

THE GENOMIC GENERATION

How will precision medicine change the way we live?

WHAT IS GENOME SEQUENCING?

Genome sequencing reads our **6 billion** genetic letters.



These letters act like an instruction manual to **build and operate our bodies...**



...and can tell us many things about **our risks of having or developing disease**



Every genome sequenced will increase our ability to diagnose genetic disease.

FORUM OVERVIEW

Genomics is creating a new era of precision healthcare in which treatments, prevention strategies and health advice will reach the right person at the right time.

Tonight's panel discussion will explore how genome sequencing may help the early detection, prevention and management of disease. Our speakers will discuss the process of genome sequencing, gene transfer and genome editing technology, plus demonstrate a unique zebra fish model for researching genetic variants.

The forum has been organised by Pathfinders, a collective-giving group who support innovative cancer research projects at the Garvan Institute of Medical Research.



“

Genomics is creating new medical products and services. It is disrupting the connection between treatment and prevention. It is collapsing the distinction between health and consumer services.

”

- Dr Thomas Barlow, author, Garvan Global Genomics Report.

FORUM SPEAKERS



Dr Martin Smith

Head of Genomic Technologies
Kinghorn Centre for Clinical Genomics
Garvan Institute of Medical Research

Dr Smith is a computational biologist with a strong background in biology. He majored in microbiology and immunology at the University of Montreal, however soon switched to the emerging field of bioinformatics.

Dr Smith has worked in five cities across three continents: Montreal (University of Montreal); Quebec City (Infectious Disease Research Centre—CHUL); Brisbane (Institute for Molecular Bioscience); Leipzig (Interdisciplinary Center for Bioinformatics); and Sydney (Garvan).

Dr Smith's research revolves around characterising the "regulome", ie the biological mechanisms that control how genes are activated and repressed. He is particularly interested in how non-protein coding regions of the genome can regulate gene expression at the level of RNA.



Dr Mark Pinese

Senior Research Officer
Genomic Cancer Medicine Lab
Garvan Institute of Medical Research

Dr Pinese completed his undergraduate studies at UNSW Australia on the biology of ageing, before moving to the Garvan Institute to pursue cancer research.

At Garvan, Dr Pinese was a member of the world's largest sequencing effort in pancreatic cancer, and for his work received a PhD on the molecular determinants of survival of patients with pancreatic adenocarcinoma.

Dr Pinese then joined the Kinghorn Centre for Clinical Genomics, where he performed rapid-turnaround genomic analysis for cancer patients, and helped to develop Australia's first clinically-accredited whole genome sequencing test for rare disease.

Dr Pinese is currently a Senior Research Officer in Garvan's Genomic Cancer Medicine Lab where he is the lead analyst for the Medical Genome Reference Bank and conducts research into the genetic basis of cancer risk.



Ms Kate Aubusson

Forum Moderator

Kate is the Health Editor at the Sydney Morning Herald. She was a senior news and medical reporter at Australian Doctor, and reported across eleven Specialist Updates titles for medical specialists. Kate also hosted the ABC documentary "Lest We Forget What?" and has freelanced for national and international media outlets.



Dr Samantha Ginn

Senior Research Officer
Gene Therapy Research Unit
Children's Medical Research Institute

Dr Ginn is a Senior Research Officer in the Gene Therapy Research Unit at the Children's Medical Research Institute. Her research has focused on developing treatment strategies for diseases of the liver and haematopoietic system using gene transfer and genome editing technology. Both these organs have immense promise as targets for the treatment of genetic disease in children.

Dr Ginn was involved in the first gene therapy trial in Australia targeting infants and is the current Secretary of the Australasian Gene and Cell Therapy Society. She has been invited to present her work at the British Society of Gene and Cell Therapy (Scotland) and European Society of Gene and Cell Therapy (Germany) annual meetings. More recently, she received the Australasian Gene and Cell Therapy Society's Inaugural Esteemed Member Award and has been invited to join the organising committee for the 2018 Asia-Pacific Consortium of Gene and Cell Therapy meeting in China.



Ms Celine Santiago

PhD Student
Molecular Cardiology Division
Victor Chang Cardiac Research Institute

Celine is a second year PhD student at the Victor Chang Cardiac Research Institute. She graduated from a Bachelor of Biomedical Science at the University of Queensland, and completed Honours at the university where she investigated the role of motoneurons in learned behaviours and memory retention of larval zebrafish. For this work, Celine was awarded the Don Tugby Prize for Biomedical Sciences.

In mid-2016 Celine began her doctoral studies at the Sr. Bernice Research Program for Inherited Heart Diseases at the Victor Chang, under the direction of Professor Diane Fatkin. She is currently investigating the role of gene-environment interactions in the heart muscle disorder, familial dilated cardiomyopathy (DCM), using adult zebrafish as a disease model.



Pathfinders

Pathfinders is a collective-giving group whose members pool their donations to support early-stage cancer research projects. The group's goal is to kick-start research projects by donating seed funding to help a scientist take a concept into the lab to evaluate it and create a research pathway.

Supporters make a monthly \$25 tax-deductible donation to the group's pool account.

We currently support cancer research at the Garvan Institute of Medical Research by donating the annual Pathfinders Award (\$10,000) to initiate an innovative research project.

Pathfinders is authorised to fundraise for the Garvan Research Foundation, the Institute's fundraising arm. All donations to Pathfinders are fully tax-deductible and are processed by Garvan on our behalf.

 www.pathfindersgroup.com.au



Garvan Institute of Medical Research

The Garvan Institute of Medical Research was founded in 1963. Initially a research department of St Vincent's Hospital in Sydney, it is now one of Australia's largest medical research institutions with more than 700 scientists, students and support staff. Garvan's mission is to make significant contributions to medical research that will change the directions of science and medicine and have major impacts on human health.

Garvan strives to enhance and develop research programs that combine fundamental science with strong clinical interactions.

 www.garvan.org.au



NEXT EVENT

12 SEPTEMBER 2018

Pathfinders Award 2018

The Science of Innovation

The Pathfinders Award is a research grant of \$10,000 which provides seed funding to a researcher at the Garvan Institute of Medical Research to initiate an early-stage cancer research opportunity.

The Award is open to researchers in the Cancer Division, Bone Division, and Epigenetics & Genomics Division. Researchers are invited to submit a proposal detailing their project's research rationale, novelty, potential impact and how they will use the grant money to undertake their research. The Award submissions are then judged by a cross-disciplinary panel of senior Garvan medical researchers.

Our annual cocktail party in the Sydney CBD will feature a cancer research update, a lively panel discussion on the science of innovation plus a Q&A with the 2018 Award winner. Invitations will be sent to supporters in August.



2017 Pathfinders Awards at Wentworth Galleries.



SHINING A LIGHT ON DNA PACKAGING

The Pathfinders Committee was delighted to present the 2017 Pathfinders Award to Katherine Giles and Qian Du, who are final-stage PhD students in the Epigenetics Research laboratory in Garvan's Genomics and Epigenetics Division. The researchers are using the Award grant to investigate how DNA packaging can change dynamically, and how this impacts on cancer.

"Our goal is to look at how chromatin changes in cancer cells by focusing on chromatin re-modellers – the proteins in the cell that bring about changes to DNA packaging," Katherine said. "We know that these proteins are important in cancer, and we want to see how they act in prostate, breast, ovarian and pancreatic cancer cell lines. We'll be exploring how different cancer therapies respond to these changes in chromatin structure – and whether this might differ from person to person." You can read the full story on this fascinating project on the Pathfinders website.



STAY IN TOUCH

Subscribe to our monthly newsletter via our website: www.pathfindersgroup.com.au.

Like us on facebook to see the event photos:

 facebook.com/pathfinderssydney

If you would like to learn more about what we do, please contact us:

 www.pathfindersgroup.com.au.

 info@pathfindersgroup.com.au