

## TRAINEE SYMPOSIUM – TUESDAY MAY 28<sup>th</sup>

All oral presentations and poster sessions will take place in the Kaneff Building.

---

12:00 PM - 1:00PM **Registration and Networking Lunch**

---

1:00 PM – 1:10 PM **Opening Remarks**

---

1:10 PM - 3:10 PM **Career session**

1:10 PM Joshua Mogyoros, Research and Development Scientist, MesoMat

1:40 PM Danielle Tokarz, Assistant Professor, Saint Mary's University

2:10 PM Daaf Sandkuijl, Senior Optical Scientist, Fluidigm

2:40 PM Ricky Ghoshal, Director, Strategic Development, Glysantis Inc.  
(Mirexus Biotechnologies)

---

3:10 PM - 3:30 PM **Coffee Break**

---

3:30 PM - 5:30 PM **Trainee Talks**

3:30 PM Rashik Ahmed, Graduate Student, McMaster University  
*Atomic Resolution Map of the Soluble Amyloid Beta Assembly Toxic Surfaces*

3:45 PM Aidan Tremblett, Graduate Student, Memorial University of  
Newfoundland  
*Systematic Coarse-Graining Method for Molecular Simulations using Relative  
Entropy*

4:00 PM Jennifer Lou, Graduate Student, University of Toronto  
*Cryo-EM Study of Transient Protein Interactions in Fungal Type I FAS Catalysis*

4:15 PM Adree Khondker, Undergraduate Student, McMaster University  
*A Molecular Mechanism for Polymyxin-induced Membrane Damage that predicts  
Bacterial Resistance*

4:30 PM Anita Rágyanszki, Postdoctoral Fellow, York University  
*Artificial Neural Networks as a Tool to Describe Peptide Conformational Changes*

4:45 PM Daryl Good, Graduate Student, University of Guelph  
*Characterizing the Hierarchy of Internal Dynamics in a Membrane Protein by Solid  
State NMR*

5:00 PM Steven Chen, Graduate Student, University of Toronto  
*High-throughput Investigation of Rhodopsin Function using Yeast*

5:15 PM Sara Molladavoodi, Postdoctoral Fellow, Wilfrid Laurier University  
*Collagen Contraction Induced by Annulus Fibrosus Cells of the Intervertebral Disc*

---

6:00 PM – 8:00 PM **BSC 2019 Opening Reception**  
**North Building Atrium**

---

**SCIENTIFIC PROGRAM****Wednesday, May 29<sup>th</sup>**

9:00 AM **Welcoming remarks**  
Kent Moore, Vice-Principal, Research, University of Toronto Mississauga  
Claudiu Gradinaru, Chair, Department of Chemical and Physical Sciences

---

9:15 PM – 9:55 AM **Plenary Talk**  
Chair: Claudiu Gradinaru (University of Toronto Mississauga)  
**Samuel Hess, University of Maine**  
*Localization-Based Super-Resolution Microscopy: Technical Advances Coupled to Biological Applications*

---

9:55 AM - 10:50 AM **Session 1: Biophotonics**  
Chair: Virgis Barzda (University of Toronto Mississauga)

9:55 AM Paul Wiseman, McGill University  
*Mining the molecular noise via fluorescence fluctuation image analysis of microscopy and super-resolution microscopy*

10:15 AM Danielle Tokarz, Saint Mary's University  
*Natural Compounds as Dyes for Nonlinear Optical Microscopy*

10:35 AM Trainee talk: Pablo Dans, Institute for Research in Biomedicine Barcelona  
*From STORM Microscopy and Genome-Wide Analysis to Near Atomic Resolution of Human Genes*

---

10:50 AM - 11:15 AM **Coffee Break and Posters**

---

11:15 AM - 12:30 PM **Session 2: Membranes**  
Chair: Simon Sharpe (The Hospital for Sick Children)

11:15 AM Voula Kanelis, University of Toronto  
*The influence of disease mutations and regulatory interactions in SUR proteins, the regulatory subunit in K-ATP channels*

11:35 AM Suzana Straus, University of British Columbia  
*Novel alternatives to antibiotics: biophysical tools to study the function of host defense peptides*

11:55 AM Jenifer Thewalt, Simon Fraser University  
*Order in the membrane*

12:15 PM Trainee talk: Javier Porro-Suardiaz, Concordia University  
*GL13K, an antimicrobial peptide with anticancer activity: A story told through the interaction with model membranes*

---

12:30 PM - 2:00 PM **Lunch Break**

---

1:30 PM – 2:00 PM **Sponsor Presentation: SFR (Kanefff Building KN L1220)**

---

---

**2:00 PM – 3:30 PM Poster Session A and Refreshments**


---

**3:30 PM – 4:45 PM Session 3: Cellular Biophysics**

Chair: Maikel Rheinstadter (McMaster University)

3:30 PM Cecile Fradin, McMaster University

*Visualizing transcription in the early fly embryo*

3:50 PM Jon Rocheleau, University of Toronto

*Islet-on-a-chip provides an optical window into cellular metabolism and insulin secretion*

4:10 PM Anton Zilman, University of Toronto

*Nuclear Pore Complex: simple physics of a complex biomachine*

4:30 PM Trainee talk: Sebastian Himbert, McMaster University

*The Bending Rigidity of Red Blood Cell Membranes Determined from Solid-Supported Multi-lamellar Membranes*


---

**4:45 PM – 5:15 PM Award Lecture: Young Investigator of the BSC**

Chair: John Baenziger (University of Ottawa)

Roberto Chica, University of Ottawa

*Rational Design of Protein Energy Landscapes*


---

**5:15 PM – 7:00 PM Poster Session B and Mixer**


---

**Thursday, May 30<sup>th</sup>**
**9:00 AM - 10:15 AM Session 4: Single Molecule Biophysics I**

Chair: Claudiu Gradinaru (University of Toronto Mississauga)

9:00 AM Sabrina Leslie, McGill University

*Deconstructing biology with simple single-molecule imaging: Controlling conformation, confinement, and concentration*

9:20 AM Michael Woodside, University of Alberta

*Direct observation of formation of a knotted structure in single RNA molecules from Zika virus*

9:40 AM Haw Yang, Princeton University

*Unsupervised Statistical Learning in Multi-Resolution Dynamics*

10:00 AM Trainee talk: Gregory-Neal Gomes, University of Toronto

*Ensemble modelling of disordered proteins using single-molecule FRET*


---

**10:15 AM - 10:45 AM Coffee Break and Posters**


---

**10:45 AM - 12:00 PM Session 5: Receptors and Cell Signalling**

Chair: Cecile Fradin (McMaster University)

10:45 AM Kalina Hristova, Johns Hopkins University

*Peering into cells with new imaging technologies*

- 11:05 AM R. Scott Prosser, University of Toronto  
*Molecular and Mechanistic Underpinnings of Signal Transduction in Membranes: NMR Inspired Studies of the Conformational Landscape in Enzymes & GPCRs*
- 11:25 AM Trainee talk: Wendy Wang, University of Toronto  
*A spatial-temporal map of the Protocadherin expression code in the CNS*
- 11:40 AM TBA

---

12:00 PM – 1:40 PM **Lunch Break**

---

1:00 PM – 1:30 PM **Sponsor Presentation: Lumicks (Kaneff Building KN L1220)**

---

12:30 PM – 1:30 PM **BSC Business Meeting (Davis Building Room 3130)**

---

1:40 PM - 2:20 PM **Plenary Talk**

Chair: Sarah Rauscher (University of Toronto Mississauga)

Tanja Mittag, St. Jude Children's Research Hospital  
*Phase separation and mesoscale assembly for functional compartmentalization*

---

2:20 PM - 3:20 PM **Session 6: Intrinsically Disordered Proteins**

Chair: Sarah Rauscher (University of Toronto Mississauga)

2:20 PM Andrea Soranno, Washington University in St. Louis  
*Single-molecule fluorescence spectroscopy reveals heterogeneous conformations in Apolipoprotein E*

2:40 PM Joan-Emma Shea, University of California San Diego  
*Aggregation and coacervation of the tau peptide*

3:00 PM Julie Forman-Kay, The Hospital for Sick Children  
*Phase Separation Biophysics, Prediction and Role in Biological Regulation*

---

3:20 PM - 3:50 PM **Coffee Break and Posters**

---

3:50 PM - 4:50 PM **Fellow of the Biophysical Society of Canada & National Lecture**

Chair: John Baenziger

Hue Sun Chan, University of Toronto  
*A Physicist's Journey in Molecular Biology*

---

4:55 PM – 6:00 PM **Travel to Waterside Inn (15 Stavebank Rd S, Mississauga)**

---

6:00 PM - 10:00 PM **Conference Banquet at Waterside Inn**

---

Friday, May 31<sup>st</sup>9:00 AM - 9:40 AM **Plenary Talk**

Chair: Andreas Hilfinger (University of Toronto Mississauga)

Johan Paulsson, Harvard University

*General principles for timing and oscillations in stochastic reaction systems*9:40 AM - 10:40 AM **Session 7: Cell and Systems**

Chair: Sid Goyal (University of Toronto)

9:40 AM Andrew Rutenberg, Dalhousie University

*Collagen fibrils: liquid-crystals, crystals, and rubber bands*

10:00 AM Lisa Manning, Syracuse University

*Biophysical modeling of the collective behavior of cells in tissues*

10:20 AM Erdal Toprak, University of Texas Southwestern

*Exploiting trade-offs in the evolution of antibiotic resistance*10:40 AM **Conference photo**10:45 AM - 11:15 AM **Coffee Break and Posters**11:15 AM - 12:35 PM **Session 8: Biopolymers**

Chair: Joan-Emma Shea (University of California San Diego)

11:15 AM Régis Pomès, The Hospital for Sick Children

*Molecular Mechanisms of Gating, Permeation, and Leakage in Ion Channels*

11:35 AM Gary Slater, University of Ottawa

*Two recent "proofs" that the theory of diffusion is not dead*

11:55 AM Justin MacCallum, University of Calgary

*Binding of cannabinoids and fatty acids to fatty acid binding proteins*

12:15 AM Christopher Rowley, Memorial University of Newfoundland

*Modeling Covalent Modifiers of Kinase Proteins*12:15 PM – 2:00 PM **Lunch Break**2:00 PM - 2:40 PM **Plenary Talk**

Chair: Sarah Rauscher (University of Toronto Mississauga)

Edward Lemke, Johannes Gutenberg University Mainz

*Tools to Decode Molecular Plasticity in the Dark Proteome*2:40 PM - 3:40 PM **Session 9: Single Molecule Biophysics II**

Chair: Josh Milstein (University of Toronto Mississauga)

2:40 PM Matthew Lew, Washington University in St. Louis

*New Methods for Visualizing Single Amyloid Protein Dynamics at the Nanoscale*

3:00 PM Ilya Finkelstein, University of Texas Austin

*Playing with Knives: Regulation of Human DNA Resection*

3:20 PM Jingyi Fei, University of Chicago  
*Dynamic interactions between the RNA chaperone Hfq, small regulatory RNAs and mRNAs in live bacterial cells*

---

3:40 PM - 3:50 PM **Closing Remarks**  
BSC Organizaing Committee

---

4:00 PM - 6:00 PM **Closing Reception**  
*North Building Atrium*

---