International Society for
Autonomic Neuroscience
established 1995
www.autonomicneuroscience.info

ISAN Programme

Thursday 25th July 2024

Time	Session/ Activity	Venue
13:00 – 14:00	**Welcome, Refreshments and Registration**	Great Hall
14:00 – 15:10	**Keynote: Andrew Allen, University of Melbourne, Australia** Vital interactions: Exploring the relationships between respiratory and autonomic neural networks. Sponsor: Elsevier (with an introduction to Autonomic Neuroscience: Basic and Clinical)	Bramall
15:10 – 16:00	**Poster Session 1** **Theme: Basic - Bioelectronic Medicine** **Alberto Esteban-Linares** – A microfabricated Parylene cuff electrode for branched nerve stimulation (P1) **Dzifa Kwaku** – Exploring Hemodynamic Responses to Electrical Stimulation of Renal Nerves: A Potential Therapeutic Approach for Drug-Resistant Hypertension (P2) **Theme: Basic - Cardiovascular** **Aparaajita Bhatnaagar** – Microgravity induced impairment of baroreflex sensitivity in rats is associated with sympathovagal imbalance but not with changes in structure of carotid artery (P5) **Larissa Correa** – Temporal profile of changes in cholinesterase activity induced by Ketamine-Xylazine anaesthesia (P6) **Yu-Wen Dai** – A study of Schwann cells in human and murine heart (P7) **Mohanad Mahdi** – Correlation of staging and risk factors with cardiovascular autonomic neuropathy in patients with type II diabetes mellitus (P8) **Aline Barbosa Ribeiro** – Galectin-3 Inhibitor Modulates Autonomic Nervous System (P9) **Finbar Argus -** A Computation Model of the Postganglionic Sympathetic Neuron for predicting drug response (P10)	Great Hall

	Theme: Basic - Gut and metabolism **Tomoya Sawamura** – Evidence that inhibitory regulation of oxytocinergic neurons to the spinal defecation center is manifested by hindpaw inflammatory pain in rats (P25) **Theme: Basic - Integrative Control** **Joost Wagenar –** Towards sustainable scientific data management solutions in the age of scale and multi-modal data-integration (P29) **Mabelle Lin –** Scaffold Mapping Tools for Mapping Data to Anatomical Scaffolds (P30) **Christian Reynolds –** Exposure to a diet rich in linoleic acid promotes nociceptive hypersensitivity and elevated systemic blood pressure in both spinal-intact and spinalized rats (P31) **Deborah Romeu –** Exploring the connections between C1 and liver-related DMV neurons involved in the autonomic control of glucose homeostasis (P32) **Karla Sampaio –** Volatile and injectable anaesthetics effects on cardiorespiratory and biochemical parameters in rats: enlightening anaesthetic choice according to the outcome studied (P33)	
15:30 – 16:00	**Afternoon Refreshments**	Great Hall
16:00 – 18:00	**Symposium Presentations Session 1:** **Theme: Bioelectronic Medicine** **Symposium Title: Bioelectronic Medicine** *Chairs: Ellis Meng, University of Southern California and Victor Pikov, Medipace Inc* **Daniel Chew, Galvani Bioelectronics** - Recent studies on splenic nerve stimulation in pigs and humans 120 minutes) **Victor Pikov, Medipace** - Inc preliminary data on sacral nerve stimulation in humans to treat colitis (20 minutes) **Jeff Ardell, University of California** – Axonal modulation therapy for bioelectronic treatment of cardiovascular diseases (20 minutes) **Chris Wilson, Loma Linda University** – Saving premature infants from sudden death using vagus nerve stimulation (20 minutes) **Jon Waataja, ReShape Lifesciences** – Bioelectronics for treating diabetes (20 minutes) Selected Abstracts to follow	Bramall

16:00 – 18:00	**Symposium Presentations Session 1:** **Theme: Cardiovascular** **Symposium Title: Central nervous control of blood pressure, brain blood flow, and cognitive health** Chairs: Emma Hart, University of Bristol and Sam Lucas, University of Birmingham **Alex Gourine, University College London** – Regulation of arterial blood pressure by an intracranial baroreceptor (20 minutes) **Fiona McBryde, University of Auckland** – Defending blood flow to the brain in hypertension, diabetes and ischemic stroke (20 minutes) **Emma Hart, University of Bristol** – Cerebrovascular variants and the role of the selfish brain in hypertension (20 minutes) **Sam Lucas, University of Birmingham** – Cerebral blood flow, aging and physiological stress (20 minutes)	G33
16:00 – 18:00	**Symposium Presentations Session 1:** **Theme: Integrative control** **Symposium Title: Brainstem integrator for viscerosensation and autonomic regulation** *Chairs: Andrew M Allen, University of Melbourne and Julian FR Paton, University of Auckland* **Ambre Linossier, Aix-Marseille University** – GABAergic neurons of the pre-Bötzinger complex regulate respiratory sinus arrhythmia and blood pressure via the autonomic nervous system (20 minutes) **Davi Moraes, University of São Paulo** – Medullary parafacial neurons control sympathetic activity and vascular function in physiological and pathophysiological conditions (20 minutes) **Zoe Adams, University of Bristol** – New insights into deep stimulation for correcting autonomic imbalance (20 minutes) **James P Fisher, University of Auckland** – Sympathetic neurocirculatory responses to central chemoreflex activation in human hypertension (20 minutes)	WG5
18:00 – 20:00	**Welcome Reception**	Great Hall

Friday 26th July 2024

Time	Session/ Activity	Venue
08:00 – 09:00	**Registration and Refreshments**	Great Hall
09:00 – 11:00	**Symposium Presentations Session 2** **Theme: Bioelectronics** **Symposium Title: Utilising NIH SPARC resources for ANS research** *Chairs: Peter Hunter and Felicia Qashu, Auckland Bioengineering Institute* **Jack Cheng, Ariege Bizanti & Mabelle Lin** – Spatial mapping of neural data with 3D scaffolds (20 minutes) **Nicole Pelot & Joost Wagenaar** – Dashboard of the human vagus: from gross to micro anatomy (20 minutes) **Igor Efimov & Alan Garny, University of Oxford** – Data visualisation and modelling to support cardiovascular control studies (20 minutes) **John Osborn & Maryann Martone** – SPARC Infrastructure supporting Functional studies of vagal stimulation (20 minutes)	Bramall
09:00 – 11:00	**Symposium Presentations Session 2** **Theme: Cardiovascular** **Symposium Title: You're so vein" – new insights into the function and autonomic regulation of the 'forgotten' venous circulation** *Chairs: Fiona McBryde and James Fisher, University of Auckland* **Tonja Emans, University of Auckland** – Sympathetic regulation of the 'forgotten' venous circulation – a new therapeutic target for blood pressure control? (20 minutes) **Davi Moraes, University of Sao Paulo** – Respiratory coupling of mesenteric venous sympathetic nerve activity – the influence of the carotid body (20 minutes) **Mickey Fan, University of Auckland** – Venous capacity and compliance in hypertensive adults: influence of hypoxia and hyperoxia (20 minutes) **Melanie Dani, Imperial College London** – New horizons in the ageing autonomic nervous system: orthostatic hypotension and supine hypertension (20 minutes)	G33

09:00 – 11:00	**Symposium Presentations Session 2** **Theme: Integrative control** **Symposium Title: Anatomical, functional, and molecular mapping of autonomic innervation of organs** *Chairs: Jack Cheng, University of Central Florida and John Furness, University of Melbourne* **Madeleine Di Natale, Australia/USA** - Spinal afferent innervation: the stomach-brain atlas **Nick Spencer, Australia** – Functional role of spinal afferent endings in the colon using novel wireless optogenetic device (20 minutes) **Jerry Yu, USA** – Integration of Molecular, Morphological, and Physiological Aspects of Mechanosensors in the Lung (20 minutes) **John Tompkins, USA** – Morphology, synaptics, and membrane excitability of intracardiac neurons from mice, pigs and humans: targets of clinical neuromodulation for cardiac disease (20 minutes) **Hanjun Wang, USA** – Cardiac Spinal Afferents: A New Therapeutic Target in Treating Chronic Heart Failure (20 minutes)	WG5
11:00 – 11:30	**Mid-morning Refreshments**	Great Hall

11:00 – 11:30 **Poster Session 2** — Great Hall

Theme: Basic - Bioelectronic Medicine

Dana Felbab – The collaborative SPARC Portal for peripheral neuromodulation data, modelling and device design (P3)

Theme: Basic - Cardiovascular

Amatul Ahmad – Plasticity in human intracardiac neurons from patients with Atrial Fibrillation (P11)

Om Lata Bhagat – Heart Rate Variability during Short-Term Head-Down Tilt (P12)

Vera K. Jandackova – Heart rate variability and air pollution (P13)

Yuma Sato – The midbrain dopaminergic areas mediate the cardiovascular response induced by the activation of the lateral habenula (P14)

Thais Silva – Mice with overexpression of vesicular acetylcholine transporter have increased cardiac parasympathetic activity (P15)

Hidefumi Waki – Exercise Mitigates Stress-Induced Hypertension and Brain Inflammation by Modulating Molecular Pathways in the Amygdala and Hypothalamus (P16)

Jinan Saboune – Muscle sympathetic nerve activity responses to the cold pressor test in women across the third and fourth decades of life (P17)

Demitris Nathanael – CD73 inhibition reverses chronic hypoxia induced carotid body hyperactivity (P18)

Theme: Basic - Gut and metabolism

Natsufu Yuki – Involvement of neurons projecting from the hypothalamus to the medullary raphe in stress-induced defecation in rats (P26)

Theme: Basic - Integrative Control

Dana Felbab – The SPARC SCKAN multi-species knowledge base of ANS connectivity (P34)

Vitor Minassa – Comparing cardiorespiratory responses after organophosphate poisoning in Wistar and pre-hypertensive SHR in situ (P35)

Zeljka Minic – Supratentorial inhibition of regional sympathetic nerve activity (P36)

Simon McMullan – Inhibitory control of motor and respiratory components of orienting by the substantia nigra pars reticulata is state-dependent (P37)

Theme: Basic - Neuroscience

Ariege Bizanti – Quantitative Analysis of CGRP-IR Afferent Axons in the Mouse Stomach Using Zeiss Arivis Vision4D for Automated Tracing (P44)

Maci Heal – Automated 3D stereology for cell counting using artificial intelligence technology yields rapid, unbiased results analogous to manual stereological methods (P45)

Alla Korsak – On the mechanisms of exercise-induced autonomic neuroplasticity (P46)

Davi Oliveira – Neuroanatomy of the paravertebral Sympathetic Neural Networks revealed with Tissue-Clearing and Large-volume Microscopy (P47)

Theme: Clinical - Cardiovascular

Daniel D. Hodgkiss – Ergogenic effects of invasive and non-invasive spinal cord stimulation strategies following spinal cord injury: a case-series (P54)

Gabriel Rodrigues – Cardiac vagal modulation and inflammation are upregulated in exceptional human longevity (P55)

Theme: Clinical - Neuroscience

Jin Yong Jeong – Thoracic sympathetic nerve block before sympathectomy for irreversible treatment of primary hyperhidrosis (P61)

13:00 – 14:00	**Lunch**	Great Hall
14:00 – 15:00	**Keynote 2: Melanie Gareau, University of California, USA** "It takes guts: The developing microbiota-gut-brain axis" Sponsor: BBSRC **BBSRC Presentation**	Bramall
15:00 - 15:30	**Afternoon Refreshments**	Great Hall
15:30 – 17:30	**Symposium Presentations Session 3** **Theme: Integrative control** **Symposium Title: Neuroimaging of cardiovascular and respiratory control in humans** *Chair: Vaughan Macefield, Monash University* **Luke Henderson, University of Sydney** – Identification of the sympathetic connectome in humans (20 minutes) **Rebecca Glarin, University of Melbourne** – Ultra-high-field fMRI of human brainstem nuclei involved in the generation of sympathetic outflow (20 minutes) **Kevin Shoemaker, University of Western Ontario** – The roles of the forebrain in cardiovascular control in exercising humans (20 minutes) **Olivia Harrison, University of Otago** – Ultra-high-field imaging of networks related to breathing and breathlessness (20 minutes)	Great Hall
15:30 – 17:30	**Symposium Presentations Session 3** **Theme: Bioelectronics** **Symposium Title: Working towards selective vagus nerve stimulation to modulate autonomic function** *Chairs: Lindsea Booth, Florey Institute and Alexander Gourine, University College London* **Nicole Thompson, University College London** – Organotopic organization of the porcine mid-cervical vagus nerve (20 minutes) **James Fallon, University of Melbourne** – Stimulation parameters for directional vagus nerve stimulation (20 minutes) **Stuart McDougall, The Florey** - Selectively targeting the afferent vagus (20 minutes)	Bramall

	Symposium Presentations Session 3 **Theme: Cardiovascular** **Symposium Title: Breaking news in cardiac autonomic regulation** *Chair: Keith Brain, University of Birmingham* Selected Abstracts to follow	
15:30 – 17:30	**Symposium Presentations Session 3** **Theme: Gut and Metabolism** **Symposium Title: Recent insights into the role of the vagus nerve in brain-gut communication and therapeutic implications of vagus nerve stimulation in the treatment of gastrointestinal disorders** *Chairs: Valentin Pavlov, Feinstein Institutes for Medical Research and Bruno Bonaz, CHU Grenoble* **Nicole Pelot, Duke University** – Quantified anatomy of human vagus nerves from brainstem to abdomen (20 minutes) **Sophie Payne, Bionics Institute** – Abdominal vagus nerve stimulation as a treatment of IBD: current and new approaches (20 minutes) **Qasim Aziz, Queen Mary University of London** – Role of the vagus nerve in modulating visceral pain hypersensitivity, intestinal permeability and inflammation in health and GI disease (20 minutes) **Bruno Bonaz, CHU Grenoble** – Invasive vagus nerve stimulation in Crohn's disease: A 10-year prospective study follow-up (20 minutes)	WG5
17:30 – 19:00	**Free Time**	
19:00 – 00:00	**Dinner**	Council House

Saturday 27th July 2024

Time	Session/ Activity	Venue
08:00 – 09:00	**Registration and Refreshments**	Great Hall
09:00 - 11:00	**Symposium Presentations Session 4** **Theme: ECR focus: Breaking abstracts**	Bramall
09:00 - 11:00	**Symposium Presentations Session 4** **Theme: Gut and Metabolism** **Symposium Title: Targeting GI vasodilatory hormones for the treatment of postprandial syndromes in autonomic disorders** *Chairs: Cyndya A. Shibao, Vanderbilt Autonomic Dysfunction Center* **Christopher Mathias, Queen Square Institute of Neurology** – Postprandial syndromes in autonomic disorders: pathophysiology and treatment (20 minutes) **Cyndya A. Shibao, Vanderbilt Autonomic Dysfunction Center** – Increased Glucose-dependent insulinotropic polypeptide (GIP) in postprandial syndromes (20 minutes) **Simon Veedfald, University of Copenhagen** – Neural modulation of entero-pancreatic hormone secretion (20 minutes) **Lærke Smidt, University of Copenhagen** – Glucose-dependent insulinotropic polypeptide receptor antagonism in humans (20 minutes)	WG5
09:00 – 11:00	**Symposium Presentations Session 4** **Theme: Integrative control** **Symposium Title: Neural control & autonomic regulation during exercise: recent innovations** *Chairs: Satoshi Koba, Tottori University and Marc Kaufman, Penn State College of Medicine* **Markus Amann, University of Utah** – The exercise pressor reflex: a flow-raising or a pressure-raising mechanism? (20 minutes) **Satoshi Koba, Tottori University** – Subcortical circuit mechanisms for central command regulation of sympatho-motor coordination (20 minutes) **Vaughan Macefield, Monash University** – The relative contributions of central command and the metaboreflex to the increases in sympathetic vasoconstrictor drive to contracting muscle (20 minutes) **Masaki Mizuno, University of Texas Southwestern Medical Center** – An integrative approach to better understand the mechanisms of the exercise pressor reflex in health and disease (20 minutes)	WG5
11:00 – 11:15	**Mid-morning Refreshments**	Great Hall

11:15 – 13:15	**Symposium Presentations Session 5** **Theme: Integrative control** **Symposium Title: Brainstem integrator for viscerosensation and autonomic regulation** *Chairs: Fiona McBryde and Pratik Thakkar, University of Auckland* **Chen Ran, Harvard Medical School, USA** – Representations of visceral signals in the brainstem **Stuart McDougall, University of Melbourne, Australia** – CaMPing in the brainstem **Stefan Trapp, University of College London, UK** – The two faces of GLP-1: gut hormone and NTS neurotransmitter – does it matter for physiology? **Kirsteen Browning, Penn State College of Medicine, USA** – Diet, stress, and is it all our mother's fault?	Great Hall
11:15 – 13:15	**Symposium Presentations Session 5** **Theme: Gut and Metabolism** **Symposium Title: Glucose sensing affecting autonomic activity** *Chairs: Fiona McBryde and Pratik Thakkar, University of Auckland* **Stefan Trapp, University College London** – Are GLP-1 producing pre-proglucagon neurons of the lower brainstem a useful target for obesity and diabetes treatment? (20 minutes) **Silvia V Conde, NOVA Medical School** – Carotid body, autonomic function and dysmetabolism: is there something new under the sun? (20 minutes) **Pratik Thakkar, University of Auckland** – GLP1 receptor agonist ameliorates high blood pressure and high blood sugar in a rat model of "glucotension" (20 minutes) **Audrys Pauza, University of Auckland** – Glucose sensing by peripheral chemoreceptors: mechanisms and role of incretin hormones (20 minutes)	Bramall

11:15 - 13:15	**Symposium Presentations Session 5** **Theme: Integrative control** **Symposium Title: Bidirectional association between depression and autonomic nervous system alteration: new insights into therapeutic strategies** *Chairs: Nicola Montano, University of Milan and Caroline Sévoz-Couche, Sorbonne Université* **Andrea Sgoifo, University of Parma** – Antidepressant activity and cardioprotective effects of endocannabinoid neuromodulation enhancement in socially stressed rats (20 minutes) **Caroline Sévoz-Couche, Sorbonne Université** – Evaluation of Ketamine effects on autonomic nervous system in patients with depressive disorders (20 minutes) **Xiaoran Zhang, Sun Yat-sen University** – Mesenchymal Stromal Cells Alleviate Murine Depressive and Anxiety-like Behaviors via a Lung Vagal-to-Brain Axis (20 minutes) **Angelica Carandina, University of Milan** – The transcutaneous auricular vagus nerve stimulation as a neuromodulatory technique in unipolar and bipolar depression: evidence from DEPONEST study (20 minutes)	G33
11:15 – 13:15	**Symposium Presentations Session 5** **Theme: Bioelectronics** **Symposium Title: Interrogating the physiology of the human vagus nerve** *Chair: Vaughan Macefield Monash University* **Nicole Pelot, Duke University** – Anatomical parameterization and physiological validation of computational modelling of vagus nerve stimulation (20 minutes) **Matteo Maria Ottaviani, University of Ancona** – Ultrasound-guided microneurography of the human vagus nerve (20 minutes) **David Farmer, Monash University** – Single-unit recordings of vagal afferents with cardiac rhythmicity (20 minutes) **Mikaela Patros, Monash University** – Activation of vagal axons by vagal nerve stimulation (20 minutes)	WG5
13:15 – 14:00	**Lunch**	Great Hall
13:15 - 14:00	**ISAN AG** *Chair: Valentine Pavlov* International Secretary - Vaughan Macefield	Great Hall
14:00 - 15:00	**Keynote 3: Jessica Filosa, Augusta University, USA** Blood pressure variability impaired neurovascular outputs in middle-aged mice	Bramall

15:00 - 16:00 **Poster Session 3** Great Hall

Theme: Basic - Bioelectronic Medicine

Dzifa Kwaku – Three-Dimensional Reconstruction of Renal Tissue: Mapping Renal Nerve Trajectories (P4)

Theme: Basic - Cardiovascular

Ariege Bizanti – Identification of Spinal Afferent Innervation in the Rat Heart: Atria and Ventricles: Anterograde Tracing (P19)

Carol T. Bussey – Autonomic mechanisms of disturbed circadian rhythm in the diabetic heart (P20)

Rubens Fazan Jr. – Cardiovascular variability and baroreflex function are altered in rats with femoral artery catheterization (P21)

Gabriel Gavazza Noé – Distinct autonomic effects of single and intermittent chlorpyrifos exposure in the contextual fear conditioning test in rats (P22)

James Saleeb-Mousa – High-resolution ex-vivo structural and functional analysis of sympathetic innervation using a novel confocal fluorescence technique (P23)

Katharina Scherschel – Neuro-glial interaction in the heart (P24)

Theme: Basic - Gut and metabolism

Thatiany Jardim Batista – Liraglutide improvement of chemoreflex function in ovariectomized female rats is associated with a reduction in oxidative stress (P27)

Makoto Kadowaki – Indigenous gut microbiota constitutively drive release of ciliary neurotrophic factor (CNTF) from mucosal enteric glia to maintain the homeostasis of enteric neural circuits (P28)

Theme: Basic - Integrative Control

Dana Felbab – Integrated Dashboard for large-scale visualization of the anatomical connectivity of the human Vagus Nerve (P38)

Mabelle Lin – Mapping the Vagus Nerve with Anatomical Scaffolds (P39)

Karla Rodrigues – Respiratory pattern and responses to hypercapnia of adenosine A2A knockout mice submitted to sustained hypoxia (P40)

Theme: Basic - Neuroscience

Rui Chang – Differential developmental blueprints of organ-intrinsic nervous systems (P48)

Olivia Gold – Mechanisms underlying long-term facilitation in the carotid body (P49)

Song Yao – Blockade of CCR2 receptors in the brain prevents hypertension in renovascular hypertensive rats (P50)

Pippa Wittenberg – On the regulation of arterial blood pressure by an intracranial baroreceptor (P51)

Theme: Clinical - Cardiovascular

Riccardo Asnaghi – Autonomic Impairment in Parkinson's Disease and Multiple System Atrophy Patients during Valsalva Maneuver (P56)

Helio Salgado – Modulation of Oral Microbiota and Inflammatory Cytokines in Hypertensive and Healthy Complete Denture Wearers (P57)

Harvey Walsh – Effects of interval versus continuous exercise on cerebral vascular flow-mediated dilatation (P58)

Theme: Clinical - Neuroscience

Sae Uchida – The basal forebrain cholinergic system linking olfaction and cognitive function: from basic studies to clinical application (P62)

Theme: Clinical - Gut and Metabolism

Rasmus Syberg Rasmussen – The gut hormone GIP contributes to the postprandial gastrointestinal hyperaemia in humans (P63)

15:30 – 16:00	**Afternoon Refreshments**	Great Hall
16:00 – 16:30	**Closing ceremony**	Bramall