



**XXth Meeting of the
International Society of Arterial Chemoreception (ISAC)**

July 23 - 27, 2017

JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD, USA

**Making Sense Out of Sensing Hypoxia:
New Directions and Translational Perspectives
Throughout the Lifespan**

ISAC 2017 Organizing Committee:

Estelle B.Gauda, M.D.
Professor of Pediatrics
President, ISAC 2014-2017
Johns Hopkins University School of Medicine

Nanduri Prabhakar, Ph.D., D.Sc
Harold Hines Professor of Medicine
Director, Institute for Integrative Physiology and Center for Systems Biology of Oxygen Sensing
University of Chicago

Harold Schultz, Ph.D.
Professor of Physiology
Department of Cellular and Integrative Physiology
University of Nebraska College of Medicine

Chris Wyatt, Ph.D.
Associate Professor of Neuroscience, Cell Biology and Physiology
Wright University

2017 ISAC CONFERENCE PROGRAMME

Sunday, July 23, 2017

4:00	Registration - Charles Commons, Johns Hopkins University
	Welcome Remarks <i>E. B. Gauda, President ISAC XX 2017</i>
Time TBA	Opening Reception with Dinner <ul style="list-style-type: none"> ◆ Tribute to Constancio González, M.D., Ph.D. (1949-2015) <i>N. Prabhakar</i>

Monday, July 24, 2017

7:15-8:10	Breakfast (Posters to be placed on poster boards)
8:15	Open Remarks and Housekeeping <i>E. B. Gauda</i>
8:30-9:30	Keynote Speaker: Role of the Hypoxia-Inducible Factors in the Carotid Body <i>G. Semenza, 2016 Lasker Awardee</i>

Session 1: Molecular Responses to Hypoxia - New Perspectives

Chair: C. Wyatt

ORAL PRESENTATIONS

9:30-9:45	Dopamine and Histamine Inhibit Purinergic Calcium Signaling in Type II Cells of the Rat Carotid Body <i>E. M. Leonard, C. A. Nurse</i>
9:45-10:00	A Novel Index of Steady-State Respiratory Chemoreflex Drive During Incremental Ascent to High Altitude: Relationship to Acute Mountain Sickness <i>J. R. Pfoh, C. D. Bruce, E. R. Vanden Berg, E. M. de Freitas, K. Borle, L. R. Lavoie, G. Saran, A. Linares, R. Brandt, K. Tjandra, T. A. Day</i>
10:00-10:15	Hypoxia Regulates MicroRNA Expression in the Human Carotid Body <i>S. Mkrтчian, K. L. Lee, J. Kåhlin, A. Ebberyd, L. Poellinger, M. Jonsson Fagerlund, L. I. Eriksson</i>
10:15-10:30	Spinal Oxygen Sensors (SOS) - The Lost Central Cardiovascular Oxygen Sensor? <i>N. Barioni, F. Derakhshan, A. Roy, M. Baghdadwala, F. B. McDonald, E. C. Scheibli, M. B. Harris, M. Dutschmann, R. J. A. Wilson</i>
10:45-11:15	Coffee Break and Poster Viewing

Session 2: Central Chemoreception - Oxygen

Chair: R. Wilson

11:15-12:15	Plenary Lecture: Oxygen Sensing in the Central Respiratory Network: Relevance to Disordered Breathing and Cardiorespiratory Control <i>J. M. Ramirez</i>
ORAL PRESENTATIONS	
12:15-12:30	CNS Mechanisms of Cardiorespiratory Homeostasis During Hypoxia in Conscious Rats <i>I. C. Wenker, R. L. Stornetta, P. G. Guyenet</i>
12:30-12:45	Pro-Inflammatory Cytokines in the Nucleus of the Solitary Tract of Hypertensive Rats Exposed to Chronic Intermittent Hypoxia <i>M. P. Oyarce, R. Iturriaga</i>
12:45-13:00	Acute Hypoxia Reveals a Developmentally-Inhibited Rhythm Generator for Lung Breathing in Pre-Metamorphic Tadpole Brainstem Preparations <i>T. A. Janes, J. P. Rousseau, S. Fournier, R. Kinkead</i>
13:05-13:55	Lunch - Charles Commons

Session 3: Hypoxia Sensing in the Carotid Body - New Directions

Chair: TBA

14:00-15:00	Plenary Lecture: Oxygen Sensing: A Rattlebag of Molecular Mechanisms <i>C. Wyatt</i>
ORAL PRESENTATIONS	
15:00-15:15	Evidence for Dopaminergic Inhibitory Cell-Cell Interactions in the Rat Carotid Body <i>E. M. Leonard, C. A. Nurse</i>
15:15-15:30	Cysteine Oxidation in the Underlying Pathophysiological Mechanisms of Kidney Fibrosis Induced by Chronic Intermittent Hypoxia <i>N. R. Coelho, S. A. Pereira, M. Correia, A. R. Lemos, C. G. Dias, E. C. Monteiro, L. N. Diogo</i>
15:30-15:45	Molecular Characterization and Localization of Ectonucleotidases in the Rat Carotid Body: Regulation by Chronic Hypoxia <i>S. Salman, C. Vollmer, G. B. McClelland, C. A. Nurse</i>
15:45-17:00	Coffee and Poster Viewing
18:00-20:30	Evening Dinner Group: Crab Feast BO BROOKS Restaurant, Baltimore, Maryland

Tuesday, July 25, 2017

7:15-8:10 Breakfast

8:10-8:15 Housekeeping

SESSION 4: (Mal)adaptive Responses to Hypoxia - New Perspectives

Chair: E. Olea

8:15-9:15 **Plenary Lecture:**
Epigenetics Regulation of Carotid Body Oxygen Sensing: Physiological Consequences from Fetus to Adult
J. Nanduri

ORAL PRESENTATIONS

9:15-9:30 **Carotid Body Long-Term Facilitation Without CIH Preconditioning: Primarily a Post-Synaptic Mechanism Involving Phosphorylation of TRPV1 and other Post-Synaptic Receptors, Independent of H₂O₂**
A. Roy, R. J. A. Wilson

9:30-9:45 **Contribution of Relative Leptin and Adiponectin Deficiencies to Chronic Intermittent Hypoxia in Premature Infants**
E. B. Gauda, A. Mason, E. Paragon, M. K. Shin, S. Polotsky

9:45-10:00 **A New Role of Chronic Intermittent Hypoxia on Pathology: Spontaneous Tumorigenesis and Consequences**
M. T. Gallego-Martin, E. Gonzalez-Obeso, E. Olea, I. Docio, A. Rocher, A. Obeso

10:00-10:30 Coffee Break and Poster Viewing

Session 5: Role of the Chemoreception in Disease - New Perspectives

Chair: J. Kåhlin

10:30-11:30 **Plenary Lecture:**
Translating Carotid Body Function in Clinical Medicine
R. Iturriaga

ORAL PRESENTATIONS

11:30-11:45 **Lysophosphatidic Acid Stimulates the Carotid Body: Linking Inflammation and Carotid Sinus Nerve Activity**
N. G. Jendzjowsky, A. Roy, R. J. A. Wilson

11:45-12:00 **Carotid Sinus Nerve Resection Decreases Weight Gain and Fat Mass in a Rodent Model of Obesity**
B. F. Melo, C. S. Prego, M. C. Correia, M. D. Cabral, J. F. Sacramento, S. V. Conde

12:00-12:15 **Overactivation of Carotid Sinus Nerve Activity in High-Fat Animals is Mediated by A₂ Adenosine Receptors**
J. F. Sacramento, J. Prieto-Lloret, S. V. Conde

12:15-12:30 **Therapeutic Targeting of Carotid Body for Treating Sleep Apnea in a Pre-Clinical Model**
Y-J. Peng, X. Zhang, I. Chupikova, A. Gridina, J. Nanduri, S. H. Snyder, D. McCormick, M. Muzzio, N. R. Prabhakar

12:30-13:30 Lunch

Session 6: Role of Chemoreception in Disease - New Directions

Chair: S. Conde

13:30-14:30

Plenary Lecture:
What Else Do the Carotid Bodies Do?
M. Joyner

ORAL PRESENTATIONS

14:30-14:45

Contrasting Effects of Acute and Chronic Progesterone Administration on Apnea Frequency in Newborn Male and Female Rats
N. P. Uppari, H. Kouchi, V. Joseph, A. Bairam

14:45-15:00

Erythropoietin Protects Against the Stress-Related Respiratory Dysfunction in Mice: Neural Control of Ventilation and Sex Dimorphism
E. Elliot-Portal, R. Kinkead, J. Soliz

15:00-15:15

Leptin Increases Blood Pressure Acting in the Carotid Body
M. K. Shin, C. Caballero, W-Y. Tang, B. Yeung, J. Sham, M. Shirahata, V. Y. Polotsky

15:15-16:30

Coffee and Poster Viewing

16:30-17:30

Business Meeting

Free Evening – Dinner on your own
Recommended city areas to visit: Fells Point, Inner Harbor, Harbor East, Canton or Charles Village (area outside Charles Commons)

Wednesday, July 26, 2017

9:30-20:30

Site Seeing Group Activity (Washington DC and Dinner)

- ◆ 9:30 - Meet at Bus: Charles Commons
- ◆ To Washington - Mall, Museums, Galleries (free admission)
- ◆ 17:30 - Meet at Bus in DC
- ◆ 18:15-20:30 - Sequoia Restaurant on the Potomac River, Washington, DC (Happy Hour followed by Dinner)

Thursday, July 27, 2017

8:15-9:00

Breakfast

Session 7: Role of Chemoreception in Disease - Early Development

Chair: A. Bairam

9:00-10:00

Plenary Lecture:
Peripheral and Central Chemoreceptors in Sudden Infant Death Syndrome
A. Pozionato

ORAL PRESENTATIONS

10:00-10:15

Divergent Effects of Myo-Inositol on Respiratory Neural Control During Postnatal Development
P. M. MacFarlane, J. M. Di Fiore, R. J. Martin, A. Mayer, I. R. Bederman

10:15-10:30	Protection from SIDS: Perhaps it is in the Milk <i>E. B. Gauda</i>
10:30-11:15	Coffee and Poster Viewing
Session 8: Role of Chemoreception in Disease - Aging <i>Chair: H. Schultz</i>	
11:15-12:15	Plenary Lecture: The Carotid Body with Aging and Inflammation <i>C. Di Giulio</i>
12:15-13:15	Lunch and Poster Viewing
SESSION 9: Central Chemoreception - Carbon Dioxide <i>Chair: E. Monteiro</i>	
13:30-14:30	Plenary Lecture: Homeostatic Regulation of Arterial PCO₂: Neural Circuits and Molecular Mechanisms of CO₂ Sensing <i>P. Guyenet</i>
SESSION 10: Molecular Responses to Hypercapnia - New Directions <i>Chair: R. Iturriaga</i>	
14:45-15:45	Plenary Lecture: Hypercapnia Interaction with HIF Adaptive Responses to Hypoxia <i>C. Taylor</i>
16:00-16:10	Announcements by E. B. Gauda Organizing Committee – Selection of Award Recipients (De Castro, Heyman, Neil Awards)
16:10-18:30	Free Time
18:30	Coach Bus - Leaves from Charles Commons to Peabody Library for GALA
19:00-19:30	Pre-Dinner Reception
19:30-20:30	GALA – Peabody Library, Johns Hopkins University Tribute to Machiko Shirahata, M.D. (1950-2016) <i>J. Sham</i> Machiko Shirahata ISAC Trainee Travel Awardees: Recognition of Awardees by Estelle Gauda, M.D. and Seva Polostky, M.D., Ph.D. De Castro Awards – Presentation of Certificates