Evolutionary Systems Biology
12 – 14 February 2020
Wellcome Genome Campus,
Hinxton, Cambridge, UK

Conference Programme

Wednesday, 12 February

12:00-13:20 Registration

13:20-13:30 Welcome and introductions
   Mark Siegal, New York University, USA

13:30-14:30 Keynote lecture
   Chair: Trisha Wittkopp, University of Michigan, USA
   Robustness and precision within developmental networks
   Eileen Furlong
   EMBL, Germany

14:30-15:30 Session 1: Evolution of Fitness Landscapes
   Chair: Olivier Tenaillon, INSERM, France
   14:30 Latent phenotypic complexity of adaptation in a single condition
       Dmitri Petrov
       Stanford University, USA
   15:00 Pervasive modulation of a natural genotype-phenotype map by global epistatic modifiers
       José Aguilar-Rodríguez
       Stanford University, USA

15:15-15:45 Afternoon tea

15:45-17:15 Session 1b: The diversity of evolutionary systems biology
   Chair: Dennis Vitkup, Columbia University, USA
   15:45 The evolution of fitness effects in a long-term experiment with bacteria
       Alejandro Couce
       Technical University of Madrid, Spain
16:00  Intraspecific evolution of QR.pax final position in Caenorhabditis elegans  
Clement Dubois  
IBENS, France

16:15  Functional optimization governs the rate of protein evolution in multicellular species  
Dinara Usmanova  
Columbia University, USA

16:30  Toward an ecology of cancer: Intra-tumor spatial heterogeneity based on multi-region mass spectrometry, single cell copy number sequencing and cyclic immunofluorescence in lung adenocarcinoma patients  
Robert J Downey  
Memorial Sloan Kettering, USA

16:45  Understanding genetic interactions and solving protein structures using deep mutagenesis  
Ben Lehner  
Centre for Genomic Regulation, Spain

17:15-17:45  Lightning talks  
Chairs: Angela Hay & Mark Siegal

17:45-18:45  Poster session 1 (odd numbers) with drinks reception

18:45  Buffet dinner

18:45-23:00  Cash Bar available

Thursday, 13 February

09:00-10:30  Session 2: Evolution of Development  
Chair: Angela Hay, Max Planck Institute, Germany

09:00  Developmental control and evolution of avian skin patterning  
Marie Manceau  
Center for Interdisciplinary Research in Biology, France

09:30  Evolutionary Transitions Between Stable States in Developmental Gene Regulatory Networks  
Veronica Hinman  
Carnegie Mellon University, USA
10.00 Regulatory and coding sequences of Trnp1 co-evolve with cortical folding in mammals  
Zane Kliesmete  
Ludwig Maximilian University of Munich, Germany

10.15 Context dependent regulatory divergence facilitates evolution of pleiotropic nodes in developmental gene regulatory networks  
Nico Posnien  
University Goettingen, Germany

10:30-11:00  
Morning coffee

11:00-12:30  
Session 3: Microbial heterogeneity  
Chair: Mark Siegal, New York University, USA

11:00 Rapid & reversible mutations in eukaryotic genomes  
Lucas Carey  
Peking University, China

11:15 Evolution of antibiotic tolerance and resistance: from in vitro to the clinic and back  
Nathalie Balaban  
The Hebrew University of Jerusalem, Israel

11:45 Compensatory evolution promotes phenotypic innovations  
Csaba Pal  
Biological Research Centre of the Hungarian Academy of Science, Hungary

12:15 Forecasting cell fate during antibiotic exposure using stochastic gene expression  
Imane El Meouche  
INSERM, France

12:30-14:00  
Lunch

14:00-15:30  
Session 4: Computational genomics and network analysis  
Chair: Veronica Hinman, Carnegie Mellon University, USA

14:00 The Genetic Architecture, network connectivity and disease prediction of a set of complex human traits  
Nicole Soranzo  
Wellcome Sanger Institute, UK

14:30 Genotype-environment interactions on phenotype and molecular traits  
Oliver Stegle  
EMBL, Germany

15:00 Evolutionary characterization of Innate Immune Related Genes in Six Glossina Species  
Pauline Karega  
The University of Nairobi, Kenya
15:15  Paralog buffering contributes to the variable essentiality of genes in cancer cell lines
   Barbara De Kegel
   University College Dublin, Ireland

15:30-16:00  Afternoon tea

16:00-17:30  Session 5: Transcriptional regulation
   Chair: Georg Hochberg, Max Planck Institute for Terrestrial Microbiology, Germany

16:00  Highly conserved enhancer grammar
   Emma Farley
   UC SanDiego, USA

16:30  Decoding evolution and development: from gene-regulatory structure to function
   Justin Crocker
   EMBL, Germany

17.00  Molecular evolution of the transcription factor Bicoid reveals the organizational evolution of segmentation in Drosophila
   Pinar Onal
   New York University, USA

17:15-17:45  Lightning talks
   Chair: Olivier Tenaillon & Trisha Wittkopp

17:45-18:45  Poster session 2 (even numbers) with drinks reception

18:45 prompt  Silver service conference dinner

18:30-23:00  Cash Bar available

Friday, 14 February

09:00-10:30  Session 6: Within-organism heterogeneity
   Chair: Marie Manceau, Center for Interdisciplinary Research in Biology, France

09:00  Evolution of cell-type specific gene regulatory programs
   Heather Marlow
   Pasteur Institute, France

09:30  Somatic evolution in human tissues
   Inigo Martincorena
   Wellcome Sanger Institute, UK

10:00  Systems genetics of drought-related traits in maize
   Mélisande Blein-Nicolas
   INRA, France
10:15  Identifying r and K strategist driver mutations in lung adenocarcinoma  
Gabor Boross  
Stanford University, USA

10:30-11:00  Morning coffee

11:00-12:30  Session 7: Gene networks  
Chair: Trisha Wittkopp, University of Michigan, USA

11:00  Mutational variance and developmental sensitivity at the basis of evolutionary trends  
Marie-Anne Felix  
IBENS, France

11:30  Evolutionary constraints from regulatory functions  
Philippe Nghe  
PSL Research University, France

12:00  Massively parallel experimental analysis of protein-protein interactions in a family of bZip proteins across the evolutionary history of Metazoa  
William Boldridge  
UCLA, USA

12:15  Mapping Arabidopsis thaliana genes involved in plant response to a turnip mosaic potyvirus (TuMV) infection  
Anamarija Butkovic  
I2SysBio, UV, CSIC, Spain

12:30-13:30  Keynote lecture  
Chair: Angela Hay, Max Planck Institute, Germany

Signposts to diversity: The genetics of adaptation and difference  
Enrico Coen  
John Innes Centre, UK

13:30-13:40  Closing remarks  
Olivier Tenaillon, INSERM, France

13:40-14:00  Grab bag lunch!

14:00  Coaches depart to Heathrow Airport via Stansted Airport

14:15  Coach departs to Cambridge Train Station and City Centre