

# 21<sup>ST</sup> INTERNATIONAL SYMPOSIUM ON THE AUTONOMIC NERVOUS SYSTEM

Marco Island Marriott Beach Resort, Spa & Golf Club  
Marco Island, Florida  
November 3-6, 2010

## Program

| <b>WEDNESDAY, NOVEMBER 3, 2010</b>   |  |
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| 6:00-7:00 PM   | <b>Registration &amp; Welcome Reception</b><br>Palms Ballroom Sabal Foyer  |
| 7:00-7:15 PM   | <b>Welcome - Dr. Mark Chapleau, President</b><br>Palms Ballroom Sabal  |
| <b>Sympathovagal Balance in Physiological &amp; Pathological States</b><br><b>Chairs: Jens Tank &amp; André Diedrich</b> |  |
| 7:15-7:30 PM   | Parasympathetic-sympathetic modulation 101<br><u>M.W. Chapleau</u><br>Iowa City, IA, USA   |
| 7:30-7:45 PM   | Respiration-adjusted low frequency power of heart rate variability reflects baroreflex function, not cardiac sympathetic innervation<br>F. Rahman, S. Pechnik, D.J. Gross, L. Sewell, <u>D.S. Goldstein</u><br>Bethesda, MD, USA                                 |
| 7:45-8:00 PM   | Relationship between cardiovagal activity and endothelial function in young healthy subjects<br><u>A. Pinter</u> , T. Horváth, M. Kollai<br>Budapest, Hungary  |
| 8:00-8:15 PM   | Autonomic function in mild cognitive impairment<br><u>O. Collins</u> , S. Dillon, C. Finnucane, B.A. Lawlor, R.A. Kenny<br>Dublin, Ireland   |
| 8:15-8:30 PM   | Parasympathetic "bias" as a form of autonomic dysregulation associated with depressive/hopeless states<br><u>B.D. Miller</u> , B.L. Wood<br>Buffalo, NY, USA   |
| 8:30-8:45 PM   | Association of arterial pressure oscillations with direct measurement of sympathetic outflow in subjects with differing tolerances to central hypovolemia<br><u>K.L. Ryan</u> , C.A. Rickards, C. Hinojosa-Laborde, V.A. Convertino<br>Fort Sam Houston, TX, USA |
| 8:45-9:00 PM   | Cardiovascular autonomic assessment in rats with spinal cord injury<br><u>J.A. Inskip</u> , L.M. Ramer, M.S. Ramer, A.V. Krassioukov, V.E. Claydon<br>Vancouver, BC, Canada  |

**THURSDAY, NOVEMBER 4, 2010**

7:00-7:45 AM **Breakfast & Exhibits**  
Palms Ballroom Royal

**Postural Orthostatic Tachycardia Syndrome**  
**Chairs: Julian Stewart & Jens Jordan**

7:45-8:00 AM Prospective analysis of postural tachycardia syndrome  
K. Kimpinski, V. Iodice, D.M. Sletten, W. Singer, P. Sandroni, A. Lipp, T.L. Gehrking, J.A. Gehrking, K.K. Nickander, P.R. Fischer, J. Figueroa, R.D. Fealey, P.A. Low  
London, ON, Canada

8:00-8:15 AM Diurnal variations of blood pressure in postural tachycardia syndrome: dippers vs. non-dippers  
J.J. Figueroa, D. Bott-Kitslaar, J.A. Mercado, J.R. Basford, P. Sandroni, W. Singer, M.J. Joyner, W.K. Shen, D.M. Sletten, T.L. Gehrking, J.A. Gehrking, P.A. Low  
Rochester, MN, USA

8:15-8:30 AM Blood volume deficit and the non-dipping phenomenon in postural tachycardia syndrome  
A. Diedrich, K. Sato, S.R. Raj, L. Diedrich, V. Weimann, I. Biaggioni, D. Robertson  
Nashville, TN, USA

8:30-8:45 AM Regulation of the renin-angiotensin-aldosterone system in postural tachycardia syndrome  
H.I. Mustafa, S.R. Raj, B.K. Black, S.Y. Paranjape, I. Biaggioni, D. Robertson  
Nashville, TN, USA

8:45-9:00 AM Baroreceptor unloading augments peripheral and decreases central chemoreceptor sensitivity in postural tachycardia syndrome  
I. Taneja, D.A. Clarke, M.S. Medow, A.J. Ocon, J.M. Stewart  
Valhalla NY, USA

9:00-9:15 AM The effects of intense cardiovascular exercise on postural tachycardia syndrome: a physiologic success but a treatment failure  
C. Gibbons, R. Freeman  
Boston, MA, USA

9:15-9:30 AM Blockade of norepinephrine transporter magnifies tachycardia and worsens symptoms in postural tachycardia syndrome (POTS)  
S.R. Raj, I. Biaggioni, B.K. Black, C.A. Shibao, S.Y. Paranjape, D. Robertson  
Nashville, TN, USA

9:30-10:00 AM **AAS Business Meeting**

10:00-10:15 AM **Coffee Break**  
Palms Ballroom Royal

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| <b>Orthostatic Hypotension &amp; Syncope</b>      |   |
| <b>Chairs: Wouter Wieling &amp; Maria Hopman</b>  |   |
| 10:15-10:30 AM                                    | Climate influence on emergency department syncope attendances: The role of temperature variability<br>A. Galli, F. Barbic, M. Borella, G. Costantino, F. Perego, F. Dipaola, F. Casella, P.G. Duca, A. Diedrich, S. Raj, D. Robertson, A. Porta, <u>R. Furlan</u><br>Bergamo, Italy   |
| 10:30-10:45 AM                                    | Hypertension, orthostatic hypotension and the risk of falls in a community-dwelling elderly population: the MOBILIZE Boston study<br>A. Gangavati, I. Hajjar, L. Quach, R.N. Jones, D.K. Kiely, P. Gagnon, <u>L.A. Lipsitz</u><br>Roslindale, MA, USA   |
| 10:45-11:00 AM                                    | Effects of age on vasomotor sympathetic activity and hemodynamic responses during neurally mediated syncope<br><u>Q. Fu</u> , M.M. Galbreath, T.B. VanGundy, S.S. Jarvis, R.L. Meier, B.D. Levine<br>Dallas, TX, USA  |
| 11:00-11:15 AM                                    | Muscle sympathetic nerve activity responses during prolonged post faint hypotension<br><u>J. Rozenberg</u> , W. Wieling, D. Jardine<br>Amsterdam, The Netherlands   |
| 11:15-11:30 AM                                    | Sympathetic nerve protein abnormalities in patients with recurrent vasovagal syncope<br><u>M. Esler</u> , L. Guo, E. Lambert, G. Lambert, G. Vaddadi<br>Melbourne, Australia  |
| 11:30-11:50 AM                                    | Experience with droxidopa (Northera™) in a phase III multinational, placebo-controlled, parallel group, induction-design study to assess clinical benefit and safety in subjects with neurogenic orthostatic hypotension<br><u>H. Kaufmann</u> , C. Mathias, P. Low, I. Biaggioni, R. Freeman, and the Droxidopa Study Group<br>New York, NY, USA |
| 11:50-12:00 PM                                    | <b>Open Discussion</b>  |
| 12:00-1:30 PM                                     | <b>Lunch &amp; Poster Session I</b><br>Palms Ballroom Royal   |
| 1:30-3:45 PM                                      | <b>Free Time</b>  |
| <b>Awards Session</b>                             |   |
| <b>Chairs: Mark Chapleau &amp; Michael Joyner</b> |   |
| 3:45-4:00 PM                                      | <b>Introduction</b><br>Dr. Mark Chapleau  |
| 4:00-4:45 PM                                      | <b>Streeten Lecture</b><br>An autonomic journey in only 30 seconds<br><u>Wouter Wieling, M.D., Ph.D.</u><br>Department of Medicine, Academic Medical Centre, Amsterdam, The Netherlands   |

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| 4:45-5:00 PM                           | <p><b>Streeten Travel Fellowship Award</b><br/>                 Preserved peripheral vasoconstriction during an orthostatic challenge in pure autonomic failure<br/> <u>J.T. Groothuis</u>, D.H.J. Thijssen, J. Deinum, J.W.M. Lenders, M.T.E. Hopman<br/>                 Nijmegen, The Netherlands</p>  |
| 5:00-5:15 PM                           | <p><b>FMS/Penaz Wesseling Award</b><br/>                 Relationship between muscle sympathetic nerve activity and aortic wave reflection characteristics in young men and women<br/> <u>D.P. Casey</u>, T.B. Curry, M.J. Joyner, N. Charkoudian, E.C. Hart<br/>                 Rochester, MN, USA</p>  |
| 5:15-5:30 PM                           | <p><b>FMS/Penaz Wesseling Award</b><br/>                 Beta-2 adrenergic receptor gene variation and the cardiovascular response to orthostatic testing<br/> <u>E.D. Wittwer</u>, N.D. Warner, Z. Liu, D.R. Schroeder, A.M. Nadeau, A.R. Allen, C.J. Murillo, J.H. Eisenach<br/>                 Rochester, MN, USA</p>   |
| 5:30-5:45 PM                           | <p><b>AAS Travel Award</b><br/>                 Quantitative Pilomotor Axon-Reflex Test (QPART) – A novel quantitative test of pilomotor function<br/> <u>T. Siepmann</u>, C. Gibbons, J. Lafo, C. Brown, R. Freeman<br/>                 Boston, MA, USA</p>   |
| 5:45-6:00 PM                           | <p><b>AAS Travel Award</b><br/>                 Altered leptin sensitivity for baroreflex suppression within the solitary tract nucleus of older Sprague-Dawley rats is associated with increased endogenous leptin tone<br/> <u>A.C. Arnold</u>, D.I. Diz<br/>                 Winston-Salem, NC, USA</p>  |
| 6:00-6:15 PM                           | <p><b>MSA Research Award</b><br/>                 Prospective 5-year natural history study of probable multiple system atrophy (MSA) in 175 North American subjects<br/>                 S. Gilman, <u>P.A. Low</u>, S. May, C. Tanner, M. Stern, P. Sandroni, S. Reich, F. Marshall, P. Novak, J. Jankovic, G. F. Wooten, B. Racette, D. Sletten, C. Shults<br/>                 Rochester, MN, USA<br/>                 (Poster 65)</p> |
| 6:15-7:45 PM                           | <p><b>American Autonomic Society Reception (Registrants &amp; Guests)</b><br/> <b>Hosted by Chelsea Therapeutics</b><br/>                 Palms Terrace</p>   |
| <p><b>FRIDAY, NOVEMBER 5, 2010</b></p> |   |
| 7:00-7:30 AM                           | <p><b>Breakfast &amp; Exhibits</b><br/>                 Palms Ballroom Royal</p>  |

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| 7:30-8:15 AM   | <p><b>Plenary Lecture</b><br/> Linking cyclic nucleotide regulation to the neural control of cardiac excitability: implications for therapeutic targeting<br/> <u>David J. Paterson, D.Phil, D.Sc.</u><br/> Department of Physiology, Anatomy &amp; Genetics, University of Oxford, Oxford, United Kingdom</p> |
| <p><b>Control of Sympathetic Nerve Activity &amp; Blood Flow in Humans</b><br/> <b>Chairs: Chet Ray &amp; Jason Carter</b></p>                   |  |
| 8:15-8:30 AM   | <p>Sympathetic cardiovascular control functional mapping of the ventrolateral medullary surface in humans with microneurography and circulatory monitoring<br/> <u>C.M. Welzig</u>, S.J. Patel<br/> Charleston, SC, USA</p>  |
| 8:30-8:45 AM   | <p>Sympathetic neural responsiveness to increasing and decreasing arterial pressures in young and older humans: the role of baseline nerve activity<br/> <u>E.C. Hart</u>, B.G. Wallin, M.J. Joyner, T.B. Curry, N. Charkoudian<br/> Rochester, MN, USA</p>  |
| 8:45-9:00 AM   | <p>Elderly hypertensive women have lower cardiovagal but similar sympathetic baroreflex sensitivity compared with elderly hypertensive men<br/> <u>Q. Fu</u>, M.M. Galbreath, T.B. VanGundy, S.S. Jarvis, R.L. Meier, S. Shibata, W. Vongpatanasin, B.D. Levine<br/> Dallas, TX, USA</p>                       |
| 9:00-9:15 AM   | <p>Concurrent recording of spontaneous skin sympathetic nerve activity and whole-brain fMRI signal intensity in awake human subjects<br/> V.G. Macefield, <u>C. James</u>, L.A. Henderson<br/> Sydney, Australia</p>   |
| 9:15-9:30 AM   | <p>The role of reactive oxygen species (ROS) in the control of skin blood flow response to local heat in healthy subjects<br/> <u>M.S. Medow</u>, N. Bamji, D. Clarke, A.J. Ocon, J.M. Stewart<br/> Hawthorne, NY, USA</p>   |
| 9:30-11:00 AM  | <p><b>Coffee &amp; Poster Session II</b><br/> Palms Ballroom Royal</p>   |
| <p><b>Autonomic-Cardiac-Blood Pressure Interactions in Humans &amp; Animal Models</b><br/> <b>Chairs: Gregory Fink &amp; Italo Biaggioni</b></p> |  |
| 11:00-11:15 AM   | <p>Novel role for the peripheral chemoreceptors in regulating blood glucose<br/> <u>E.A. Wehrwein</u>, R. Basu, A. Basu, T.B. Curry, R. Rizza, M.J. Joyner<br/> Rochester, MN, USA</p>   |
| 11:15-11:30 AM   | <p>Modulation of the ventilatory baroreflex by changes in chemoreceptor activation<br/> D.A. Clarke, A.J. Ocon, I. Taneja, M.S. Medow, <u>J.M. Stewart</u><br/> Hawthorne, NY, USA</p>   |
| 11:30-11:45 AM   | <p>Cardiovascular responses during acute intermittent apnea in normotensive and spontaneously hypertensive conscious rats<br/> <u>S.L. Cravo</u>, M.V. Rossi, T.A. Silva, S. Tufik, G.H.M. Schoorlemmer<br/> Sao Paulo, Brazil</p>   |

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| 11:45-12:00 PM  | Autonomic dysregulation precedes and predicts cardiac dysfunction and mortality in a mouse model of muscular dystrophy<br><u>R. Sabharwal</u> , R.M. Weiss, K. Zimmerman, M.W. Chapleau<br>Iowa City, IA, USA  |
| 12:00-12:15 PM  | Baroreflex failure makes patients super susceptible to volume overload and predisposes patients to pulmonary edema in the absence of left ventricular systolic failure<br><u>K. Sunagawa</u><br>Fukuoka, Japan                                       |
| 12:15-12:30 PM  | Mechanism and durability of blood pressure reduction with catheter-based denervation in essential hypertension<br><u>M. Esler</u> , M. Schlaich, R. Whitbourn, A. Walton, H. Krum<br>Melbourne, Australia  |
| 12:30-4:00 PM   | <b>Free Time</b>   |
| <b>Highlights from the Posters on Stage</b><br><b>Chairs: Mark Chapleau &amp; Peter Raven</b> |  |
| 4:00-4:08 PM  | Poster 19<br>Role of otolith inputs in cerebral blood flow regulation<br><u>J.M. Serrador</u> , B. Deegan, S. Forstbauer, T. Nichols, S.J. Wood<br>East Orange, NJ, USA  |
| 4:08-4:16 PM  | Poster 13<br>Mechanisms mediating tilt-induced (pre)syncope may be sensitive to age but not gender<br><u>C. Schroeder</u> , J. Tank, K. Heusser, A. Diedrich, F.C. Luft, J. Jordan<br>Berlin, Germany  |
| 4:16-4:24 PM  | Poster 52<br>Postural tachycardia in children and adolescents - what is abnormal?<br><u>W. Singer</u> , D.M. Sletten, T.L. Opfer-Gehrking, P.A. Low<br>Rochester, MN, USA  |
| 4:24-4:32 PM  | Poster 26<br>Regional hypothalamic activity associated with spontaneous fluctuations in muscle sympathetic nerve activity in humans<br><u>C. James</u> , L.A. Henderson, V.G. Macefield<br>Sydney, Australia   |
| 4:32-4:40 PM  | Poster 29<br>Single-unit muscle sympathetic nerve activity responsiveness to lower body negative and positive pressure in healthy humans<br><u>H. Murai</u> , C.F. Notarius, B.L. Morris, D. Kimmerly, P. Picton, J.S. Floras<br>Toronto, ON, Canada |
| 4:40-4:48 PM  | Poster 31<br>Mental stress attenuates sympathetic baroreflex sensitivity in humans<br><u>J.R. Carter</u> , J.J. Durocher, C.E. Schwartz, J.C. Klein<br>Houghton, MI, USA   |

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| 4:48-4:56 PM | Poster 33<br>Does yogic breathing increase baroflex gain?<br><u>S.M. Bertisch</u> , C.O. Tan, J.A. Taylor<br>Boston, MA, USA  |
| 4:56-5:04 PM | Poster 34<br>Can meditation influence the autonomic nervous system? A case report of a man immersed in crushed ice for 80 minutes<br>J.T. Groothuis, T.M. Eijvogels, R.R. Scholten, D.H.J. Thijssen, <u>M.T.E. Hopman</u><br>Nijmegen, The Netherlands  |
| 5:04-5:12 PM | Poster 49<br>Reduced SK channel function mediates enhanced excitability of pre-sympathetic PVN neurons and sympathoexcitation in heart failure<br>L. Gui, J.H. Zhu, L.P. LaGrange, <u>Q.H. Chen</u><br>Houghton, MI, USA  |
| 5:12-5:20 PM | Poster 50<br>Early autonomic dysfunction and cardiac failure in a mouse model of spinal muscular atrophy<br><u>A.K. Bevan</u> , K.R. Hutchinson, K.D. Foust, L. Braun, V.L. McGovern, L. Schmelzer, J.G. Ward, J.C. Petruska, P.A. Lucchesi, A.H.M. Burghes, B.K. Kaspar<br>Columbus, OH, USA |
| 5:20-5:28 PM | Poster 59<br>Congenital Central Hypoventilation Syndrome (CCHS): PHOX2B genotype/CCHS pupillary function phenotype<br>P.P. Patwari, J. Chesniak, N.L. Kuntz, A.S. Kenny, <u>D.E. Weese-Mayer</u><br>Chicago, IL, USA  |
| 5:28-5:36 PM | Poster 73<br>Positron emission tomography guided placement of deep brain stimulator electrodes in the treatment of medically refractory cluster headache<br><u>W.P. Cheshire</u> , R.E. Wharen<br>Jacksonville, FL, USA   |

**SATURDAY, NOVEMBER 6, 2010**

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| 7:00-7:30 AM | <b>Breakfast &amp; Exhibits</b><br>Palms Ballroom Royal |
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| 7:30-8:15 AM | <b>Plenary Lecture</b><br><b>What is the mechanism for circadian rhythms of body temperature?</b><br><u>Clifford B. Saper, M.D., Ph.D.</u><br>Department of Neurology, Program in Neuroscience, and Division of Sleep Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA |
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**Autonomic & Vascular Dysfunction in Diabetes**

**Chairs: Roy Freeman & Max Hilz**

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| 8:15-8:30 AM | Increased adrenergic innervation of sweat glands in early diabetic neuropathy<br><u>C. Gibbons</u> , N. Wang, C. Brown, R. Freeman<br>Boston, MA, USA |
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| 8:30-8:45 AM  | Effects of inflammation on vasoreactivity, white matter hyperintensity and brain volume in diabetes<br>P. Zhao, B. Manor, M. Munshi, D. Alsop, A. Abduljalil, <u>P. Novak</u> , P. Roberson, V. Novak<br>Boston, MA, USA  |
| 8:45-9:00 AM  | Features of cardiac autonomic neuropathy in patients with diabetic foot syndrome. Effect of sympathetic vasomotor dysfunction and poor control of hypertension<br>O.V. Mamontov, O.E. Korotkova, T.A. Zelenina, <u>E.V. Shlyakhto</u><br>St. Petersburg, Russian Federation   |
| 9:00-9:15 AM  | GSK3 $\beta$ : a new mechanism in cardiac diabetic autonomic dysfunction<br><u>Y. Zhang</u> , H.-J. Park, C.M. Welzig, K. Picard, C. Du, S. Georgescu, C. Vaickus, M. Aronovitz, W. Claycomb, J.B. Galper<br>Boston, MA, USA  |
| 9:15-10:45 AM   | <b>Coffee &amp; Poster Session III</b><br>Palms Ballroom Royal  |
| <b>Autonomic Failure in the Synucleinopathies</b><br><b>Chairs: Phillip Low &amp; David Robertson</b> |   |
| 10:45-11:00 AM  | An important pitfall in submaximal exercise testing in Parkinson's disease patients<br><u>J.T. Groothuis</u> , A.D. Speelman, J.J.M. Verbeek, B.R. Bloem, M. Munneke, M.T.E. Hopman<br>Nijmegen, The Netherlands  |
| 11:00-11:15 AM  | Is Parkinson disease with orthostatic hypotension a distinctive entity?<br><u>D.S. Goldstein</u> , L. Sewell, C. Holmes, Y. Sharabi<br>Bethesda, MD, USA  |
| 11:15-11:30 AM  | Norepinephrine transporter blockade and cardiac sympathetic innervation<br><u>C. Shibao</u> , S.R. Raj, L.E. Okamoto, D. Robertson, I. Biaggioni<br>Nashville, TN, USA  |
| 11:30-11:45 AM  | Differentiation of Parkinson's disease from multiple systems atrophy: Comparison of clinical autonomic testing with <sup>123</sup> I MIBG myocardial scintigraphy<br><u>K. Kimpinski</u> , V. Iodice, D.D. Burton, M. Camilleri, B.P. Mullan, A. Lipp, P. Sandroni, T.L. Gehrking, D.M. Sletten, J.E. Ahlskog, R.D. Fealey, W. Singer, P.A. Low<br>London, ON, Canada |
| 11:45-12:00 PM  | Hemodynamic changes underlying nocturnal blood pressure dipping and morning surge in autonomic failure patients with supine hypertension<br><u>L.E. Okamoto</u> , A. Gamboa, C. Shibao, A. Diedrich, B.K. Black, S.R. Raj, S. Paranjape, D. Robertson, I. Biaggioni<br>Nashville, TN, USA   |
| 12:00-12:15 PM  | Olfactory function in pure autonomic failure, multiple system atrophy and dopamine beta hydroxylase deficiency<br><u>E.M. Garland</u> , S.R. Raj, A.C. Peltier, D. Robertson, I. Biaggioni<br>Nashville, TN, USA  |
| 12:15-12:25 PM  | <b>Open Discussion &amp; Adjourn</b>  |
| 7:00-10:00 PM   | <b>Presidential Dinner</b><br>Tiki Beach  |



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| <b>POSTER SESSION I</b><br><b>Thursday, November 4, 2010</b><br><b>12:00-1:30 PM</b>                              |  |
| <b>POTS &amp; Co-morbidities</b><br><b>Chair: Thomas Chelimsky</b>  |  |
| Poster #1   | Hyperadrenergic postural tachycardia syndrome with sympathetic storms<br><u>J.J. Figueroa</u> , P. Sandroni, W. Singer, J.R. Basford, D.M. Sletten, T.L. Gehrking, J.A. Gehrking, P.A. Low<br>Rochester, MN, USA                                       |
| Poster #2   | CANCELLED  |
| Poster #3   | Menstrual cycle does not affect sympathetic neural and hemodynamic responses to upright tilt in the postural orthostatic tachycardia syndrome<br><u>Q. Fu</u> , T.B. VanGundy, S. Shibata, M.M. Galbreath, S.S. Jarvis, B.D. Levine<br>Dallas, TX, USA |
| Poster #4   | Pregnancy in postural tachycardia syndrome: clinical course and maternal and fetal outcomes<br><u>S. Blitshteyn</u> , H. Poya, G.C. Bett<br>Buffalo, NY, USA   |
| Poster #5   | POTS due to excessive venous pooling in an enlarged inferior vena cava<br>C. Gaw, R. Shields, K. Mayuga, H. Gornik, C. Fonseca, <u>F. Fouad-Tarazi</u><br>Cleveland, OH, USA   |
| Poster #6   | Neurohormonal and hemodynamic profile of patients with postural tachycardia and chronic fatigue syndrome<br><u>L.E. Okamoto</u> , S.R. Raj, A. Gamboa, C. Shibao, A. Diedrich, B.K. Black, G. Farley, D. Robertson, I. Biaggioni<br>Nashville, TN, USA |
| Poster #7   | Clinical observations in a cohort of patients with autonomic dysfunction<br><u>A. Barboi</u> , T. Prieto, M. Yellick, J. Bergholte, C. Dennis, N. Fabian, S. Jaradeh<br>Milwaukee, WI, USA   |
| Poster #8   | Serotonin reuptake inhibition acutely worsens symptoms in postural tachycardia syndrome (POTS)<br><u>S.R. Raj</u> , I. Biaggioni, B.K. Black, C.A. Shibao, S.Y. Paranjape, D. Robertson<br>Nashville, TN, USA  |
| Poster #9   | Beta blockers and exercise in POTS<br><u>A. Gamboa</u> , L.E. Okamoto, A. Arnold, B. Black, A. Diedrich, G. Farley, S.Y. Paranjape, I. Biaggioni<br>Nashville, TN, USA   |
| <b>Orthostatic Hypotension, Cerebral Blood Flow Regulation &amp; Spinal Cord Injury</b><br><b>Chair: Max Hilz</b> |  |
| Poster #10  | Alterations of cardiovascular autonomic profile in constitutional hypotension<br>F. Barbic, <u>R. Furlan</u> , A. Porta, M. Glago, G. Jacob<br>Bergamo, Italy  |
| Poster #11  | Multiscale entropy of heart rate and blood pressure – an effect of orthostasis<br><u>M. Javorka</u> , Z. Turianikova, K. Javorka, M. Baumert<br>Martin, Slovak Republic  |

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| Poster #12 | Characteristic pattern of autonomic dysfunction in chronic radiation-induced baroreflex failure presenting with orthostatic hypotension<br><u>W. Singer</u> , B.P. Goodman, T.L. Opfer-Gehrking, P.A. Low<br>Rochester, MN, USA   |
| Poster #13 | Mechanisms mediating tilt-induced (pre)syncope may be sensitive to age but not gender<br><u>C. Schroeder</u> , J. Tank, K. Heusser, A. Diedrich, F.C. Luft, J. Jordan<br>Berlin, Germany  |
| Poster #14 | Mechanisms for the reduction in facial skin blood flow at pre-syncope in normothermic and heat-stressed individuals<br><u>C.G. Crandall</u> , R.M Brothers, M.S. Ganio<br>Dallas, TX, USA   |
| Poster #15 | During comprehensive autonomic testing dirotic notch changes detected by transcranial Doppler monitoring helped to clarify the pattern of autonomic changes present in a patient with a history of syncope: A case study<br><u>R.E. Leppanen</u> , J. Collins, D. Morrison, A. Line<br>Knoxville, TN, USA |
| Poster #16 | The influence of autonomic neural control on human cerebral vessels 'in vivo'<br>S. Purkayastha, R. Zhang, B.D. Levine, <u>P.B. Raven</u><br>Fort Worth, TX, USA  |
| Poster #17 | What is the stimulus for oscillations in arterial pressure and cerebral blood velocity?<br><u>C.A. Rickards</u> , K.L. Ryan, C. Hinojosa-Laborde, W.H. Cooke, V.A. Convertino<br>San Antonio, TX, USA   |
| Poster #18 | Time domain indices of cerebral autoregulation and the nonlinear role of sympathetic control<br><u>C. Ozan Tan</u> , J.W. Hamner, J.A. Taylor<br>Boston, MA, USA  |
| Poster #19 | Role of otolith inputs in cerebral blood flow regulation<br><u>J.M. Serrador</u> , B. Deegan, S. Forstbauer, T. Nichols, S.J. Wood<br>East Orange, NJ, USA  |
| Poster #20 | Orthostatic hypotension in mild cognitive impairment<br><u>O. Collins</u> , C. Finnucane, S. Dillon, B.A. Lawlor, R.A. Kenny<br>Dublin, Ireland   |
| Poster #21 | Are compression stockings really an effective treatment for orthostatic intolerance?<br><u>C.L. Protheroe</u> , A. Dikareva, V.E. Claydon<br>Burnaby, BC, Canada  |
| Poster #22 | Perceptions of exercise effects in younger patients with neurogenic orthostatic hypotension<br><u>J.L. Gilden</u> , T. Kim, T. Malledi, S. Maineni, S. Ubhayakar, D. Vahedi, A. Nuygen<br>Chicago, IL, USA  |
| Poster #23 | <b>CANCELLED</b>  |
| Poster #24 | The influence of different wheelchair seating positions on cardiovascular control<br><u>I.S. Sahota</u> , J.E. Camp, C.S. Mah, J.F. Borisoff, L.T. McPhail, V.E. Claydon<br>Burnaby, BC, Canada   |
| Poster #25 | ECG-based predictors for cardiac arrhythmias after spinal cord injury<br><u>H.J.C. Ravensbergen</u> , M.L. Walsh, A.V. Krassioukov, V.E. Claydon<br>Burnaby, BC, Canada   |

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| Poster #LB1  | Vasovagal syncope and its relationship with hypotension: what is the current conception and how it may change if essential hypotensive population emerges. Lessons learned from the essential hypotension registry.<br><u>L. Medina</u> , J. Marin, M. Duque, W. Uribe, S. Mesa, J. Aristizabal, J. Velasquez, M.A. Restrepo, A. Miranda, J. Bernal, Y. Torres<br>Medellin, Colombia |
| <p><b>POSTER SESSION II</b><br/> <b>Friday, November 5, 2010</b><br/> <b>9:30-11:00 AM</b></p>                       |  |
| <p><b>Neural Mechanisms of Cardiovascular Regulation</b><br/> <b>Chairs: Craig Crandall &amp; Michael Joyner</b></p> |  |
| Poster #26   | Regional hypothalamic activity associated with spontaneous fluctuations in muscle sympathetic nerve activity in humans<br><u>C. James</u> , L.A. Henderson, V.G. Macefield<br>Sydney, Australia  |
| Poster #27   | Somatosensory inputs inhibit insular activation during baroreceptor unloading<br><u>R. Goswami</u> , M.F. Frances, J. K. Shoemaker<br>London, ON, Canada   |
| Poster #28   | Cortical autonomic alterations with hypertension<br><u>K.N. Norton</u> , R. Goswami, R.P. Nolan, J.K. Shoemaker<br>London, ON, Canada  |
| Poster #29   | Single-unit muscle sympathetic nerve activity responsiveness to lower body negative and positive pressure in healthy humans<br><u>H. Muraj</u> , C.F. Notarius, B.L. Morris, D. Kimmerly, P. Picton, J.S. Floras<br>Toronto, ON, Canada  |
| Poster #30   | Sympathetic and cardiovascular responses to glossopharyngeal insufflation in trained apnea divers<br><u>K. Heusser</u> , G. Dzamonja, T. Breskovic, C. D. Steinback, A. Diedrich, J. Tank, J. Jordan, Z. Dujic<br>Hannover, Germany  |
| Poster #31   | Mental stress attenuates sympathetic baroreflex sensitivity in humans<br><u>J.R. Carter</u> , J.J. Durocher, C.E. Schwartz, J.C. Klein<br>Houghton, MI, USA  |
| Poster #32   | Autonomic tests: possible link between body composition and vulnerability to stress in healthy young adults<br><u>S. Ghosh</u><br>Kuala Lumpur, Malaysia   |
| Poster #33   | Does yogic breathing increase baroflex gain?<br><u>S.M. Bertisch</u> , C.O. Tan, J.A. Taylor<br>Boston, MA, USA  |
| Poster #34   | Can meditation influence the autonomic nervous system? A case report of a man immersed in crushed ice for 80 minutes<br><u>J.T. Groothuis</u> , T.M. Eijsvogels, R.R. Scholten, D.H.J. Thijssen, M.T.E. Hopman<br>Nijmegen, The Netherlands  |

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| Poster #35 | Use of electrical impedance to measure sympathetic activity of human skin<br><u>I. Wexler</u><br>Lewes, DE, USA  |
| Poster #36 | Melatonin differentially affects vascular blood flow in humans<br>J.S. Cook, C.L. Sauder, <u>C.A. Ray</u><br>Hershey, PA, USA  |
| Poster #37 | Influences of an acute ozone exposure on heart rate and blood pressure variability in healthy subjects<br><u>J. Tank</u> , K. Heusser, H. Biller, W. Koch, A. Diedrich, N. Krug, J. Jordan, J. Hohlfeld<br>Hannover, Germany |
| Poster #38 | Blood pressure variability after heart transplantation. Patterns and probable mechanisms<br>O.V. Mamontov, A.O. Konradi, <u>E.V. Shlyakhto</u><br>St. Petersburg, Russian Federation   |
| Poster #39 | Valsalva maneuver: shortest optimal expiratory strain duration<br><u>R.K. Khurana</u> , D. Mittal, N.H. Dubin<br>Baltimore, MD, USA  |
| Poster #40 | Autonomic imbalance may underlie labile hypertension: I. Possible remedy<br>E.S. Pereira, S. Baker, R. Bulgarelli, R.R. Arora, S. Ghosh-Dastidar, <u>J. Colombo</u><br>Philadelphia, PA, USA                                 |
| Poster #41 | Autonomic imbalance may underlie labile hypertension: II. Possible physiology<br>S. Baker, E.S. Pereira, R. Bulgarelli, R.R. Arora, S. Ghosh-Dastidar, <u>J. Colombo</u><br>Philadelphia, PA, USA                            |
| Poster #42 | Baroreflex sensitivity associates with salt-sensitivity in patients with resistant hypertension<br><u>A.O. Konrady</u> , I.V. Emelyanov, A.Y. Bagrov, E.V. Shlyakhto<br>St. Petersburg, Russia                               |
| Poster #43 | Autonomic nervous system and insulin sensitivity<br><u>A. Gamboa</u> , L.E. Okamoto, A. Diedrich, G. Farley, S.Y. Paranjape, K. Jabbour, N. Abumrad, I. Biaggioni<br>Nashville, TN, USA                                      |
| Poster #44 | Autonomic function in mildly obese sleep apnea patients<br><u>A.C. Peltier</u> , K. Bagai, A. Diedrich, E. Garland, Y. Shi, L. Wang, D. Robertson, B. Malow<br>Nashville, TN, USA  |
| Poster #45 | Assessment of cerebral autoregulation and baroreflex in first-ever ischemic stroke patients<br><u>S.J. Yeh</u> , C.C. Chiu, B.Y. Liao<br>Taichung, Taiwan  |
| Poster #46 | Increased baroreflex sensitivity correlates with clinical improvement of acute stroke<br><u>M.J. Hilz</u> , H. Marthol, A. Akhundova, P. De Fina, S. Schwab, S. Moeller<br>Erlangen, Germany                                 |
| Poster #47 | Baroreflex regulates arterial pressure by modulating vascular properties, not by modulating ventricular properties<br><u>K. Sunagawa</u><br>Fukuoka, Japan   |

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| Poster #48  | Angiotensin II-induced reactive oxygen species signaling in sympathetic ganglia<br>S.W. Flanagan, C.A. Whiteis, F.M. Abboud, <u>M.W. Chapleau</u><br>Iowa City, IA, USA  |
| Poster #49  | Reduced SK channel function mediates enhanced excitability of pre-sympathetic PVN neurons and sympathoexcitation in heart failure<br><u>L. Gui</u> , J.H. Zhu, L.P. LaGrange, Q.H. Chen<br>Houghton, MI, USA   |
| Poster #50  | Early autonomic dysfunction and cardiac failure in a mouse model of spinal muscular atrophy<br><u>A.K. Bevan</u> , K.R. Hutchinson, K.D. Foust, L. Braun, V.L. McGovern, L. Schmelzer, J.G. Ward, J.C. Petruska, P.A. Lucchesi, A.H.M. Burghes, B.K. Kaspar<br>Columbus, OH, USA   |
| Poster #51  | Blood flow dynamics in sciatic nerve supply artery detected by Doppler ultrasound<br><u>J. Junuzovic</u> , M.L. Thorne, J.C. Lacefield, J.K. Shoemaker<br>London, ON, Canada   |
| Poster #LB2 | Left and right stellate ganglion stimulation modulates left ventricular function, regional myocardial interstitial norepinephrine kinetics and activation recovery interval<br><u>W. Zhou</u> , M. Vaseghi, R. Ramirez, N. Patel, K. Shivkumar, A. Mahajan<br>Los Angeles, CA, USA |
| Poster #LB3 | Bilateral renal denervation in established hypertension results in acute fall of blood pressure in spontaneous hypertensive stroke prone rat<br>J.T. Phelps, H. Garver, <u>G. Fink</u><br>E. Lansing, MI, USA  |
| Poster #LB4 | Autonomic modulation and arterial compliance in young African American women<br><u>P. Latchman</u> , G. Gates, K. Sollanek, R. Axtell, R. De Meersman<br>New Haven, CT, USA  |
| Poster #LB5 | Modulatory influence of sympathetic nervous system activity on vascular endothelial dysfunction with aging in humans<br>R.E. Kaplon, A.E. Walker, <u>D.R. Seals</u><br>Boulder, CO, USA  |

| <b>POSTER SESSION III</b><br><b>Saturday, November 6, 2010</b><br><b>9:15-10:45 AM</b>   |   |
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| <b>Pediatric Disorders &amp; Autonomic Neuropathies</b><br><b>Chair: Felicia Axelrod</b> |   |
| Poster #52   | Postural tachycardia in children and adolescents - what is abnormal?<br><u>W. Singer</u> , D.M. Sletten, T.L. Opfer-Gehrking, P.A. Low<br>Rochester, MN, USA  |
| Poster #53   | Length of tilt table test in children: an unresolved problem<br>S. Kassabian, T.C. Chelimsky, D. Zhang, <u>G. Chelimsky</u><br>Cleveland, OH, USA   |
| Poster #54   | Co-morbidities in pediatric patients with postural tachycardia syndrome<br>A. Ojha, T.C. Chelimsky, <u>G. Chelimsky</u><br>Cleveland, OH, USA   |
| Poster #55   | Orthostatic tolerance and autonomic symptoms in a prospective cohort of adolescents with chronic fatigue syndrome and recovered controls following infectious mononucleosis<br>B.Z. Katz, <u>J.M. Stewart</u> , Y. Shiraishi, C.J. Mears, R. Taylor<br>Hawthorne, NY, USA |
| Poster #56   | Functional gastrointestinal disorders (FGID): Not just a GI problem<br><u>G. Chelimsky</u> , D. Zhang, S. Safder, T. Chelimsky<br>Cleveland, OH, USA  |
| Poster #57   | Headache following reflex syncope in adolescents may be due to deregulated cerebral blood flow<br><u>A.J. Ocon</u> , D. Clark, M.S. Medow, J.M. Stewart<br>Valhalla, NY, USA  |
| Poster #58   | Familial dysautonomia: alterations in cardiopulmonary regulation during wakefulness and sleep<br>M.S. Carroll, A.S. Kenny, J.M. Ramirez, <u>D.E. Weese-Mayer</u><br>Chicago, IL, USA  |
| Poster #59   | Congenital Central Hypoventilation Syndrome (CCHS): PHOX2B genotype/CCHS pupillary function phenotype<br>P.P. Patwari, J. Chesniak, N.L. Kuntz, A.S. Kenny, <u>D.E. Weese-Mayer</u><br>Chicago, IL, USA   |
| Poster #60   | Longitudinal changes to neurophysiologic function in diabetes<br><u>C. Gibbons</u> , R. Freeman, A. Veves<br>Boston, MA, USA  |
| Poster #61   | CANCELLED   |
| Poster #62   | A unique deficit in pupillary function in autoimmune autonomic ganglionopathy<br><u>S. Vernino</u><br>Dallas, TX, USA   |
| Poster #63   | A case of autonomic autoimmune ganglionopathy: Profound improvement with maintenance rituximab<br><u>B.K. Black</u> , R.D. Hollenbeck, A.C. Peltier, I. Biaggioni, D. Robertson, E.F. Winton, S.R. Raj<br>Nashville, TN, USA  |

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| Poster #64  | Autonomic dysfunction in chronic inflammatory demyelinating polyradiculoneuropathy<br><u>J.J. Figueroa</u> , P.J. Dyck, P. Sandroni, R.S. Laughlin, J.A. Mercado, R. Massie, P.A. Low<br>Rochester, MN, USA  |
| <p><b>Multiple System Atrophy &amp; Parkinson's Disease</b><br/> <b>Chair: Horacio Kaufmann</b></p> |  |
| Poster #65  | Prospective 5-year natural history study of probable multiple system atrophy (MSA) in 175 North American subjects<br>S. Gilman, <u>P.A. Low</u> , S. May, C. Tanner, M. Stern, P. Sandroni, S. Reich, F. Marshall, P. Novak, J. Jankovic, G. F. Wooten, B. Racette, D. Sletten, C. Shults<br>Rochester, MN, USA  |
| Poster #66  | Autopsy confirmed multiple system atrophy (MSA) cases: Mayo experience and role of autonomic function tests<br>V. Iodice, A. Lipp, J.E. Ahlskog, P. Sandroni, R.D. Fealey, J.E. Parisi, J.Y. Matsumoto, K.K. Nickander, D.M. Maraganore, E.E. Benarroch, K. Kimpinski, W. Singer, T.L. Gehrking, J.A. Gehrking, D.M. Sletten, A.M. Schmeichel, J.H. Bower, S. Gilman, J. Figueroa, <u>P.A. Low</u><br>Rochester, MN, USA |
| Poster #67  | Norepinephrine transporter blockade, as diagnostic tool for early multiple system atrophy. Case report<br><u>C. Shibus</u> , L.E. Bradbury, I. Biaggioni<br>Nashville, TN, USA   |
| Poster #68  | Severe generalized autonomic failure in Parkinson disease<br><u>P. Novak</u> , L. Qin, P. Ravin<br>Worcester, MA, USA  |
| Poster #69  | When in the course of Parkinson disease does cardiac sympathetic denervation occur?<br><u>D.S. Goldstein</u><br>Bethesda, MD, USA  |
| Poster #70  | Cooling of skin of the back: a novel autonomic function test<br><u>D.S. Goldstein</u> , L. Sewell, D.J. Gross, P. Sullivan, C. Holmes, R. Imrich, Y. Sharabi<br>Bethesda, MD, USA  |
| Poster #71  | Postganglionic sympathetic function in Parkinson's disease and multiple system atrophy<br>C. Noack, K. Hahn, L. Zange, R. Rukwied, M. Schmelz, <u>A. Lipp</u><br>Berlin, Germany   |
| Poster #72  | Fava bean ingestion potently alters catecholamine metabolism<br><u>T. Smith Cesar</u> , E.M. Garland, S. Lonce, D. Robertson<br>Nashville, TN, USA   |
| Poster #73  | Positron emission tomography guided placement of deep brain stimulator electrodes in the treatment of medically refractory cluster headache<br><u>W.P. Cheshire</u> , R.E. Wharen<br>Jacksonville, FL, USA   |

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| Poster #LB6 | Improvement of chronic idiopathic nausea in children with orthostatic intolerance by fludrocortisone is not accompanied by correction of gastric dysrhythmias<br><u>J.E. Fortunato</u> , H.A. Shaltout, M.L. Larkin, P.C. Rowe, D.I. Diz, KL. Koch<br>Winston-Salem, NC, USA;        |
| Poster #LB7 | Variability in heart rate and blood pressure in subjects with Parkinson's disease or extrapyramidal motor slowing: is variability a reliable indicator of autonomic dysfunction in Parkinson's disease?<br><u>R. Brown</u> , S.R. Duma, G.A. Broe, V. Macefield<br>Sydney, Australia |
| Poster #LB8 | The pressor response to water is inversely proportional to baseline blood pressure in autonomic failure patients<br><u>A. Hernandez</u> , L.E. Okamoto, H. Mustafa, S.R. Raj, E.M. Garland, A. Diedrich, B.K. Black, D. Robertson, I. Biaggioni<br>Nashville, TN, USA                |
| Poster #LB9 | Use of a calibrated method of massage therapy results in pressure-dependent reductions in cardiovascular parameters<br><u>K. Spurgin</u> , M. Valdez, A. Kaprielian, R. Nichol, B. Martinez, M.C. Curras-Collazo<br>Riverside, CA, USA   |



## SPECIAL INTEREST GROUP MEETINGS/EVENTS

|                                   |   |
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| <b>THURSDAY, NOVEMBER 4, 2010</b> |   |
|                                   |   |
| 1:30-3:30 PM                      | <b>AAS Board Meeting</b><br>Executive Boardroom   |
|                                   |   |
| 8:00 PM                           | <b>Rare Disease Consortium Reunion (NIH)</b><br>Dinner  |
|                                   |   |
| <b>FRIDAY, NOVEMBER 5, 2010</b>   |   |
|                                   |   |
| 2:30-3:30 PM                      | <b>CAR Editorial Board Meeting</b><br>Caxambas 1  |
|                                   |   |
| 5:45-7:00 PM                      | <b>Trainee and Young Investigator/Clinician Career Development/Mentoring Event</b><br>Quinn's Beach |

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