

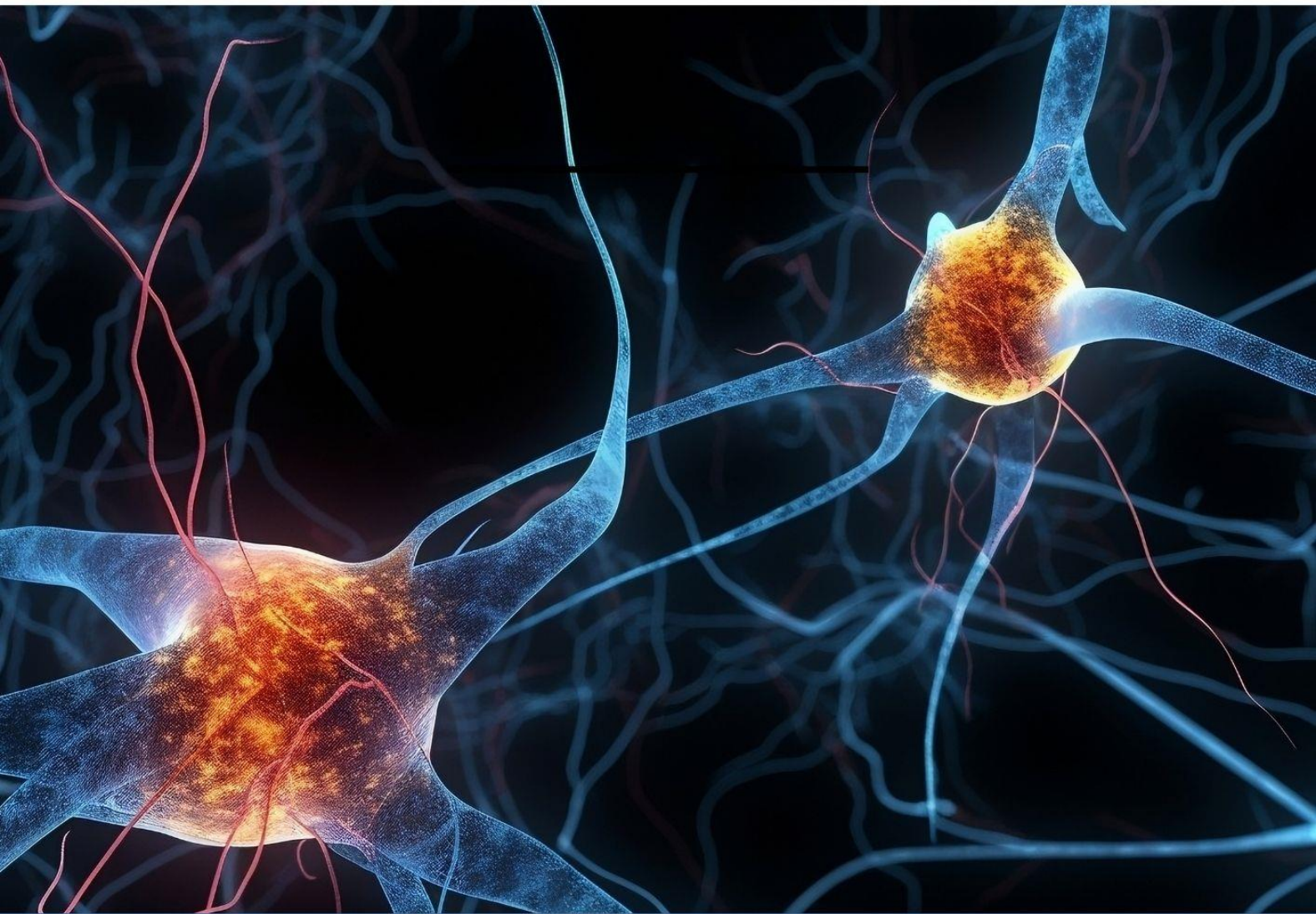


# 14th CONGRESS of the INTERNATIONAL SOCIETY FOR AUTONOMIC NEUROSCIENCE

*Joint Meeting with* EFAS - European Federation of Autonomic Societies



**BOLOGNA – ITALY, 2-5 SEPTEMBER 2026**



## PROGRAM

Organizing Secretariat:



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## CHAIRS

Chiara Berteotti - Davide Martelli  
(University of Bologna)

## ORGANIZING COMMITTEE

Roberto Amici – Chiara Berteotti - Giovanna Calandra Buonauro - Pietro Cortelli  
Pietro Guaraldi - Timna Hitrec - Davide Martelli - Giovanna Zoccoli

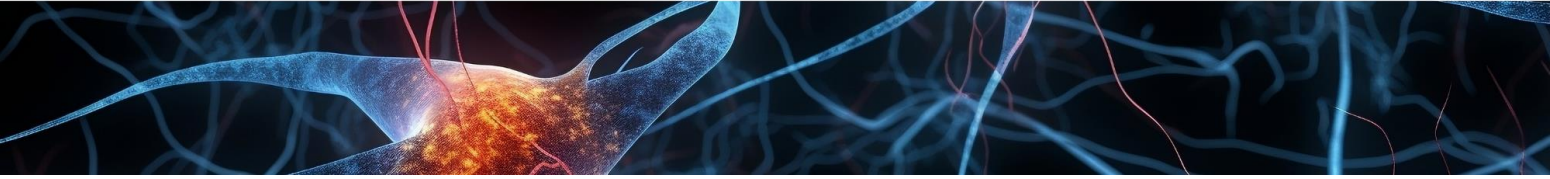
## PRESENTATION

The 14th Congress of the International Society for Autonomic Neuroscience (ISAN), jointly organized with the European Federation of Autonomic Societies (EFAS), held at the University of Bologna (Italy), will focus on current advances in the understanding of autonomic nervous system physiology and pathophysiology, with particular emphasis on mechanisms of disease and translational perspectives.

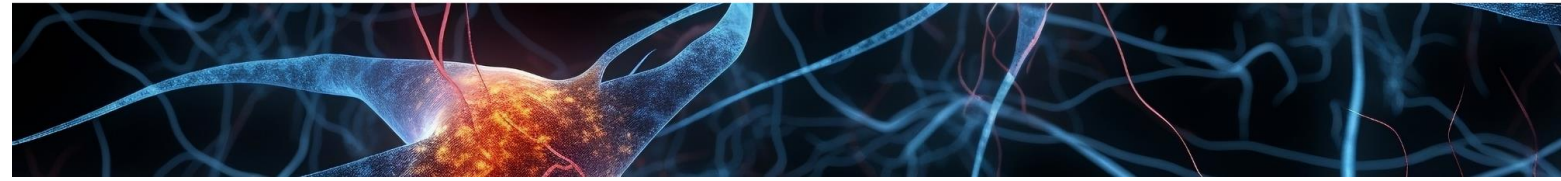
The scientific program is structured around keynote lectures, thematic symposia, hot topic sessions, and poster presentations covering both basic and clinical research. Major areas include cardiovascular autonomic regulation in health and disease, molecular and cellular drivers of cardiac autonomic dysfunction, and altered sympathetic activity in heart failure. Specific sessions address electroceuticals and neuromodulation strategies, including vagus nerve stimulation, as well as transcriptomic and circuit-level analyses of autonomic ganglia.

Neuroimmune interactions represent a central theme of the meeting, with dedicated sessions exploring inflammatory neural circuits, sympathetic regulation of immune responses, and the role of autonomic pathways in obesity and cancer progression. Additional program components examine autonomic dysfunction in neurodegenerative disorders, multiple system atrophy, multiple sclerosis, protein misfolding diseases, and lysosomal storage disorders, with attention to mechanisms and clinical implications.

Clinical autonomic disorders are addressed through sessions on orthostatic syndromes and their management, as well as on sleep, circadian biology, and interoception in relation to autonomic regulation. Interdisciplinary perspectives also include autonomic involvement in gastrointestinal function and broader systemic diseases.



Overall, the congress program provides an integrated overview of current research directions in autonomic neuroscience, spanning molecular mechanisms, systems physiology, disease models, and clinical applications in the context of autonomic disorders, that represent a substantial and often under-recognized clinical burden across multiple medical specialties and require continued advances in mechanistic understanding to improve diagnostic and therapeutic strategies.



## WEDNESDAY, 2 September 2026

### ROOM 1

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10.00 – 13.00      **EFAS session**  
 Practical session: Hands on

13.00 – 14.00      *Registration*

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### ROOM 1

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14.00 – 15.00      **Opening ceremony**

15.00 – 16.00      **Keynote lecture ISAN**  
**Sympathetic neuroimmunity in obesity**  
 Ana Domingos, *University of Oxford, UK*

**16.00 – 18.00      Chemoreflex and Autonomic Dysfunction: From Mechanisms to Therapeutic Targets Across Diseases**

*Chair: Rodrigo Del Rio (University of Kansas Medical Center, USA)*

**Heart Failure with Preserved Ejection Fraction: Role of chemoreflex drive on tuning disease progression**

Rodrigo Del Rio

**Chemoreflex Adaptations in Metabolic Disease and Obesity**

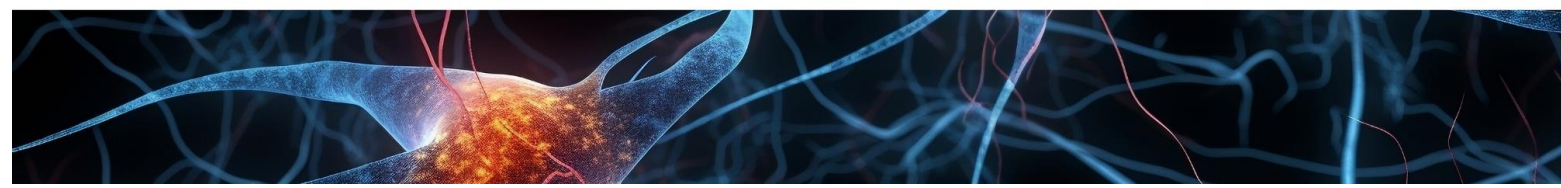
Silvia Conde

**Chemoreflex Plasticity and Hypertension: Central and Peripheral Mechanisms**

Deborah Colombari

**Chemoreflex Sensitivity as a Therapeutic Target in Sleep Apnea and Heart Failure**

Alberto Giannoni



## WEDNESDAY, 2 September 2026

### ROOM 2

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16.00 – 18.00

**Central and peripheral investigation of the autonomic regulation of cardiovascular function in health, disease and injury**

*Chairs: Clement Menuet (Aix-Marseille University, France)*

*Davi J.A. Moraes (University of São Paulo, Brazil)*

**Acute intermittent carotid bodies stimulations induce long-term facilitation of respiratory-cardiovascular coupling in rats**

Ambre Linossier

**Lateral parafacial neurons evoked expiratory oscillations driving neurogenic hypertension**

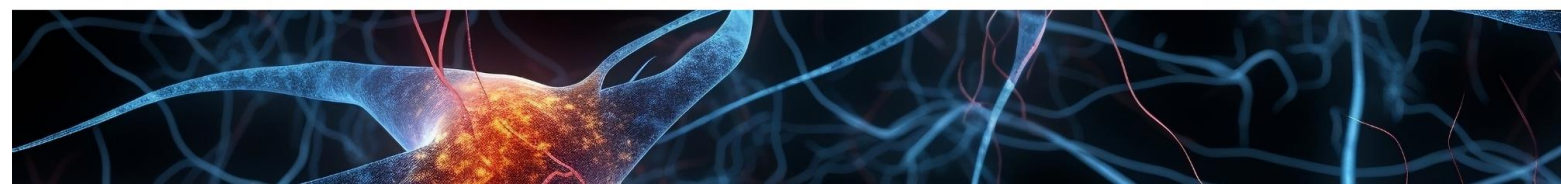
Davi J.A. Moraes

**Investigating end-organ regulation through direct cardiac autonomic nerve recordings**

Julia Shanks

**Heart and respiratory central regulation changes during the acute phase of brain injury**

Baptiste Balanca



## WEDNESDAY, 2 September 2026

### ROOM 3

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16.00 – 18.00

**Beyond the Average Human: New Insights from Interindividual Variability in Autonomic Control**

*Chairs: Lauro C. Vianna (University of Brasília, Brazil)*

*James P. Fisher (University of Auckland, New Zealand)*

**Interindividual Variability in Muscle Sympathetic Nerve Activity at Rest and During Exercise: Disconnection with Blood Pressure**

Philip Millar

**Interindividual Variability in Sympathetic Contributions to Hypertension and Response to Interventional Therapies**

Jens Jordan

**Interindividual Variability in Autonomic and Hemodynamic Responses in Pulmonary Arterial Hypertension**

Michael Plunkett

**Interindividual Variability in Orthostatic Disorders: Mechanistic and Clinical Insights**

Marie-Claire Seeley



## WEDNESDAY, 2 September 2026

### ROOM 4

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16.00 – 18.00

**Early detection and monitoring of disease progression in protein misfolding diseases and lysosomal storage disorder**

*Chairs: Astrid Juhl Terkelsen (Aarhus University Hospital, Denmark)*

*Max Hilz (Universitätsklinikum Erlangen, Germany & Icahn School of Medicine at Mount Sinai, USA)*

**Screening of patients with polyneuropathy and neurogenic autonomic dysfunction for early detection of amyloidosis and Lewy Body Disease**

Astrid Juhl Terkelsen

**Polyneuropathy as an early manifestation of REM body sleep disorder?**

Naja Helt Andersen

**Monitoring of patients and asymptomatic carriers with hereditary transthyretin amyloidosis to identify disease progression**

Pietro Guaraldi

**Similarities and differences between Fabry Disease and TTR Amyloidosis**

Max Hilz

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18.00 – 20.00

*Welcome cocktail*

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## THURSDAY, 3 September 2026

### ROOM 1

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08.30 – 10.30

#### **Cardiovascular Autonomic Disorders in Clinical Practice**

*Chairs: Celine Gallagher (University of Adelaide, Australia)*

*Helen Eftekhari (University of Warwick, UK)*

#### **Mechanistic Insights into POTS and IST: Autonomic Dysfunction, Inflammation and Hemodynamic Regulation**

Artur Fedorowski

#### **Autonomic Mechanisms in Postural Orthostatic Tachycardia Syndrome: Reduced Stroke Volume, Brain Perfusion, and Postural Hyperventilation**

Jacque Baker

#### **Cardiovascular Autonomic Abnormalities in Post-Acute Sequelae of COVID-19: Mechanistic Overlap with POTS and Implications for Management**

Marie-Claire Seeley

**TBD**

Fabian Leys

#### **Fixing Perturbed Physiology: Dietary Salt and Compression to Treat Postural Orthostatic Tachycardia Syndrome (POTS)?**

Satish Raj

**TBD**

Jennifer Camaradou



## THURSDAY, 3 September 2026

### ROOM 2

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08.30 – 10.30

**The Failing Dialogue: Molecular and Cellular Drivers of Cardiac Autonomic Dysfunction.**

*Chairs: Beth Habecker (OHSU School of Medicine, Portland, USA)*

*Hanjun Wang (University of Nebraska Medical Center, Nebraska, USA)*

**Precise nanomedicine targeting cardiac sympathetic afferents to treat chronic heart failure**

Hanjun Wang

**Non-invasively targeting cardiac sympathetic neurons with millimeter precision in patients with recurrent ventricular arrhythmias. A first in human study**

Neil Herring;

**The role of glial cells in the cardiac autonomic nervous system: The missing link for nervous hearts?**

Katarina Scherschel

**Head to heart: non-invasive assessment of sympathetic tone using sympathetic vasomotion.**

Peter Pellegrino



## THURSDAY, 3 September 2026

### ROOM 3

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08.30 – 10.30

**Neuroimmune interaction: how much more do we have to discover?**

*Chairs: Alessandra Occhinegro (The Florey Institute, Australia)*

*Pedro Trevizan-Bau (McKnight Brain Institute, USA)*

**Peripheral mechanism of sympathetic anti-inflammatory action**

Alessandra Occhinegro

**Lung-innervating sympathetic nerves regulate airway inflammation**

Pedro Trevizan-Bau

**Disruption of vagal signaling impairs the central nervous system immune response to infection with murine neurotropic hepatitis virus JHM strain**

Kaitlin Murray

**TNF- $\alpha$  drives carotid body and autonomic dysfunction in dysmetabolic states: reversal through anti-inflammatory modulation**

Silvia Conde

### ROOM 4

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08.30 – 10.30

**Autonomic Dysfunction in Neurodegenerative Disorders: From Mechanisms to Therapies**

*Chairs: Giovanna Calandra Buonauro (University of Bologna, Italy)*

*Walter Struhal (University Hospital Tulln, Austria)*

**Mechanisms of Neurodegeneration**

Paolo Calabresi

**Autonomic Dysfunction in Neurodegenerative Disorders**

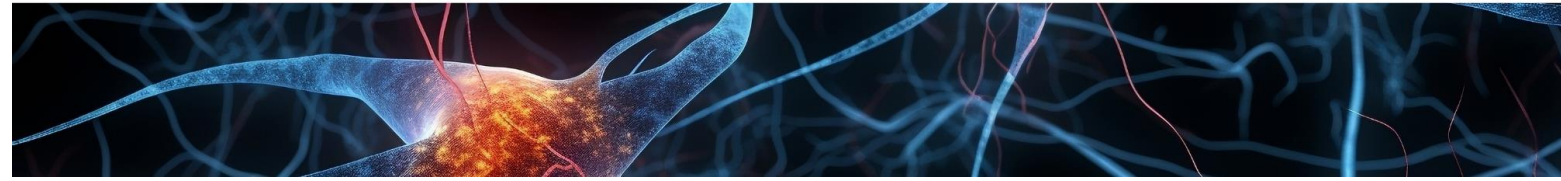
Valeria Iodice

**Symptomatic and Disease-Modifying Treatments in Neurodegenerative Disorders**

Alessandra Fanciulli

10.30 – 11.30

*Poster session 1 (and refreshment)*



## THURSDAY, 3 September 2026

### ROOM 1

11.30 – 12.30	<p><b>Keynote lecture</b>  <b>Sleep and the Autonomic Nervous System: Clinical Insights and Pathophysiology</b>  Pietro Cortelli; <i>University of Bologna, Italy</i></p>
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12.30 – 13.30	Lunch
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### ROOM 1

13.30 – 15.00	<p><b>Hot topic session</b>  <b>TBD</b></p>
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15.00 – 16.00	Poster session 2 (and refreshment)
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### ROOM 1

16.00 – 18.00	<p><b>Electroceuticals for controlling cardiorespiratory diseases</b>  <i>Chair: David J. Paterson (Oxford University, UK)</i></p>
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**Selective stimulation of nerve fascicles within the vagus nerve**  
Swetlana Mastitskaya

**Stellate ganglion modulation to control autonomic transmitter release**  
Tina Vrabec

**Visceral afferent and autonomic modulation of cardiovascular function**  
John Osborn

**Bionic pacemaking**  
Julian F.R. Paton



## THURSDAY, 3 September 2026

### ROOM 2

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16.00 – 18.00

**Precisely what is torpor? Can we synthesise it?**

*Chairs: Megan Elley (University of Bristol, UK);*

*Carla Frare (University of Bristol, UK)*

**Autonomic changes during natural torpor in the mouse**

Steven Swoap

**Engineering hibernation: Exploring synthetic torpor induction methods and future perspectives**

Timna Hitrec

**Brain Circuits and Central Mechanisms Enabling Survival under Extreme Conditions**

Natalia Machado

**Synthetic torpor: clone or counterfeit**

William Wheatley

### ROOM 3

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16.00 – 18.00

**Cardiac innervation patterns governing cardiovascular function in health and disease**

*Chairs: Olujimi Ajijola (University of California, USA)*

*Zixi Jack Cheng (University of Central Florida, USA)*

**Innervation of the human heart and changes associated with cardiomyopathy**

Peter Hanna

**Cardiac sympathetic neurons: victims and culprits in Arrhythmogenic Cardiomyopathy (ACM)**

Tania Zaglia

## THURSDAY, 3 September 2026

**Cardiac vagal innervation of myocardial vasculature in the ovine heart**

Julia Shanks

**Heterogeneous cardiac sympathetic innervation gradients promote arrhythmogenesis in murine dilated cardiomyopathy**

Olujimi Ajjola

### ROOM 4

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16.00 – 18.00

**Autonomic Dysfunction in Multiple Sclerosis: From Mechanisms to Clinical Implications**

*Chairs: Claire Hentzen (Sorbonne Université, France)*

*Mario Habek (University Hospital Center Zagreb, Croatia)*

**How do the autonomic and immune systems communicate in multiple sclerosis?**

Mario Habek

**Central autonomic network disturbance in multiple sclerosis: implications for the clinic and research**

Giorgio Guido

**Urogenital and gastroenterological dysfunction in multiple sclerosis: implications for the clinic and research**

Claire Hentzen

## FRIDAY, 4 September 2026

### ROOM 1

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08.30 – 10.30

#### **Dysfunction of the autonomic nervous system in cardiovascular disease**

*Chairs: Molly O'Reilly (Academic Medical Centre, Netherlands)*

*Laura Fedele (King's College London, UK)*

#### **Sympathetic neurons are involved in arrhythmogenic cardiomyopathy**

Induja Perumal Vanaja

#### **Ageing impairs the neurovascular interface in the heart**

Julian Wagner

#### **Superior Cervical Ganglion: a driver of carotid bodies hyperexcitation in hypertension**

Igor Felipe

#### **Sympatho-vagal cross talk in health and disease**

Marmar Vaseghi

### ROOM 2

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08.30 – 10.30

#### **Vagus nerve stimulation in epilepsy**

*Chairs: Vaughan Macefield (Monash University Melbourne, Australia)*

*Ayse Dereli (Université catholique de Louvain, Belgium)*

#### **Electrophysiological biomarkers for VNS in patients with refractory epilepsy**

Riem El Tahry

#### **Microelectrode recordings from the human vagus nerve during clinical vagus nerve stimulation**

David Farmer

#### **Vagus nerve activity modulations during absence seizures, NREM sleep, wake, and hypercapnia in epilepsy rat models**

Elise Collard

#### **Hypercapnic cardiorespiratory responses in epileptic rat models**

Ayse Dereli

## FRIDAY, 4 September 2026

### ROOM 3

08.30 – 10.30

#### **Neuropeptides as Core Integrators of Cardiac Autonomic Function**

Chairs: Julia Shanks (*University of Auckland, New Zealand*)

Neil Herring (*University of Oxford, UK*)

#### **The Cardio-Protective Mechanism of CGRP**

Susan Brain

#### **Rapid Measure and Closed-Loop Control of Neurotransmitters in the Porcine Heart**

Corey Smith

#### **Glucagon-like peptide 1 as a peptide modulator of cardiac electrophysiology**

Frederike Lubberding

#### **NPY Signalling in Human Cardiomyocytes and the Parallels in Patients Experiencing Myocardial Infarction**

Neil Herring

### ROOM 4

08.30 – 10.30

#### **Multiple system atrophy: from bench to bedside**

Chair: Alessandra Fanciulli (*University of Innsbruck, Austria*)

#### **MSA: mechanisms of disease**

Antonio Heras-Garvin

#### **Advances in AI-supported MSA diagnostics and biomarker research**

Christopher Gibbons

#### **Cure MSA**

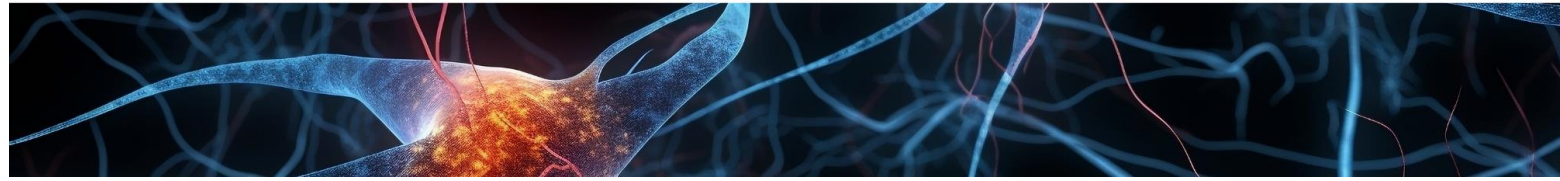
Margherita Fabbri

#### **Care for people living with MSA**

Alessandra Fanciulli

10.30 – 11.30

*Poster session 3 (and refreshment)*



## FRIDAY, 4 September 2026

### ROOM 1

11.30 – 12.30

#### Keynote lecture

#### **Cancer neuroscience: the autonomic nervous system regulates cancer progression and treatment response**

Erica K. Sloan; *Monash University, Australia*

12.30 – 13.30

*Lunch*

### ROOM 1

13.30 – 15.30

#### **Rethinking the definition of sympathetic and parasympathetic nervous systems**

Chair: Thiago Moreira (*University of Sao Paulo, Brazil*)

#### **The emergence of the terms sympathetic and parasympathetic. Scientific and clinical consequences**

Alexandru Barboi

#### **The sympathetic and other related systems of nerves**

Jean Francois Brunet

#### **Novel insights into neuro-humoral aspects involved in urinary bladder control**

Monica A Sato

#### **The autonomic nervous system: just a bunch of central pattern generators?**

Vaughan Macefield



## FRIDAY, 4 September 2026

### ROOM 2

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13.30 – 15.30

#### **Transcriptomic Signatures of Autonomic Ganglia in Health and Disease**

Chairs: Olujimi Ajijola (*University of California, USA*)

Neil Herring (*University of Oxford, UK*)

#### **Developmental transcriptomic programs shaping sympathetic neuron identity and plasticity**

Rejji Kuruvilla

#### **Molecular heterogeneity and sensory coding in visceral afferent and parasympathetic pathways**

Yuki Oka

#### **Intrinsic Cardiac Ganglia & transcriptomic signatures in human cardiovascular disease**

Peter Hanna

#### **Spatial transcriptomic mapping of autonomic circuits in cardiovascular pathology**

Karin A. Ziegler

### ROOM 3

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13.30 – 15.30

#### **Altered regulation of sympathetic nerve activity in heart failure with preserved ejection fraction**

Chair: Rohit Ramchandra (*University of Auckland, New Zealand*)

#### **Control of muscle sympathetic nerve activity during rest and dynamic exercise in HFpEF**

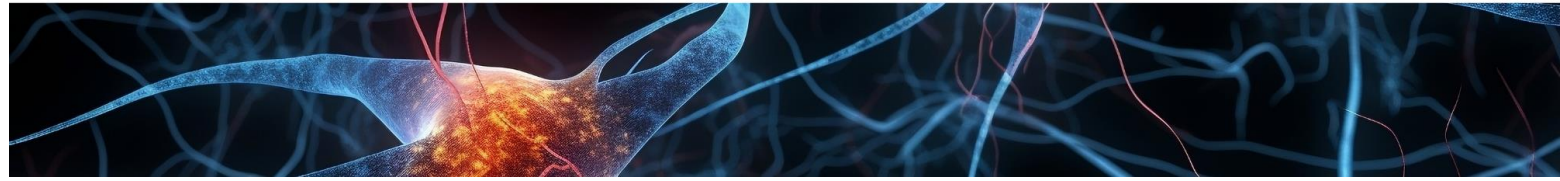
John Floras

#### **Sex differences in sympathetic neural control in HFpEF**

Qi Fu

#### **Control of cardiac sympathetic nerve activity in ovine hypertensive HFpEF**

Joshua Chang



## FRIDAY, 4 September 2026

### ROOM 4

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**13.30 – 15.30**      **Interplay of interoception and the autonomic nervous system in health and disease**

*Chairs: Diogo Reis Carneiro (University of Coimbra, Portugal)*

*Roland Thijs (Epilepsie Instellingen Nederland (SEIN), The Netherlands & Leiden University Medical Centre, Netherlands)*

**The new science of interoception and its relationship with the autonomic nervous system**

Lucia Ricciardi

**Measuring brain-heart and other organs interactions**

Diego Candia-Riveira

**Clinical implications of interoceptiveautonomic changes**

Diogo Carneiro

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15.30 – 16.30      *Poster session 4 (and refreshment)*

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### ROOM 1

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**16.30 – 17.30**      **ISAN AGM**

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19.30 – 23.00      *Conference dinner*

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## SATURDAY, 5 September 2026

### ROOM 1

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09.00 – 11.00

#### **Inflamed Circuits: Brain Immune Cells Shaping Cardiovascular Outcomes**

Chairs: Vagner R. Antunes (*University of Sao Paulo, Brazil*)

Song T. Yao (*The University of Melbourne, Australia*)

#### **The effects of exercise training on blood pressure, microglia activation and BBB function.**

Paula Gomes

#### **Microglia and autonomic dysfunction in an ovine model of heart failure and cardiopulmonary by pass.**

Lindsea Booth

#### **IL-1b mediated increases in blood pressure in the area postrema via direct projections to the rostral ventrolateral medulla**

Song Yao

#### **Neuroimmune Crosstalk in Hypertension: ROR $\gamma$ t as a Mediator of Angiotensin II-Induced Microglial Activation and BBB Breakdown**

Shunguang Wei

### ROOM 2

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09.00 – 11.00

#### **Interdisciplinary studies of nervous systems associated with the gastrointestinal tract and beyond**

Chairs: Hiromi Tamada (*University of Fukui, Japan*)

Shinji Tanaka (*The University of Tokyo Hospital, Japan*)

#### **Definition of molecular enteric neuron classes and their intrinsic connectivity patterns within the gut wall**

Ulrika Marklund

#### **Advances in our understanding of sensory nerves in the gut-brain axis –**

Nick Spencer



**SATURDAY, 5 September 2026**

**Volume-EM analysis for exploring new comprehension in gut innervation regulatory system**

Hiromi Tamada

**GLP-1 released from the gut protects the kidney through the nervous system**

Shinji Tanaka

**ROOM 3**

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**09.00 – 11.00**

**Autonomic regulation in cardiovascular disorders: mechanisms and interventions**

Chairs: Satish R. Raj (*University of Calgary, Canada*)

Kalyanam Shivkumar (*UCLA, USA*)

**Interactions between Stroke Volume and Cerebral Blood Flow Dynamics**

Martin Miranda-Hurtado

**Autonomic Dysfunction in Atrial Fibrillation- Does Targeting the ANS Alter Outcomes**

Varun Malik

**Stellate Ganglionectomy for Ventricular Arrhythmias.**

Peter Hanna

**Carbon Dioxide as a Treatment for Orthostatic Hypotension.**

Jacque Baker



## SATURDAY, 5 September 2026

### ROOM 4

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09.00 – 11.00

#### **Circadian System and Autonomic Regulation**

Chairs: Pietro Cortelli (*University of Bologna, Italy*)

Max Hilz (*Universitätsklinikum Erlangen, Germany & Icahn School of Medicine at Mount Sinai, USA*)

#### **Anatomy of Circadian System**

Eduardo Benarroch

#### **Circadian disorders and the Autonomic Nervous System**

Federica Provini

#### **Resetting the Circadian Clock: Emerging Approaches**

Ambra Stefani

### ROOM 1

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11.00 – 12.00

Morning refreshment followed by

#### **Keynote lecture ISAN.**

#### **Immunoregulation by sympathetic nerves: can neutrophils be selectively targeted?**

Alexander A. Steiner; University of Sao Paulo

12.00 – 13.00

*Closing ceremony*

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## GENERAL INFORMATION

### THE VENUE

**Alma Mater Studiorum - Università di Bologna - Plesso Belmeloro**

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