

Additional information from the course trainers

Dr Edmondston

Dr Edmondston has had extensive molecular biology laboratory experience and has worked as a lecturer for eight years prior to joining the AB-CRC. She has run similar short courses for professional development of scientists, adult learning and vocational training.

From Dr Edmonston:

My component will run for 1.5 days and will cover the fundamentals of the following areas in relation to applied molecular biology techniques:

- Genetic molecules & their structure, replication, organization & control (such as DNA, RNA & cDNA, structures, repair and replication, transcription & translation, gene regulation);
- DNA amplification techniques (such as reproductive cloning, cell-based cloning, & PCR);
- Advanced PCR techniques (such as degeneracy, long PCR, multiplexing, mutagenesis, quantitative, reverse transcription, arbitrary priming, optimisation);
- Detection techniques (such as labelling, electrophoresis, quantification);
- Sequencing & micro arrays (manual, fluorescent, pyrosequencing, gene expression);
- Bioinformatics (genomics, proteomics, transcriptomics, metabolomics);
- New technologies.

The course is designed to get you comfortable with the principles underlying these techniques, the language used to describe them, from the basics right through to their application. I'll take into account that participants in the course may have had some exposure to molecular biology (most likely as an undergrad course in molecular biology) and others may have had none.

Feel free to give me a call if you would like to talk about this further, or if there is a particular area that you would like included in the course.

Jo

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Dr Mullner

Dr Mullner is a veterinary epidemiologist and Massey University PhD student with experience in diagnostic test evaluation, microbiological risk assessment and veterinary public health. She has experience leading a multidisciplinary project applying advanced molecular and modelling risk research tools to determine the importance of different food sources to the burden of human campylobacteriosis in New Zealand.

From Dr Mullner:

I will be integrating Dr Edmondston's part into the field of molecular epidemiology and into practical applications in veterinary science. The emerging discipline of molecular epidemiology provides new opportunities for disease control, which often could not have been achieved using traditional approaches. Molecular epidemiology has led to several advancements in veterinary epidemiology such as the identification of previously undetected infections, the identification of risk factor for diseases, and the application of new diagnostic approaches contributing to an improved prevention and control of infectious diseases. This is an exciting new area and there are lots of things to talk about.

My component runs for 1 day and I will:

- Discuss the strength and weaknesses of different approaches, and give guidelines on finding a suitable typing method for a study, considering aspects such as costs, discriminatory power and diagnostic test performance).
- Demonstrate different ways of describing and analysing typing data.
- Show practical examples (e.g. from a large sentinel surveillance site in New Zealand, where we studied the molecular epidemiology of campylobacteriosis to attribute risks).
- I will consider the experience of the course participants, and tailor the course to meet everybody's needs. The idea is to keep this part of the course as applied as possible with some practical exercises. It would be good to bring along a basic understanding of epidemiological concepts, but I am happy to through in some "refreshers" where necessary. If there are special things of interest I can stray a bit off the outline to explore those further with the group.

Hope this helps, please drop me a line if you have any further questions.

Petra

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