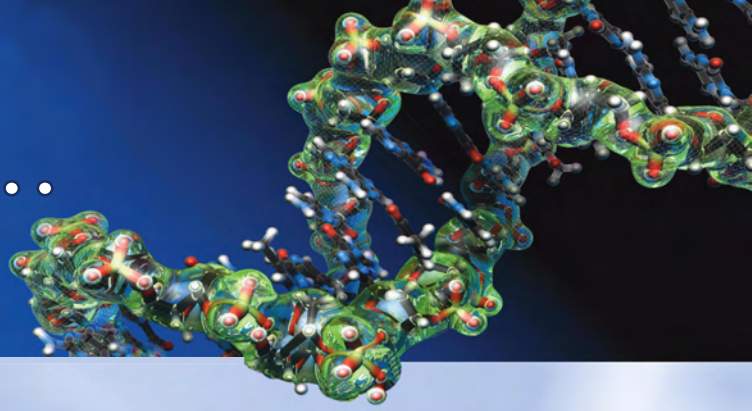
The Centre for Reproduction and Genomics is proud to bring to you: A Special Focus On: "Seeding the farms – control of reproduction in aquaculture." to be held on **Wednesday, 19 October 2011 4.00-6.00pm**. D'Ath Lecture Theatre, Hercus Building, Great King St. Any enquiries to charlene.gell@anatomy.ac.nz

Genetics Journal Club

Below is the remaining schedule for **Genetics Journal Club 2011**. This is held on Wednesdays at 1pm in the Benham Seminar room, Department of Zoology. **Any queries, please contact GJC's coordinator, Rebecca Debono: debre606@student.otago.ac.nz**

DATE	STUDENT SPEAKER	STAFF SPEAKER
21st September	Tessa Sanders	Richard Macknight
5th October	Rebecca Debono	Graham Wallis
19th October	Melanie Margison	Caroline Beck

publications...



Geoghegan JL and Spencer HG. Population-epigenetic models of selection. *Theoretical Population Biology* (In Press) doi:10.1016/j.tpb.2011.08.001

Rhodes, J. M., McEwan, M. and **Horsfield, J.** (2011) Gene regulation by cohesin in cancer: is The Ring An Unexpected Party to proliferation? *Molecular Cancer Research* (in press).

Mönnich, M., Kuriger, Z., Print, C. and **Horsfield, J.** (2011) A zebrafish model of Roberts Syndrome reveals that Esco2 depletion interferes with development by disrupting the cell cycle. *PLoS ONE*, 6(5): e20051. doi:10.1371/journal.pone.0020051

Gay O, Gilquin B, Nakamura F, **Jenkins ZA, McCartney R,** Krakow D, Deshiere A, Assard N, Hartwig JH, **Robertson SP,** Baudier J (2011) RefilinB targets Filamin A to organize perinuclear actin networks and regulates nuclear shape during epithelial-mesenchymal transition *Proc Natl Acad Sci USA* 108(28):11464-9.

Changes in cell fate are correlated with the movement of the nucleus with a cell – a process called intracellular nucleokinesis. The molecular machinery that mediates this is poorly understood. In conjunction with a group based in Grenoble in France, we have shown that a cytoskeletal protein filamin A is a critical part of these transitional processes and in particular, a protein that we have helped characterise called refilin helps filamin achieve this task. The work has significance for the understanding of disease states caused by mutations in filamins but also in development in general. Key players from GO in this work included Dr Zandra Jenkins, Research Fellow, Clinical Genetics Group and Rosannah McCartney, then an Honours student in the same lab and now a PhD student in Peter Dearden's lab.

Simpson MA, Irving MD, Asilmaz E, **Gray MJ,** Dafou D, Elmslie F, Mansour S, Holder SE, Brain CE, Burton BK, Kim KH, Affimos S, Stewart H, Kim CA, Holder-Espinasse M, **Robertson SP,** Drake WM, Trembath RC (2011) Mutations in NOTCH2 cause Hajdu Cheney syndrome, a disorder of severe and progressive bone loss. *Nature Genetics* 43(4):303-5.

In conjunction with scientists at Guys and St Thomas's Hospital London, we have used exome sequencing to identify the cause of a rare autosomal dominant bone condition characterised by bone fragility and osteoporosis. Surprisingly the defect lies in a well characterised developmental pathway, called the NOTCH signaling pathway. This pathway is utilised broadly during development to regulate the polarity of cells within tissues. This finding brings new aspects of bone mineral homeostasis to light and suggests new avenues to consider in drug development to maintain bone health and strength over the lifespan. Mary Gray, PhD student, Clinical Genetics Group, contributed prominently to this work.

Przybilski, R., Richter, C., Gristwood, T., Clulow, J.S., Vercoe, R.B. and **Fineran, P.C.** (2011). Csy4 is responsible for CRISPR RNA processing in *Pectobacterium atrosepticum*. *RNA Biology*. **8**. 517-528 IF: 5.60

Przybilski, R., Richter, C., Gristwood, T., Clulow, J.S., Vercoe, R.B. and **Fineran, P.C.** (2011). Csy4 is responsible for CRISPR RNA processing in *Pectobacterium atrosepticum*. *RNA Biology*. **8**: 517-528.

Blower, T.R., Pei, X.Y., Short, F.L., **Fineran, P.C.,** Humphreys, D.P., Luisi, B.F. and Salmond, G.P.C. (2011). A processed non-coding RNA regulates a bacterial antiviral system. *Nature Structural and Molecular Biology*. **18**: 185-190.

Gristwood, T., **McNeil, M.B.,** Clulow, J.S., Salmond, G.P.C. and **Fineran, P.C.** (2011). PigS and PigP regulate prodigiosin biosynthesis in *Serratia* via differential control of divergent operons, which include predicted transporters of sulfur-containing molecules. *Journal of Bacteriology*. **193**: 1076-1085.

Linterman KS, Palmer DN, Kay GW, Barry LA, Mitchell N, McFarlane R, **Black M,** Sands MS, **Hughes SM.** Lentiviral-mediated gene transfer to the sheep brain – implications for gene therapy in Batten disease. *Human Gene Therapy*, August 2011, **22**(8): 1011-1020.

Dottori M, Tay C, **Hughes SM.** Neural development in human embryonic stem cells – applications of lentiviral vectors. *Journal of Cellular Biochemistry*, **112**:1955-62 (Invited review) Also included in the journals "Features" section