

**Celebrating the 75th Anniversary of
UBC Department of Biochemistry &
Molecular Biology**

**Life Sciences Centre, The University of British Columbia
Vancouver, British Columbia
24 October 2025**

Acknowledgements

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Brief History of UBC's Department of Biochemistry & Molecular Biology

The Department of Biochemistry and Molecular Biology at the University of British Columbia has a rich and distinguished history that began shortly after the Second World War. Its roots lie in the early efforts to teach biochemistry within the Faculty of Agriculture and later the Faculty of Medicine, growing over decades into one of Canada's leading centres for biochemical and molecular biological research and training.

Origins and Early Development (1940s–1960s)

Following World War II, Dr. Blythe Eagles, Dean of Agriculture and Professor of Dairy Science, introduced one of UBC's first courses in biochemistry, CHEM425 "Principles of Biochemistry". This course formed part of the foundation for the later biochemistry course offered by our department. When the Faculty of Medicine was established in 1950, Dr. Zbarsky, who now taught CHEM425, became a founding member of the new department of Biochemistry. He was soon joined by Dr. Jim Polglase and Dr. Marvin Darrach, the latter of whom became the first permanent Head of the Department.

In its early years, the Department was accommodated in Wartime Housing located near the Chemistry building. These "huts" were subsequently moved across campus to the site now occupied by the Woodward Library. One building contained small research laboratories and offices, while the other served as a teaching laboratory and storeroom. Biochemistry was initially taught as a graduate course for students with backgrounds in chemistry, biology, or bacteriology. The first class of four students graduated with Master's degrees in 1956.

The Department moved into the newly constructed Basic Medical Sciences Building in 1961, occupying half of the A-Block. This marked a major expansion in space and research capacity. Around this time, Dr. Robert Noble and his team established the Cancer Research Group at UBC, and several of his colleagues became members of the Biochemistry Department. New appointments, including Dr. Gordon Tener, brought in external funding and further research expertise.

During this period, significant biochemical research was conducted at the BC Research Council located at the south campus of UBC. Notably, H.G. Khorana group's pioneering work in nucleotide synthesis and oligonucleotide chemistry at BC Research laid the groundwork for future breakthroughs in molecular genetics. These efforts culminated in Khorana's Nobel Prize in Physiology or Medicine in 1968 for his role in deciphering the genetic code. H.G. Khorana and his team were regular participants of the Biochemistry Discussion Group, the predecessor of the current Biochemistry and Molecular Biology Seminar Series.

Growth and Consolidation (1970s–1990s)

The Department entered a new phase of growth with the establishment of the Faculty of Dentistry, which brought expanded facilities and additional faculty members. Among them was Dr. Michael Smith, who had worked as a postdoctoral fellow with Khorana and subsequently returned to Vancouver to take on a scientist position at the Fisheries Research Board of Canada. Through the effort of Dr. Marvin Darrach, who nominated Dr. Smith for the position of Medical Research Associate of the Medical Research Council of Canada, Dr. Smith became a full-time faculty member of our department. Despite modest facilities, Dr. Smith conducted groundbreaking research. Notably, his work developing site-directed mutagenesis earned him the 1993 Nobel Prize in Chemistry — the first awarded to a UBC-based scientist.

Throughout the 1970s and 1980s, the Department expanded its areas of expertise through strategic recruitment and the establishment of new research infrastructure. For example, between 1976 and 1978, Electron Microscopy (EM) and Nuclear Magnetic Resonance (NMR) laboratories were established by recent recruits Dr. Bob Molday and Dr. Pieter Cullis. In 1987, Dr. Michael Smith founded the UBC Biotechnology Laboratory, which was later expanded and renamed the Michael Smith Laboratories (MSL).

Further advancements followed: a Mass Spectrometry laboratory was established by Dr. Ruedi Aebersold (1988–1994) at the Biomedical Research Centre, and macromolecular X-ray Crystallography capabilities were introduced under Dr. Gary Brayer (1988). Around 1990, the Protein Engineering Network of Centres of Excellence (PENCE) brought major investments to UBC, expanding both NMR and crystallography facilities and positioning the Department at the forefront of structural biology research.

In 1999, Drs. Michael Smith and Victor Ling initiated the BC Genome Sciences Centre (GSC), jointly established by UBC and the BC Cancer Agency, recruiting Drs. Marco Marra and Steve Jones. The GSC would go on to play a vital role in global genomics research, including the first sequencing of the SARS genome in 2003.

Expansion and Collaboration (2000s–2010s)

The early 2000s brought a wave of new interdisciplinary initiatives. Drs. Grant Mauk, Ross MacGillivray, Dana Devine, and Don Brooks led the establishment of the UBC Centre for Blood Research (CBR) in 2002, which became one of the first occupants of the Life Sciences Centre (LSC; opened in 2005). Other major milestones included the founding of the Laboratory for Molecular Biophysics by Dr. Grant Mauk (2000), the Centre for Drug Research and Development co-led by Dr. Cullis (2007), and the Centre for High Throughput Biology (CHiBi) (2008), the latter developed by Drs. Phil Hieter, Brian Ellis, George Mackie, and Steve Withers.

CHiBi launched a graduate program in Genome Sciences and Technology (GSAT) in 2010, strengthening the department's leadership in functional genomics. That same

year, new cryo-electron microscopy (cryo-EM) infrastructure was added, with major contributions from Dr. Bob Molday. Dr. Molday also became first director of the newly founded Centre for Macular Research.

Interdisciplinary collaboration continued with the creation of the Advanced Structural Research in Infectious Disease (ASTRID) consortium, led by Dr. Lawrence McIntosh, uniting researchers from Biochemistry, Microbiology, and other disciplines. In 2018, the Department acquired the first FEI Titan Krios transmission electron microscope in Western Canada. With support from Canadian Foundation for Innovation (CFI) funding led by Dr. Natalie Strynadka, the Department was now positioned at the cutting-edge molecular EM research.

In recent years, the department has strengthened its ties with other units within the Faculty of Medicine through collaborative recruitment. These include the Djavad Mowafaghian Centre for Brain Health (Dr. Annie Ciernia), B.C. Children's Hospital Research Institute (Dr. Seth Parker), Terry Fox Laboratory at BC Cancer Agency (Dr. Carol Chen), and Edwin S.H. Leong Centre for Healthy Aging (Dr. Emilia Lim).

Educational Innovation

The Department has continually advanced its teaching programs alongside its research.

- In 1998–1999, the Co-op Program in Biochemistry was launched, giving undergraduates hands-on research and industry experience.
- In 2012–2013, a new and expanded undergraduate curriculum was introduced, including second-year courses and enhanced third- and fourth-year options.
- From 2014–2020, several new graduate courses were developed.
- In 2016, the UBC/BCIT Forensic Biochemistry Program was introduced, broadening the Department's interdisciplinary training opportunities.

Awards and Honours

Members of the Department have received national and international recognition for their scientific contributions:

- **Michael Smith** – *Nobel Prize in Chemistry, 1993*
- **Pieter Cullis**: International Gairdner Award, 2022
- **Fellows of the Royal Society (London)**: Natalie Strynadka, Steve Withers, Pieter Cullis
- **Fellows of the Royal Society of Canada**: Brett Finlay, Pieter Cullis, Shoukat Dedhar, Phil Hieter, Bob Molday, Natalie Strynadka
- **Order of Canada**: Brett Finlay, Pieter Cullis
- **Order of British Columbia**: Brett Finlay
- **Fellow of the Canadian Institute for Advanced Research**: Pat Dennis
- **Fellow of AAAS (Chemistry)**: Grant Mauk

- **CRC/CERC Chairs:** Grant Mauk, Bob Molday, Natalie Strynadka, Steve Withers, Chris Overall, Dieter Bromme (Tier 1); Franck Duong, Leonard Foster, Vivien Measday, Annie Ciernia, Sheila Teves (Tier 2); Sriram Subramaniam (CERC)

A Continuing Legacy

From its modest beginnings in Wartime Housing to its current home within UBC's Life Sciences Center, the Department of Biochemistry and Molecular Biology has grown from three founding faculty members to a thriving community of more than forty faculty, instructors, and research associates. The graduate program, which began with just four students in the 1950s, now includes more than sixty MSc and PhD students, supported by numerous postdoctoral fellows and research staff.

The Department continues to build on its legacy of discovery, innovation, and training — from the genetic code and site-directed mutagenesis to today's advances in molecular imaging, genomics, and precision medicine. Its faculty, students, and alumni remain at the forefront of Canadian and international biomedical research, carrying forward a tradition of excellence that has defined UBC biochemistry for over seven decades.

**UBC Faculty of Medicine Wartime Housing
– first home of the Department from 1950 to 1960**



**The D.H. Copp building (Med Block A)
– Home of the Department from 1961 to 2004**



Life Sciences Centre – Home of the Department since 2005



Biochemistry Discussion Group (late 1950s) featuring Gohbind Khorana, Sidney Zbarsky and Michael Smith



Michael Smith at the Nobel Prize ceremony, 1993



Michael Smith symposium, 1997



Faculty members in 2025
Research stream



Carol Chen



Annie Ciernia



Pieter Cullis



Shoukat Dedhar



Franck Duong



B. Brett Finlay



Leonard Foster



Ethan Greenblatt



Jörg Gsponer



Eric Jan



Emilia Lim



Thibault Mayor



Alice Mui



Bob Molday



Seth Parker



Ivan Sadowski



Corinna Schindler



Corey Stephenson



Natalie Strynadka



**Sriram
Subramaniam**



Sheila Teves



Nobuhiko Tokuriki



Filip Van Petegem



Calvin Yip

Educational leadership stream



Scott Covey



Eden Fussner-Dupas



Michael Krisinger



Jason Read



Lindsay Rogers



Warren Williams

Department Heads



Sidney Zabarsky
(1950-1951 interim)



Marvin Darrach
(1951-1972)



Jim Polglase
(1972-1982)



Dennis Vance
(1982-1986)



Bob Molday
(1986-1987 interim)



Philip Bragg
(1987-1993)



George Mackie
(1993-2003)



Chris Proud
(2005-2008)



Roger Brownsey
(2003-2005 interim)
(2008-2009 interim)
(2009-2016)



Leonard Foster
(2016-2018 interim)
(2018-2024)



Joerg Gsponer
Head
2024 – present



Scott Covey
Associate Head
2024 – present

Getting to UBC and around Vancouver

The 75th Anniversary symposium will be held in the Vancouver campus of the University of British Columbia (UBC). The main campus is approximately 20 km from Vancouver International Airport (YVR). The main conference will be the **Life Sciences Centre (2350 Health Sciences Mall, Vancouver)**, whereas the guest housing is located at **Gage Towers (5959 Student Union Boulevard, Vancouver)**. There are several options to easily get from YVR to UBC and vice versa.

By Taxi

Taxis to UBC take approximately 30 minutes. Taxis are queued outside the domestic and international arrival gates, and are available 24 hours per day, 7 days a week. If you are arriving from an international destination or the U.S.A., the taxi departure bay is outside the building on the same level. The approximate fare from YVR to UBC is between \$45-\$55 CAD, and can be paid by credit card or cash. All taxis that pick-up passengers from the airport are fully licensed.

By Public transport

The Canada Line is a rapid-transit system that runs from YVR to downtown Vancouver. All trains leaving the airport head towards “Waterfront” Station. The Canada Line does NOT go directly to UBC. To get to UBC campus, get off at Broadway City Hall and take the 99 B-Line bus to the end stop. The Canada Line Skytrain runs every seven minutes from YVR-Airport station during peak hours and every 15 minutes during off-peak hours. Total travel time from the airport to UBC is approximately 50 minutes. Remember to keep your validated ticket for inspection purposes and to use as a transfer ticket. Tickets are valid for 90 minutes.

Information on where to purchase tickets and directions on how to get to the Canada Line Skytrain from the arrivals terminals can be found at <http://www.yvr.ca/en/getting-to-from-yvr/public-transportation.aspx>. Information on current bus fares, schedules, and transit planning can be found at www.translink.bc.ca. After getting off the #99 Bus at its final stop at UBC, walk north across the street to the Gage Towers front desk check-in.

Depending on the day of the week and time you are leaving the airport, the cost of public transit from the airport ranges from \$7.75 to \$9.00.

By Rental car

Several rental car companies are located just steps from the terminal on the ground floor of the airport’s parkade.

Information for visitors and registered participants

Venue

The main venue (scientific sessions, exhibit hall, meals, poster sessions) will be the Life Sciences Centre (LSC) (**2350 Health Sciences Mall**). The LSC is an approximate 15-minute walk from the on-campus housing at Gage Towers (**5959 Student Union Boulevard**).

Registration

Registered participants of the symposium will be able to pick up their name tags at the registration booth between 8:20am and 8:45am on October 24th, 2025 at the West Atrium of the Life Sciences Centre (LSC)

Meals

An opening reception (invitation only) will be held at UBC Alumni Centre on October 23rd (5:30pm to 8pm). Light refreshments and drinks will be available.

Two coffee breaks will be offered to registered participants on the symposium day October 24th (10am and 3pm) and lunch will be served right after the end of Session II.

The conference banquet will be held at Sage (**6331 Crescent Road**) on October 24th (6pm to 8:30pm). This restaurant is located on the Northern tip of the campus and is an approximate 20-minute walk from LSC.

Parking on campus

The closest parking lot to on-campus housing/Gage Towers is North Parkade (6115 Student Union Boulevard, Vancouver). Rate is \$2.25 for ½ hour to a maximum of \$22/day.

The closest parking lot to the UBC Alumni Centre is University Boulevard Lot (6131 University Boulevard, Vancouver). Rate is \$4.5 per hour with no maximum rate.

The closest parking lot to the conference venue/LSC is Thunderbird Parkade (6085 Thunderbird Boulevard, Vancouver). Rate is \$2.25 for ½ hour to a maximum of \$22/day.

Wi-Fi access on campus

Visitors to the campus can use our visitor network for light web browsing at no charge. The 'ubcvisitor' network allows visitors to connect to the internet for light web browsing. Select the "ubcvisitor" wireless network on your wireless device. Open up a web browser, and you will be directed to the login page.

Visitors from other educational institutions which support eduroam are advised to use the eduroam network.

Additional Information

Restaurants/food outlets to eat/drink (within UBC campus)

1. Central campus (5-minute walk from LSC & Gage residence)

Browns Craft House. 101 – 6111 University Blvd.

Student Union Building (Nest) Food outlets. Located at 6133 University Blvd.

- Blue Chip Café (Baked goods, sandwiches, coffee)
- Gallery Patio and Lounge (Northwest-inspired food, craft beer)
- Grand Noodle Emporium (Pan-Asian food)
- FreshSlice Pizza (Pizza)
- The Delly (Sandwiches, curries, pastries)

Along University Blvd.

- DownLow Chicken Shack (fried chicken)
- Jamjar Canteen (Lebanese)
- Kinton Ramen (Ramen)
- Nori Bento & Udon (Japanese)
- Sesame (Asian)
- Ryuu Japanese Kitchen (Japanese)
- Steve's Poke Bar (Hawaiian)
- Uncle Fatih's Pizza (pizza)

2. University Village (10-minute walk from LSC & Gage residence)

- McDonald's (Fast food)
- Blenz Coffee (Café, coffee, tea)
- Starbucks (Café)
- Pita Pit (Pita, fast food)
- Subway (Sandwiches, fast food)
- A&W (Fast food)
- Pizza Garden (Pizza)

3. Wesbrook Village (20-minute walk from LSC – located in South campus)

- Togo Sushi (Sushi, Japanese)
- Chef Hung Taiwanese Beef Noodle (Beef noodle house)
- Nicili Pizza + Bar (Italian)
- Sports Illustrated Clubhouse

Restaurants/food outlets to eat/drink (outside UBC campus)

There are many excellent restaurants throughout the city Vancouver. Many of them are within a 15 to 20-minute bus/taxi ride from campus. Recommended places include: Fable, Vij's (no reservations), Provence Marinaside, La Buca, etc.

Groceries and Pharmacies (on UBC campus)

Save-On-Foods. 5946 Berton Avenue. Big supermarket located in Wesbrook Village
Shoppers Drug Mart. 5940 University Blvd. Full service pharmacy located in main campus.

UBC campus mall map and Directions

Accommodation

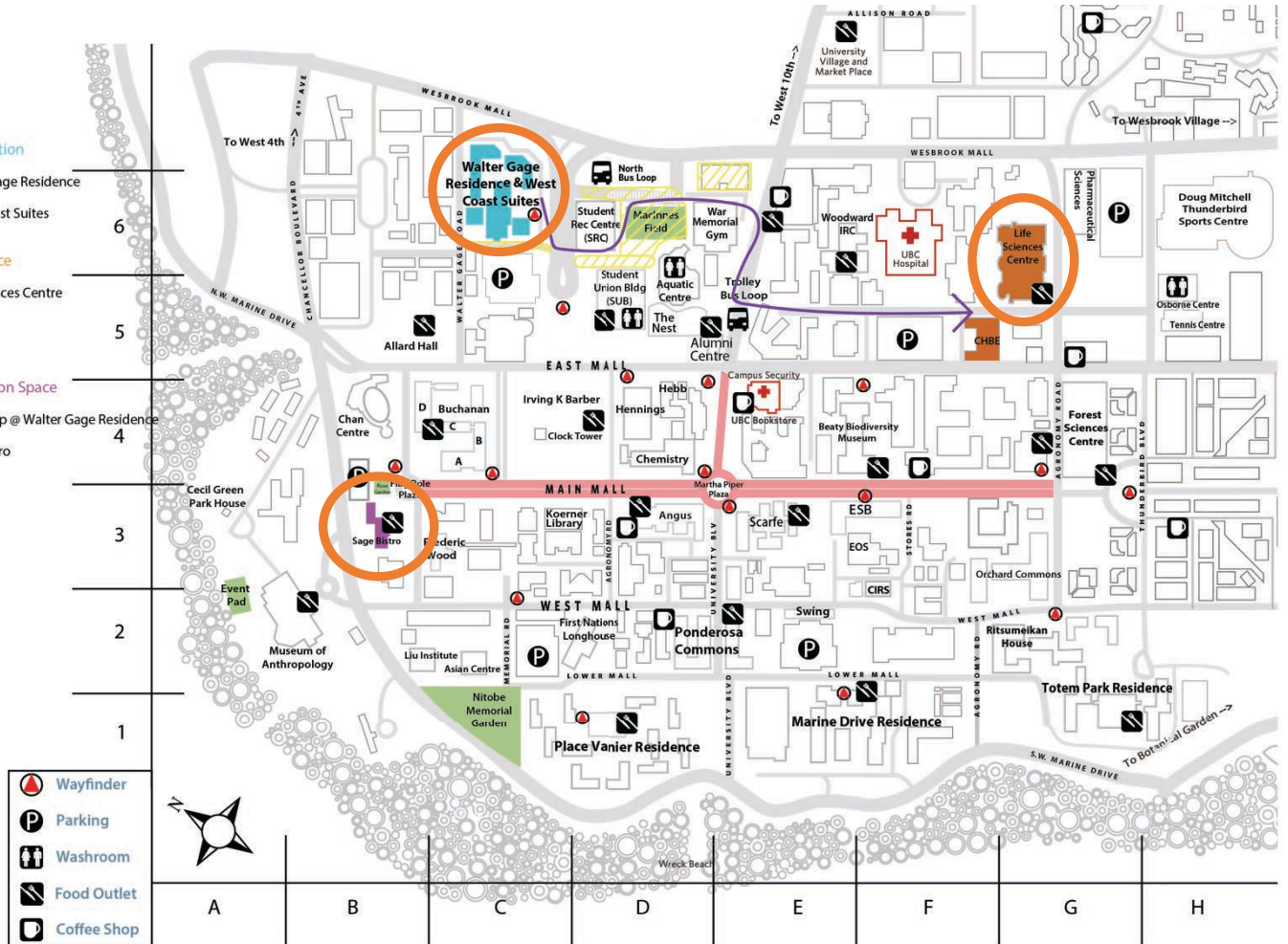
- C6 Walter Gage Residence
- C6 West Coast Suites

Meeting Space

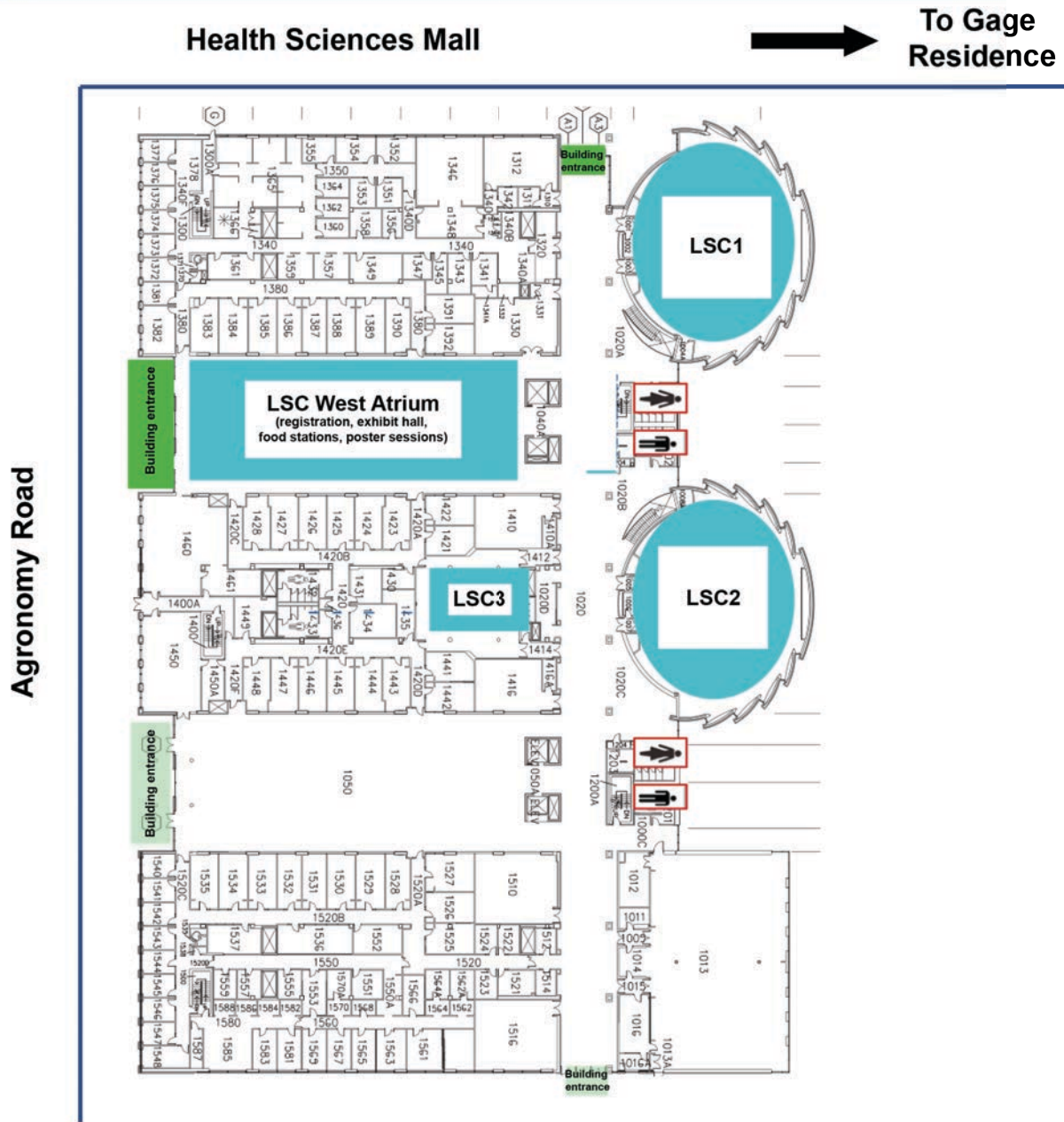
- G6 Life Sciences Centre
- G6 CHBE

Social Function Space

- C6 Fort Camp @ Walter Gage Residence
- B3 Sage Bistro



Conference venue map



Program

8:20am – 8:45am Registration
Pick up ID from the registration desk (*LSC West Atrium*)

8:45am – 9:00am Opening remarks & Land acknowledgement (LSC2)
Dr. Joerg Gsponer, Department Head

Session I – From the early days (moderator: Dr. Seth Parker)

9:00am – 9:40am Dr. Peter Davies (Queen’s University)
“How proteins do their jobs?”

9:40am – 10:00am **Trainees talk**
Nisha Johal (Parker Lab)
Yao Zhang (Cullis Lab)

10:00am – 10:20am **Coffee break** (*LSC West Atrium*)

Session II – Nucleic Acids and Beyond (moderator: Dr. Annie Ciernia)

10:20am – 11:00am Dr. David Russell (UT Southwestern)
“A Texan in British Columbia”

11:00am – 11:40am Dr. Marlys Koschinsky (Western University)
**“Discoveries and Detours: Charting the Road Less Travelled
in Fundamental Lp(a) Research**

11:40am – 12:00pm **Trainees talk**
Morgan Towriss (Ciernia Lab)
Hazel Cui (Teves Lab)

12:00pm – 1:40pm Lunch (LSC West Atrium)

12:00pm – 1:40pm Lab posters and BMB museum display

Session III – Future of BMB – Research and Teaching

1:40pm – 2:10pm Panel discussion (moderator: Dr. Scott Covey)

Session IV – The rise of high-throughput biology (moderator: Dr. Leonard Foster)

2:10pm – 2:50pm Dr. Rudolf Aebersold
“Observations, reflections and projections for academic molecular biology research”

2:50pm – 3:10pm Trainees talk
Lucy Chi (Foster Lab)
Oliver Hong (Mayor Lab)

3:10pm – 3:30pm Coffee break (LSC West Atrium)

Session IV – The structural biology revolution (moderator: Dr. Calvin Yip)

3:30pm – 4:10pm Dr. Albert Berghuis (McGill University)
“Target mimicry in enzyme-mediated antibiotic resistance”

4:10pm – 4:40pm Dr. Dustin King (Simon Fraser University)
“CO₂-Dependent Protein Carbamate Formation: A Biochemical Mechanism for CO₂ Sensing”

4:40pm – 5:00pm Trainees talk
Helena Sverak (Strynadka Lab)
Marvin Bader (Van Petegem Lab)

Invited speakers – Presentation summary

Peter Davies, Ph.D., FRSC

Canda Research Chair in Protein Engineering
Professor, School of Medicine
Department of Biological and Molecular Sciences

Ph.D. graduate in 1973, working under the supervision of Dr. Phil Bragg

Title: “How proteins do their jobs.”

A PhD from UBC, which enabled me to meet my spouse, profs, and friends in grad school, was a solid foundation for an enjoyable career researching protein evolution and structure-function relationships. I will illustrate this with some discoveries about antifreeze polypeptides and other proteins my lab has studied, and tell some tales about the department in the late 60s and early 70s.

David Russell, Ph.D.

Professor Emeritus
The University of Texas Southwestern Medical Center
Former Vice Provost and Dean of Basic Research
Member, National Academy of Sciences
Member, American Academy of Arts and Sciences

Postdoctoral fellow of Dr. Michael Smith between 1980 and 1982

Title: “A Texan in British Columbia”

I was a postdoctoral fellow with Michael Smith in the UBC Department of Biochemistry from 1980 to 1982. I will discuss the planned and unplanned steps that led to my training in the Department, who I worked with, and how the lessons learned greatly influenced my subsequent career in biomedical research. Lastly, I will describe how these lessons allowed my laboratory to gain insight into a previously enigmatic class of cholesterol metabolites called oxysterols.

Marlys Koschinsky, Ph.D.

Professor
Robarts Research Institute
Department of Physiology and Pharmacology
Western University
Fellow, Canadian Academy of Health Sciences

Ph.D. graduate in 1988, working under the supervision of Dr. Ross MacGillivray

Title: “*Discoveries and Detours: Charting the Road Less Travelled in Fundamental Lp(a) Research*”

From completing a PhD in Biochemistry at UBC, to a postdoctoral fellowship at Genentech Inc., and ultimately becoming Professor of Biochemistry at Queen’s, University of Windsor, and now Western University, my career path has taken many turns. Some routes were planned, others reflected circumstances that necessitated moving in unexpected directions. Throughout, my laboratory has remained focused on characterizing the unique, enigmatic lipoprotein(a) (Lp(a)) and how it causes cardiovascular disease. Completing graduate training with the inestimable Dr. Ross MacGillivray was excellent preparation for the inevitable peaks and valleys on the road to building a successful career as researcher in academia.

Rudolf Aebersold, Ph.D.

Professor
Institute of Molecular Systems Biology
ETH Zurich

Assistant Professor in our department, between 1989 and 1993

Title: “*Observations, reflections and projections for academic molecular biology research*”

I had the privilege to join the Biomedical Research Centre at UBC with an affiliation as an Assistant Professor at the Biochemistry Department in 1988. With deep gratitude for the opportunity offered by the Department to start my own independent research group, I will reflect on the research and social culture at the Department and the surprising trajectory molecular biology research has taken since that time.

Albert Berghuis, Ph.D.

Professor
Department of Biochemistry
McGill University

Ph.D. graduate in 1993, working under the supervision of Dr. Gary Brayer

Title: “Target mimicry in enzyme-mediated antibiotic resistance”

The threat antibiotic resistance poses to human health needs little introduction. Statistics that more than one million deaths annually are directly attributable to resistant bacteria, have been well publicized. The mechanisms by which bacteria thwart the effects of antibiotics are highly diverse. However, one of the prominent strategies involves dedicated enzymes that modify antibiotics. For the past 30 years, the team of Dr. Berghuis has pursued structural studies of these “resistance enzymes”. These studies have shed light on the basis for the effectiveness of enzyme-mediated resistance and has informed strategies to circumvent antibiotic resistance.

Dustin King, Ph.D.

Assistant Professor
Department of Molecular Biology & Biochemistry
Simon Fraser University

Ph.D. graduate in 2016, working under the supervision of Dr. Natalie Strynadka

Title: “CO₂-Dependent Protein Carbamate Formation: A Biochemical Mechanism for CO₂ Sensing”

Carbon dioxide (CO₂) is a ubiquitous biological gas that triggers adaptive responses across all domains of life, yet the molecular mechanisms underlying CO₂ sensing remain poorly understood. One direct means of regulation involves direct modification of proteins, in which CO₂ modifies free amine groups to form carbamates (Prot–CO₂) that can alter protein structure and function. However, this transient modification is difficult to detect using conventional methods, and its biological roles are largely unexplored. Here, we present a chemical proteomic strategy to quantitatively map Prot–CO₂ sites across proteomes. Using this approach, we identify multiple high-confidence carbamate sites and investigate their biochemical regulation. This work establishes a foundation for understanding Prot–CO₂ as a molecular mechanism of CO₂ sensing in biology.