



THE UNIVERSITY OF  
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Sydney  
Informatics Hub

# Genomics Research Computing Workshop

Monday 3<sup>rd</sup> June 2019

[informatics.sydney.edu.au/genomics\\_workshop/](http://informatics.sydney.edu.au/genomics_workshop/)

Messel Lecture Theatre, Level 3  
Sydney Nanoscience Hub (Map Ref. A31)  
Physics Rd Camperdown NSW 2006  
University of Sydney

## Speaker profiles

**Opening Address**  
9.00am – 9.10am



**Hugh Durrant-Whyte**  
NSW Chief Scientist & Engineer

Hugh Durrant-Whyte is NSW Chief Scientist and Engineer. From 2017-18 he was Chief Scientific Advisor to the UK Ministry of Defence, from 2010-2014, he was CEO of National ICT Australia (NICTA), and from 1995-2010 Director of the ARC Centre of Excellence for Autonomous Systems, an ARC Federation Fellow, and the founding Director of the Australian Centre for Field Robotics (ACFR) at the University of Sydney. Hugh is a world-leading authority on machine learning and robotics, and its application. He has published over 300 research papers, graduated over 70 PhD students, and has won numerous awards and prizes for his work, including being named 2010 NSW Scientist of the Year. In his career he has worked with many major companies, has co-founded three successful start-up companies, and has won many awards including being named 2008 Engineers Australia NSW Engineer of the Year. He is particularly well known for his work with Patrick in delivering the automated container terminals in Brisbane and Port Botany, and for his work with Rio Tinto in pioneering the delivering the automated "Mine of the Future". He is an honorary Fellow of Engineers Australia (HonFIEAus), a Fellow of the IEEE (FIEEE), Fellow of the Australian Academy of Science (FAA), Fellow of the Royal Academy of Engineering (FREng), and a Fellow of the Royal Society of London (FRS).



**A/Prof. Mark Cowley (Session Chair)**

Group Leader, Computational Biology, Children's Cancer Institute

Associate Professor Mark Cowley is a bioinformatician whose research is focused on developing innovative computational approaches to improve health outcomes. Mark joined Children's Cancer Institute in 2018 to establish a new computational biology group, bringing his bioinformatics expertise to the Zero Childhood Cancer personalised medicine program as well as a number of other research programs at the Institute.

Best-known for his translational bioinformatics work, Mark previously worked with the Australian Pancreatic Cancer Initiative, and the Kinghorn Centre for Clinical Genomics at the Garvan Institute. Here, he led the development of clinical-grade whole genome analysis, which has now been commercialised, and developed into one of the first whole-genome-sequencing-based pathology tests in the world. He was also instrumental in leading the development of the computational biology underpinning the now-national MoST program, Australia's largest precision medicine trial for adults with rare cancer.



**Precision Medicine**

9.10am – 9.20am

**Professor Jean Yang**

Charles Perkins Centre Integrative Systems and Modelling Lead, Precision Medicine, University of Sydney

Professor Jean Yang is an applied statistician with expertise in statistical bioinformatics. She was awarded the 2015 Moran Medal in statistics from the Australian Academy of Science in recognition of her work on developing methods for molecular data arising in cutting edge biomedical research. Her research stands at the interface between medicine and methodology development and has centered on the development of methods and the application of statistics to problems in -omics and biomedical research. She has made contributions to the development of novel statistical methodology and software for the design and analysis of high-throughput biotechnological data including that from microarrays, mass spectrometry and next generation sequencing. Recently, much of her focus is on integration of multiple biotechnologies with clinical data to answer a variety of scientific questions. This includes developing various approaches and methodologies in statistical machine learning and network analysis. As a statistician who works in the bioinformatics area, she enjoys research in a collaborative environment, working closely with scientific investigators from diverse backgrounds.



### **Genomics for Agriculture**

9.20am – 9.30am

#### **Professor Robert Park**

Director of Cereal Rust Research, University of Sydney

Professor Robert Park completed a PhD in plant pathology at La Trobe University in 1984 and has over 30 years' research experience in the pathology and genetics of cereal rust diseases.

In 1995, he was awarded an Alexander von Humboldt research award in Germany, and in 2010, a Fulbright Senior Scholarship to the USA. In recognition of his extensive work in China, he was awarded the Friendship Award of China in 2009 – the highest honour the Chinese Government bestows on foreign experts who have made outstanding contributions to China. He was awarded the NSW Science and Engineering Award for Excellence in Biological Sciences in 2013, and the Clarke Medal by the Royal Society of NSW in 2015. He was elected to the Australian Academy of Technological Sciences and Engineering in 2015.

Robert holds the Judith and David Coffey Chair of Sustainable Agriculture at the University of Sydney. He is Director of the Australian Cereal Rust Control Program, which includes nodes at the University of Adelaide, CSIRO Plant Industry, and the International Wheat and Maize Improvement Centre in Mexico (CIMMYT).



### **Companion and Farm Animal Genomics**

9.30am – 9.40am

#### **Professor Claire Wade**

Chair of Computational Biology and Animal Genetics, University of Sydney

Claire Wade began her career in quantitative genetics before making the leap to genomics in 2002 when she began a position with the Whitehead Institute for Biomedical Research at Massachusetts Institute of Technology. The genomics group at the Whitehead later became one of the founding groups of what is now the Broad Institute. While in the USA, Claire worked on several mammalian genome projects including the mouse, dog and horse (for which she was the lead researcher). Claire's research interests include unravelling the secrets of genome biology using next generation sequencing. In particular, she studies the application of new genomic technologies to improve our understanding of diseases and behavioural traits in domestic animals and wildlife and our understanding of the links between DNA and phenotype in general. Projects currently underway are as diverse as studying the genetics of durability in Thoroughbred race horses, finding genes underlying canine separation anxiety and working dog performance, improving captive animal management using new genetic resources, and better understanding the genomics of behaviour. Other projects involve mapping genes causing congenital disorders in dogs including cleft palate and deafness using whole genome association analysis and genotyping by sequencing.



### **Pathogen Genomics**

9.40am – 9.50am

#### **Dr Verlain Timms**

Research Fellow, Centre for Infectious Diseases and Microbiology – Public Health, Marie Bashir Institute, University of Sydney

Verlain studied Microbiology at the University of NSW before working overseas as a clinical scientist for the Public Health Laboratory Service (UK), Leeds General Infirmary (UK) and Statens Serum Institute (Denmark) researching the gastric bacterium *Helicobacter pylori*. She returned to the University of NSW for her PhD in Medical Microbiology on pathogenic *Mycobacterial* sp. Here she developed an interest in fastidious bacteria and the interplay between humans and the pathogens that have challenged us for centuries. Her current project on the re-emergence of pathogenic *Bordetella* sp. extends this interest and she hopes to gain more insight into this group using whole genome sequencing techniques. In particular, Verlain is interested in how this pathogen is evading current vaccination strategies and how other *Bordetella* sp. are contributing to pertussis outbreaks.



### **Wildlife Genomics**

9.50am – 10.00am

#### **Dr Carolyn Hogg**

Research Manager of the Australasian Wildlife Genomics, University of Sydney

Dr Carolyn Hogg is the Research Manager for the Australasian Wildlife Genomics Group in the Faculty of Science, University of Sydney. Carolyn is a conservation biologist who has been working with threatened species for over twenty years both in Australia and overseas. Carolyn has been working closely with the Save the Tasmanian Devil Program for over eight years and with other threatened species more recently. Through her partnerships with both her academic and conservation colleagues Carolyn has developed better tools and technologies to integrate molecular genetics into real-time conservation management decisions.



### **Sydney Informatics Hub**

10.00am – 10.10am

#### **Dr Rosemarie Sadsad**

Informatics Services Lead, Sydney Informatics Hub, University of Sydney

Dr Rosemarie Sadsad is the Informatics Services Lead at the Sydney Informatics Hub, University of Sydney. She is also the lead bioinformatician at the Centre for Infectious Diseases and Microbiology – Public Health and NSW Health Pathology – Pathogen Genomics. She is a Computer and Biomedical Engineer with a PhD in Health Informatics (multiscale simulation of health systems) and is Head of the University of Sydney Node of EMBL - Australia Bioinformatics Resource.

**Morning tea (provided)**  
**10.10am – 10.30pm**

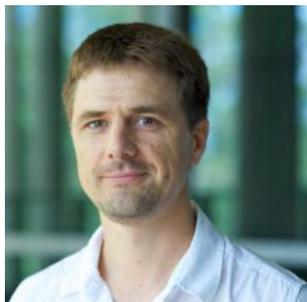
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**A/Prof. Andrew Lonie (Session Chair)**

Director, Australian Bioinformatics Commons and EMBL- Australian Bioinformatics Resource

A/Prof. Andrew Lonie is the Director of the Australian Bioinformatics Commons and the EMBL Australia Bioinformatics Resource, and an associate professor at the Faculty of Medicine, Dentistry and Health Sciences at the University of Melbourne. The Australian Bioinformatics Commons (BioCommons) is an emerging national digital infrastructure program aiming to establish highly accessible and scalable computational platforms and data resources for bioscience research, based on global best practice and tightly linked to international infrastructure programs including the NIH Data Commons and Europe's ELIXIR. The BioCommons is supported by Bioplatforms Australia, the Australian Research Data Commons, and AARNet.



**University of Sydney**

10.30am – 10.40am

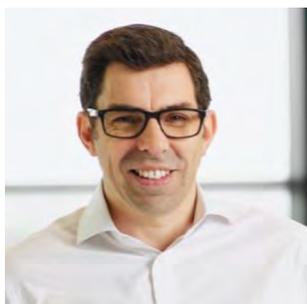
**Dr Andrew Janke**

Associate Director, Research Technology, University of Sydney

Dr. Andrew Janke is the Associate Director, Research Technology at the University of Sydney within the portfolio of Strategic Engagement and Planning, Information and Communications Technology.

Before this he was the Informatics Fellow of the National Imaging Facility (NIF) at the Centre for Advanced Imaging, UQ. He has 20 years experience in the analysis and quantification of BioMedical Imaging data, focused on MRI, PET, CT, Ultrasound and Microscopy but also EEG, video, audio recordings, MALDI-TOF, 2-photon fluorescence and calcium imaging data.

Dr. Janke was the Project Lead on the DLCF led RAID ([www.raid.org.au](http://www.raid.org.au)) Research Activity ID project and seconded to the UQRDM project (<https://research.uq.edu.au/project/research-data-manager-uqrdm>). This project is a combination of technology, change management, policy and education. It aims to change the way how research data is stored at UQ.



**The Walter and Eliza Hall Institute for Medical Research**

10.40am – 10.50am

**Professor Tony Papenfuss**

Head of the Bioinformatics and Cancer Genomics Laboratory at the Peter MacCallum Cancer Centre and The Walter and Eliza Hall Institute of Medical Research

Professor Tony Papenfuss is head of the Bioinformatics and Cancer Genomics Laboratory at the Peter MacCallum Cancer Centre and holds a joint lab head position in the Bioinformatics division at The Walter and Eliza Hall Institute of Medical Research. He is the Lorenzo and Pamela Galli Melanoma Research Fellow. The main focus of his labs research is the analysis of next generation sequence data. Associate Professor Papenfuss'

background is in mathematics and his lab consists of mathematicians, statisticians, physicists and computer scientists, who develop novel bioinformatics methods to make sense of cancer genomics data. He has strong interests in melanoma genomics, in cancer evolution and heterogeneity, and in developing methods to detect genomic rearrangements in tumours. Recent research also includes mathematical models of chromosomal shattering and the breakage-fusion-bridge mechanism.



**The Garvan Institute for Medical Research**

10.50am – 11.00am

**Dr Warren Kaplan**

Chief of Informatics, The Garvan Institute for Medical Research

I am the Chief of Informatics at the Garvan Institute. Having completed a PhD (Wits University, South Africa, 1998) I joined Entigen a bioinformatics startup company, before moving to Garvan's newly established Peter Wills Bioinformatics Centre in 2002. As bioinformatics head of the Centre my role included collaborative research and the provision of core services and infrastructure through grant funding. In my role within Garvan's Kinghorn Centre for Clinical Genomics I oversees the Centre's clinical grade genome sequencing software and informatics implementations, and manage projects relating to informatics, compute and data with partnering organisations.



**Bioplatforms Australia**

11.00am – 11.10am

**Andrew Gilbert**

Chief Executive, Bioplatforms Australia

Andrew Gilbert has been Bioplatforms Australia's general manager since its inception in 2007. Andrew oversees the investment of \$150 million in Commonwealth Government research infrastructure funding in the discovery sciences of genomics, proteomics and metabolomics.

In addition to managing the national infrastructure network, Andrew has also catalysed the formation of a series of strategic national scientific collaborations. Each of these projects is by design multi-disciplinary, multi-institutional and contain both discovery implications and pathways to end use.

Prior to his current endeavours, Andrew was the Commercial Manager for Life Therapeutics and involved in a broad range of activities surrounding the commercialisation of cutting-edge biotechnology developments. A particular focus was to ensure market requirements were successfully married with strong science to deliver a product and service that was both needed by end users and of financial benefit to Life Therapeutics.



### **National Computational Infrastructure**

11.10am – 11.20am

#### **Jon Smillie**

Data Services and Virtual Lab Infrastructure Manager, National Computational Infrastructure

I am a Systems Analyst with NCI's Research Engagements and Initiatives portfolio and have been with NCI for around 15 years in various technical capabilities, providing support and development for NCI's Astronomy, Climate, and Geosciences clients. amongst others.



### **Australian Research Data Commons**

11.20am – 11.30am

#### **Rosie Hicks**

Chief Executive Officer, Australian Research Data Commons

Rosie Hicks, was recently appointed as the Chief Executive Officer of the Australian Research Data Commons (ARDC).

Rosie brings a wealth of experience to the role which will be fundamental to the ARDC in building a truly national capability, with global reach and a collaborative mindset. The ARDC is a transformational initiative that enables Australian researchers and the eResearch community to access nationally significant, leading edge data intensive infrastructure, platforms, skills and collections of high-quality data.

Rosie has expertise and extensive knowledge of the Australian research infrastructure sector, and leadership experience as the former CEO of the Australian National Fabrication Facility (ANFF), constituting a unique skill set for this position. Her career, spanning Japan, UK and Australia, includes every aspect of scientific instrumentation from product development and technical marketing to the management of multi-user facilities working in environments that cross academic and industry domains.

### **Panel Discussion** 11.30am – 12.10pm



### **Panel Discussion**

11.30am – 12.10pm

**Rosie Hicks**, Chief Executive Officer, Australian Research Data Commons - Panel Covenor

**Jean Yang**, Charles Perkins Centre Integrative Systems and Modelling Lead, Faculty of Medicine and Health

**Kathy Belov**, Pro Vice-Chancellor Global Engagement, USyd

**Rosemarie Sadsad**, Informatics Services Lead, Sydney Informatics Hub, USyd

**Hugh Durrant-Whyte**, NSW Chief Scientist & Engineer

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**Tony Papenfuss**, Head of Computational Biology, The Walter and Eliza Hall Institute for Medical Research

**Warren Kaplan**, Chief of Informatics, The Garvan Institute for Medical Research

**Andrew Gilbert**, Chief Executive, Bioplatforms Australia

**Jon Smillie**, Data Services and Virtual Lab Infrastructure Manager, National Computational Infrastructure

**Closing remarks**  
**12.10pm – 12.15pm**

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**Closing Remarks**  
12.10pm – 12.15pm

**Duncan Ivison**  
Deputy Vice Chancellor (Research), University of Sydney

Professor Duncan Ivison is the Deputy Vice Chancellor (Research) at the University of Sydney. He was Dean of the Faculty of Arts and Social Sciences (2010-2015) and Head of the School of Philosophical and Historical Inquiry (2007-2009). He continues to teach in the Department of Philosophy. He has held appointments in the Department of Political Science at the University of Toronto, the Department of Politics at the University of York (UK) and was a Postdoctoral Fellow at the Research School of Social Sciences at the ANU. He did his BA at McGill University in Montreal and MSc and PhD at the London School of Economics and Political Science and was awarded the Robert Mackenzie Prize for his PhD. Prof. Ivison was a Laurance S. Rockefeller Visiting Fellow and Visiting Fellow in Ethics and Public Affairs, at the Center for Human Values, Princeton University (2002-3). He was elected a Fellow of the Australian Academy of Humanities in 2009 and Fellow of the Royal Society of NSW in 2017. He is Chair of the Australian Group of Eight Universities DVCR Committee; Chair of the NSW DVC/PVC Research Committee; Chair of the University of Sydney Confucius Institute Board; member of the ARC Advisory Council; member of the Editorial Board of The Conversation; and board member of UniSeed.

**Lunch (provided)**  
**12.15pm – 1.30pm**

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The **Roadmap for Genomics Research Computing Workshop** and speakers are supported by:

