



July 27-31, 2024
Arlington, Virginia



PROGRAM

International Gap Junction Conference 2024

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Welcome!



July 27-31, 2024
Arlington, Virginia



Dear Colleagues,

We are delighted to welcome you to the International Gap Junction Conference (IGJC) 2024, held in the dynamic and cosmopolitan Arlington, Virginia adjacent to Washington, D.C., USA. Bringing together the diverse international community of scientists investigating connexin, innexin, and pannexin biology, the biannual IGJC has provided a forum to push our research forward for over 40 years. From fundamental biophysics to human health and disease, our program encompasses the full breadth of the research spectrum and ensuring valuable information sharing while fostering attendee networking and collaboration. We highlight and acknowledge our trainees and early-career group leaders while providing professional development programming to facilitate career progression for all. Our community is diverse in many ways beyond our science, and as such we ensure an inclusive and equitable culture at the meeting.

In addition to sharing novel research findings with the field and building relationships, we incorporate a variety of social events to enjoy each other's company and take in the culture and sights of Washington DC. Additionally, you will have opportunity to explore the capitol of the United States, immerse in its history, and enjoy the plethora of Smithsonian Museums encompassing impactful art, culture, and technology that speaks to us all as an international community. The region is famed for its cuisine, enchanting neighborhoods, and nearby historical highlights to visit.

We thank you for your participation and look forward to seeing you in Arlington for an invigorating experience discussing connexin, innexin, and pannexin research.

Handwritten signature of Silvia Penuela in black ink.

Handwritten signature of Jamie Smyth in black ink.

Dr. Silvia Penuela and Dr. Jamie Smyth

Conference Co-Chairs
International Gap Junction Conference 2024

The Westin Arlington Hotel
Arlington, VA USA
July 27th- July 31st, 2024
igjconference.org



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Keynote Speakers

Michael Koval Ph.D.

Connexins and Pannexins Lead to Connections

Michael Koval, Ph.D., is Professor of Medicine and Cell Biology at Emory University. He has a longstanding interest in studying the molecular machinery that regulates the trafficking and assembly of connexins into gap junctions, including the first identification of ERp29 as a component of the connexin quality control pathway. His laboratory also works on defining roles for pannexins in regulating vascular barrier function. A continuing line of research is to define how gap junctions, pannexins and tight junctions are coordinately regulated and to determine how junction proteins organize into protein complexes that act as signaling hubs, primarily in the context of diseases such as acute respiratory distress syndrome, cystic fibrosis and sepsis.



Lilian Plotkin Ph.D.

From gap junctions to hemichannels to intracellular signaling: connexins and bone mass and strength



Lilian Plotkin, Ph.D., is a Professor at the Department of Anatomy, Cell Biology & Physiology, Indiana University School of Medicine, Indianapolis. She obtained her Ph.D. in Immunology at the Universidad Nacional de Buenos Aires, Argentina. Plotkin performed postdoctoral training from 1998 to 2002 at the Endocrinology Division and the Center for Osteoporosis and Metabolic Bone Diseases, University of Arkansas for Medical Sciences where her work revealed non-traditional roles of bisphosphonates in promoting osteoblast and osteocyte survival through Cx43 hemichannel activation. She subsequently became faculty there until 2008 when she moved to the Indiana University School of Medicine. Plotkin's research focuses on the role of connexins and pannexins as regulators of intracellular signaling in bone, and the consequences of genetic modifications associated with cognitive disorders on the musculoskeletal system. In addition, she investigates cellular and molecular mechanisms leading to skeletal sexual dimorphism using novel animal models.

Keynote Speakers

Arantxa Tabernero Ph.D.

The connexin43 mimetic peptide TAT-Cx43-266-283 as a promising therapy against glioblastoma

Arantxa Tabernero, Ph.D., is a Professor at the Instituto de Neurociencias de Castilla y León, Universidad de Salamanca, Spain. Examining the relationship between connexin43 and glioma cell proliferation, the Tabernero group have demonstrated connexin43 inhibits oncogenic Src activity. They have successfully translated this basic finding through design of a connexin43 mimetic peptide (TAT-Cx43²⁶⁶⁻²⁸³) that recapitulates Src inhibition in glioblastoma models. TAT-Cx43²⁶⁶⁻²⁸³ exerts anti-tumoral effects consistent across several preclinical models of glioblastoma, including freshly removed surgical specimens from patients, and peptide-treated glioblastoma-bearing mice survive longer. Importantly, unlike traditional Src inhibitors, TAT-Cx43²⁶⁶⁻²⁸³ is specific for the glioblastoma cancer stem cell subpopulation with no effects on normal brain cells. Connexin43 plays a complex role in cancer, and Tabernero's approach of interrogating its function through specific targeting of pathways, including Src inhibition, is providing critical insight in the development of effective therapeutic tools.



Roger Thompson Ph.D.

Diversity of functions of Pannexin-1 in the brain



Roger Thompson, Ph.D., is a Professor at the Hotchkiss Brain Institute at the University of Calgary. His research focusses on pannexin-1 biology as it relates to stroke, cognitive decline and physiological brain functions. He has a bachelors degree from Queen's University, a Ph.D. from McMaster University, and postdoctoral experience from the University of Colorado Health Sciences Center, University of British Columbia, and has been researching brain pathologies for over 20 years. His active research program focuses on identifying new molecular pathways and designing custom molecules to protect brain cells during disease.

Scientific Program *at a glance*

Saturday July 27th

12:00	<i>Registration opens</i>
15:00 – 16:00	<i>Early Career Workshop: “Dear ChatGPT, is industry for me?”</i>
16:30 – 17:00	<i>Conference Opening Remarks and Welcome Address</i>
17:00 – 18:00	Keynote I Michael Koval ‘ <i>Connexins and Pannexins Lead to Connections</i> ’
18:00 – 20:30	<i>Opening Reception</i>

Sunday July 28th

08:30	<i>Coffee and Pastries</i>
09:00 – 10:20	Session I ‘Lung, Liver, and Vascular Biology’
10:20 – 10:40	<i>Break</i>
10:40 – 12:00	Session II ‘Isoforms and Alternative Translation Initiation’
12:00 – 13:00	<i>Lunch</i>
13:00 – 14:20	Session III ‘Wound Healing, Metabolism, and Regulation’
14:20 – 14:30	<i>Break</i>
14:30 – 15:50	Session IV ‘Bone and Adipose Biology’
15:50 – 16:00	<i>Break</i>
16:00 – 17:00	Keynote II Lilian Plotkin ‘From gap junctions to hemichannels to intracellular signaling: connexins and bone mass and strength’
17:00 – 19:00	Poster Session I <i>Snacks and cash bar</i>

Monday July 29th

08:30	<i>Coffee and Pastries</i>
09:00 – 10:20	Session V ‘Innexins and Hemichannels’
10:20 – 10:40	<i>Break</i>
10:40 – 12:20	Session VI ‘Pathophysiology’
12:20 – 13:10	<i>Lunch</i>
13:10 – 14:30	Session VII ‘Vascular and Neurobiology’
14:30 – 14:40	<i>Break</i>
14:40 – 16:00	Session VIII ‘Neurobiology’
16:00 – 16:10	<i>Break</i>
16:10 – 17:10	Keynote III Roger Thompson ‘Diversity of functions of Pannexin-1 in the brain’
17:10 – 19:00	Poster Session II <i>Snacks and cash bar</i>

Scientific Program *at a glance*

Tuesday July 30th

08:30	<i>Coffee and Pastries</i>
09:00 – 10:20	Session IX 'Cardiovascular'
10:20 – 10:40	<i>Break</i>
10:40 – 12:00	Session X 'Regulation and Signaling'
12:00 – 13:00	<i>Lunch</i>
13:00 – 14:20	Session XI 'Cancer'
14:20 – 14:30	<i>Break</i>
14:30 – 15:30	Keynote IV Arantxa Tabernero 'The connexin43 mimetic peptide TAT-Cx43-266-283 as a promising therapy against glioblastoma'
15:30 – 16:00	<i>Break to refresh for Gala Dinner Cruise</i>
16:00 – 16:30	<i>Buses leave from Westin for Gala Dinner Cruise</i>
17:00 – 21:00	GALA DINNER CRUISE <i>boat boarding at 17:00; cruise begins at 18:00</i>
21:00 – 21:30	<i>Buses return to Westin Arlington</i>
21:30 – 02:00	<i>After party at The Commentary bar Westin Arlington</i>

Wednesday July 31st

08:30	<i>Coffee and Pastries</i>
09:00 – 10:35	Session XII 'Structure and Function'
10:35 – 10:45	<i>Break</i>
10:45 – 11:05	<i>Future Conferences</i>
11:05 – 11:30	Awards and Prizes
11:30 – 11:45	<i>Closing Remarks</i>
12:00	<i>Orientation for exploration of Washington DC and Smithsonian museums</i>

List of Attendees

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Detailed Program

			IGJC 2024 Scientific Program		
SATURDAY JULY 27th					PRESENTER
12:00		REGISTRATION OPENS	Westin Arlington Gateway Second Floor		
15:00	16:00	EARLY CAREER WORKSHOP	<i>Demystifying Biotech - F. Scott Fitzgerald Ballroom Second Floor</i>		Carissa Haynes
16:30	16:45	OPENING REMARKS			Silvia Penuela and Jamie Smyth
16:45	17:00	Welcome address			Michael Friedlander
17:00	18:00	KEYNOTE I	<i>Connexins and Pannexins Lead to Connections</i>		Michael Koval (Chair: Jamie Smyth)
18:00	20:30	Opening Reception	Westin Arlington Gateway Second Floor		
SUNDAY JULY 28th			Westin Arlington Gateway F. Scott Fitzgerald Ballroom - Second Floor		
8:30		Coffee and Pastries			
9:00		SESSION I	<i>Lung, Liver, and Vascular Biology</i> (Chairs: Mauricio Lillo and Brenda Kwak)		
9:00	9:20		<i>Endothelial Piezo1-Pannexin1-TRPV4 channel signaling mediates flow-induced dilation of small pulmonary arteries</i>		Swapnil Sonkusare
9:20	9:40		<i>Nanobody-based pannexin1 channel inhibitors reduce inflammation in acute liver injury</i>		Raf Van Campenhout
9:40	10:00		<i>Macrophages initiate smooth muscle cell proliferation via gap junctions during neointima formation</i>		Mark Renton
10:00	10:20		<i>Connexin43 regulates apicobasal polarity of the airway epithelium</i>		Mehdi Badaoui
10:20	10:40	Break			
10:40		SESSION II	<i>Isoforms and Alternative Translation Initiation</i> (Chairs: Trond Aasen and Samar Sayedyahosseini)		
10:40	11:00		<i>Dynamic 5'UTR element inclusion regulates ribosome scanning and initiation to control GJA1 mRNA internal translation and connexin43 gap junction formation</i>		Michael Zeitz
11:00	11:20		<i>GJA1-20k Promotes Formation of Mitochondrial Actin Cages</i>		Vu Nguyen
11:20	11:40		<i>Role of GJA1-20k, a short isoform of Connexin43, on adaptative stresses abilities of metastatic prostate cancer cells</i>		Sarah Fournier
11:40	12:00		<i>Novel Pannexin 1 isoform is increased in cancer</i>		Brooke O'Donnell
12:00	13:00	Lunch	Westin Arlington Gateway		

13:00		SESSION III	Wound Healing, Metabolism, and Regulation (Chairs: Dale Laird and Brant Isakson)	
13:00	13:20		<i>The Connexin 43 (Cx43) interacting protein human Discs large homologue-1 (Dlg1) controls gap junctional intercellular signalling and is an important component of the wound healing process</i>	Patricia Martin
13:20	13:40		<i>Cold exposure rejuvenates the metabolic phenotype of Panx1^{-/-} mice</i>	Brenda R. Kwak
13:40	14:00		<i>Pannexin 1 is a diagnostic marker and therapeutic target for dysfunctional endothelial progenitor cells in diabetic patients</i>	Ting-Yi Tien
14:00	14:20		<i>Connexin 43 Phosphorylation on Multiple Sites as a Regulatory Mechanism of Cx43-Src Interaction</i>	Anastasia Thévenin
14:20	14:30	Break		
14:30		SESSION IV	Bone and Adipose Biology (Chairs: Maria Mayan and Joseph Stains)	
14:30	14:50		<i>Connexin 43 Mediates Mitochondrial Transfer from Human Mesenchymal Stromal Cells to Chondrocytes</i>	Michelle L. Delco
14:50	15:10		<i>Exploring the Potential of Connexin 43 Peptides as Senotherapeutic Agents for Osteoarthritis Treatment</i>	Paula Carpintero-Fernandez
15:10	15:30		<i>Severe Osteoarthritis in Aged Panx3 Knockout Mice: Implications for a Novel Primary Osteoarthritis Model</i>	Brent Wakefield
15:30	15:50		<i>Connexin Hemichannel Opening in Osteocytes and PGE2 Release: A Mechanism for Reducing Adiposity, Enhancing Metabolic Balance, and Maintaining Lean Mass</i>	Francisca Acosta
15:50	16:00	Break		
16:00	17:00	KEYNOTE II	<i>From gap junctions to hemichannels to intracellular signaling: connexins and bone mass and strength</i>	Lilian Plotkin (Chair: Silvia Penuela)
17:00	19:00	Poster Session I		
MONDAY JULY 29th				
8:30		Coffee and Pastries		
9:00		SESSION V	Innexins and Hemichannels (Chairs: Anaclet Ngezahayo and Juan Carlos Saez)	
9:00	9:20		<i>Mapping electrical synapses in the Drosophila brain</i>	Thomas Ravenscroft
9:20	9:40		<i>Ablation of Panx1 Aggravates Neuroinflammation by Altering Molecular and Bioelectrical Properties of Synapses in the Zebrafish In Vivo</i>	Georg S Zoidl
9:40	10:00		<i>Innexin hemichannel activation by Microplitis bicoloratus ecSOD monopolymer reduces ROS</i>	Kai-Jun Luo

10:00	10:20		<i>Opening of C-terminal truncated human pannexin1 hemichannels allows Ca²⁺ influx that mediates cell death</i>	Juan Carlos Saez
10:20	10:40	Break		
10:40		SESSION VI	<i>Pathophysiology</i> (Chairs: Patricia Martin and Morten Schak Nielsen)	
10:40	11:00		<i>Gap Junctions - a window into the origins of endometriosis and a pathway to diagnosis and therapy.</i>	Bruce J Nicholson
11:00	11:20		<i>Role of pannexin-1 in polycystic kidney diseases</i>	Tengis Pavlov
11:20	11:40		<i>Pharmacological inhibition of pannexin-1 reduces pathophysiological platelet activation.</i>	Kirk Taylor
11:40	12:00		<i>Connexin-43 auto-antibodies and the heart: A potential pathogenic arrhythmogenic role in Brugada Syndrome and beyond</i>	Meena Fatah
12:00	12:20		<i>Tunneling Nanotubes containing connexin43 are essential for the propagation of HIV infection</i>	Silvana Valdebenito
12:20	13:10	Lunch	Westin Arlington Gateway	
13:10		SESSION VII	<i>Vascular and Neurobiology</i> (Chairs: Georg R Zoidl and Alex Lohman)	
13:10	13:30		<i>Physiologically specific roles for post-translational modifications of Pannexin 1</i>	Brooke O'Donnell
13:30	13:50		<i>Sex-specific effects of endothelial Pannexin1 overexpression in cerebral vascular function and ischemic stroke recovery</i>	Amanda Mauro, PhD
13:50	14:10		<i>Electrical synapses – Connexins and beyond</i>	Adam Miller
14:10	14:30		<i>Exploring the dynamics of rod/cone coupling: from molecular mechanisms to functional significance</i>	Christophe P. Ribelayga
14:30	14:40	Break		
14:40		SESSION VIII	<i>Neurobiology</i> (Chairs: Amanda Mauro and Andrew Woolley)	
14:40	15:00		<i>Trafficking of Connexin36 (Cx36) in the early secretory pathway</i>	Stephan Tetenborg
15:00	15:20		<i>Characterization of the critical residues at the second extracellular domain for docking and formation of functional Cx36 gap junctions</i>	Robert S Wong
15:20	15:40		<i>Investigating the roles of PANX1 and TNF-α in dendritic spine stability</i>	Adriana Casillas Martinez
15:40	16:00		<i>New insights into gap junction nexus and connexosome dynamics with new optical tagging and imaging strategies.</i>	Randy Stout
16:00	16:10	Break		
16:10	17:10	KEYNOTE III	<i>Diversity of functions of Pannexin-1 in the brain</i>	Roger Thompson (Chair: Scott Johnstone)
17:10	19:00	Poster Session II		

TUESDAY JULY 30th				
8:30		Coffee and Pastries		
9:00		SESSION IX	Cardiovascular (Chairs: Rob Gourdie and Joseph Palatinus)	
9:00	9:20		<i>Critical Role of S-Nitrosylated Connexin 43 Hemichannels in Hyperpermeability</i>	Pia C. Burboa
9:20	9:40		<i>Left Ventricular Mechanical Unloading Recovers GJA1-20k Expression in Patients with Arrhythmogenic Cardiomyopathy</i>	Lindsey Taylor
9:40	10:00		<i>Mechanistic link between altered metabolic signaling and defective myocardial conduction: Insights into the role of AMPK in arrhythmogenesis</i>	Margaret McKay
10:00	10:20		<i>Fibroblasts in heart scar tissue directly regulate cardiac excitability and arrhythmogenesis</i>	Yijie Wang
10:20	10:40	Break		
10:40		SESSION X	Regulation and Signaling (Chairs: Randy Stout and Kirk Taylor)	
10:40	11:00		<i>Oral Delivery of an Esterified Connexin43 Carboxyl Terminal Mimetic Peptide by Milk-Derived Exosomes Attenuates Cardiac Ischemic and Radiation Injury in Murine Models</i>	Spencer Marsh
11:00	11:20		<i>Inhibition of Pyk2 Improves Cx43 Intercalated Disc Localization, Infarct Size, and Cardiac Function in Rats With Heart Failure</i>	Li Zheng
11:20	11:40		<i>Phospho-Mimic Mutation in Beta Tubulin Suppresses Arrhythmias and Improves Cardiac Connexin 43 Localization in Duchenne Muscular Dystrophy Mice.</i>	DeLong Zhou
11:40	12:00		<i>Bone marrow plasma cells require P2RX4 to sense extracellular ATP</i>	Masaki Ishikawa
12:00	13:00	Lunch	Westin Arlington Gateway	
13:00		SESSION XI	Cancer (Chairs: Justin Lathia and Elizabeth Yeh)	
13:00	13:20		<i>A Cx43-WNK1-C-MYC signaling axis governs glioblastoma cancer stem cell survival</i>	Erin Mulkearns-Hubert
13:20	13:40		<i>GJA1-20k control of gap junction formation impacts epithelial-mesenchymal transition and breast cancer cell metastatic potential.</i>	Kenneth Young
13:40	14:00		<i>Pannexin 1 cross talk with the Hippo pathway in malignant melanoma</i>	Samar Sayedyahosseini
14:00	14:20		<i>Exploring invadopodia biomechanics: Insights from Cx43-expressing brain tumor cells.</i>	Aymerick Gaboriau
14:20	14:30	Break		
14:30	15:30	KEYNOTE IV	<i>The connexin43 mimetic peptide TAT-Cx43-266-283 as a promising therapy against glioblastoma</i>	Arantxa Tabernero (Chair: Samy Lamouille)

15:30	16:00		Break to refresh for Gala Dinner Cruise	
16:00	16:30		Buses leave from Westin for Gala Dinner Cruise	
17:00		GALA DINNER CRUISE		
22:00	2:00		After-party at The Commentary in the Westin Arlington	
WEDNESDAY JULY 31st				
8:30		Coffee and Pastries		
9:00		SESSION XII	Structure and Function (Chairs: Paul Sorgen and John O'Brien)	
9:00	9:20		<i>Molecular mechanisms of gap junction channel inhibition by small molecules</i>	Volodymyr Korkhov
9:20	9:40		<i>Connexin channels and hemichannels are modulated differently by charge reversal at residues forming the intracellular pocket</i>	Viviana M. Berthoud
9:40	10:00		<i>Integrated and multiplexed parallel processing by electric synapses in retinal cone bipolar cells</i>	Yao Xue
10:00	10:20		<i>Gap junction networks in ultrastructural mammalian connectomes</i>	Crystal L. Sigulinsky
10:20	10:35		<i>Pulse EPR Imaging for Exploring Neurology & Announcement of O2M Technologies Travel Award</i>	Mrignayani Kotecha
10:35	10:45	Break		
10:45	11:05	FUTURE CONFERENCES	Italy - IGJC 2026	Maria Mayan (Fabio Mammano)
11:05	11:30	AWARDS AND PRIZES		
11:30	11:45	CLOSING REMARKS		Silvia Penuela and Jamie Smyth
	12:00		<i>Exploration of Washington DC and Smithsonians (assisted by conference volunteers)</i>	