

Tuesday, July 23

9:00–10:00: PLENARY

Lindi Wahl, “Message in a bottleneck: How transmission bottlenecks shape the evolution of influenza and HIV”

Z-110, Pavillon Claire-McNicoll (streaming in Z-220 and Z-210)

10:30–12:30: MINISYMPOSIA

Z-110: Modeling time since infection: theory and implications

- 10:30–11:00: Maia Martcheva, “Modeling time since infection: theory and implications”
- 11:00–11:30: Lorenzo Pellis, “Multi-scale time-since-infection models in evolutionary epidemiology”
- 11:30–12:00: Zhilan Feng, “A new approach of modeling time-since-infection in epidemiology”
- 12:00–12:30: John Glasser, “Applications of an epidemiological model structured by time-since-last-infection”

Z-200: Immunobiology and Infection Subgroup

- 10:30–11:00: Katharine Best, “Modelling dose dependent immune responses in acute Zika infection”
- 11:00–11:30: Chase Cockrell, “Nested Active Learning for Efficient Model Contextualization and Parameterization”
- 11:30–12:00: Richard Allen, “Mathematical Modeling to Support Discovery and Development of Therapies for NASH and other Chronic Inflammatory Diseases”
- 12:00–12:30: Jared Barber, “Analyzing the inflammatory response to a bacterial infection in rats”

Z-205: Models of bacterial biofilms and biofilm control approaches

- 10:30–11:00: John Ward, “Large time solutions in Wanner-Gujer type biofilm models”

- 11:00–11:30: Vincenzo Luongo, “Modeling the role of motile cells in biofilm ecology”
- 11:30–12:00: Harry Gaebler, “Modeling One-Dimensional Biofilms in Porous Media”
- 12:00–12:30: Maryam Ghasemi, “A density dependent reaction-diffusion model to study the dynamics of Nitric Oxide in a growing biofilm”

Z-209: Contemporary mathematical approaches in developmental biology

- 10:30–11:00: Adam MacLean, “Single-cell approaches to unravel the developmental trajectories of cells”
- 11:00–11:30: Lisanne Rens, “Mechanical and chemical signaling in single and collective cell migration”
- 11:30–12:00: Ruben Perez Carrasco, “A stochastic dynamical systems approach to understand cell fate transitions during embryonic development”
- 12:00–12:30: Renske Vroomans, “Of clocks and waves: in silico evolution of animal segmentation”

Z-210: Spatial and evolutionary dynamics in mathematical ecology

- 10:30–11:00: Joy-Ying Zhou, “Seasonal changes in habitat size and locations: population dynamics and dispersal strategies”
- 11:00–11:30: Robert S Cantrell, “Evolutionary stability of ideal free dispersal under spatial heterogeneity and time periodicity”
- 11:30–12:00: Chunhua Ou, “Speed determinacy of traveling waves to the Lotka-Volterra competition model”
- 12:00–12:30: King-Yeung Lam, “Monotonicity and Global Dynamics of a Non-local Two-species Phytoplankton Model”

Z-215: Mathematical psychology and psychiatry

- 10:30–11:00: Daniel Forger, “Mathematical problems arising from studying daily rhythms with smartphones and wearables”
- 11:00–11:30: Shelby Weaver, “Approach-Avoidance Conflict in Posttraumatic-Stress Disorder”

- 11:30–12:00: Joel Nishimura, “Rescorla Wagner Models with Dynamic Attention”
- 12:00–12:30: Zoran Tiganj, “Learning from memory: a computational model for a logarithmically compressed timeline of the past and future”

Z-220: Mathematical modeling of cellular transitions en route metastasis: epithelial-mesenchymal plasticity and associated cellular traits

- 10:30–11:00: Kaitlyn Johnson, “An integrated approach to calibrate and validate mathematical models of therapy-induced resistance from in vitro drug response data in cancer”
- 11:00–11:30: Mohammed Kohandel, “Experimental and theoretical study of cancer plasticity: The effect of tumor microenvironment and long range interactions”
- 11:30–12:00: David Wooten, “Local model of cancer subtypes identifies master regulators and destabilizers”
- 12:00–12:30: Jason Somarelli, “Exploiting ecological dynamics to overcome cancer therapy resistance”

Z-245: Delay differential equation models in population biology

- 10:30–11:00: Gail Wolkowicz, “An alternative formulation for a delayed logistic equation”
- 11:00–11:30: Lin Wang, “The effects of delayed dispersal in ecological models”
- 11:30–12:00: Kyeongah Nah, “Normalization of periodic delays in delay differential equations arising from population dynamics”
- 12:00–12:30: Fuxiang Li, “A West Nile Virus Model with Vertical Transmission and Periodic Time Delays”

Z-255: Mathematical modelling of hematopoiesis under stress and disease

- 10:30–11:00: Thomas Stiehl, “Stem cell niche dynamics in human blood cancer - insights from mathematical modeling”
- 11:00–11:30: Kolja Eppert, “Anti-leukemic stem cell compounds: in silico and in vitro screening”
- 11:30–12:00: Morten Andersen, “Hematopoiesis or inflammation driven blood

cancer? Insights from mathematical modelling”

- 12:00–12:30: Dominik Wodarz, “Mathematical models of leukemia development and treatment”

Z-260: Spatial interactions in cell biology

- 10:30–11:00: Daniel Coombs, “Interpreting super-resolution microscopic imaging of B cell surface receptors”
- 11:00–11:30: Alan Lindsay, “Boundary Homogenization of Patchy Membranes and the Roles of Clustering in Chemoreception”
- 11:30–12:00: Ruth Baker, “Testing Models of mRNA Localization Reveals Robustness Regulated by Reducing Transport between Cells”
- 12:00–12:30: Samuel Isaacson, “Signaling in the presence of cellular substructures”

Z-305: Mentoring Room

12:30–13:30: LUNCH

Pavillon Jean-Coutu

Z-110: Women’s Lunch

13:30–14:30: PLENARY

Mortiz Thon, “Toward a quantification of atherosclerosis”

Morgan Craig, “Novel physiological mechanisms revealed through mechanistic modelling of granulopoiesis guides the optimization of chemotherapy regimens” Z-110, Pavillon Claire-McNicoll (streaming in Z-220 and Z-210)

14:30–15:30: CONTRIBUTED TALKS

Z-200

- 14:30–14:50: John Dallon, “A Stochastic Model of Filament Transport by Motor Proteins”
- 14:50–15:10: Jochen Kursawe, “Stochastic amplification of gene oscillations dur-

ing embryonic neurogenesis”

- 15:10–15:30: Marc Roussel, “Developing a left and a right side: bistability in the Lefty-Nodal network”

Z-205

- 14:30–14:50: Anet Anelone, “Elite control of HIV exhibits some robustness properties”
- 14:50–15:10: Youfang Cao, “Mechanistic Immuno-Viral Dynamics Modeling Platform for HIV Cure Drug Development”
- 15:10–15:30: Wylie Stroberg, “Information Processing by Endoplasmic Reticulum Stress Sensors”

Z-209

- 14:30–14:50: Adeshina Adekunle, “A pandemic tool for emerging disease monitoring: Ebola as a case study”
- 14:50–15:10: Pedro Cárdenas, “Qualitative behavior of AIDS in a homosexual population”
- 15:10–15:30: Deena Schmidt, “Contagion dynamics on adaptive networks: Norovirus as a case study”

Z-210

- 14:30–14:50: Carlene Arceo, “Stochastic SEIR Dynamics on an Edge-based Network Model”
- 14:50–15:10: Jing Jiao, “The influences of host evolution on host-pathogen interactions across space”
- 15:10–15:30: Rachael Milwid, “Assessing the impact of empirical contact patterns on disease dynamics within an equine population”

Z-215

- 14:30–14:50: Iulia Martina Bulai, “Geometrical analysis of mixed-mode bursting oscillations in a multiple-timescale model of bursting electrical activity”
- 14:50–15:10: Diane Fokoue, “Numerical Methods for the Microscopic Cardiac Electrophysiology Model”
- 15:10–15:30: Cheng Ly, “Spike statistics during olfactory stimulation via orthonasal and retronasal inhalation”

Z-220

- 14:30–14:50: Davide Maestrini, “On the concept of temperature in the process of aging and AML development”
- 14:50–15:10: Prativa Sahoo, “Mathematical modeling to quantitatively evaluate the dynamics of CAR T-cell therapy in glioblastoma”
- 15:10–15:30: Jeffrey West, “Tissue structure accelerates evolution: premalignant sweeps precede neutral expansion”

Z-245

- 14:30–14:50: James Brunner, “Modeling microbial community dynamics using genome scale metabolic models”
- 14:50–15:10: Juancho Collera, “HOPF BIFURCATION IN A THREE-SPECIES INTRAGUILD PREDATION MODEL WITH STAGE STRUCTURE”
- 15:10–15:30: Tony Humphries, “Equivalences Between Age Structured Models and Distributed Delay Differential Equations”

Z-255

- 14:30–14:50: Ramesh Arumugan, “Tracking unstable states: A complicated dance in a changing world”
- 14:50–15:10: Sean Lavery, “Modeling woundwood rib formation and fire scar closure in fire-scarred oak”
- 15:10–15:30: Pengyu Liu, “A polynomial metric on rooted binary tree shapes”

Z-260

- 14:30–14:50: Aniruddha Deka, “Individual vaccination choice and optimal budget allocation for vaccination campaign”
- 14:50–15:10: Maximilian Pulema Touzel, “Inferring population dynamics from high-throughput sequencing”
- 15:10–15:30: Emek Kose, “Modeling the Stem Cell Hypothesis for Cancer”

Z-305: Mentoring Room

15:30–16:00: BREAK

16:00–18:00: MINISYMPOSIA

Z-110: Modeling time since infection: theory and implications

- 16:00–16:30: Glenn Webb, “Spatial Spread of Epidemic Diseases in Geographical Settings: Seasonal Influenza Epidemics in Puerto Rico”
- 16:30–17:00: Helen Wearing, “Modelling time since infection in mosquitoes: biting behaviour matters”
- 17:00–17:30: David Champredon, “A Dynamical Model to Forecast Seasonal Influenza”
- 17:30–18:00: David Earn & Jonathan Dushoff, “Comments and discussion on modeling time since infection”

Z-200: Immune system modeling in the context of cancer growth and treatment

- 16:00–16:30: Ami Radunskaya, “How do immune cells kill cancer cells?”
- 16:30–17:00: Luiz Zapata Ortiz, “The rise and fall of malignant clones under immune attack”
- 17:00–17:30: Ardith El-Kareh, “Immune system changes with age and age-dependence of cancer survival time from diagnosis”
- 17:30–18:00: Morgan Craig, “Determining the Mechanisms of Combined Immunotherapy/Oncolytic Virotherapy Success for Treatment Personalization and Optimization through Computational Biology”

Z-205: Hepatitis B viral dynamics: mathematical and numerical methods

- 16:00–16:30: Stanca Ciupe, “Early events during hepatitis B virus infection”
- 16:30–17:00: Jonathan Forde, “Models of Chronic Hepatitis B Infection”
- 17:00–17:30: Harel Dahari, “Modeling hepatitis B virus infection in primary human hepatocytes”
- 17:30–18:00: Vladimir Reinharz, “PDE modeling simulations and fitting methods for understanding hepatitis B virus infection in humanized mice”

Z-209: Mathematical Modelling of Cancer Therapy

- 16:00–16:30: SeokJoo Chae, “Predicting cytotoxicity of natural killer cell”
- 16:30–17:00: Yangjin Kim, “Mathematical model of tumor growth and anti-invasion strategies”
- 17:00–17:30: Kang-Ling Liao, “Mathematical modeling in cancer immunotherapy”
- 17:30–18:00: Xiulan Lai, “Mathematical modeling about cancer combination therapy with immune checkpoint inhibitor”

Z-210: Algebraic tools for the analysis of biochemical reaction networks

- 16:00–16:30: Alan Rendall, “A proof of unlimited multistability for phosphorylation cycles”
- 16:30–17:00: Eduardo Sontag, “A computational framework for a Lyapunov-enabled analysis of biochemical reaction networks”
- 17:00–17:30: Jiaxin Jin, “Persistence and global stability for biochemical reaction-diffusion systems”
- 17:30–18:00: Polly Yu, “Dynamical equivalence for complex-balanced mass action systems”

Z-215: Mathematical models for plants

- 16:00–16:30: Danielle Way, “Impacts of photosynthetic parameter selection and acclimation on modeled tree carbon gain”
- 16:30–17:00: Sabrina Russo, “Water transport through tall trees: A vertically explicit, analytical model of xylem hydraulic conductance in stems”
- 17:00–17:30: Nicholas Smith, “Photosynthetic acclimation through the lens of optimality”
- 17:30–18:00: Glenn Ledder, “The local control theory of plant resource allocation”

Z-220: The mechanics and biochemical signalling of cellular motility

- 16:00–16:30: Laurent MacKay, “The mechanics and biochemical signalling of cellular motility”

- 16:30–17:00: Lennart Hilbert, “Spreading of molecular mechanical perturbations on linear filaments”
- 17:00–17:30: Adam Hendricks, “The microtubule-associated proteins tau and MAP7 direct organelle transport”
- 17:30–18:00: Lead Edelstein-Keshet, “Models for cell shape changes and cell motility: from one cell to many”

Z-245: Applications of mathematical drug development

- 16:00–16:30: Ryan Vargo, “Evolutionary responses to a disturbance in a predator-prey system”
- 16:30–17:00: Chi-Chung Li, “Integrating QSP Modeling In Phase I Clinical Drug Development of Mosunetuzumab in Relapsed/Refractory Non-Hodgkins Lymphoma”
- 17:00–17:30: Khamir Mehta, “Computational analysis of mechanism of action of bispecific antibodies for cancer treatment”
- 17:30–18:00: Mindy Magee, “Recent applications of Modeling and Simulation in Drug Development: From Data to Decision”

Z-255: Modelling intracellular transport

- 16:00–16:30: Gleb Zhelezov, “Which head is ahead: Molecular motor dynamics in a microtubule bundle”
- 16:30–17:00: Stephanie Portet, “Deciphering the transport of intermediate filaments by motor proteins”
- 17:00–17:30: John Fricks, “Incorporating time series at different spatio-temporal levels to understand dynamics of motor-cargo complexes”
- 17:30–18:00: Calina Copos, “Modeling insights into the collective cell polarization of heart progenitor cells”

Z-260: Modeling and analysis of the endocrine and neuroendocrine systems

- 16:00–16:30: Benoit Huard, “Amplitude variation in glucose-insulin ultradian dynamics”
- 16:30–17:00: Brad Peergcy, “Islet Network Analysis: Determining Conditions for Behaviors Related to Silencing Hub Cells”

- 17:00–17:30: Patrick Fletcher, “Calcium oscillation-dependent and -independent glycolytic oscillations in models of pancreatic beta cells”
- 17:30–18:00: Richard Bertram, “Using Glucose to Test a Rhythmogenic Mechanism in Pancreatic β -Cells”

Z-305: Data-driven methods for biological modeling

- 16:00–16:30: Harry Dudley, “Numerical Error in Model Selection for Biochemical Systems”
- 16:30–17:00: John Nardini, “Learning PDE models from noisy spatiotemporal data”
- 17:00–17:30: Suzanne Sindi, “Mathematical Modeling and Statistical Inference to Quantify Product Inhibition in Chromogenic Assays”
- 17:30–18:00: Marisa Eisenberg, “Identifiability, uncertainty, & parameter reduction in mathematical epidemiology”

19:00–21:00: POSTER SESSION

Agora of Pavillon Jean-Coutu