



BSC 2023
Calgary



Biophysical Society
Société de biophysique
of
du Canada

FULL PROGRAM



Biophysical Society of Canada

8th Annual Meeting

May 23-26, 2023

University of Calgary

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The meeting program including lists of invited speakers, abstracts, keynote and award winner lecturer bios, lists of participants, etc. are all found on the conference website: <https://event.fourwaves.com/bsc2023>

WIFI INFORMATION

Network Name: airuc-guest - no identification needed
eduroam – authenticate with home university credentials

Welcome

Welcome to the 8th Annual Meeting of the Biophysical Society of Canada (BSC)! This year's meeting will be held on the campus of the University of Calgary (UCalgary) located in the heart of Canada's New West. The annual meeting offers attendees the opportunity to learn about exciting new developments in biophysics research and to network with peers from across Canada and further afield. The meeting is dedicated to biophysical techniques and discoveries that have revolutionized research leading to advancements in medicine, pharmaceutical sciences, biotechnology, material sciences and biosensing.

The meeting features four keynote talks by Molly Shoichet (University of Toronto), Tamir Gonen (University of California and HHMI), Pascale Legault (Université de Montréal), and Gerhard Hummer (Max Planck Institute of Physics and Goethe University Frankfurt). The BSC also features the National Lecture by Michael Woodside (University of Alberta), the 2023 BSC Fellow.

Nous voulons remercier nos commanditaires industriels, ainsi que la Faculté des Sciences de l'Université de Calgary, pour leurs contributions importantes à cette conférence. Le succès de cet événement dépend de votre participation et nous vous remercions d'avoir fait le voyage jusqu'ici, que vous soyez de la région ou de passage à Calgary. Grâce à vous, cette réunion sera des plus stimulantes et inclusives! Bonne semaine!

President's message

On behalf of the Biophysical Society of Canada (BSC), I welcome you to Calgary and what promises to be an exciting, stimulating and fun week of Biophysics! Je vous souhaite la bienvenue au congrès annuel 2023 de la Société de biophysique du Canada (SBC) à l'Université de Calgary. I hope that the annual meeting of the BSC will provide each of you an opportunity to be exposed to new research findings, stimulated to think in new ways about your own research, and to renew and forge new connections with others in the Canadian and international biophysics communities.

On behalf of all of us attending this conference, I would like to acknowledge and offer huge thanks to the local conference organizing team for its work in putting together this outstanding scientific and social program of events for us all to enjoy: Justin MacCallum, Omid Haji-Ghassemi and Trushar Patel. Merci! Big thanks also to BSC executive committee member Vincent Tabard-Cossa, for his efforts to help steer this organizational ship. Thanks go as well to Christopher Cairo, Daniel Charlebois, Megan Engel, Joanne Lemieux and Peter Tieleman for their contributions to the scientific program and beyond.

It is a true pleasure working with members of our BSC Trainee Executive throughout the year. Led by Vishal Pandya, they have prepared a fantastic Trainee Symposium for the first day of this meeting, which provides an opportunity to showcase the amazing research being done by trainees and allows them to build their professional networks. Thank you to all of the members of the BSC Trainee Executive who have made this happen.

Finally, I would like to thank the many financial sponsors of BSC 2023. Your contributions have allowed us to maintain the affordability of this meeting for all participants, for which we are grateful.

J'espère que vous serez stimulés par ce congrès et plus que jamais motivés à contribuer à notre société. I encourage you to get involved in our society!

Nancy Forde
President
Biophysical Society of Canada / Société de biophysique du Canada

BSC 2022 LOCAL ORGANIZING COMMITTEE

Justin MacCallum UCalgary	Trushar Patel University of Lethbridge
Omid Haji-Ghassemi UCalgary	Megan Engel UCalgary
Peter Tieleman UCalgary	Daniel Charlebois University of Alberta
Chris Cairo University of Alberta	Joanne Lemieux University of Alberat



BIOPHYSICAL SOCIETY OF CANADA - EXECUTIVE TEAM

Nancy Forde President	Claudiu Gradinaru Vice President	David Langelaan Treasurer	Suzanna Straus Membership
Zoya Leonenko Past President	C�cile Fradin e-News	Vincent Tabard-Cossa BSC Meetings	Nicolas Doucet Awards
Trushar Patel Awards	Justin MacCallum Awards	Isaac Li Web & Social Media	Alaa Al-Shaer Trainee Representative
Vishal Pandya Trainee Representative			

BSC 2022 TRAINEE SYMPOSIUM LOCAL ORGANIZING COMMITTEE

Tanille Shandro
Graduate student

Stefan Lenz
Postdoctoral Fellow

Daniel Ramirez
Graduate student

Sridhar Dwadasi
Graduate student

Mariia Borbuliak
Graduate student

Departments of Chemistry and Biological Sciences, UCalgary

BIOPHYSICAL SOCIETY OF CANADA – TRAINEE EXECUTIVE TEAM

Vishal Pandya
President
Memorial University
of Newfoundland

Alaa Al-Shaer
Vice President
Simon Fraser
University

Sarika Kumari
Member at Large
Memorial University
of Newfoundland

Benjamin Baylis
Member at Large
University of Guelph

Hanieh Rezasoltani
Member at Large
University of
Manitoba

Toka Hussein
Member at Large
University of Ottawa

MacAulay Harvey
Member at Large
Saint Mary's
University

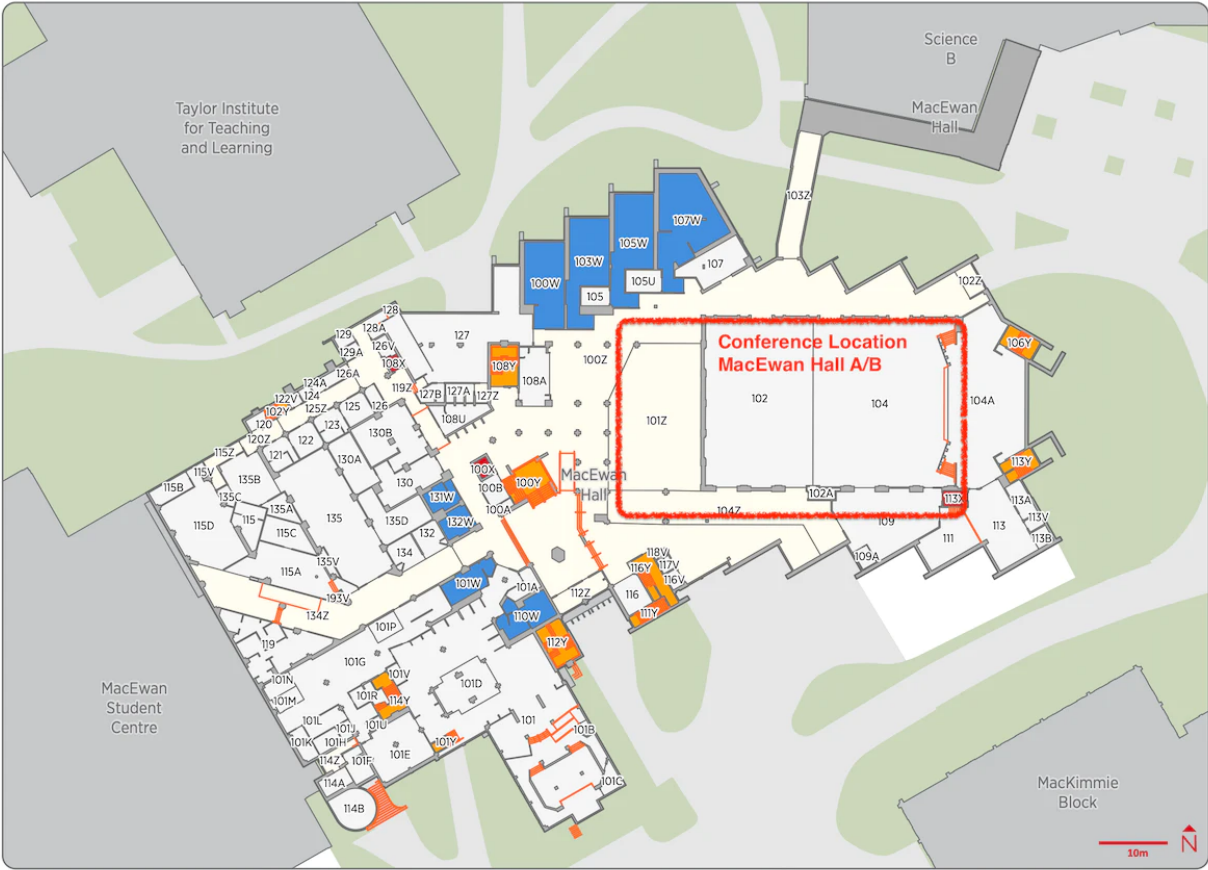
Luis Ramirez
Member at Large
Simon Fraser
University

Koushik Bar
Member at Large
Simon Fraser
University

CONFERENCE LOCATION

MacEwan Hall, Lower Floor MacEwan Student Centre

MacEwan Hall (MH) - Floor 01



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RESTAURANTS AND TAKE-OUT OPTIONS FOR LUNCH

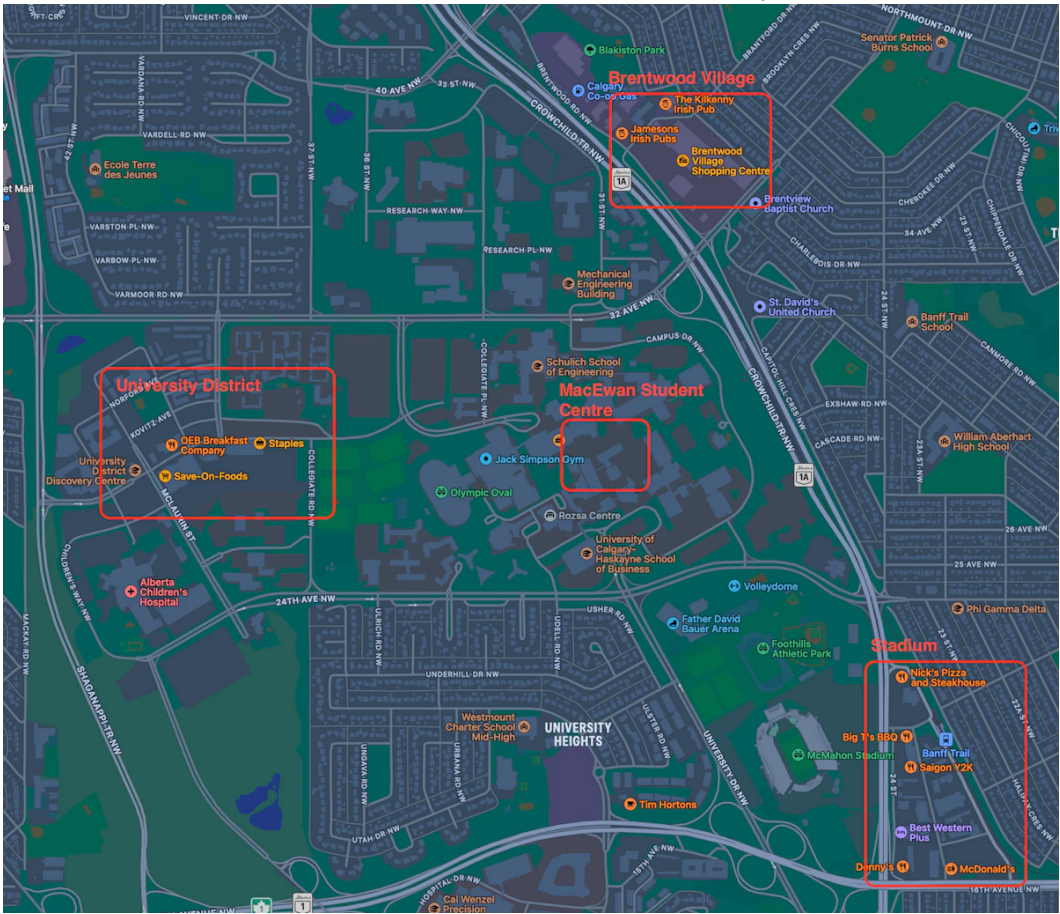
Searching “restaurants near me” on google maps will give you many options close to campus. There are some options in MacEwan Student Centre, including the Den and Black Lounge, Last Defense Lounge, and the food court. The University District is a short walk and features many more options. Additionally, the Brentwood Village and Stadium district have additional options.

MacEwan Student Centre (directly adjacent)

- A variety of fast-food and student-faire options on the first and second floors.
- The Den is a pub-style restraint on the lower floor.
- The Last Defense Lounge is a pub-style restraint located on the third floor.

University District (15 minute walk)

- [Many options](#) a short walk west of campus.
- BarBurrito
- Borough Bar + Grill
- Cobs Bread
- Five Guys
- Freshii
- Fuwa Fuwa
- OEB Breakfast Co.
- Osmow's
- Sesame
- The Alley
- The Canadian Brewhouse
- The Banquet



BSC BANQUET AND BSC MIXER

The BSC Mixer (Tuesday evening, May 23rd) will be held at the **conference venue, MacEwan Hall**.

The BSC Banquet (Thursday evening, May 25th) will be held at the **Hotel Arts**, 119 12th Ave SW. The venue is easily accessible by Uber, Taxi, or transit (C-Train).

- Catch the C-train at University Station, located on the East end of campus, to the eastbound station at 3 St SW. It is then a 10-minute walk to Hotel Arts.
- To return, catch a Westbound train at 1 St SW to University Station.
- Note: there are two train lines, Red (201) and Blue (202). The University is served by the Red Line. In the downtown core, the stations alternate between east and westbound, so you will arrive and depart from a different block.

Calgary is generally a very safe city. But drug use and crime can be more common on the train and in the downtown core. We recommend using common sense and travelling with a group.



COVID INFORMATION

The University of Calgary no longer has a mask requirement. Attendees who are feeling sick or have COVID-19 symptoms are recommended to follow [Alberta Health Services guidelines](#). Canada no longer has COVID-19 border or travel measures.

REGISTRATION INFORMATION

The registration desk is in Foyer MacEwan Hall, lower level of MacEwan Student Centre where all talks will take place.

Hours of registration

Tuesday May 23	9:30 AM - 7:00 PM
Wednesday May 24	8:30 AM - 4:00 PM
Thursday May 25	8:30 AM - 4:00 PM

POSTER INFORMATION

The poster board size is 4' (width) x 4' (height). The poster sessions will be held in the main conference venue, MacEwan Hall. The poster boards will be available on the morning of Monday, May 22nd. BSC posters must be removed by noon on Friday, May 26th. The numbering of the BSC posters is listed on [the website](#). Poster viewing will be held during lunch breaks and/or coffee breaks. The main catered BSC poster session with poster judging will be Wednesday evening, May 24th, from 5:00 PM to 7:00 PM. Presenters with **odd-numbered posters** should be at their posters from 5:00 PM to 6:00 PM. Presenters with **even-numbered posters** should be at their posters from 6:00 PM to 7:00 PM. Everyone is welcome to visit posters at their leisure.

ACCESSIBILITY AND INCLUSION

Accessibility Parenting Resources

If you have disability-related accommodation needs or parenting-resources needs, please contact us (bsc2023@ucalgary.ca) to work with you to make appropriate arrangements. This may include, for example, information about accessible services on campus.

Washroom Inclusivity

A list of washrooms that are inclusive to all, regardless of gender identity: <https://www.ucalgary.ca/equity-diversity-inclusion/literacy-and-education/lgbtq2s-guide>

Multi-faith Spaces at uCalgary: <https://ucalgary.ca/student-services/faith-spirituality>

Campus Maps

[Campus maps](#) with directions, parking, buildings, accessibility, etc.

ABOUT THE BIOPHYSICAL SOCIETY OF CANADA

The Biophysical Society of Canada (BSC: <https://biophysicalsociety.ca/>) was officially formed in 1985 by a group of Canadian scientists led by Don Chapman (Cross Cancer Institute, Edmonton), Alan Groom (University of Western Ontario, London) and Ian Smith (then at the NRC Institute for Biological Sciences, Ottawa). The BSC has maintained close ties to the IUPAB throughout its existence, with a representative of the BSC sitting on the IUPAB council since the early 1970s. BSC founder, Ian Smith, served for many years as a member of council, and then as Vice-President and President of the IUPAB. The BSC hosted the highly successful 10th IUPAB congress in 1990 in Vancouver.

The BSC has evolved into an independent, dynamic and diverse society with membership from across Canada. Professional activities of the BSC include an annual meeting, sponsorship of symposia and trainee travel awards to both our annual meeting and the annual meeting of the US Biophysical Society, and the administration of society awards. The BSC sponsors prizes for the best student posters at the annual meeting of the BSC. Researchers who have made exceptional contributions to Biophysicists are recognized as Fellows of the Biophysical Society of Canada. Outstanding researchers are also recognized annually as the National Lecturer at the BSC meeting. Finally, outstanding contributions to the BSC are recognized by the Michele Auger award for exceptional service.

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PROGRAM OVERVIEW

Tuesday, May 23th

9:30 AM – 4:00 PM Trainee Symposium

5:00 PM – 7:00 PM Opening Mixer

Wednesday, May 24th

9:00 AM – 9:15 AM Welcome

9:15 AM – 10:15 AM Cryo-Electron Microscopy 1

10:15 AM – 10:45 AM Coffee Break

10:45 AM – 11:45 AM Cryo-Electron Microscopy 2

11:45 AM – 1:30 PM Lunch

1:30 PM – 2:30 PM Computational Biophysics

2:30 PM – 3:00 PM Coffee Break

3:00 PM – 4:30 PM Biomaterials

5:00 PM – 7:00 PM Poster Session

Thursday, May 25th

9:00 AM – 10:45 AM Modeling

10:45 AM – 11:15 PM Coffee Break

11:15 AM – 12:00 PM Biomolecular Structure and Dynamics

12:00 PM – 1:30 PM BSC Business Meeting (In Cassio, located on the second floor of MacEwan Student Centre)

12:00 PM – 2:00 PM Lunch

2:00 PM – 2:45 PM Imaging and Spectroscopy

2:45 PM – 3:15 PM Awards

3:15 PM – 4:00 PM National Lecture

4:00 PM – 4:30 PM Coffee Break

4:30 PM – 5:30 PM Drug Discovery and Anti-microbial Resistance

6:30 PM – 9:30 PM Conference Dinner (Hotel Arts, 119 12 Ave SW)

Friday, May 26th

9:00 AM – 11:00 AM RNA Biology and Biophysics

11:00 AM – 11:30 AM Coffee Break

11:30 AM – 1:00 PM Biological Networks

1:00 PM – 1:15 PM Closing Remarks

TRAINEE SYMPOSIUM

All events are held in MacEwan Hall, which is located on the lower floor of the MacEwan Student Centre

Tuesday May 23 th	
9:30 AM – 10:00AM	Coffee and Snacks UCalgary GSA funded
10:00AM – 10:10AM	Welcoming Remarks Nancy Forde (BSC President) and Vishal Pandya (President of BSC Trainee Executive)
10:10 AM – 11:55 AM	Career Session Chair: Vishal Pandya
10:10 AM	Dr. Michael Woodside (University of Alberta)
10:30 AM	Dr. Jumai Abioye (Director of Technology at Northern RNA Inc).
10:50 AM	Dr. Sarah Treit (Figures First Consulting)
11:10 AM	Martin Z. Olszynski (UCalgary Faculty of Law)
11:30 AM	Panel Discussion
12:00 PM – 1:00 PM	Lunch At Last Defense Lounge in MacEwan Student Centre. Food and non-alcoholic drinks will be provided. UCalgary GSA funded.
1:05 PM – 2:05 PM	Trainee Talks Session 1 Chair: Alaa-al Shaer
1:05 PM	Kathleen Vergunst (Dalhousie University)
1:20 PM	Eugene Klyshko (University of Toronto)
1:35 PM	Sara Evans (Dalhousie University)
1:50 PM	Jiacheng Zuo (University of British Columbia)
2:05 PM – 2:35 PM	Coffee and Snack Break (UCalgary GSA funded)
2:35 PM – 3:35 PM	Trainee Talks Session 2 Chair: Benjamin Baylis
2:35 PM	Tanille Shandro and Stefan Lenz (UCalgary)
2:50 PM	Samantha Polege (University of Alberta)
3:05 PM	Danilar Zhaguparov (University of Alberta)
3:20 PM	Shabnam Massah (University of British Columbia)
3:35 PM – 3:50 PM	Closing remarks

BSC SCIENTIFIC PROGRAM

Wednesday, May 24 th	
9:00 AM – 9:15 AM	Introduction and Housekeeping
9:15 AM – 10:15 AM	Cryo-Electron Microscopy 1 Chair: Omid Haji-Ghassemi
9:15 AM	Elitza Tocheva, University of British Columbia <i>Characterization of cellular ultrastructure using advanced imaging approaches</i>
9:35 AM	Lejla Zubcevic, The University of Kansas Medical Center <i>The role of cytoplasmic domains in TRP channel gating</i>
9:55 AM	Francesca Vallese, Columbia University <i>Architecture of the human erythrocyte ankyrin-1 complex</i>
<hr/>	
10:15 AM – 10:45 AM	Coffee Break <i>MacEwan Hall Foyer</i>
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10:45 AM – 11:45 AM	Cryo-Electron Microscopy 2 Chair: Joanne Lemieux
10:45 AM	Nathanael Caveney, Stanford University School of Medicine <i>Novel Insights into Cytokine Signalling using CryoEM</i>
11:00 AM	Tamir Gonen, UCLA
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11:45 AM	Lunch
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1:30 PM – 2:30 PM	Computational Biophysics Chair: Peter Tieleman
1:30 PM	Rachael (Reiy) Mansbach, Concordia University <i>AMPlE Data: Understanding of Spaces and Starting Points for Antimicrobial Peptide Design</i>
1:50 PM	Miranda Holmes-Cerfon, University of British Columbia <i>The dynamics of particles with ligand-receptor contacts</i>
2:10 PM	Gonca Erdemci-Tandogan, Western University, Department of Physics & Astronomy <i>Physics of developing tissues: modelling embryonic development</i>
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2:30 PM – 3:00 PM	Coffee Break <i>MacEwan Hall Foyer</i>
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3:00 PM – 4:30 PM	Biomaterials Chair: Megan Engel
3:00 PM	Molly Shoichet, University of Toronto <i>Emulating the Microenvironment: 3D Cell Culture Enables Drug Discovery</i>
3:45 PM	Arnold Mathijssen, University of Pennsylvania <i>Collective functionalities emerging in microbial active matter</i>
4:05 PM	Gwynn Elfring, University of British Columbia <i>Active matter in inhomogeneous environments</i>

5:00 PM– 7:00 PM **Poster Session**

Thursday, May 25th

9:00 AM – 10:45 AM	Modeling Chair: Justin MacCallum
9:00 AM	Gerhard Hummer, Max Planck Institute of Biophysics <i>Molecular modeling and simulation of the human nuclear pore complex</i>
9:45 AM	Hans-Joachim Wieden, University of Manitoba <i>The secret life of the ribosome - How to break it, how to make it and how to fix it.</i>
10:05 AM	Saman Salari, Memorial University of Newfoundland <i>Identification and characterization of human mevalonate kinase inhibitors</i>
10:25 AM	Matthew Leighton, Simon Fraser University <i>Thermodynamic performance bounds for multi-component molecular machines</i>

10:45 AM – 11:15 AM **Coffee Break**

11:15 AM – 12:00 PM	Biomolecular Structure and Dynamics Chair: Claudio Gradinaru
11:15 AM	Filip Van Petegem, University of British Columbia <i>Channelopathies: high-resolution insights into arrhythmias and myopathies</i>
11:35 AM	David Langelaan, Dalhousie University <i>Structural studies of co-activator recruitment by the microphthalmia-associated transcription factor</i>

12:00 PM **Lunch**

12:00 PM **BSC Business Meeting**

2:00 PM – 2:45 PM	Imaging and Spectroscopy Chair: Vincent Tabard-Cossa
2:00 PM	Hamideh Rezvani Alanagh, McGill University <i>pH-induced changes in the viscoelasticity of coacervates from mussel byssus coating proteins</i>
2:20 PM	Danielle Tokarz, Dalhousie University <i>Measuring the Crystalline Structure of Fibrillar Proteins in Mouse Otoconia by Second Harmonic Generation Microscopy</i>
2:45 PM – 3:15 PM	Awards
3:15 PM – 4:00 PM	National Lecture Chair: Nancy Forde Michael Woodside, University of Alberta <i>Watching biological molecules fold and misfold at the single-molecule level</i>
4:00 PM – 4:30 PM	Coffee Break
4:30 PM – 5:30 PM	Drug Discovery and Antimicrobial Resistance Chair: Susana Straus
4:30 PM	Suzana Straus, University of British Columbia <i>Towards better sepsis therapeutics: biophysical characterization of CG4L73 and its conjugate</i>
4:50 PM	Nicole Weckman, University of Toronto <i>Synthetic Biology Sensing Systems for Tackling Global Healthcare Challenges</i>
5:10 PM	Samy Cecioni, Université de Montréal <i>Chemical strategies for monitoring glycan-processing and for capturing glycan-protein binding</i>
6:30 PM – 8:30 PM	Dinner <i>Dinner at Hotel Arts 119 12 Ave SW</i>

Friday, May 26th

- 9:00 AM – 11:00AM **RNA Biology and Biophysics**
Chair: Trushar Patel
- 9:00 AM Pascale Legault, Université de Montréal
RNA dynamics - Taking the road to function one step at a time
- 9:45 AM Anna Blakney, University of British Columbia
Modulating Immunogenicity and Expression of Self-Amplifying RNA
- 10:05 AM Nicolas Doucet, University of Quebec
Conformational exchange correlates with functional conservation along the evolutionary pathway of pancreatic-type ribonucleases
- 10:25 AM Dylan Girodat, University of Arkansas
The Accurate Decoding of mRNA Relies on the Geometric Alignment of Aminoacyl-tRNA with the Catalytic Centers of the Ribosome

11:00 AM – 11:30 AM **Coffee Break**

- 11:30 AM – 1:00 PM **Biological Networks**
Chair: Cécile Fradin
- 11:30 AM Gabor Balazsi, Stony Brook University
Mapping the fitness landscapes of cancer with synthetic gene circuits
- 11:50 AM Robert Lu, University of Toronto
Heparin promotes tropoelastin coacervation through a specific domain 36 interaction
- 12:10 PM Alice Troitskaia, University of Illinois Urbana-Champaign
Probing the Damage-Sensing Mechanism(s) of a DNA Repair Helicase
- 12:30 PM Eldon Emberly, Simon Fraser University

1:00 PM – 1:15 PM **Closing Remarks**