



WEDNESDAY, JULY 24

12:00 – 18:00 Odyssey Room, Level 1

Congress Registration

THURSDAY, JULY 25, MORNING

06:30 – 08:00 Centennial Terrace, Level 3

Breakfast Buffet

07:00 – 18:00 Group Registration Desk, Level 1

Congress Registration

08:00 – 17:00 Centennial Ballroom C&D, Level 1

PS1 – Poster Session 1

08:00 – 08:15 Centennial Ballroom A&B, Level 1

W1 - Welcome to the Congress by the Chair of ISAN 2019

Kalyanam Shivkumar MD PhD Director, UCLA Cardiac Arrhythmia Center & EP Program, Los Angeles, CA, USA

08:15 – 09:00 Centennial Ballroom A&B, Level 1

PT001 - Plenary Talk: Autonomic Circuitry Redefined and Targeted for Neuromodulation

Speaker:

John Furness PhD FAA FAHMS Florey Institute, University of Melbourne, Victoria, Australia

Introduction by:

Yvette Taché, PhD, Co-Chair ISAN 2019 UCLA, Los Angeles, CA

09:00 – 09:20 Nutrition Hub, Level 1&2

Break

Concurrent Symposia Sessions

09:20 – 11:20 Centennial Ballroom A&B, Level 1

ST001 - Enteric Neural Circuitry in Mouse and Human Colon: The Changing Face of Morphology, Function and Therapeutic Leads

Chair: **Marthe Howard, PhD** University of Toledo Health Sciences Campus, Toledo, OH, USA

Speakers:

Marthe Howard PhD University of Toledo Health Sciences Campus, Toledo, OH, USA

ISAN19:003: Refining enteric neural circuitry by quantitative morphology, transcriptomics and function in mice

Brian Davis PhD University of Pittsburgh, Pittsburgh, PA, USA

Don't believe everything you see: integration of colon extrinsic primary afferent information via spinal parasympathetic circuitry

Robert O Heuckeroth MD PhD The Children's Hospital of Philadelphia, Philadelphia, PA, USA

ISAN2019.005 Visualizing the human enteric nervous system in 3-dimensions: new ways to think about autonomic neuropathy

Poi-Qing Yuan PhD UCLA and VA Greater Los Angeles, Los Angeles, CA, USA

Three- dimensional imaging and phenotype of intrinsic innervation of the human colon

11:20 – 11:40 OP001 - Symposia-related Featured Abstracts – Oral Presentations

Joseph F Margiotta PhD University of Toledo College of Medicine, Toledo, OH, USA

ISAN19.019 Nicotinic acetylcholine receptors mediate and modulate cholinergic circuit activity in mouse myenteric ganglia

Aaron May-Zhang Vanderbilt University Medical Center, Nashville, TN, USA

ISAN19.020 Identification of novel markers for enteric neurons in healthy human adults using RNA-sequencing

09:20 – 11:20 Legacy Room A&B, Level 2

ST002 - Into the Void: Autonomic Regulation of Urinary Continence and Micturition

Chair: **Peregrine Osborne PhD** University of Melbourne, Victoria, Australia

Speakers:

Michelle Southard-Smith PhD Vanderbilt University Medical Center, Nashville, TN, USA

Development of lower urinary tract autonomic innervation from sacral neural crest

Janet Keast, PhD University of Melbourne, Victoria, Australia

Visceral connectomes: spinal connectivity with lower urinary tract organs

Sourish Mukhopadhyay, BS MS Scripps Research, La Jolla, CA, USA

Brain control of voluntary voiding in the mouse

Marcus Drake MA DM University of Bristol, UK

How neural deficit relates to clinical dysfunction of the lower urinary tract

11:20 – 11:40

OP002 - Symposia-related Featured Abstracts – Oral Presentations

Sevda C Aslan PhD University of Louisville, Louisville, KY, USA

ISAN19.021 Normalization of blood pressure responses to bladder distension with epidural stimulation after spinal cord injury

Jaclyn Definis Drexel University College of Medicine, Philadelphia, PA, USA

ISAN19.022 Stimulating spinal 5-HT_{2A} receptors improves involuntary micturition reflex in rats with spinal cord transection

09:20 – 11:20 Optimist Room A&B, Level 2

ST003 - Autonomic Control of Inflammation - New Insights into Pathways and Mechanisms

Chair:

Davide Martelli PhD University of Bologna, Bologna, Italy

Martin Stebbing PhD Florey Institute of Neuroscience and Mental Health, Victoria Australia

Speakers:

Paul O'Connor PhD Augusta University, Augusta, GA, USA

Evidence oral ingestion of sodium bicarbonate activates the cholinergic anti-inflammatory pathway via the mesothelium

Davide Martelli PhD University of Bologna, Bologna, Italy

ISAN19.012: The splanchnic anti-inflammatory pathway: mapping its peripheral and central branches

Colin Reardon PhD University of California Davis, Davis, CA, USA

Neuro-immune communication in mesenteric lymph nodes

Rainer Straub MD University Hospital, Regensburg, Germany

The sympathetic regulation of the spleen in the middle of arthritis

11:20 – 11:30

OP003 - Symposia-related Featured Abstract – Oral Presentation

Alice E McGovern PhD University of Melbourne, Parkville, Victoria, Australia

ISAN9.023 Neuro-immune cross talk in influenza virus pathogenesis

09:20 – 11:20 Laureate Room, Level 1

ST004 - The Neurobiology of Orthostatic Hypotension – A Clinical, Experimental and Preclinical Approach

Chair: **Roy Freeman MD** Harvard Medical School, Boston, MA, USA

Speakers:

Roy Freeman MD Harvard Medical School, Boston, MA, USA

Orthostatic hypotension - the clinical perspective

J. Andrew Taylor PhD Spaulding Rehabilitation Hospital; CV Research Lab, Cambridge MA, USA

Baroreflex dysfunction and blood pressure control - the human experimental perspective

Can Ozan Tan PhD Harvard Medical School, Boston, MA, USA

Cerebral blood flow and autonomic dysfunction – the human experimental perspective

Mark Chapleau PhD University of Iowa, Iowa City, IA, USA

Orthostatic hypotension – the preclinical perspective

11:20 – 11:30

OP004 - Symposia-related Featured Abstracts – Oral Presentations

Matthew G Lloyd PhD University of Calgary, Calgary, Alberta, Canada

ISAN19.024 Norepinephrine transporter inhibition with atomoxetine: autonomic effects during orthostasis

11:20 – 11:45 Nutrition Hubs, Level 1 & 2

Break

11:45 – 13:00 Centennial Ballroom C&D, Level 1

PV001 - Poster Viewing

11:45 – 13:00 Centennial Terrace, Level 3

Lunch Buffet

THURSDAY JULY 25, AFTERNOON

13:00 – 13:45 Centennial Ballroom A&B, Level 1

PT002 - Plenary Talk: Autotoxicity: A New Paradigm to Explain Catecholaminergic Neurodegeneration in the Brain and Heart

Speaker: **David Goldstein MD PhD** Autonomic Medicine Section, CNP/DIR/NINDS, NIH, Bethesda MD, USA

Introduction by:

Kalyanam Shivkumar MD PhD, Chair ISAN 2019 Director, UCLA Cardiac Arrhythmia Center & EP Program, Los Angeles CA, USA

13:45 – 14:00 Nutrition Hubs, Level 1&2

Break

Concurrent Symposia Sessions

14:00 – 16:00 Centennial Ballroom A&B, Level 1

ST005 - Mechanisms of Sympathetic Neurovascular Function and Control During Pregnancy - A Growing Field of Interest

Chair: **Craig Steinback PhD** University of Alberta, Edmonton Alberta, Canada

Speakers:

Virginia Brooks PhD Oregon Health & Science University, Portland, OR, USA

Neurovascular regulation and control in animal models of healthy pregnancy

Qi Fu MD PhD University of Texas Southwestern, Dallas, TX, USA

Population differences in sympathetic regulation during human pregnancy

Frank Spradley PhD University of Mississippi Medical Center, Jackson, MS, USA

Mechanisms of altered adrenergic vascular control in models of preeclampsia

Craig Steinback PhD University of Alberta, Edmonton Alberta, Canada

Neurovascular regulation in complex human pregnancy

16:00 – 16:20

OP005 - Symposia-related Featured Abstracts – Oral Presentations

Paul Macey PhD UCLA, Los Angeles, CA

ISAN19.045 Sex differences in insular cortex gyri responses to a foot cold pressor

Laura M. Reyes Martinez MD PhD University of Alberta, Edmonton, Alberta, Canada

ISAN19.046 Sympathetic nervous system (re)activity in women with gestational diabetes

14:00 – 16:00 Legacy Room A&B, Level 2

ST006 - Neuron-Myocyte Interactions in Health and Disease

Chair: **Beth Habecker PhD** OHSU School of Medicine, Portland, OR, USA

Speakers:

David J. Paterson, DPhil Oxford University, Oxford, UK

Neuronal control of myocyte excitability in cardiovascular disease

Susan J. Birren PhD Brandeis University, Waltham, MA, USA

Development and function of the peripheral cardiac-sympathetic circuit

Johanna Montgomery PhD Department of Physiology, University of Auckland, Auckland, New Zealand

Plasticity in the intrinsic cardiac nervous system and its role in atrial fibrillation

16:00 – 16:20

OP006 - Symposia-related Featured Abstracts – Oral Presentations

Lily L. Cao MS University of Birmingham, Birmingham, UK

ISAN19.047 A fluorescent method to monitor norepinephrine transporter rate in murine heart and blood vessels

John D. Tompkins PhD UCLA, Los Angeles, CA, USA

ISAN19.048 Dysregulation of M-current at porcine intrinsic cardiac neurons after myocardial infarction

14:00 – 16:00 Optimist Room A&B, Level 2

ST007 - Autonomic Reflexes in Health and Disease: From Sensors to Circuits to Reflex

Chairs:

Mark W. Chapleau PhD University of Iowa, Iowa City, IA, USA

Lucy Norcliffe-Kaufmann PhD NYU School of Medicine, New York, NY, USA

Speakers:

Silvia Conde PhD CEDOC, NOVA Medical School, Lisbon, Portugal

Carotid body and insulin sensing: Implications for metabolic diseases

Wei-Zheng Zeng PhD The Scripps Research Institute, La Jolla, CA, USA

Piezo channels mediate baroreceptor mechano-transduction and the baroreflex

Rui B. Chang PhD Yale University School of Medicine, New Haven, CT

Molecular and functional dissection of vagal heart-to-brain circuits

Robert A. Larson MS PhD University of Iowa Carver College of Medicine, Iowa City, IA, USA

Targeting cardiac sensory neurons and reflexes in hypertrophic cardiomyopathy

16:00 – 16:20

OP007 - Symposia-related Featured Abstracts – Oral Presentations

Ann-Katrin Grotle MS The University of Texas at Austin, Austin, TX, USA

ISAN19.049 Pressor response to intermittent contraction in type 1 diabetic rats: role of Piezo channels

John H. Schild PhD IUPUI, Indianapolis, IN, USA

ISAN19.050 Sexual dimorphism in the aortic baroreflex of rat

14:00 – 16:00 Laureate Room, Level 1

ST008 - Cardiac Electrophysiology – Neuromodulation and Beyond

Chairs:

Noel Boyle MD PhD UCLA, Los Angeles, CA, USA

Jeffrey Goldberger MD University of Miami, FL, USA

Speakers:

Kevin Monahan MD, Boston University, Boston, MA, USA

The role of pacing for sick sinus syndrome and vasovagal syncope

Michael Gold MD Medical University of South Carolina, Charleston, SC, USA

Implanted devices for heart failure

Gaetano DeFerrari MD University of Pavia, Pavia, Italy

Parasympathetic modulation for heart failure

Harikrishna Tandri MD Johns Hopkins University, Baltimore, MD, USA

Cardiac sympathectomy for management of ventricular arrhythmias

Jason Bradfield MD University of California, Los Angeles, CA, USA

Renal denervation for management of heart failure

Christian Meyer MD University of Hamburg, Hamburg, Germany

Catheter ablation of atrial fibrillation-new insights

16:00 – 16:20

OP008 - Symposia-related Featured Abstracts – Oral Presentations

Sahib S Khalsa Laureate Institute for Brain Research, Tulsa, OK, USA

ISAN19.051 Association between bilateral cardiac sympathetic denervation and mental health

Sebastian Stec MD PhD MediNice Research & Development Center, Jasionka-Rzeszów, Poland

ISAN19.052 Neuro-cardiac reflexes for catheter ablation and management of idiopathic premature ventricular complexes.

16:00 – 17:30 Centennial Ballroom C&D, Level 1

PV002 - Poster Viewing and Judging (judging from 16:30 – 17:30)

17:30 – 17:50 Centennial Ballroom A&B, Level 1

ISAN1 - ISAN Members' Meeting

Chair: **Bruno Bonaz MD PhD, President ISAN** CHU Grenoble-Alpes, Grenoble, France

18:00 – 21:00 Centennial Terrace, Level 3

Congress Dinner (ticketed - \$80 per person)

FRIDAY JULY 26, MORNING

06:30 – 08:00 Centennial Terrace, Level 3

Breakfast Buffet

07:00 – 18:00 Group Registration Desk, Level 1

Registration

08:00 – 17:00 Centennial Ballroom C&D, Level 1

PS2 – Poster Session 2

08:00 – 08:15 Centennial Ballroom A&B, Level 1

AW1 - Awards for Best Abstract Submissions

Yvette Taché PhD, Co-Chair ISAN 2019, UCLA, Los Angeles, CA, USA

08:15 – 09:00 Centennial Ballroom A&B, Level 1

PT003 - Plenary Talk: The Exercise Pressor Reflex in Health and Simulated Peripheral Artery Disease

Speaker: Marc Kaufman PhD Penn State College of Medicine, Hershey, PA, USA

Introduced by: **Bill Farquhar PhD** University of Delaware, Hershey, PA, USA

09:00 – 17:00 Pathways & Innovation Rooms, Level 1

SDR1 - SPARC Data Resource Center Hands on Experience

09:00 – 09:20 Nutrition Hubs, Level 1 & 2

Break

Concurrent Symposia Sessions

09:20 – 11:20 Laureate Room, Level 1

SF009 - Recent Advances in Exercise Pressor Reflex Function in Health and Disease

Chair: **Marc Kaufman PhD** Penn State Hershey Medical Center, Hershey, PA, USA

Speakers:

Bill Farquhar PhD University of Delaware, Newark, DE, USA

Exaggerated exercise pressor reflex function in hypertension and the role of dietary salt

Vaughan Macefield PhD University of Melbourne, Victoria, Australia

The contributions of central command and the metaboreflex to the sympathetic control of blood flow in contracting muscle

Audrey Stone PhD: University of Texas at Austin, Austin, TX, USA

Exercise pressor reflex function in diabetes

Donal O'Leary PhD Wayne State University, Detroit, MI, USA

Altered muscle metaboreflex-arterial baroreflex interaction in heart failure

11:20 – 11:30

OP009 - Symposia-related Featured Abstracts – Oral Presentations

Joyce S. Kim Penn State College of Medicine, Hershey, PA, USA

ISAN19.114 Redundancy of the ASIC channel in evoking the exercise pressor reflex.

09:20 – 11:20 Legacy Room A&B, Level 2

SF010 - Multiple System Atrophy: A Disease Centrally Affecting the Autonomic Nervous System

Chairs:

Eduardo E Benarroch MD Mayo Clinic, Rochester, MN, USA

Ryuji Sakakibara MD PhD Toho University Sakura Medical Center, Sakura, Japan

Speakers:

Ryuji Sakakibara MD PhD Toho University Sakura Medical Center, Sakura, Japan

Overview of multiple system atrophy

Eduardo E Benarroch MD Mayo Clinic, Rochester, MN

Autonomic pathology of multiple system atrophy

Horacio Kaufmann MD New York University Langone Health, New York, NY, USA

Autonomic cardiovascular disorder in multiple system atrophy

Tatsuya Yamamoto MD Chiba University, Chiba, Japan

Autonomic bladder disorder in multiple system atrophy

11:20 – 11:40

OP010 - Symposia-related Featured Abstracts – Oral Presentations

Parag Gad UCLA, Los Angeles, CA, USA

ISAN19.115 Transcutaneous neuromodulation of spinal cord restores bladder and bowel function after neurological dysfunction

Ruslan Pustovit PhD The University of Melbourne, Melbourne, Victoria, Australia

ISAN19.116 Lesion of the neurons of forebrain caused motor and colorectal deficit in a Parkinson's Disease model

09:20 – 11:20 Optimist Room A&B, Level 2

SF011 - Autonomic Modulation of Cardiac Arrhythmias

Chair: **Olujimi Ajijola MD PhD** UCLA, Los Angeles, CA, USA

Speakers:

Neil Herring MD DPhil University of Oxford, Oxford, UK

Role of sympathetic co-transmitters in cardiac disease and ventricular function

Crystal Ripplinger PhD UC Davis School of Medicine, Davis, CA, USA

Sympathetic innervation and myocardial infarction

Dominik Linz MD PhD The University of Adelaide and Royal Adelaide Hospital, Adelaide, Australia

Autonomic modulation for atrial fibrillation

Stavros Stavrakis MD PhD University of Oklahoma Health Sciences Center, Oklahoma City, OK, USA

Tragus nerve stimulation for modulation of cardiac arrhythmias

11:20 – 11:40

OP011 - Symposia-related Featured Abstracts – Oral Presentations

Ronald M. Harper PhD UCLA, Los Angeles, CA, USA

ISAN19.117 Non-invasive neuromodulation to maintain blood pressure and respiration in sleep-disturbed breathing

Kevin Tran David Geffen School of Medicine at UCLA, Los Angeles, CA, USA

ISAN19.118 Outcomes of cardiac sympathetic denervation for ventricular tachycardia: impact of urgency at presentation

09:20 – 11:20 Centennial Ballroom A&B, Level 1

SF012 - SPARC Data Resource Center Portal Roll Out

Chair: **Andrew Weitz PhD** National Institutes of Health, Bethesda, MD, USA

Speakers:

Opening remarks

Andrew Weitz PhD

SPARC Portal: Building the first interactive collection of autonomic neuroscience resources

Joost Wagenaar PhD Blackfynn, Philadelphia, PA, USA

Peter Hunter PhD University of Auckland, Auckland, New Zealand

Esra Neufeld PhD IT'IS Foundation, Zurich, Switzerland

The life cycle of a SPARC dataset: from bench to cloud

Joost Wagenaar PhD Blackfynn, Philadelphia, PA, USA

Anita Bandrowski PhD University of California San Diego, La Jolla, CA, USA

Interactive maps provide a modern view into the autonomic nervous system

Peter Hunter PhD University of Auckland, Auckland, New Zealand

Susan Tappan PhD MBF Bioscience, Williston, VT, USA

Leveraging SPARC data, models and maps for collaborative computational neuroscience

Esra Neufeld PhD IT'IS Foundation, Zurich, Switzerland

Roundtable: What does the future look like for collaborative neuroscience and how is SPARC enabling the future?

Introductory speaker

Maryann Martone PhD University of California San Diego, CA, USA

Roundtable participants

Maryann Martone PhD University of California San Diego, CA, USA

Andrew Weitz PhD National Institutes of Health, Bethesda, MD, USA

Joost Wagenaar PhD Blackfynn, Philadelphia, PA, USA

Peter Hunter PhD University of Auckland, Auckland, New Zealand

Esra Neufeld PhD IT'IS Foundation, Zurich, Switzerland

Anita Bandrowski PhD University of California San Diego, La Jolla, CA, USA

Bernard de Bono MD Auckland Bioengineering Institute, Auckland, New Zealand

Susan Tappan PhD MBF Bioscience, Williston, VT, USA

11:20 – 11:45 Nutrition Hubs, Level 1 & 2

Break

11:45 – 13:00 Centennial Ballroom C&D, Level 1

PV003 - Poster Viewing – Session I: Anatomical and Functional Characterization of Autonomic Neural Networks for Organ Control

11:45 – 13:00 Centennial Terrace, Level 3

Lunch Buffet

11:45 – 12:45 Centennial Ballroom A&B, Level 1

ISAN AGM and Elections

FRIDAY JULY 26, AFTERNOON

13:00 – 13:45 Centennial Ballroom A&B, Level 1

PT004 - Plenary Talk: Neuromodulation Focused Therapeutics for Cardiac Disease: Structure/Function Foundations

Speaker: **Jeffrey Ardell PhD, Co-Chair ISAN 2019** UCLA Cardiac Arrhythmia Center, UCLA, Los Angeles CA, USA

Introduced by: **Irving Zucker PhD** University of Nebraska Medical Center, Omaha, NE, USA

13:45 – 14:00 Nutrition Hubs, Level 1 & 2

Break

Concurrent Symposia Sessions

14:00 – 16:00 Centennial Ballroom A&B, Level 1

SF013 - Sympatho-Excitatory Afferent Reflexes in Cardiovascular Disease

Chairs:

Marmar Vaseghi MD PhD UCLA, Los Angeles, CA, USA

Irving Zucker PhD University of Nebraska Medical Center, Omaha, NE, USA

Speakers:

Hanjun Wang MD University of Nebraska Medical Center, Omaha, NE, USA

Cardiopulmonary spinal afferents; Their role in heart failure

John Osborn PhD University of Minnesota, Minneapolis, MN, USA

Renal afferents and inflammation in hypertension

Rodrigo del Rio PhD Pontificia Universidad Católica de Chile, Santiago, Chile

Chemoreception and sympathetic outflow in heart failure

Gisele Lincevicius PhD Heart Institute, Faculty of Medicine, University of Sao Paulo, Sao Paulo, Brazil

Carotid body recruitment in renovascular hypertension: role for renal afferents and mineralocorticoid receptors

16:00 – 16:20

OP012 - Symposia-related Featured Abstracts – Oral Presentations

Mariana Ruiz Lauar PhD University of Minnesota, Minneapolis, MN, USA

ISAN19.132 Effect of total and afferent renal denervation on neurogenic pressor activity and blood pressure in 2K1C model

Ibrahim M. Salman Case Western Reserve University, Cleveland, OH, USA

ISAN19.133 The contribution of renal nerves to modulation of cardio-respiratory function in Zucker fat rats

14:00 – 16:00 Legacy Room A&B, Level 2

SF014 - Preclinical and Clinical Advances in Parasympathetic Cholinergic Modulation for Treating Inflammatory and Metabolic Disorders

Chairs:

Bruno Bonaz MD PhD CHU Grenoble-Alpes, Grenoble, France

Valentin Pavlov PhD Feinstein Institute for Medical Research, Manhasset, NY, USA

Speakers:

Valentin Pavlov PhD Feinstein Institute for Medical Research, Manhasset, NY, USA

Recent insights into cholinergic regulation of inflammation and its clinical relevance in obesity-driven disorders

Bruno Bonaz MD PhD CHU Grenoble-Alpes, Grenoble, France

The vagus nerve at the interface of the brain-gut neuroimmune axis: clinical implications

Cyndya Shibao MD Vanderbilt University, Nashville, TN, USA

Novel findings in cholinergic modulation of oxidative stress in obese African Americans and its potential therapeutic use

Hermona Soreq PhD The Hebrew University of Jerusalem, Jerusalem, Israel

Carving the molecular landscape of cholinergic signalling in anxiety and metabolic stresses

16:00 – 16:20

OP013 - Symposia-related Featured Abstracts – Oral Presentations

Oliver C. Neely BA University of Oxford, Oxford, UK

ISAN19.134 Shift in monocyte-macrophage subtype proportions within rat stellate ganglia in hypertension

Ramya Vajapey MD Cleveland Clinic Foundation, Cleveland, OH, USA

ISAN19.135 Postural Tachycardia Syndrome (POTS) and ST segment changes

14:00 – 16:00 Optimist Room A&B, Level 2

SF015 - New Advances in Autonomic Nerve Targeting for Treatment of Immune, Metabolic and Renal Disease

Chair: **Stephen Lewis PhD** Case Western Reserve University, Cleveland, OH, USA

Speakers:

Pankaj Jay Pasricha MD Johns Hopkins University, Baltimore, USA

Greater splanchnic nerve modulation and its impact on metabolic syndrome animal models

Philippe Blancou PhD Institut de Pharmacologie Moleculaire et Cellulaire, Nice, France

Treating type 1 diabetes by pancreatic nerve electrostimulation

Thomas Simon PhD Institut de Pharmacologie Moleculaire et Cellulaire, Nice, France

Apical splenic nerve electrical stimulation discloses a novel T cell independent anti-inflammatory pathway

Jacqueline Phillips DVM PhD Macquarie University, Sydney, Australia

Modulation of reno-renal reflex and its potential impact on chronic kidney disease

16:00 – 16:20

OP014 - Symposia-related Featured Abstracts – Oral Presentations

David R. Giovannucci PhD University of Toledo College of Medicine, Toledo, OH, USA

ISAN19.136 A novel peripheral inhibitory pathway targeting salivary gland function

Roman Tyshynsky University of Minnesota, Minneapolis, MN, USA

ISAN19.137 Anatomical and Functional Mapping of the Renal Nerves

14:00 – 16:00 Laureate Room, Level 1

SF016 - Conceptualization to Commercialization for Neuromodulation IP

Chairs:

Kalyanam Shivkumar MD PhD, Chair ISAN 2019 Director, UCLA Cardiac Arrhythmia Center and EP Program, Los Angeles, CA, USA

Emily Loughran MBA Former Senior Director of Licensing and Strategic Alliances, UCLA, Los Angeles, CA, USA

Speakers:

Kathryn Zavala PhD Medtech Innovator, Los Angeles, CA, USA

Raghuveer Mendu NeuCures, Los Angeles, CA, USA

Emily Loughran MBA Former Senior Director of Licensing and Strategic Alliances, UCLA, Los Angeles, CA, USA

16:00 – 17:00 Centennial Ballroom C&D, Level 1

PV004 - Poster Viewing – Session II: Anatomical and Functional Characterization of Autonomic Neural Networks for Organ Control

FRIDAY JULY 26, EVENING

17:15 – 18:00 Centennial Ballroom A&B, Level 1

PT005 - SPARC Plenary Talk – Neuromodulation and Robustness to Perturbation of Rhythmic Circuit

Speaker: **Eve Marder PhD** Professor of Biology, Brandeis University, Waltham, MA, USA

Introduction by: **Joseph Margiotta PhD** University of Toledo, OH, USA

18:00 – 19:00 Centennial Ballroom A&B, Level 1

SPI1 - SPARC PI Meeting

Chair: **Gene Civillico PhD** NIH SPARC Program Manager, NIH, Bethesda, MD, USA

SATURDAY JULY 27, MORNING

06:30 – 08:00 Centennial Terrace, Level 3

Breakfast Buffet

07:00 – 18:00 Group Registration Desk, Level 1

Congress Registration

08:00 – 17:00 Centennial Ballroom C&D, Level 1

PS3 – Poster Session 3

08:00 – 08:15 Centennial Ballroom A&B, Level 1

W2 - Welcome to Day 3

Chair: **Gene Civillico PhD** NIH SPARC Program Manager, NIH, Bethesda, MD, USA

08:15 – 10:15 Centennial Ballroom A&B, Level 1

SS017 - SPARC-ISAN Career Launcher Symposia

Chair: **Gene Civillico, PhD** NIH SPARC Program Manager, NIH, Bethesda, MD

Speakers:

Kristen Smith-Edwards, PhD University of Pittsburgh, Pittsburgh, PA, USA

ISAN19.184 Mapping intrinsic and extrinsic enteric circuits using optogenetic tools in vivo and ex vivo

Hongrong Yang, PhD Northeastern University, Boston, MA, USA

ISAN19.185 Optical nanosensor for imaging acetylcholine in the peripheral nervous system

Seoeun Lee, BS Columbia University, New York, NY, USA

ISAN19.186 Neuroanatomical and molecular properties of stellate ganglion neurons that regulate brown adipose tissue

Yehe Liu, BS/MS Case Western Reserve University, Cleveland OH, USA

ISAN19.187 Easier 3D Imaging

Maria Jantz, BS University of Pittsburgh, Pittsburgh, PA, USA

ISAN19.188 Epidural spinal cord stimulation for selective activation of lower urinary tract nerves

Pradeep Rajendran, PhD UCLA, Los Angeles, CA, USA

ISAN19.189 Identification of peripheral neural circuits regulating heart rate using optogenetic and viral vector strategies

10:15 – 17:00 Artistry, Imagination, Entrepreneur Rooms, Level 2

STS1 - SPARC Technology Showcase

10:15 – 17:00 Pathways & Innovation Rooms, Level 1

SDR2 - SPARC Data Resource Center Hands on Experience

10:15 – 10:40 Nutrition Hubs, Level 1 & 2

Break

Concurrent Symposia Sessions

10:40 – 11:40 Centennial Ballroom A&B, Level 1

SS018 - SPARC: Tools to Study and Modulate Autonomic Function – Session I

Chair: **Michael Wolfson PhD** NIH, Bethesda, MD, USA

Speakers:

Chris Towne PhD Circuit Therapeutics, Mountain View, CA, USA

Transdermal Light-Activated Gene Therapy for Pain

Tiago Costa PhD Columbia University, New York, NY, USA (Kenneth Shepard **PhD**, primary author)
ISAN19.191 2D ultrasound phased array in a single wearable chip for stimulation of peripheral nerves

Emily Gibson PhD University of Colorado, Denver, CO, USA (John Caldwell **PhD**, primary author)

ISAN19.192 Bidirectional minimally invasive optogenetic peripheral nerve interface

Larry Miller MD Feinstein Institute for Medical Research, Manhasset, NY, USA

ISAN19.193 The gastrointestinal tract as a window to the autonomic nervous system

10:40 – 11:40 Laureate Room, Level 1

SS019 - Structure-Function: Cardiorespiratory Control

Chair: **Jeffrey Ardell PhD Co-Chair ISAN 2019** UCLA Cardiac Arrhythmia Center, UCLA, Los Angeles, CA, USA

Speakers:

Thomas Taylor-Clark PhD University of South Florida, Tampa, FL, USA

ISAN19.194 Mapping of vagal afferent subsets - peripheral terminals within the lungs and central terminals within the medulla

Xin Sun PhD UCSD, San Diego, CA, USA

ISAN19.195 Mapping of the neural circuits that control intrinsic lung function

Don Bolser PhD University of Florida, Gainesville, FL, USA

ISAN19.196 Network-scale interactions among neurons in the medulla: a substrate for autonomic control by reverberant circuits

Kendall Morris PhD University of South Florida, Tampa, FL, USA

ISAN19.197 Simulations and cluster analysis visualizations of respiratory neuronal discharge patterns

10:40 – 11:40 Optimist Room A&B, Level 2

SS020 - Peripheral Neuromodulation for Pain and Withdrawal

Chair: **Nick Langhals PhD** NIH SPARC Program, NIH Bethesda, MD, USA

Speakers:

Leonardo Kapural MD PhD Carolinas Pain Institute, Winston Salem, NC, USA

Spinal cord stimulation for abdominal visceral pain – clinical evidence

Teresa Pitts PhD University of Louisville, Louisville, KY, USA

Anatomical and functional underpinnings of sex-based differences in neuromodulatory therapies

Bin Feng PhD University of Connecticut, Hartford, CT, USA

Determine the topology and molecular profiles of nociceptive DRG neurons innervating the colon and rectum

10:40 – 11:40 Legacy Room A&B, Level 2

SS021 - Foundational Aspects for Peripheral Neuromodulation

Chair: **Marmar Vaseghi, MD PhD** UCLA, Los Angeles, CA, USA

Speakers:

Nicole Pelot BS Duke University, Durham, NC, USA

ISAN19.201 Modeling activation of autonomic nerves for analysis and design

Matthew Ward PhD Purdue University, West Lafayette, IN, USA (Terry Powley **PhD**, primary author)

ISAN19.202 A novel approach to decode and classify vagal nerve structure and function

Eric Musselman BS Duke University, Durham, NC, USA

ISAN19.203 Interspecies scaling of cervical vagus nerve stimulation parameters

Guillermo Monroy PhD FDA Silver Springs, MD, USA

ISAN19.204 Optical coherence tomography as a versatile tool to observe and quantify electrostimulation induced peripheral nerve injury

11:45 – 13:00 Centennial Ballroom C&D, Level 1

PV005 - Poster Viewing – Session I: Mapping and Neuromodulation Technologies, Models and Modeling

12:00 – 13:00 Centennial Terrace, Level 3

Lunch Buffet

SATURDAY JULY 27, AFTERNOON

Concurrent Symposia Sessions

13:00 – 14:00 Centennial Ballroom A&B, Level 1

SS022 - Structure-Function: Pelvic Neural Pathways and Urinary Control

Chair: **Peregrine Osborne PhD** University of Melbourne, Parkville, VIC Australia

Speakers:

Nicole Wiedmann PhD University of Melbourne, Parkville, VIC Australia (Peregrine Osborne **PhD**, primary author)

ISAN19.205 Mapping spinal cord neurons activated by voiding and electrical pelvic nerve stimulation in awake rats

Clara Huesing BS Pennington Biomedical Research Center, Baton Rouge, LA USA

ISAN19.206 Pre- and postganglionic sympathetic tracing of inguinal white adipose tissue innervation in adult mice

Esther Ji MSD University of Melbourne, Parkville, VIC Australia (Janet Keast **PhD**, primary author)

ISAN19.207 Regional changes in sensory and autonomic innervation of the vasculature and epithelium of the female rat urethra

April Herrity DC PhD University of Louisville, Louisville, KY, USA

ISAN19.208 Targeting urinary continence with epidural stimulation after human spinal cord injury

13:00 – 14:00 Laureate Room, Level 1

SS023 - SPARC: Tools to Study and Modulate Autonomic Function – Session II

Chair: **Felicia Qashu, PhD** NIH Bethesda, MD, USA

Speakers:

Bhavesh Patel PhD California Medical Innovations Institute, San Diego, CA, USA

ISAN19.209 Fecobionics technology for mapping colorectal stress and deformation patterns

David Holder PhD University College London, London, UK

ISAN19.210 EIT imaging and selective neuromodulation in complex autonomic nerves with multielectrode cuff arrays

Junqi Zhuo BS Case Western Reserve University, Cleveland, OH, USA (**Michael Jenkins PhD**, primary author)

ISAN19.211 Infrared neuromodulation (IRN) in the peripheral nervous system

Bartek Rajwa PhD Purdue University, West Lafayette, IN, USA

ISAN19.212 Cloud-computing analytics for neurohistology: A Development A Spatial Statistical analysis workflow

13:00 – 14:00 Optimist Room A&B, Level 2

SS024 - Neuromodulation of GI Function and Anti-Inflammatory Effects

Chair: **Charles Horn, PhD** University of Pittsburgh, Pittsburgh, PA, USA

Speakers:

Martin Stebbing PhD Florey Institute, Parkville, VIC, Australia

ISAN19.213 Extrinsic afferent and efferent nerve responses to acute local inflammation in the rat ileum

Sophie Payne PhD Bionics Institute East Melbourne VIC Australia

ISAN19.214 Abdominal vagal nerve stimulation relieves inflammation of the rat small intestine

Kun-Han Lu BS Purdue University, West Lafayette, IN, USA

ISAN19.215 Differential effects of afferent and efferent vagus nerve stimulation on gastric motility assessed with magnetic resonance imaging

Jiande Chen PhD Johns Hopkins University, Baltimore, MD, USA

ISAN19.216 Improving gastric accommodation by spinal cord stimulation in canine

13:00 – 14:00 Legacy Room A&B, Level 2

SS025 - Structure-Function: Autonomic Control of Proximal Colon

Chair: **Marthe Howard, PhD** University of Toledo, Toledo, OH, USA

Speakers:

Catia Sternini MD UCLA, Los Angeles, CA, USA

ISAN19.217 Characterization of Enteric Neurons in Different Segments of the Porcine Colon

Dante Heredia BS University of Nevada, Reno, NV, USA

ISAN19.218 Genetically encoded tools for examining patterns of myenteric activity responsible for modulating the murine CMMC

Joel Bornstein PhD University of Melbourne, Parkville, VIC Australia

ISAN19.219 5-HT₃ receptors mediate some fast excitatory synaptic potentials in myenteric neurons in mouse proximal colon

Concurrent Symposia Sessions

14:10 – 15:10 Centennial Ballroom A&B, Level 1

SS026 - Intrathoracic Autonomic Neural Networks and Cardiac Control

Chair: **Colleen Clancy, PhD** University of California Davis, Davis, CA, USA

Speakers:

John Tompkins PhD UCLA, Los Angeles, CA, USA

ISAN19.220 Structure and function of single cells from stellate and intrinsic cardiac ganglia

Mark Doyle PhD OHSU School of Medicine, Portland, OR, USA (Michael Andresen **PhD**, primary author)

ISAN19.221 Cardiac nerve synaptic events in mouse stellate ganglion suggests cholinergic collaterals.

Alison Moss BS Thomas Jefferson University, Philadelphia, PA, USA (Rajanikanth Vadigepalli **PhD**, primary author)

ISAN19.222 Discovering molecular phenotype gradients and markers within the Rat ICN

Guy Salama PhD University of Pittsburgh, Pittsburgh, PA, USA

ISAN19.223 Autonomic activity generates regional heterogeneities of CA₂₊ transients and alters V_m-Cai delays in ventricles

14:10 – 15:10 Laureate Room, Level 1

SS027 - SPARC: Tools to Study and Modulate Autonomic Function – Session III

Chair: **Michael Jenkins PhD** Case Western Reserve University, Cleveland, OH, USA

Speakers:

arah Stanley PhD Mount Sinai, New York, NY, USA

ISAN19.225 Tools for remote modulation of peripheral nerves innervating the pancreas

Joseph Canzano BS University of Florida, Gainesville, FL, USA

ISAN19.226 In vivo two-photon imaging of sympathetic and parasympathetic neuromodulation of pancreatic microvessels

Dennis Bourbeau PhD Cleveland FES Center, Cleveland, OH USA (Aref Smiley **PhD**, primary author)

ISAN19.227 Wireless real-time sensor platform for monitoring bowel state and function

14:10 – 15:10 Optimist Room A&B, Level 2

SS028 - Autonomic Control of Respiration Function

Chair: **Don Bolser PhD** University of Florida, Gainesville, FL, USA

Speakers:

Stephen Lewis PhD Case Western Reserve University, Cleveland, OH, USA

ISAN19.228 Ganglioglomerular nerve regulation of carotid body responses to hypoxic-gas challenge in juvenile rats

Leah Reznikov PhD University of Florida, Gainesville, FL, USA

ISAN19.229 Acute airway acidification modifies mucus secretion and transport properties

Gjinovefa Kola MD Case Western Reserve University, Cleveland, OH, USA (Stephen Lewis PhD, primary author)

ISAN19.230 Superior cervical ganglionectomy affects the brainstem cardiorespiratory network

Yee-Hsee Hsieh PhD Case Western Reserve University, Cleveland, OH, USA (Stephen Lewis PhD, primary author)

ISAN19.231 Cervical sympathetic chain stimulation on upper airway pressure is mediated by the internal carotid nerve

14:10 – 15:10 Legacy Room A&B, Level 2

SS029 - Enteric Neural Networks and Control of GI Function

Chair: **John Furness, PhD FAA FAHMS** Florey Institute, University of Melbourne, VIC, Australia

Speakers:

Simon Brookes PhD Flinders University, Adelaide, South Australia, Australia

ISAN19.232 Characterization of ascending interneuronal pathways in myenteric plexus of human colon

Joel Bornstein PhD University of Melbourne, Parkville, VIC, Australia

ISAN19.233 Computational models of synaptic interactions in enteric nervous system reveal anomalous inhibition from depolarizing synapses

Joel Bornstein PhD University of Melbourne, Parkville, VIC, Australia

ISAN19.234 Correlation of firing properties and function of myenteric neurons in mouse proximal colon: modeling differential expression of ion channels

Kun-Han Lu BS MS Purdue University, West Lafayette, IN, USA

ISAN19.235 Vagus nerve stimulation promotes gastric emptying by increasing pyloric opening measured with magnetic resonance imaging

15:10 – 15:40 Nutrition Hubs, Level 1 & 2

Break

15:30 – 17:00 Centennial Ballroom C&D, Level 1

PV006 - Poster Viewing – Session II: Mapping and Neuromodulation Technologies, Models and Modeling

17:15 – 17:30 Centennial Ballroom A&B, Level 1

CR1 - Closing Remarks ISAN-SPARC 2019

Speakers:

Gene Civillico PhD NIH SPARC Program Manager, NIH, Bethesda, MD, USA

Kalyanam Shivkumar MD PhD, Chair ISAN 2019, Director, UCLA Cardiac Arrhythmia Center & EP Program, Los Angeles, CA, USA