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Coming up for the remainder of the year:

1. Roads from Home (Oct - Nov)
2. EOY function (Nov 14)

Registration Form - Series 6 2024

Payment methods in order of preference

1. Direct Credit to
   Acc: 03 1746 0080910 000
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3. Cash in an envelope, please, with your name or include this registration form. Amount enclosed $30 per person

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We prefer to contact you by email. If you have an email address, and we are not aware of it, please let us know.

Spare paper copies of the brochure are always available if you are unable to print one for yourself.

Series Organiser

Isabel Radka

U3A Invercargill

August - September 2024

Series 6

The Power of Genes; Foundation and Frontiers in Genetics

Venue:	Windsor Community Church 19 Windsor St
Time:	10.00am
Cost:	$30 per person

Series 6 - The Power of Genes; Foundation and Frontiers in Genetics

Session 1 : Friday 30 August

Genetics: molecular letters that underpin biological development and health

Presenter: *Dr Louise Bicknell*

Synopsis: DNA is composed of just 4 different letters, and yet it underpins every biological process, across all living organisms. There is remarkable diversity from these 4 letters to generate the living world around us, and yet just a single spelling mistake can be detrimental for human health. I will provide an overview of genetics and genomics, and how we can harness the power of the DNA code to understand biological systems, with a focus on genetic disorders that impair brain development.

Bio: Associate Professor Louise Bicknell of the Department of Biochemistry, University of Otago, completed her PhD in human genetics at Otago in 2007, and undertook a postdoctoral position at the University of Edinburgh. Louise repatriated to the University of Otago with a Rutherford Discovery Fellowship in late 2015
Her broad research theme is understanding how genetic variation makes people differ in their development and their lifetime health. She focuses on rare human disorders, where her lab uses cutting edge DNA sequencing technology and molecular biology techniques to identify and understand novel causes of human disorders.

Session 2 : Friday 6 September

Who has a right to know our genetic information ?

Presenter : *Prof Mark Henaghan*

Synopsis: This presentation will explore the right to autonomy and confidentiality of information about our genetic make up and the potential limits on it . Genetic information can be extremely valuable to biological relatives. Should we have to reveal it ?
Should insurance companies be able to ask about your genetic make - up to assess the risks of insuring you ? When paternity of a child is contested should the potential father be required to take a paternity test? Will genetic knowledge allow us to get rid of pests?

Bio: Mark is a Professor of Law at the University of Auckland . He was previously Dean and Professor of Law at the University of Otago where he worked for 42 years . Mark has an BA LLB (Hons) LLD from the University of Otago . He is a Fellow of the Royal Society in New Zealand and a Fellow of the International Academy of Family Lawyers . He was a member of a Royal Society working party that investigated the implementation of gene editing in New Zealand .

Session 3 : Friday 13 September

Breeding sheep that are more resistant to disease

Presenter: *Dr Kathryn McRae*

Synopsis: Health and welfare are of major importance to livestock production worldwide. While vaccination and chemical intervention, including anthelmintics and antibiotics, have historically been used to control animal health challenges, there is well-documented evidence for genetic variation in the ability of livestock to resist disease. These heritable differences enable the improvement of animal health and welfare through genetic selection for enhanced resistance and can be used as a complementary approach to current methods for disease control.

Bio: Kathryn grew up on a sheep farm in Mokoreta, in eastern Southland. Her farming background, coupled with her interest in genetics, led her to complete an MSc in genetics at Otago in collaboration with AgResearch before moving to Ireland, where she completed her PhD in the genetics of parasite resistance in sheep with Dublin City University and Teagasc. Kathryn is now a Senior Scientist in AgResearch's Animal Genomics group, where her research primarily focuses on understanding the genetic basis of resistance to diseases in livestock such as parasites and pneumonia. This research aims to breed healthy, productive animals that are more resilient to stress.

Session 4 : Friday 20 September

Genetic Technologies - What they are and why they are used

Presenter: *Dr Richard Scott*

Synopsis: Targeting specific genetics for improved livestock and crops have been used for millennia as part of traditional selection and breeding activities. Only in the past 20-30 years has the technology been used to control individual genes and enable their transfer between species that cannot interbreed. This presentation will provide an overview of the mechanisms behind these technologies, what they are delivering, and why they are even being used in the first place.

Bio: I started with AgResearch in 1989 before heading to the UK where I gained a PhD in plant biotechnology. After returning to NZ in 2001 and two years at Massey University I got a job at AgResearch - right back at the same bench I had left about 11 years before. I have worked on the HME Ryegrass project for close to 20 years, and coming from a sheep and beef farm near Tauranga I can see how its increase in feed quality has the potential to deliver significant on-farm benefits. I also lead the Climate Change and Forage Innovations Team, a mix of climate change and plant biotechnology research projects including: studying forage adaptation to climate change; reducing greenhouse gas production; genetic editing of plants; and continuing the development of HME Ryegrass. I also lead the Genetic Technologies Enabling Platform, established to build a strategy around the application of gene technologies, including leading associated industrial, regulatory, and societal interactions.

Session 5 : Friday 27 September

Understanding the genetic predisposition to metabolic disease in Māori and Pacific peoples

Presenter: *Dr Megan Leask*

Synopsis: A precision medicine approach to tackling metabolic disease, informed by an individual's genetics, promises to save lives, improve quality of life and lower medical costs. However, for Māori and Pacific people there is a critical need to expand the development of genetic resources and analyses, and build genetic capabilities in Aotearoa if these groups are to receive equal medical care in the future. Dr Leask and her team aim to reduce the precision medicine gap for Māori and Pacific people by applying large data techniques to genetic data from Māori and Pacific individuals, and identify unique genetics that can be targeted in the treatment and prevention of metabolic diseases.

Bio: Dr Leask has recently returned from the US to take up a Lecturer position in the Department of Physiology at Ōtakou Whakaihu Waka (Otago University).