### ANNUAL CONFERENCE OF THE GENETICS SOCIETY OF AUSTRALASIA WITH THE NZ SOCIETY FOR BIOCHEMISTRY & MOLECULAR BIOLOGY

# Diverse pathways, wide horizons

St David Lecture Complex University of Otago Dunedin New Zealand 2 - 6 July 2017

# Conference Handbook







gen2017.w.events4you.currinda.com



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Annual Conference of the Genetics Society of Australasia with the NZ Society for Biochemistry & Molecular Biology "Diverse Pathways, Wide Horizons" has been organised in association with:



Events 4 You Limited PO Box 7168 Dunedin 9040 New Zealand T: +64 3 487 6622 W: www.events4you.co.nz E: sally@events4you.co.nz

# Welcome

Welcome to the University of Otago in Dunedin, New Zealand, for this unique gathering of geneticists, biochemists, molecular biologists and those in between or adjunct!

The Genetics Society of AustralAsia and the New Zealand Society for Biochemistry and Molecular Biology are delighted to unite for this multi-disciplinary conference. Our sessions encompass the diversity of life, heritage and possible futures: ancient DNA, agriculture, bioinformatics, conservation, ecology, evolution and development, human disease, molecular biology, and more.

If we see new connections between research, people, and even the public, over the next several days of events, then we can call this a productive and successful meeting. Your efforts to travel south in the depths of winter will be worthwhile!

We would like to thank everyone for coming to the University of Otago, home to New Zealand's deepest and most diverse concentration of genetics research. We are very fortunate to have strong relationships throughout Australasia, Europe and North America, which contribute significantly to the success of our research. Thank you to those who have travelled from afar and will generously share the toil, results and insight from their research so that we may all forge on together.

We are fortunate to undertake our work while surrounded by Dunedin's very special natural and historic environment. No doubt the locals will not spare their words in telling you about it! For a recharge and some inspiration, a few minutes' walk north will take you to the delightful and intriguing Dunedin Botanic Gardens. Or just wander through our historic campus, where we will celebrate our 150th anniversary in 2019 – not quite as old as Mendel's Laws, but almost.

Welcome once more, and enjoy a most productive few days,

The GSA/NZSBMB Annual Conference Committee

## **Working Committee**

Prof Peter Dearden	Assoc Prof Julia Horsfield	Dr Wayne Patrick
Dpt of Biochemistry	Dpt of Pathology	Dpt of Biochemistry
University of Otago	University of Otago	University of Otago

## **Committee Members**

Assoc Prof Michael Black	Prof Neil Gemmell	Assoc Prof Christine Jasoni
Dpt of Biochemistry	Dpt of Anatomy	Dpt of Anatomy
University of Otago	University of Otago	University of Otago
Prof Lisa Matisoo-Smith	Prof Stephen Robertson	Dr Anna Santure
Dpt of Anatomy	Clinical Genetics Group	School of Biological Science
University of Otago	University of Otago	University of Auckland
Prof Hamish Spencer	Prof Jonathan Waters	Dr Megan Wilson
Dpt of Zoology	Dpt of Zoology	Dpt of Anatomy
University of Otago	University of Otago	University of Otago
NZSBMB		

Dr Monica Gerth	Dr Xochitl Morgan	Prof Clive Ronson
Dpt of Biochemistry University of Otago	Dpt of Microbiology & Immunology	Dpt of Microbiology & Immunology

Staff David Turner

Genetics Otago

University of Otago





The Trade Exhibition Floorplan can be viewed on the back cover.



#### **Registration and Information Desk**

The registration desk is situated at St David Lecture Theatre Complex, University of Otago, Cnr St David and Cumberland Sts who welcome your enquiries on any conference detail or local information. The desk will be open at the following times:

Sunday 11.00 am – 7.30 pm

Monday 8.00 am – 7.30 pm

Tuesday 8.00 am – 6.00 pm

Wednesday 8.30 am – 6.00 pm

#### **Useful Telephone Numbers**

Registration Desk Staff: Sally 027 562 5949 Dunedin Taxis 03 477 7777 Super Shuttles www.supershuttle.co.nz

#### Abstracts

Abstracts for the presentations and posters are available electronically on the conference website:

#### http://gen2017.w.events4you.currinda.com

#### Airport

Please allow 20-30 minutes drive from the Dunedin International Airport to Dunedin CBD. Shuttles and taxis are available on arrival – we recommend that you pre-book a shuttle or taxi prior to your arrival as a taxi fare from the airport is around NZ\$90. There is no public bus service from the Airport.

#### **Attendee List**

There is a list of conference attendees available at the registration desk. Please note this only includes delegates who have consented to having their information included.

#### **Certificate of Attendance & Evaluation**

A certificate of attendance will be emailed directly to delegates following the conclusion of the conference along with a link to an evaluation form for your valuable feedback.

#### **Internet Access**

Wireless internet will be available at the venue. Delegates will be able to use up to two devices with a limit of 500MB of data per day. Connect to UO\_Guest wireless network on your device. Follow the set up instructions (you will need to create a user name and password).

#### **Suggestions for Dining**

Fine Dining (bo	oking required)		Near to Venue	(booking recomr	nended)
Two Chefs:	121 Stuart St	03 477 7293	Buddha Stix:	678 George St	03 421 6706
Bacchus:	12 The Octagon	03 474 0824	Ombrellos:	10 Clarendon St	03 477 8773
Scotia:	199 Stuart St	03 477 7704	Captain Cook:	354 Gt King St	03 474 1935
Madame Woo:	115 Stuart St	03 474 9266	Eureka:	116 Albany St	03 477 7977

There are lots of reasonably priced places to eat on George St between Albany and Hanover Streets. More dining options are available on the Tourism Dunedin Website:

www.dunedinnz.com

#### **Mobile Phones**

Mobile phones must be turned off or set to vibrate during sessions.

#### **Name Badges**

All conference attendees and industry representatives are requested to wear their name badges at all times during the conference and social functions. It is your official entrance pass to the sessions and conference catering.

We invite you to return your name badge to the registration desk at the end of the conference for recycling.

#### Parking

There is plenty of street parking in the surrounding streets. Please note that most parking is pay and display (up to 4 hours) with free parking on Sunday.

#### **Session Chairs**

Ten minutes before the session you are chairing, please go to the conference room to meet the presenters. Please ensure that each session starts and finishes at the advertised time (if a presenter is missing hold that space with an open discussion). A room monitor will be assigned to time the session indicating to the presenter when 3 minutes and 1 minute remaining.

#### Smoking

The University of Otago is completely smoke-free and this includes the conference venue and surrounding property.

#### **Special Diets**

Vegetarian options are included on main buffets. If you have advised any special dietary requirements on your registration these would have been notified to the caterers. Lamb, beef, chicken served at the main conference venue is cerified Halal (all Halal food will be labelled). There will be a 'pre-registered special diets' table located in the exhibition area, meals will be labeled. Please make yourself known to the catering staff if you require help finding your meal.



#### The Custom Science NZSBMB Award

This is the NZ Society for Biochemistry and Molecular Biology premier prize for research award, this award is made on the basis of work published during the three years preceding the award.

2017 Recipient: Wayne Patrick, University of Otago

#### **Excellence in Education Award (GSA)**

This award has been established by the Genetics Society of AustralAsia to recognise an individual who has made outstanding contributions to genetics education in AustralAsia. Candidates must be at least five years post the awarding of their PhD. Recipients will have promoted greater exposure to and deeper understanding of genetics through their achievements. **2017 Recipient: Jaime Gongora, University of Sydney** 

#### D.G. Catcheside Award (GSA)

The D. G. Catcheside Prize has been 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. The prize is made available by a generous bequest to the Genetics Society of AustralAsia from Professor Catcheside's family.

2017 Recipient: Katherine Harrisson, La Trobe University

#### **Alan Wilton Award (GSA)**

This award was established by the Genetics Society of AustralAsia in honour of the late Associate Professor Alan Wilton, to recognise outstanding contributions to the field of genetics research by Australasian scientists early in their career. The award is intended to assist the recipient in advancement of their career and will be awarded for work completed within five years of graduating as a PhD. **2017 Recipient: Jemma Geoghegan, Macquarie University** 

#### **Ross Crozier Medal (GSA)**

This award was established by the Genetics Society of AustralAsia to recognise outstanding contributions to the field of genetics research by mid-career Australasian scientists. The medal commemorates Ross Crozier, an Evolutionary Geneticist who was a past President and an avid lobbyist for the Society. The award is intended to assist the recipient in advancement of their career and will be awarded for work completed within the period five to 15 years from graduating with a PhD. **2017 Recipient: Peter Fineran, University of Otago** 

#### **MJD White Medal Award (GSA)**

This award was established in 2009 by the Genetics Society of AustralAsia to recognise outstanding contributions to the field of genetics research by Australasian scientists. The medal commemorates Michael White who proposed the formation of the Genetics Society of Australia in 1953. This award is intended to recognise excellence in genetic research and may be awarded for a lifetime's contribution to genetic research or for work by a mid-career scientist either leading to a paradigm shift in genetics or for a large body of work that is recognised as of major significance in a specific field of genetics.

2017 Recipient: Richard Frankham, Macquarie University

# **Presenter Information**

#### **Oral Presenters**

Powerpoint presentations are to be loaded at the audio visual desk located next to the registration desk. Please take your presentation to the audio visual technician on your arrival at the conference and ensure this is done the day prior to your presentation. It would be helpful if you would name your file with your surname, the day you are presenting and room number (eg: SmithMondayMCR) Due to time constraints, only Keynote Presenters will be able to use their own laptop in the Main Conference Room.

During a break please go to the conference room in which you are presenting prior to your presentation, to check your presentation, familiarise yourself with the audio visual set-up, and meet the session chair.

Please note that total time scheduled includes Q&A.

#### **Poster Presenters**

Poster presenters are asked to have their posters up in the Foyer area by Monday morning ready for the first morning tea break. Poster tubes can be stored at the Registration Desk - authors must take their own posters down and remove before Wednesday 4pm.

Please refer to the poster list on Pages 27-30 which lists posters in alphabetical order by author surname. The poster number (original abstract number) and the poster area that it will need to be put up (refer to the floorplan on the back inside and outside cover) is also listed. Each poster area will have a guide to the order of posters and posterboards will all be labelled with Poster Number and Surname. Please see the Registration Desk should you need any assistance.

The GSA and NZSBMB will award prizes to student posters. Students should be with their posters during the poster sessions when judges will view their posters. Judges will view NZSBMB student posters during the Monday poster session. Judges will view the GSA student posters in two rounds, over the Monday and Tuesday poster sessions:

Poster Session 1: Monday 3 July 2017 5.00 pm - 6.45 pm

Poster Session 2: Tuesday 4 July 2017 5.00 pm - 6.30 pm

Poster Areas: (refer to floorplan on back cover)

Posters A: Medical Genetics plus Model Organisms, Conservation/Ecology

Posters B: Genomics and Ancient DNA

Posters C: Evo-Devo

Posters D(First Floor Foyer): Biochem, Molecular Evolution and Microbes

# **Social Events**

#### **Welcome Function**

St David Lecture Theatre Complex Foyer

#### Sunday 2 July 5.30 pm – 6.30 pm

The University of Otago and Local Committee welcome you to Dunedin. A Mihi Whakatau (traditional welcome) will take place in the Foyer Area – please ensure that you arrive by 5.20 pm.

Drinks (voucher plus cash bar) and canapés will be served in the Foyer from 5.30 pm. Dress: Smart Casual.

#### **Art & Genetics Opening**

HD Skinner Annex, 361 Great King Street (located 1 minute walk from the Otago Museum)

#### Tuesday 4 July 6.10 pm – 6.50 pm

Wine and canapés will be served during the opening of this exhibition.

Dress: Smart Casual. Ticket required.

#### **Conference Dinner**

Otago Museum, 419 Great King Street

#### Tuesday 4 July 7.00 pm – 10.30 pm

Enjoy a pleasant evening with colleagues old and new. Three course meal and wine on tables provided. A cash/eftpos bar will be available.

Dress: Smart Casual. Ticket required.

#### You want to do that in public??? Young Sci-Com Lunch

St David Lecture Theatre Complex Upstairs 1st Floor Foyer - Registration Required (to indicate numbers)

#### Wednesday 5 July 12.05 pm – 12.55 pm

Media and technology are evolving so quickly that making exciting science communication seems both temptingly possible and impossibly scary. Where do you start? Come and have your lunch while meeting and listening to people who have taken their first steps, dived in, survived and created some fantastic stuff about science – in public!

**Speakers include:** Jack Scanlan, PhD Candidate, Melbourne University, Editor-in-Chief, Lateral Magazine, Jean Balchin, English Literature Honours student, University of Otago, author of A History of NZ Science in 25 Objects Ellen Rykers, Master of Science Communication Student, University of Otago, freelance writer and science communicator. Jesse Bering, Assoc. Professor, Centre for Science Communication, University of Otago.

# **Workshops & Seminars**

#### Monday 3 July 2017, 2.00 - 5.00 pm

Room 5 (1st Floor) St David Lecture Complex

#### Introduction To R and R Shiny (fully booked)

The Bioinformatics Institute, University of Auckland

With just a little guidance, you can wield the power and expressivity of R to make awesome paper-ready images for scientific publication, AND turn your analyses into elegant interactive web applications without requiring HTML, CSS, or JavaScript knowledge.

Attendees are asked to bring their own laptop, as this is a hands-on workshop. If you do not have a laptop, we will try to pair you with someone who does.

No prior coding knowledge required. Knowledge of unix and basic command-line text editors is a plus.

#### Wednesday 5 July 2017, 2.00 - 3.00 pm

Room 5 (1st Floor) St David Lecture Complex

#### Best Practice in RNASEQ (fully booked)

The Bioinformatics Institute, University of Auckland

This workshop introduces you to the design, analysis and visualisation of an RNA-seq experiment, with a focus on the bioinformatics issues that arise from large datasets and their manipulation.

The course has been adapted to the needs of beginners in the field of NGS bioinformatics and allows scientists with no or little background in computer science to get a first hands-on experience in this new and fast evolving research topic.

No laptop necessary.

#### Wednesday 5 July 2017, 3.15 pm - 4.15 pm

iRoom 5 (1st Floor) St David Lecture Complex

#### Best Practice in Metagenomics (fully booked)

The Bioinformatics Institute, University of Auckland

You can meet the experts, who will outline tools and approaches used to conduct metagenomic analyses. Following the talk, there will be time for questions and answers with the team of experts from the Bioinformatics Institute.

This course is designed to be understood by novice scientists with no or little background in computer science as a way to get a basic knowledge in this incredible field of novel discoveries.

No laptop necessary.



#### Thursday 6 July 2017, 1.00 pm - 3.30 pm

Room 1, St David Lecture Theatre Complex

#### VISG Statistics Seminar (booking required)

Brian Cullis and Alison Smith

Genotype by environment data: pedigree and genomic selection analysis using ASRemI-R

This seminar will use several data-sets to demonstrate the methods outlined in two papers:

Genomic selection and genomic estimated breeding values in genotype by environment data: a proof of concept for Radiata Pine Breeding Company.Brian Cullis, Alison Smith and Paul Jefferson.

Selection tools built on factor analytic models for genotype by environment data. Alison Smith and Brian Cullis.

The seminar will also work through the ASRemI-R syntax for model fitting and the R code for summarising results.

This Seminar is free but bookings essential book via the Genetics Otago Booking System: https://geneticsotago.wildapricot.org/event-2565358

# Keynote Speaker Biographies



#### **Associate Professor Jacqueline Batley**

Prof Jacqueline Batley is an ARC Future Fellow at the University of Western Australia. She was awarded her PhD from the University of Bristol UK in 2001. She moved to Australia in 2002, as a senior research scientist at DPI-Victoria, then led a research group at the University of Queensland as an ARC QEII Research Fellow, from 2007-2014. Jacqui has received several awards for her research including a University of Queensland Foundation Research Excellence Award, an ARC QEII Fellowship and an ARC Future Fellowship. Jacqueline has expertise in the field of plant molecular biology, genetics and genomics, gained from working in both industry and academia. Her areas of interest include genetic and genomic analysis and specifically, genome sequence analysis, pan genomics, SNP analysis and the role of structural variation for applications such as genetic diversity, genetic mapping, LD, GWAS, evolutionary, population and comparative genomic studies, as well as the molecular characterisation of agronomic traits. She is currently focussing on blackleg resistance in Brassicas.



#### **Professor Hugo Bellen**

Hugo Bellen, D.V.M., Ph.D, is a Howard Hughes Investigator and Distinguished Professor at Baylor College of Medicine in Houston, Texas. His group has made major contributions to our understanding of nervous system development, mechanisms of neurodegeneration, and has developed numerous tools and reagents for the Drosophila research community worldwide. Professor Bellen uses fruit flies to examine the normal function of genes implicated in neurodegeneration. He is the Principle Investigator of the Model Organisms Screening Center (MOSC) for the Undiagnosed Diseases Network (UDN) of the National Institutes of Health in the USA. The goal of the MOSC is to determine which human variants associated with specific human disease are pathogenic using fruit flies and zebrafish. His lab has discovered more than five new human diseases in the past two years, and his lab members are elucidating the pathogenic mechanisms for Friedreich ataxia, Alzheimer Disease, Parkinson Disease, and several other neurodegenerative diseases. Professor Bellen's research demonstrates the benefits to human health that can emerge from studies in model organisms. He not only uses flies in his research, he also loves fly fishing and is fond of Australia and New Zealand.



#### **Professor Antony Dean**

Tony obtained his PhD in 1987 from Washington University in St Louis studying the fitness effects of new amino acid replacements in the beta-galactosidase of E. coli under the supervision of Dan Hartl. He completed his postdoctoral training at the University of California at Berkeley working on regulatory phosphorylation of isocitrate dehydrogenase in the laboratory of Dan Koshland. In 1991 he became an assistant professor in the Department of Biochemistry at the Chicago Medical School where he continued pursued work on protein engineering and the metabolic basis of natural selection. He moved to the BioTechnology Institute at the University of Minnesota in 1999 where he continues his interests in protein structure, function and evolution.



#### **Professor Tom Gilbert**

Tom has a BA in Biological Sciences from the University of Oxford, after which he did his D.Phil under Alan Cooper's supervision. During this time he was first exposed to not only the power, but also limitations, of using genetic data in ecological, evolutionary, anthropological and archaeological questions, the latter in particular shaping his later research. He then spent two years at the University of Arizona with Mike Worobey, during which he helped apply his aDNA expertise to tackling questions relating to the origin of the HIV-1 epidemic. He subsequently moved to the University of Copenhagen, where he is currently Professor of Palaeogenomics and Head of the Natural History Museum's research department for Evolutionary Genomics. Today his groups's research remains broad, but in general synthesises modern and ancient genomic-scale datasets, across topics spanning both basic and applied questions.



#### Dr Rebecca Johnson BSc(Hons), PhD

Dr Johnson is Director of the Australian Museum Research Institute, a Wildlife Forensic Scientist, a conservation geneticist and co-chief investigator of the Koala Genome Consortium. As Director of the Australian Museum Research Institute she leads the 100+ staff working in science and education work of the Australian Museum.

She has an honours degree from the University of Sydney and PhD from La Trobe University Melbourne in the field of molecular evolutionary genetics and has worked as a molecular geneticist, in Australia and the USA before joining the museum in 2003. Since then she has established the Museum as one of the global leaders in the field of wildlife forensics and conservation genomics through the ISO17025 accreditation of the Australian Centre for Wildlife Genomics facilities (one of the only fully accredited wildlife forensics laboratories in the Australasian region).



#### **Assistant Professor Elinor Karlsson**

Elinor Karlsson is an assistant professor in bioinformatics and integrative biology at the University of Massachusetts Medical School. She is also the director of the Vertebrate Genomics Group at the Broad Institute of MIT and Harvard. Her research focuses on using our own evolutionary history to understand how the genome works, and how that knowledge can lead to advances in healthcare. She has a special interest in diseases shared between humans and dogs. She recently launched the citizen science-driven Darwin's Dogs project, which invites all dog owners to participate directly in research exploring the genetic basis of dog behavior, as well as diseases such as OCD and cancer. Her current projects also include the 200 Mammals Genome Project, an international effort to compare hundreds of different mammalian genomes and identify critically important segments of DNA, and the evolution of resistance to ancient infectious diseases, like cholera, in people. Elinor received her B.A. in biochemistry, and a Bachelor of Fine Arts, from Rice University, and her Ph.D. in bioinformatics from Boston University. She was a postdoctoral fellow at Harvard University before starting her own research group in 2014.

#### **Assistant Professor Daniel MacArthur PhD**

Daniel MacArthur is an Assistant Professor at Harvard Medical School and Massachusetts General Hospital and the Co-Director of Medical and Population Genetics and the Center for Mendelian Genomics at the Broad Institute of Harvard and MIT. His research focuses on the use of genomic approaches to uncover the functional impact of human genetic variation, and especially its role in causing severe Mendelian diseases. He currently coordinates the Genome Aggregation Database (gnomAD), which has aggregated and jointly processed exome and genome sequence data from over 140,000 individuals, made publicly available through the widely-used ExAC and gnomAD browsers. His group also applies a variety of genomic technologies, including exome, whole-genome, and transcriptome sequencing, to improve the diagnosis of patients with rare disease. To date his lab has sequenced over 3,000 samples and provided genetic diagnoses for over 500 families suffering from these diseases. He now co-directs the newly created Center for Mendelian Genomics at the Broad Institute, established with a grant from NHGRI, which will apply genomic technologies to the diagnosis of over 7,000 rare disease families over the next four years.

MacArthur received his BMedSc and PhD from the University of Sydney, Australia, and completed postdoctoral training at the Wellcome Trust Sanger Institute in Cambridge, UK before beginning his current position in 2012.

# **Conference Programme**

Please refer to the conference website for the electronic abstracts and any updates: http://gen2017.w.events4you.currinda.com

#### **SUNDAY 2 JULY 2017**

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ex 1.00 ; Entry on		
Conference Opening / Welcome Function Peter Dearden (for GSA) & Anthony Poole (for NZSBMB) 5.30 pm – 6.30 pm		

Keynote / Public Lecture: Chairs: Peter Dearden and Anthony Poole

Pet dogs, citizen science and complex behavioral genetics

Elinor Karlsson – University of Massachusetts Medical School, USA 6.30 pm – 7.30 pm

Location

Offsite Foyer



Main Conference Room Room 1



#### **MONDAY 3 JULY 2017**

Registration desk opens from 8.00 am

# Drosophila to identify and unravel pathogenic mechanisms of human genetic diseases

Keynote: Hugo Bellen, Baylor College of Medicine, Texas, USA Chairs: Wayne Patrick & Peter Dearden 9.00 am – 9.45 am

Morning Tea 9.45am – 10.15am

**Practical Adaptive Landscapes** Keynote: Antony Dean, University of Minnesota, USA Chairs: Wayne Patrick & Peter Dearden 10.15 am – 11.00 am

#### Cell-type specific profiling of chromatin states within the brain

**Owen Marshall, University of Tasmania, Australia Chairs:** Wayne Patrick & Peter Dearden 11.05 am – 11.25 am

# The avoidance of random RNA interactions controls bacterial protein expression

Paul Gardner, University of Canterbury, New Zealand Chairs: Wayne Patrick & Peter Dearden 11.30 am – 11.50 am

Announcements 11.55 am - 12.00 pm

Lunch 12.00 pm - 1.00 pm



## MONDAY 3 JULY 2017

Genomics 1 1.00 pm – 2.10 pm Chair: Neil Gemmell	Biochem-AG 1.00 pm – 2.10 pm Chair: Amy Osborne Session sponsored by	Workshop 2.00 pm – 5.00 pm	
<b>Developmental genomics of</b> <b>sponges</b> Maja Adamska, Australian National University, Australia 1.00 pm - 1.20 pm	<b>Insecticide metabolism -</b> <b>Control or chaos?</b> Philip Batterham, University of Melbourne 1.00 pm - 1.20 pm		
<b>Commemorating 60 years</b> of bidirectional selection: <b>Applying genomics to</b> <b>the Virginia body weight</b> <b>chicken lines</b> Mette Lillie 1.25 pm – 1.40 pm	<b>Evolution of the odorant</b> receptor multigene family in insects: a tale from coloured fish to flying dragons Richard Newcomb 1.25 pm - 1.40 pm		
The shape of silencing: differential DNA methylation between the sexes of genes subject to X chromosome inactivation in marsupials Paul Waters 1.40 pm – 1.55 pm	<b>Cyclotides: deployment of the small circular peptides for butterfly pea (Clitoria ternatea) plant defence</b> Georgianna Oguis 1.40 pm – 1.55 pm		
<b>New insights into sexual plasticity in fish using RNA- Seq</b> Ann Liu 1.55 pm – 2.10 pm	Genotyping-By-Sequencing for diverse applications including population genetics Jeanne Jacobs 1.55 pm – 2.10 pm	R and R Shiny Workshop 2.00 pm – 5.00 pm Bioinformatics Institute	
Drosophila and mouse genetic models provide clues into the inexplicable tumour suppressor behaviour of FUBP1 in oligodendroglioma Leonie Quinn, Australia National University, Australia 2.20 pm – 2.45 pm Chair: Neil Gemmell			
Afternoon Tea 2.45 pm – 3.15 pr	n		

Location

Offsite Foyer





## **MONDAY 3 JULY 2017 (continued)**

Genomics 2 3.15 pm – 4.55 pm Chair: Julia Horsfield	Workshop 3.15 pm – 5.00 pm
<b>The tuatara genome - insights from the sole survivor of an</b> <b>ancient reptilian order</b> Neil Gemmell, University of Otago, New Zealand 3.15 pm - 3.35 pm	R and R Shiny Workshop 2.00 pm – 5.00 pm
A genomewide investigation of susceptibility and resistance of bottlenose dolphins to cetacean morbillivirus Kimberley Batley 3.40 pm - 3.55 pm	Bioinformatics Institute
<b>Identifying methylome changes in response to heavy, long- term cannabis use, in a large longitudinal cohort</b> Amy Osborne 4.00 pm – 4.15 pm	
Australian rainbowfishes: a model system for ecological genomic studies of adaptation to climate change Luciano Beheregaray 4.20 pm – 4.35 pm	
<b>Genetic hitchhikers: what species are hiding in your sequencing data?</b> Rachel Ashby 4.40 pm – 4.55 pm	
Poster Session 1 5.00 pm – 6.45 pm (refer to pages 27-30)	
Keynote/Public Lecture: Chair: Stephen Robertson <b>Using large-scale genomic databases to interpret genetic variat</b> Daniel MacArthur, Harvard Medical School, USA 6.45 pm – 7.45 pm	tion



#### **TUESDAY 4 JULY 2017**

#### Registration desk opens from 8.00 am

#### Wildlife genomics and conservation - lessons from the koala genome Chair: Katherine Belov

Keynote: Rebecca Johnson, Australian Museum Research Institute, Australia 8.30 am - 9.15 am

#### Maximising genetic diversity in captive breeding for translocation programmes: a conservation genomics approach

Chair: Katherine Belov Tammy Steeves, University of Canterbury, New Zealand 9.20 am - 9.45 am

Morning Tea 9.45 am - 10.15 am

#### Using conservation genomics to predict adaptive potential in hihi

Chair: Coral Warr Anna Santure, University of Auckland, New Zealand 10.15 am - 10.35 am

#### **Decoding obesity & type-2 diabetes co-morbidity**

Chair: Coral Warr Justin O'Sullivan, University of Auckland, New Zealand 10.35 am - 10.55 am

#### **Deciphering the role of DNA replication in human growth and development**

Chair: Coral Warr Louise Bicknell, University of Otago, Dunedin 10.55am – 11.15am Sponsored by phscientific Merck

#### **Genotyping Brassicas: The need for a pangenome**

Chair: Jeanne Jacobs Keynote: Jacqui Batley, University of Western Australia 11.20 am - 12.05 pm Sponsored by agresearch

Lunch 12.05 pm – 1.00 pm

Genetics Association of AustralAsia Annual General Meeting 12.05 pm - 1.00 pm

NZSBMB Annual General Meeting 12.05 pm - 1.00 pm Room 6

Location

Offsite Foyer





Evo-Devo 1 1.00 pm – 2.50 pm Chair: Peter Dearden Session sponsored by	Conservation/Ecology 1.00 pm – 2.50 pm Chair: Jon Waters	
Torso-like interacts with the insulin signalling pathway to regulate growth and developmental timing Coral Warr, Monash University, Australia 1.00 pm – 1.20 pm	Using population genetics and genomics as next- generation approaches for the control of invasive insects: social wasps as a case study Phil Lester, Victoria University, New Zealand 1.00 pm – 1.20 pm	
<b>The transcription factor</b> <b>petal loss suppresses</b> <b>growth between sepals in</b> <b>arabidopsis</b> David Smyth 1.20 pm – 1.35 pm	Bridging the conservation genetics gap by identifying barriers to uptake for conservation practitioners Helen Taylor 1.20 pm -1.35 pm	
<b>Evolving eusociality: Using</b> <b>Drosphila to understand</b> <b>how queen pheromone</b> <b>inhibits reproduction in</b> <b>worker honeybees</b> Mackenzie Lovegrove 1.35 pm – 1.50 pm	<b>The devil's in the diet: a</b> <b>metabarcoding study of</b> <b>ecosystem changes</b> Catriona Campbell 1.35 pm – 1.50 pm	
Use if or lose it? The genomic mechanisms underlying wing-loss in New Zealand's alpine stoneflies Andrew Veale 1.50 pm – 2.05 pm	<b>Using mitochondrial DNA</b> sequencing and nuclear <b>Genotyping-by-Sequencing</b> to identify bycaught seabirds Peter Ritchie 1.50 pm – 2.05 pm	

Location

Offsite Foyer

Room 1



Evo-Devo 1 continued Chair: Peter Dearden Session sponsored by	Conservation/Ecology continued Chair: Jon Waters	
<b>The genetic and mechanistic</b> <b>basis of worker sterility in</b> <b>the honey bee</b> Isobel Ronai 2.05 pm – 2.20 pm	<b>Genetics and conservation</b> <b>biology: a reexamination</b> Ian Franklin 2.05pm – 2.20 pm	
Phenotypically normal worker honey bees (Apis mellifera capensis) with three alleles at multiple microsatellite loci Benjamin Oldroyd, University of Sydney 2.20 pm – 2.35 pm	Mitochondrial variation and heteroplasmy in Australian and Hawai'ian cane toads Lee Rollins 2.20 pm – 2.35 pm	
Is migration propensity linked to genetic "switches" in a great "speciator" silvereyes Zosterops lateralis? Graeme Oatley 2.35 pm – 2.50 pm	Environmental DNA monitoring detects habitat- specific species assemblages in the marine ecosystem Gert-Jan Jeunen 2.35 pm - 2.50 pm	
Afternoon Tea 2.50 pm – 3.15 pi	n	

LocationOffsiteMain Conference RoomRoom 5FoyerRoom 1Room 2

Biochem and Evolution 3.15 pm – 5.05 pm Chair: Monica Gerth	Medical Genetics 3.15 pm – 4.50 pm Chair: Louise Bicknell	Evo-Devo 2 3.15 pm – 4.00 pm Chair: Peter Dearden
Predicting the future and reconstructing the past through protein engineering Colin Jackson, Australian National University 3.15 pm – 3.45 pm	A recessive skeletal dysplasia due to compound heterozygosity for bi- allelic variants in MYH3 Stephen Robertson, University of Otago 3.15 pm – 3.35 pm	<b>Epigenetic memory in</b> <b>vertebrates</b> Tim Hore 3.15 pm – 3.30 pm
How the other half live: the evolution of repetitive DNA Austen Ganley, University of Auckland 3.45 pm – 4.05 pm	<b>Growing a Pair:</b> Directing pluripotent stem cells towards human testis cell lineages Ingrid Knarston 3.35 pm - 3.50 pm	<b>Epigenetics and sex</b> <b>determination</b> Jenny Graves 3.30 pm – 3.45 pm
<b>The anatomy of an</b> <b>adapted enzyme</b> Renwick Dobson 4.05 pm – 4.20 pm	<b>GWAS on post-term</b> <b>birth: Analysis of</b> <b>successive Finnish birth</b> <b>cohorts identifies TKT</b> <b>and SSBP2 loci</b> William Schierding 3.50 pm – 4.05 pm	A unified model for the molecular basis and evolution of temperature-dependent sex determination Clare Holleley 3.45 pm - 4.00 pm
Determining the molecular effects of 5-fluorocytosine on the pathogenicity	Using the mouse model to understand the interplay between genetic susceptibility	ECOLOGY 4.05 pm – 5.20 pm Chair: Anna Santure
of Pseudomonas aeruginosa Jessica Thomson 4.20 pm – 4.35 pm	and idiopathic scoliosis progression during puberty Megan Wilson 4.05 pm - 4.20 pm	Phylogenomics and species delimitation of pygmy perches: implications for biogeography, taxonomy and conservation Sean Buckley 4.05 pm - 4.20 pm

Location

Offsite Foyer

Main Conference Room Room 1



Biochem and Evolution continued Chair: Monica Gerth 4.35 pm - 5.05 pm	Medical Genetics continued Chair: Louise Bicknell 4.20 pm - 4.50 pm	Ecology continued Chair: Anna Santure 4.20 pm - 5.20 pm
<b>Emergence of RNA</b> editing in an evolution experiment Anthony Poole 4.35 pm – 4.50 pm	<b>Pleiotropic effect of</b> <b>ABCG2 in gout</b> Amanda Phipps-Green 4.20 pm – 4.35 pm	Differential gene expression in brain tissue of cane toads across the australian invasive range Andrea West 4.20 pm - 4.35 pm
<b>Bioinformatic discovery of noncoding RNA genes</b> Christopher Brown 4.50 pm – 5.05 pm	<b>Zbtb11 regulates TP53</b> <b>and is required for</b> <b>definitive haemopoiesis</b> Maria Cristina Keightley 4.35 pm – 4.50 pm	Volcanoes and earthquakes shed light on how disturbance shapes spatial patterns of genetic diversity Ceridwen Fraser 4.35 pm - 4.50 pm
		Invader immune profiles? Differential gene expression patterns in cane toad populations match predictions about invasive species immune function Daniel Selechnik 4.50 pm – 5.05 pm
Poster Session 2 5.00 pm – 6.30 pm (Refer to Pages 27-30)		Phylogenetic affinities of white-chinned petrels: questions for conservation management Kalinka Rexer-Huber 5.05 pm - 5.20 pm
Art & Genetics Exhibiton Opening – HD Skinner Annex, 361 Great King Street 6.10 pm – 6.50 pm Conference Dinner – Otago Museum, 419 Great King Street 7.00 pm – 10.30 pm (Optional – bookings essential for both events – Art & Genetics Exhibiton free of charge, Conference Dinner - \$125 or \$90 for students)		

Location



Main Conference Room Room 1



## WEDNESDAY 5 JULY 2017

Registration desk opens from 8.00 am	
Keynote: Chair: Lisa Matisoo-Smith Dogs and wolves in time and space Tom Gilbert, Natural History Museum of D 9.00 am – 9.45 am	enmark
Morning Tea 9.45am – 10.15am	
Ancient DNA Plenary 10.15 am – 11.15 am Chair: Nic Rawlence	Statistical Genetics (VISG) 10.15 am – 11.15 am Chair: Phil Wilcox
Ancient DNA and contributions to understanding the human settlement of the Pacific Lisa Matisoo-Smith, University of Otago 10.15 am - 10.35 am	Genomic selection and genomic estimated breeding values in genotype by environment data: a proof of concept for RPBC Brian Cullis, Alison Smith and Paul Jefferson 10.15 am - 10.40 am
Ancient DNA: testing for climatic and anthropogenic drivers of ecosystem change in the Southern Hemisphere Jonathan Waters, University of Otago, New Zealand 10.35 am - 10.55 am	Selection tools built on factor analytic models for genotype by environment data Alison Smith and Brian Cullis 10.40 am – 11.15 am
Rapid Response of a Marine Mammal Species to Holocene Climate and Habitat Change Mark de Bruyn, University of Sydney 10.55 am - 11.15 am	
The Custom Science NZSBMB Award for F Chair: Anthony Poole 2017 Recipient: Wayne Patrick, Univer 11.20 am – 12.05 pm Sponsored by: customscience	Research Excellence
Lunch 12.05 pm – 1.00pm	Young Sci-Com Lunch – 1st Floor Mezzanine
Location Offsite Main Constraints Room	onference Room Room 5 1 Room 2

## WEDNESDAY 5 JULY 2017 (continued)

Microbial Genomics 1.00 pm – 2.45 pm Chair: Xochitl Morgan	Ancient DNA Symposium 1.00 pm – 2.45 pm Chair: Michael Knapp	
<b>Evolution of a global</b> <b>superbug</b> Scott Beatson, University of Queenland, AUS 1.00 pm – 1.30 pm	Myth or relict: Does ancient DNA detect the enigmatic Upland seal? Alex Salis 1.00 pm - 1.15 pm	
	<b>Untangling the evolutionary</b> <b>history of the European</b> <b>Bison</b> Ayla van Loenen 1.15 pm – 1.30 pm	
One genome to rule them all: genome plasticity in single strains of Helicobacter pylori Jenny Draper 1.30 pm - 2.00 pm	<b>Madagascar's extinct</b> elephant birds: what we know from molecular studies Alicia Grealy 1.30 pm – 1.45 pm	Workshop Best Practice in RNA Seq 2.00pm – 3.00pm
	Out of Australia - Are New Zealand's extinct giant birds of prey descendants of recent Australian migrants? Michael Knapp 1.45 pm - 2.00 pm	
<b>Discovery of new natural</b> <b>products from uncultivated</b> <b>microbes</b> Jeremy Owen 2.00pm – 2.30pm	Ancient DNA reveals extinction and replacement of New Zealand's unique flight- reduced semi-terrestrial swans Nic Rawlence 2.00 pm – 2.15 pm	
	Ancient DNA from museum specimens: techniques for minimizing damage Lara Shepherd 2.15 pm – 2.30 pm	
<b>Evolution of antibiotic</b> <b>resistance in pseudomonas</b> <b>aeruginosa</b> Iain Lamont 2.30pm – 2.45pm	Ancient DNA clarifies the evolutionary history, taxonomy and distribution of crested penguins Theresa Cole 2.30 pm - 2.45 pm	
Location Offsite	Main Conference Room	Room 5 Room 2

## WEDNESDAY 5 JULY 2017 (continued)

Afternoon Tea 2.45 pm – 3	.15 pm	
GSA Awards 3.15 pm – 5.55 pm Chairs: Katherine Belov & Peter Dearden		Workshop 3.15 pm – 4.15 pm
Excellence in Education Award 3.15 pm – 3.35 pm Jaime Gongora University of Sydney		Workshop: Best Practice in Metagenomics 3.15 pm – 4.15 pm
D.G. Catcheside Award 3.40 pm – 3.55 pm Katherine Harrisson La Trobe University		
Alan Wilton Award 4.00 pm – 4.20 pm Jemma Geoghegan Macquarie University		
Ross Crozier Medal 4.25 pm – 4.50 pm Peter Fineran University of Otago		
MJD White Medal Award 4.55 pm – 5.55 pm Richard Frankham Macquarie University		
Public Lecture: <b>Me, my dog and maize: str</b> <b>level using ancient DNA</b> Tom Gilbert, Natural History 6.30 pm – 7.15 pm	a <b>dying evolution and domes</b> / Museum of Denmark	stication at the population

Location

Offsite Foyer

Main Conference Room Room 1



#### **THURSDAY 6 JULY 2017**

Emerson Brewery Tour (booking essential) make your way to 70 Anzac Avenue 10.15am – 11.30am

Anatomy Museum Tour Lindo Fergusson Building, Great King Street

(opposite Dunedin Hospital) 12.50am – 2.00pm

#### VISG Statistics Seminar

Genotype by environment data: pedigree and genomic selection analysis using ASReml-R

Brian Cullis and Alison Smith 1.00pm – 3.30pm

This Seminar is free but bookings essential (also open to the public) Book via the Genetics Otago Booking System: https://geneticsotago.wildapricot.org/event-2565358



# **Posters**

In alphabetical order of presenting authors surname (see back covers for locations)

Poster ID	Location	Poster
778	A	Predicting altered methylation patterns in early pre- eclampsia Suzan Almomani
762	А	Using DNA methylation to investigate a novel model for childhood acute lymphoblastic leukaemia Abdulmonem Alsaleh
630	В	Adaptive genomic divergence despite high gene flow in an Australian fish, golden perch (Macquaria ambigua) Catherine RM Attard
785	D	Combining deleterious ABC transporter C2 alleles of independent origin causes field resistance to insecticidal Bt toxins Simon W Baxter
659	A	Genetic consequences of wildfire in an insular stand of the bird-pollinated, granite-outcrop endemic tree <i>Eucalyptus</i> <i>caesia</i> Nicole Bezemer
767	А	Understanding the genetic basis of mate choice in an iconic Australian species Parice A Brandies
733	В	Waking the sleeping dragon - molecular insights into the hibernation of the central bearded dragon Alexander Capraro
693	D	Developmentally important transcription factor <i>Fezf2</i> has a molecular and functional role in the mature brain Alison J Clare
661	С	Identification and expression of pluripotency genes during ascidian whole body regeneration. Rebecca M. Clarke
671	С	Regulation and Evolution of Complex Developmental Gene Networks Andrew G Cridge
788	А	Sequencing the genomes of every Kakapo Andrew Digby
540	В	Coming of age: the role of nuclear structure in zygotic genome activation Amy Dowdle
536	A	Does animal personality explain harem access in the polygynous new zealand sea lion (phocarctos hookeri)? Imogen Foote
588	A	Genomic analysis of hybridisation between the endemic kakī (black stilt), and the self-introduced poaka (pied stilt) Natalie J Forsdick
691	D	Triose phosphate isomerase: far from perfect, far from done Josh B Gilligan

Poster ID	Location	Poster
532	В	Sex and stress: ls cortisol a mediator of sex change in fish? Alexander Goikoetxea Pérez de Mendiola
567	В	Genomics of a weevil pest and its parasitoid biocontrol
		agent Thomas WR Harrop
772	D	Characterisation of an Arabidopsis thaliana plant cysteine
		dioxygenase Brooklyn K Hayes
735	D	Recombination drives evolution of the pyoverdine locus in
		Pseudomonas aeruginosa Astra Heywood
734	В	Evidence for post-transcriptional regulation of dosage
		compensation in platypus William Horspool
699	С	Telomere length dimorphism in dasyurid marsupials is
		based on parental origin of the chromosome Emory D Ingles
775	D	Regulatory small RNAs in bacteria: Annotation and
		evolutionary origins Bethany R Jose
706	В	Functional analysis of a gout-associated noncoding snp
		variant Sarada Ketharnathan
698	С	Rock wallabies as a model for chromosome speciation:
		fine-scale mapping of chromosome rearrangements.
		Maya Kruger-Andrzejewska
704	D	Intergenerational effects of atrazine exposure during
		juvenile development in zebrafish Simon SDL Lamb
740	٨	New structural and functional insights into the type II
740	A	fungal ATP-binding cassette transporter Candida albicans
		Cdr1 Erwin Lamping
657	В	Unravelling the genetics of macadamia: integration of
		linkage and genome maps. Kirsty S Langdon
680	С	Independent loss of introns during evolution across
		multiple fungal clades Chun Shen Lim
696		To the Caribbean and beyond: complete mitogenomes of
080	В	ancient guinea pigs as a proxy for human interaction post-
		AD500 Edana Lord
547	A	Genome-wide association study of gout in 111,098 people
		of european ancestry Tanya J Major
776	A	Structural investigation of the Hsc70 heat shock cognate
		protein for applications in radiotherapy Jamin L.B Martin
694	В	Whole genome insight into Kea's alpine lifestyle
770		Denise Martini Machaniana of Antiva DNA Demothylation in comptio calle
770	D	Mechanisms of Active DNA Demethylation in somatic cells
713	Δ	Gender hiss and late onset idionathic disease
	/ \	Jeremy McCallum-Loudeac
528	A	Innovative approaches to disease gene discovery in motor
		neuron disease Emily P McCann

Poster ID	Location	Poster
777	A	Inbreeding on the rise: Molecular-based pedigree reveals an early warning sign of gene diversity loss in an island population of Tasmanian devils (Sarcophilus harrisii) Elspeth A McLennan
765	А	Germline Variant in Tumour Supressor p16 <sup>INK4A</sup> and Long Non-Coding RNA ANRIL in Breast Cancer Paulomi Mehta
683	В	De novo assembly and reconstruction of complete circular chloroplast genomes using Geneious Hilary Miller
684	С	Germline memory: Understanding epigenetic reprogramming in vertebrates Oscar Ortega-Recalde
763	A	SLC2A9 and hyperuricemia: Identification of population- specific genetic variants in New Zealand Maori and Pacific (Polynesian) people. Padmini Parthasarathy
722	D	Interactions between PvdA and PvdF, two enzymes involved in pyoverdine biosynthesis in Pseudomonas aeruginosa Priyadarshini Devi Philem
525	А	Hierarchical metapopulation structure in the southern Australia coastal bottlenose dolphin (Tursiops cf. australis) Eleanor AL Pratt
544	D	A bimolecular luminescence complementation assay to identify a bee-friendly insecticide Charlotte Pushparajan
531	В	DNA methylation and aging in zebrafish Alexandria Ragsdale
766	А	Human papilloma virus in the placenta: the role of p53 Sankalita Ray
745	A	Detecting genetic divergence in a relict New Zealand seabird Aisling Rayne
724	А	Understanding evolution of ciprofloxacin resistance in Pseudomonas aeruginosa Attika Rehman
548	D	Convergence of Deformed Wing virus recombinant strains in honey bee populations with Varroa-resistance Emily Remnant
719	А	Gene expression in conspecific-supressed cane toad tadpoles Mark F Richardson
702	В	Propr: an r package for measuring associations in any -omics data Mark F Richardson
779	D	A FRET reporter of conformation in Hsc70 Malcolm T Rutledge
718	С	Identification and characterisation of two putative ecdysteroid kinases in Drosophila melanogaster Jack Scanlan
591	A	One big family? Population genetic structure of the endangered black-fronted tern (Chlidionias albostriatus) Ann-Kathrin V. Schlesselmann
549	В	Association of genetic variants in AAT encoded SERPINA1 gene with gout in Europeans and Polynesian Amara Shaukat

Poster ID	Location	Poster
723	С	Determining the regulation of Lbx1 gene expression during
		mouse spinal cord development. Kathleen J Sircombe
517	D	Evidence for a large expansion and neofunctionalisation of
		neuroglobin-like genes in sea anemones Hayden L Smith
740	С	Testing the Kinship Theory of Genomic Imprinting in African
		honey bees Nicholas MA Smith
70.4	P	SWItching it up: Purification of fungal SWI/SNF complexes
/84	D	reveals compositional differences from their yeast
		counterparts Brianna Steed
730	D	Scratched, then sniffed? exploring the role of chemotaxis in
		host invasion Laura RK Stringer
742	В	Linkage disequilibrium and linked identity by decent for
		loose linkage John Sved
566	С	Sex-differential microrna expression in the developing
		mouse brain Susie Szakats
689	A	Modelling rare disease in Xenopus laevis using CRISPR/
		Cas9 Amy Taylor
789	В	Identifying functional roles for novel cis-regulatory elements
		predicted to regulate the Runx1 gene Armani Thomas
533	С	Investigating early genetic regulators of sex change in
		labrid fish: a multispecies candidate gene approach
		Jodi T Thomas
682	D	Functional analysis of the SOXB1 bound Nestin enhancer
		using CRISPR Ella Thomson
539	A	Genetic effects on social isolation anxiety in zebrafish
		(Danio rerio) Hilary Thomson
771	П	Purification and chromophore composition of an unusual
///	D	phycoerythrin from New Zealand red alga, Polysiphonia
701		Strictissima Pauline I Uyseco
/81	В	van Stijn
709	D	Evolution of Pseudomonas aeruginosa during long term
		infection in a patient with cystic fibrosis Samuel J.T Wardell
526	А	Establishing an invertebrate chordate model to study whole
		body regeneration Megan Wilson
725	С	Lhx9 is required for urogenital ridge formation and ovarian
		development Stephanie Workman
666	D	Understanding the Batten disease associated protein CLN5
		Jade JK Alb

#### Poster Areas: (refer to floorplan on back cover)

Posters A: Medical Genetics plus Model Organisms, Conservation/Ecology

Posters B: Genomics and Ancient DNA

Posters C: Evo-Devo

Posters D (First Floor Foyer): Biochem, Molecular Evolution and Microbes









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