



30TH INTERNATIONAL SYMPOSIUM ON THE AUTONOMIC NERVOUS SYSTEM

**Wyndham Grand Clearwater Beach, Florida
November 6-9, 2019**

Preliminary Program

WEDNESDAY, NOVEMBER 6, 2019	
7:00-8:30 AM	Registration Dunes Foyer Continental Breakfast Pelican/Heron
8:30-8:45 AM	President's Welcome <u>Satish R. Raj, M.D.</u> President, American Autonomic Society Dunes I-III
8:45-9:45 AM	Plenary Lecture 1: Robertson Plenary Lecture Impact of obesogenic diet on autonomic regulation in a rat model of chronic spinal cord injury <u>Gregory D. Fink, Ph.D.</u> East Lansing, MI, USA Chair: Satish Raj Dunes I-III
9:45-10:00 AM	Coffee Break Dunes Foyer
Course on Autonomic Medicine Organizers: David Goldstein and Howard Snapper Video recording project sponsored by The Dysautonomia Project 10:00 AM-1:00 PM Dunes I-II <i>Parallel session</i>	
10:00-10:05 AM	Introduction to The Dysautonomia Project

10:05-1:00 PM	<p>Why are dysautonomias hard?</p> <p>What is the ANS?</p> <p>The ANS has parts</p> <p>Organization of the ANS</p> <p>Chemical messengers of the ANS</p> <p>Homeostatis and the ANS</p> <p>Stress and the ANS</p> <p>Introduction to dysautonomias</p> <p>The syndromic nature of dysautonomias</p> <p>Autonomic function tests</p> <p>Pediatric dysautonomias</p> <p>Adult dysautonomias</p> <p>Geriatric dysautonomias</p> <p>Miscellaneous dysautonomias</p> <p>Treatment of dysautonomias</p>
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Research Testing of Autonomic Function Workshop
Organizers: Amy Arnold and Matthew Lloyd
10:00 AM-12:30 PM
Dunes III
Parallel session

10:00-12:30 PM	<p>Assessment of blood pressure and heart rate in preclinical models <u>Amy Arnold, Ph.D.</u> Hershey, PA, USA</p> <p>Measurement of sympathetic activity in preclinical models <u>Sean Stocker, Ph.D.</u> Pittsburgh, PA, USA</p> <p>Cross-correlation analysis in the quantification of sympathetic outflow to muscle and skin in humans <u>Vaughan Macefield, Ph.D.</u> Melbourne, Australia</p> <p>How to measure cardio-vagal and sympathetic baroreflex sensitivity in humans <u>Andre Diedrich, M.D., Ph.D.</u> Nashville, TN, USA</p> <p>Catecholamines and cardiovascular autonomic neuropathies in humans <u>Giris Jacob, M.D., Ph.D.</u> Tel Aviv, Israel</p> <p>Quantitative assessment of sympathetic structure and function in humans <u>Christopher Gibbons, M.D.</u> Boston, MA, USA</p>
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12:30-1:30 PM	Lunch Break (on own)
Clinical Autonomic Testing Workshop	
Organizers: Wolfgang Singer and David Sletten	
1:30-4:00 PM	Dunes III
1:30-4:00 PM	Clinical autonomic testing – physiology and approach Testing demonstration Illustrative cases, pitfalls, and discussion
4:00-5:00 PM	Free Time
5:00-5:30 PM	Registration: Industry Dinner Symposium Dunes I-III
5:30-7:15 PM	Industry Dinner Symposium: Anylam Pharmaceuticals Dunes I-III
7:15-7:30 PM	Coffee Break Dunes Foyer
7:30-9:30 PM	Poster Session I and Trainee Poster Competition Dunes IV-V and Dunes Foyer
THURSDAY, NOVEMBER 7, 2019	
7:00-8:30 AM	Continental Breakfast Pelican/Heron

Session 1: Autonomic Regulation of Heart and Vasculature**Chairs: Kaushik Patel and Jacqueline Limberg**

8:30-10:00 AM

Dunes I-II

Parallel session

8:30-8:45 AM	Evidence of adaptations in the neural control of body temperature following heat acclimation in humans <u>H. Barry</u> , G. Chaseling, S. Moreault, C. Sauvageau, P. Behzadi, H. Gravel, N. Ravanelli, D. Gagnon Montréal, Canada
8:45-9:00 AM	Low-frequency sinusoidal electrical stimulation of the dorsolateral prefrontal cortex modulates muscle sympathetic nerve activity in humans <u>T. Dawood</u> , L.A. Henderson, V.G. Macefield Melbourne, Australia
9:00-9:15 AM	Sympathetic vasodilation improves insulin-mediated microvascular recruitment in the forearm of obese human subjects <u>J. Celedonio</u> , J.N. Patel, A. Ruiz, E.C. Smith, S. Lonce, S. Paranjape, L. Okamoto, I. Biaggioni, A. Gamboa Nashville, TN, USA
9:15-9:30 AM	Differences in regional grey matter volume of the brain are related to mean blood pressure and muscle sympathetic nerve activity in humans S. Kobuch, R.H. Fatouleh, J.M. Macefield, L.A. Henderson, <u>V.G. Macefield</u> Melbourne, Australia
9:30-9:45 AM	Impact of age and sex on neural cardiovascular responsiveness to cold pressor test in humans <u>M.L. Keller-Ross</u> , H.A. Cunningham, J.R. Carter Minneapolis, MN, USA
9:45-10:00 AM	Neuroplasticity in nucleus tractus solitarii after cardiovascular deconditioning induced by hindlimb unloading in rats <u>L. Lima-Silveira</u> , E.M. Hasser, D.D. Kline Columbia, MO, USA

Symposium 1: Role of Autoimmunity in POTS**Sponsored by Dysautonomia International****Chairs: Steven Vernino and Xichun Yu**

8:30-10:00 AM

Dunes III

Parallel session

8:30-8:35 AM	Introduction to Dysautonomia International
8:35-10:00 AM	Autoimmunity in POTS: overview <u>Steven Vernino, M.D., Ph.D.</u> Dallas, TX, USA Overview of G protein coupled receptor antibodies in POTS <u>David C. Kem, M.D.</u> and <u>Xichun Yu, M.D.</u> Oklahoma City, OK, USA Sjögren syndrome and POTS <u>Brent P. Goodman, M.D.</u> Scottsdale, AZ, USA

10:00-10:30 AM	Coffee Break
Session 2: Autonomic Neuropathy and POTS	
Chairs: Howard Snapper and Meredith Bryarly	
10:30 AM-12:00 PM	
Dunes I-II	
<i>Parallel session</i>	
10:30-10:45 AM	Low frequency variability of systolic arterial pressure accurately predicts autonomic injury during the acute phase of spinal cord injury <u>V.E.M. Lucci</u> , J.A. Inskip, M.S. McGrath, B.K. Kwon, V.E. Claydon Burnaby, Canada
10:45-11:00 AM	Clinical phenotyping of postural orthostatic tachycardia syndrome <u>B. Roschach</u> , V. Galvis, A.I. Penzlin, I. Bonyhay, J. Celli, R. Freeman, C.H. Gibbons Boston, MA, USA
11:00-11:15 AM	Orthostatic intolerance in the young and the benefits of oral rehydration <u>M.S. Medow</u> , K. Guber, S. Chokshi, C. Terilli, P. Visintainer, J.M. Stewart Valhalla, NY, USA
11:15-11:30 AM	Hereditary transthyretin (hATTR) amyloidosis: symptoms and signs in early disease <u>C.H. Gibbons</u> , A. Gonzalez-Duarte, F. Barroso, M. Campagnono, J. Garcia, S. Rajan, R. Freeman Boston, MA, USA
11:30-11:45 AM	Putative genetic markers for postural tachycardia syndrome <u>J.R. Boris</u> , H. Hakonarson Philadelphia, PA, USA
11:45-12:00 PM	Responsiveness of neuropathy symptom and change (NSC) score components in inotersen treatment of hereditary transthyretin amyloidosis polyneuropathy <u>P.J.B. Dyck</u> , T. Coelho, M. Waddington Cruz, T. Brannagan, S. Khella, C. Karam, J.L. Berk, M.J. Polydefkis, J.C. Kincaid, J.F. Wiesman, W.J. Litchy, M.L. Mauermann, E.J. Ackermann, B.F. Baker, S.W. Jung, S.Guthrie, M. Pollock, P.J. Dyck Rochester, MN, USA

Symposium 2: Sex Differences in Autonomic Control of Blood Pressure and Metabolism**Chairs: Cyndya Shibao and Amanda Miller**

10:30 AM-12:00 PM

Dunes III

Parallel session

10:30-12:00 PM	<p>Angiotensin-(1-7) and metabolic function in obesity: sex matters <u>Amy Arnold, Ph.D.</u> Hershey, PA, USA</p> <p>Neural control of blood pressure during pregnancy in humans <u>Qi Fu, M.D., Ph.D.</u> Dallas, TX, USA</p> <p>Racial difference in cholinergic modulation of oxidative stress and its clinical application in obese women <u>Cyndya Shibao, M.D.</u> Nashville, TN, USA</p> <p>Compensatory interaction between sympathetic baroreflex sensitivity and vascular transduction in males but not females <u>C.E. Taylor, S.L. Hissen, R. Brown, V.G. Macefield</u> Sydney, Australia</p> <p>Sympathetic and cardiovascular responses to acute mental stress in post-traumatic stress disorder (PTSD): sex differences <u>I.T. Fonkoue, T.N. Jones, M. Vemulapalli, D. DaCosta, M.L. Kankam, J. Park</u> Atlanta, GA, USA</p>
12:00-1:30 PM	Poster Session II (box lunch) Dunes IV-V and Dunes Foyer
1:30-4:00 PM	Free Time
4:00-5:30 PM	Mentor-Mentee Round Table Organizers: Amanda Miller and Elisabeth Golden Pelican/Heron
5:30-6:00 PM	Free Time
6:00-7:00 PM	Plenary Lecture 2: Streeten Plenary Lecture Multiple system atrophy and brainstem control of survival <u>Eduardo E. Benarroch, M.D.</u> Rochester, MN, USA Chair: Satish Raj Dunes I-III
Session 3: Awards Presentations Chairs: Satish Raj and Marvin Medow 7:00-8:30 PM Dunes I-III	
7:00-7:15 PM	FMS/Penaz Wesseling Travel Fellowship Award: Towards improved hemodynamic criteria to distinguish between classic orthostatic hypotension and reflex syncope during tilt-table testing <u>M. Gharig, F.I. Kerkhof, R.H.A.M. Reijntjes, R.D. Thijs, J.G. van Dijk</u> Leiden, The Netherlands

7:15-7:30 PM	FMS/Penaz Wesseling Travel Fellowship Award: Effect of dietary salt intake on morning blood pressure surge in healthy women R. Takeda, A.S. Stickford, J.-K. Yoo, R.A. Parker, M.A. Roberts-Reeves, Q. Fu Dallas, TX, USA
7:30-7:45 PM	Streeten Travel Fellowship Award: Increased gastrointestinal gut hormones secretion following a glucose challenge in postural orthostatic tachycardia syndrome N.C. Breier, S.Y. Paranjape, S. Scudder, S. Lonce, S.E. Mehr, A. Diedrich, C.R. Flynn, C.A. Shiba Nashville, TN, USA
7:45-8:15 PM	The Felicia Axelrod Award
8:15-8:30 PM	Recognition of Fellows of the American Autonomic Society
FRIDAY, NOVEMBER 8, 2019	
6:15-6:45 AM	Registration: Industry Breakfast Symposium Dunes I-III
6:45-8:00 AM	Industry Breakfast Symposium: Akcea Therapeutics Dunes I-III
8:00-9:00 AM	Plenary Lecture 3: Hot Topic Plenary Lecture The gut microbiome: all hype or true hope? <u>Amir Zarrinpar, M.D., Ph.D.</u> La Jolla, CA, USA Chair: Satish Raj Dunes I-III
9:00-9:15 AM	Coffee Break

Session 4: OH and Supine Hypertension Chairs: William Farquhar and Mitchell Miglis 9:15-10:50 AM Dunes I-II <i>Parallel session</i>	
9:15-9:30 AM	A phase 2 study of the efficacy, durability, and safety of amprelosetine (TD-9855), a norepinephrine reuptake inhibitor, given once-daily to treat neurogenic orthostatic hypotension (nOH) in subjects with synucleinopathies <u>H. Kaufmann</u> , I. Biaggioni, K. Chatamra, A. Panneerselvam, B. Haumann, R. Vickery New York, NY, USA
9:30-9:45 AM	Local passive heat in the treatment of nocturnal supine hypertension in autonomic failure <u>L.E. Okamoto</u> , J.E. Celedonio, E.C. Smith, A. Gamboa, C.A. Shibao, A. Diedrich, S. Paranjape, B.K. Black, J.A. Muldowney 3rd, A.C. Peltier, R. Habermann, C.G. Crandall, I. Biaggioni Nashville, TN, USA
9:45-10:00 AM	Changes in supine blood pressure with long-term droxidopa use L.A. Hewitt, <u>S. Gorny</u> , A. Lindsten, M. Karnik-Henry, S. Kymes, A. Favit Deerfield, IL, USA
10:00-10:15 AM	Best Basic Science Autonomic Research: Bezold-Jarisch reflex and beyond: differential engagement of inhibitory and excitatory cardiopulmonary reflexes by capsaicin and phenylbiguanide <u>R.A. Larson</u> , M.W. Chapleau Iowa City, IA, USA
10:15-10:30 AM	Can urine sodium concentration be determined through chloride test strips? <u>N.D. Heeney</u> , B.C.D. Hockin, S. Sanatani, K. Armstrong, V.E. Claydon Burnaby, Canada
10:30-10:50 AM	Presentations from top 4 posters (4 @ 5 min each)
Symposium 3: Vasovagal Syncope: The Present and the Future Chairs: Satish R. Raj and Juan Guzman 9:15-10:50 AM Dunes III <i>Parallel session</i>	
9:15-10:50 AM	Drugs for vasovagal syncope: what are the data? <u>Satish R. Raj, M.D.</u> Calgary, Canada Pacemakers for vasovagal syncope <u>Dan Sorajja, M.D.</u> Scottsdale, AZ, USA Can we ablate away vasovagal syncope? <u>Phang Boom Lim, Ph.D.</u> London, UK Syncope in the young: what do we know about their physiology so far? <u>Mohammed Numan, M.D.</u> Houston, TX, USA
10:50-11:30 AM	Coffee Break

Symposium 4: Heart Failure: Cutting Edge Autonomic Approach**Chairs: Mark W. Chapleau and Amanda Peltier**

11:30 AM-1:00 PM

Dunes I-II

Parallel session

11:30-1:00 PM	<p>Carotid body contribution to autonomic disorders <u>Rodrigo Iturriaga, Ph.D.</u> Santiago, Chile</p> <p>Molecular basis of cardiac mechanosensory and chemosensory signaling: implications in heart failure <u>Mark W. Chapleau, Ph.D.</u> Iowa City, IA, USA</p> <p>Splanchnic modulation in heart failure <u>Marat Fudim, M.D.</u> Durham, NC, USA</p>
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Symposium 5: Gastrointestinal System in Autonomic Disorders**Chairs: Gisela Chelimsky and Qi Fu**

11:30 AM-1:00 PM

Dunes III

Parallel session

11:30-1:00 PM	<p>Enteric nervous system: the big brain! <u>Keith A. Sharkey, Ph.D.</u> Calgary, Canada</p> <p>Evaluation of GI problems in dysautonomia <u>Gisela Chelimsky, M.D.</u> Milwaukee, WI, USA</p> <p>Management pearls for GI problems in autonomic disorders <u>John E. Fortunato, Jr., M.D.</u> Evanston, IL, USA</p>
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1:00-7:00 PM	Free Time/Lunch On Your Own
1:30-3:30 PM	AAS Board Meeting Ibis
3:30-4:30 PM	CAR Editorial Board Meeting Ibis
4:30-5:30 PM	AAS Committee Meetings Pelican/Heron
7:00-10:00 PM	Presidential Dinner Pool Deck

SATURDAY, NOVEMBER 9, 2019

6:30-8:00 AM	Continental Breakfast Pelican/Heron
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8:00-8:45 AM	<p>Plenary Lecture 4: MSA Plenary Lecture The early stages of synucleinopathies: is prodromal MSA detectible? <u>Ronald Postuma, M.D.</u> Montreal, Canada Chair: Satish Raj Dunes I-III</p>
<p>Session 5: MSA and Other Degenerative Diseases Sponsored by MSA Coalition Chairs: Janice Golden and Jose-Alberto Palma Dunes I-III</p>	
8:45-10:05 AM	
8:45-8:50 AM	Introduction to MSA Coalition
8:50-9:05 AM	<p>Don Summers Memorial MSA Travel Award: Baseline characteristics of patients with multiple system atrophy enrolled in the Natural History Study of the Synucleinopathies <u>M.A. Perez</u>, J.-A. Palma, L. Norcliffe-Kaufmann, W. Singer, P. Low, M.T. Pellecchia, H.-J. Kim, C. Shibao, A. Peltier, I. Biaggioni, D. Giraldo, M.J. Marti, A. Fanciulli, C. Terroba, M. Merello, D.S. Goldstein, R. Freeman, C.H. Gibbons, S. Vernino, F. Krismer, G. Wenning, H. Kaufmann; on behalf of the Natural History Study of the Synucleinopathies Study Group New York, NY, USA</p>
9:05-9:20 AM	<p>Predicting evolution in pure autonomic failure <u>E.A. Coon</u>, S.E. Berini, J.N. Mandrekar, E.E. Benarroch, P. Sandroni, P.A. Low, W. Singer Rochester, MN, USA</p>
9:20-9:35 AM	<p>Cutaneous biomarkers in multiple system atrophy <u>N. Wang</u>, S. Rajan, D. Kern, J.A. Palma, H. Kaufmann, R. Freeman, C.H. Gibbons Boston, MA, USA</p>
9:35-9:50 AM	<p>Long-term administration of intrathecal mesenchymal stem cells in multiple system atrophy – a compassionate use experience <u>W. Singer</u>, A.B. Dietz, A.D. Zeller, T.L. Gehrking, J.D. Schmelzer, D.M. Sletten, J.A. Gehrking, A.M. Schmeichel, E.A. Coon, P. Sandroni, E.E. Benarroch, J.Y. Matsumoto, J.H. Bower, A. Hassan, A. McKeon, P.A. Low Rochester, MN, USA</p>
9:50-10:05 AM	<p>Autonomic changes in Parkinson’s disease patients treated with L-threo-3,4-dihydroxyphenylserine and high dose Carbidopa therapy <u>K.R. Hay</u>, K.E. McDonnell, P. Trujillo, C. Shibao, S. Paranjape, O. Roman, D.O. Claassen Nashville, TN, USA</p>
10:05-10:30 AM	Coffee Break
10:30 AM-12:30 PM	<p>Case-Based Discussion: Ultimate Autonomic Challenge Organizer: Juan Guzman Dunes I-III</p>
12:30-1:00 PM	<p>AAS Business Meeting and Closing Remarks Dunes I-III</p>
2:00-3:00 PM	Registration: Patient Seminar: Updates from the 2019 AAS Meeting
3:00-8:00 PM	<p>Patient Seminar: Updates from the 2019 AAS Meeting Organized by Dysautonomia International Dunes I-II (separate registration required)</p>

POSTER SESSION I AND TRAINEE POSTER COMPETITION***WEDNESDAY, NOVEMBER 6, 2019****7:30-9:30 PM**

Dunes IV-V and Dunes Foyer

****Abstracts with asterisks are included in the Trainee Poster Competition*****AUTONOMIC FAILURE**

Poster #1*	Addressing orthostatic hypotension in Parkinson disease patients in a neurology resident continuity clinic: one year follow-up <u>E.P. Golden</u> , T. Le, B. Bleiberg, L.S. Brown, S. Khan, S. Vernino, P. Khemani Dallas, TX, USA
Poster #2*	Disease stage and UMSARS progression in patients with multiple system atrophy enrolled in the Natural History Study of the Synucleinopathies: implications for clinical trials <u>M.A. Perez</u> , J.-A. Palma, L. Norcliffe-Kaufmann, W. Singer, P. Low, M.T. Pellecchia, H.-J. Kim, C. Shibao, A. Peltier, I. Biaggioni, D. Giraldo, M.J. Marti, A. Fanciulli, C. Terroba, M. Merello, D.S. Goldstein, R. Freeman, C.H. Gibbons, S. Vernino, F. Krismer, G. Wenning, H. Kaufmann; on behalf of the Natural History Study of the Synucleinopathies Study Group New York, NY, USA;
Poster #3*	Symptoms of orthostatic hypotension <u>S. Rajan</u> , J. Celli, I. Bonyhay, C.H. Gibbons, R. Freeman Boston, MA, USA
Poster #4	Conjugal multiple system atrophy: chance, shared risk factors, or evidence of infectivity? <u>E.A. Coon</u> , W. Rocca, J.E. Ahlskog, J.Y. Matsumoto, P.A. Low, W. Singer Rochester, MN, USA
Poster #5*	Long-term trends in myocardial sympathetic innervation and function in synucleinopathies <u>G. Lamotte</u> , C. Holmes, T. Wu, D.S. Goldstein Bethesda, MD, USA
Poster #6*	Reliable indicators of autonomic function test in Parkinson's disease <u>B.A. Yoon</u> , J.K. Kim, J.W. Kim, S.M. Cheon Busan, South Korea
Poster #7	Post-mortem and in vivo evidence for "sick but not dead" central dopaminergic neurons in multiple system atrophy: implications for neurotrophic factor gene enhancement therapy <u>D.S. Goldstein</u> , P. Sullivan, C. Holmes, K. Bankiewicz Bethesda, MD, USA
Poster #8*	Longitudinal changes in autonomic symptom burden predict decline in activities of daily living in Parkinson's disease <u>M. Sklerov</u> , C. Shih, N. Browner, E. Dayan Chapel Hill, NC, USA
Poster #9*	Submandibular gland alpha-synuclein deposition occurs without local sympathetic denervation or dysfunction in Parkinson disease <u>R. Isonaka</u> , P. Sullivan, D.S. Goldstein Bethesda, MD, USA

GENETIC AUTONOMIC DISORDERS	
Poster #10*	Colocalization of alpha-synuclein with tyrosine hydroxylase in skin biopsies from individuals at genetic risk of Parkinson disease: a genotype-phenotype study <u>R. Isonaka</u> , D. Narendra, D.S. Goldstein Bethesda, MD, USA
Poster #11*	A case of indifference to pain and central anhidrosis <u>K. Shouman</u> , K.V. Minota Pacheco, A.M. Schmeichel, T.L. Gehrking, J.A. Gehrking, A.D. Zeller, P.A. Low, W. Singer Rochester, MN, USA
Poster #12*	Neurogenic bladder dysfunction in patients with familial dysautonomia: a cross-sectional study <u>B.J. Balgobin</u> , J.-A. Palma, B. Peyronnet, B. Brucker, H. Kaufmann New York, NY, USA
Poster #13*	Frequency of seizures and epilepsy in familial dysautonomia <u>B.J. Balgobin</u> , M.A. Perez, J.-A. Palma, L. Norcliffe-Kaufmann, H. Kaufmann New York, NY, USA
AUTONOMIC REGULATION	
Poster #14	Does renal denervation restore GABAergic tone in the paraventricular nucleus and thus attenuate the enhanced activation of the PVN in heart failure? <u>K.P. Patel</u> , K. Katsurada, X. Liu, H. Zheng Omaha, NE, USA
Poster #15*	Role of arterial baroreflex in respiratory sinus arrhythmia: a study using oscillatory lower body negative pressure in human subjects <u>A. Sood</u> , S. Srivastav, D.S. Chandran, A.K. Jaryal, K.K. Deepak New Delhi, India
Poster #16*	The effect of dietary sodium intake on central blood pressure variability in young adults <u>K.U. Migdal</u> , J.C. Watso, M.C. Babcock, A.T. Robinson, M.M. Wenner, S.D. Stocker, W.B. Farquhar Newark, DE, USA
CARDIOVASCULAR DISEASE, OBESITY & AGING	
Poster #17*	Relationships between cardiovascular disease, autonomic function, neuropathic pain, and depression following spinal cord injury <u>M.C. Dorton</u> , S. de Groot, M. Post, J.J. Cragg, J.K. Kramer, V.E. Claydon Burnaby, BC, Canada
Poster #18	Slow breathing training reduces blood pressure even in healthy normotensive subjects <u>E.C. Smith</u> , S. Paranjape, K. Nelson, A. Diedrich, G. Birdee, A. Gamboa Nashville, TN, USA
DIABETIC, AUTOIMMUNE & OTHER AUTONOMIC NEUROPATHIES	
Poster #19*	Granulomatosis with polyangiitis presenting as autonomic failure <u>B. Blech</u> , M. Grill, B. Goodman Scottsdale, AZ, USA
Poster #20	Quality improvement and practice-based research in diabetic autonomic neuropathy: preliminary observations <u>A. Barboi</u> , O. Kincaid, S. Pocica, S. Tideman, L. Garduno, V. Patel, L. Hillman, D. Macapinlac, R. Frigerio, K.C. Simon, D. Maraganore Evanston, IL, USA
Poster #21*	Clinical features of autoimmune gastrointestinal dysmotility in Japan <u>A. Mukaino</u> , S. Nakane, H. Minami, H. Isomoto, O. Higuchi, E. Ihara, A. Ido, H.

	Matsuo, K. Nakao, T. Yamashita, Y. Ando Kumamoto, Japan
EXERCISE, TEMPERATURE REGULATION & HYPOXIA	
Poster #22	Quantification of vasodilation and sweating responses during heat stress in a person with and without spinal cord injury: a case report <u>M.T. Trbovich</u> , R.C. Camacho San Antonio, TX, USA
Poster #23*	Is there an association between resting heart rate and cardiovagal function early-to-late phases of recovery after resistance training? <u>G.L. Garcia</u> , C.J.G. Cruz, E.M.K.V.K. Soares, M.T. Morlin, L.F. Junqueira Jr., L.G.G. Porto, G.E. Molina Brasília, Brazil
Poster #24*	Evolution of pulmonary hemodynamics during severe sustained hypoxia <u>F. Hoffmann</u> , U. Limper, V. Zaha, H. Reuter, L. Zange, J. Schulz-Menger, M. Hein, H. Sadek, S. Baldus, B. Levine, J. Jordan, J. Tank Cologne, Germany
MICRONEUROGRAPHY & CARDIOVASCULAR REFLEXES IN HUMANS	
Poster #25*	Early-onset blood pressure and muscle sympathetic nerve activity responsiveness to cold pressor test in young, healthy adults <u>H.A. Cunningham</u> , J.R. Carter Houghton, MI, USA
Poster #26*	Cardiorespiratory response to the exercise pressor reflex in women through the menstrual cycle with or without oral contraceptive use <u>I. Ivry</u> , E. Assadpour, S. Wasef, B. Adeyinka, H. Edgell Toronto, ON, Canada
Poster #27*	Effects of obstructive sleep apnea on baroreflex gain in patients with hypertrophic cardiomyopathy <u>S. Venkataraman</u> , A. Rajendran, J. Bukartyk, N. Covassin, J.B. Geske, M. Mansukhani, A.C. Chahal, V.K. Somers Rochester, MN, USA
NEUROIMAGING IN BRAIN & HEART	
Poster #28	HIV-related deficits in volume of the central autonomic network and resting cardio-autonomic tone <u>R. McIntosh</u> , J. Pappozzi, D. Qadir, D. Dukenik, G. French, J. Lobo Miami, FL, USA
Poster #29*	Specific cerebral multiple sclerosis lesions alter cardiovascular autonomic modulation <u>K. Winder</u> , R.A. Linker, R. Wang, T. Engelhorn, A. Dörfler, K. Fröhlich, M.J. Hilz Erlangen, Germany
ORTHOSTATIC HYPOTENSION & SYNCOPE	
Poster #30	Artificial intelligence algorithms and natural language processing for the recognition of syncope patients in emergency department medical records <u>F. Dipaola</u> , M. Gatti, D. Shiffer, V. Pacetti, A.G. Bottaccioli, M. Minonzio, R. Menè, M. Solbiati, G. Costantino, M. Anastasio, E. Sini, F. Barbic, E. Brunetta, R. Furlan Milan, Italy
Poster #31*	Forearm vascular resistance responses to the Valsalva maneuver <u>B.C.D. Hockin</u> , E.Z. Tang, M.G. Lloyd, V.E. Claydon Burnaby, BC, Canada

Poster #32	Patient-reported “good” days during a prospective study of the treatment of neurogenic orthostatic hypotension with droxidopa <u>S. Kymes</u> , L.A. Hewitt, C. François Deerfield, IL, USA
Poster #33*	Midodrine for the prevention of tilt-induced and clinical vasovagal syncope: A systematic review and meta-analysis <u>L. Lej</u> , S.R. Raj, R.S. Sheldon Calgary, AB, Canada
Poster #34	Elective EEG monitoring combined with head-up tilt in the diagnosis of syncope and non-syncopal fainting <u>J.A.S. Muldowney 3rd</u> , P. Sharma, L.E. Okamoto, H.H. Sonmezturk, A. Peltier, C.A. Shibao, I. Biaggioni Nashville, Tennessee, USA
Poster #35	In their own words: a qualitative analysis of patients’ experience of living with syncope and POTS <u>M. Runte</u> , T. Runte, S. Jarvie, D. Basil, S. Bedard, D. Porter, K. Williams-Whitt Lethbridge, AB, Canada
Poster #36	Initial orthostatic hypotension causes (transient) postural tachycardia <u>J.M. Stewart</u> , T. Fialkoff, B. Tuma-Marcella, P. Visintainer, C. Terilli, M.S. Medow Valhalla, NY, USA
PEDIATRIC AUTONOMIC DISORDERS	
Poster #37*	IVIG for treatment of acquired pseudo-obstruction of unknown etiology <u>N. Rademacher</u> , T. Chelimsky, M. Sood, R. Kliegman, D. Basel, G. Chelimsky Milwaukee, WI, USA
Poster #38	Concurrent encephalopathy and autonomic failure in a child with positive ganglionic nicotinic acetylcholine receptor antibodies <u>G.A. Cook</u> , J.L. Jaskiewicz Bethesda, MD, USA
Poster #39	Gastrointestinal (GI) symptoms and GI biomarkers in postural orthostatic tachycardia syndrome (POTS) and cardiogenic syncope (NCS) in adolescents and young adults <u>M.T. Numan</u> , D. Halawa, I.J. Butler, H. Zamil Houston, TX, USA
Poster #40	Breathing disturbances in a child with Rett syndrome <u>H.W. Choi</u> , P. Pianosi Minneapolis, MN, USA
POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME (POTS)	
Poster #41	Postural orthostatic tachycardia syndrome in a family with pseudoxanthoma elasticum <u>A. Arvantaj</u> , C. Geiger, J. Robinson, B. Katirji Cleveland, OH, USA
Poster #42	Synergistic but separable sensory changes in migraineurs and postural tachycardia syndrome <u>M.M. Cortez</u> , L. Millsap, K.C. Brennan Salt Lake City, UT, USA
Poster #43*	Body compression in postural tachycardia syndrome improves orthostatic tolerance in a dose-dependent pattern <u>K.M. Bourne</u> , R.S. Sheldon, D.V. Exner, J. Tyberg, K. Kogut, J. Ng, N. Sheikh, M. Lloyd, E. Scott, S.R. Raj Calgary, AB, Canada

Poster #44*	Diagnosis of postural orthostatic tachycardia syndrome: a comparison between the tilt and active stand tests <u>V. Galvis</u> , A.I. Penzlin, B. Roschach, S. Rajan, J. Celli, I. Bonyhay, R. Freeman, C.H. Gibbons Boston, MA, USA
Poster #45*	Cognitive function is impaired during active standing in postural orthostatic tachycardia syndrome <u>A.J. Miller</u> , T. Sheehan, M. Feeley, K. Bourne, A.C. Arnold Hershey, PA, USA
Poster #46*	Prevalence of hypermobile Ehlers-Danlos syndrome in postural orthostatic tachycardia syndrome <u>A.J. Miller</u> , L.E. Stiles, T. Sheehan, R. Bascom, H.P. Levy, C. Francomano, A.C. Arnold Hershey, PA, USA
Poster #47	Immunotherapy as an effective treatment of POTS with functionally active adrenergic and muscarinic antibodies after human papillomavirus vaccination: a case report <u>A.T. Del Pozzi</u> , G. Wallukat, I. Schimke, S. Blitshteyn Muncie, IN, USA
Poster #48*	Natural history of postural orthostatic tachycardia syndrome <u>A.I. Penzlin</u> , B. Roschach, A. Benson, V. Galvis, I. Bonyhay, C.H. Gibbons, R. Freeman Boston, MA, USA
Poster #49*	Effects of transcutaneous vagal nerve stimulation on orthostatic tolerance in patients with postural orthostatic tachycardia syndrome (POTS) <u>D. Shiffer</u> , R. Furlan, F. Barbic, M. Minonzio, B. Cairo, A. Porta, N. Montano, E. Tobaldini, L. Furlan, V. Urechie, I. Biaggioni, A. Diedrich Milan, Italy
Poster #50	A double-blind, placebo-controlled, crossover pilot trial of gabapentin for treatment of postural tachycardia symptoms <u>R.K. Khurana</u> Baltimore, MD, USA
Poster #51*	Cerebral blood flow, autoregulation, and symptoms during orthostasis with lower body compression in postural tachycardia syndrome <u>M.G. Lloyd</u> , K.M. Bourne, R.S. Sheldon, D.V. Exner, J. Tyberg, K. Kogut, J. Ng, N. Sheikh, E. Scott, S.R. Raj Calgary, AB, Canada
SYMPATHOVAGAL BALANCE & SPECTRAL ANALYSIS	
Poster #52*	Norepinephrine transporter inhibition with atomoxetine: autonomic effects during orthostasis in patients with vasovagal syncope <u>M.G. Lloyd</u> , L.Lei, J.C. Guzman, T. Kus, F.A. Ayala-Paredes, R.S. Sheldon, S.R. Raj Calgary, AB, Canada

POSTER SESSION II
THURSDAY, NOVEMBER 7, 2019
12:00-1:30 PM
Dunes IV-V and Dunes Foyer

NEUROIMAGING IN BRAIN & HEART

Poster #53	Cannabis induces changes in functional brain connectivity that correlate with increased vagal tone and clinical analgesia in chronic neuropathic pain <u>H. Sharon</u> , L. Weizman, J. Espaniol, L. Dayan, G. Jacob Tel Aviv, Israel
Poster #54	Peripheral chemoreflex drives sympathetic activation in the human brainstem and hypothalamus D.A. Gerlach, J. Manuel, A. Hoff, H. Kronsbein, F. Hoffmann, K. Heusser, A. Diedrich, H. Ehmke, J. Jordan, F. Beissner, <u>J. Tank</u> Cologne, Germany
Poster #55	Functional connectivity of the central autonomic network and regulation of parasympathetic tone in health and chronic disease <u>R. McIntosh</u> , K. Reaves, G. French, J. Lobo, C. Chang Miami, FL, USA

AUTONOMIC FAILURE

Poster #56	HIV-related decrement in respiratory arrhythmia during a deep breathing test <u>R. McIntosh</u> , K. Reaves, D. Dukenik, J. Lobo, V. Sookdeo Miami, FL, USA
Poster #57	Normal values of quantitative thermoregulatory sweat testing (Q-TST) <u>A. Arvantaj</u> , J. Robinson, C. Geiger, B. Katirji Cleveland, OH, USA
Poster #58	Experience from a multidisciplinary care clinic for multiple system atrophy <u>S. Vernino</u> , E. Golden, E. Kent, G. Huet, M. Bryarly Dallas, TX, USA
Poster #59	Neurogenic orthostatic hypotension in patients referred for evaluation in a Chilean autonomic clinic <u>J. Idiaquez</u> , O. Trujillo, J.F. Idiaquez, R. Iturriaga Santiago, Chile
Poster #60	Cutaneous alpha-synuclein deposition in idiopathic REM sleep behavioral disorder <u>M.G. Miglis</u> , J. Zitser, S. Rajan, E. During, R. Freeman, C.H. Gibbons Stanford, CA, USA
Poster #61	Acute effects of mechanical somatosensory stimulation on cardiac autonomic control and its relationship with postural control in patients with Parkinson's disease B.M. Franco, N.R. Marques, V.C. Moreno, M.H. Kuroda, F.A. Barbieri, <u>A.R. Zamunér</u> São Paulo, Brazil
Poster #62	Anti-cholinergic receptor antibodies, cardiovascular hemodynamics and dysautonomia symptoms relationship in pure autonomic failure: a two-year follow-up F. Barbic, M. Minonzio, B. Cairo, D. Shiffer, E. Brunetta, F. Dipaola, M. Folci, R. Fornerone, F. Andreetta, C. Antozzi, R. Mantegazza, A. Porta, <u>R. Furlan</u> Milan, Italy

Poster #63	A phase-2 clinical trial of sirolimus in multiple system atrophy: protocol, recruitment and preliminary adverse event profile <u>J.-A. Palma</u> , J. Martinez, S. Simon, L. Norcliffe-Kaufmann, H. Kaufmann New York, NY, USA
Poster #64	Impact of spinal cord injury on maximal cutaneous vasodilation, myogenic and venoarteriolar responses <u>M. Trbovich</u> , Y. Wu, W. Koek, J. Zhao, A. McMahon, D. Kellogg San Antonio, TX, USA
Poster #65	Sudomotor abnormalities in idiopathic REM sleep behavior disorder <u>J. Zitser</u> , S. Muppidi, D.I. Sinn, E. During, T. Prieto, S. Jaradeh, M.G. Miglis San Francisco, CA, USA
CARDIAC AUTONOMIC INNERVATION	
Poster #66	Multiple functional abnormalities in cardiac sympathetic nerves revealed by a comprehensive computational model in Lewy body diseases <u>D.S. Goldstein</u> , M. Pekker, G. Eisenhofer, Y. Sharabi Bethesda, MD, USA
Poster #67	The relationship between sympathetic modulation and central blood pressure in African American and Caucasian women <u>P. Latchman</u> , G. Gates, L. Mangone, T. Yue, R. Axtell, Q. Yang, M. Latchman, H. Zhang, J. Pereira, R. De Meersman New Haven, CT, USA
DIABETIC, AUTOIMMUNE & OTHER AUTONOMIC NEUROPATHIES	
Poster #68	Autonomic dysfunction and its association with painful and painless neuropathy R. Lüddecke, R. Baron, <u>J. Gierthmühlen</u> Kiel, Germany
Poster #69	Cold vasoconstriction in upper and lower extremities measured by a contactless method of vasomotor reactivity assessment in patients with diabetic foot syndrome <u>O.V. Mamontov</u> , V.V Zaytsev, A.A. Kamshilin, T.A. Zelenina, M.A. Volynsky, E.V. Shlyakhto St.-Petersburg, Russia
Poster #70	Dysautonomia in Guillain-Barré syndrome: an under-recognized and potentially life-threatening phenomena <u>A.V. Varma-Doyle</u> , H. Gould New Orleans, LA, USA
GENETIC AUTONOMIC DISORDERS	
Poster #71	Hereditary sensory and autonomic neuropathy type IV: case-report and review of immune dysfunction in the disease <u>A.V. Varma-Doyle</u> , M. Marble, L. McBride, A. Tilton New Orleans, LA, USA
Poster #72	Familial dysautonomia and congenital adrenal hyperplasia: one patient with two rare genetic disorders <u>B.J. Balgobin</u> , J.-A. Palma, L. Norcliffe-Kaufmann, H. Kaufmann New York, NY, USA
AUTONOMIC REGULATION	
Poster #73	Methionine sulfoxide reductase deficiency exacerbates metabolic dysfunction in mice fed a high-fat diet: implications in metabolic syndrome <u>R. Sabharwal</u> , L. Yang, M.W. Chapleau Iowa City, IA, USA
Poster #74	Angiotensin II type 2 receptors restore autonomic function and delay onset of dilated cardiomyopathy in male mice with muscular dystrophy

	L. Yang, K. Zimmerman, R.M. Weiss, <u>R. Sabharwal</u> Iowa City, IA, USA
CARDIOVASCULAR DISEASE, OBESITY & AGING	
Poster #75	Effect of the menstrual cycle on resting, exercise and post-exercise heart rate in healthy women <u>C. Giovanna</u> , G. Porto Luiz Guilherme, M. Daniel, S. Edgard, G. Giliard, C. Carlos Janssen, E. M. Guilherme University of Brasilia, Brasília, Brazil
Poster #76	Sympathetic neural traffic in older patients with type 2 diabetes mellitus K. Heusser, J. Tank, B. Johannes, <u>J. Jordan</u> Cologne, Germany
Poster #77	Vasoactive autoantibodies in coronary microvascular dysfunction: a case report <u>X. Yu</u> , H. Li, L.T. Cooper, P.K. Mehta, C.N.B. Merz, D.C. Kem Oklahoma City, OK, USA
AUTONOMIC CLINICAL PRACTICE	
Poster #78	Autonomic medical practice as sampled by physician-rating websites <u>W.P. Cheshire</u> Jacksonville, FL, USA
EXERCISE, TEMPERATURE REGULATION & HYPOXIA	
Poster #79	Fast heart rate recovery and its association with vagal withdraw after active orthostatic test in men <u>G.E. Molina</u> , C.J.G. Cruz, M.T. Morlin, E.M.K.V.K. Soares, G.L. Garcia, L.G.G. Porto Brasília, Brazil
Poster #80	Acute effects of propranolol and pindolol on heart rate, metabolic rate, and cold-induced thermogenesis in lean, young men <u>R.J. Brychta</u> , R. Muniyappa, S. McGehee, S. Huang, J.D. Hattenbach, S.L. Bell, A.B. Courville, S. Yang, B.P. Leitner, C.J. Duckworth, T. Cassimatis, L.A. Fletcher, H. Sasai, A.M. Cypess, M.L. Reitman, K.Y. Chen Bethesda, MD, USA
Poster #81	Agreement between the ventilatory and heart rate variability thresholds in non-athlete women <u>C.J.G. Cruz</u> , L.G.G. Porto, G.E. Molina Brasília, Brazil
Poster #82	Analysis of the speed of post-exercise heart rate recovery in athletes who practice triathlon and crossfit <u>M.T. Morlin</u> , C.J.G. Cruz, E.M.K.V.K. Soares, L.G.G. Porto, G.E. Molina Brasília, Brazil
GASTROINTESTINAL & UROGENITAL SYSTEMS, IBS, CYSTITIS	
Poster #83	Neurotensin-induced relaxation of the guinea pig ileal circular muscle layer is indirect and mediated by release of vasoactive intestinal peptide H. Wang, D.M. Kendig, K.S. Murthy, <u>J.R. Grider</u> Baltimore, MD, USA
MICRONEUROGRAPHY & CARDIOVASCULAR REFLEXES IN HUMANS	
Poster #84	Consistent first trimester elevations in muscle sympathetic nerve activity and sympathetic baroreflex sensitivity between first and second pregnancy: a case study <u>C.E. Taylor</u> , S. Kobuch, S.L. Hissen, D. Boulton, A. Burton, N. Kramadhari, S. Dayaratne, V.G. Macefield Sydney, Australia

Poster #85	Reproducibility of valsalva maneuver derived baroreflex parameters <u>C. Ustine</u> , L. Conant, P. Simpson, G. Chelimsky, C. O'Hara, T. Chelimsky Milwaukee, WI, USA
ORTHOSTATIC HYPOTENSION & SYNCOPE	
Poster #86	A case of dysautonomia in post-craniectomy syndrome of the trephined <u>M. Beeler</u> , T. Malone, J. Boulter, R. Bell, M. Rosner, G. Cook Bethesda, MD, USA
Poster #87	Assessment of practice patterns among neurologists and cardiologists for the care of patients with neurogenic orthostatic hypotension <u>T. Finnegan</u> , J. Maeglin New York, NY, USA
Poster #88	Prevention of vasovagal syncope using hyoscyamine H. Snapper, <u>M. Jawaid</u> Marietta, GA, USA
Poster #89	Norepinephrine transporter inhibition for the prevention of tilt-induced vasovagal syncope: a systematic review and meta-analysis <u>L. Lei</u> , A. Qaddoura, S.R. Raj, R.S. Sheldon MD Calgary, AB, Canada
Poster #90	Does recent weight loss predispose to vasovagal syncope? a case-control series B. Cumming, <u>D. Jardine</u> Christchurch, New Zealand
Poster #91	Factors influencing patients' decision making around accessing emergency medical services for syncope <u>T. Runte</u> , T. Williamson, R. Sheldon, T. Campbell, K. King-Shier, S.R. Raj, M. Runte Lethbridge, AB, Canada
POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME (POTS)	
Poster #92	Effect of a neck compression collar on cardiorespiratory function in postural orthostatic tachycardia syndrome (POTS) M. Nardone, J. Guzman, P. Harvey, J. Floras, <u>H. Edgell</u> Toronto, ON, Canada
Poster #93	T cell surface marker, CRTH2 expression in POTS <u>H.A. Abdallah</u> , H.M. Abdallah, C. Kim, O. Alpan McLean, VA, USA
Poster #94	Sleep disturbances in postural orthostatic tachycardia syndrome T. Fayyaz, A. Sheikh, S.B. Alam, <u>M.Y. Bilal</u> , H. Nazeer, M. Farooq, S. Shaheen, H. Mistry, S. Usmani, N. Chaudhary, W. Almardini, A. Suleman Dallas, TX, USA
Poster #95	Acute modafinil and cognition in postural tachycardia syndrome <u>A.C. Arnold</u> , K. Haman, E.M. Garland, A.J. Miller, M. Wang, B. Shen, S.Y. Paranjape, B.K. Black, A. Diedrich, D. Robertson, C.A. Shibao, I. Biaggioni, S.R. Raj Hershey, PA, USA
Poster #96	A new disease cluster: postural orthostatic tachycardia syndrome, hypermobile Ehlers-Danlos syndrome/hypermobility spectrum disorder and mast cell activation syndrome I. Cheung, J. Holoff, <u>J. Guzman</u> , R.M. Londono, S. Walsh, P. Vadas Toronto, ON, Canada

Poster #97	Prevalence of anxiety and depression in children with POTS: a retrospective study <u>B. Kakavand</u> , A. Centner, S. Centner, S. Hasan Orlando, FL, USA
Poster #98	Why do patients wear a compression garment for their POTS symptoms (or not)? <u>K.M. Bourne</u> , R.S. Sheldon, S.R. Raj, M. Runte Calgary, AB, Canada
Poster #99	Autoimmunity and immunotherapy in postural orthostatic tachycardia syndrome <u>K. Sato</u> , A. Yamaga, Y. Nishimura, K. Shibata, T. Nakaoka, Y. Sunami, T. Hirai, T. Nakane, H. Sakura Tokyo, Japan
Poster #100	Is chronic orthostatic intolerance related to functional CSF hypovolemia? A case series <u>L. Kinsella</u> , M. Boedefeld, J. Stephens St. Louis, MO, USA
Poster #101	Family inheritance in postural orthostatic tachycardia syndrome: insights from a cross-sectional community-based survey <u>L.E. Stiles</u> , K. Bourne, C.A. Shibao, L.E. Okamoto, E.M. Garland, A. Gamboa, A. Peltier, A. Diedrich, I. Biaggioni, R.S. Sheldon, S.R. Raj East Moriches, NY, USA
Poster #102	Somatic and autonomic findings in cancer related base of the skull syndromes <u>A. Barboi</u> , S. Pocica, S. Moffat, I. Kafkas, V. Patel Evanston, IL, USA
Poster #103	Efficacy and safety of droxidopa for the treatment of patients with symptomatic neurogenic orthostatic hypotension during 12 weeks of open-label treatment in a phase 4 study <u>S. Gorny</u> , L.A. Hewitt, A. Lindsten, S. Kymes, A. Favit Deerfield, IL, USA
Poster #104	A phase 2 dose-escalation study of amprelosetine (TD-9855), a norepinephrine reuptake inhibitor, given once-daily to treat neurogenic orthostatic hypotension (nOH) in subjects with synucleinopathies <u>H. Kaufmann</u> , I. Biaggioni, K. Chatamra, A. Panneerselvam, B. Haumann, R. Vickery New York, NY, USA

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