

# BSC 2023 Calgary



Biophysical Society  
Société de biophysique  
of  
du Canada

**FULL PROGRAM**



## Biophysical Society of Canada

8<sup>th</sup> 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 8<sup>th</sup> 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 support comme participants et nous vous remercions de faire le voyage pour nous rejoindre ici cette semaine. Votre participation nous donne confiance que cette réunion sera stimulante et positive! 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-ghassem 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. They have again 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 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 le congrès vous servira bien et vous encouragez à contribuer à notre société. We 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

**Cécile 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

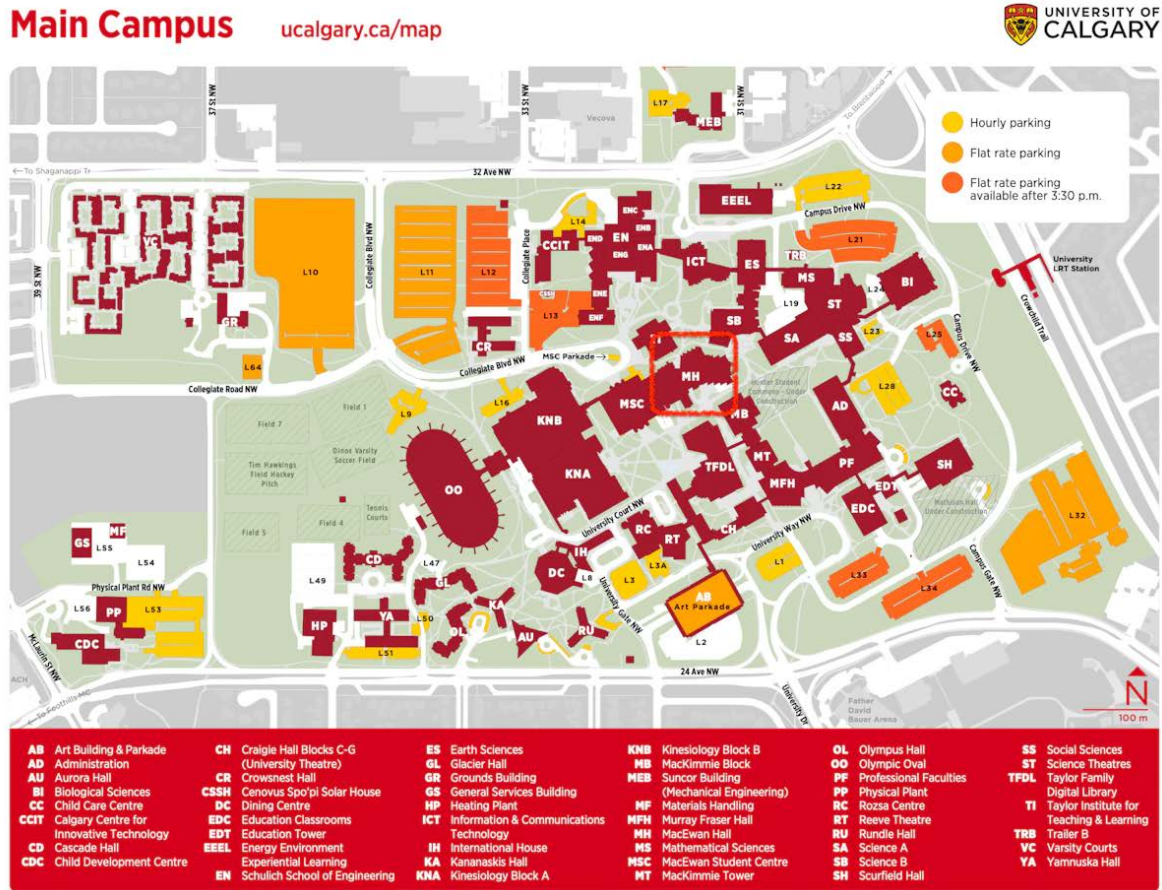
**Toka Hussein**  
Member at Large  
University of Ottawa

**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

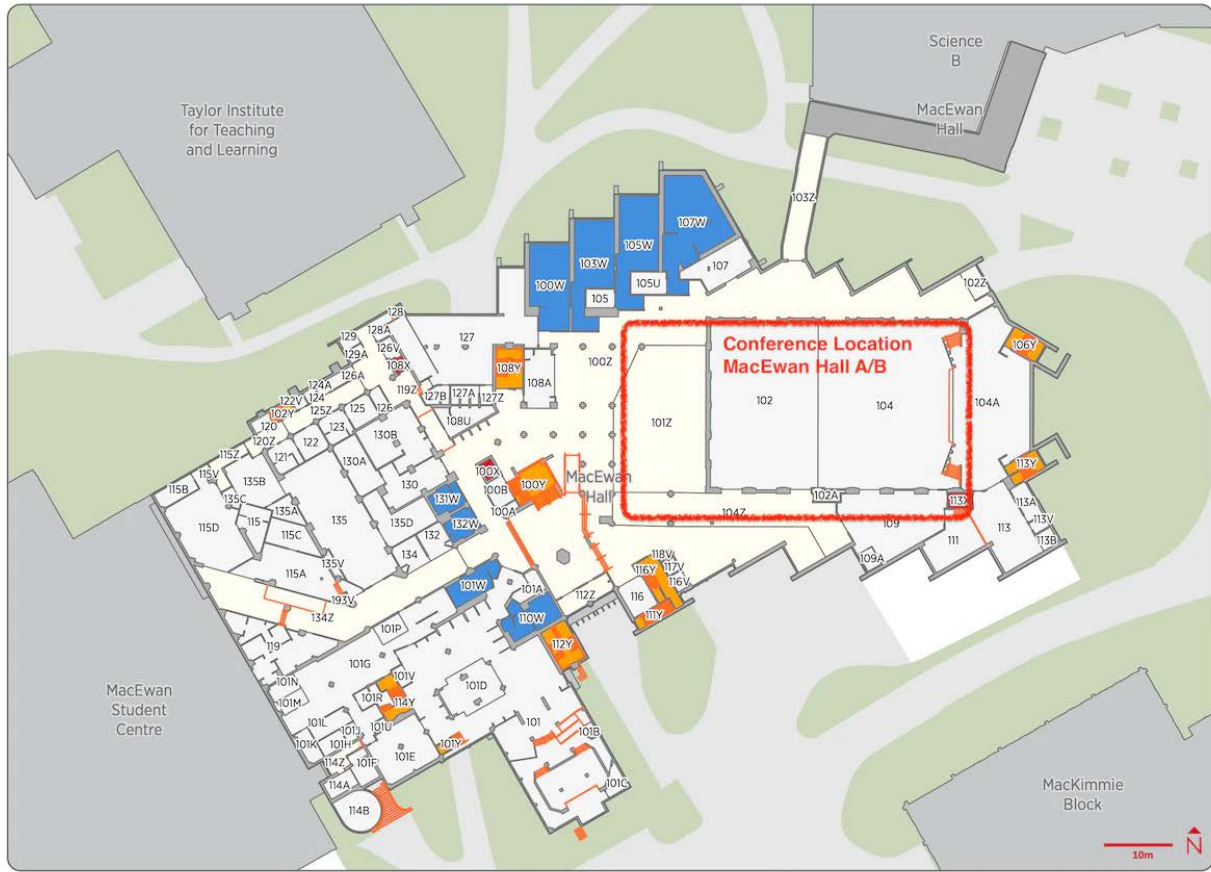


UCalgary maps: <https://www.ucalgary.ca/about/our-campuses/campus-maps-and-room-finder>

# 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

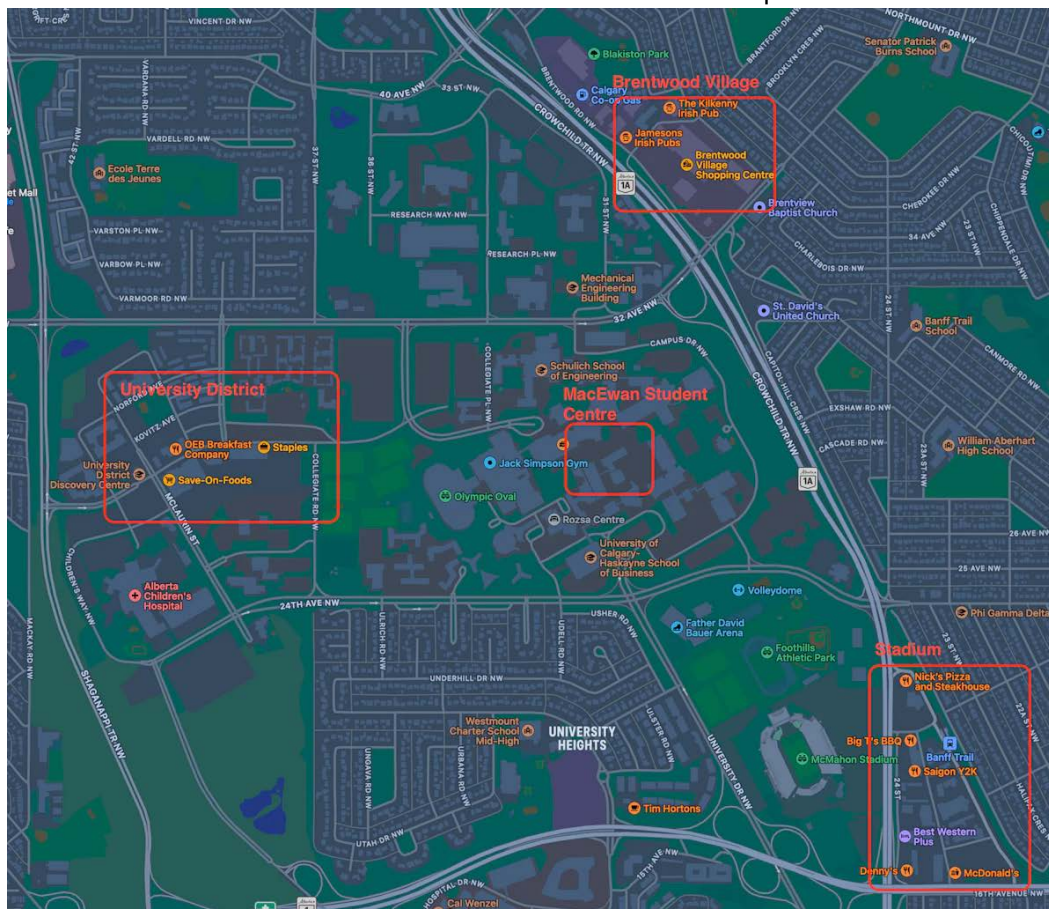
Searching “restaurants near me” on google maps will give you many options close to campus. There are some options in MacEwan Student Centre, including the Den and Black Lounge, Last Defense Lounge, and the food court. The University District is a short walk and features many more options. Additionally,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



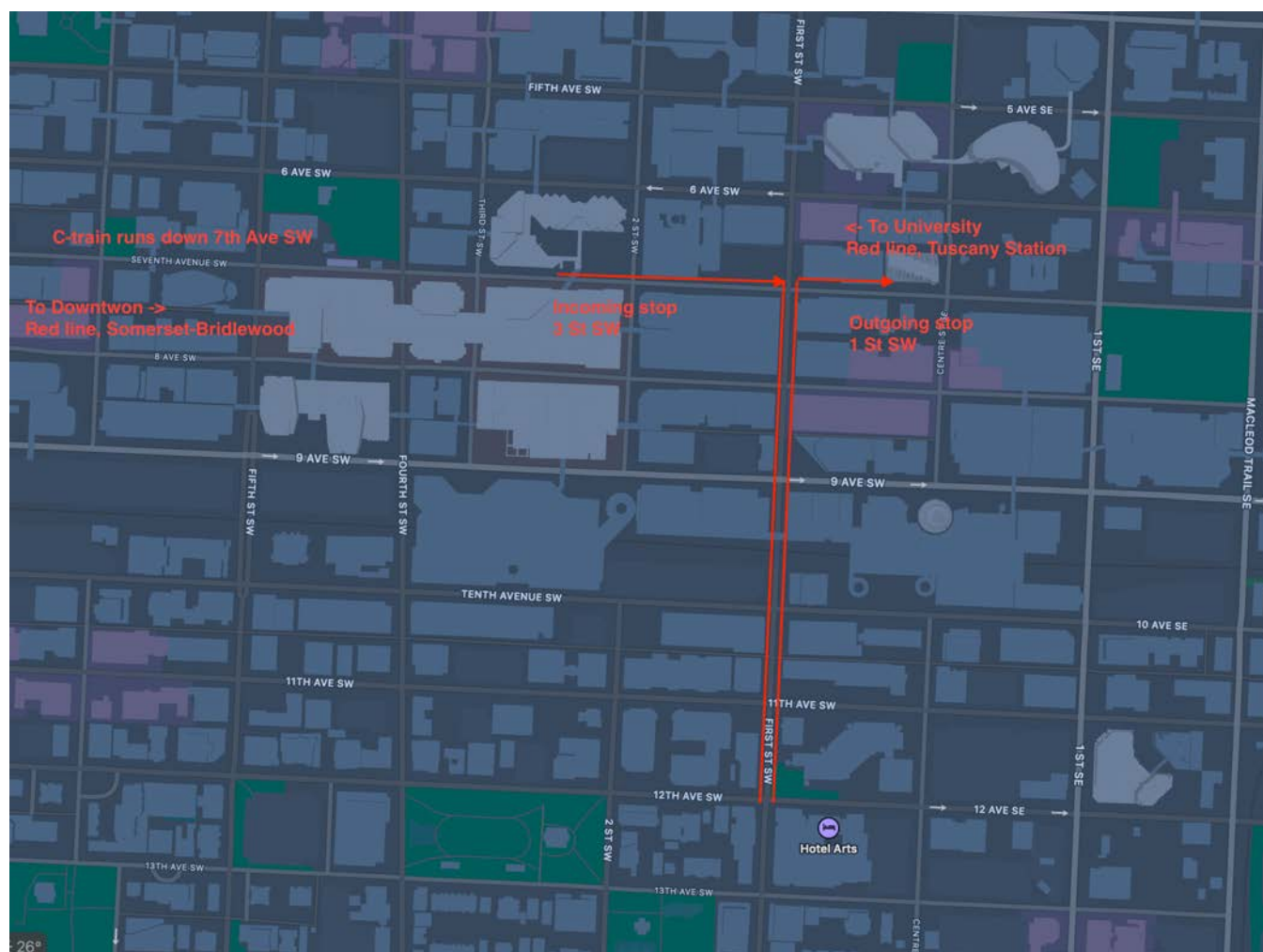
## BSC BANQUET AND BSC MIXER

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

The BSC Banquet (Thursday evening, May 25<sup>th</sup>) will be held at the **Hotel Arts**, 119 12<sup>th</sup> 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 the atrium of the Learning Crossroads (CRX) Building across from the lecture hall (**CRX-C140**) where all talks will take place.

### Hours of registration

<b>Tuesday May 23</b>	<b>8:30 AM - 6:00 PM</b>
<b>Wednesday May 24</b>	<b>8:30 AM - 4:00 PM</b>
<b>Thursday May 25</b>	<b>8:30 AM - 4:00 PM</b>

## 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 22<sup>nd</sup>. BSC posters must be removed by noon on Friday, May 26<sup>th</sup>. 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 24<sup>th</sup>, 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](mailto: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 23<sup>th</sup>**

9:30 AM – 4:00 PM Trainee Symposium

5:00 PM - 7:00 PM Opening Mixer

**Wednesday, May 24<sup>th</sup>**

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 PM Cryo-Electron Microscopy 2

11:45 PM – 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 25<sup>th</sup>**

9:00 AM – 10:45 AM Modeling

10:45 AM – 11:15 PM Coffee Break

11:15 PM – 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 26<sup>th</sup>**

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

11:00 AM – 11:30 AM Coffee Break

11:55 AM – 12:35 PM Biological Networks



## TRAINEE SYMPOSIUM

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

### Tuesday May 23<sup>th</sup>

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**  
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**  
2:35 PM Tanille Shandro and Stefan Lenz (UCalgary)  
2:50 PM Samantha Polege (University of Alberta)  
3:05 PM Shabnam Massah (University of British Columbia)

3:35 PM – 3:50 PM **Closing remarks**

## BSC SCIENTIFIC PROGRAM

Wednesday, May 24<sup>th</sup>

9:00 AM – 9:15 AM **Introduction and Housekeeping**

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

9:15 AM Elitza Tocheva, University of British Columbia  
*Characterization of cellular ultrastructure using advanced imaging approaches*

9:35 AM Lejla Zubcevic, The University of Kansas Medical Center  
*The role of cytoplasmic domains in TRP channel gating*

9:55 AM Francesca Vallese, Columbia University  
*Architecture of the human erythrocyte ankyrin-1 complex*

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10:15 AM – 10:45 AM **Coffee Break**  
*MacEwan Hall Foyer*

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

10:45 AM Nathanael Caveney, Stanford University School of Medicine  
*Novel Insights into Cytokine Signalling using CryoEM*

11:00 AM Tamir Gonen, UCLA

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11:45 AM **Lunch**

1:30 PM – 2:30 PM **Computational Biophysics**

1:30 PM Rachael (Reiy) Mansbach, Concordia University  
*AMPlE Data: Understanding of Spaces and Starting Points for Antimicrobial Peptide Design*

1:50 PM Miranda Holmes-Cerfon, University of British Columbia  
*The dynamics of particles with ligand-receptor contacts*

2:10 PM Gonca Erdemci-Tandogan, Western University, Department of Physics & Astronomy  
*Physics of developing tissues: modelling embryonic development*

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2:30 PM – 3:00 PM **Coffee Break**  
*MacEwan Hall Foyer*

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**3:00 PM – 4:30 PM Biomaterials**

3:00 PM Molly Shoichet, University of Toronto

3:45 PM Arnold Mathijssen, University of Pennsylvania  
*Collective functionalities emerging in microbial active matter*4:05 PM Gwynn Elfring, University of British Columbia  
*Active matter in inhomogeneous environments*

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**5:00 PM– 7:00 PM Poster Session**

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**Thursday, May 25<sup>th</sup>****9:00 AM – 10:45 AM Modeling**9:00 AM Gerhard Hummer, Max Planck Institute of Biophysics  
*Molecular modeling and simulation of the human nuclear pore complex*9:45 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*10:05 AM Saman Salari, Memorial University of Newfoundland  
*Identification and characterization of human mevalonate kinase inhibitors*10:25 AM Matthew Leighton, Simon Fraser University  
*Thermodynamic performance bounds for multi-component molecular machines*

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**10:45 AM – 11:15 AM Coffee Break**

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

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**12:00 PM Lunch**

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**12:00 PM BSC Business Meeting**

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

2:00 PM Hamideh Rezvani Alanagh, McGill University  
*pH-induced changes in the viscoelasticity of coacervates from mussel byssus coating proteins*

2:20 PM Danielle Tokarz, Dalhousie University  
*Measuring the Crystalline Structure of Fibrillar Proteins in Mouse Otoconia by Second Harmonic Generation Microscopy*

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**2:45 PM – 3:15 PM Awards**

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**3:15 PM – 4:00 PM National Lecture**

Michael Woodside, University of Alberta  
*Watching biological molecules fold and misfold at the single-molecule level*

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**4:00 PM – 4:30 PM Coffee Break**

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**4:30 PM – 5:30 PM Drug Discovery and Antimicrobial Resistance**

4:30 PM Suzana Straus, University of British Columbia  
*Towards better sepsis therapeutics: biophysical characterization of CG4L73 and its conjugate*

4:50 PM Nicole Weckman, University of Toronto

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**6:30 PM – 8:30 PM Dinner**

*Dinner at Hotel Arts 119 12 Ave SW*

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**Friday, May 26<sup>th</sup>****9:00 AM – 11:00AM RNA Biology and Biophysics**

- 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 Hans-Joachim Wieden, University of Manitoba

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**11:00 AM – 11:30 AM Coffee Break**

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**11:30 AM – 1:00 PM Biological Networks**

- 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

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**1:00 PM – 1:15 PM Closing Remarks**

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