

# EXPLORING THE LYMPHATIC CONTINUUM LYMPHATIC FORUM 2023

Banff, Alberta, Canada • June 13-17, 2023

## SCHEDULE

### TUESDAY, JUNE 13

	Arrival and Registration: Max Bell Central Foyer
6:30–7:30 PM	Opening Reception: Max Bell Foyer and ETCBR
7:30–7:45 PM	Welcome Remarks: Max Bell Auditorium; Pierre-Yves von der Weid, <i>University of Calgary, Canada</i>
7:45–9:45 PM	<b>Patient-Oriented Session:</b> Max Bell Auditorium <i>Lymphatic Disease: Learning from the Patients</i> <b>Chairs:</b> Stan Rockson, <i>Stanford University, CA</i> and Ian Soles, <i>Edmonton, Canada</i>

### WEDNESDAY, JUNE 14

7:00–9:00 AM	Breakfast: Vistas Dining Room
9:00–11:45 AM	<b>Plenary Session (Across Organs):</b> Max Bell Auditorium
	<b>Session 1–Lymphatic Development</b> <b>Chair:</b> Carrie Shawber, <i>Columbia University, New York, NY</i>
9:00–9:30 AM	<b>Invited Talk:</b> <i>Spatiotemporal Reconstruction of the Origin and Assembly of the Villus Muscular-lacteal Complex;</i> Natasza Kurpios, <i>Cornell University, Ithaca, NY</i>
9:30–10:00 AM	<b>Invited Talk:</b> <i>Morphogenesis of Schlemm’s Canal Via the Crosstalk With the Trabecular Meshwork in Glaucomatous Pathology;</i> Tsutomu Kume, <i>Northwestern University, Chicago, IL</i>
10:00–10:30 AM	<b>Invited Talk:</b> <i>Growth Factor-small GTPase Interplay for Lymphangiogenesis Regulation;</i> Constantinos Mikelis, <i>University of Patras, Greece</i>
10:30–11:00 AM	Coffee Break: Max Bell Central Foyer
11:00–11:30 AM	<b>Invited Talk:</b> <i>The Cell Lineage and Patterning of the Coronary Lymphatic Vasculature;</i> Miguel Torres, <i>CNIC, Madrid, Spain</i>
11:30–11:45 AM	<b>Short Talk:</b> <i>Lymphatic and Sinusoidal Vessel Growth Is Controlled by Reciprocal VEGF-C–CDH5 Inhibition;</i> Derek Sung, <i>University of Pennsylvania, Philadelphia, PA</i>
11:45–1:15 PM	Lunch: Vistas Dining Room
1:15–3:30 PM	<b>Plenary Session (Across Organs):</b> Max Bell Auditorium
	<b>Session 2–Lymphatic Function and Transport (Sponsored by The Microcirculatory Society, Inc.); Chair:</b> Brandon Dixon, <i>Georgia Institute of Technology, Atlanta, GA</i>
1:15–1:45 PM	<b>Invited Talk:</b> <i>Valve Development In Embryonic Lymphatic Vasculature: What Decides Where?;</i> Christopher Bertram, <i>University of Sydney, Australia</i>
1:45–2:15 PM	<b>Invited Talk:</b> <i>Trpv4 Modulation of Lymphatic Vascular Function: Implications In Metabolic Syndrome;</i> Jorge Castorena-Gonzalez, <i>Tulane University, New Orleans LA</i>
2:15–2:45 PM	<b>Invited Talk:</b> <i>Stickin’ and Pumpin’: Unravelling the Interplay Between Extracellular Vesicles and Lymphatic Function;</i> Catherine Martel, <i>Montreal Heart Institute, Montreal, Canada</i>
2:45–3:00 PM	<b>Short Talk:</b> <i>ERG K+ Channels Mediate a Major Component of Action Potential Repolarization in Lymphatic Muscle;</i> Michael Davis, <i>University of Missouri-Columbia, MO</i>
3:00–3:15 PM	<b>Short Talk:</b> <i>Lymphatic Endothelial TRPV4 Channel Signaling in Obesity;</i> Yen-Lin Chen, <i>University of Virginia School of Medicine, Charlottesville, VA</i>
3:15–3:30 PM	<b>Short Talk:</b> <i>Time-dependent Mechanisms of Lymphatic Growth and Remodeling for Alleviating Flow Obstruction in Response to Injury: Insights from a Large Animal Model of Fessel Ligation;</i> Young Ryu, <i>Georgia Institute of Technology, Atlanta, GA</i>
4:00–6:00 PM	<b>Poster Session 1/Exhibitors:</b> Max Bell 251 and 253
6:00–7:00 PM	<b>Trainees Mixer (Sponsored by LE&amp;RN):</b> Max Bell Central Foyer
	Dinner (on your own)

## THURSDAY, JUNE 15

7:00–8:30 AM	Breakfast: Vistas Dining Room	
8:30–10:30 AM	<b>Concurrent Sessions (Organ Specific):</b> Max Bell 252 and Max Bell Auditorium	
	<b>Session 3–Airway &amp; Lung Lymphatics</b> <b>Chair:</b> Peter Baluk, UCSF, CA	<b>Session 4–Skin Lymphatics; Chair:</b> Cornelia Halin Winter, ETH Zürich, Switzerland
8:30–9:00 AM	<b>Invited Talk:</b> <i>Abnormal Lymphatic S1P Signaling Aggravates Lymphatic Dysfunction and Tissue Inflammation;</i> Mark Nicolls, Stanford University, Stanford, CA	<b>Invited Talk:</b> <i>Visualizing Vascular Mechanisms of Tissue Sodium Storage;</i> Rachele Crescenzi, Vanderbilt University Medical Center, Nashville, TN
9:00–9:30 AM	<b>Invited Talk:</b> <i>Targeting the Pulmonary Lymphatics In the Response to Lung Injury;</i> Hasina Outtz Reed, Cornell Weill Medical College, New York, NY	<b>Invited Talk:</b> <i>Microneedles Generated Naked Eye Invisible Fluorescent Microtattoos for the Noninvasive Structural and Functional Assessment of Lymphatic System;</i> Davide Brambilla, Université de Montréal, Canada
9:30–9:45 AM	<b>Short Talk:</b> <i>Lymphatic YAP1 in Pulmonary Hypertension;</i> Akiko Mammoto, Medical College of Wisconsin, Milwaukee, WI	<b>Short Talk:</b> <i>Loss of Primary Cilia Protein IFT20 Impairs Lymphatic Vessel Function and VE-cadherin Localization;</i> Delayna Paulson, South Dakota State University, Brookings, SD
9:45–10:00 AM	<b>Short Talk:</b> <i>Pulmonary Lymphatic Remodeling in Response to Influenza-Induced Inflammation;</i> Senegal Carty, Boston University School of Medicine, MA	<b>Short Talk:</b> <i>Keratinocytes Coordinate Inflammatory Responses and Regulate Development of Secondary Lymphedema;</i> Raghu Kataru, Memorial Sloan Kettering Cancer Center New York, NY
10:00–10:15 AM	<b>Short Talk:</b> <i>Loss of IKK<math>\alpha</math> in Lymphatic Endothelial Cells Disrupts Lymphoid Organ Formation and Protects Mice from Infection with Influenza Virus;</i> Michelle Cully, University of Pennsylvania, Philadelphia, PA	<b>Short Talk:</b> <i>uPARAP Orchestrates VE-cadherin Trafficking and Attenuates Lymphedema;</i> Fabrice Gucciardo, Laboratory of Tumors and Development Biology, Liege University, Belgium
10:15–10:30 AM	Q&A and General Discussion	<b>Short Talk:</b> <i>IFN<math>\gamma</math> Induces Metabolic Reprogramming and Limits Tumor-associated Lymphangiogenesis and Lymph Node Metastasis;</i> Triantafyllia Karakousi, New York University, New York, NY
10:30–11:00 AM	Coffee Break: Max Bell Central Foyer	
11:00 AM–1:00 PM	<b>Concurrent Sessions (Organ Specific):</b> Max Bell 252 and Max Bell Auditorium	
	<b>Session 5–Vascular and Heart Lymphatics</b> <b>Chair:</b> Mark Kahn, University of Pennsylvania, Philadelphia, PA	<b>Session 6–Liver and Kidney Lymphatics</b> <b>Chair:</b> Craig Jenne, University of Calgary, Alberta, Canada
11:00–11:30 AM	<b>Invited Talk:</b> <i>Beneficial Impact of Lymphatic Remodeling in Cardiac Hypertrophy;</i> Ebba Brakkenhielm, University of Rouen, France	<b>Invited Talk:</b> <i>Renal Lymphatics and Hypertension;</i> Brett Mitchell, Texas A&M University College of Medicine, Bryan, TX
11:30 AM–12:00 PM	<b>Invited Talk:</b> <i>Pathophysiology and Treatment of Lymphovenous Edema;</i> Andrzej Szuba, Wroclaw Medical University, Poland	<b>Invited Talk:</b> <i>Oxidized Low-Density Lipoprotein Drives Dysfunction of the Liver Lymphatic System;</i> Matthew A. Burchill, University of Colorado Anschutz, Aurora, CO
12:00–12:15 PM	<b>Short Talk:</b> <i>The Impact of Cardiac Transplantation on Lymphatic Vessel Quantity, Structure, and Drainage;</i> Sydney Ginn, Georgia Institute of Technology and Emory University, GA	<b>Short Talk:</b> <i>Kidney Disease Alters Renal Lymphatic Contractility and Permeability;</i> Elaine Shelton, Vanderbilt University Medical Center, TN
12:15–12:30 PM	<b>Short Talk:</b> <i>Pathogenic Lymphangiogenesis Contributes to Autoimmune Valvular Carditis;</i> Victoria Osinski, University of Minnesota, Twin Cities, MN	<b>Short Talk:</b> <i>Impact of VEGFR-3 Signaling on Macrophage Polarization in Kidney Injury;</i> Saranya Kannan, Texas A&M University, College Station, TX
12:30–12:45 PM	<b>Short Talk:</b> <i>Sex Dependent Cardiac Lymphatic Vessel Development Along Coronary Artery in Zebrafish Heart;</i> Ching-Ling Ellen Lien, Children's Hospital, Los Angeles, CA	<b>Short Talk:</b> <i>Single-cell RNA Sequencing Identifies Responses of Renal Lymphatic Endothelial Cells to Acute Kidney Injury;</i> Heidi Creed, Texas A&M University College of Medicine, College Station, TX

12:45–1:00 PM	<b>Short Talk:</b> <i>The Reactivation of the Lymphangiogenic Capacity of Human Adult Cardiac Fibroblasts by the Selective Stimulation of NF-<math>\kappa</math>B/STAT6 Axis Contributes to the Restoration of Heart Function After Myocardial Infarction;</i> Takahiro Iwamiya, Metcela Inc., Kawasaki, Japan	<b>Short Talk:</b> <i>Lymphatic Dysfunction in Liver Fibrosis: Is LEC NOTCH4 a Key Player?;</i> Glicella Salazar-De Simone, Columbia University Medical Center, New York, NY
1:00–2:30 PM	<b>Lunch: What Philanthropists Are Looking for in Funding Research</b> KC103/105 Dianne and Irving Kipnes, Edmonton, Canada	
2:30–4:30 PM	<b>Poster Session 2/Exhibitors:</b> Max Bell 251 and 253	
	Free time and dinner on your own	

## FRIDAY, JUNE 16

7:00–8:30 AM	Breakfast: Vistas Dining Room	
8:30–10:45 AM	<b>Plenary Sessions (Across Organs):</b> Max Bell Auditorium	
	<b>Session 7–Lymphatics, Cancer, and Metastasis</b> <b>Chair:</b> Mihaela Skobe, Mt. Sinai Hospital, New York, NY	
8:30–9:00 AM	<b>Invited Talk:</b> <i>Mechanisms of Immune Suppression in Metastatic Lymph Nodes;</i> Timothy Padera, Massachusetts General Hospital, Boston, MA	
9:00–9:30 AM	<b>Invited Talk:</b> <i>Lymphangiogenesis Promotes Immune Tolerance During Breast Adenocarcinoma Development;</i> Barbara Garmy-Susini, University of Toulouse, France	
9:30–10:00 AM	<b>Invited Talk:</b> <i>Inflammatory Microenvironment and Tumor Lymphatic Interactions in Progression of Cholangiocarcinoma;</i> Sanjukta Chakraborty, Texas A&M University College of Medicine, Bryan, TX	
10:00–10:15 AM	<b>Short Talk:</b> <i>Tumor Derived JAGGED-1 Promotes Breast Cancer Lymphovascular Invasion and Lymph Node Metastasis;</i> Benjamin Gordon, University of Illinois College of Medicine, Chicago, IL	
10:15–10:30 AM	<b>Short Talk:</b> <i>Lymphatic/Blood Vessel Plasticity is Increased by Cancer Cells;</i> Walter Murfee, University of Florida, Gainesville, FL	
10:30–10:45 AM	<b>Short Talk:</b> <i>Vascular Endothelial Growth Factor C (VEGF-C) Sensitizes Lymphatic Endothelial Cells to Oxidative Stress-induced Cell Death;</i> Lazina Hossain, University of Alberta, Edmonton, Canada	
10:45–11:00 AM	Coffee Break: Max Bell Central Foyer	
11:00 AM–2:00 PM	<b>Concurrent Sessions (Organ Specific):</b> Max Bell 252 and Max Bell Auditorium	
	<b>Session 8–Gastrointestinal Lymphatics</b> <b>Chair:</b> David Zawieja, Texas A&M University College of Medicine, Bryan, TX	<b>Session 9–Lymphatics in the Brain</b> <b>Chair:</b> Shan Liao, University of Calgary, Alberta, Canada
11:00–11:30 AM	<b>Invited Talk:</b> <i>Role of Lipid Metabolism in Lymphatic Integrity;</i> Vincenza Cifarelli, Saint Louis University School of Medicine, St. Louis, MO	<b>Invited Talk:</b> <i>Neuroinflammation Induces Lymphangiogenesis in the Brain;</i> ZsuZsanna Fabry, University of Wisconsin, Madison, WI
11:30–12:00 PM	<b>Invited Talk:</b> <i>Gut Microbiome and Shaping Intestinal Lymphatics;</i> Kathy McCoy, University of Calgary, Alberta, Canada	<b>Invited Talk:</b> <i>Functional Links Between Meningeal Lymphatic Drainage and Brain Myelination;</i> Sandro Da Mesquita, Ph.D., Mayo Clinic, Jacksonville, FL
12:00–1:00 PM	Lunch: Vistas Dining Room	
	<b>Session 8–Gastrointestinal Lymphatics (Cont.)</b>	<b>Session 9–Lymphatics in the Brain (Cont.)</b>
1:00–1:15 PM	<b>Short Talk:</b> <i>The Asymmetric Pitx2 Gene Regulates Gut Muscular-lacteal Morphogenesis and Protects Against Fatty Liver Disease;</i> Liqing Huang, Cornell University, Ithaca, NY	<b>Short Talk:</b> <i>Investigation of Glymph to Lymph Drainage in a Rat Model of Mild Traumatic Brain Injury;</i> J. Brandon Dixon, Georgia Institute of Technology, Atlanta, GA
1:15–1:30 PM	<b>Short Talk:</b> <i>Deletion of the Soluble Epoxide Hydrolase Impairs Intestinal Angiogenesis and Lacteal Development;</i> Zumer Naeem, Goethe University, Frankfurt, Germany	<b>Short Talk:</b> <i>Dural Macrophages in the Regulation of Meningeal Lymphatic Vessels and Brain Lymph Drainage;</i> Vikrimjeet Lohat, University of Calgary, Alberta, Canada
1:30–1:45 PM	<b>Short Talk:</b> <i>Low Dose Space Relevant Radiation Causes a Unique Transcriptomic Phenotype in Gut Associated Lymphoid Organs;</i> Walter Cromer, Texas A&M University, College Station, TX	<b>Short Talk:</b> <i>Lymphatics Drain CSF Proteins and Immune Cells During Neuroinflammation;</i> Li Xin, Theodore Kocher Institute, Bern, Switzerland

1:45–2:00 PM	<b>Short Talk:</b> <i>A Fault in the Pipeline: The Impact of Chronic Inflammation on Collecting Lymphatic Junction Integrity</i> ; Keith Keane, University of Calgary, Alberta, Canada	<b>Short Talk:</b> <i>Intracranial Venous Hypertension Induces Lymphatic Remodeling and Neuroinflammation</i> ; Marie-Renee El Kamouh, Institut du Cerveau, Paris, France
2:00–2:30 PM	Break: Max Bell Central Foyer	
2:30–4:45 PM	<b>Plenary Session (Across Organs):</b> Max Bell Auditorium	
	<b>Session 10–Immunity and Infection</b> <b>Chair:</b> John Conly, University of Calgary, Alberta, Canada	
2:30–3:00 PM	<b>Invited Talk:</b> <i>Macrophage-mediated Lymphangiogenesis Restricts Dermal Immunopathology During Leishmania Infection</i> ; Tiffany Weinkopff, University of Arkansas for Medical Sciences, Little Rock, AR	
3:00–3:30 PM	<b>Invited Talk:</b> <i>Lymph Node Stromal Cells and the Adaptive Immune Response</i> ; Reina Mebius, Amsterdam UMC, The Netherlands	
3:30–3:45 PM	<b>Short Talk:</b> <i>Characterization of the Role of Lymphatics in Nucleoside Modified mRNA-LNP Vaccine Induced Immune Response</i> ; Zoltanb Jakus, Semmelweis University, Budapest, Hungary	
3:45–4:00 PM	<b>Short Talk:</b> <i>Inflamed Lymphatic Endothelial Cells Promote Neutrophil Transmigration and NETosis in a CCR7- and CXCL8-depedent Manner</i> ; Margo MacDonald, University of Chicago, IL	
4:00–4:5 AM	<b>Short Talk:</b> <i>Transport of Antigens and Cytokines in Lymph Nodes</i> ; James E. Moore, Imperial College London, UK	
4:15–4:30 AM	<b>Short Talk:</b> <i>Uncovering the Impact of Intestinal Helminth Infections on Tissue Lymphatics and Their Function</i> ; Jordan Lane, University of Chicago, IL	
4:30–5:00	Break: Max Bell Central Foyer	
5:00–6:00 PM	<b>Young Investigator Session (Sponsored by The Microcirculatory Society, Inc.):</b> Max Bell Auditorium	
	<b>Session 11–Emphatic About Lymphatics!</b> <b>Co-Chairs:</b> Heidi Creed and Reetu Singh, Texas A&M University, TX	
5:00–5:15 PM	<b>Short Talk:</b> <i>Imaging and Quantitating the Peripheral and Central Lymphatic Systems Using Iron Oxide Nanoparticle MR Lymphangiography (ION-MRL)</i> ; Robert Carson Sibley III, Stanford University, Palo Alto, CA	
5:15–5:30 PM	<b>Short Talk:</b> <i>Fibrin Hydrogel Promotes Regeneration of Collecting Lymphatic Vessels Following Injury</i> ; Mohammad S. Razavi, Massachusetts General Hospital and Harvard Medical School, Boston, MA	
5:30–5:45 PM	<b>Short Talk:</b> <i>Novel Modes of Corneal Lymphatic Remodeling</i> ; Ahana Majumder, Dakota State University, Madison, SD	
5:45–6:00 PM	<b>Short Talk:</b> <i>Surgical Disruption of the Tumor-draining Lymphatic Network Suggests Altered Drainage Routes in a Bilateral Melanoma Model</i> ; Lauren Liebman, Georgia Institute of Technology, Atlanta, GA	
7:00–7:30 PM	<b>Cocktail Reception:</b> KC101	
7:30–10:30 PM	<b>Banquet Dinner &amp; Awards:</b> KC103	

## SATURDAY, JUNE 17

7:00–9:30 AM	Breakfast: Vistas Dining Room
	<b>Departure</b>

# EXPLORING THE LYMPHATIC CONTINUUM LYMPHATIC FORUM 2023

**Host Institution:** University of Calgary

**Organizers:** Pierre-Yves von der Weid and Shan Liao, University of Calgary; Stanley Rockson, Stanford University; Jan Kitajewski, University of Illinois at Chicago; Carrie Shawber, Columbia University; Miikka Vikkula, de Duve Institute, Brussels; Brandon Dixon, Georgia Institute of Technology; Spencer Gibson, University of Alberta

**Co-Organizer:** William Repicci, Lymphatic Education & Research Network

**Date & Location:** June 13–17, 2023 at The Banff Centre, 107 Tunnel Mountain Drive, Banff, Alberta, Canada

[www.LymphaticForum.org](http://www.LymphaticForum.org)