

ANZIAM Mathematical Biology Special Interest Group

One day meeting Friday 8 February 2019

Room T309 NMIT, 322 Hardy St, Nelson, New Zealand

Topics: This year the MBSIG day encompasses a series of speakers across the spectrum of mathematical biology. Our speakers will discuss a range of themes, with a general focus on emergent behaviours across scales (spatial and temporal) in biology. The day will start with a focus on cellular structure, function and behaviours, and move toward systems models and collective dynamics in physiology and ecology. The day will finish with a special session 'Maths in primary industries' which aims to foster discussion of mathematical approaches and solutions for decision making in this area.

9:00-9:30 – Welcome Alys Clark

9:30-10:00 **Vijay Rajagopal** (University of Melbourne, Australia)

'The diabetic heart under the mathematical microscope.'

Co-authors: Shouryadipta Ghosh, Kenneth Tran, Eric Hanssen, Lea Delbridge, Edmund Crampin

10:00-10:30 **Vinod Suresh** (University of Auckland, New Zealand)

'The Auckland mumps epidemic: lessons from epidemiological modelling.'

Co-authors: Elise Salt, Oliver J Maclaren.

10:30-11:00 Morning tea

11:00-11:30 **Amy Hurford** (Memorial University, Canada)

'Skewed temperature dependence affects range and abundance in a warming world'.

Co-authors: Christina Cobbold and Peter Molnar

11:30-12:00 **Jody Fisher** (Flinders University, Australia)

'A universal genetic topology in microbial systems'

12:00-1:30 MBSIG AGM and Lunch

1:30-2:30 **Rachelle Binny** (Landcare Research, New Zealand)

'Spatial moment models for collective cell behavior.'

2:00-2:30 Winner of the MBSIG BEST PAPER PRIZE - Alexander Browning

'Inferring parameters for a lattice-free model of cell migration and proliferation using experimental data'

Co-authors: Scott McCue, Rachelle Binny, Michael Plank, Esha Shah, Matthew Simpson

2:30-3:00 Afternoon tea

3:00-4:00 Maths in primary industries session

Science and the law - mathematical modelling for public policy

John Gamlen (University of Alberta, Canada; retired, Tasman District)

Graeme Wake (Institute of Natural and Mathematical Sciences, Massey University, Auckland, NZ)

4:00 – Close, discussion and pub