

Workshop programme

KT= Keynote talk (50+10 minute)

CT= Contributed talk (20+5 minutes)

ST = Short talk (12+3 minutes)

All talks to be held in the MALL on level 8 of the School of Mathematics. Reading Room is near reception on Level 9 of the School of Mathematics.

Tuesday 9th July 2024 (2 KT + 5 CT +3 ST=10 talks)

10:00-10:55 *Welcome and registration + Coffee & Tea* – Reading Room

10:55-11:00 *Opening*

11:00-12:00 **KT1 Bitbol, Anne-Florence (EPFL)** - *Impact of population spatial structure on mutant fixation, from models on graphs to the gut*

12:00-12:25 **CT1** Lepper, Hannah (University of Edinburgh) - *Multi-serotype models of mechanisms of coexistence of antibiotic resistant strains and dynamics of Streptococcus pneumoniae following vaccine introduction*

12:25-12:50 **CT2** Hernández-Navarro, Lluís (University of Leeds) - *Eco-evolutionary dynamics of cooperative antimicrobial resistance*

12:50-14:00 *Lunch break* – Reading Room

14:00-15:00 **KT2 Shou, Wenying (UCL)** - *The evolution of Cooperative Communities*

15:00-15:25 **CT3** Liu, Xiaoyuan (University of York) - *Eco-evolutionary modelling of environmentally triggered sex and hibernation*

15:25-15:50 **CT4** Zaherddine, Jana (ASTEK - DRI) - *Stochastic models of regulation of transcription in biological cells*

15:50-16:15 **CT5** Liu, Ming (University of Oxford) - *What makes microbial communities stable?*

16:15-16:45 *Coffee break* – Reading Room

16:45-17:00 **ST1** Sayyar, Golsa (University of Szeged) - *Evolution into chaos – implications of the trade-off between transmissibility and immune evasion*

17:00-17:15 **ST2** Fontanarrosa, Pedro (UCL) - *MIMIC: A Comprehensive Python Package for Simulating, Inferring, and Predicting Microbial Community Interactions*

17:15-18:00 *Informal networking*

Wednesday 10th July 2024 (4 KT + 5 CT=9 talks)

09:00-10:00 **KT3 Täuber, Uwe (Virginia Tech)** - *Stochastic Population Dynamics of Competing Species in Driven and/or Spatially Inhomogeneous Systems*

10:00-10:25 **CT6** Allen, Rosalind (Friedrich Schiller University Jena) - *Effect of spatial partitioning of a microbial population on collective antibiotic resistance*

10:25-10:50 **CT7** Juhász, János (Pázmány Péter Catholic University) - *Agent-based modelling of multi-strain yeast colony development in inhomogeneous environmental conditions*

10:50-11:15 **CT8** Asker, Matthew (University of Leeds) - *Spatial Structure and Environmental Dynamics in Microbial Populations*

11:15-11:45 *Coffee break* – Level 8 open area

11:45-12:45 **KT4 Möbius, Wolfram (University of Exeter)** - *Geometry as a predictor for evolutionary dynamics of populations undergoing range expansions in fragmented environments*

12:45-13:10 **CT9** Li, Bowen (Newcastle University) - *NUFEB 2.0 – A massively parallel simulator for individual-based modelling of microbial communities*

13:10-14:20 *Lunch break* – Level 8 open area

14:20-14:30 *Conference photo*

14:30-15:30 **KT5 Waclaw, Bartłomiej (Polish Academy of Sciences)** - *The physics of growth and evolution in microbial biofilms*

15:30-15:55 **CT10** Moser, Niklas (University of Jyväskylä) - *A general likelihood-based method for the inferential analysis of agent-space reactant-catalyst-product models*

15:55-16:15 *Coffee break* – Level 8 open area

16:15-17:15 **KT6 Beardmore, Robert (University of Exeter)** - *Observations about the world of antibiotics and its datasets from a mathematical perspective*

17:15-18:00 *Informal networking*

19:00-21:00 *Workshop dinner* – University House

Thursday 11th July 2024 (2 KT + (2+5) CT + 2 ST=11 talks)

09:15-10:15 **KT7 Bottery, Michael (University of Manchester)** - *Interspecies interactions and their effect on antibiotic efficacy*

10:15-10:40 **CT11** Bali, Yogesh (Johannes Gutenberg Universität Mainz) - *Phenotype-driven Mathematical Approaches for T-cell activation*

10:40-11:05 **CT12** Berríos-Caro, Ernesto (Max Planck Institute for Evolutionary Biology) - *Adaptation of bacterial populations exposed to periodic bottlenecks and antibiotic drug pressure*

11:05-11:30 *Coffee break* – Level 8 open area

11:30-12:30 **KT8 Gjini, Erida (University of Lisbon)** - *Understanding cooperation and competition in co-colonization systems with multiple strains*

12:30-12:55 **CT13** Aagren, Jonathan (Roskilde University) - *Using the Lotka-Volterra competition model to predict co-existence from extinction*

12:55-14:30 *Lunch break* – Level 8 open area

14:30-14:55 **CT14** Pawar, Samraat (Imperial College London) - *Predicting the assembly and functioning of bacterial communities in thermally fluctuating environments*

14:55-15:20 **CT15** Taitelbaum, Ami (Hebrew University of Jerusalem) - *Population Dynamics in a Changing Environment: The effect of the noise properties*

15:20-15:40 *Coffee break* – Level 8 open area

15:40-16:05 **CT16** Meacock, Oliver (University of Lausanne) - *Three sides of the same coin: Unifying context-dependencies of ecological interactions*

16:05-16:30 **CT17** Vilk, Ohad (Hebrew University of Jerusalem) - *Non-Markovian zero-sum rock-paper-scissors game*

16:30-16:45 **ST4** Maull, Victor (Universitat Pompeu Fabra) - *A synthetic microbial Daisyworld: planetary regulation in the test tube*

16:45-17:00 **ST5** Jain, Paras (Indian Institute of Science) - *Cell-state transitions and density-dependent interactions together explain the dynamics of spontaneous epithelial-mesenchymal heterogeneity in cancer cells*

17:00-18:00 *Informal networking*

Friday 12th July 2024 (1 KT + 3CT + 1 ST = 5 talks)

09:00-10:00 **KT9** Bansept, Florence (Aix-Marseille Université) - *Host-associated microbial communities: stories of migration*

10:00-10:25 **CT19** Lee, Julian (Soongsil University) - *Inference of Causal Interaction Network of Gut Microbiota*

10:25-10:50 **CT20** Zhang, Xiaotong (University of Manchester) - *Can pairwise cocultures predict complex microbiome dynamics?*

10:50-11:20 *Coffee break* – Level 8 open area

11:20-11:45 **CT21** Constable, George (University of York) - *Maternal transmission as a microbial symbiont sieve and the absence of lactation in male mammals*

11:45-12:00 **ST6** López, Roberto Corral (University of Granada) - *Deciphering Dysbiosis: Modeling the Ecological Dynamics of the Gut Microbiome*

12:00-12:05 *Close*

12:05-14:30 *Lunch and departure* – Level 8 open area