

AMSI Workshop on Mathematical and Statistical Challenges in Modelling Cellular Systems in Biology

Tuesday, 11th of May 2021

(all times AEST)

Session 1: Whole Cell Models: Physical perspectives

- 10:00- 10:15 **Welcome and Introduction**
- 10:15 -10:35 **Energy based modelling of cell physiology**
Edmund Crampin (Melbourne)
- 10:40-11:00 **TBD**
Adelle Coster (UNSW)
- 11:00-11:15 Discussion

Session 2: Whole Cell Models: The Need for new Methods

- 11:30-12:00 **Lessons from single-molecule-resolution models for -omic data analysis**
Elizabeth Read (UC Irvine)
- 12:05-12:25 **Universal Robustness-Promoting Structures in Biochemical Reaction Networks**
Robyn Araujo (QUT)
- 12:30-12:50 **GPUs, complex lipidomes and the cryo-EM revolution: towards multiscale simulations of a physiological cell membrane**
Megan O'Mara (ANU)
- 12:55-13:15 **How to parameterise Whole Cell Models?**
Michael Stumpf (Melbourne)
- 13:20-13:35 Discussion

Session 3: Whole Cell Models: New Biology?

- 14:30-14:50 **Stochastic and deterministic evolution in microbial populations**
Michael McDonald (Monash)
- 14:55-15:25 **The E. coli Whole Cell Model Project**
Markus Covert (Stanford University)
- 15:30-16:00 **Synthetic approaches to uncover new biology**
Jörg Stelling (ETH Zurich)
- 16:05-16:40 Discussion

To register and receive updates please email macsys@theosysbio.org

