

International Chemical Biology Society 2024

Conference Program

All conference activities will take place at the
Peter Gilgan Centre for Research and Learning
686 Bay Street, Toronto, ON, M5G 0A4
(The Hospital for Sick Children (SickKids) Research Tower)

Sunday, 27 October 2024

9:00-9:15 AM	ICBS 2024 Trainee Symposium Opening Remarks by Bridget Wagner, Arena BioWorks, USA
	<u>Trainee Presentations</u> <i>Chair: Michelle Gontcharova, Hospital for Sick Children, Canada</i>
9:15-9:35 AM	Laurence Seabrook , University of California, Irvine, USA <i>"Methyl arginine targeting chimeras for lysosomal degradation of intracellular proteins"</i>
9:35-9:55 AM	TinTin Luu , University of Toronto, Canada <i>"Targeting and Modulating Positive-Sense Viral RNA Regulatory Structures with Amiloride-Based Small Molecules"</i>
9:55-10:15 AM	Xiangrong Chen , University of Oxford, UK <i>"Discovery of Novel Human KLHL40 Chemical and Substrate Binders"</i>
	<u>Keynote Lecture</u> <i>Introduction by Maria Kutera, University of Toronto, Canada</i>
10:15-11:00 AM	Rachel Harding , University of Toronto, Canada <i>"Charting Your Course: Perspectives on Building a Career Through Multidisciplinary and Open Research"</i>
11:00-11:15 AM	Coffee Break
	<u>Trainee Presentations</u> <i>Chair: May Nguyen, Hospital for Sick Children, Canada</i>
11:15-11:35 AM	Tristan Kenney , University of Toronto, Canada <i>"Toward Drugging c-MYC Interactions with TFIIS N-terminal Domain (TND)-Containing Proteins"</i>
11:35-11:55 AM	Kirsten Meyer , University of Toronto, Canada <i>"Utilizing Evolved Delivery Mechanisms of Natural Product Antimicrobials to Treat Biofilm Infections"</i>

11:55 AM-1:00 PM **Career Panel**
Moderators: Sofia Melliou and Matthew Maitland, Structural Genomics Consortium, Canada

Paul Workman, Institute of Cancer Research, London, UK
Milka Kostic, Harvard Medical School, USA
Qin Wu, Hangzhou Institute of Medicine, China
Mikko Taipale, University of Toronto, Canada

1:00-2:00 PM **Lunch Break**

Trainee Presentations
Chair: Jerry Chen, Hospital for Sick Children, Canada

2:00-2:20 PM **Danielle Hanke**, University of British Columbia, Canada
"Chasing the "Undruggable": the Quest for Direct Inhibitors of STAT Proteins"

2:20-2:40 PM **Dylan Lynch**, University of Dundee, UK
"Knock Your SOCS Off! Expanding the E3 Ligase Toolbox"

2:40-3:00 PM **Liming Wang**, Rutgers University, USA
"Synthetic Chemical Approaches Toward Higher-Performing Probes and Prodrug Designs"

3:00-3:20 PM **Adam Feng**, University of Toronto, Canada
"Identifying New Therapies for Cardiac Fibrosis Through AI-Driven Small Molecule Screening Targeting Protein:Protein Interactions"

3:20 PM **Trainee Networking Activities**

-----**Official Opening of ICBS 2024**-----

5:00-5:10 PM **ICBS2024 Conference Welcome from the ICBS President, Douglas Auld and ICBS 2024 co-chair Mike Tyers**

Keynote Lecture
Introduction by Cheryl Arrowsmith, University of Toronto

5:10-6:00 PM **Hiroaki Suga**, University of Tokyo, Japan
"Pseudo-natural Peptides, Products and Neobiologics for Therapeutic Applications"

6:00-7:30 PM **Reception and Networking**

Monday, 28 October 2024

9:00-9:50 AM

Keynote Lecture

Introduction by Cheryl Arrowsmith, University of Toronto

Danette Daniels, Foghorn Therapeutics, USA

"Targeting Chromatin Regulatory Proteins with Therapeutic Degraders"

9:50- 10:20 AM

Coffee Break

10:20-11:50 AM

Session 1: Proximity Pharmacology and Targeted Protein Degradation I

Chair: Mikko Taipale, University of Toronto

Mikko Taipale, University of Toronto, Canada

"Navigating the Proteome with Induced Proximity Screens"

Lauren V Albrecht, University of California Irvine, USA

"A Methylarginine Targeting Chimera for Lysosomal Degradation of Intracellular Proteins"

Suman Shrestha, University Health Network, Canada

"Characterization of PROTAC Specificity and Endogenous Protein Interactomes using ProtacID"

Shusuke Tomoshige, Tohoku University, Japan

"Targeted Protein Degradation in the Mitochondrial Matrix and its Application to Chemical Control of Mitochondrial Morphology"

11:50 AM -12:55 PM

Session 2: Innovation in Ligand Discovery and Characterization

Chair: Michael Woodhouse & Juan Gijzelaar, Collaborative Drug Discovery (CDD)

Marie-Aude Guié, X-Chem, USA

"Beyond the Hype: Making Machine Learning Work for DEL Data"

Rafael J. Borges, Universidade Estadual de Campinas (UNICAMP), Brazil

"Harnessing Artificial Intelligence-Driven Fragment-Based Drug Discovery to Target HSP90 in Cancer Therapeutics"

Derek Wilson, York University, Canada

"High Throughput Characterization of Drug/Target Interactions using Millisecond HDX Mass Spectrometry"

12:55-2:00 PM

Lunch Break [Including Discussion Venue for Women in Science]

2:00-3:35 PM

Session 3 Target 2035

Chair: Susanne Muller-Knapp, Goethe University, Frankfurt, Germany

Levon Halabelian, University of Toronto, Canada

"An Affinity Selection Mass Spectrometry Hit Discovery Platform for Target 2035"

Rafael Counago, University of North Carolina, Chapel Hill, USA

"Protein Ligand Discovery Using Machine Learning Models Built with Open Fingerprint Representation of DEL Libraries"

Benjamin Haibe-Kains, University Health Network, Canada

"AIRCHECK: Large-Scale Sharing of Chemical Data for Transparent, Reproducible and Reusable Computational Research for Hit Discovery"

Qin Wu, Hangzhou Institute of Medicine, China

"Finding the Positive for Triple Negative Breast Cancer with Chemical Probes"

3:35-4:00 PM

Coffee Break

4:00-5:15 PM

Session 4: 2024 ICBS Young Chemical Biologist - Rising Stars

Chair: Peng Wu, Max Planck Institute of Molecular Physiology, Germany

James Checco, University of Nebraska-Lincoln, USA

"Unraveling the Signaling Mechanisms of Endogenous Cell-Cell Signaling Peptides"

Keriann Backus, University of California, Los Angeles, USA

"Chemoproteomic Approaches to Decipher the Proteome-wide Consequences of Electrophile Stress"

Michael J. Booth, University College London, UK

"Remote-Controlled Nucleic Acids for Biology and Medicine"

5:15-7:00 PM

Poster Session

Tuesday, 29 October 2024

9:00-9:50 AM

Keynote Lecture

Introduction by Mike Tyers, Hospital for Sick Children, Canada

John Chodera, Memorial Sloan Kettering Cancer Institute, USA

“Blending physics with machine learning to power the future of drug discovery”

9:50-10:20 AM

Coffee Break

10:20-11:30 AM

Session 5: Proximity Pharmacology and Targeted Protein Degradation II

Chair: Lindsey James, University of North Carolina, USA

Lindsey James, University of North Carolina, USA

“Altering the H3 Methylation Landscape through Degradation of Methy Lysine Reader Proteins”

Brian Liau, Harvard University, USA

“Converging Mechanism Between a Molecular Glue Degradator and E3 Ligase Cancer Mutations”

Walid Houry, University of Toronto, Canada

“The ClpP Protease: From Basic Principles to Drug Discovery”

11:30 AM-1:00 PM

Session 6: Synthetic Protein Design and Biological Control

Chair: Brent Page, University of British Columbia, Canada

Monique Mulder, Leiden University Medical Centre, Netherlands

“Cracking the Code: Unlocking the Ubiquitin System with Chemical Tools”

Maurice Michel, Karolinska Institutet, Sweden

“Chemical Switching as a Technology to Rewrite Human Physiology”

George Burslem, University of Pennsylvania, USA

“Intracellular Protein Editing to Incorporate Non-Canonical Residues into Endogenous Proteins”

Jason Maynes, Hospital for Sick Children, Canada

“Pediatric Mesenchymal Stromal Cell-Derived Extracellular Proteins Prevent Fibroblast Activation and Senescence to Promote Cardiac Repair by Modulating the Hippo Signaling Pathway”

1:00-2:00 PM

Lunch Break [Workshop organized by Promega]

2:00-3:40 PM

Session 7: ICBS Pharma LifeSci Advisory Group Session: Tools for understanding molecular complexes and degradation in biological systems

Chair: Andrew Zhang, Promega, USA

Eugene Douglass, University of Georgia, USA

“A Comprehensive Kinetic Model for Ternary-Complex Dependent Drugs”

Jarrett R. Remsberg, Belharra Therapeutics, USA

“Redefining UnDruggable”

Jordan M. Mattheisen, AstraZeneca, USA

“SMaLTACs: Small Molecule Lysosome-Targeting Chimeras for Degrading Secreted Proteins”

Ani Michaud, Promega, USA

“Quantifying Drug Cooperativity at Ternary Complexes in Cells using NanoBRET™”

3:40-4:10 PM

Coffee Break

4:10-5:00 PM

Session 8: The European Federation for Medicinal Chemistry (EFMC) session

Chair: Dr. Gianluca Sbardella, University of Salerno, Italy

Amit Choudary, Harvard University, USA

“Modulating Protein Function using Proximity-Inducing Small Molecules”

Harald Weinstabl, Boehringer Ingelheim, Austria

“From Fragments to panKRAS PROTAC Degraders”

5:15-7:00 PM

Poster Session

Wednesday, 30 October 2024

9:00-9:50 AM

2024 ICBS Global Lectureship

Chair: Jonathan Baell, Lyterian Therapeutics, USA

Paul Workman, Institute of Cancer Research, London UK

"Adventures Discovering Chemical Probes and Clinical Drugs: Protein and Lipid Kinases, Molecular Chaperones and Transcription Factors"

9:50-10:20 AM

Coffee Break

10:20-11:30 AM

Session 9: Systems-Level Analysis of Drug Action

Chair: Mike Tyers, Hospital for Sick Children, Canada

Jason Sheltzer, Yale University, USA

"A Mischaracterized Compound that Selectively Targets Drug-Resistant Cancers"

Anne-Claude Gingras, University of Toronto, Canada

"Rewiring of Cancer Signaling by Kinase Fusions"

Megan Matthews, University of Pennsylvania, USA

"The Revolution and Evolution of Activity-Based Protein Profiling"

11:30-12:15 AM

Session 10: AI in Drug Discovery

Chair: Matthieu Schapira, University of Toronto, Canada

Jon Stokes, McMaster University, Canada

"AI for Drug Discovery and Design"

Michal Koziarski, Hospital for Sick Children, Canada

"Efficient Chemical Space Exploration with Reaction-GFlowNet"

12:15-12:45 PM

ICBS Annual Business Meeting

Chair: Douglas Auld, Novartis Biomedical Research, Cambridge, Mass, USA

12:45-1:45 PM

Lunch Break

1:45-2:50 PM

Session 11: Innovations in Targeting Infectious Disease

Chair: Gerry Wright, McMaster University, Canada

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"Resistance-Guided Antibiotic Discovery"

Boris Vauzeilles, Institut de Chimie des Substances Naturelles - CNRS, France

"Bringing Pathogens to Light"

Nathaniel Martin, Leiden University, Netherlands

"Semisynthetic Guanidino Lipoglycopeptides with Potent In Vitro and In Vivo Antibacterial Activity"

2:50-4:00 PM

Session 12: Pushing the Boundaries of Chemical Space

Chair: Zaneta Nikolovska-Coleska, University of Michigan

Arvin Dar, Memorial Sloan Kettering Cancer Center, USA

“Targeting Cancer Pathways with Chemical Switches and Molecular Glues”

Anne Marinier, Institute for Research in Immunology and Cancer, Canada

“Ion Chelators as a Novel Therapeutic Modality in Cancer: Beyond the Traditional Cell Death Approach”

Peng Wu, Max Planck Institute of Molecular Physiology, Germany

“Small Molecule Inhibitors Targeting RNA-Cleaving and m6A RNA-Binding Proteins”

4:00-4:30 PM

Poster and Trainee Talk Prizes Awarded – ICBS Leadership

4:30-4:45 PM

Closing Remarks – Cheryl Arrowsmith and Mike Tyers