# Abridged timetable of MBE'15

## Tuesday April 28th

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|---|---|
| 8.20-9.00 | Registration |
| 9.00-9.10 | Welcome talk |
| 9.10-10.00 | Plenary talk 1 (Nick Britton) |
| 10.00-10.50 | Plenary talk 2 (Rebecca Hoyle) |
| 10.50-11.20 | Coffee break |
| 11.20-13.00 | Contributed talks (session 1) |
| 13.00-14.20 | Lunch break |
| 14.20-15.10 | Plenary talk 3 (Samuel Alizon) |
| 15.15-16.15 | Contributed talks (Session 2) |
| 16.15-16.45 | Coffee break |
| 16.45-18.05 | Contributed talks (Session 3) |

## Wednesday April 29th

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|---|---|
| 9.00-9.50 | Plenary talk 4 (John McNamara) |
| 9.50-10.40 | Plenary talk 5 (Sergey Gavrilets) |
| 10.40-11.10 | Coffee break |
| 11.10-12.50 | Contributed talks (Sessions 4)<br>Mini-section 'Eco-evolution' |
| 12.50-14.10 | Lunch break |
| 14.10-16.15 | Minisyposium: 'Inferring Cancer Evolution from Genomic Data ' (Part I)<br>Minisyposium: 'Evolution of virulence in coupled dynamics of infectious diseases' |
| 16.15-16.45 | Coffee break |
| 16.45-18.15 | Invited short talks<br>Minisyposium: 'Inferring Cancer Evolution from Genomic Data ' (Part II) |
| 18.15-20.00 | Reception and poster session |

## Thursday April 30th

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|---|---|
| 9.00-9.50 | Plenary talk 6 (Alexander Gorban) |
| 09.50-10.40 | Plenary talk 7 (Yoh Iwasa) |
| 10.40-11.10 | Coffee break |
| 11.10-12.50 | Minisyposium: 'Molecular evolution and fitness landscapes'. (Part I)<br>Minisyposium: 'Adaptive evolution and the emergence of diversity in ecological communities' |
| 12.50-14.10 | Lunch break |
| 14.10-15.00 | Plenary talk 8 (Arne Traulsen) |
| 15.05-16.05 | Contributed talks (session 5) |
| 16.05-16.35 | Coffee break |
| 16.35-18.15 | Minisyposium: 'Molecular evolution and fitness landscapes'. (Part II)<br>Minisyposium: 'Adaptive evolution and the emergence of diversity in ecological communities' |

# Friday May 1st

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|---|---|
| 9.00-9.50 | Plenary talk 9 (Ivana Gudelj ) |
| 10.00-11.20 | Contributed talks (sessions 6,7) |
| 11.20-11.50 | Coffee break |
| 11.50-12.40 | Plenary talk 10 (Katerina Stankova) |
| 12.40-14.00 | Lunch break |
| 14.00-15.40 | Contributed talks (sessions 8,9) |
| 15.50-16.00 | Closing address and the end of the conference |

# MBE'15: Detailed Conference Program

Tuesday April 28th

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Venue: Bennett Building, ground floor

8.20-9.00 Registration

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9.00-10.50 **Introduction and plenary talks 1, 2**

Venue: Bennett Building, LT1

9.00-9.10 **Introduction and welcome address**

9.10-10.00 **Plenary talk 1**. Nick Britton (University of Bath, UK). *Interspecific kleptoparasitism.*

10.00-10.50 **Plenary talk 2**. Rebecca Hoyle (University of Southampton, UK). *Maternal effects, within-generation plasticity and environmental change.*

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10.50-11.20 Coffee break: Bennett Building, ground floor

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11.20-13.00 **Contributed talks** (session 1)

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Venue: Bennett Building, LT1

Chair: Géza Meszéna

11.20-11.40 Nadav Shnerb (Bar-Ilan University, Israel) *Emergence of structured communities through evolutionary dynamics*.

11.40-12.00 Suzanne Sindi (University of California, Merced, USA). *A Mathematical Test for Selection in Word Frequencies*.

12.00-12.20 Anne Kandler (City University London, UK). *Inferring cultural transmission processes from frequency data*.

12.20-12.40 Olof Leimar (Stockholm University, Sweden). *Social evolution and genetic polymorphism.*

12.40-13.00. Gunnar Brandt (Leibniz Center for Tropical Marine Ecology, Germany). *Introducing human behaviour into models of resource extraction*.

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13.00-14.20 Lunch break

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Venue: Bennett Building, LT1

14.20-15.10 **Plenary talk 3**. Samuel Alizon (CNRS, Montpellier, France). *More than pretty figures: clinical and epidemiological applications of virus phylogenies*

15.15-16.15 **Contributed talks** (session 2)

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Venue: Bennett Building, LT1

Chair: Rebecca Hoyle

15.15-15.35 Robert Beardmore (University of Exeter, UK). *Using mathematics to make sense of genomic and phenotypic datasets from rapid antibiotic resistance evolution experiments.*

15.35-15.55. Alexander Bentley (University of Bristol, UK). *Fitness landscapes among many options under social influence.*

15.55-16.15 Sebastien Lion (CNRS, Montpellier, France). *Spatial structure, host heterogeneity and parasite evolution: implications for vaccination.*

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16.15-16.45 Coffee break: Bennett Building, ground floor

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16.45-18.05 **Contributed talks** (session 3)

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Venue: Bennett Building, LT1

Chair: Andrew Morozov

16.45-17.05 Tobias Galla (University of Manchester, UK). *Stochastic evolutionary delay dynamics in epidemiology and gene regulation.*

17.05-17.25 Michael Sieber (University of Potsdam, Germany). *Beyond trade-offs: how life cycle complexity limits parasite host ranges.*

17.25-17.45 Barbara Boldin (University of Primorska, Slovenia). *An extension of the classification of evolutionarily singular strategies in Adaptive Dynamics.*

17.45-18.05 Matthew Adamson (University of Leicester, UK). *Evaluating structural sensitivity of partially specified models in ecology and evolution.*

*Time for rest and relaxation*

## Wednesday April 29th

9.00-10.40 **Plenary talks 3,4**

Venue: Bennett Building, LT2

9.00-9.50 **Plenary talk 4.** John McNamara (University of Bristol, UK). *Ecological rationality and environmental complexity.*

9.50-10.40 **Plenary talk 5.** Sergey Gavrilets (University of Tennessee, Knoxville, USA) *Collective action and the collaborative brain*.

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10.40-11.10 Coffee break: Bennett Building, ground floor

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11.10-13.10 **Contributed talks** (session 4)

Venue: Bennett Building, LT3

Chair: Arne Traulsen

11.10-11.30 Caroline Colijn (Imperial College London). *Phylogenetic trees and outbreaks of pathogens: mapping one kind of tree onto the other.*

11.30-11.50 Michelle Kendall (Imperial College London, UK). *A new metric for the comparison of phylogenetic trees.*

11.50-12.10 Andrzej Swierniak (Silesian University of Technology, Poland). *Mixed spatial evolutionary games in modelling cancer cell interactions*

12.10-12.30 Peter Ashcroft (University of Manchester, UK). *Stochastic tunnelling and metastable states during the somatic evolution of cancer.*

12.30-12.50 Antje Vollrath (TU Braunschweig, Germany). *A framework for multi-gene-loci inheritance in resistance modeling*

11.10-13.10 Mini-section '**Eco-evolution'**

Venue: Bennett Building, LT2

Chair: Andrew Morozov

11.10-11.30 Matthew Adamson (University of Leicester). *Rock-paper-scissors in space: revising the role of species mobility in the coexistence of cyclically competing type.* (**replacement of Daniel Ritterskamp**)

11.30-11.50 Katharina Brinck (Imperial College London, UK). *The evolution of ecosystem organisation: a complexity science approach.*

11.50-12.10 Jaspreet Toor (University of Sheffield, UK). *The evolution of host resistance to disease in the presence of predators*

12.10-12.30 Andrew Dean (University of York, UK). *Modelling the evolution of symbiosis.*

12.30-12.50 Krzysztof Argasinski (Institute of Mathematics, Warsaw, Poland). *Selection under limited population growth. Eco evolutionary feedbacks and the replicator dynamics.*

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12.50-14.10 Lunch break

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14.10-16.15 **Minisyposium: 'Inferring Cancer Evolution from Genomic Data' (Part I)**

Venue: Bennett Building, LT3

Chairs: Trevor A Graham (Barts Cancer Institute, UK), Andrea Sottoriva (The Institute of Cancer Research, UK) and Ian Tomlinson (University of Oxford, UK)

14.10-14.35 Simon Tavaré (Cancer Research UK Cambridge, UK). *Some thoughts about the statistics of cancer evolution.*

14.35-15.00. Ville Mustonen (Wellcome Trust Sanger Institute, UK). *Using time-resolved genetic data to monitor evolving populations.*

15.00-15.25 Benjamin Werner (The Institute of Cancer Research, UK). *Reconstructing the in vivo dynamics of hematopoietic stem cells from telomere length distributions*

15.25-15.50. Marco Gerlinger (The Institute of Cancer Research, UK) *Copy number trees of cancer evolution.*

15.50-16.15 Robert Noble (University of Montpellier, France). *Eco-evolutionary models of tumour heterogeneity.*

14.10-16.15 **Minisyposium: 'Evolution of virulence in coupled dynamics of infectious diseases'**

Venue: Bennett Building, LT2

Chair: Zhilan Feng (Purdue University, USA)

14.10-14.35 Viggo Andreasen (Roskilde University, Denmark). *Epidemics in competition.*

14.35-15.00. Barbara Boldin (U. Primorska, Slovenia). *Linking within- and between-host dynamics to study the evolutionary dynamics of pathogens.*

15.00-15.25 Zhilan Feng (Purdue University, USA). *Coupled within –host and between-host dynamics and evolution of virulence Part I: Disease dynamics of the coupled system.*

15.25-15.50. Lorenzo Pellis (University of Warwick, UK). *Is HIV short-sighted? Insights from a multistrain nested model*

15.50-16.15 Rupert Mazzucco (IIASA, Austria). *Virulence evolution in fragmented host populations with infectivity–mobility trade-offs.*

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16.15-16.45 Coffee break: Bennett Building, ground floor

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16.45-18.00 I**nvited short talks**

Venue: Bennett Building, LT2

Chair: Andrew Morozov

16.45-17.15 Géza Meszéna (Eötvös University, Budapest, Hungary). *Niche theory in ecology and evolution: A mathematical exercise, or help in biology?*

17.15-17.45 Vincent Jansen (Royal Holloway University of London, UK). *Inclusive fitness models that include ecological detail: the evolution of investment in siderophore production*

17.45-18.15 Minus van Baalen (CNRS/IHES/ENS, Paris, France). *Adaptation, conflicting information and stress.*

16.45-17.35 **Minisyposium: 'Inferring Cancer Evolution from Genomic Data' (Part II)**

Venue: Bennett Building, LT3

Chairs: Trevor A Graham (Barts Cancer Institute, UK), Andrea Sottoriva (The Institute of Cancer Research, UK) and Ian Tomlinson (University of Oxford, UK)

16.45-17.10. Stephen Attwood (Sichuan University, Chengdu, China). *A practical guide to estimating phylogenies for cancer.*

17.10-17.35. Andrea Sottoriva (The Institute of Cancer Research, UK). *Neutral evolution and star-like phylogenies in next-generation sequencing data.*

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18.15-20.00 **Poster session and wine reception**: Bennett Building, ground floor

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*Time for rest and relaxation*

## Thursday April 30th

9.00-9.50 **Plenary talk 6**

Venue: Bennett Building, LT2

9.00-9.50 **Plenary talk 6.** Alexander Gorban (University of Leicester, UK). *Evolution of adaptation mechanisms: adaptation `energy', stress, and oscillating death.*

9.50-10.40 **Plenary talk 7.** Yoh Iwasa (Kyushu University, Japan). *Rate of species creation by geographic isolation and recurrent migration.*

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10.40-11.10 Coffee break: Bennett Building, ground floor

11.10-12.50 **Minisyposium: 'Molecular evolution and fitness landscapes. Part I'**

Venue: Bennett Building, LT2

Chairs: Michael Stich (Aston University, Birmingham, UK), Jacobo Aguirre (CNB, Madrid, Spain)

11.10-11.35 Adam Kun (Parmenides Foundation, Pullach,Germany and Eötvös University, Budapest, Hungary). *The minimal genome and functionality of a ribo-organism.*

11.35-12.00. Nobuto Takeuchi (University of Tokyo, Japan). *Spontaneous symmetry breaking in complementary replication as a consequence of multilevel selection in a minimal model of protocells*

12.00-12.25 Tomas Alarcón (CRM, Barcelona, Spain)) *Evolutionary dynamics of systems with genotype-phenotype map*

12.25-12.50 Pablo Catalan (Universidad Carlos III de Madrid, Spain). *toyLIFE: the complexities of the genotype-phenotype map.*

11.10-12.50 **Minisyposium: 'Evolution and Adaptive Dynamics: Applications in Biological Systems'**

Venue: Bennett Building, LT5

Chair: Andy Hoyle (University of Stirling, UK).

11.10-11.35 Andy Hoyle (University of Stirling, UK). *Evolution of antibiotic resistance in aquatic bacteria – biofilms vs well-mixed models.*

11.35-12.00. Alex Best (University of Sheffield, UK). *Co-evolutionary cycles in host-parasite interactions: experiment and theory.*

12.00-12.25 Daniel Balaz (University of Glasgow, UK). Do sheep cheat themselves by mounting weak immune responses? An adaptive dynamics approach.

12.25-12.50 Christina Cobbold (University of Glasgow, UK). *Modelling the evolution of cold tolerance and adaptation to temperature changes: application to the mountain pine beetle.*

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12.50-14.10 Lunch break

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14.10-15.50 **Plenary talk 8**

Venue: Bennett Building, LT2

14.10-15.00 **Plenary talk 8.** Arne Traulsen (Max-Planck-Institute, Ploen, Germany). *Mathematical models of disease progression: From conceptual insights to quantitative predictions*

15.05-16.05 **Contributed talks** (session 5)

Venue: Bennett Building, LT2

Chair: Minus van Baalen

15.05-15.25 Tamas David-Barrett (University of Oxford, UK). *The evolution of constrained sociality.*

15.25-15.45 Matthijs Van Veelen (University of Amsterdam, the Netherlands). *Inclusive fitness and group selection: the regression method vs. the counterfactual method.*

15.45-16.05 Andrew Pomiankowski (University College London, UK). *The evolution of larger sexual ornaments.*

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16.05-16.35 Coffee break: Bennett Building, ground floor

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16.35-18.15 **Minisyposium: 'Molecular evolution and fitness landscapes. Part II'**

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Venue: Bennett Building, LT2

Chair: Michael Stich (Aston University, Birmingham, UK), Jacobo Aguirre (CNB, Madrid, Spain)

16.35-17.00 Sebastian Ahnert (University of Cambridge, UK) *A tractable genotype-phenotype map for biological self-assembly.*

17.00-17.25 Carlos Lugo (Sainsbury Laboratory, Norwich, UK). *Genomic evolution of pathogens as a consequence of host shifts.*

17.25-17.50 Jose Jiménez (University of Surrey, UK). *Comprehensive experimental fitness landscape and evolutionary network for RNA*

17. 50-18.15 Ester Lazaro (Centro de Astrobiologia, Madrid, Spain). *Transient increases in the error rate can open new pathways for adaptation to new selective pressures.*

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16.35-18.15 **Minisyposium: 'Adaptive evolution and the emergence of diversity in ecological communities'**

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Venue: Bennett Building, LT5

Chair: Vincent Calcagno (INRA, Sophia Antipolis, France)

16.35-17.00 Vincent Calcagno (INRA, Sophia Antipolis, France). *The interplay of colonization and evolution in models of adaptive radiation*

17.00-17.25 Florence Debarre (Wissenschaftskolleg zu Berlin, Germany). *(Co)evolution in multiple dimensions: how does the number of traits under selection influence evolutionary and co-evolutionary processes?*

17.25-17.50 Fabien Laroche (University of Montpellier, France). *Evolution of dispersal impacts species diversity patterns in a heterogeneous metacommunity*

Contributed talk:

17.50-18.15 Judith Perez-Velazquez (Helmholtz Zentrum München, Germany). *An age-structured model to analyze the evolutionary stability of bacterial quorum sensing.*

*Time for rest and relaxation*

## Friday May 1st

9.00-9.50 **Plenary talk**

Venue: Bennett Building, LT2

9.00-9.50 **Plenary talk 9.** Ivana Gudelj (University of Exeter, UK). *The role of trade-offs in the evolution of diversity.*

10.00-11.20 **Contributed talks** (session 6)

Venue: Bennett Building, LT2

Chairs: Andrew Morozov

10.00-10.20. Galina Kuzenkova (Lobachevsky State University, Nizhni Novgorod, Russia). *Controlled selection process of self-replicating systems.*

10.20-10.40. Oleg Kuzenkov (Lobachevsky State University, Nizhni Novgorod, Russia) *Revealing patterns of optimal zooplankton diel vertical migration on the basis of dynamics of the underlying measure.*

10.40-11.00. Max Souza (Departamento de Matemática Aplicada, UFF, Brazil). *Fixation in large populations: a continuous view of a discrete problem.*

11.00-11.20. Magnus Lindh (Umeå University, Sweden). *Early starters beat optimal reproduction strategy in evolutionary game with annual plants*

10.00-11.20 **Contributed talks** (session 7)

Venue: Bennett Building, LT5

Chairs: Nick Britton

10.00-10.20. Andrew Whalen (University of St Andrews, UK). *The Learning of Sequences of Actions through Low Fidelity Social Transmission*

10.20-10.40. Daniel van der Post (University of St Andrews, UK) *Learning mechanisms modulate the evolutionary trade-off between social learning and exploration*

10.40-11.00. Ke Yuan (University of Cambridge, UK). *Reconstructing intra-tumor phylogenies with Bayesian nonparametric models.*

11.00-11.20 Bhavin S. Khatri (National Institute for Medical Research, UK). *A simple biophysical model of protein binding DNA predicts higher rates of speciation in small populations.*

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11.20-11.50 Coffee break: Bennett Building, ground floor

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11.50-12.40 **Plenary talk**

Venue: Bennett Building, LT2

11.50-12.40 **Plenary talk 10.** Katerina Stankova (Maastricht University, the Netherlands). *Evolution of diapause timing in an acarine predator-prey system on apple: caused by phylogeny, ecology or both?*

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12.40-14.00 Lunch break

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14.00-16.00 **Contributed talks** (session 8)

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Venue: Bennett Building, LT2

Chair: Max Souza

14.00-14.20 Jack Aidley (University of Leicester, UK). *Modelling the behaviour of hypermutable regions in populations of Campylobacter jejuni under selective and non-selective conditions*

14.20-14.40. Weini Huang (Max Planck Institute, Plön, Germany) *Evolutionary game dynamics under demographic fluctuations*

14.40-15.00. Juan C. Ramírez (University of Sheffield, UK) *Self-deception Can Evolve Under Appropriate Costs*

15.00-15.20 Michael Pocklington (University of Leicester, UK). *The empirical genetic interaction map, the molecular ecosystem, and the nature of mathematical and computational abstraction.*

15.20-15.40 Christopher Quickfall (University of Sheffield, UK) *Evolution of Maternally-Transmitted Symbionts*

14.00-15.40 **Contributed talks** (session 9)

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Venue: Bennett Building, LT5

Chair: Géza Meszéna

14.00-14.20 Yoav Soen (Weizmann Institute of Science, Israel). *Bridging Ecology and Evolution by Symbiosis and Epigenesis*

14.20-14.40 Tat Dat Tran (Max Planck Institute, Leipzig, Germany). *The free energy method for the Wright-Fisher model*

14.40-15.00 Axel Rossberg (Cefas, UK) *Are there species smaller than 1mm?*

15.00-15.20 Gereon Kaiping (University of Southampton, UK). *Structured populations facilitate cooperation in policed Public Goods Games.*

15.20-15.40 Virgile Baudrot (Université de Franche-Comté / CNRS, France). The influence of adaptive foraging on trophically transmitted parasite.

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15.50-16.00 **Closing address and end of meeting.**

Venue: Bennett Building, LT2

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# Posters

The special reception and poster session will be held on the evening of Wednesday, April 29th. (18.15-19.20, Venue: Bennett Building, ground floor)

Matthew Adamson (University of Leicester, UK). *Structural sensitivity in models revisited*.

Jack Aidley (University of Leicester, UK). *Modelling the behaviour of hypermutable regions in populations of Campylobacter jejuni under selective and non-selective conditions*

Paul Calcraft (University of Sussex) *Species Selection in the Solanaceae: Integrating Speciation and Extinction with Individual Competition*

Valentina Clamer (University of Trento, Itlay). *Dynamics of Host-Parasitoid Interactions and Coexistence of Different Hosts.*

Assaf Engel (Bar-Ilan University, Soreq NRC, Israel). *What bowl and doily spiders have to say about Zero Determinant strategies?*

Frédéric Fabre (INRA, Bordeaux, France). *Joint estimation of the strength of genetic drift and selection from Next Generation Sequencing time-sampled data: a case study on the adaptation of virus populations to host plant resistance.*

Lucas Dias Fernandes (University of Aberdeen, UK). *Interplay between selection and gene flow on coevolutionary dynamics on large spatial lattices*

James Ounsley (University of St. Andrews, UK). *Whom should I copy? The value of learning from the young in a complex and variable environment.*

Ferdinand Pfab (University of Trento, Italy). *Multiplicity of coexistence equilibria in a 2-parasitoids 1-host model.*

Giacomo Plazzotta (Imperial College London, UK). *Phylogenetic trees: cherries and basic reproduction number.*

Nomenjanahary Alexia, Raharinirina (Leibniz Center for Tropical Marine Ecology (ZMT) & Jacobs University, Bremen, Germany). *A simple trait-based model for describing the adaptive dynamics of symbiosis*

Carlos Reding (University of Exeter, UK). *Non-monotone antimicrobial response and emergence of resistance during antimicrobial treatments.*

Edith Ross (University of Cambridge, UK). *Inferring clonal evolution of tumours from single-cell sequencing data.*

Rafik Salama (University of Oxford, UK). *Somatic evolution of renal cancer presents an evidence for selective transcriptional pressure.*

Benjamin Schuster-Boeckler (University of Oxford, UK). *Biased random sampling: the effect of epigenetic marks on somatic genome evolution.*

Mircea T. Sofonea (University of Montpellier, France). *Epidemiological pleiotropy of within-host interactions.*

Dov Stekel (University of Nottingham, UK). *Mathematical model for spread of antibiotic resistance in a dairy unit in the UK: the importance of horizontal gene transfer*

Megan Sørensen (University of York, UK). *Modelling the metabolic exchange in a novel endosymbiosis*