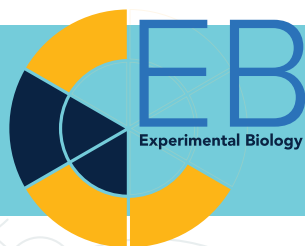




Annual  
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**APRIL 21–25**

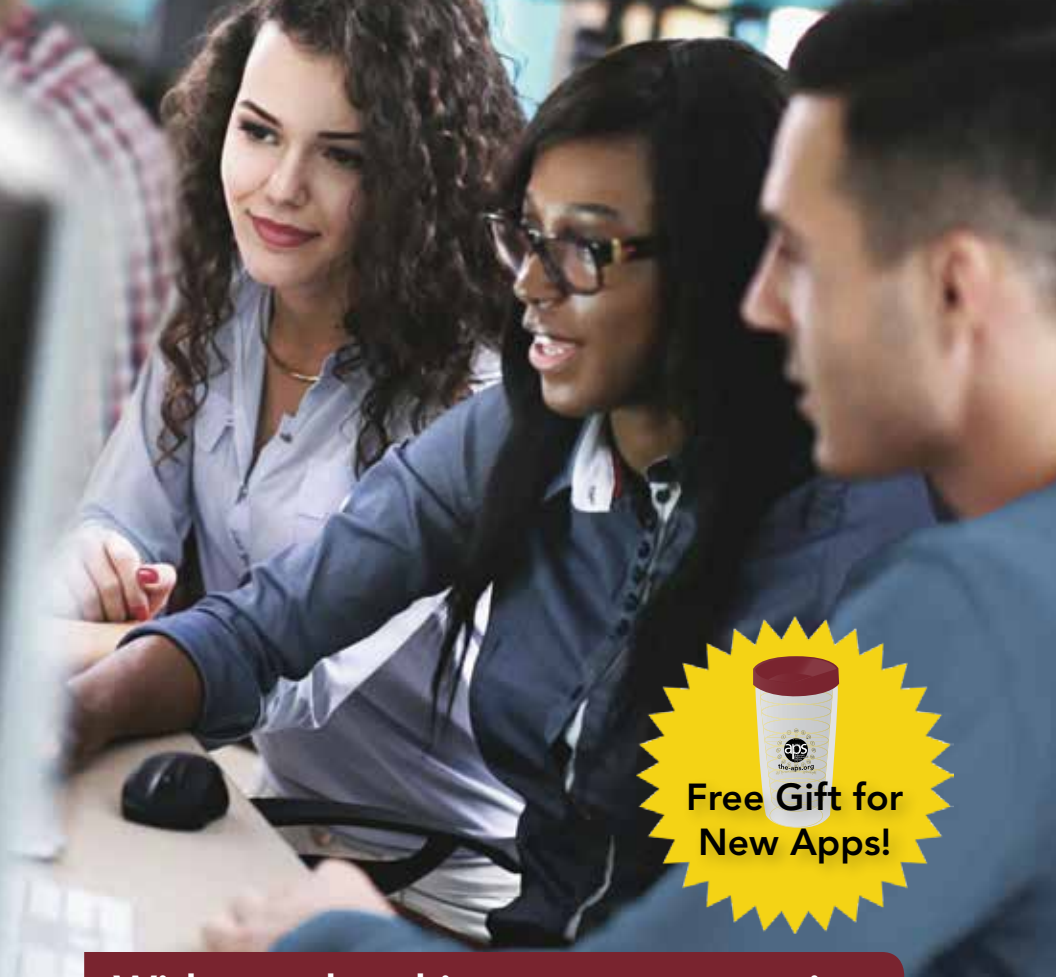
SAN DIEGO, CALIFORNIA

# Program 2018



**#ExpBio**  
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The American Physiological Society (APS) is a community that champions the discipline of physiology. Stop by the APS booth (#1630) to join our global community. You're only a few steps away from unlocking extensive resources and society support for your science.

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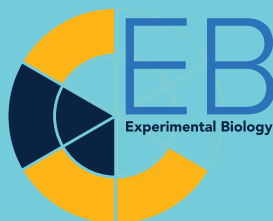


#APSBenefitsMe





Annual  
MEETING



## WHERE TO FIND APS AT EB

- **APS Office** in the Marriott Hotel La Jolla and La Mesa Rooms:  
Saturday – Tuesday 7 a.m. to 5 p.m. and Wednesday 7 a.m. to 3 p.m.
- **APS Exhibit Booth #1630**: Sunday – Tuesday 9 a.m. to 4 p.m.
- **APS Connect Zone** near Physiology Posters:  
Sunday – Tuesday 9 a.m. to 4 p.m.
- **APS Kiosk** stand near Physiology Session Rooms (27 A/B):  
Saturday – Wednesday throughout the meeting.

APS EB Website:  
**[apsebmeeting.org](http://apsebmeeting.org)**

**Look for your APS EB dailies  
(as well as EB-wide dailies) in your email for  
meeting program information.**

# VISIT APS BOOTH #1630

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## Awards

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## Education

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## Meetings

Save the date for upcoming APS meetings.

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FREE  
TUMBLER

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Attend our Meet the Editors Reception to celebrate the launch of our new journal websites.

SUN.  
11A.M.-  
12:30P.M.

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For more EB information,  
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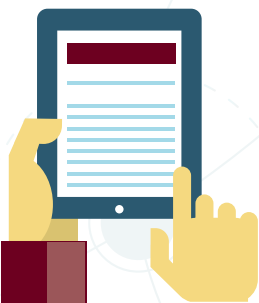
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**DOWNLOAD THE EB APP  
FOR UPDATED INFO**

# Program At-a-Glance:

## Saturday, April 21

Time	Location	Session No.	Sponsor
8:00 AM – 12:00 PM	20A	49	
9:00 AM – 5:00 PM	25A	50	ETG
9:30 AM – 11:30 AM	24AB	51	MCS
1:00 PM – 3:00 PM	24AB	52	MCS
1:00 PM – 2:30 PM	27AB	53	AFMR
1:00 PM – 2:30 PM	25B	54	ACE
1:00 PM – 3:00 PM	28B	55	
1:00 PM – 5:15 PM	28A	56	PGG
2:15 PM – 5:15 PM	26AB	57	WEH
3:00 PM – 4:30 PM	27AB	58	AFMR
3:00 PM – 5:00 PM	28B	59	
3:00 PM – 4:30 PM	25C	60	COMM
3:00 PM – 5:00 PM	22	61	NCAR
3:30 PM – 5:30 PM	24AB	62	MCS
6:00 PM – 8:00 PM	23ABC	63	MCS

## **Session Title & Chairs**

### **Refresher Course on GI Physiology: Not Just the Gut Anymore**

Sasser, Merritt

### **ETG Pre-Meeting**

### **MCS President's Symposium: Biomedical Engineering Approaches for Studying the Microcirculation**

Peirce-Cottler, Schmid-Schoenbein

### **Cerebromicrovascular Mechanisms in Cognitive Impairment: From Aging to Neurodegeneration**

Ungvari, Galvan

### **Bench to Bedside Approaches to Human Disease**

Wongtrakool, Yeligar

### **Avoiding Common Pitfalls in Preclinical Animal Research Design**

Michele, Uray

### **Sex and Age as Biological Variables in Physiology Research**

Yosten, Kolar

### **5th Annual Physiological Genomics Conference**

### **WEH Trainee Award Finalists and Data Diuresis**

Bie, Madhur

### **The Mevalonate Pathway: A Fundamental Player in Human Disease**

Zeki, Ghavami

### **Transformative Technologies Enabling Ecological Assessment of Human and Wildlife Physiology**

Sandberg, Crossley

### **Communications Committee Symposium: Social Media for the Professional Scientist**

Goodman, Rhoads

### **Data NCARNation**

Miller, Jiang

### **Emerging Topics in Microvascular Research**

Stapleton, Secomb

### **MCS Poster Discussion and Reception**

Twynstra, Scallan

# Program At-a-Glance:

## Sunday, April 22

Time	Location	Session No.	Sponsor
7:00 AM – 8:00 AM	25A	168	TAC
8:30 AM – 10:00 AM	20A	170	Integrative
8:30 AM – 10:00 AM	25C	171	
8:30 AM – 10:00 AM	27AB	172	WEH
8:30 AM – 10:00 AM	25A	173	ETG
8:30 AM – 10:00 AM	23ABC	174	CVS
8:30 AM – 10:00 AM	28B	175	Teach
8:30 AM – 10:00 AM	22	176	MBG
8:30 AM – 10:00 AM	26AB	177	NCAR
8:30 AM – 10:00 AM	28A	178	Renal
8:30 AM – 10:00 AM	24AB	179	CVS
8:30 AM – 10:00 AM	28DE	180	PGG
8:30 AM – 10:00 AM	25B	181	Translational
1:30 PM – 3:00 PM	28DE	182	
1:30 PM – 3:00 PM	25A	183	Renal
1:30 PM – 3:00 PM	26AB	184	CNS
1:30 PM – 3:00 PM	28A	185	Cell
1:30 PM – 3:00 PM	22	186	CVS
1:30 PM – 3:00 PM	20A	187	PSS



## **Session Title & Chairs**

### **Do it Again: How to Achieve Rigorously Reproducible Research I**

Downey, Obi

### **Ischemic and Hypoxic Conditioning: Potential for Protection of Vital Organs**

Rickards, Sprick

### **Too Hot to Handle: Controversies in Exertional Heat Stroke Prevention and Treatment**

Laitano, King

### **Inflammation and Sodium Reabsorption**

Lee, Pai

### **Building Epithelial Organs In Vitro to Study Physiology and Pathogenesis of Disease**

Norregaard

### **Of Mice and Men: What Have We Really Learned about the Regulation of Coronary Vascular Function in Health and Disease?**

Phillips, Goodwill

### **Addressing Higher Levels of Bloom's Taxonomy in the Teaching and Learning of Physiology**

Clements-Jewery, Hopper

### **Maintenance and Remodeling of the Neuromuscular Junction in Health and Disease**

Lubicic

### **NCAR Young Investigator Awards**

Moraes, Poglitsch

### **Renal Section Young Investigator Award Featured Topic: Novel Roles for Renal GPCRs**

Pluznick, Caplan

### **Role of the Microbiome in Cardiovascular Disease**

Buys

### **Physiological Genomics Trainee Highlights**

### **Translational Physiology Showcase: Bench to Bedside and In Between**

Kriegel

### **Redox Biology: A Unifying Theme in the Etiology of Human Diseases**

Case, Kevil

### **ENaC Proteins as Mechanosensors in Endothelial and Vascular Smooth Muscle Cells**

Drummond, Ashley

### **Sex Differences in Central Circuits**

Wainford, Browning

### **Organoids: Modelling Cell Physiology and Disease in 3D**

Bradbury, Ameen

### **American Journal of Physiology Heart and Circulatory Physiology Editors Symposium**

Zucker, Lindsey

### **APS President's Symposium Series I. Exosomes: The New Frontier. Cell Biology of Exosomes**

O'Driscoll

# Program At-a-Glance:

## Sunday, April 22

Time	Location	Session No.	Sponsor
1:30 PM – 3:00 PM	27AB	188	Respiration
1:30 PM – 3:00 PM	28B	189	PGG
1:30 PM – 3:00 PM	25C	190	CEPS
1:30 PM – 3:00 PM	25B	191	EEP
1:30 PM – 3:30 PM	23ABC	192	GIL
1:30 PM – 3:00 PM	24AB	193	CVS
3:30 PM – 5:00 PM	25B	194	EEP
3:30 PM – 5:00 PM	28A	195	CNS
3:30 PM – 5:00 PM	28DE	196	GIL
3:30 PM – 5:00 PM	25C	197	NCAR
3:30 PM – 5:15 PM	25A	198	Respiration
3:30 PM – 5:00 PM	28B	199	Respiration
3:30 PM – 4:30 PM	23ABC	200	WEH
3:30 PM – 4:30 PM	26AB	201	Teach
3:30 PM – 4:30 PM	27AB	202	Cell
3:30 PM – 5:00 PM	22	203	CVS
4:30 PM – 5:30 PM	23ABC	205	WEH
5:30 PM – 6:30 PM	20A	206	

## **Session Title & Chairs**

### **Non-Canonical Functions of the Lung in Immunity and Hemostasis**

Kuebler, Juss

### **From Gene to Function of Complex Traits: Analysis of Genes Identified in Human GWAS and Animal Models**

Solberg Woods

### **Comparative and Evolutionary Physiology Section Trainee-Driven Featured Topic**

Crossley, Tift

### **Exploring Novel Mechanisms to Improve Exercise Tolerance in Health and Disease**

Harris, Barnes

### **Cell Plasticity and Repair and Disease Mechanisms in the Stomach, Liver and Intestine**

Zemper

### **Innate and Adaptive Immunity in Cardiovascular Physiology**

Madhur, Cornelius

### **Epigenetic Memory of Environmental Exposure: A Physiological Perspective**

Murashov, Clanton

### **Intersection of Central Pain and Reward Circuitry in CNS Disorders**

Edwards, Roberto

### **John Forte GIL Plenary Session**

Uno, Frey

### **Psychological Stress Disorders: Novel Concepts and Mechanisms**

Sabharwal, Johnson

### **Communication and Miscommunication in Lung Injury and Repair**

Koval, Birukov

### **Microglia as Effectors of Respiratory Plasticity in Health and Disease**

Kinthead, Powell

### **Ernest H. Starling Distinguished Lectureship of the Water and Electrolyte Homeostasis Section**

Mattson

### **Claude Bernard Distinguished Lectureship of the APS Teaching of Physiology Section**

McFarland

### **Hugh Davson Distinguished Lectureship of the APS Cell and Molecular Physiology Section**

Quinton

### **Kaley Award Featured Topic: Cerebral Vascular Dysfunction and Impaired Cognitive Function**

Roman, Ungvari

### **WEH New Investigator Award Lecture**

Loria

### **Physiology in Perspective: The Walter B. Cannon Memorial Award Lecture**

Petersen

# Program At-a-Glance:

## Monday, April 23

Time	Location	Session No.	Sponsor
7:00 AM – 8:00 AM	25A	303	TAC
7:00 AM – 8:00 AM	25B	304	Career
7:00 AM – 8:00 AM	25C	305	WIPC
8:30 AM – 10:00 AM	23ABC	306	Hypoxia
8:30 AM – 10:00 AM	25B	307	Renal
8:30 AM – 10:00 AM	22	308	Sex
8:30 AM – 10:00 AM	28DE	309	Pubs
8:30 AM – 10:00 AM	20A	310	Integrative
8:30 AM – 10:00 AM	26AB	311	Nutrition
8:30 AM – 10:00 AM	25A	312	PGG
8:30 AM – 10:00 AM	25C	313	Cell
8:30 AM – 10:00 AM	28A	314	EM
8:30 AM – 10:00 AM	24AB	315	NCAR
8:30 AM – 10:00 AM	28B	316	Teach
8:30 AM – 10:00 AM	27AB	317	CVS
1:30 PM – 3:00 PM	23ABC	318	GIL
1:30 PM – 3:00 PM	22	319	CVS

## **Session Title & Chairs**

### **Do it Again: How to Achieve Rigorously Reproducible Research II**

Downey, Obi

### **Hallmarks of Ground Rules for Productive Collaborations in Science. Maintaining Momentum in Collaborations**

Brandauer, Becker

### **2018 Mentoring Symposium: Recognizing and Responding to Implicit Bias in Science III**

Al Alam, Wallace

### **Novel Physiologic-Based Approaches to Treating Sleep Apnea**

Dempsey, Bates

### **New Concepts in JGA Physiology**

Peti-Peterdi, Buckley

### **Impact of Sex-Specific Size of the Normal and Failing Left Ventricle: Studies in Humans and Mice**

Kerkhof, Miller

### **Publishing 101: How to Get Your Work Published and Avoid Ethical Minefields**

Sigmund, Scheman

### **Bioartificial Organs: Using Donor and Synthetic Scaffolds**

Harrison-Bernard

### **The Physiology of Personalized Nutrition**

Voy, Anthony

### **Non-Coding RNA Regulation of Inflammation in Cardiovascular, Kidney, and Respiratory Diseases**

Kriegel, Rogers

### **Ion Channels and Transporters in Health and Disease**

Worrell

### **Gut-Brain Interactions and Control of Feeding Behavior**

Stein

### **Novel Insights on Sympathetic Activation in Kidney Disease: From Animal Models to Clinical Trials**

Park, Becker

### **Adaptations in Physiology Education**

Osborne

### **Regulation of Blood Flow in Health and Disease**

Ohanyan

### **Identification of Novel Drug Targets for the Modulation of Gastrointestinal Motility**

Uray, Perrino

### **Cardiovascular Section – Young Investigator Symposium**

Gouloupoulou, Belin de Chantemele

# Program At-a-Glance:

## Monday, April 23

Time	Location	Session No.	Sponsor
1:30 PM – 3:00 PM	25C	320	Cell
1:30 PM – 3:00 PM	20A	321	PSS
1:30 PM – 3:00 PM	26AB	322	PIC
1:30 PM – 3:00 PM	28B	323	History
1:30 PM – 3:00 PM	28A	324	EM
1:30 PM – 3:00 PM	25A	325	ETG
1:30 PM – 3:00 PM	28DE	326	NCAR
1:30 PM – 3:00 PM	25B	327	Renal
1:30 PM – 2:30 PM	24AB	328	NCAR
1:30 PM – 2:30 PM	27AB	329	EEP
3:30 PM – 5:00 PM	28B	330	Teach
3:30 PM – 5:00 PM	25B	331	Translational
3:30 PM – 5:00 PM	23ABC	332	CVS
3:30 PM – 5:00 PM	25C	333	CEPS
3:30 PM – 5:00 PM	25A	334	Respiration
3:30 PM – 5:00 PM	28A	335	WEH
3:30 PM – 5:00 PM	22	336	CVS

## **Session Title & Chairs**

### **Biophysical and Metabolic Regulation of Stem Cells**

Rehman, Shin

### **APS President's Symposium Series II. Exosomes: The New Frontier. Pathophysiology of Exosomes**

Clotilde Thierry

### **Biosensors Advancing Health and Disease Research**

Bucher, Oliver

### **The Physiological Challenges of Escaping Extreme Environments: Disabled Subs and Stratospheric Bailouts**

Ryan, Dean

### **The Role of REDD1 in the Regulation of Skeletal Muscle Metabolism**

Favier

### **Hans Ussing Lecture of the Epithelial Transport Group**

Akiba

### **NCAR Hot Topics in Autonomic Regulation**

Mathis, Banek

### **Advances in Renal Physiology I**

Ortiz, Cornelius

### **Carl Ludwig Distinguished Lectureship of the APS Neural Control and Autonomic Regulation Section**

Paterson

### **Edward F. Adolph Distinguished Lectureship of the APS Environmental and Exercise Physiology Section**

Poole

### **Synergizing Teaching and Scholarship**

Harris

### **Altering Phenotype without Genotype**

Sones, Reijnders-Most

### **Brown Adipose Tissue and Cardiovascular Function: Insulin Resistance, Vascular Tone, and Cardioprotective Effects**

Stanford, Scherrer-Crosbie

### **Comparative Perspectives on Maximal O<sub>2</sub> and CO<sub>2</sub> Transport in Animals**

Hedrick

### **Molecular, Cellular and Systems-Level Mechanisms driving Ventilation and CO<sub>2</sub> Sensitivity during Acute and Chronic Hypercapnia**

Hodges, Hawkins

### **Impact of Diet on Blood Pressure Regulation**

Greene, Stodola

### **Protective Mechanisms in the Vasculature: Wiggers Award Session**

Sigmund

# Program At-a-Glance:

## Monday, April 23

Time	Location	Session No.	Sponsor
3:30 PM – 4:30 PM	27AB	337	EM
3:30 PM – 4:30 PM	24AB	338	Renal
3:30 PM – 4:30 PM	26AB	339	CNS
3:30 PM – 5:30 PM	20A	340	MCS
5:30 PM – 6:30 PM	24AB	341	





### **Session Title & Chairs**

**Solomon Berson Distinguished Lectureship of the APS Endocrinology and Metabolism Section**  
Richter

**Carl W. Gottschalk Distinguished Lectureship of the APS Renal Section**  
Satlin

**Joseph Erlanger Distinguished Lectureship of the APS Central Nervous System Section**  
Schultz

**MCS Landis Award Lecture and Business Meeting**  
Peirce-Cottler, Lombard

**Henry Pickering Bowditch Award Lecture**  
Shah

# Program At-a-Glance:

## Tuesday, April 24

Time	Location	Session No.	Sponsor
7:00 AM – 8:00 AM	25B	433	Career
7:00 AM – 8:00 AM	25C	434	WIPC
7:00 AM – 8:00 AM	25A	435	TAC
8:30 AM – 10:00 AM	24AB	436	Cell
8:30 AM – 10:00 AM	26AB	437	Respiration
8:30 AM – 10:00 AM	22	438	EM
8:30 AM – 10:00 AM	23ABC	439	NCAR
8:30 AM – 10:00 AM	20A	440	Integrative
8:30 AM – 10:00 AM	25C	441	CEPS
8:30 AM – 10:15 AM	25B	442	EEP
8:30 AM – 10:00 AM	28A	443	CNS
8:30 AM – 10:00 AM	25A	444	Renal
8:30 AM – 10:00 AM	28B	445	CVS
8:30 AM – 10:00 AM	27AB	446	CVS
1:00 PM – 2:00 PM	Marriott Grand Ballroom 3-4	447	History
1:30 PM – 3:00 PM	20A	448	PSS
1:30 PM – 3:00 PM	22	449	CVS

## **Session Title & Chairs**

### **Hallmarks of Ground Rules for Productive Collaborations in Science: Preventing and Managing Conflict**

Brandauer, Becker

### **2018 Mentoring Symposium: Recognizing and Responding to Implicit Bias in Science II**

Al Alam, Wallace

### **Do it Again: How to Achieve Rigorously Reproducible Research III**

Downey, Obi

### **Molecular Mechanisms for Salt-Induced Cardiovascular Disease**

Kirabo, Ruggeri Barbaro

### **Neuroplasticity of Airway Reflexes**

Bolser, Pitts

### **Mechanisms underlying Skeletal Muscle Adaptation in Health and Disease**

Lang, Molina

### **Neuro-Immune Interactions in Inflammatory Homeostasis**

Marvar

### **Tissue-Distributed Control of Sex Differences in Diabetes and Cardiovascular Disease**

Stafford

### **The Effects of Environmental Challenges on Performance and Metabolism**

Williams, Hindle

### **Getting Blood to Where it Needs to Go: Emerging Mechanisms Regulating Skeletal Muscle Blood Flow in Health and Disease**

Romero, Hearon

### **Interrogating Neuronal Circuits Mediating Body Fluid Homeostasis**

Krause, Wang

### **Advances in Renal Physiology II**

Inscho, Nespoux

### **Endothelial Cell Contraction or Retraction (Insights into Barrier Function and Permeability)**

Webb, Wenceslau

### **Novel Discoveries in Vascular Physiology**

Earley

### **History of Physiology Group Lecture**

Raven

### **APS President's Symposium Series III. Exosomes: The New Frontier. Exosomes in Diagnostics and Therapeutics**

Jones

### **Steroid Receptor Signaling in Cardiovascular Health and Disease**

Hamblin, Clayton

# Program At-a-Glance:

## Tuesday, April 24

Time	Location	Session No.	Sponsor
1:30 PM – 3:00 PM	28DE	450	Renal
1:30 PM – 3:00 PM	28B	451	NCAR
1:30 PM – 3:00 PM	25C	452	EEP
1:30 PM – 3:00 PM	28A	453	CVS
1:30 PM – 3:00 PM	26AB	454	Hypoxia
1:30 PM – 3:00 PM	25A	455	Cell
1:30 PM – 3:00 PM	23ABC	456	GIL
1:30 PM – 3:00 PM	25B	457	Respiration
1:30 PM – 3:00 PM	27AB	458	WEH
3:30 PM – 5:00 PM	25C	459	EEP
3:30 PM – 5:00 PM	25A	460	ETG
3:30 PM – 5:00 PM	22	461	MBG
3:30 PM – 5:00 PM	28A	462	Cell
3:30 PM – 4:30 PM	26AB	463	CEPS
3:30 PM – 5:00 PM	28B	464	NCAR
3:30 PM – 5:00 PM	25B	465	WEH

## **Session Title & Chairs**

### **Structure and Function of Renal Epithelial Cilia**

Bell, Ilatovskaya

### **Sympathetic Neurovascular Transduction in Humans: Are We There Yet?**

Shoemaker

### **Molecular Transducers of the Physiological Adaptations to Exercise and Aging**

Seals, Martens

### **The Vasculome: An Integrated Exploration of Vascular Reactivity, Lineage, and Specialization**

Galis, Yin

### **Physiological Adaptations to Hypoxia: From Mountain Top to Ocean Bottom**

Harris, Moya

### **Epithelial Mechano-Sensitivity in Health and Disease**

Beyder, Chebib

### **GI and Liver Physiology and Disease (Cosponsored by AJP - Gastrointestinal and Liver Physiology)**

Frey, McCole

### **Cell Plasticity: Calcium, cAMP and Beyond**

Mehta

### **Origins of Cardiovascular Disease: Does Metabolic Disease Always Come First?**

Spradley, Souza

### **Respiratory and Limb Skeletal Muscle Weakness in Disease and Aging: Mechanisms and Treatments**

Bowen, Ferreira

### **Hebert Lecture of the Epithelial Transport Group**

Subramanya

### **Exercise and Skeletal Muscle as Key Regulators of Whole Body Aging**

Jackson, Brooks

### **Cell Signaling: Proteins, Pathways, and Mechanisms**

Hamilton, Helms

### **August Krogh Distinguished Lectureship of the APS Comparative and Evolutionary Physiology Section (Supported by Novo Nordisk Fonden)**

Hillman

### **Battle of the Reflexes: Chemo- versus Baroreflexes during Physiological Stressors, Aging and Cardiovascular Disease**

Kellawan, Nelson

### **Adaptations in Fluid Balance and Blood Pressure Regulation during Pregnancy**

Denton, Veiras

# Program At-a-Glance:

## Tuesday, April 24

Time	Location	Session No.	Sponsor
3:30 PM – 4:30 PM	23ABC	466	GIL
3:30 PM – 4:30 PM	24AB	467	Respiration
3:30 PM – 4:30 PM	27AB	468	CVS
5:30 PM – 7:00 PM	20A	469	



### **Session Title & Chairs**

**Horace W. Davenport Distinguished Lectureship of the APS Gastrointestinal and Liver Physiology Section**  
Turner

**Julius H. Comroe, Jr. Distinguished Lectureship of the APS Respiration Section**  
Forster

**Robert M. Berne Distinguished Lectureship of the APS Cardiovascular Section**  
Yuan

**APS Business Meeting**

# Program At-a-Glance:

## Wednesday, April 25

Time	Location	Session No.	Sponsor
8:30 AM – 10:00 AM	23ABC	484	PHYSOC
8:30 AM – 10:00 AM	20A	485	Integrative
8:30 AM – 10:00 AM	22	486	CVS
8:30 AM – 10:00 AM	25A	487	GIL
8:30 AM – 10:00 AM	26AB	488	MBG
8:30 AM – 10:00 AM	25C	489	CEPS
8:30 AM – 10:00 AM	28A	490	EM
8:30 AM – 10:00 AM	27AB	491	Respiration
8:30 AM – 10:00 AM	28B	492	WEH
8:30 AM – 10:00 AM	25B	493	CVS
1:30 PM – 3:00 PM	25C	494	EM
1:30 PM – 3:00 PM	25A	495	Pan-Am
1:30 PM – 3:00 PM	23ABC	496	PHYSOC
1:30 PM – 3:00 PM	25B	497	EEP
1:30 PM – 3:00 PM	28A	498	CNS
1:30 PM – 3:00 PM	28B	499	Respiration
1:30 PM – 3:00 PM	24AB	500	WEH
1:30 PM – 3:00 PM	22	501	WEH
1:30 PM – 3:00 PM	26AB	502	CVS
3:30 PM – 4:30 PM	20A	503	



## **Session Title & Chairs**

**Epithelial Crosstalk and Innate Immunity**  
Garnett

**Extracellular Matrix Remodeling in Metabolic Diseases**  
Bodine, Wasserman

**Chemotherapy Induced Vascular Toxicity: Do Small Things Matter?**  
Beyer, Croce

**Bile Acids in the Small Intestine and Colon, Physiology, Pathophysiology, and Therapeutic Opportunities**  
Keely, Lajczak

**Role and Importance of Mitophagy in Skeletal Muscle in Health and Disease**  
Beaudry, Deldicque

**Comparative Models of Disease**  
Pamenter

**Brain – Gut Microbiota Interactions in Cardiovascular and Metabolic Control**  
Collister

**The Influence of State on Cardiorespiratory Control Mechanisms**

**Novel Approaches and Techniques in Water and Electrolyte Research**  
Smith, Craighead

**Post-Translational Modifications in Cardiovascular Disease**  
Scott, Kohr

**Cardiac Metabolism Moving Center Stage: New Insights Enabling Metabolic Modulation Therapy**  
Wende, Glatz

**Pan-American Symposium**  
Campagnole-Santos

**DAMPs and Inflammasomes: A Clear and Present Danger**  
Khan, Tribe

**EEP Awardee Featured Topic**  
Miller, Gladden

**The Gut-Brain Axis**  
Torres-Reveron, Appleyard

**Pulmonary Arterial Hypertension**  
Jernigan, Trittmann

**Immune Modulation of Blood Pressure and Vice Versa**  
Ryan, Itani

**Stress, Sleep, Circadian Rhythms and Blood Pressure Regulation**  
Gumz, Johnston

**Mechanotransduction in Cardiovascular Function**  
Thodeti, Lindsey

**APS Nobel Prize Award Lecture**  
Hartwell



# APS EDUCATION

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# Oral Sessions: Saturday, April 21

## 49 Refresher Course on GI Physiology: Not Just the Gut Anymore

### SYMPOSIUM

**SAT 8:00 AM-12:00 PM, Convention Center, Room 20A**

Made possible in part by APS Strategic Partner: ADInstruments

Sponsored by: APS Education Committee

**Chairs: J. M. Sasser · E. K. Merritt**

Track: Education

**8:00 AM** Strategies to teach GI physiology.

**D. Speck**, Univ. of Kentucky Med. Ctr.

**9:00 AM** Intestinal epithelial function.

**J. Dominguez-Rieg**, Univ. of South Florida

**10:00 AM** Strategies for investigating the interaction between the microbiota and the gut brain axis.

**S. Collins**, McMaster Univ. Hlth. Sci. Ctr.

**11:00 AM** Immune interactions in the intestinal epithelium.

**K. Edelblum**, Rutgers New Jersey Med. Sch.

## 50 ETG Pre-Meeting

### SYMPOSIUM

**SAT 9:00 AM-5:00 PM, Convention Center, Room 25A**

Sponsored by: Epithelial Transport Group

Track: Metabolism and Metabolic Disease · Nutrition/Obesity

## 51 MCS President's Symposium: Biomedical Engineering Approaches for Studying the Microcirculation

### SYMPOSIUM

**SAT 9:30 AM-11:30 AM, Convention Center, Room 24AB**

Sponsored by: Microcirculatory Society (MCS)

**Chairs: S. Peirce-Cottler · G. Schmid-Schönbein**

Track: Cardiovascular

**9:30 AM** Listening with light: photoacoustic microscopy of the microcirculation in vivo engineering microvasculature for investigation of health and disease.

**S. Hu**, Univ. of Virginia.

**10:00 AM** Engineering microvasculature for investigation of health and disease.

**A. Gonzalez**, Yale Univ.

**10:30 AM** Computational systems pharmacology for microvascular disease.

**F. Mac Gabhann**, Johns Hopkins Univ.

**11:00 AM** A new view for old questions: rediscovering angiogenesis and lymphangiogenesis.

**W. L. Murphy**, Univ. of Florida.

## 52 Cerebromicrovascular Mechanisms in Cognitive Impairment: From Aging to Neurodegeneration

### SYMPOSIUM

SAT 1:00 PM-3:00 PM, Convention Center, Room 24AB

Sponsored by: Microcirculatory Society (MCS)

Chairs: **Z. Ungvari** - **V. Galvan**

Track: Cardiovascular

- 1:00 PM Cerebromicrovascular dysfunction in Alzheimer's disease.  
**V. Galvan**, Univ. of Texas Hlth. Sci. Ctr., San Antonio.
- 1:20 PM Role of senescence in cerebromicrovascular impairment: a translational perspective.  
**A. Yabluchanskiy**, Univ. of Oklahoma Hlth. Sci. Ctr.
- 1:40 PM Microvascular damage and cerebral microhemorrhages in aging: new mechanisms.  
**S. Tarantini**, Univ. of Oklahoma Hlth. Sci. Ctr.
- 2:00 PM Assessing Mitochondrial Respiratory Function in Isolated Mouse Brain Microvessels Using Seahorse Xfe Analyzer: Role of Neuronal Nitric Oxide Synthase  
**V.N.L.R. Sure, S.S. V. P. Sakamuri, J.A. Sperling, I. Merdzo, W.R. Evans, I. Rutkai, D.W. Busija, P.V. G. Katakam**, Tulane Univ. School of Medicine
- 2:15 PM Optogenetic Stimulation of Pericytes Lacking Alpha Smooth Muscle Actin Produces a Decrease in Capillary Blood Flow in the Living Mouse Brain  
**D. Hartmann, R.I. Grant, S.A. Harrill, T. Noonan, A. Lauer, A.Y. Shih**, Medical Univ. of South Carolina and College of Charleston
- 2:30 PM Nrf2 Deletion Is Associated with Impaired  $Bk_{ca}$  Channel Expression and Function in Rat Cerebral Arterial Muscle Cells  
**D. Gebremedhin, D.R. Harder, J.H. Lombard**, Medical College of Wisconsin
- 2:45 PM Increased Hydrogen Peroxide After Traumatic Brain Injury Disrupts Phosphatidylinositol 4,5-Bisphosphate Metabolism Causing Impaired Inward Rectifier Potassium Channel Function  
**A.M. Sackheim, N. Villalba, A. Bonev, M. Nelson, K. Freeman**, Univ. of Vermont

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## 53 Bench to Bedside Approaches to Human Disease

### SYMPOSIUM

**SAT 1:00 PM-2:30 PM, Convention Center, Room 27AB**

Sponsored by: American Federation for Medical Research (AFMR)

**Chair: C. Wongtrakool · S. Yeligar**

- 1:00 PM Metabolic comorbidities of alcohol and SIV/HIV.  
**Liz Simon**, LSU Sch. of Med.
- 1:30 PM Understanding complications of HIF-1 using HIV-1 transgenic models.  
**Roy L. Sutliff**, Emory Univ. Sch. of Med.
- 2:00 PM Connecting the clots: From acute pulmonary thromboembolism to chronic thromboembolic pulmonary hypertension.  
**Timothy Morris**, UCSD.

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## 54 Avoiding Common Pitfalls in Preclinical Animal Research Design

### SYMPOSIUM

**SAT 1:00 PM-2:30 PM, Convention Center, Room 25B**

Sponsored by: Animal Care and Experimentation Committee

**Chairs: D. Michele · K. Uray**

Track: Science Policy/Public Engagement

- 1:00 PM Selecting the appropriate animal model in preclinical research.  
**James Fox**, MIT.
- 1:30 PM Translational preclinical research: What the FDA wants to know.  
**Valerie Hamilton**, Merck Sharp and Dohme Corp.
- 2:00 PM Addressing appropriate biological variables in NIH grant applications.  
**Tom Cheever**, NIAMS/NIH.

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## 55 Sex and Age as Biological Variables in Physiology Research

### WORKSHOP

**SAT 1:00 PM-3:00 PM, Convention Center, Room 28B**

**Chairs: G. Yosten · G. Kolar**

Track: Science Policy/Public Engagement · Sex Differences and Women's Health

- 1:00 PM Incorporating sex as a biological variable.  
**Jane Reckelhoff**, Univ. of Mississippi Med. Ctr.
- 1:30 PM Incorporating age as a biological variable.  
**Steven Austad**, Univ. of Alabama.
- 2:00 PM Sex and age in physiology research: The NIH perspective.  
**Christine Maric-Bilkan**, NHLBI/NIH.
- 2:30 PM Rigor and reproducibility in sex- and age-related physiology research.  
**Barbara Alexander**, Univ. of Mississippi Med. Ctr.

## 56 5th Annual Physiological Genomics Conference

### SYMPOSIUM

SAT 1:00 PM-5:15 PM, Convention Center, Room 28A

Sponsored by: Physiological Genomics Group

## 57 WEH Trainee Award Finalists and Data Diuresis

### AWARD COMPETITION

SAT 2:15 PM-5:15 PM, Convention Center, Room 26AB

Sponsored by: Water and Electrolyte Homeostasis Section

Supported by: Data Sciences International, Portland Press and the Juan Carlos Romero Fund · Chairs: **P. Bie · M. Madhur**

Track: Hypertension · Salt

### Trainee Award Finalists Competition Sponsored by Portland Press

- 2:15 PM The Role of Mitochondrial Oxidative Stress in the Pathophysiology of Preeclampsia  
**V.R. Vaka, K. McMaster, T. Ibrahim, D. Cornelius, L. Amaral, K. Wallace, B. LaMarca**, Univ. of Mississippi Medical Center
- 2:30 PM Cd14 as a Novel Negative Modulator of Immune System-Dependent Renal Damage and Salt-Sensitive Hypertension  
**D.J. Fehrenbach, J.M. Abais-Battad, J. H. Dasinger, H. Lund, A.M. Geurts, D.L. Mattson**, Medical College of Wisconsin
- 2:45 PM Absence of the Na-Glucose Cotransporter SGLT1 Ameliorates Kidney Recovery in a Murine Model of Acute Kidney Injury  
**J. Nespoux, R. Patel, W. Huang, H. Koepsell, B. Freeman, V. Vallon**, Univ. of California, San Diego and VA San Diego Healthcare System and Univ. of Würzburg, Germany

### Postdoctoral Award Finalists Presentations Sponsored by Juan Carlos Romero Fund

- 3:00 PM Effects of Parental Dietary Protein Source on Hypertension, Renal Injury, and Renal Inflammation  
**J.M. Abais-Battad, H. Lund, J. H. Dasinger, D.J. Fehrenbach, D.L. Mattson**, Medical College of Wisconsin
- 3:15 PM Tnfa Impairs Cerebral Blood Flow Autoregulation in Pregnant Rats  
**J.W. Duncan, J.P. Warrington, H.A. Drummond, J.P. Granger, M.J. Ryan**, Univ. of Mississippi Medical Center
- 3:30 PM Three-Dimensional Analysis of Potassium Deprivation-Induced Tubular Remodeling Using Optical Clearing  
**T. Saritas, V. Puelles, J. McCormick, D. Ellison**, Oregon Health & Science Univ. and Univ. Hospital RWTH Aachen, Germany
- 3:45 PM Mingle with Open Bar

### Data Diuresis Brief Sponsored by DSI

Chairs: **P. O'Connor and A. Polichnowski**

- 4:15 PM Effects of Vagus Nerve Stimulation in a Murine Model of Systemic Lupus Erythematosus  
**K.W. Mathis, H. Stauss, G.S. Pham, S.S. Kim, D.V. Kulp**, Univ. of North Texas Health Science Center and Univ. of Iowa

- 4:20 PM Kidney-Specific KO of the Circadian Clock Protein Bmal1 Lowers Blood Pressure in Male C57BL/6J Mice  
**L.G. Douma, K-Y. Cheng, I.J. Lynch, M. Holzworth, S. Masten, D. Barral, A. Miller, K.A. Esser, C.S. Wingo, M.L. Gumz**, Univ. of Florida
- 4:25 PM Envigo Female Salt-Sensitive Rapp Rats Are Now Spontaneously Hypertensive and Have Higher Frequencies of CD4<sup>+</sup>, CD4<sup>+</sup> CD25<sup>+</sup> and CD4<sup>+</sup> CD25<sup>+</sup> FoxP3<sup>+</sup> T Cells Compared to Normotensive Salt-Resistant Rapp Rats  
**A.V. Pai, C.A. West, A. Souza, P.S. Kadam, E.J. Pollner, D.A. West; Jr., H. Ji, X.S. Wu, C. Baylis, K. Sandberg**, Georgetown Univ. and Univ. of Florida
- 4:30 PM Role of the Renal Nerves in Renal Damage and Immune Cell Infiltration in Dahl Salt-Sensitive Rats  
**A.J. Alsheikh, H. Lund, J. H. Dasinger, J.M. Abais-Battad, D.J. Fehrenbach, D.L. Mattson**, Medical College of Wisconsin
- 4:35 PM Reduced Placental Expression of Regulator of G-Protein Signaling-2 (RGS2) and Preeclampsia  
**K.J. Perschbacher, G. Deng, J.A. Sandgren, L.C. Saenz, D.A. Santillan, E.J. Devor, G.L. Pierce, M.K. Santillan, R.A. Fisher, K.N. Gibson-Corley, J.L. Grobe**, Univ. of Iowa
- 4:40 PM Hypertension Precedes Metabolic Syndrome in the ALMS1 (Alstrom Syndrome 1) Knockout Rat  
**K.N. King-Medina, P.A. Ortiz**, Henry Ford Health System
- 4:45 PM Mingle with Open Bar

## **58 The Mevalonate Pathway: A Fundamental Player in Human Disease**

### **SYMPOSIUM**

**SAT 3:00 PM-4:30 PM, Convention Center, Room 27AB**

Sponsored by: American Federation for Medical Research (AFMR)

Guest: American Federation for Medical Research · **Chairs: A. Zeki · S. Ghavami**

- 3:00 PM Mevalonate pathway regulation of cell fate: autophagy, apoptosis, and ER stress.  
**Saeid Ghavami**, Univ. of Manitoba
- 3:30 PM Mevalonate signaling, COPD, and cancer: The statins and beyond.  
**Robert Young**, Univ. of Auckland.
- 4:00 PM Targeting the mevalonate pathway and oxidized phosphatidylcholines in asthma: A new role for lipids in airway disease.  
**Andrew Halayko**, Univ. of Manitoba

## 59 Transformative Technologies Enabling Ecological Assessment of Human and Wildlife Physiology

### WORKSHOP

SAT 3:00 PM-5:00 PM, Convention Center, Room 28B

Chairs: **K. Sandberg** · **D. Crossley**

Track: Emerging Technologies

3:00 PM Biotelemetry from the laboratory to the field and back.

**Michael Axelsson**, Univ. of Gothenburg

3:30 PM What have human studies using commercial wearable device technology taught us and where can we go from here?

**Scott Collier**, Appalachian State Univ.

4:00 PM Walking the tightrope between stability and change: biologging reveals phenological and physiological plasticity in an arctic hibernator.

**C. Loren Buck**, Northern Arizona Univ.

4:30 PM Helping teens choose2Snooze: Developing a mobile sleep app for teens.

**Tyish Hall Brown**, Howard Univ. Col. of Med.

## 60 Communications Committee Symposium: Social Media for the Professional Scientist

### SYMPOSIUM

SAT 3:00 PM-4:30 PM, Convention Center, Room 25C

Track: Science Policy/Public Engagement · Career and Professional Development

In this 90-minute interactive session organized by the APS Communications Committee, we'll discuss why social media remains a popular option for researchers who want to connect with colleagues about science and the unique discussions that social platforms enable among the research community. Established and emerging platforms popular with researchers, the use of analytics to measure social impact and best practices of popular scientists on social media will also be addressed.

## 61 Data NCARNation

### AWARD COMPETITION

SAT 3:00 PM-5:00 PM, Convention Center, Room 22

Sponsored by: Neural Control and Autonomic Regulation Section

Chairs: **A. J. Miller** · **Y. Jiang**

Track: Neuroscience

3:00 PM CCL2-CCR2 Signalling in the Hypothalamic Paraventricular Nucleus Elicits Sympathetic-Mediated Blood Pressure Elevations Through Monocyte and Lymphocyte Recruitment

**K. Elsaafien, W.S. Korim, C.N. May, S.T. Yao**, The Florey Institute of Neuroscience and Mental Health, Australia

3:10 PM Reduced Bone Marrow Adrenergic Receptor Signaling Is Protective Against Weight Gain and High Fat-Induced Hypertension

**N. Ahmari, T. Yang, W. Malphurs, C.J. Martyniuk, J. Zubcevic**, Univ. of Florida



- 3:20 PM Splenic 6-Hydroxydopamine Worsens Renal Inflammation and Injury in a Murine Model of Systemic Lupus Erythematosus  
**G.S. Pham, B. Osazuwa, O. Thomas, S.S. Vedantam, D.L. Fancher, K.W. Mathis**, Univ. of North Texas Health Science Center, Texas Southern Univ. and Texas Christian Univ.
- 3:30 PM Dynamic Cerebral Autoregulation Impairment Persists Past Resolution of Symptoms in Collegiate Athletes Following Concussion  
**J. Frantz, S. Sedaghat, L. Ryan, M. Wainman, S. Lyng, T. Sabo, K. Bell, S. Purkayastha**, Southern Methodist Univ., Northwestern Univ. and The Univ. of Texas Southwestern Medical Center
- 3:40 PM Extinction of Blood Pressure and Heart Rate Responses to Conditioned Fear  
**A.P. Swiercz, J. Park, C.N. Young, P.J. Marvar**, The George Washington Univ. and Emory Univ. School of Medicine and Atlanta VA Medical Center
- 3:50 PM How Do the Carotid Chemoreceptors Modulate Ventilatory Control and Cardiovascular Regulation at Rest and During Exercise in COPD?  
**D. Phillips, S. Collins, C. Steinback, T. Bryan, E. Wong, M.S. McMurtry, M. Bhutani, M. Stickland**, Univ. of Alberta, Canada
- 4:00 PM Hypertensive Actions of Long Chain Fatty Acids Are Paralleled by Toll-Like Receptor 4 Upregulation and Nuclear Factor-KB (NFkB) Activation in the Subfornical Organ  
**C. Hurr, B.J. Ritchie, H. Simonyan, C.N. Young**, George Washington Univ.
- 4:10 PM Identifying Brain Networks Controlling Micturition and Continence in Mouse  
**A.M. J. Verstegen, N. Klymko, J.C. Geerling, J. Mathai, V.G. VanderHorst, P.M. Fuller, M.L. Zeidel**, Beth Israel Deaconess Medical Center and Univ. of Iowa Hospitals and Clinics
- 4:20 PM Corticotropin-Releasing Hormone Receptor 2 in the Nucleus of the Solitary Tract Contributes to the Intermittent Hypoxia Induced Hypertension  
**L. Wang, D. Nguyen, S. Cross, S. Mifflin**, Univ. of North Texas Health Science Center
- 4:30 PM Epidural Spinal Cord Stimulation Acutely Reduces Efferent Postganglionic Sympathetic Nerve Activity in Humans  
**S.W. Holwerda, M.T. Holland, C.G. Reddy, G.L. Pierce**, Univ. of Iowa
- 4:40 PM Spinal Contusion Injury Induces Long-Lasting Changes in Homecage Activity and Respiration Which Correlate with Spontaneous and Evoked Indices of Neuropathic Pain  
**H. Kloefkorn, S. Idlett, M. Halder, S. Hochman**, Emory Univ.
- 4:50 PM TRPA1-Induced Pulmonary Spinal Sympathetic Afferent Activation Is Attenuated in Rats with Chronic Heart Failure  
**R.J. Adam, Z. Xia, J.A. Shanks, G.J. Rozanski, S.J. Lisco, I.H. Zucker, H-J. Wang**, Univ. of Nebraska Medical Center

## 62 Emerging Topics in Microvascular Research

### SYMPOSIUM

**SAT 3:30 PM-5:30 PM, Convention Center, Room 24AB**

Sponsored by: Microcirculatory Society (MCS)

**Chairs: P. Stapleton · T. Secomb**

Track: Cardiovascular

- 3:30 PM Probing for the role of fluid mechanical forces in controlling vascular permeability using microfluidic biomimicry.  
**J. Song**, The Ohio State Univ.
- 3:45 PM Cell transplantation impacts on microvascular growth and function.  
**Trevor Cardinal**, California Polytech. State Univ.
- 4:00 PM The pericyte microenvironment.  
**John Chappell**, Virginia Tech Carillon Res. Inst.
- 4:15 PM Emerging paradigms in microbiota dysbiosis and lymphatic inflammatory mechanisms.  
**Sanjukta Chakraborty**, Texas A&M Col. of Med.
- 4:30 PM Anti-inflammatory-pro-resolving strategies to abrogate a pro-thrombotic blockage.  
**F. Gavins**, LSU Health, Shreveport.
- 4:45 PM VE-cadherin controls mechanotransduction signaling in embryonic and postnatal lymphatic valves.  
**J. Scallan**, Univ. of South Florida.
- 5:00 PM Lymphatics in chronic disease: new functions and implications.  
**J. Rutkowski**, Texas A&M Col. of Med.
- 5:15 PM Bone microvascular dysfunction: a potential nexus between age-related cardiovascular and bone disease.  
**R. Brisby**, Univ. of Texas at Arlington.

## 63 MCS Poster Discussion and Reception

### SYMPOSIUM

**SAT 6:00 PM-8:00 PM, Convention Center, Room 23ABC**

Sponsored by: Microcirculatory Society (MCS)

**Chairs: J. Twynstra · J. Scallan · P. Stapleton**

Track: Cardiovascular

# Oral Sessions: Sunday, April 22

## 167 2018 Mentoring Symposium: Recognizing and Responding to Implicit Bias in Science I

### SYMPOSIUM

**SUN 7:00 AM-8:00 AM, Convention Center, Room 25C**

Sponsored by: APS Women in Physiology Committee

**Chairs: D. Al Alam · K. Wallace · D. H. Ho**

Track: Diversity in Science · Career and Professional Development

**7:00 AM** Implicit and explicit bias in science and science education.

**Charlotte Tate**, San Francisco State Univ.

**7:30 AM** General discussion.

## 168 Do it Again: How to Achieve Rigorously Reproducible Research I

### SYMPOSIUM

**SUN 7:00 AM-8:00 AM, Convention Center, Room 25A**

Sponsored by: Trainee Advisory Committee · **Chairs: R. Downey · I. Obi**

Track: Career and Professional Development

**7:00 AM** Data management and storage for rigor and reproducibility.

**Shai Silberberg**, NINDS/NIH.

## 169 Hallmarks of Ground Rules for Productive Collaborations in Science. Devining and Establishing Collaborations

### SYMPOSIUM

**SUN 7:00 AM-8:00 AM, Convention Center, Room 25B**

Sponsored by: APS Careers in Physiology Committee · **Chairs: J. Brandauer · B. Becker**

Track: Career and Professional Development

**7:00 AM** Defining and establishing collaborations.

**S. Watts**, Michigan State Univ.

**7:20 AM** Defining and establishing collaborations

**C. Northcott**, Pfizer, Inc.

**7:40 AM** Panel discussion

## 170 Ischemic and Hypoxic Conditioning: Potential for Protection of Vital Organs

### SYMPOSIUM

SUN 8:30 AM-10:00 AM, Convention Center, Room 20A

Sponsored by: Integrative Physiology Symposium Series · Chairs: C. A. Rickards · J. D. Sprick  
Track: Cardiovascular

- 8:30 AM Intermittent, normobaric hypoxia training exerts robust cerebroprotection against ischemic injury.  
**Robert Mallet**, Univ. of North Texas Hlth. Sci. Ctr.
- 9:00 AM Prolonged global ischemia and consequences of resuscitation to the heart and brain.  
**Demitri Yannopoulos**, Univ. of Minnesota
- 9:30 AM Remote ischemic conditioning: Trials, tribulations and clinical translation.  
**Karin Przyklenk**, Wayne State Univ. Sch. of Med.

## 171 Too Hot to Handle: Controversies in Exertional Heat Stroke Prevention and Treatment

### SYMPOSIUM

SUN 8:30 AM-10:00 AM, Convention Center, Room 25C

Sponsored by: Environmental and Exercise Physiology Section · Chairs: O. Laitano · M. A. King  
Track: Cardiovascular · Inflammation/Immunity · Metabolism and Metabolic Disease

- 8:30 AM Exertional heat stroke: Underlying physiology and misconceptions.  
**Michael Sawka**, Georgia Institute of Technology
- 8:50 AM NSAIDs and Heat Stroke: Evidence from animal models suggesting NSAIDs increase Heat Stroke morbidity.  
**Lisa Leon**, United States Army Research Institute of Environmental Medicine
- 9:10 AM Impact of NSAIDs on thermoregulatory responses in the aged.  
**Lacy Alexander**, Pennsylvania State Univ.
- 9:30 AM Exertional heat stroke: A clinical perspective on a condition with complex etiology and current controversies regarding prevention and treatment.  
**William Roberts**, Univ. of Minnesota

## 172 Inflammation and Sodium Reabsorption

### SYMPOSIUM

**SUN 8:30 AM-10:00 AM, Convention Center, Room 27AB**

Sponsored by: Water and Electrolyte Homeostasis Section · **Chairs: D. Lee · A. V. Pai**

Track: Salt · Inflammation/Immunity · Ion Channels and Transporters

**8:30 AM** Regulation of epithelial sodium channel in salt-sensitive hypertension via inflammation-induced reactive oxygen species production.

**Tengis Pavlov**, Henry Ford Hospital

**8:50 AM** Getting inflamed with the sodium chloride cotransporter.

**Robert Hoover, Jr**, Emory Univ.

**9:10 AM**  $\text{Na}^+/\text{H}^+$  exchanger regulatory factor in age-dependent salt-sensitive hypertension and renal inflammation.

**Syed Khundmiri**, Howard Univ.

**9:30 AM** The role of  $\text{CD8}^+$  T cells in the pathogenesis of salt-sensitive hypertension.

**Shengyu Mu**, Univ. of Arkansas for Medical Sciences

## 173 Building Epithelial Organs In Vitro to Study Physiology and Pathogenesis of Disease

### SYMPOSIUM

**SUN 8:30 AM-10:00 AM, Convention Center, Room 25A**

Sponsored by: Epithelial Transport Group · **Chairs: R. Nørregaard**

Track: Emerging Technologies · Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials) · Metabolism and Metabolic Disease

**8:30 AM** Engineering human organs on a chip.

**Donald Ingber**, Wyss Inst. for Biologically Inspired Engineer., Harvard Med. Sch.

**9:00 AM** Making mini-human intestine in a dish from intestinal biopsies.

**Mark Donowitz**, Johns Hopkins Medical School

**9:30 AM** Using kidney organoids to study cystogenesis in ADPKD.

**Owen Woodward**, Univ. of Maryland School of Medicine

## 174 Of Mice and Men: What Have We Really Learned about the Regulation of Coronary Vascular Function in Health and Disease?

### SYMPOSIUM

SUN 8:30 AM-10:00 AM, Convention Center, Room 23ABC

Sponsored by: Cardiovascular Section · Chairs: S. Phillips · A. Goodwill

Track: Cardiovascular

8:30 AM Mechanisms of vasodilation in the human coronary micro-circulation in diabetes.

**Frank Selke**, Brown Medical School

8:50 AM Mechanisms of coronary flow control in swine models of health and disease.

**Adam Goodwill**, Indiana Univ. School of Medicine

9:10 AM Age-related coronary microvascular dysfunction in murine models.

**Amanda LeBlanc**, Univ. of Louisville School of Medicine

9:30 AM Multi-scale modeling of supply-demand matching in myocardial oxygen delivery.

**Dan Beard**, Univ. of Michigan

## 175 Addressing Higher Levels of Bloom's Taxonomy in the Teaching and Learning of Physiology

### SYMPOSIUM

SUN 8:30 AM-10:00 AM, Convention Center, Room 28B

Sponsored by: Teaching of Physiology Section · Chairs: H. Clements-Jewery · M. Hopper

Track: Education · Career and Professional Development

8:30 AM Fostering higher-order cognitive skills in the teaching and learning of physiology.

**Janet Casagrand**, Univ. of Colorado, Boulder

8:52 AM Using Bloom's Taxonomy to monitor assessment changes after flipping a course.

**Lara DeRuisseau**, LeMoyne Col.

9:14 AM Addressing higher levels of Bloom's Taxonomy: Does student performance match perception?

**Mari Hopper**, Univ. of Indiana, Evansville

9:36 AM Using the Phys-MAPS to understand changes in students' ability to apply core physiology concepts.

**Katharine Semsar**, Univ. of Colorado, Boulder.

## 176 Maintenance and Remodeling of the Neuromuscular Junction in Health and Disease

### SYMPOSIUM

**SUN 8:30 AM-10:00 AM, Convention Center, Room 22**

Sponsored by: Muscle Biology Group · **Chair: V. Lubicic**

Track: Metabolism and Metabolic Disease · Neuroscience

- 8:30 AM Aging Muscle and Chronic Tobacco Smoke Exposure: Crossing Swords at the Neuromuscular Junction.  
**Russell Hepple**, Univ. of Florida
- 8:50 AM Factors Regulating Differential Neuromuscular Junction Vulnerability in Motor Neuron Diseases.  
**Lyndsay Murray**, Univ. of Edinburgh
- 9:10 AM Interrelationships Between Age-Related Skeletal Muscle Stem Cell and Neuromuscular Junction Decline.  
**Joe Chakkalakal**, Univ. of Rochester
- 9:30 AM Activity-Induced Plasticity of the NMJ.  
**Michael Deschenes**, College of William and Mary

## 177 NCAR Young Investigator Awards

### FEATURED TOPIC

**SUN 8:30 AM-10:00 AM, Convention Center, Room 26AB**

Sponsored by: Neural Control and Autonomic Regulation Section ·

**Chairs: D. J. Moraes · M. Poglitsch**

Track: Neuroscience

- 8:30 AM Brainstem Pre-Sympathetic Neuron Controls Oscillatory Breathing in Heart Failure  
**R. Del Rio, D.C. Andrade, C. Toledo, H.S. Diaz, C. Lucero, A. Arce-Alvarez**, P. Universidad Católica de Chile, Chile
- 8:50 AM Sim1-PVN Neurons in ADAM17 Mediated Neurogenic Hypertension  
**S. Mukerjee, T. Basting, A. Zsombok, E. Lazartigues**, Louisiana State Univ. Health Sciences Center and Tulane Univ.
- 9:00 AM Role of AT<sub>1</sub> Receptor-Mediated ADAM17 Signaling in Glutamatergic Neurons in Neurogenic Hypertension  
**J. Xu, E. Lazartigues**, Louisiana State Univ. Health Sciences Center - New Orleans
- 9:10 AM Plasma Erythropoietin Concentration Determine the Carotid Body Chemosensitivity to Hypoxia and Hypercapnia in Rats  
**S. Laouafa, R. Tam, A. Bairam, V. Joseph, J. Soliz**, Univ. Laval, Canada
- 9:20 AM Salt Diet Influences Endothelin-1 Signaling in Renal Sensory Nerves  
**B.K. Becker, J.S. Speed, D.M. Pollock**, Univ. of Alabama at Birmingham
- 9:30 AM Neurons in the Ventral Lateral Preoptic Area Inhibit Brown Adipose Tissue Thermogenesis  
**E.P. Conceição, C.J. Madden, S.F. Morrison**, Oregon Health & Science Univ.
- 9:40 AM Redox-Driven Lymphocyte Inflammation Sensitizes Mice to Psychological Stress-Mediated Hypertension  
**A.J. Case, C.W. Collins, A.J. Kohl, C.M. Moshfegh, S. Elkhatab**, Univ. of Nebraska Medical Center

## 178 Renal Section Young Investigator Award Featured Topic: Novel Roles for Renal GPCRs

### FEATURED TOPIC

SUN 8:30 AM-10:00 AM, Convention Center, Room 28A

Sponsored by: Renal Section · Chairs: **J. Pluznick** · **M. Caplan**

- 8:30 AM Orphan GPCRs and renal physiology.  
**Jennifer Pluznick**, Johns Hopkins School of Medicine
- 9:00 AM Activation of G Protein-Coupled Estrogen Receptor Promotes Endothelin-Dependent Natriuresis in Female Rats  
**E.Y. Gohar, I.E. Obi, E.M. Daugherty, C. De Miguel, M. Kasztan, J.S. Pollock, D.M. Pollock**, Univ. of Alabama at Birmingham
- 9:15 AM Deep Proteomic Quantification of Inner Medullary Collecting Duct Protein Phosphorylation: Response to Vasopressin  
**V. Deshpande, C-L. Chou, M. Knepper**, National Heart, Lung, and Blood Institute and National Institutes of Health
- 9:30 AM Kir4.1 Is Involved in Bradykinin-Induced Inhibition of NCC and Natriuresis  
**P. Wu, Z-X. Gao, D-D. Zhang, C.P. Vio, R. Gu, W-H. Wang**, New York Medical College, Harbin Medical Univ., People's Republic of China and Pontificia Universidad Católica de Chile, Chile
- 9:45 AM Intrarenal Bradykinin Is Decreased in Mice with Prorenin Receptor Deficiency in the Collecting Duct  
**B. Visniauskas, J. Mourain, J.R. Chagas, M.C. Prieto**, Tulane Univ. and Universidade Federal de Sao Paulo, Brazil
- 10:00 AM Renal Olfactory Receptor 1393 Contributes to the Progression of Diabetes  
**B.D. Shepard, H. Koepsell, J.L. Pluznick**, Georgetown Univ., Univ. of Würzburg, Germany and Johns Hopkins Univ. School of Medicine
- 10:15 AM Genetic Deletion of P2Y2 Receptor Suppresses Lithium-Induced Medullary Collecting Duct Remodeling in Mice  
**B.K. Kishore, J. Peti-Peterdi, T. Liu, A. Riquier-Brison, N.G. Carlson, Y. Zhang**, Univ. of Utah and VA Medical Center and Univ. of Southern California

## 179 Role of the Microbiome in Cardiovascular Disease

### FEATURED TOPIC

SUN 8:30 AM-10:00 AM, Convention Center, Room 24AB

Sponsored by: Cardiovascular Section · Supported by: Journal of Clinical Science

Chair: **E. Buys**

Track: Cardiovascular

- 8:30 AM Suppression of the Gut Microbiome-Derived Metabolite Trimethylamine N-Oxide Prevents Western Diet-Induced Arterial Dysfunction  
**V.E. Brunt, Z.J. Sapinsley, R.A. Gioscia-Ryan, J.J. Richey, M.C. Zigler, D.R. Seals**, Univ. of Colorado Boulder



- 8:45 AM Examining the Role of Gut Dysbiosis in Neuroinflammation and Hypertension in a Model of Obstructive Sleep Apnea  
**D. Durgan, B.P. Ganesh, J. Nelson, J. Eskew, N. Ajami, J. Petrosino, R. Bryan**, Baylor College of Medicine, The Univ. of Texas Health Science Center and Mercer Univ.
- 9:00 AM Short-Term Captopril Treatment Causes Persistently Decreased Blood Pressure Associated with Long-Lasting Shifts in Gut Microbiota and Improvement in Gut Pathology  
**T. Yang, V.P. Aquino, Q. Yanfei, G.O. Lobaton, C. Jobin, E.M. Richards, C.J. Pepine, M.K. Raizada**, Univ. of Florida
- 9:15 AM Dysbacteriosis an Inciting Cause of Endothelial Dysfunction Mediated Through Mitochondrial DNA Interactions  
**K. Ait-Aissa, J.C. Hockenberry, A.O. Kadlec, D.S. Chabowski, J.M. Linn, D.D. Gutterman, A.M. Beyer**, Medical College of Wisconsin
- 9:30 AM The Oral Microbiome and Hypertension.  
**Nathan Byran**, Baylor College of Medicine

## 180 Physiological Genomics Trainee Highlights

### FEATURED TOPIC

**SUN 8:30 AM-10:00 AM, Convention Center, Room 28DE**

Sponsored by: Physiological Genomics Group

- 8:30 AM Transcriptomic Profiling of Mitochondrial Dysfunction Induced Apoptosis in Accelerated Cardiovascular Disease  
**F. Xu, F. Guan, A. Halim, L. Ho, K. Lim, T. Lu**, Brookline High School, Brigham and Women's Hospital and Harvard Medical School, Univ. of Rochester and Massachusetts General Hospital and Harvard Med. School
- 8:45 AM Aerobic Exercise Training and Cardiac Ace2 Overexpression Promotes Beneficial Effects in Circulating Renin Angiotensin System  
**C.V. Gomes-Gatto, A.C. Silveira, J. L.P. Gomes, T. Fernandes, E. Lazartigues, E.M. Oliveira**, Univ. of São Paulo, Brazil and Louisiana State Univ. Health Sciences Center - New Orleans
- 9:00 AM Long Non-Coding RNAs Are Transcriptional Regulators of Contractile Protein-Coding Genes in Skeletal Muscle  
**J.D. Resnick, C.A. Gilbert, A.J. Lowrey, M.C. Callier, C.E. Pandorf**, Mercer Univ. and Mercer Univ. School of Medicine
- 9:15 AM Effect of 17 $\beta$ -Estradiol on Endothelial Cell Expression of Inflammation-Related miRNAs  
**M.V. Levy, J.G. Hijmans, K.A. Stockelman, L.M. Brewster, W.R. Reiakvam, Z.A. Goldthwaite, J.J. Greiner, C.A. DeSouza**, Univ. of Colorado Boulder
- 9:30 AM Nuclear-Mitochondrial Crosstalk in the Heart During Diabetes Mellitus the Impact on RNA in Mitochondrial Subpopulations  
**Q.A. Hathaway, D.L. Shepherd, A.J. Durr, J.M. Hollander**, W. Virginia Univ.
- 9:45 AM The Molecular Mechanisms of Chronic Kidney Disease Induced Hyperphosphatemia in Cerebral Microvasculature  
**J. Xu, C-P. Chung, P-T. Lee, L. Ho, K. Lim, T. Lu**, Harvard College, Harvard Univ., Taipei Veterans General Hospital, Taiwan, Kaohsiung Veterans General Hospital, Taiwan, Brigham and Women's Hospital and Harvard Medical School and Massachusetts General Hospital and Harvard Medical School

## 181 Translational Physiology Showcase: Bench to Bedside and In Between

### FEATURED TOPIC

SUN 8:30 AM-10:00 AM, Convention Center, Room 25B

Sponsored by: Translational Physiology Interest Group · **Chair: C. Young**

Track: Cardiovascular · Metabolism and Metabolic Disease · Nutrition/Obesity

### Mitochondria in health and disease from a translational perspective

8:30 AM Profiling Mitochondrial Quality Control in Human Myotubes Derived from Severely Obese Non-Diabetic and Type 2 Diabetic Patients  
**A. Gundersen, S. Park, G. Dubis, J. Houmard, K. Zou**, Univ. of Massachusetts Boston and East Carolina Univ.

8:36 AM Patterns of Suppressed Mitochondrial Respiration in Isolated Muscle Fibers from Type 2 Diabetics  
**K.D. Turner, M.P. Harris, A. Kronemberger, K. Ueda, A.J. Feider, H. Kenny, E.J. Anderson, E.D. Abel, D.P. Casey, V.A. Lira**, Univ. of Iowa

8:42 AM Exercise Induces Depot-Specific Adaptations to White and Brown Adipose Tissue  
**L.A. Baer, A.C. Lehnig, R.S. Dewal, K.M. Kitching, D.A. Sindeldecker, L.J. Goodyear, K.I. Stanford**, The Ohio State Univ. and Joslin Diabetes Center

8:48 AM “The Role of the Unfolded Protein Response in Mediating Adaptations to Exercise Responsiveness”  
**C.R. Hart, J-H. Koh, S. Dasari, A.Z. Lalia, I.R. Lanza**, Mayo Clinic

8:54 AM  $H_1/h_2$  Histamine Receptor Blockade Lowers Substrate-Dependent Mitochondrial  $H_2O_2$  Emission in Deep Gastrocnemius Muscle Following a Bout of Prolonged Exercise  
**L.R. Davidson, H.E. Wallace, M.C. W. Bell, K. Brebner, D.A. Kane**, St. Francis Xavier Univ., Canada

9:00 AM Effects of Roux-En-Y Gastric Bypass Surgery on Mitochondrial Quality Control Proteins in Human Myotubes Derived from Severely Obese Humans  
**B.N. Kugler, P.N. Gona, S.N. Saunders, S. Park, G. Dubis, J.A. Houmard, K. Zou**, Univ. of Massachusetts Boston and East Carolina Univ.

9:06 AM Roundtable discussion.

### Sex and cardiometabolic disease from a translational perspective

9:14 AM Sex Differences in Renal Inflammation and Injury in High Fat Diet Induced Hypertension in Dahl Salt Sensitive Rats  
**R. Fernandes, H. Garver, J.J. Harkema, J.J. Galligan, G.D. Fink, H. Xu**, Michigan State Univ.

9:20 AM Chronic  $17\beta$ -Estradiol Supplementation Reduces Blood Pressure and Alters Renal Estrogen Receptor Expression in Female Growth-Restricted Rats in Later Life  
**G.K. Davis, A. Cole, A.D. Newsome, N.B. Ojeda, B.T. Alexander**, Univ. of Mississippi Medical Center

9:26 AM Estrogen Receptor Beta and G-Protein Coupled Estrogen Receptor Are Located and Activated on Microglia by Estrogen  
**K. Dvorak, M. Boyer, M.J. Barnes, S.C. Clayton**, Des Moines Univ.

- 9:32 AM A Novel Role for Hindbrain Astrocytes in Leptin-Mediated Energy Balance and the Development of Obesity  
**L. Stein, R. Lhamo, A. Corini, A. Cao, J. Chen, M. Hayes**, Univ. of Pennsylvania
- 9:38 AM Inflammatory Reproductive White Adipose Tissue Characterizes the Obese Preeclamptic-Like Bph/5 Mouse Prior to Pregnancy  
**K. Olson, D. Reijnders-Most, N. Douglas, L.M. Redman, J.L. Sones**, Louisiana State Univ. School of Veterinary Medicine, Columbia Univ. Medical Center and Pennington Biomedical Research Center
- 9:44 AM Local Angiotensin 1-7 Administration Augments Microvascular Endothelial Function in Women Who Have Had Preeclampsia  
**A. Stanhewicz, L. Alexander**, Pennsylvania State Univ.
- 9:50 AM Roundtable discussion.

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## 182 Redox Biology: A Unifying Theme in the Etiology of Human Diseases

### SYMPOSIUM

SUN 1:30 PM-3:00 PM, Convention Center, Room 28DE

Sponsored by: Society for Redox Biology and Medicine (SFRBM) · Chairs: **A. Case** · **C. Kevil**

Track: Inflammation/Immunity

- 1:30 PM Chair's Introduction.
- 1:35 PM The NADPH oxidase Nox4 in endothelial function.  
**Katrin Schröder**, Goethe-Univ. - Germany
- 2:00 PM Reductive Stress Promotes Heart Failure in Mouse and Human  
**R. Namakkal Soorappan**, The Univ. of Alabama at Birmingham
- 2:15 PM Renal Hv1: A critical component of reactive oxygen species production outside the immune system?  
**Paul O'Connor**, Medical College of Georgia / Augusta Univ.
- 2:40 PM Ketone Salts Inhibit Production of Superoxide Anions During Normobaric and Hyperbaric Hyperoxia in Rat Solitary Complex Neurons  
**C. Hinojo, G. Ciarlone, D. D'agostino, J. Dean**, Univ. of South Florida
- 2:55 PM Concluding remarks.

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## 183 ENaC Proteins as Mechanosensors in Endothelial and Vascular Smooth Muscle Cells

### SYMPOSIUM

SUN 1:30 PM-3:00 PM, Convention Center, Room 25A

Sponsored by: Renal Section · Chairs: H. Drummond · Z. Ashley

Track: Cardiovascular

- 1:30 PM ENaC: An evolutionary model of mechano-electrical coupling.  
**Thomas Kleyman**, Universit of Pittsburgh
- 1:50 PM Mechanotransduction in renal VSMCs is mediated by coupling of ENaC and Trp signaling.  
**Heather Drummond**, Univ. of Mississippi Medical Center
- 2:10 PM How do ENaCs sense mechanical force? Or extracellular Na<sup>+</sup> regulates ENaC function in blood vessels.  
**Shujie Shi**, Univ. of Pittsburgh
- 2:30 PM Shear force sensing of ENaC in endothelial cells requires N-glycans and the extracellular matrix.  
**Martin Fronius**, Univ. of Otago

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## 184 Sex Differences in Central Circuits

### SYMPOSIUM

SUN 1:30 PM-3:00 PM, Convention Center, Room 26AB

Sponsored by: CNS Section · Chairs: R. Wainford · K. Browning

Track: Neuroscience

- 1:30 PM Sex based differences in the central responses to prenatal stress.  
**Tracy Bale**, Univ. of Pennsylvania
- 2:00 PM Sex based differences following early adverse life events.  
**Beverly Greenwood-Van Meerveld**, Univ. of Oklahoma
- 2:30 PM Sex differences in the brainstem and implications for GI function.  
**Yanyan Jiang**, Penn State

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## 185 Organoids: Modelling Cell Physiology and Disease in 3D

### SYMPOSIUM

SUN 1:30 PM-3:00 PM, Convention Center, Room 28A

Sponsored by: Cell and Molecular Physiology Section · Chairs: N. A. Bradbury · N. Ameen

Track: Cardiovascular · Inflammation/Immunity · Neuroscience

- 1:30 PM Introduction to organoid biology.  
**Neil Bradbury**, Chicago Medical School
- 1:40 PM Human pancreatic organoids as a model for cancer.  
**David Tuveson**, Cold Spring Harbor Laboratory
- 2:05 PM Directing stem cell differentiation in airway organoids.  
**Henry Danahay**, Univ. of Sussex
- 2:30 PM Getting organoids started in your own laboratory.  
**Ryan Condor**, StemCell Technologies

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## 186 American Journal of Physiology Heart and Circulatory Physiology Editors Symposium

### SYMPOSIUM

SUN 1:30 PM-3:00 PM, Convention Center, Room 22

Sponsored by: Cardiovascular Section · Chairs: **I. H. Zucker** · **M. Lindsey**

- 1:30 PM Disease modeling using hiPSC-derived differentiated cells: A platform for integrative physiology.  
**Ivor Benjamin**, Medical College of Wisconsin
- 1:50 PM Gender difference in the development of cardiac amyloidosis.  
**Ronglih Liao**, Harvard Medical School
- 2:10 PM The nervous heart: Insights into autonomic-mediated arrhythmias.  
**Crystal Ripplinger**, Univ. of California at Davis
- 2:30 PM Cerebromicrovascular aging: new mechanisms.  
**Zoltan Ungvari**, Univ. of Oklahoma

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## 187 APS President's Symposium Series I. Exosomes: The New Frontier. Cell Biology of Exosomes

### SYMPOSIUM

SUN 1:30 PM-3:00 PM, Convention Center, Room 20A

Sponsored by: President's Symposium Series · Chairs: **L. O'Driscoll**

- 1:30 PM Cellular regulation of exosome and other extracellular vesicles production and release.  
**Clotilde Théry**, INSERM U932
- 2:00 PM Characterization and analysis of exosomes/extracellular vesicles.  
**Jennifer Jones**, NCI, NIH
- 2:30 PM Exosomes and intracellular signaling.  
**Riccardo Alessandro**, Univ. of Palermo

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## 188 Non-Canonical Functions of the Lung in Immunity and Hemostasis

### SYMPOSIUM

SUN 1:30 PM-3:00 PM, Convention Center, Room 27AB

Sponsored by: Respiration Section · Chairs: **W. M. Kuebler** · **J. K. Juss**

Track: Inflammation/Immunity · Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials)

- 1:30 PM Platelet biogenesis in the lung.  
**Mark Looney**, UCSF School of Medicine
- 2:00 PM The lung as a source and effector site for factor XII.  
**Malgorzata Wygrecka**, Univ. of Giessen
- 2:30 PM Antigen-presentation in the lung.  
**Claudia Jakubzick**, National Jewish Health

## 189 From Gene to Function of Complex Traits: Analysis of Genes Identified in Human GWAS and Animal Models

### FEATURED TOPIC

SUN 1:30 PM-3:00 PM, Convention Center, Room 28B

Sponsored by: Physiological Genomics Group · Chairs: **L. Solberg Woods**

- 1:30 PM Learning about an old dog's new tricks: the role of Glyoxalase 1 in regulating behavior and GABAergic signaling and how we stumbled across it.  
**Abraham Palmer**, Univ. of California San Diego
- 2:00 PM The IMPC: A Global Scientific Infrastructure for Understanding the Role of Genes in Complex Traits  
**V. Muñoz-Fuentes, T.F. Meehan, K. C.K. Lloyd, A-M. Mallon, D. Smedley, H. Parkinson**, European Bioinformatics Institute, United Kingdom, Univ. of California, Davis, Medical Research Council Harwell, United Kingdom and Queen Mary Univ. of London, United Kingdom
- 2:15 PM Characterization of Coding and Noncoding Variants for Human CKD Using Novel Strategies  
**J.W. Prokop, N.C. Yeo, C. Ottmann, B.A. Link, E.M. Mendenhall, B.I. Freedman, J. Lazar, H.J. Jacob**, Michigan State Univ., Harvard Medical School, Eindhoven Univ. of Technology, Netherlands, Medical College of Wisconsin, The Univ. of Alabama in Huntsville, Wake Forest and HudsonAlpha Institute for Biotechnology
- 2:30 PM GNAI2 Polymorphic Variance Associates with the Salt-Sensitivity of Blood Pressure  
**A.A. Frame, R.D. Wainford**, Boston Univ. School of Medicine
- 2:45 PM Tick-Tock, Tick-Tock: Clock Gene Expression Is Altered in Sleep Apnea  
**M. Holzworth, M. Canales, R. Berry, R. Beyth, M.L. Gumz**, Univ. of Florida

## 190 Comparative and Evolutionary Physiology Section Trainee-Driven Featured Topic

### FEATURED TOPIC

SUN 1:30 PM-3:00 PM, Convention Center, Room 25C

Sponsored by: Comparative and Evolutionary Physiology Section · Chairs: **D. Crossley**  
Track: Cardiovascular

- 1:30 PM Active  $\text{NH}_4^+$  Excretion via  $\text{Na}^+/\text{NH}_4^+(\text{H}^+)$  Exchange in the Highly Ammonia Tolerant Hagfish (*Epatatretus Stoutii*)  
**A.M. Clifford, M.P. Wilkie, S.L. Edwards, A. Weinrauch, G.G. Goss**, Univ. of Alberta, Canada, Wilfrid Laurier Univ., Canada and Appalachian State Univ.
- 1:45 PM Evolutionarily-Conserved Mechanisms of Nutrient Acquisition in the Primordial Vertebrate, the Pacific Hagfish  
**A. Weinrauch, C. Glover, T. Blewett, A. Clifford, G. Goss**, Univ. of Alberta, Canada and Athabasca Univ., Canada

- 2:00 PM Crude Oil Impairs Heart Cell Function in the Mahi-Mahi (*Coryphaena Hippurus*)  
**R.M. Heuer, H.A. Shiels, G.L. J. Galli, G.K. Cox, J.D. Stieglitz, D.D. Benetti, M. Grosell, D.A. Crossley II**, Univ. of Miami, Univ. of Manchester, United Kingdom and Univ. of North Texas
- 2:15 PM Paralytic Hypo-Energetic State Facilitates Anoxia Tolerance Despite Ionic Imbalance in Adult *Drosophila Melanogaster*  
**J.B. Campbell, M.K. Andersen, J. Overgaard, J.F. Harrison**, Arizona State Univ. and Aarhus Univ., Denmark
- 2:30 PM Incomplete Caspase Signaling During Hibernation in the Golden-Mantled Ground Squirrel, *Spermophilus Lateralis*  
**M.D. Treat, F. van Breukelen**, Univ. of Nevada and Las Vegas
- 2:45 PM Noradrenergic Tuning, Not Simple Rate Effects, Produces Temperature-Sensitivity of the Respiratory Network in Bullfrogs  
**M. Vallejo, J.M. Santin, L.K. Hartzler**, Wright State Univ. and Univ. of Missouri

## 191 Exploring Novel Mechanisms to Improve Exercise Tolerance in Health and Disease

### FEATURED TOPIC

**SUN 1:30 PM-3:00 PM, Convention Center, Room 25B**

Sponsored by: Environmental and Exercise Physiology Section

**Chairs: R. Harris · J. Barnes**

Track: Cardiovascular · Inflammation/Immunity · Cancer and Therapy

- 1:30 PM Mechanism and consequences of O<sub>2</sub> supply limitations in heart failure.  
**Markus Amann**, Univ. of Utah
- 2:00 PM Central Cardiac Determinants of the Speed-Duration Relationship in Heart Failure Rats  
**J.C. Craig, T.D. Colburn, J.T. Caldwell, D.M. Hirai, A. Tabuchi, J.H. Merino, C.J. Ade, D.C. Poole, T.I. Musch**, Kansas State Univ.
- 2:15 PM Inorganic Nitrate Supplementation Improves Exercise Tolerance and Calf Vascular Function in Patients with Peripheral Artery Disease  
**J. Bock, D. Treichler, K. Ueda, W. Hughes, D. Casey**, Univ. of Iowa
- 2:30 PM ***Skeletal Muscle Parvin Regulates Exercise Tolerance and Glucose Homeostasis in Mice***  
**D.S. Lark, J.R. Kwan, L. Lantier, R. Zent, A. Pozzi, D.H. Wasserman**, Vanderbilt Univ.
- 2:45 PM Acute Sildenafil Treatment Improves Exercise Capacity in Patients with Cystic Fibrosis  
**V. Gonzalez, N. Siegler, R. Crandall, K.T. Mckie, C. Forseen, P. Rodriguez-Miguel, M. Tucker, R.A. Harris**, Medical College of Georgia and Augusta Univ.

## 192 Cell Plasticity and Repair and Disease Mechanisms in the Stomach, Liver and Intestine

### FEATURED TOPIC

**SUN 1:30 PM-3:30 PM, Convention Center, Room 23ABC**

Sponsored by: GI and Liver Physiology Section · AJP - Gastrointestinal and Liver Physiology · **Chairs: A. E. Zemper**

Track: Microbiome · Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials) · Cancer and Therapy

**1:30 PM** Intestinal stem cells in tissue repair.

**Melissa Wong**, Oregon Health Science Univ.

**2:15 PM** Rapid Crypt Cell Remodeling Regenerates the Intestinal Stem Cell Niche After Stem Cell Loss Induced by Notch Inhibition

**N. Bohin, T.M. Keeley, A.J. Carulli, E.A. Carlson, J. Gao, I. Aifantis, M.W. Rajala, M.G. Myers, J.C. Jones, C.D. Brindley, P.J. Dempsey, L.C. Samuelson**, Univ. of Michigan, New York Univ. School of Medicine and Univ. of Colorado School of Medicine

**2:30 PM** Microvillus Inclusion Formation in Myosin Vb Knockout Mice Occurs Through Apical Bulk Endocytosis and Requires Syndapin 2

**A.C. Engevik, J. Faust, M. Tyska, J.R. Goldenring**, Vanderbilt Univ. School of Medicine and Vanderbilt Univ.

**2:45 PM** Deletion of Claudin-7 Disrupts Epithelial Cell Self-Renewal in Mouse Colon

**T. Xing, L. J. Benderman, S. Sabu, Y. Chen**, Brody School of Medicine, East Carolina Univ. and East Carolina Univ.

**3:00 PM** Effect of Egfr on Calcium Mobilization and Epithelial Repair in Gastric Organoids

**K. Engevik, E. Aihara, A. Matthis, M. Montrose**, Univ. of Cincinnati

**3:15 PM** Determining the Mechanism by Which PRDM16 Maintains the Adult Small Intestinal Epithelium

**R. Stine, P. Seale**, Univ. of Pennsylvania



## 193 Innate and Adaptive Immunity in Cardiovascular Physiology

### FEATURED TOPIC

SUN 1:30 PM-3:00 PM, Convention Center, Room 24AB

Sponsored by: Cardiovascular Section · Chairs: **M. Madhur · D. Cornelius**  
Track: Cardiovascular

- 1:30 PM Macrophage phenotypic modulation in coronary artery disease.  
**Cornelia Weyand**, Stanford Univ.
- 2:00 PM A Crucial Role for Interleukin-18/IL-18R Signalling Axis in the Development of Renal Inflammation and Elevated Blood Pressure in 1 Kidney/DOCA/Salt-Induced Hypertension  
**J.M. Thomas, Y. H. Ling, S. Murali Krishnan, D. Ferens, S. Masters, B. Kemp-Harper, A. Mansell, C. Sobey, A. Vinh, G. Drummond**, La Trobe Univ., Australia, Monash Univ., Australia, Walter and Eliza Hall Institute of Medical Research, Australia and Hudson Institute of Medical Research, Australia
- 2:15 PM Leptin Restores Endothelial Function, Reduces Vascular Inflammation but Not Vascular Remodeling in Mouse Models of Congenital and Acquired Lipodystrophy via Anti-Oxidant Properties  
**T. Bruder do Nascimento, J. Faulkner, W. Chen, E.J. Belin de Chantemle**, Augusta Univ.
- 2:30 PM CD8 T-Cells Have a Biphasic Role During Post-Myocardial Infarction Cardiac Remodeling  
**K.Y. DeLeon-Pennell, M.L. Lindsey, E. Flynn, D.R. Menick**, Univ. of Mississippi Medical Center and Medical Univ. of South Carolina
- 2:45 PM High Salt Promotes Human Monocytes Activation in Vitro and in Vivo  
**N. Ruggeri Barbaro, J.D. Foss, A. Alsouqi, R. Loperena, J. Van Beusecum, M. Ao, F. Eljovich, C.L. Laffer, W. Chen, A. Ikizler, D.G. Harrison, A. Kirabo**, Vanderbilt Univ.

## 194 Epigenetic Memory of Environmental Exposure: A Physiological Perspective

### SYMPOSIUM

SUN 3:30 PM-5:00 PM, Convention Center, Room 25B

Sponsored by: Environmental and Exercise Physiology Section

Chairs: **A. Murashov · T. L. Clanton**

- 3:30 PM Molecular Mechanisms of epigenetic regulation.  
**Scott Rothbart**, Van Andel Inst., Grand Rapids, MI.
- 3:50 PM Ancestral paternal nutrition and modulation of cancer risk and phenotype.  
**Sonia de Assis**, Georgetown Univ. Medical Center
- 4:10 PM Mechanisms underlying the nutritional programming of cardio-metabolic health.  
**Susan Ozanne**, Univ. of Cambridge
- 4:30 PM Mechanisms underlying developmental programming of thrifty phenotype.  
**Alexander Murashov**, East Carolina Univ.

## 195 Intersection of Central Pain and Reward Circuitry in CNS Disorders

### SYMPOSIUM

**SUN 3:30 PM-5:00 PM, Convention Center, Room 28A**

Sponsored by: CNS Section · **Chairs: S. Edwards · M. Roberto**

**3:30 PM** Neuroinflammation caused by chronic pain alters limbic circuitry: Implications for pain and mood disorders.

**Catherine Cahill**, Univ. of California - Irvine

**4:00 PM** Role of the opioid system in the reward pathway in pain-induced negative affect.

**Jose Moron-Concepcion**, Washington Univ. in St Louis

**4:30 PM** Neurobiology of pain and negative reinforcement in drug addiction: New translational targets.

**Amanda Pahng**, LSU Health New Orleans

## 196 John Forte GIL Plenary Session

### FEATURED TOPIC

**SUN 3:30 PM-5:00 PM, Convention Center, Room 28DE**

Sponsored by: GI and Liver Physiology Section · AJP - Gastrointestinal and Liver Physiology · **Chairs: J. Uno · M. Frey**

**3:30 PM** Protective Effects of Human Milk Oligosaccharides on Intestinal Epithelial Function Assessed in Enteroid-Derived Monolayers

**A. Drobny, S. R. Ibeawuchi, S. Das, L. Bode, K.E. Barrett**, Univ. of California and San Diego

**3:45 PM** Enteroglial Adenosine A2B Receptor Signaling Contributes to Local Cytokine Production and Delays Functional Recovery Following Acute Inflammation in the Mouse Colon

**V. Grubisic, H.K. Eltzschig, B.D. Gulbransen**, Michigan State Univ., Dell Medical School and The Univ. of Texas at Austin

**4:00 PM** Gene Expression Analysis of the Effect of Microbial Tryptophan Metabolites on T-Cell Differentiation

**C. Cheng, S. Steinmeyer, A. Jayaraman, R. Alaniz**, Texas A&M Univ.

**4:15 PM** Targeting the Prolactin Receptor Signaling Using an Antipsychotic Drug to Suppress Pancreatic Cancer

**P. Dandawate, G. Kaushik, D. Subramaniam, P. Ramamoorthy, C. Ghosh, S. Choudhury, D. Standing, A. Dhar, S.M. Thomas, S. Santimukul, S. Padhye, O. Tawfik, S. Weir, R.A. Jensen, S. Anant**, Univ. of Kansas Medical Center, Pittsburg State Univ. and Abeda Inamdar Senior College, India

**4:30 PM** Hypoxia Inducible Factor Accelerates Epithelial Wound Healing Through Regulation of Integrin- $\alpha 5\beta 1$

**B. Goggins, K. Minahan, A. Mathe, G. Liu, M. Walker, J. Horvat, D. Knight, S. Keely**, Univ. of Newcastle and Hunter Medical Research Institute, Australia

**4:45 PM** Fish-Oils Protect Against Hepatic Inflammation Following Lps Stimulation

**M.L. Schaller, D.R. Kamm, M.P. Harris, K.A. Witt, K.E. Sandoval, J.S. Wooten**, Southern Illinois Univ. Edwardsville

## 197 Psychological Stress Disorders: Novel Concepts and Mechanisms

### FEATURED TOPIC

**SUN 3:30 PM-5:00 PM, Convention Center, Room 25C**

Sponsored by: Neural Control and Autonomic Regulation Section

**Chairs: R. Sabharwal · A. K. Johnson**

Track: Neuroscience

- 3:30 PM Contributions of the renin-angiotensin system in psychological stress.  
**Juan Saavedra**, Georgetown Univ. Medical Center
- 4:00 PM Activation of Angiotensin Type 2 Receptor Contributes to Fear Memory  
**Z. Yu, A.P. Swiercz, L. Hopkins, E.G. Krause, P.J. Marvar**, George Washington Univ. and Univ. of Florida
- 4:15 PM Differences in Excitatory and Inhibitory Balance Within the Paraventricular Nucleus Reflects Response Variability to Acute Stress  
**M.M. Knuepfer, H. Zheng, N.B. Hoffman-Schepers, N.M. Sharma, K.P. Patel**, St. Louis Univ. School of Medicine and Univ. of Nebraska Med. Center
- 4:30 PM T Cell Inhibition During Pregnancy Prevents Post-Partum Anxiety-Like Behavior in Rats with a History of Severe Preeclampsia/HELLP Syndrome  
**K. Wallace, T. Bowles, S-K. Spencer, C. Bean**, Univ. of Mississippi Med. Center
- 4:45 PM Prehypertension Augments Autonomic Imbalance in Post-Traumatic Stress Disorder.  
**I.T. Fonkoue, J. Kang, P. Marvar, J. Park**, Emory Univ. and George Washington Univ.

## 198 Communication and Miscommunication in Lung Injury and Repair

### FEATURED TOPIC

**SUN 3:30 PM-5:15 PM, Convention Center, Room 25A**

Sponsored by: Respiration Section · **Chairs: M. Koval · K. Birukov**

Track: Inflammation/Immunity · Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials)

- 3:30 PM Vascular niche modulates lung regeneration and Fibrosis.  
**Bi-Sen Ding**, Weill Cornell Medical College
- 4:00 PM Modulation of Myeloid Cell Recruitment and Activation by Alveolar Epithelial Type 2 Cells Drives Early Inflammation in a Murine Model of Mutant Surfactant Protein-C Pulmonary Fibrosis  
**A. Venosa, Y. Tomer, M. Kopp, S. Jamil, M.F. Beer**, Univ. of Pennsylvania
- 4:15 PM Lung Immune Regulation by Vectorial Transport of Endothelial Mitochondria  
**M.N. Islam, D.J. Rowlands, G. Gusarova, J. Bhattacharya**, Columbia Univ. and Novartis Institute of Biomedical Research
- 4:45 PM Endothelial Caveolin-1 Positive Microvesicles and Apoptotic Bodies as Early Biomarkers of Acute Lung Injury and Possible Mediators of Tgf- $\beta$ -Mediated Repair/Remodeling  
**S. D. S. Oliveira, M. Castellon, R. Machado, M.G. Bonini, R. Minshall**, Univ. of Illinois at Chicago and Indiana Univ.
- 5:00 PM PTEN Suppresses Epigenetic Modulation of ERG Transcription Factor to Maintain Endothelial Lineage and Vascular Integrity  
**V. A. B. R., M. Anwar, J. C. Joshi, T. Mohammad, F. Mohammad, L. Yue, D. Mehta**, Univ. of Illinois at Chicago

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## 199 Microglia as Effectors of Respiratory Plasticity in Health and Disease

### FEATURED TOPIC

SUN 3:30 PM-5:00 PM, Convention Center, Room 28B

Sponsored by: Respiration Section · **Chairs: R. Kinkead · F. Powell**

Track: Neuroscience · Inflammation/Immunity · Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials)

3:30 PM Dark microglia and pathological remodeling of neuronal circuits.  
**M. Tremblay**, Université Laval

4:00 PM Inflammation Differentially Impacts Phrenic Long-Term Facilitation (PLTF) in Rats with Motor Neuron Death Induced by Intrapleural Ctb-Saporin Injections  
**N.L. Nichols, M.A. Tanner**, Univ. of Missouri

4:15 PM Is Regulation of Microglial Functions by T3 Dependent on the Micro-Environment?: Insights from the Brainstem Respiratory Control Network of Newborn Mice  
**J-P. Rousseau, K. Kitazono, Y. Yoshioka, M. Noda, R. Kinkead**, Université Laval, Canada and Kyushu Univ., Japan

4:30 PM Gestational Intermittent Hypoxia Induces Neuroinflammation and Impairs Compensatory Respiratory Plasticity in Adult Offspring  
**A. Meza, M. Gumnit, A. Ewald, K. Braegelmann, E.A. Kiernan, J.N. Ouellette, S.M. Johnson, J.J. Watters, T. Baker**, Univ. of Wisconsin - Madison

4:45 PM Hypoxia-Induced Pulmonary Hypertension in Cx3cr1-Deficient Mice Correlates with Decreased Microglia Activation  
**A.C. Oliveira, V. Aquino, R.K. Sharma, G. Lobaton, J.K. Harrison, E.M. Richards, M.K. Raizada**, Univ. of Florida

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## 200 Ernest H. Starling Distinguished Lectureship of the Water and Electrolyte Homeostasis Section

### LECTURE

SUN 3:30 PM-4:30 PM, Convention Center, Room 23ABC

Sponsored by: Water and Electrolyte Homeostasis Section

Diet, inflammation, and hypertension.

**David Mattson**, Med. Col. of Wisconsin

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## 201 Claude Bernard Distinguished Lectureship of the APS Teaching of Physiology Section

### LECTURE

SUN 3:30 PM-4:30 PM, Convention Center, Room 26AB

Made possible in part by APS Strategic Partner ADInstruments

Sponsored by: Teaching of Physiology Section

Track: Education · Career and Professional Development · Diversity in Science

Transformations: Paths to student-centered, evidence-based physiology education.  
**Jenny McFarland**, Edmonds Community Col.

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## 202 Hugh Davson Distinguished Lectureship of the APS Cell and Molecular Physiology Section

### LECTURE

**SUN 3:30 PM-4:30 PM, Convention Center, Room 27AB**

Sponsored by: Cell and Molecular Physiology Section

Track: Emerging Technologies · Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials) · Cancer and Therapy

Confessions of a long-term extra-marital affair with bicarbie.

**Paul Quinton, UCSD**

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## 203 Kaley Award Featured Topic: Cerebral Vascular Dysfunction and Impaired Cognitive Function

### FEATURED TOPIC

**SUN 3:30 PM-5:00 PM, Convention Center, Room 22**

Sponsored by: Cardiovascular Section · Microcirculatory Society

Chairs: **R. Roman · Z. Ungvari**

- 3:30 PM 20-HETE, vascular dysfunction, hypertension and susceptibility to kidney disease and impaired cognitive function.  
**Richard Roman**, Univ. of Mississippi Med. Ctr.
- 4:00 PM Elevated Aortic Stiffness Is Associated with Weaker Executive Function in Individuals with Lower Cognitive Reserve via Reductions in Frontal Cerebrovascular Reserve  
**L.E. DuBose, D.J. Moser, L.L. Boles Ponto, G.L. Pierce**, Univ. of Iowa
- 4:15 PM Pharmacologically-Induced Impairment of Neurovascular Coupling Responses Alters Gait Coordination in Mice  
**S. Tarantini, A. Yabluchanskiy, G.A. Fulop, P. Hertelendy, M.N. Valcarcel-Ares, T. Kiss, J.M. Bagwell, D. O'Connor, E. Farkas, F. Sorond, A. Csiszar, Z. Ungvari**, Univ. of Oklahoma Health Sciences Center, Univ. of Szeged, Hungary and Northwestern Univ.
- 4:30 PM Obesity in Aging Exacerbates Neuroinflammation and Alters Eicosanoid Profiles in the Mouse Hippocampus: Potential Role in Impaired Synaptic Plasticity and Cognitive Decline  
**T. Kiss, M.N. Valcarcel-Ares, A. Yabluchanskiy, S. Tarantini, F. Deak, Z. Ungvari, A. Csiszar**, Univ. of Oklahoma Health Sciences Center
- 4:45 PM Endogenous Renin-Angiotensin System Activation Causes Accelerated Cerebral Vascular Dysfunction in Mice Expressing Dominant-Negative Mutations in PPAR $\gamma$  in Endothelium  
**A.R. Nair, L.N. Agbor, M. Mukohda, X. Liu, C. Hu, J. Wu, C.D. Sigmund**, Univ. of Iowa

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## 204 APS David Bruce Undergraduate Poster Session

### POSTER DISCUSSION

**SUN 4:00 PM-5:00 PM, Convention Center, Sails Pavilion**

Sponsored by: APS Education Committee

The APS David Bruce Undergraduate Poster Session is a special poster session held during Experimental Biology for physiology undergraduates. This session is held in addition to the regularly programmed scientific session in which all researchers participate. Graduate departments and programs will also be on site to talk to students about various opportunities at their institutions.

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## 205 WEH New Investigator Award Lecture

### LECTURE

**SUN 4:30 PM-5:30 PM, Convention Center, Room 23ABC**

Sponsored by: Water and Electrolyte Homeostasis Section

**4:30 PM** WEH New Investigator Award Lecture. Early life stress-programmed adipose tissue targets with impact on cardiometabolic risk.

**A.S. Loria**, Univ. of Kentucky

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## 206 Physiology in Perspective: The Walter B. Cannon Memorial Award Lecture

### LECTURE

**SUN 5:30 PM-6:30 PM, Convention Center, Room 20A**

Sponsored by: APS · Supported by: Sucampo AG

**5:30 PM** The roles of  $\text{Ca}^{2+}$  and ATP in pancreatic physiology and pathophysiology.

**Ole Petersen**, Cardiff Univ.

# Oral Sessions: Monday, April 23

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## 303 Do it Again: How to Achieve Rigorously Reproducible Research II

### SYMPOSIUM

MON 7:00 AM-8:00 AM, Convention Center, Room 25A

Sponsored by: Trainee Advisory Committee · **Chairs: R. Downey · I. Obi**

Track: Career and Professional Development

7:00 AM Building bridges: learning to work effectively with regulatory committees.

**Bill Yates**, Univ. of Pittsburgh Sch. of Med.

7:30 AM Practical applications of rigor and reproducibility in the laboratory.

**Sean Stocker**, Univ. of Pittsburgh Sch. of Med.

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## 304 Hallmarks of Ground Rules for Productive Collaborations in Science. Maintaining Momentum in Collaborations

### SYMPOSIUM

MON 7:00 AM-8:00 AM, Convention Center, Room 25B

Sponsored by: APS Careers in Physiology Committee · **Chairs: J. Brandauer · B. Becker**

Track: Career and Professional Development

7:00 AM Maintaining momentum in collaborations.

**David Pollock**, Univ. of Alabama at Birmingham

7:20 AM Maintaining momentum in collaborations.

**Christine Schnackenberg**, GlaxoSmithKline.

7:40 AM Panel discussion

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## 305 2018 Mentoring Symposium: Recognizing and Responding to Implicit Bias in Science III

### SYMPOSIUM

MON 7:00 AM-8:00 AM, Convention Center, Room 25C

Sponsored by: Women in Physiology Committee · **Chairs: D. Al Alam · K. Wallace · D. H. Ho**

Track: Diversity in Science · Career and Professional Development

7:00 AM Impact Bias: What is it and what can we do about it?

**Tamera Schneider**, Wright State Univ.

7:30 AM General discussion.

## 306 Novel Physiologic-Based Approaches to Treating Sleep Apnea

### SYMPOSIUM

**MON 8:30 AM-10:00 AM, Convention Center, Room 23ABC**

Sponsored by: Hypoxia Group · **Chairs: J. Dempsey · M. Bates**

Track: Neuroscience · Emerging Technologies · Cardiovascular

**8:30 AM** Treating upper airway muscle dysfunction via hypoglossal nerve stimulation.

**Atul Malhotra, UCSD**

**9:00 AM** Strategic decision making and identification of potential drug targets for OSA pharmacology.

**Richard Horner, Univ. of Toronto**

**9:30 AM** Treating the apnea of heart failure: complexities and controversies.

**Shahrokh Javaheri, Univ. of Cincinnati**

## 307 New Concepts in JGA Physiology

### SYMPOSIUM

**MON 8:30 AM-10:00 AM, Convention Center, Room 25B**

Sponsored by: Renal Section · **Chairs: J. Peti-Peterdi · C. Buckley**

Track: Metabolism and Metabolic Disease

**8:30 AM** SGLT2 inhibitors and glomerular hemodynamics.

**Volker Vallon, UCSD**

**8:52 AM** New role of macula densa cells in tissue remodeling.

**Georgina Gyarmati, USC**

**9:14 AM** Imaging and manipulation of renin cells.

**Charlotte Buckley, Queen's Medical Research Institute**

**9:36 AM** Non-canonical functions of renin cells: renal physiology, regeneration and beyond.

**Vladimir Todorov, TU Dresden.**

## 308 Impact of Sex-Specific Size of the Normal and Failing Left Ventricle: Studies in Humans and Mice

### SYMPOSIUM

**MON 8:30 AM-10:00 AM, Convention Center, Room 22**

Sponsored by: Sex/Gender Research Interest Group · **Chairs: P. L. Kerkhof · V. M. Miller**

Track: Cardiovascular · Diversity in Science

**8:30 AM** Sex-specific aspects of cardiac maladaptation to hypertension and arterial stiffness.

**Tatiana Kuznetsova, KU Leuven**

**9:00 AM** Sex differences in cardiac function for mice with increased arterial stiffness.

**Jessica Wagenseil, Washington Univ.**

**9:30 AM** Sex differences in cardiac electrophysiology and medical device effectiveness: cardiac resynchronization therapy in women.

**Robert Zusterzeel, NIH, FDA Office of the Commissioner**



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## 309 Publishing 101: How to Get Your Work Published and Avoid Ethical Minefields

### SYMPOSIUM

MON 8:30 AM-10:00 AM, Convention Center, Room 28DE

Sponsored by: Publications Committee · **Chairs: C. Sigmund · R. Scheman**

8:30 AM Preparing your work for publication in APS journals.

**Curt Sigmund**, Roy J. and Lucille A. Carver College of Medicine Univ. of Iowa

9:00 AM Publications ethics considerations.

**Christina Bennett**, American Physiological Society

9:30 AM Editors-in-Chief Panelists Discussion.

**Rory Morty and Sue Bodine**, Max Planck Inst. for Heart and Lung Res., Giessen, Germany, and Univ. of Iowa Carver Col. of Med.

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## 310 Bioartificial Organs: Using Donor and Synthetic Scaffolds

### SYMPOSIUM

MON 8:30 AM-10:00 AM, Convention Center, Room 20A

Sponsored by: Integrative Physiology Symposium Series · **Chairs: L. M. Harrison-Bernard**

Track: Emerging Technologies

8:30 AM Directed morphogenesis: bringing tissue engineering and developmental biology together?

**Harald Ott**, Mass General Hosp.

9:00 AM Bioartificial lung regeneration derived from lungs of Rhesus macaques.

**Bruce Bunnell**, Tulane Univ.

9:30 AM Acellular human heart matrix: a critical step toward whole heart grafts.

**Luiz Sampaio**, Texas Heart Inst.

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## 311 The Physiology of Personalized Nutrition

### SYMPOSIUM

MON 8:30 AM-10:00 AM, Convention Center, Room 26AB

Sponsored by: Nutrition Physiology Interest Group · **Chairs: B. Voy · J. Anthony**

Track: Nutrition/Obesity

8:30 AM Genetic and gender variation in the response to global human diets.

**William Barrington**, UCLA

8:52 AM Contribution of the gut microbiome to individual response to diet.

**Frederico Rey**, Univ. of Wisconsin-Madison

9:14 AM Genetic variation in human flavor perception.

**Danielle Reed**, Monell Chemical Senses Ctr.

9:36 AM Personalized nutrition from the perspective of phenotypic flexibility.

**Susan Wopereis**, Netherlands Organ. for Appl. Sci. Res. (TNO)

## 312 Non-Coding RNA Regulation of Inflammation in Cardiovascular, Kidney, and Respiratory Diseases

### FEATURED TOPIC

**MON 8:30 AM-10:00 AM, Convention Center, Room 25A**

Sponsored by: Physiological Genomics Group · **Chairs: A. Kriegel · L. Rogers**

Track: Inflammation/Immunity

**8:30 AM** Lipoprotein small RNAs activate TLR signaling in cardiopulmonary diseases.

**Kasey Vickers**, Vanderbilt Univ.

**9:00 AM** Enhancer-Associated Long Non-Coding RNAs Regulate Vascular Endothelial Function

**Z. Chen, Y. Miao, F-M. Lin, T-S. Huang, N. Ajami, S. Subramaniam, S. Chien**, City of Hope, Univ. of California and San Diego

**9:15 AM** Renal Impact of Systemic Inhibition of miRNA-451 in a Mouse Model of Insulin Resistance

**M.B. Fluit, L. Li, N. Shivapurkar, C.M. Ecelbarger**, Georgetown Univ.

**9:30 AM** Liposomal Delivery of Mir-29b Restored Prmt-1 and Prmt-5 Expression and Histone Methylation in Mice Exposed to Perinatal Inflammation

**S.S. Sugar, K.M. Heyob, R.M. Lee, L.K. Rogers**, The Research Institute at Nationwide Children's Hospital and The Ohio State Univ.

**9:45 AM** Chronic Alcohol Misuse Induces Alveolar Macrophage Oxidative Stress and Mitochondrial Dysfunction via Upregulation of microRNA-130a

**S.M. Yeligar**, Emory Univ. and Atlanta VA Medical Center

## 313 Ion Channels and Transporters in Health and Disease

### FEATURED TOPIC

**MON 8:30 AM-10:00 AM, Convention Center, Room 25C**

Sponsored by: Cell and Molecular Physiology Section · **Chairs: R. Worrell**

Track: Neuroscience · Cardiovascular

**8:30 AM** Porcine Epidemic Diarrhea Virus, a Member of the *Coronaviridae* Family, Increases Epithelial Secretion in the Jejunum by Up-Regulation of Kcnn4

**C.B. Enns, J.C. S. Harding, M.E. Loewen**, Univ. of Saskatchewan, Canada

**8:45 AM** Oligomerization of Ferroportin and the Mechanism of Autosomal Dominance in Ferroportin Disease

**J.P. Bonamer, T.A. Ruwe, B. Qiao, K.R. Vieth, T. Ganz, E. Nemeth, B. Mackenzie**, Univ. of Cincinnati College of Medicine, David Geffen School of Medicine at Univ. of California and Los Angeles

**9:00 AM** The Role of Exocyst Complex in the Fusion Process of KCA3.1 at the Basolateral Membrane of Epithelial Cells

**R.E. Farquhar, F.J. McDonald, K.L. Hamilton**, Univ. of Otago, New Zealand

- 9:15 AM Characterizing the Expression of TRPV4 in the Choroid Plexus Epithelia as a Prospective Component in the Development of Hydrocephalus in the Gas8gt Juvenile Mouse Model  
**A.E. Hochstetler, L. Whitehouse, P. Antonellis, N.F. Berbari, B.L. Blazer-Yost**, Indiana Univ.-Purdue Univ. Indianapolis
- 9:30 AM Knockout of Kcnj16 (Kir5.1) in Dahl Salt-Sensitive Rats Produces Seizure Phenotype  
**A.D. Manis, M.R. Hodges, T.S. Pavlov, A. Staruschenko, O. Palygin**, Medical College of Wisconsin and Henry Ford Hospital
- 9:45 AM A Conserved Pain Syndrome Resulting from the Acute Activation of TRPA1 by Chemotherapy Drugs  
**N. Boiko, E. Montano, K.M. Hargreaves, B.A. Eaton, J.D. Stockand**, The Univ. of Texas Health Science Center at San Antonio

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## 314 Gut-Brain Interactions and Control of Feeding Behavior

### FEATURED TOPIC

**MON 8:30 AM-10:00 AM, Convention Center, Room 28A**

Sponsored by: Endocrinology and Metabolism Section · **Chairs: L. Stein**

Track: Nutrition/Obesity · Neuroscience · Metabolism and Metabolic Disease

- 8:30 AM Gut vagal afferent signaling regulates hippocampus function through multisynaptic pathways.  
**Scott Kanoski**, Univ. of Southern California
- 9:00 AM Coordination of Homeostatic Functions by Intrascapular Brown Adipose Tissue- and Pancreas-Related Command Neurons  
**S.M. Butcher, B.V. Hamling, L.D. Desmoulins, A. Zsombok**, Tulane Univ. and Tulane Univ. School of Medicine
- 9:15 AM CART-GPR160 Regulation of Food Intake  
**C.J. Haddock, G.L.C. Yosten, G.R. Kolar, W.K. Samson**, Saint Louis Univ.
- 9:30 AM Metabolic Syndrome and the Role of GLP-1 Receptor Agonists in a Model of Postmenopausal PCOS  
**E.D. Torres Fernandez, D.G. Romero, L.L. Yanes Cardozo**, Univ. of Mississippi Medical Center
- 9:45 AM Central Fructose Impairs Exendin 4-Mediated Anorexia in the Ventromedial Hypothalamus in Male C57Bl/6 Mice  
**M. Burmeister, J.E. Ayala**, Sanford Burnham Prebys Medical Discovery Institute and Vanderbilt Univ.

### 315 Novel Insights on Sympathetic Activation in Kidney Disease: From Animal Models to Clinical Trials

#### FEATURED TOPIC

**MON 8:30 AM-10:00 AM, Convention Center, Room 24AB**

Sponsored by: Neural Control and Autonomic Regulation Section

**Chairs: J. Park · B. Becker**

Track: Neuroscience · Cardiovascular

- 8:30 AM** Sympathetic nervous system dysregulation in kidney disease: insights from human and animal studies.  
**Ronald Victor**, UCLA Cedars-Sinai
- 9:00 AM** Angiotensin II Acts in the Hypothalamic Paraventricular Nucleus to Differentially Regulate Blood Pressure and Sympathetic Nerve Activity in a Rodent Model of Polycystic Kidney Disease  
**C.F. Underwood, A.A. Rahman, J.K. Phillips, C.M. Hildreth**, Macquarie Univ., Australia
- 9:15 AM** Renal Sympathetic Nerves and Inflammation in Hypertension: Assessing Temporal Renal Inflammation Responses to Renal Denervation by Urinary Cytokine Excretion in the DOCA-Salt Rat  
**C.T. Banek, J.W. Osborn**, Univ. of Minnesota
- 9:30 AM** Augmented Vascular  $\alpha_1$ -Adrenergic Receptor Sensitivity in Humans with Chronic Kidney Disease  
**D.G. Morison, Y. Li, I. Fonkoue, M. Kankam, D. DaCosta, D. Rapista, R.M. Downey, J. Park**, Emory Univ. School of Medicine and Emory Univ.
- 9:45 AM** Splenic 6-Hydroxydopamine Worsens Renal Inflammation and Injury in a Murine Model of Systemic Lupus Erythematosus  
**G.S. Pham, B. Osazuwa, O. Thomas, S.S. Vedantam, D.L. Fancher, K.W. Mathis**, Univ. of North Texas Health Science Center, Texas Southern Univ. and Texas Christian Univ.

### 316 Adaptations in Physiology Education

#### FEATURED TOPIC

**MON 8:30 AM-10:00 AM, Convention Center, Room 28B**

Sponsored by: Teaching of Physiology Section · **Chairs: D. Osborne**

Track: Career and Professional Development

- 8:30 AM** Collaborative Phun Week Program Engages Elementary School Children in Physiology Learning and Jumpstarts Year-Long Physiology Curriculum  
**R. Altman, K. Whited**, California State Univ., Sacramento and Sacramento Country Day School
- 8:45 AM** Student Perspectives on Active Learning Activities in a Human Anatomy and Physiology Course  
**H.M. DiFrancesca**, Univ. of Mary Hardin-Baylor
- 9:00 AM** Collaborative Testing and Reflection Papers as Supplementary Assessment Tools in a Clinical Physiology Course  
**L.C. Anderson**, Univ. of Minnesota

- 9:15 AM Academic Success Predictors in Optometry  
**B. Foutch, R. Trevino, L. Fortepiani**, Univ. of the Incarnate Word
- 9:30 AM The Impact of a Team Based Learning Exercise in the Understanding and Retention of Medical School Nutrition Education  
**L. Cialdella-Kam, S. Khadilkar**, Case Western Reserve Univ. School of Medicine
- 9:45 AM A Teaching EHR for Delivery of Small Group Cases  
**D.U. Silverthorn, C. Johnston, K. Ziai**, Dell Medical School and The Univ. of Texas at Austin

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## 317 Regulation of Blood Flow in Health and Disease

### FEATURED TOPIC

**MON 8:30 AM-10:00 AM, Convention Center, Room 27AB**

Sponsored by: Cardiovascular Section · **Chairs: V. Ohanyan**

Track: Cardiovascular

- 8:30 AM Diabetic vasculopathy: mechanisms and potential treatments.  
**David Stepp**, Medical College of Georgia
- 8:45 AM LPA-Induced Activation of LPA<sub>1</sub> Receptor Leads to the Loss of No-Mediated Flow-Induced Dilation in Human Microvessels  
**D.S. Chabowski, K. Ait-Aissa, A.O. Kadlec, J.H. Hockenberry, A.M. Beyer, D.D. Guterman**, Medical College of Wisconsin
- 9:00 AM Quantitative Capillary Blood Flow Spatial Analysis in Skeletal Muscle During Sepsis  
**N.A. Mignemi, K.V. Kilchrist, M.A. McClatchey, I.M. Williams, C.L. Duval, D.H. Wasserman, O.P. McGuinness**, Vanderbilt Univ.
- 9:15 AM Reconstitution of Autophagy Improves Vascular Reactivity in Spontaneously Hypertensive Rats  
**C.G. McCarthy, C.F. Wenceslau, P. Martinez-Quinones, F.B. Calmasini, R.C. Webb**, Augusta Univ.
- 9:30 AM The Influence of Aging on Central Artery Stiffness and Cerebral Vascular Function Following an Acute Hypertensive Stimulus  
**A.J. Rosenberg, E.C. Shroeder, G. Grigoriadis, S. O. Wee, G.J. Griffith, B. Fernhall, T. Baynard**, Integrative Physiology Laboratory, Univ. of Illinois at Chicago, California State Univ. and San Bernardino
- 9:45 AM In Vivo Visualization of Mitochondria in the Cerebral Endothelium of Mice  
**I. Rutkai, T. Salter-Cid, A. Adivi, W.R. Evans, T.C. Dean, P.V. G. Katakam, D.W. Busija**, Tulane Univ.

### 318 Identification of Novel Drug Targets for the Modulation of Gastrointestinal Motility

#### SYMPOSIUM

**MON 1:30 PM-3:00 PM, Convention Center, Room 23ABC**

Sponsored by: GI and Liver Physiology Section · AJP - Gastrointestinal and Liver Physiology  
Track: Microbiome · Nutrition/Obesity · Neuroscience

- 1:30 PM Inflammation-induced neuroplasticity in the gut.  
**Gary Mawe**, Univ. of Vermont
- 1:52 PM Immune modulation of GI motility.  
**Terez Shea-Donohue**, Univ. of Maryland
- 2:14 PM Microbial modulation of the gut innervation.  
**Alan Lomax**, Queen's Univ.
- 2:36 PM  $\text{Ca}^{2+}$  sensitization mechanisms and gastric motility.  
**Brian Perrino**, Univ. of Nevada, Reno School of Medicine

### 319 Cardiovascular Section - Young Investigator Symposium

#### SYMPOSIUM

**MON 1:30 PM-3:00 PM, Convention Center, Room 22**

Sponsored by: Cardiovascular Section · Chairs: **S. Gouloupoulou · E. Belin de Chantemele**  
Track: Cardiovascular

- 1:30 PM Inhibition of FPR2 impaired leukocyte get-in signal and triggers non-resolving inflammation in heart failure.  
**Vasundhara Kain**, Univ. of Alabama at Birmingham
- 1:45 PM Leptin-Induced Endothelial Dysfunction Is Mediated by Endothelial Mineralocorticoid Receptor Epithelial Sodium Channel Activation in Female Mice  
**J.L. Faulkner, S. Kennard, I. Jaffe, E.J. Belin de Chantemele**, Augusta Univ. and Tufts Univ.
- 2:00 PM Endothelial Trpa1 Channels Are Activated by Hypoxia in Cerebral Arteries and Protect Against Ischemic Damage  
**P.W. Pires, S. Earley**, Univ. of Nevada and Reno School of Medicine
- 2:15 PM Mineralocorticoid Receptor Signaling Regulates Parenchymal Arteriole Vasodilation and Cognitive Function  
**J.M. Diaz-Otero, T-C. Yen, C. Fisher, W.F. Jackson, A.M. Dorrance**, Michigan State Univ.
- 2:30 PM Inducible Deletion of Endothelial *Hba1* Significantly Reduces Exercise Fitness in Mice  
**A.S. Keller, S. Brooks, A. Islam, T. C.S. Keller, A.K. Best, M.K. Cortese-Krott, Z. Yan, H. Ackerman, B.E. Isakson**, Univ. of Virginia, National Heart, Lung, and Blood Institute, National Institutes of Health and Heinrich-Heine Univ. of Düsseldorf, Germany
- 2:45 PM Neddylation Is Essential for Cardiac Development via Regulation of Notch Signaling  
**R.E. Littlejohn, J. Zou, W. Ma, J. Li, N. Weintraub, J. Zhou, H. Su**, Augusta Univ. and Augusta Univ., Republic of Korea

## 320 Biophysical and Metabolic Regulation of Stem Cells

### SYMPOSIUM

MON 1:30 PM-3:00 PM, Convention Center, Room 25C

Sponsored by: Cell and Molecular Physiology Section · **Chairs: J. Rehman · J-W. Shin**

Track: Neuroscience · Cardiovascular

- 1:30 PM Introduction: Key questions in the biophysical and metabolic regulation of stem cells.  
**Jae-Won Shin**, Univ. of Illinois at Chicago
- 1:35 PM Biomechanical regulation of hematopoietic stem cell potential.  
**Pamela Wenzel**, Univ. of Texas Health Sciences Center
- 2:00 PM Oxygen and mechanics to control vascular differentiation and network assembly.  
**Sharon Gerecht**, Johns Hopkins Univ.
- 2:25 PM Dietary control of stem cells in physiology and disease.  
**Ömer Yilmaz**, Mass Instit Tech
- 2:50 PM Wrap-up: Future directions.  
**Jalees Rehman**, Univ. of Illinois at Chicago

## 321 APS President's Symposium Series II. Exosomes: The New Frontier. Pathophysiology of Exosomes

### SYMPOSIUM

MON 1:30 PM-3:00 PM, Convention Center, Room 20A

Sponsored by: President's Symposium Series · **Chairs: C. Théry**

Track: Cancer and Therapy · Neuroscience · Microbiome

- 1:30 PM Pathological role of exosomes and other extracellular vesicles in cancer.  
**Lorraine O'Driscoll**, Trinity College Dublin
- 2:00 PM Neurodegenerative diseases and extracellular vesicles.  
**Shilpa Buch**, Univ. of Nebraska Med. Ctr.
- 2:30 PM Mediation of host-bacterial interactions by exosomes.  
**Bruce Stanton**, Geisel Sch. of Med., Dartmouth Med. Sch.

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## 322 Biosensors Advancing Health and Disease Research

### SYMPOSIUM

**MON 1:30 PM-3:00 PM, Convention Center, Room 26AB**

Sponsored by: APS Physiologists in Industry Committee · **Chairs: B. Bucher · T. D. Oliver**  
Track: Emerging Technologies

- 1:30 PM The use of telemetry to study glucose metabolism.  
**Patrick Tso**, Univ. of Cincinnati Medical Center
- 2:00 PM Wearable technology for injury prevention and optimal performance.  
**Mark Buller**, U.S. Army Research Institute of Environmental Medicine
- 2:30 PM Closed-loop neuromodulation in physiological and translational research.  
**Stavros Zanos**, Fienstein Institute for Medical Research

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## 323 The Physiological Challenges of Escaping Extreme Environments: Disabled Subs and Stratospheric Bailouts

### SYMPOSIUM

**MON 1:30 PM-3:00 PM, Convention Center, Room 28B**

Sponsored by: History of Physiology Group · **Chairs: K. Ryan · J. Dean**  
Track: Physiology of Extreme Environments

- 1:30 PM 33 Gs of deceleration, anoxia and frozen eyeballs: Bailout at 40,000 feet in 1943.  
**Jay Dean**, Univ. of South Florida
- 2:00 PM Stratospheric supersonic freefall flight test lessons learned.  
**Jonathan Clark**, Baylor Col. of Med. and Florida Inst. for Human and Machine Cognition
- 2:30 PM Disabled submarine (DISSUB) escape and rescue.  
**Anthony Bielawski**, US Navy Undersea Rescue Command

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## 324 The Role of REDD1 in the Regulation of Skeletal Muscle Metabolism

### SYMPOSIUM

**MON 1:30 PM-3:00 PM, Convention Center, Room 28A**

Sponsored by: Endocrinology and Metabolism Section · **Chair: F. Favier**  
Track: Metabolism and Metabolic Disease

- 1:30 PM REDD1- mediated redox control governs autophagy and skeletal muscle ATP generation to promote exercise capacity.  
**Leif Ellisen**, Massachusetts General Hospital
- 2:00 PM The role of REDD1 during muscle hypertrophy and atrophy.  
**Scot Kimball**, Pennsylvania State Univ. College of Medicine
- 2:30 PM The role of REDD1 in the exercise-induced change in gene expression.  
**Bradley Gordon**, Univ. of Central Florida



## 325 Hans Ussing Lecture of the Epithelial Transport Group

### FEATURED TOPIC

**MON 1:30 PM-3:00 PM, Convention Center, Room 25A**

Sponsored by: Epithelial Transport Group · **Chair: Y. Akiba**

Track: Metabolism and Metabolic Disease · Nutrition/Obesity

- 1:30 PM** Epithelial acid-base balance, claudins, and gastric barrier properties.  
**Ursula Seidler**, Hannover Med. Sch., Germany.
- 2:00 PM** Novel Mouse Model of a Human Mutation in NKCC1 Confirms Its Mistargeting in Epithelia  
**R. Koumangoye, S. Omer, E. Delpire**, Vanderbilt Univ. School of Medicine
- 2:15 PM** The Sodium/Hydrogen Exchanger 2 (SLC9A2/NHE2) Is Involved in the Differentiation of Colonic Intestinal Epithelial Cells  
**K. Nikolovska, C. Li, Y. Yu, Z. Yuan, A. Seidler, A. Kini, S. Yeruva, A.K. Singh, B. Riederer, U. Seidler**, Hannover Medical School, Germany
- 2:30 PM** Intestinal Epithelial-Specific NHE3 Knockout Causes Metabolic Acidosis  
**A. Valdez, J.A. Dominguez Rieg, R.A. Fenton, T. Rieg**, Univ. of South Florida and Aarhus Univ., Denmark
- 2:45 PM** Chip Regulates Aquaporin-2 Quality Control and Body Water Homeostasis  
**Q. Wu, H.B. Moeller, D.A. Stevens, R. Sanchez-Hodge, G. Childers, M.L. A. Kortenoeven, L. Cheng, L.L. Rosenbaek, C. Rubel, C. Patterson, T. Pisitkun, J.C. Schisler, R.A. Fenton**, Aarhus Univ., Denmark, Univ. of North Carolina at Chapel Hill and Presbyterian Hospital

## 326 NCAR Hot Topics in Autonomic Regulation

### FEATURED TOPIC

**MON 1:30 PM-3:00 PM, Convention Center, Room 28DE**

Sponsored by: Neural Control and Autonomic Regulation Section

**Chairs: K. W. Mathis · C. T. Banek**

Track: Neuroscience

- 1:30 PM** Hypertensive Young Adult Female Obese Zucker Rats (OZR) Do Not Have the Blunted Baroreflexes and Poor Glycemic Control Observed in Age-Matched Hypertensive Male OZR  
**P. Chaudhary, A.M. Schreihofe**r, Univ. of North Texas Health Science Center
- 1:45 PM** Thoracic TRPV1 Receptor Spinal Afferent Ablation Prevents the Development and Progression of Hypertension in SHR but Not in Ang II-Infused Rats  
**J.A. Shanks, S. Del Bem Velloso de Moraes, H. Wang, I.H. Zucker**, Univ. of Nebraska Medical Center
- 2:00 PM** The Inflammatory Reflex Controls Inflammation in Response to Viral Challenges  
**D. Martelli, D.G. S. Farmer, E.N. Komegae, M.J. McKinley, R.M. McAllen**, Università di Bologna, Italy, Florey Institute of Neuroscience and Mental Health, Australia and Univ. of São Paulo, Brazil
- 2:15 PM** A Forebrain-Hypothalamic Circuit Mediates Hepatic Steatosis  
**K.A. Blackmore, C.J. Houchen, H. Simonyan, C.N. Young**, The George Washington Univ. School of Medicine and Health Sciences
- 2:30 PM** Corticotropin-Releasing Hormone Receptor 2 in the Nucleus of the Solitary Tract Contributes to the Intermittent Hypoxia Induced Hypertension  
**L. Wang, D. Nguyen, S. Cross, S. Mifflin**, Univ. of North Texas Health Science Center
- 2:45 PM** Resting Regional Brain Activity and Functional Connectivity Varies with Resting Blood Pressure but Not Muscle Sympathetic Nerve Activity in Normotensive Humans  
**V.G. Macefield, S. Kobuch, L.A. Henderson**, Baker Heart and Diabetes Institute, Australia, Western Sydney Univ., Australia and Univ. of Sydney, Australia

## 327 Advances in Renal Physiology I

### FEATURED TOPIC

**MON 1:30 PM-3:00 PM, Convention Center, Room 25B**

Sponsored by: Renal Section · Chairs: **P. Ortiz** · **R. Cornelius**

Track: Microbiome

- 1:30 PM** Kidney-Specific COP9 Signalosome (Csn) Deletion Mimics Fhht Effects on Wnk/Ncc Signaling  
**R.J. Cornelius, C-L. Yang, D.H. Ellison**, Oregon Health & Science Univ.
- 1:45 PM** A Sympathetically Mediated  $\alpha$ 1-Adrenoceptor Dependent Pathway Promotes Renal Sodium Chloride Cotransporter Activity in Age-Related Hypertension  
**A.A. Frame, R.D. Wainford**, Boston Univ. School of Medicine
- 2:00 PM** SPAK (*STK39*) Is Involved in NKCC2 Phosphorylation and Salt-Sensitive Hypertension in Dahl Salt-Sensitive Rats  
**J. A. Garcia-Pedraza, P.A. Ortiz**, Henry Ford Hospital
- 2:15 PM** Renal Expression of Adhesion GPCR GPR116 (ADGRF5) Plays a Role in Urinary Concentration in Mice  
**N. Zaidman, J. Pluznick**, Johns Hopkins Univ.
- 2:30 PM** Elevated Superoxide Production in Response to Angiotensin II by Proximal Tubules of Rats Consuming a Moderately Enriched Fructose Diet  
**A. Gonzalez-Vicente, N. Yang, A. Morris, J.L. Garvin**, Case Western Reserve Univ.
- 2:45 PM** Tubular NHE3 Is a Determinant of the Acute Natriuretic and Chronic Blood Pressure Lowering Effect of the SGLT2 Inhibitor Empagliflozin  
**W. Huang, R. Patel, A. Onishi, M. Crespo Masip, M. Soleimani, B. Freeman, V. Vallon**, Univ. of California, San Diego and VA San Diego Healthcare System, Univ. of Lleida, Spain and Univ. of Cincinnati

## 328 Carl Ludwig Distinguished Lectureship of the APS Neural Control and Autonomic Regulation Section

### LECTURE

**MON 1:30 PM-2:30 PM, Convention Center, Room 24AB**

Sponsored by: Neural Control and Autonomic Regulation Section

Track: Cardiovascular · Neuroscience

Heart meets brain/brain meets heart: Therapeutic opportunities.

**David Paterson**, Univ. of Oxford

### 329 Edward F. Adolph Distinguished Lectureship of the APS Environmental and Exercise Physiology Section

#### LECTURE

**MON 1:30 PM-2:30 PM, Convention Center, Room 27AB**

Sponsored by: Environmental and Exercise Physiology Section

Track: Cardiovascular

Muscle microcirculation: Gateway to function and dysfunction.

**David Poole**, Kansas State Univ. Col. of Veterinary Med.

### 330 Synergizing Teaching and Scholarship

#### SYMPOSIUM

**MON 3:30 PM-5:00 PM, Convention Center, Room 28B**

Sponsored by: Teaching of Physiology Section · **Chairs: D. M. Harris**

Track: Education · Career and Professional Development

**3:30 PM** How to apply learning theories to teaching and scholarship.

**Denise Kay**, Univ. of Central Florida

**4:00 PM** How to choose an appropriate research design.

**John Dobson**, Georgia Southern Univ.

**4:30 PM** Statistical analyses in educational research.

**Doug Everett**, Natl. Jewish Health.

### 331 Altering Phenotype without Genotype

#### SYMPOSIUM

**MON 3:30 PM-5:00 PM, Convention Center, Room 25B**

Sponsored by: Translational Physiology Interest Group · **Chairs: J. Sones · D. Reijnders-Most**

Track: Nutrition/Obesity · Metabolism and Metabolic Disease · Cardiovascular

**3:30 PM** Maternal obesity and neonatal body mass biometry.

**Leanne Redman**, LSU Pennington Biomedical Research Center

**4:00 PM** The milk of paradise? Maternal obesity, milk composition, and infant growth.

**Ellen Demerath**, Univ. of Minnesota

**4:30 PM** Eating for two: parental dietary effects on offspring metabolism.

**Rebecca Simmons**, Perelman Sch. of Med., Univ. of Pennsylvania.

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### 332 Brown Adipose Tissue and Cardiovascular Function: Insulin Resistance, Vascular Tone, and Cardioprotective Effects

#### SYMPOSIUM

MON 3:30 PM-5:00 PM, Convention Center, Room 23ABC

Sponsored by: Cardiovascular Section · Chairs: **K. Stanford** · **M. Scherrer-Crosbie**

Track: Cardiovascular

- 3:30 PM Origin and function of human beige adipocytes.  
**Silvia Corvera**, Univ. of Massachusetts Medical School
- 4:00 PM The cardioprotective role of brown adipose tissue.  
**Kristin Stanford**, Ohio State Univ.
- 4:30 PM Neuro-vascular interactions in adipose tissue.  
**Kristy Townsend**, Univ. of Maine

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### 333 Comparative Perspectives on Maximal O<sub>2</sub> and CO<sub>2</sub> Transport in Animals

#### SYMPOSIUM

MON 3:30 PM-5:00 PM, Convention Center, Room 25C

Sponsored by: Comparative · Evolutionary Physiology Section · Chair: **M. Hedrick**

Track: Cardiovascular

- 3:30 PM What limits cardiac output in vertebrates?  
**William Joyce**, Univ. of Aarhus
- 4:00 PM Getting to the heart of the matter: oxygen supply and demand in fish.  
**Georgina Cox**, Univ. of Pennsylvania
- 4:30 PM Maximum gas exchange rates: Lessons from across the vertebrate spectrum.  
**James Hicks**, Univ. of California-Irvine

### 334 Molecular, Cellular and Systems-Level Mechanisms driving Ventilation and CO<sub>2</sub> Sensitivity during Acute and Chronic Hypercapnia

#### FEATURED TOPIC

MON 3:30 PM-5:00 PM, Convention Center, Room 25A

Sponsored by: Respiration Section · Chairs: **M. Hodges** · **V. Hawkins**

Track: Neuroscience

- 3:30 PM Molecular physiology of RTN respiratory chemoreceptor neurons.  
**Douglas Bayliss**, Univ. of Virginia
- 4:00 PM Ablation of Neuromedin B (NMB)-Expressing Neurons Located Within Retrotrapezoid Nucleus Reduces the Central Respiratory Chemoreflex Selectively in Conscious Rats  
**G. Souza, R. Kanbar, D. Stornetta, R. Stornetta, P. Guyenet**, Univ. of Virginia and Lebanese American Univ.
- 4:15 PM Ventilatory Co<sub>2</sub>/H<sup>+</sup> Chemoreflex During Chronic Hypercapnia in Healthy Goats  
**N. Burgraff, K. Buchholz, S. Neumueller, M. Hodges, L. Pan, T. Langer, H. Forster**, Medical College of Wisconsin, Carthage College and Marquette Univ.
- 4:30 PM Acute and Chronic Respiratory Effects from Repeated Audiogenic Seizures in SSKCNJ16<sup>-/-</sup> Rats  
**A.D. Manis, G.C. Mouradian, Jr., S. Alvarez-Argote, A. Staruschenko, O. Palygin, M.R. Hodges**, Medical College of Wisconsin
- 4:45 PM Hypercapnic Ventilatory Response Is Increased in a Rat Model of Alzheimer's Disease  
**M.C. Vicente, K.C. Bicego, D.C. Carrettiero, M. C. Almeida, L.H. Gargaglioni**, Sao Paulo State Univ., Brazil and Universidade Federal do ABC, Brazil

## 335 Impact of Diet on Blood Pressure Regulation

### FEATURED TOPIC

**MON 3:30 PM-5:00 PM, Convention Center, Room 28A**

Sponsored by: Water and Electrolyte Homeostasis Section · **Chairs: A. Greene · T. Stodola**

Track: Microbiome · Nutrition/Obesity · Metabolism and Metabolic Disease

- 3:30 PM** The DASH Diet Produces a Natriuretic Effect and Interacts with the Renin-Angiotensin-Aldosterone System  
**S.A. Maris, S. Brown, P.R. Conlin, J.S. Williams**, Brigham & Women's Hospital and Harvard Medical School and Veterans Affairs Boston Healthcare System
- 3:45 PM** Differential Sympathetic and Raas Responses to a Low Sodium Diet  
**M.C. Babcock, A.T. Robinson, J.C. Watso, K.U. Migdal, M.M. Wenner, S.D. Stocker, W.B. Farquhar**, Univ. of Delaware and Univ. of Pittsburgh
- 4:00 PM** Female Balb/C Mice Develop Salt-Sensitive Hypertension and Endothelial Dysfunction in Association with Activation of the Renin-Angiotensin Aldosterone System  
**J.L. Faulkner, D. Harwood, L. Bender, J. Morwitzer, M. Brands, S. Kennard, G. Antonova, E.J. Belin de Chantemele**, Augusta Univ.
- 4:15 PM** Effects of Parental Dietary Protein Source on Hypertension, Renal Injury, and Renal Inflammation  
**J.M. Abais-Battad, H. Lund, J. H. Dasinger, D.J. Fehrenbach, D.L. Mattson**, Medical College of Wisconsin
- 4:30 PM** The Short and Long-Term Effects of Food Restriction on Body Composition and the Renin Angiotensin System  
**A. Souza, C.A. West, G. Campos, A.V. Pai, H. Ji, K. Sandberg**, Georgetown Univ. and Universidade Federal de Ouro Preto, Brazil
- 4:45 PM** Timing of Blood Pressure Rhythms Predict Risk of Renal Injury in the Dahl Salt-Sensitive Rats  
**D. Chen, J.N. Booth III, C. Houchin, J.C. Colson, C. Jin, A.W. Cowley, A. Geurts, P. Muntner, M.E. Young, D.M. Pollock, J.S. Pollock**, Univ. of Alabama at Birmingham and Medical College of Wisconsin

### 336 Protective Mechanisms in the Vasculature: Wiggers Award Session

#### FEATURED TOPIC

MON 3:30 PM-5:00 PM, Convention Center, Room 22

Sponsored by: Cardiovascular Section · Chair: **C. Sigmund**

Track: Cardiovascular

- 3:30 PM PPARgamma-dependent pathways protect the vasculature.  
**Curt Sigmund**, Univ. of Iowa
- 3:30 PM CD70 Modulates the Role of eNOS in Endothelial Cells  
**A.K. Pandey, J.D. Brown, D.G. Harrison, H.A. Itani**, Vanderbilt Univ. Medical Center
- 3:30 PM Mitochondrial-Targeted Antioxidant Improves Vascular Function in Healthy Late Middle-Aged and Older Adults  
**M.J. Rossman, J.R. Santos-Parker, C.A. C. Steward, N.Z. Bispham, L.M. Cuevas, H.L. Rosenberg, K.A. Woodward, M. Chonchol, R.A. Gioscia-Ryan, M.P. Murphy, D.R. Seals**, Univ. of Colorado Boulder, Univ. of Colorado Anschutz Medical Campus and Medical Research Council Mitochondrial Biology Unit, United Kingdom
- 3:30 PM Protective Effects of Diet and Sex on Cell Death and Intracellular Calcium in Resistance Arteries During Oxidative Stress  
**C.E. Norton, S.Y. Sinkler, C.M. Manrique, S.S. Segal**, Univ. of Missouri
- 3:30 PM Loss of Lymphocyte Adaptor Protein Lnk Predisposes to Acute Aortic Dissection  
**F. Laroumanie, M.A. Saleh, L. Xiao, B.L. Dale, K.A. Gavulic, A. Korneva, M.R. Bersi, J.D. Humphrey, M.S. Madhur**, Vanderbilt Univ. Medical Center and Yale Univ.

### 337 Solomon Berson Distinguished Lectureship of the APS Endocrinology and Metabolism Section

#### LECTURE

MON 3:30 PM-4:30 PM, Convention Center, Room 27AB

Sponsored by: Endocrinology and Metabolism Section

Track: Metabolism and Metabolic Disease

The BIG story: The beautiful, integrative, glucose metabolism and exercise.

**Erik Richter**, Univ. of Copenhagen

### 338 Carl W. Gottschalk Distinguished Lectureship of the APS Renal Section

#### LECTURE

MON 3:30 PM-4:30 PM, Convention Center, Room 24AB

Sponsored by: Renal Section

In the Flow. Cell-specific expression and regulation of BK channels in the distal nephron.

**Lisa Satlin**, Ichan Sch. of Med. at Mount Sinai



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### 339 Joseph Erlanger Distinguished Lectureship of the APS Central Nervous System Section

#### LECTURE

**MON 3:30 PM-4:30 PM, Convention Center, Room 26AB**

Sponsored by: CNS Section

Track: Neuroscience

Getting the best reward: Neuronal mechanisms for utility maximisation.

**Wolfram Schultz**, Univ. of Cambridge

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### 340 MCS Landis Award Lecture and Business Meeting

#### LECTURE

**MON 3:30 PM-5:30 PM, Convention Center, Room 20A**

Sponsored by: Microcirculatory Society (MCS) · **Chairs: S. Peirce-Cottler · J. Lombard**

Track: Cardiovascular

Following the yellow brick road toward a better understanding of human arteriolar function requires courage, heartfelt collaborations and presence of mind.

**David Gutterman**, Med. Col. of Wisconsin.

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### 341 Henry Pickering Bowditch Award

#### LECTURE

**MON 5:30 PM-6:30 PM, Convention Center, Room 24AB**

Sponsored by: APS

Oxygen sensing pathways: A critical link between inflammation and cancer.

**Yatrik Shah**, Univ. of Michigan

# Oral Sessions: Tuesday, April 24

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## **433 Hallmarks of Ground Rules for Productive Collaborations in Science. Preventing and Managing Conflict.**

### **SYMPOSIUM**

**TUE 7:00 AM-8:00 AM, Convention Center, Room 25B**

Sponsored by: APS Careers in Physiology Committee · **Chairs: J. Brandauer · B. Becker**

Track: Career and Professional Development

**7:00 AM** Preventing and managing conflict.

**I. Zucker**, Univ. of Nebraska Med. Ctr.

**7:20 AM** Preventing and managing conflict.

**C. Moreno Quinn**, MedImmune, Cambridge, UK.

**7:40 AM** Panel discussion

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## **434 2018 Mentoring Symposium: Recognizing and Responding to Implicit Bias in Science II**

### **SYMPOSIUM**

**TUE 7:00 AM-8:00 AM, Convention Center, Room 25C**

Sponsored by: APS Women in Physiology Committee

**Chairs: D. Al Alam · K. Wallace · D. H. Ho**

Track: Diversity in Science · Career and Professional Development

**7:00 AM** Surviving and thriving in the post-Weinstein world.

**Gretchen Dahlinger Means**, Univ. of Southern California

**7:30 AM** General discussion.

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## **435 Do it Again: How to Achieve Rigorously Reproducible Research III**

### **SYMPOSIUM**

**TUE 7:00 AM-8:00 AM, Convention Center, Room 25A**

Sponsored by: APS Trainee Advisory Committee · **Chairs: R. Downey · I. Obi**

Track: Career and Professional Development

**7:00 AM** Publishing reproducible research: ensuring that editors, reviewers, and readers have confidence in your findings.

**Kim Barrett**, UCSD Sch. of Med.

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## 436 Molecular Mechanisms for Salt-Induced Cardiovascular Disease

### SYMPOSIUM

**TUE 8:30 AM-10:00 AM, Convention Center, Room 24AB**

Sponsored by: Cell and Molecular Physiology Section

**Chairs: A. Kirabo · N. Ruggeri Barbaro**

Track: Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials) · Cardiovascular · Metabolism and Metabolic Disease

**8:30 AM** Salt, inflammation, and NKCC2.

**Steven Crowley**, Duke Univ. School of Medicine

**9:00 AM** Renal nerves and renal inflammation in salt-induced hypertension: Afferent or efferent?

**John Osborn**, Univ. of Minnesota

**9:30 AM** The brain and Salt Sensing in Cardiovascular Disease.

**Sean Stocker**, Univ. of Pittsburgh

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## 437 Neuroplasticity of Airway Reflexes

### SYMPOSIUM

**TUE 8:30 AM-10:00 AM, Convention Center, Room 26AB**

Sponsored by: Respiration Section

Track: Neuroscience

**8:30 AM** Plasticity of nociceptive signaling from the airways.

**Thomas Taylor-Clark**, Univ. of South Florida

**8:52 AM** Neural mechanisms of airway hyperreactivity.

**Leah Reznikov**, Univ. of Florida

**9:14 AM** Effect of cervical spinal contusion on pulmonary C-fiber induced laryngeal closure.

**Kun-Ze Lee**, National Sun Yat-Sen Univ.

**9:36 AM** The importance of spinal pathways in the regulation of swallow.

**Teresa Pitts**, University of Louisville

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## 438 Mechanisms underlying Skeletal Muscle Adaptation in Health and Disease

### SYMPOSIUM

**TUE 8:30 AM-10:00 AM, Convention Center, Room 22**

Sponsored by: Endocrinology and Metabolism Section · **Chairs: C. Lang · P. Molina**

Track: Metabolism and Metabolic Disease · Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials) · Nutrition/Obesity

**8:30 AM** Impact of impaired stem cell differentiation on alcohol-induced muscle wasting.

**Liz Simon**, LSU Health Science Ctr.

**9:00 AM** Proteasomal activation in remodeling muscle during aging and disuse.

**Sue Bodine**, Univ. of Iowa

**9:30 AM** Changes in muscle protein synthesis: role in catabolic muscle loss in humans.

**Stuart Phillips**, McMaster Univ.

## 439 Neuro-Immune Interactions in Inflammatory Homeostasis

### SYMPOSIUM

**TUE 8:30 AM-10:00 AM, Convention Center, Room 23ABC**

Sponsored by: Neural Control and Autonomic Regulation Section · **Chair: P. Marvar**

Track: Inflammation/Immunity · Neuroscience

**8:30 AM** Inflammatory homeostasis: A role for MAMPs, DAMPs and microRNA.

**Monika Fleshner**, Univ. of Colorado Boulder

**9:00 AM** CNS immune activation and effects on mesolimbic dopamine in a non-human primate model of peripheral cytokine-induced depression.

**Jennifer Felger**, Emory

**9:30 AM** CNS immune interactions in multiple sclerosis.

**Robert Miller**, George Washington Univ.

## 440 Tissue-Distributed Control of Sex Differences in Diabetes and Cardiovascular Disease

### SYMPOSIUM

**TUE 8:30 AM-10:00 AM, Convention Center, Room 20A**

Sponsored by: Integrative Physiology Symposium Series · **Chair: J. M. Stafford**

Track: Cardiovascular · Nutrition/Obesity

**8:30 AM** Sex differences in adipose tissue growth and remodeling contribute to metabolic risk.

**Susan Fried**, Ichan Sch. of Med. at Mount Sinai

**8:52 AM** Estrogen mediated cardioprotection.

**Elizabeth Murphy**, NHLBI, NIH

**9:14 AM** Gender risk of autoimmunity: Estrogen and aire.

**Nadine Dragin**, Sorbonne Univ., UPMC - INSERM UMRS 974

**9:36 AM** Hepatic actions of estrogens and androgens in control glucose and lipid metabolism with obesity.

**John Stafford**, Vanderbilt Univ. Sch. of Med.

## 441 The Effects of Environmental Challenges on Performance and Metabolism

### FEATURED TOPIC

**TUE 8:30 AM-10:00 AM, Convention Center, Room 25C**

Sponsored by: Comparative & Evolutionary Physiology Section

**Chairs: C. Williams · A. Hindle**

Track: Metabolism and Metabolic Disease

**8:30 AM** From Lab to Field and Into the Future, Gaining Insights Into Environmental and Physiological Drivers of Crocodilian Performance.

**Craig Franklin**, The Univ. of Queensland

**9:00 AM** Environmental Chemicals Can Disrupt Neonatal Cardiomyocyte Physiology

**M. Ramadan, M. Sherman, R. Jaimes, L. Swift, N. Posnack**, Children's National Health System

- 9:15 AM Behavioral Thermoregulation of Antarctic Teleosts with and Without Hemoglobin in Response to Acute Thermal Challenge  
**I.I. Ismailov, J.B. Scharping, I.E. Andreeva, M.J. Friedlander**, Virginia Tech Carilion Research Institute and Virginia Tech Carilion School of Medicine and Research Institute
- 9:30 AM Glucose Metabolism After Sleep Restriction, Total Sleep Deprivation, and Recovery  
**E-M. Elmenhorst, E. Hennecke, D. Lange, J. Fronczek, A. Bauer, D. Elmenhorst, D. Aeschbach**, German Aerospace Center (DLR), Germany and Research Center Jülich, Germany
- 9:45 AM Development of Thermoregulatory Capability in Weddell Seal Pups  
**L.E. Pearson, E. Weitzner, S. Whoriskey, L. Tomanek, H.E. M. Liwanag**, California Polytechnic State Univ. and The Marine Mammal Center

## 442 Getting Blood to Where it Needs to Go: Emerging Mechanisms Regulating Skeletal Muscle Blood Flow in Health and Disease

### FEATURED TOPIC

TUE 8:30 AM-10:15 AM, Convention Center, Room 25B

Sponsored by: Environmental and Exercise Physiology Section

**Chairs: S. Romero · C. Hearon**

Track: Cardiovascular · Metabolism and Metabolic Disease

- 8:30 AM Mechanisms of Age-Related Compensatory Vasodilation: Insight from Passive Leg Movement  
**J.D. Trinity, R.M. Broxterman, J.R. Gifford, O. S. Kwon, J.R. Hydren, A.C. Kithas, A.D. Nelson, D.E. Morgan, J.E. Jessop, A. Bledsoe, R.S. Richardson**, Salt Lake City VA Medical Center and Univ. of Utah
- 8:45 AM Augmented Skeletal Muscle Vasodilation to Intravascular Atp During Exercise and Systemic Hypoxia in Humans  
**J.D. Terwoord, M.L. Racine, C.M. Hearon; Jr., J.C. Richards, G.J. Luckasen, M.J. Joyner, F.A. Dinunno**, Colorado State Univ., Univ. of Colorado Health and Mayo Clinic and Foundation
- 9:00 AM Endothelium Mediated Dilation Does Not Blunt  $\alpha_1$ -adrenergic Vasoconstriction in First Order Arterioles  
**B.S. Ferguson, E. Kozina, M.A. Hill, P.S. Clifford**, Univ. of Illinois at Chicago and Univ. of Missouri
- 9:15 AM Effect of Increased Skeletal Muscle Temperature on Intramuscular Histamine Concentrations  
**J. Mangum, D. Sieck, M. Ely, E. Larson, C. Minson, J. Halliwill**, Univ. of Oregon
- 9:30 AM Limiting the constrictor influence: a parallel tale on scientific mindset and vascular control in humans.  
**Frank Dinunno**, Colorado State Univ.

## 443 Interrogating Neuronal Circuits Mediating Body Fluid Homeostasis

### FEATURED TOPIC

TUE 8:30 AM-10:00 AM, Convention Center, Room 28A

Sponsored by: CNS Section · Chairs: E. Krause · L. A. Wang

Track: Neuroscience

- 8:30 AM Salt and the NTS.  
**Brad Lowell**, Harvard
- 9:00 AM Differential Effects of Osmotic Stress on Synaptic vs. Paracrine Signaling Mechanisms in Oxytocinergic Magnocellular Neurons  
**C.J. Frazier, W. Sheng, S.W. Harden**, Univ. of Florida
- 9:15 AM Chronic Chemogenetic Activation of OvlT Neurons Alters Body Fluid Homeostasis and Sympathetically-Mediated Hypertension  
**S.D. Stocker, W.B. Farquhar, M.M. Wenner**, Univ. of Pittsburgh and Univ. of Delaware
- 9:30 AM Prefrontal Cortical Regulation of Chronic Stress-Induced Cardiovascular Susceptibility  
**B. Myers, D. Schaeuble, A.E. B. Packard, J.M. McKlveen, R.L. Morano, S. Fourman, B.L. Smith, J.R. Scheimann, B.A. Packard, S.P. Wilson, J. James, D.Y. Hui, Y.M. Ulrich-Lai, J.P. Herman**, Colorado State Univ., Univ. of Cincinnati, Univ. of South Carolina and Cincinnati Children's Hospital Medical Center
- 9:45 AM Identifying *Angiotensin Sensitive* Neurons in the Lamina Terminalis That Coordinate Endocrine, Cardiovascular and Behavioral Responses Mediating Body Fluid Homeostasis  
**E.G. Krause, A.R. Alleyne, K.M. Cahill, M.D. Smeltzer, E.B. Bruce, Y. Tan, S.W. Harden, C.J. Frazier, A.D. de Kloet**, Univ. of Florida

## 444 Advances in Renal Physiology II

### FEATURED TOPIC

TUE 8:30 AM-10:00 AM, Convention Center, Room 25A

Sponsored by: Renal Section · Chairs: E. Inscho · J. Nespoux

- 8:30 AM Absence of the Na-Glucose Cotransporter SGLT1 Ameliorates Kidney Recovery in a Murine Model of Acute Kidney Injury  
**J. Nespoux, R. Patel, W. Huang, H. Koepsell, B. Freeman, V. Vallon**, Univ. of California, San Diego and VA San Diego Healthcare System and Univ. of Würzburg, Germany
- 8:45 AM Bowmans Capsule Corrected: Undiscovered Vascular Chambers in the Renal Glomerulus  
**D.O. Bates, K.P. Arkill, J.S. Bell, C.P. Winlove, S.J. Harper, C.R. Neal**, Univ. of Nottingham, United Kingdom, Univ. of Exeter, United Kingdom and Univ. of Bristol, United Kingdom

- 9:00 AM The Role of Renal Vascular Reactivity in the Development of Renal Dysfunction During the Phase of Compensated and Decompensated Congestive Heart Failure  
**V. Kratky, L. Kopkan, J. Sadowski, L. Cervenka**, Institute for Clinical and Experimental Medicine, Czech Republic, Mossakowski Medical Research Centre and Polish Academy of Science, Poland
- 9:15 AM Renal Mechanism for Regulation of Blood Pressure by the Circadian Clock Protein Per1  
**L.G. Douma, M. Holzworth, K. Solocinski, K-Y. Cheng, S. Masten, I.J. Lynch, B.D. Cain, C.S. Wingo, M.L. Gumz**, Univ. of Florida
- 9:30 AM The Protective Effects of Atrial Natriuretic Peptide Infusion in Salt-Sensitive Hypertension  
**D. Ilatovskaya, V. Levchenko, A. Zietara, K. Winsor, D.R. Spires, A. Staruschenko**, Medical College of Wisconsin
- 9:45 AM Enhanced Hydrogen Peroxide and Renin Release in Primary Cultures of Juxtaglomerular (Jg) Cells from Diabetic Mice  
**M. Mendez**, Henry Ford Hospital

#### **445 Endothelial Cell Contraction or Retraction (Insights into Barrier Function and Permeability)**

##### **FEATURED TOPIC**

**TUE 8:30 AM-10:00 AM, Convention Center, Room 28B**

Sponsored by: Cardiovascular Section · Chairs: **C. Webb · C. F. Wenceslau**  
Track: Cardiovascular

- 8:30 AM Endothelial contractile cytoskeleton and barrier dysfunction.  
**Sarah Yuan**, Univ. of South Florida
- 9:00 AM N-Cadherin Signaling via Rhogef Trio Stabilizes VE-Cadherin Junctions and Regulates Vascular Permeability  
**K.J. Kruse, Q. Lee, Y. Sun, X. Yang, J. Klomp, F. Huang, S. Vogel, L.M. Tai, A.B. Malik, J. W. Shin, Y.A. Komarova**, Univ. of Illinois at Chicago
- 9:15 AM Mitochondria N-Formyl Peptides in Plasma of Polytrauma Patients Cause Vascular Endothelial Barrier Dysfunction Through Formyl Peptide Receptor-1 Activation  
**P. Martinez Quinones, C. White, C.G. McCarthy, S. Ogbi, K. O'Malley, R. C. Webb, C. Ferreira Wenceslau**, Medical College of Georgia at Augusta Univ.
- 9:30 AM A Disintegrin and Metalloproteinase 15-Mediated Glycocalyx Disruption Contributes to Vascular Leakage During Septic Injury  
**X. ( Yang, J.E. Meegan, M. Jannaway, D.C. Coleman, S. Rodriguez Ospina, S.Y. Yuan**, Univ. of South Florida
- 9:45 AM Estrogen Receptor Alpha Mediated Activation of the Endothelial Epithelial Sodium Channel: Role in the Genesis of Arterial Stiffness  
**C. Manrique, Y. Yang, A. Lising, D. Chen, A. Aroor, J.R. Sowers, M. Hill**, Univ. of Missouri

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## 446 Novel Discoveries in Vascular Physiology

### FEATURED TOPIC

TUE 8:30 AM-10:00 AM, Convention Center, Room 27AB

Sponsored by: Cardiovascular Section · Chair: **S. Earley**

Track: Cardiovascular

8:30 AM Introduction.

8:35 AM Parallel Processing of Multiple Stimuli in the Vascular Endothelium  
**M.D. Lee, C. Wilson, C.D. Saunter, J.M. Girkin, J.G. McCarron**, Univ. of Strathclyde, United Kingdom and Durham Univ., United Kingdom

8:50 AM Peroxynitrite-Induced Reversible Impairment of Endothelial Trpv4 Channel Function in Obesity  
**K. Hong, E. Cope, C. Marziano, L. DeLalio, B. Isakson, S. Sonkusare**, Univ. of Virginia

9:05 AM Dynamic Blood Flow Control by ATP-Sensitive K<sup>+</sup> Channel in Heart  
**G. Zhao, H.C. Joca, W.J. Lederer**, Univ. of Maryland School of Medicine

9:20 AM Junctional Pericytes Serve as Directional Control Elements in K<sup>+</sup>-Mediated Functional Hyperemia  
**A.L. Gonzales, M. Nelson**, Univ. of Vermont

9:35 AM Functional hyperemia in the brain regulated by retrograde C<sup>2+</sup> signals.  
**Scott Earley**, Univ. of Nevada, Reno School of Medicine

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## 447 History of Physiology Group Lecture

### LECTURE

TUE 1:00 PM-2:00 PM, Marriott, Marriott Grand Ballroom 3-4

Sponsored by: History of Physiology Group

Bengt Saltin, M.D., D.Sci. (1935-2014): Exercise is medicine.

**Peter Raven**, Univ. of North Texas Hlth. Sci. Ctr.

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## 448 APS President's Symposium Series III. Exosomes: The New Frontier. Exosomes in Diagnostics and Therapeutics

### SYMPOSIUM

TUE 1:30 PM-3:00 PM, Convention Center, Room 20A

Sponsored by: President's Symposium Series · Chair: **J. C. Jones**

Track: Cancer and Therapy · Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials) · Emerging Technologies

1:30 PM Exosomes as drug delivery vehicles.  
**Samir El-Andaloussi**, Univ. of Oxford

2:00 PM Exosomes as liquid biopsies for disease diagnosis.  
**Jhan Skog**, Exosome Diagnostics Inc.

2:30 PM Stem cell derived exosomes for tissue regeneration.  
**Johnathon Anderson**, Univ. of California-Davis Medical Center



## 449 Steroid Receptor Signaling in Cardiovascular Health and Disease

### SYMPOSIUM

TUE 1:30 PM-3:00 PM, Convention Center, Room 22

Sponsored by: Cardiovascular Section · Chairs: **M. Hamblin** · **J. Clayton**

Track: Cardiovascular

- 1:30 PM Estrogen-dendrimer conjugate protection against cardiac ischemic-reperfusion injury is ablated in mice with endothelial-specific loss of ER-alpha.  
**Elizabeth Murphy**, National Heart Lung and Blood Institute
- 1:52 PM Crucial role of mitofilin and cyclophilin D interaction in post-ischemic GPER1-induced cardioprotection against ischemia-reperfusion injury.  
**Jean Bopassa**, Univ. of Texas Health Science Center at San Antonio
- 2:14 PM The role of aldosterone-mineralocorticoid receptor activation in pulmonary vascular remodeling and right ventricular dysfunction in pulmonary hypertension.  
**Jane Leopold**, Brigham and Women's Hospital
- 2:36 PM Mineralocorticoid receptors in vascular function and CVD.  
**Iris Jaffe**, Tufts Univ. Medical Center

## 450 Structure and Function of Renal Epithelial Cilia

### SYMPOSIUM

TUE 1:30 PM-3:00 PM, Convention Center, Room 28DE

Sponsored by: Renal Section · Chairs: **P. D. Bell** · **D. Ilatovskaya**

Track: Metabolism and Metabolic Disease

- 1:30 PM Mechanosensitive differentiation of proximal tubule cells.  
**Ora Weisz**, Univ. of Pittsburgh
- 2:00 PM Dietary interventions in polycystic kidney disease: taking advantage of metabolic defects for therapy.  
**Thomas Weimbs**, Univ. of California, Santa Barbara.
- 2:30 PM Unilateral nephrectomy activates kidney immune cells and accelerates cyst growth in polycystic kidney disease.  
**Takamitsu Saigusa**, Univ. of Alabama at Birmingham.

## 451 Sympathetic Neurovascular Transduction in Humans: Are We There Yet?

### SYMPOSIUM

TUE 1:30 PM-3:00 PM, Convention Center, Room 28B

Sponsored by: Neural Control and Autonomic Regulation Section · **Chair: J. K. Shoemaker**  
Track: Neuroscience

1:30 PM Neurovascular transduction in humans: New approaches to old questions.

**Can Tan**, Harvard Medical School

2:00 PM Sympathetic transduction: Implications for health and disease.

**Paul Fadel**, Univ. of Texas at Arlington

2:30 PM From one generation to the next: differential distribution of sympathetic receptors in skeletal muscle microvasculature.

**Baraa Al-Khazraji**, Western Univ.

## 452 Molecular Transducers of the Physiological Adaptations to Exercise and Aging

### SYMPOSIUM

TUE 1:30 PM-3:00 PM, Convention Center, Room 25C

Sponsored by: Environmental and Exercise Physiology Section

**Chairs: D. R. Seals · C. R. Martens**

Track: Cardiovascular · Inflammation/Immunity · Metabolism and Metabolic Disease

1:30 PM Symposium introduction.

**Douglas Seals**, Univ. of Colorado Boulder

1:40 PM Molecular mechanism of reversal of age-related decline of muscle mitochondria in humans.

**Sreekumaran (Sree) Nair**, Mayo Clinic

2:00 PM Inter-individual response heterogeneity: a window into molecular transducers of exercise adaptation.

**Marcas Bamman**, Univ. of Alabama Birmingham

2:20 PM Metabolites as key molecular transducers of exercise and metabolic capacity.

**Jane Shearer**, Univ. of Calgary

2:40 PM Epigenetic patterns with aging and exercise are associated with indicators of healthspan in humans.

**Christopher Martens**, Univ. of Delaware

## 453 The Vasculome: An Integrated Exploration of Vascular Reactivity, Lineage, and Specialization

### SYMPOSIUM

TUE 1:30 PM-3:00 PM, Convention Center, Room 28A

Sponsored by: Cardiovascular Section · Chairs: **Z. Galis** · **L. Yin**

Track: Cardiovascular

- 1:30 PM The *what* and *why* of the vasculome.  
**Zorina Galis**, National Heart Lung and Blood Institute
- 1:40 PM Why we need the vasculome: Lessons from the coronary circulation.  
**William Chilian**, Northeast Ohio Medical Univ.
- 2:00 PM Mapping vascular smooth muscle development, diversity and reprogramming.  
**Mark Majesky**, Univ. of Washington
- 2:20 PM Tracing the origin of vascular lineage in development and diseases.  
**Bin Zhou**, Shanghai Institutes for Biological Sciences
- 2:40 PM Panel discussion.

## 454 Physiological Adaptations to Hypoxia: From Mountain Top to Ocean Bottom

### FEATURED TOPIC

TUE 1:30 PM-3:00 PM, Convention Center, Room 26AB

Sponsored by: Hypoxia Group · Chairs: **M. B. Harris** · **E. A. Moya**

Track: Inflammation/Immunity · Metabolism and Metabolic Disease · Cardiovascular

- 1:30 PM Lahiri-Cherniak Lecture of the APS Hypoxia Interest Group.  
**William Milsom**, Univ. of British Columbia
- 2:15 PM Mechanisms of Neuroprotection Against Oxidative Stress in the Anoxia Tolerant Turtle *Trachemys Scripta*  
**M. Reiterer**, **S.L. Milton**, Florida Atlantic Univ.
- 2:30 PM High Altitude Hypoxia Impacts Omega-3 Fatty Acid Metabolites in Plasma of Fetal and Newborn Sheep  
**V. Lopez**, **M. La Frano**, **R. Bosviel**, **J. Newman**, **R. Thorpe**, **O. Feihn**, **L. Zhang**, **S.M. Wilson**, Occidental College Los Angeles, California Polytechnic State Univ., Univ. of California, Davis, Loma Linda Univ. School of Allied Health Professions and Loma Linda Univ. School of Medicine
- 2:45 PM Sweet Success: Metabolic Substrate Adaptations to Acute Hypoxia in the Naked Mole Rat (*Heterocephalus glaber*)  
**M.E. Pamenter**, **A.M. Kirby**, **A.J. Shuhendler**, Univ. of Ottawa, Canada

## 455 Epithelial Mechano-Sensitivity in Health and Disease

### FEATURED TOPIC

TUE 1:30 PM-3:00 PM, Convention Center, Room 25A

Sponsored by: Cell and Molecular Physiology Section · Chairs: **A. Beyder** · **F. Chebib**  
Track: Neuroscience

- 1:30 PM Mechanical forces controlling epithelial cell numbers.  
**Jody Rosenblatt**, Univ. of Utah
- 2:15 PM Role of the Mechanosensitive Ion Channel Piezo1 in Autosomal Dominant Polycystic Kidney Disease  
**F. Chebib, A. Beyder, X. Wang, C. Alcaino, B. Ehrlich, V. Torres**, Mayo Clinic and Yale Univ.
- 2:30 PM Piezo2 Mechanosensitive Ion Channel Role in Primary Enterochromaffin Cell Mechanosensitivity  
**C. Alcaino, K. Knutson, G. Yildiz, D. Linden, J.H. Li, A. Leiter, G. Farrugia, A. Beyder**, Mayo Clinic and Univ. of Massachusetts Medical School
- 2:45 PM N-Glycan and Heparan Sulphate Components of the Extracellular Matrix Are Essential for Laminar Shear Stress Response of the Epithelial Sodium Channel  
**Z. Ashley, D. Barth, J.P. Baldin, M. Fronius**, Univ. of Otago, New Zealand

## 456 GI and Liver Physiology and Disease (Cosponsored by AJP - Gastrointestinal and Liver Physiology)

### FEATURED TOPIC

TUE 1:30 PM-3:00 PM, Convention Center, Room 23ABC

Sponsored by: GI and Liver Physiology Section · Chairs: **M. Frey**  
Track: Nutrition/Obesity · Inflammation/Immunity · Emerging Technologies

- 1:30 PM Colonic Bile Acids Regulate Epithelial Wound Healing  
**N.K. Lajczak, M.S. Mroz, B. Goggins, S. Keely, S.J. Keely**, Royal College of Surgeons in Ireland, Ireland, School of Biomedical Sciences and Pharmacy and Univ. of Newcastle, Australia
- 1:45 PM The Impact of Antibiotics on the Intestinal Microbiome and the Gut-Brain Axis in Zebrafish  
**E.A. Bell, A.G. Ball, K.L. Deprey, J.K. Uno**, Elon Univ.
- 2:00 PM Tofacitinib Inhibits Intestinal Epithelial JAK-STAT Signaling and Prevents Barrier Dysfunction Induced by Interferon-Gamma  
**A. Sayoc, R. Preciado, M. Krishnan, D.F. McCole**, Univ. of California and Riverside
- 2:15 PM *Helicobacter Pylori* Alters the Expression of Circadian Clock Components PER2 and BMAL1 During Infection  
**E.L. Teal, J. Li, J.L. Chakrabarti, N. Steele, D. Rosselot, N. Sundaram, J. Hawkins, C. Hong, M.A. Helmrich, T.L. Diwan, Y.L. Zavros**, Univ. of Cincinnati, Univ. of Michigan and Cincinnati Children's Hospital Medical Center

- 2:30 PM Enteric Neuroinflammation Driven by Exposure to Pyridostigmine Bromide Is a Possible Contributing Factor to Gulf War Illness  
**S. Hernandez-Rivera, V. Grubišić, D. Fried, B.D. Gulbransen**, Michigan State Univ.
- 2:45 PM C-Src Mediates Intestinal Stem Cell Response to High Fat Diet  
**A.L. Theiss, J. Han, D.L. Jackson, J. Park, K. H. Jung, B.A. Kaiparettu**, Baylor Scott & White Research Institute and Baylor College of Medicine

## 457 Cell Plasticity: Calcium, cAMP and Beyond

### FEATURED TOPIC

TUE 1:30 PM-3:00 PM, Convention Center, Room 25B

Sponsored by: Respiration Section · Chairs: **D. Mehta**

Track: Inflammation/Immunity · Metabolism and Metabolic Disease

- 1:30 PM New insights into STIM-ORAI-dependent calcium signalling.  
**Patrick Hogan**, La Jolla Inst. for Allergy and Immunol.
- 1:45 PM Role of Mitochondrial Reactive Oxygen Species and TRPV4 Activation in Microvascular Endothelial Cell Dysfunction in PAH  
**K. Suresh, L. Servinsky, H. Jiang, Z. Bigham, J. Zaldumbide, J. Huetsch, C. Kliment, M. Damarla, L. Shimoda**, Johns Hopkins Univ.
- 2:00 PM Extracellular Vesicles: An Additional Compartment for the Second Messenger, Cyclic Adenosine Monophosphate  
**S.L. Sayner, M. Maulucci, A. Scruggs, C. Zhou, N. Bauer**, Univ. of South Alabama
- 2:15 PM Ceramide Containing Microparticles from Aged Stored Platelets Recapitulate Aspects of Murine Transfusion Related Acute Lung Injury  
**M.J. McVey, M. Maishan, W.L. Lee, C. Spring, J.W. Semple, W.M. Kuebler**, Univ. of Toronto, Canada, Keenan Research Centre for Biomedical Science, St. Michael's Hospital, Canada and Charité-Universitätsmedizin Berlin, Germany
- 2:30 PM Protease Activated Receptor 2 Deficiency in Alveolar Macrophages Impairs Camp Generation Leading to NFAT-Dependent Pro-Inflammatory Signalling and Lung Injury  
**R. R. Sheikh, J. C. Joshi, T. Mohammad, I. Rochford, S. Baweja, M. Koichiro, M. Hollenberg, D. Mehta**, Univ. of Illinois at Chicago, Chicago State Univ. and Univ. of Calgary, Canada
- 2:45 PM Pannexin 1 and a Venous-Specific Purinergic Cascade Induces Endothelial Leak in Response to TNF $\alpha$   
**H.S. Comstra, D. Begandt, S. Molina, N. Krüger, L. Biwer, S.R. Johnstone, A. Lohman, M.E. Good, L.J. DeLalio, H. Bacon, B.E. Isakson, M. Koval**, Emory Univ., Walter and Eliza Hall Institute of Medical Research, Germany and Univ. of Virginia School of Medicine

## 458 Origins of Cardiovascular Disease: Does Metabolic Disease Always Come First?

### FEATURED TOPIC

**TUE 1:30 PM-3:00 PM, Convention Center, Room 27AB**

Sponsored by: Water and Electrolyte Homeostasis Section

**Chairs: F. T. Spradley · A. Souza**

Track: Nutrition/Obesity · Metabolism and Metabolic Disease

- 1:30 PM Obesity, cardiometabolic and kidney dysfunction: mechanistic links.  
**John Hall**, Univ. of Mississippi Med. Ctr.
- 2:00 PM Early Life Stress Induces Endothelial-Derived HDAC9 and ET-1 Expression  
**K.C. McPherson, D.H. Ho, Y.D. Pettway, X. Liu, K.A. Hyndman, J.S. Pollock**, Univ. of Alabama at Birmingham
- 2:15 PM Sex Differences in the Development of Renal Injury in Obese Dahl Salt-Sensitive Leptin Receptor Mutant Rats During Prepubertal Obesity  
**B. Poudel, C.A. Shields, D.C. Cornelius, J.M. Williams**, Univ. of Mississippi Medical Center
- 2:30 PM Nighttime Sodium Intake Is Associated with Cardiometabolic Risk and Insulin Resistance in Night Shift Nurses  
**J.S. Speed, H.E. Molzov, R.L. Johnson, B.K. Becker, D.M. Pollock, K.L. Gamble**, Univ. of Alabama at Birmingham
- 2:45 PM AMPK as a Metabolic Sensor Regulates Inflammatory Response During Ischemic Insults  
**J. Li, X. Chen, C. Cates, T. Rousselle, X. Li**, Univ. of Mississippi Medical Center

## 459 Respiratory and Limb Skeletal Muscle Weakness in Disease and Aging: Mechanisms and Treatments

### SYMPOSIUM

**TUE 3:30 PM-5:00 PM, Convention Center, Room 25C**

Sponsored by: Environmental and Exercise Physiology Section

**Chairs: S. Bowen · L. Ferreira**

- 3:30 PM Reactive oxygen species and diaphragm contractile dysfunction in heart failure and aging.  
**Leo Ferreira**, Univ. of Florida
- 3:50 PM Mechanisms of diaphragm dysfunction in the critically ill.  
**Coen Ottenheijm**, VU Univ. Medical Center Amsterdam
- 4:15 PM Intracellular calcium leak as a mediator of muscle weakness in disease and aging.  
**Andrew Marks**, Columbia Univ.
- 4:40 PM Exercise training as a therapeutic treatment for muscle weakness in chronic disease.  
**Scott Bowen**, Univ. of Leeds

## 460 Hebert Lecture of the Epithelial Transport Group

### FEATURED TOPIC

TUE 3:30 PM-5:00 PM, Convention Center, Room 25A

Sponsored by: Epithelial Transport Group · Chairs: **A. R. Subramanya**

Track: Metabolism and Metabolic Disease · Emerging Technologies

3:30 PM Potassium diet and blood pressure.

**Alicia McDonough**, USC

4:00 PM The  $\beta$ -Adrenergic Stimulation of the Renal NaCl Cotransporter Is Mediated via a Camp-Dependent Activation of Protein Phosphatase 1 Inhibitor 1

**D. Penton Ribas, S. Moser, A. Wengi, J. Czogalla, L.L. Rosenbaek, N. Faresse, R. Fenton, D. Loffing-Cueni, J. Loffing**, Univ. of Zurich, Switzerland and Aarhus Univ., Denmark

4:15 PM Collecting-Duct-Principal-Cell-Select Knockout of the Mechanistic-Target-of-Rapamycin Alters Sodium and Acid/base Homeostasis

**M.B. Fluitt, A.L. Brown, S. Tiwari, L. Li, C.M. Ecelbarger**, Georgetown Univ. and Sanjay Gandhi Post-Graduate Institute of Medical Sciences, India

4:30 PM Characterization of P2RX7 Knockout in Polycystic Kidney Rats

**S.N. Arkhipov, D. Potter, A.M. Geurts, T.S. Pavlov**, Henry Ford Health System and Medical College of Wisconsin

4:45 PM WNK3 and WNK4 Exhibit Opposite Sensibility for Cell Volume and Intracellular Chloride Concentration

**D. Pacheco-Alvarez, D.L. Carrillo-Pérez, A. Mercado, K. Leyva-Ríos, E. Moreno, N. Vazquez, G. Gamba**, Universidad Panamericana, Mexico, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico, Instituto Nacional de Cardiología Ignacio Chávez, Mexico and Instituto de Investigaciones Biomédicas-UNAM, Mexico

## 461 Exercise and Skeletal Muscle as Key Regulators of Whole Body Aging

### FEATURED TOPIC

TUE 3:30 PM-5:00 PM, Convention Center, Room 22

Sponsored by: Muscle Biology Group · Chairs: **M. Jackson** · **S. Brooks**

Track: Metabolism and Metabolic Disease · Nutrition/Obesity

- 3:30 PM Muscle mitochondrial signaling as a regulator of whole body proteostasis.  
**Anne McArdle**, Univ. of Liverpool
- 4:00 PM Senescent Skeletal Muscle Produces a Distinct Cytokine Secretory Profile in Response to Endotoxin Exposure *in Vitro*  
**A.J. Mattingly, O.J. Laitano, T.L. Clanton**, Univ. of Florida
- 4:15 PM Metformin Blunts Exercise-Induced Improvements in Skeletal Muscle Mitochondrial Respiration Independent of Changes in Mitochondrial Biogenesis  
**A.R. Konopka, W.M. Castor, J. Reid, H. Schoenberg, J. Laurin, C. Wolff, K. Hamilton, B. Miller**, Univ. of Illinois at Urbana-Champaign and Colorado State Univ.
- 4:30 PM Aerobic Exercise Training Reduces Regulators of Denervation in Exercise Resistant and Exercise Sensitive Old Rats  
**L.A. Brown, P.C. MacPherson, L.G. Koch, N.R. Qi, S.L. Britton, S.V. Brooks**, Univ. of Michigan and Univ. of Toledo
- 4:45 PM Reduced Training Frequency Improves Muscle Adaptation and PI3K-AKT Signaling Following Resistance-Type Training in an Aging Model  
**M. Naimo, J. Ensey, E. Rader, B. Baker**, National Institute for Occupational Safety and Health and Centers for Disease Control and Prevention



## 462 Cell Signaling: Proteins, Pathways, and Mechanisms

### FEATURED TOPIC

**TUE 3:30 PM-5:00 PM, Convention Center, Room 28A**

Sponsored by: Cell and Molecular Physiology Section · **Chairs: K. L. Hamilton · M. Helms**  
Track: Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials)

**3:30 PM** Functional selectivity of GPCR-directed drug action through location bias.

**Roshanak Irannejad**, UC-San Francisco

**4:00 PM** MSP-Dependent Activation of Cns Ron Receptor Tyrosine Kinase Signaling Attenuates Neuroinflammation Through the Physiological Regulation of IL1b and NLRP3 Inflammasome Pathway

**A. Dey, S.K. Nettleford, J.W. Fraser, A.J. Hare, D.M. Alnemri, R.F. Paulson, K.S. Prabhu, P.A. Hankey-Giblin**, Pennsylvania State Univ.

**4:15 PM** Matrix Metalloproteinase Inhibitors Attenuate Doxorubicin-Induced Heart Failure by Preventing Cardiac Titin Proteolysis

**B. Chan, A. Roczkowsky, M. Poirier, N. Moser, R. Ilarraza, H. Granzier, R. Schulz**, Univ. of Alberta, Canada and Univ. of Arizona

**4:30 PM** SIRT2 Is Required for in Vivo Tissue-Specific and Whole Body Insulin Action in Mice

**L. Lantier, A.S. Williams, C.C. Hughey, D. Bracy, D. Gius, D.H. Wasserman**, Vanderbilt Univ., Duke Univ. and Northwestern Univ. Feinberg School of Medicine

**4:45 PM** Mechanisms of CO<sub>2</sub>-Dependent Regulation of NF $\beta$  Signaling  
**C.E. Keogh, C.C. Scholz, J. Rodriguez, A.C. Selfridge, A. von Kreigsheim, E.P. Cummins**, School of Medicine and Medical Science at Univ. College Dublin, Ireland, Institute of Physiology, Univ. of Zürich, Switzerland and Edinburgh Cancer Research Centre, United Kingdom

## 463 August Krogh Distinguished Lectureship of the APS Comparative and Evolutionary Physiology Section (Supported by Novo Nordisk Fonden)

### LECTURE

**TUE 3:30 PM-4:30 PM, Convention Center, Room 26AB**

Sponsored by: Comparative & Evolutionary Physiology Section  
Track: Cardiovascular

Anuran amphibians as models for understanding extreme dehydration tolerance.

**Stanley Hillman**, Portland State Univ.

## **464 Battle of the Reflexes: Chemo- versus Baroreflexes during Physiological Stressors, Aging and Cardiovascular Disease**

### **FEATURED TOPIC**

**TUE 3:30 PM-5:00 PM, Convention Center, Room 28B**

Sponsored by: Neural Control and Autonomic Regulation Section

**Chairs: M. Kellawan · M. Nelson**

Track: Cardiovascular · Neuroscience

**3:30 PM** Effects of diabetes on the exercise pressor reflex.

**Audrey Stone**, Univ. of Texas Austin

**4:00 PM** Neural Responses to Mechanical Stimulation in Thin Muscle Afferents and Dorsal Root Ganglia Are Sensitized by Insulin

**N. Hotta, K. Katanosaka, K. Mizumura, J.H. Mitchell, S.A. Smith, M. Mizuno**, Chubu Univ., Japan and The Univ. of Texas Southwestern Medical Center

**4:15 PM** How Do the Carotid Chemoreceptors Modulate Ventilatory Control and Cardiovascular Regulation at Rest and During Exercise in COPD?

**D. Phillips, S. Collins, C. Steinback, T. Bryan, E. Wong, M.S. McMurtry, M. Bhutani, M. Stickland**, Univ. of Alberta, Canada

**4:30 PM** High Intensity Muscle Metaboreflex Activation Blunts Cardiopulmonary Baroreflex Control of Sympathetic Vasomotor Outflow

**K. Katayama, J. Kaur, B.E. Young, T.C. Barbosa, S. Ogoh, P.J. Fadel**, Nagoya Univ., Japan, The Univ. of Texas at Arlington and Toyo Univ., Japan

**4:45 PM** Effect of Acute Intermittent Hypoxia on Baroreflex Sensitivity to Decreasing and Increasing Blood Pressures

**Z.M. Scruggs, S.E. Baker, M.J. Joyner, J.K. Limberg**, Mayo Clinic and Univ. of Missouri

## 465 Adaptations in Fluid Balance and Blood Pressure Regulation during Pregnancy

### FEATURED TOPIC

**TUE 3:30 PM-5:00 PM, Convention Center, Room 25B**

Sponsored by: Water and Electrolyte Homeostasis Section · **Chairs: K. Denton · L. Veiras**

Track: Cardiovascular · Salt · Ion Channels and Transporters

**3:30 PM** Womens health: adaptations to pregnancy.

**Vesna Garovic**, Mayo Clinic

**4:00 PM** Time Course of Changes in Arterial and Venous Function During Normal and Hypertensive Pregnancies in Humans

**J-K. Yoo, M.B. Badrov, O. Syed, R.S. Parker, A.S. Stickford, Y. Okada, S.A. Best, B.D. Levine, Q. Fu**, The Univ. of Texas Southwestern Medical Center, Institute for Exercise and Environmental Medicine and Texas Health Presbyterian Hospital Dallas

**4:15 PM** T Lymphocytes Contribute to the Development of Maternal Syndrome in Dahl Ss Rats Maintained on a Low Salt Diet

**J. H. Dasinger, J.M. Abais-Battad, H. Lund, D.J. Fehrenbach, A. Alsheikh, D.L. Mattson**, Medical College of Wisconsin

**4:30 PM** A Novel Anti-Inflammatory Agent for the Management of Preeclampsia  
**A.C. Eddy, H. Chapman, F. Mahdi, E.M. George, G.L. Bidwell III**, Univ. of Mississippi Medical Center

**4:45 PM** Cardiovascular Effects of Endothelial-Specific Interference with PPAy Activity in Offspring Born from Avp-Induced Preeclamptic Pregnancies

**A.R. Nair, M. Mukohda, L.N. Agbor, K-T. Lu, J. Wu, J.A. Sandgren, J.L. Grobe, C.D. Sigmund**, Univ. of Iowa

## 466 Horace W. Davenport Distinguished Lectureship of the APS Gastrointestinal and Liver Physiology Section

### LECTURE

**TUE 3:30 PM-4:30 PM, Convention Center, Room 23ABC**

Sponsored by: GI and Liver Physiology Section

Track: Career and Professional Development · Emerging Technologies · Inflammation/Immunity

Mucosal barriers: pathways and pathologies.

**Jerrold Turner**, Brigham and Women's Hosp.

## 467 Julius H. Comroe, Jr. Distinguished Lectureship of the APS Respiration Section

### LECTURE

**TUE 3:30 PM-4:30 PM, Convention Center, Room 24AB**

Sponsored by: Respiration Section

Interdependence of neuromodulators in the control of breathing.

**Hubert Forster**, Med. Col. of Wisconsin

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**468 Robert M. Berne Distinguished Lectureship of the APS Cardiovascular Section**

**LECTURE**

**TUE 3:30 PM-4:30 PM, Convention Center, Room 27AB**

Sponsored by: Cardiovascular Section

Track: Cardiovascular

Mechanisms of pulmonary vascular disease: Pathogenic role of ion channels.

**Jason Yuan**, Univ. of Arizona Health Sciences

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**469 APS Business Meeting**

**BUSINESS MEETING**

**TUE 5:30 PM-7:00 PM, Convention Center, Room 20A**

# Oral Sessions: Wednesday, April 25

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## 484 Epithelial Crosstalk and Innate Immunity

### SYMPOSIUM

WED 8:30 AM-10:00 AM, Convention Center, Room 23ABC

Sponsored by: The Physiological Society · Chairs: J. P. Garnett

Track: Inflammation/Immunity

- 8:30 AM Regulation of chronic intestinal pathology by autophagy.  
**Kevin Maloy**, Univ. of Oxford
- 9:00 AM Mucin-neutrophil interaction and the respiratory epithelium.  
**Jason Powell**, Newcastle Univ.
- 9:30 AM Antiviral innate immune signaling promotes bacterial biofilm growth during viral-bacterial co-infection.  
**Jennifer Bomberger**, Univ. of Pittsburgh

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## 485 Extracellular Matrix Remodeling in Metabolic Diseases

### SYMPOSIUM

WED 8:30 AM-10:00 AM, Convention Center, Room 20A

Sponsored by: Integrative Physiology Symposium Series

Chairs: S. C. Bodine · D. H. Wasserman

Track: Metabolism and Metabolic Disease

- 8:30 AM Adipose extracellular matrix remodeling in development and obesity.  
**Tae-Hwa Chun**, Univ. of Michigan
- 9:00 AM Increased extracellular matrix abundance characterizes insulin resistant muscle: potential mechanisms.  
**Lawrence Mandarino**, Univ. of Arizona
- 9:30 AM Liver extracellular matrix remodeling and integrin signaling in regulation of insulin action.  
**David Wasserman**, Vanderbilt Univ.

## 486 Chemotherapy Induced Vascular Toxicity: Do Small Things Matter?

### SYMPOSIUM

WED 8:30 AM-10:00 AM, Convention Center, Room 22

Sponsored by: Cardiovascular Section · Cosponsored by AJP - Heart and Circulatory

Physiology · **Chairs: A. Beyer · K. Croce**

Track: Cardiovascular

8:30 AM Chemotherapy induced cardiotoxicity: A large problem with small origins.

**Javid Moslehi**, Vanderbilt Univ.

9:00 AM Targeting cancer-related transcriptional dependencies in cardiovascular disease.

**Jonathan D. Brown**, Vanderbilt Univ.

9:20 AM MicroRNA networks in endothelial DNA damage responses.

**Sudarshan Anand**, Oregon Health and Science Univ.

9:40 AM Modeling endothelial dysfunction in doxorubicin-induced vasculopathy.

**Sayed Nazish**, Stanford Univ.

## 487 Bile Acids in the Small Intestine and Colon, Physiology, Pathophysiology, and Therapeutic Opportunities

### SYMPOSIUM

WED 8:30 AM-10:00 AM, Convention Center, Room 25A

Sponsored by: GI and Liver Physiology Section · Cosponsored by AJP - Gastrointestinal and Liver Physiology · **Chairs: S. J. Keely · N. K. Lajczak**

Track: Nutrition/Obesity · Cancer and Therapy

8:30 AM The evolution of bile acids as therapeutic agents.

**Alan Hofmann**, Univ. of California, San Diego

9:00 AM Gut feelings: systemic reach of intestinal FXR.

**Ron Evans**, Salk Institute for Biological Studies

9:30 AM Protective actions of secondary bile acids in colonic epithelium.

**Natalia Lajczak**, Royal College of Surgeons in Ireland

9:45 AM Bile acids and colon cancer: Is FXR the solution of the conundrum?

**Raffaella Gadaleta**, PMI Science

## 488 Role and Importance of Mitophagy in Skeletal Muscle in Health and Disease

### FEATURED TOPIC

WED 8:30 AM-10:00 AM, Convention Center, Room 26AB

Sponsored by: Muscle Biology Group · Chairs: **M. Beaudry** · **L. Deldicque**

Track: Metabolism and Metabolic Disease · Nutrition/Obesity

- 8:30 AM Introduction: Molecular mechanisms of mitophagy in skeletal muscle.  
**Louise Deldicque**, Université catholique de Louvain
- 8:45 AM TBD.  
**Marc Francaux Francaux**, Université catholique de Louvain
- 9:20 AM PGC-1 $\alpha$  Overexpression Increases Lysosome Abundance and Autophagy in Dystrophic Skeletal Muscle  
**A. Ludwig, H.R. Spaulding, M. Hudson, J. Selsby**, Purdue Univ., Iowa State Univ. and Univ. of Delaware
- 9:40 AM Muscle Mitochondrial Dysfunction at Different Stages of Chronic Kidney Disease  
**J. Gamboa, C.A. Keller, A.M. Falck, B. Roshanravan, N.J. Brown, T.A. Ikizler**, Vanderbilt Univ. Medical Center and Univ. of Washington

## 489 Comparative Models of Disease

### FEATURED TOPIC

WED 8:30 AM-10:00 AM, Convention Center, Room 25C

Sponsored by: Comparative and Evolutionary Physiology Section · Chairs: **M. Pamerter**

Track: Metabolism and Metabolic Disease

- 8:30 AM Mechanisms of longevity and cancer resistance in long-lived mammals.  
**Xiao Tian**, Univ. of Rochester
- 9:00 AM Intrinsic Anti-Inflammatory Properties of Serum in Deep-Diving Seals  
**A.G. Hindle, A. Bagchi, A. Batten, M. Levin, K.N. Allen, L.A. Huckstadt, D.P. Costa, W.M. Zapol, E.S. Buys**, Massachusetts General Hospital, Univ. of Connecticut, Univ. of California and Santa Cruz
- 9:15 AM Genetically Engineering a Sheep Model of Hypophosphatasia  
**D.K. Williams, C.A. Pinzon, S. Huggins, J.H. Pryor, H.M. Georges, F. Hermann, J. Oldeschulte, M.E. Westhusin, C.R. Long, D. Gaddy, L.J. Suva**, Texas A&M Univ.
- 9:30 AM Hormonal Drive of Cardiomyocyte Proliferative and Regenerative Potential Loss During the Acquisition of Endothermy  
**G.N. Huang**, Univ. of California and San Francisco
- 9:45 AM Seal Endothelial Cells: A Comparative Model to Study Natural Tolerance to Ischemia/Reperfusion  
**J. P. Vazquez-Medina, K. Allen, A.G. Hindle**, Univ. of California, Berkeley and Massachusetts General Hospital

## 490 Brain - Gut Microbiota Interactions in Cardiovascular and Metabolic Control

### FEATURED TOPIC

WED 8:30 AM-10:00 AM, Convention Center, Room 28A

Sponsored by: Endocrinology and Metabolism Section · Chair: **J. Collister**

Track: Neuroscience · Cardiovascular · Microbiome

- 8:30 AM** Implication of gut microbiota in hypertension, role of the brain, and future therapeutics.  
**Seungbum Kim**, Univ. of Florida
- 9:00 AM** Role of the OVL-Gut Microbiome Axis on the Development of DOCA-Salt Hypertension  
**J. Collister, D. Nahey, R. Hartson, B. Youmans, T. Johnson**, Univ. of Minnesota
- 9:15 AM** Probiotic Kefir Antihypertensive Effects in Spontaneously Hypertensive Rats Involves Central and Peripheral Mechanisms  
**M.A. Silva-Cutini, S.C. Peaden, F.E. Mowry, H.A. G. Ducray, L.P. Globa, I.B. Sorokulova, T.U. Andrade, V.C. Biancardi**, Auburn Univ. and Vila Velha Univ., Brazil
- 9:30 AM** Hypertension-Associated Dysbiosis Leads to Elevated Sympathetic Drive and Alterations in Neurotransmitter Signaling in the Nucleus of the Solitary Tract in Wky  
**T. Yang, C.G. B. Silva, W.L. Malphurs, R. Arocha, J. Zubcevic**, Univ. of Florida
- 9:45 AM** Gut Microbiota Effects on Bone Density Are Dependent on T- And B-Lymphocytes  
**N.D. Rios-Arce, J. Schepper, L.R. McCabe, N. Parameswaran**, Michigan State Univ.



## 491 The Influence of State on Cardiorespiratory Control Mechanisms

### FEATURED TOPIC

WED 8:30 AM-10:00 AM, Convention Center, Room 27AB

Sponsored by: Respiration Section

Track: Cardiovascular · Neuroscience

- 8:30 AM Sleep and Wake Signals in Upper Airway Motoneurons.  
**Leszek Kubin**, Univ. of Pennsylvania
- 9:00 AM Muscarinic Blockade Stabilizes the Breathing Pattern of Serotonin-Deficient Rat Pups During Active Sleep  
**M.L. Davis, J.L. Magnusson, K.J. Cummings**, Univ. of Missouri
- 9:15 AM Identifying Pathways for Apolipoprotein A2 Actions on Respiratory Rhythmogenesis  
**K.P. Strohl, S. Azzam, D. Saleh**, Case Western Reserve Univ. and Kent State Univ.
- 9:30 AM ATP in the Lateral Hypothalamus/Perifornical Area (LH/PFA) Increases CO<sub>2</sub> Chemoreflex  
**M.B. Dias, E.N. da Silva, L.H. Gargaglioni, J. D. A.D. C. Horta-Junior**, UNESP, Brazil
- 9:45 AM Drowning a Frog Respiratory Oscillator in a Wash of Network Excitability  
**R.J. A. Wilson, M. Baghdadwala**, Univ. of Calgary, Canada

## 492 Novel Approaches and Techniques in Water and Electrolyte Research

### FEATURED TOPIC

WED 8:30 AM-10:00 AM, Convention Center, Room 28B

Sponsored by: Water and Electrolyte Homeostasis Section

Chairs: **C. Smith · D. Craighead**

Track: Emerging Technologies · Salt · Neuroscience

- 8:30 AM Heat Therapy to Target Hypertension.  
**Christopher Minson**, Univ. of Oregon
- 9:00 AM Renal Injury Is Worsened When Consuming a Caffeinated Soft-Drink During and After Exercise in the Heat  
**C.L. Chapman, B.D. Johnson, J.R. Sackett, M.D. Parker, Z.J. Schlader**, Univ. at Buffalo and State Univ. of New York
- 9:15 AM Three-Dimensional Analysis of Potassium Deprivation-Induced Tubular Remodeling Using Optical Clearing  
**T. Saritas, V. Puelles, J. McCormick, D. Ellison**, Oregon Health & Science Univ. and Univ. Hospital RWTH Aachen, Germany
- 9:30 AM Reducing Disparities in the Treatment of Hypertension in African Americans Using Computational Modeling  
**J.S. Clemmer, W.A. Pruett, R.L. Hester**, Univ. of Mississippi Medical Center
- 9:45 AM Hypertensive and Pre-Hypertensive African Green Monkeys Display Increased Proteinuria  
**M.K. Rhoads, J.L. Osborn**, Univ. of Kentucky

## 493 Post-Translational Modifications in Cardiovascular Disease

### FEATURED TOPIC

WED 8:30 AM-10:00 AM, Convention Center, Room 25B

Sponsored by: Cardiovascular Section · Chairs: I. Scott · M. J. Kohr

Track: Cardiovascular

- 8:30 AM Lysine Acetylation in Cardiac Pathophysiology.  
**Mahesh Gupta**, Univ. of Chicago
- 9:00 AM Increased Global Lysine Acetylation in Diabetic Vasculature Is Associated with Downregulation of Sirt-1 in Vascular Smooth Muscle Cells  
**C.M. Johnson, C. Burke, M. A. Carrillo-Sepulveda**, New York Institute of Technology College of Osteopathic Medicine
- 9:15 AM Endothelial Cullin3 Mutation Causes Vascular Dysfunction, Arterial Stiffening, and Hypertension  
**J. Wu, S. Fang, C. Hu, A.J. Otanwa, L.N. Agbor, K-T. Lu, X. Liu, M. Mukohda, A. Nair, C.D. Sigmund**, Univ. of Iowa
- 9:30 AM Metabolic Interventions to Treat Mitochondrial Cardiomyopathy: Roles of NAD<sup>+</sup> and Protein Acetylation in Leigh Syndrome  
**C. F. Lee, R. Tian**, Univ. of Washington
- 9:45 AM Increased Protein Cysteine Sulfonation with Heme Destruction of Mitochondrial Complex III Mediates Cardiac Reperfusion Injury  
**Y-R. Chen, P.T. Kang, C-L. Chen**, Northeast Ohio Medical Univ.

## 494 Cardiac Metabolism Moving Center Stage: New Insights Enabling Metabolic Modulation Therapy

### SYMPOSIUM

WED 1:30 PM-3:00 PM, Convention Center, Room 25C

Sponsored by: Endocrinology and Metabolism Section · Chairs: A. Wende · J. F. Glatz

Track: Cardiovascular · Metabolism and Metabolic Disease

- 1:30 PM Balance of fatty acids and carbohydrates for optimal cardiac performance.  
**Miranda Nabben**, Maastricht Univ.
- 1:50 PM Circadian rhythm, timing of fuel utilization is everything.  
**Martin Young**, Univ. of Alabama at Birmingham
- 2:10 PM Ketone metabolism, a new player takes the stage.  
**Peter Crawford**, Univ. of Minnesota
- 2:30 PM Ketone interventions for increased performance.  
**Kieran Clarke**, Univ. of Oxford

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## 495 Pan-American Symposium

### SYMPOSIUM

WED 1:30 PM-3:00 PM, Convention Center, Room 25A

Sponsored by: Pan-American Societies (SFIB) · **Chairs: M. J. Campagnole-Santos**

- 1:30 PM Angiotensin II modulation of stretch-dependent changes in cardiac contractility: Physiological and pathological consequences.  
**Nestor Pérez**, National Univ. of La Plata
- 1:52 PM Interaction renin-angiotensin system and autonomic nervous system in cardiovascular regulation.  
**M. Claudia Irigoyen**, Univ. of Sao Paulo
- 2:14 PM Muscle plasticity and muscle-bone crosstalk at the masticatory system: deciphering the words.  
**Sonia Buvnic**, Univ. of Chile
- 2:36 PM Role of angiotensin-(1-7) in asthma.  
**Maria Campagnole-Santos**, Federal Univ Minas Gerais

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## 496 DAMPs and Inflammasomes: A Clear and Present Danger

### SYMPOSIUM

WED 1:30 PM-3:00 PM, Convention Center, Room 23ABC

Sponsored by: American Physiological Society and The Physiological Society (UK)

Guest: The Physiological Society · **Chairs: R. Khan · R. Tribe**

Track: Inflammation/Immunity · Cardiovascular

- 1:30 PM Unconventional roles for gasdermin D in pyroptosis-independent IL-1b release from neutrophils during inflammasome signaling.  
**Eric Pearlman**, Univ. of California-Irvine.
- 2:00 PM Inflammasomes beyond IL-1 and cell death.  
**Vijay Rathinam**, UConn Hlth. Sch. of Med., Farmington.
- 2:30 PM Alpaca nanobodies reveal mechanistic details of DAMP-induced inflammasome signaling.  
**Florian Schmidt**, Univ. of Bonn

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## 497 EEP Awardee Featured Topic

### FEATURED TOPIC

WED 1:30 PM-3:00 PM, Convention Center, Room 25B

Sponsored by: Environmental and Exercise Physiology Section

**Chairs: B. Miller · B. Gladden**

Track: Metabolism and Metabolic Disease · Regenerative Medicine (Stem Cells, Tissue Regeneration, Biomaterials)

- 1:30 PM Autophagy Promotes Cancer Chemotherapy-Induced Oxidative Stress and Skeletal Muscle Dysfunction  
**A.J. Smuder, O. S. Kwon, B.A. Hain, F.E. Houston, E.E. Talbert**, Univ. of South Carolina, Univ. of Florida and The Ohio State Univ.
- 2:00 PM Skeletal Muscle Disuse Alters Exosome miRNA Predicted to Target Various Signaling Pathways Related to Muscle Atrophy  
**D.W. Van Pelt, E.R. Hunt, T.A. Butterfield, B.F. Miller, K.L. Hamilton, E.E. Dupont-Versteegden**, Univ. of Kentucky and Colorado State Univ.

- 2:15 PM The Ventilatory Response to Muscle Metaboreflex Activation During Concurrent Hypercapnia Is Attenuated by Local Muscle Training  
**J. AIGhaith, M. White**, Univ. of Birmingham, United Kingdom
- 2:30 PM Effect of Chronic Xenon Supplementation on Hematological Parameters, Cardiorespiratory Fitness, and Athletic Performance  
**K.A. Dias, J.S. Lawley, C.M. Hearon; Jr., M. Hieda, S. Sarma, M. Hendrix, B.D. Levine**, Institute for Exercise and Environmental Medicine, Texas Health Presbyterian Hospital Dallas and The Univ. of Texas Southwestern Medical Center
- 2:45 PM Healthspan-Extending Treatments Enhance Proteostasis Through Reduced Cellular Proliferation  
**C.A. Wolff, F.F. Peelor, K. Hamilton, B. Miller**, Colorado State Univ.

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## 498 The Gut-Brain Axis

### FEATURED TOPIC

WED 1:30 PM-3:00 PM, Convention Center, Room 28A

Sponsored by: CNS Section · Chairs: **A. Torres-Reveron · C. B. Appleyard**

Track: Neuroscience

- 1:30 PM Microbiota and immunity.  
**Michael Bailey**, The Ohio State Univ.
- 2:00 PM NOD-Like Receptors: Novel Regulators of the Microbiota-Gut-Brain Axis in Mice  
**M. Pusceddu, K.A. Wong, P. Stokes, J. Sladek, M. Gareau**, Univ. of California and Davis
- 2:15 PM Environmental Enrichment Reverses Chronic Stress-Induced Brain-Gut Axis Dysfunction  
**J. Love, A. Johnson, C. Ligon, B. Greenwood-Van Meerveld**, Univ. of Oklahoma Health Sciences Center and VA Medical Center Oklahoma City
- 2:30 PM Probiotic Administration in an Endometriosis Animal Model Can Influence the Gut Microbiota and Gut-Brain Axis to Counteract the Effects of Stress  
**G. Chompre, M.L. Cruz, G.A. Arroyo, R.M. Rivera, M.C. Colon, C.B. Appleyard**, Pontifical Catholic Univ. of Puerto Rico, Puerto Rico, Ponce Health Sciences Univ., Puerto Rico and Univ. of Puerto Rico at Ponce, Puerto Rico
- 2:45 PM Sex Differences and Stress Alter the Vagally-Mediated Gastric Response to Oxytocin in Rats  
**J.E. Zimmerman, Y. Jiang, R.A. Travagli**, Swarthmore College and Pennsylvania State Univ.

## 499 Pulmonary Arterial Hypertension

### FEATURED TOPIC

WED 1:30 PM-3:00 PM, Convention Center, Room 28B

Sponsored by: Respiration Section · Chairs: **N. Jernigan · J. Trittman**

- 1:30 PM Acid-Sensing Ion Channels (Asics) 2 and 3 Buffer Pulmonary Vasoreactivity and Asic2 Protects Against the Development of Chronic Hypoxia-Induced Pulmonary Hypertension  
**N.D. Detweiler, K.G. Vigil, S. Yan, L.M. Herbert, M.C. Bennett, T.C. Resta, B.R. Walker, N.L. Jernigan**, Univ. of New Mexico Health Sciences Center
- 2:00 PM Rho Kinase and Na<sup>+</sup>/H<sup>+</sup> Exchanger Mediate Endothelin-1 Induced Pulmonary Arterial Smooth Muscle Cell Proliferation and Migration  
**J.C. Huetsch, X. Yun, H. Jiang, L. Shimoda**, John Hopkins Univ. School of Medicine
- 2:15 PM DDAH-1 Regulates NO-Mediated Apoptosis and Cell Proliferation in Human Pulmonary Microvascular Endothelial Cells  
**J.K. Trittman, H. Almazroue, L.D. Nelin**, Nationwide Children's Hospital
- 2:30 PM Hypoxia-Induced Ubiquitination Regulates 14-3-3 $\eta$ -Gremlin-1 Interactions in a Hypoxia Model of Pulmonary Hypertension  
**B.E. Wade, J. Zhao, J. Ma, C.M. Hart, R.L. Sutliff**, Emory Univ. and Atlanta VA Medical Center
- 2:45 PM BALB/cJBom Treated with Angiotensin II and High Salt Diet Develop Pulmonary Hypertension and Right Sided Heart Failure While C57BL/6J Mice Do Not  
**M. Becirovic-Agic, S. Jönsson, M.K. Tveitarås, T. Skogstrand, T.V. Karlsen, J. Lidén, S. Leh, R.K. Reed, M. Hultström**, Uppsala Univ., Sweden, Univ. of Bergen, Norway and Haukeland Univ. Hospital, Norway

## 500 Immune Modulation of Blood Pressure and Vice Versa

### FEATURED TOPIC

WED 1:30 PM-3:00 PM, Convention Center, Room 24AB

Sponsored by: Water and Electrolyte Homeostasis Section · Chairs: **M. J. Ryan · H. A. Itani**

Track: Cell Signaling in Disease · Inflammation/Immunity · Hypertension

1:30 PM Regulatory T cells and autoimmunity: is there a leptin connection?

**Erin Taylor**, Univ. of Mississippi Med. Ctr.

1:50 PM Role of the Renal Nerves in Renal Damage and Immune Cell Infiltration in Dahl Salt-Sensitive Rats

**A.J. Alsheikh, H. Lund, J. H. Dasinger, J.M. Abais-Battad, D.J. Fehrenbach, D.L. Mattson**, Medical College of Wisconsin

2:05 PM Envigo Female Salt-Sensitive Rapp Rats Are Now Spontaneously Hypertensive and Have Higher Frequencies of CD4<sup>+</sup>, CD4<sup>+</sup> CD25<sup>+</sup> and CD4<sup>+</sup> CD25<sup>+</sup> FoxP3<sup>+</sup> T Cells Compared to Normotensive Salt-Resistant Rapp Rats

**A.V. Pai, C.A. West, A. Souza, P.S. Kadam, E.J. Pollner, D.A. West; Jr., H. Ji, X.S. Wu, C. Baylis, K. Sandberg**, Georgetown Univ. and Univ. of Florida

2:20 PM Oral L-Arginine Treatment Significantly Reduces Blood Pressure Without Altering the Renal T Cell Profile in the Doca Salt Model of Hypertension

**E.E. Gillis, G.R. Crislip, J.C. Sullivan**, Augusta Univ.

2:35 PM Inhibition of FPR2 impaired leukocyte get-in signal and triggers non-resolving inflammation in heart failure.

**Vasundhara Kain**, Univ. of Alabama at Birmingham

## 501 Stress, Sleep, Circadian Rhythms and Blood Pressure Regulation

### FEATURED TOPIC

WED 1:30 PM-3:00 PM, Convention Center, Room 22

Sponsored by: Water and Electrolyte Homeostasis Section

Chairs: **M. L. Gumz · J. G. Johnston**

Track: Neuroscience · Hypertension · Cardiovascular

- 1:30 PM 1-Adrenoreceptor-Mediated Vasoconstriction Is Enhanced in the Aorta but Not Resistance Arteries of Humanized Sickle Cell Mice  
**B.M. Fox, J.M. Allan, R.S. Sedaka, M. Kasztan, C. Jin, P.A. Molina, D.M. Pollock, J.S. Pollock**, Univ. of Alabama at Birmingham
- 1:45 PM Evidence for Circadian Control of Endothelial Function in Mice on a High Fat Diet  
**P. Pati, J.M. Allan, J. Colson, M. Young, S. Bailey, D.M. Pollock, K. Gamble, J.S. Pollock**, Univ. of Alabama at Birmingham
- 2:00 PM Chronic High Fat Diet Disrupts Renal Molecular Clock  
**D. Zhang, J.S. Speed, J.C. Colson, S.M. Bailey, M.E. Young, K.L. Gamble, J.S. Pollock, D.M. Pollock**, Univ. of Alabama at Birmingham
- 2:15 PM Kidney-Specific KO of the Circadian Clock Protein Bmal1 Lowers Blood Pressure in Male C57BL/6J Mice  
**L.G. Douma, K.Y. Cheng, I.J. Lynch, M. Holzworth, S. Masten, D. Barral, A. Miller, K.A. Esser, C.S. Wingo, M.L. Gumz**, Univ. of Florida
- 2:30 PM Influence of Insufficient Sleep on Circulating MicroRNAs in Middle-Aged Adults  
**Z.A. Goldthwaite, J.G. Hijmans, K.J. Diehl, T.D. Bammert, G.M. Lincenberg, J.J. Greiner, B.L. Stauffer, C.A. DeSouza**, Univ. of Colorado Boulder and Univ. of Colorado Denver
- 2:45 PM Impact of Exercise-Induced Dehydration on Perceived Sleep Quality  
**W.M. Adams, L.W. Vandermark, L.N. Belval, C.L. Benjamin, G.E. W. Giersch, R.K. Katch, E.C. Lee, L.E. Armstrong, L.J. DiStefano, D.J. Casa**, Univ. of North Carolina at Greensboro, Univ. of Arkansas and Univ. of Connecticut

## 502 Mechanotransduction in Cardiovascular Function

### FEATURED TOPIC

WED 1:30 PM-3:00 PM, Convention Center, Room 26AB

Sponsored by: Cardiovascular Section · Chairs: **C. Thodeti** · **S. Lindsey**

Track: Cardiovascular

- 1:30 PM Two N-Glycosylated Asparagines Within Endothelial  $\alpha$ ENaC Are Crucial for Shear Force Sensing and Blood Pressure Regulation *in Vivo*  
**F. Knoepp, Z. Ashley, N. Weissmann, M. Fronius**, Justus-Liebig-Univ. of Giessen, Germany and Univ. of Otago, New Zealand
- 1:45 PM Glypican-1 Mediates Endothelial Hyper-Permeability in a Model of Acute Heart Failure  
**A. Chignalia, A. Isbatan, M. Patel, B. Borlaug, R. Dull**, Univ. of Illinois at Chicago and Mayo Clinic
- 2:00 PM TRPV4 Channel Deletion or Pharmacological Inhibition Protects Heart Against Adverse Remodeling Post-Myocardial Infarction  
**R.K. Adapala, A. Kanugula, A. Minasyan, H. Cappelli, S. Paruchuri, J.G. Meszaros, C.K. Thodeti**, Northeast Ohio Medical Univ. and Univ. of Akron
- 2:15 PM Type 2 Diabetic Coronary Vascular Smooth Muscle Cells Exhibit Decreased Stiffness and Decreased Adhesion  
**P. McCallinhart, Z. Sun, G.A. Meininger, A.J. Trask**, Nationwide Children's Hospital and Univ. of Missouri
- 2:30 PM Laminin- $\beta$ 6 Integrin Interaction Is Crucial for Coronary Collateral Growth  
**G. Joseph, C. D'Addario, K. McEvoy, R. Jadhav, B. Hutcheson, P. Rocic**, New York Medical College
- 2:45 PM Effects of Exercise-Induced Shear Stress on Endothelial Gene Expression  
**F. Morales-Acuna, D. Coover, A.N. Gurovich**, The Univ. of Texas at El Paso and Indiana State Univ.

## 503 APS Nobel Prize Award Lecture

### LECTURE

WED 3:30 PM-4:30 PM, Convention Center, Room 20A

Sponsored by: President's Symposium Series

A life of learning.

**Leland Hartwell**, Arizona State Univ.



# APS JOURNALS

## YOU'RE INVITED: MEET THE EDITORS RECEPTION

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Sunday, April 22

11 a.m.–12:30 p.m.

Cake and refreshments will be served.

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# Poster Sessions:

## Sunday, April 22

Session #	Session Title
572	Atherosclerosis/Thrombosis/Platelets
573	Angiogenesis/Microvascular Remodeling/Injury and Repair
574	Inflammation/Leukocyte-Endothelium Interactions
575	Ischemia-Reperfusion/Free Radical Biology
576	Lymphatic and venular function
577	Instrumentation, Methodology, and Experimental Models
578	Microvascular Development and Aging
579	Coronary Circulation
580	Cardioprotection
581	Vascular Ion Channels
582	Role of the Microbiome in Cardiovascular Disease
583	Cardiac Muscle; Physiology and Metabolism in Health and Disease
584	Cardiovascular Endocrinology
585	Genetics/Genomics of Cardiovascular Disease, Kidney Disease, Diabetes and Exercise
586	Functional Genetics/Genomics
587	Acute Exercise Responses
588	Exercise, Health and Disease
589	Metabolism and Energetics of Muscle and Related Disease
590	Temperature Regulation and Biological Timekeeping
591	NCAR Section Young Investigator Poster Presentations
592	Autonomic Circuitry in Thermoregulation or Metabolism
593	Sympathetic Regulation in Heart Failure
594	Sympathetic Control of the Circulation
595	Arterial Baroreflex Function and Blood Pressure Regulation
596	Sympathetic and Parasympathetic Regulation in Disease
597	Central Regulation of Body Fluid Homeostasis
598	Interrogating Neuronal Circuits Mediating Body Fluid Homeostasis
599	CNS: Other
600	Neurotransmission and Signaling Molecules
601	Oxygen Sensing: The Carotid Bodies and Beyond
602	Scholar Trainee Highlights
603	Diabetes, Insulin Resistance and Obesity I
604	Obesity and Satiety
605	Adipocyte Function and Metabolism

Session #	Session Title
606	Pancreatic Hormones and Diabetes
607	Pancreatic Physiology and Pathophysiology
608	Liver Physiology and Pathophysiology
609	Effects of Diet and Metabolites on Mucosal Immunology
610	Gastrointestinal Cancer and Metastasis
611	Nuclear receptors in the liver and GI tract
612	Cell Plasticity and Repair and Disease Mechanisms in the Stomach, Liver and Intestine
613	Immunology and Microbiology of the Gut
614	Cell and Molecular Processes in Cancer Metastasis
615	Stem Cells, Cell Growth, Development, Differentiation, and Autophagy
616	Apoptosis, Cell Stress, and Cell Death
617	Cellular Responses to Inflammation
618	Oxidative Stress, Mitochondrial Metabolism and Redox Changes in Health and Disease
619	Renal Effects of Hormones, Autacoids and Oxidative Stress
620	Renal Ion Transport, Transporter Regulation and Trafficking
621	Water, Urea and Solute Transport
622	Cell Volume, Osmoregulation, and Water Transport
623	pH Homeostasis and Acid-Base Transport
624	Epithelial Transport Group I
625	Control of Breathing: Respiratory Plasticity
626	Lung Physiology: Airway Responsiveness and Smooth Muscle Cell Biology
627	Lung Physiology: Biomechanics, Surfactant and Gas Exchange
628	Lung Physiology: Vascular Smooth Muscle Regulation
629	Innovations in Physiology Education I
630	Innovations in Physiology Education II

# Poster Sessions:

## Monday, April 23


Session #	Session Title
703	Microvascular Cell Signaling Pathways
704	Microvascular Flow Regulation/Oxygen Delivery/Networks
705	Vasomotor Control: Endothelium/Smooth Muscle/Nerves
706	Permeability/Fluid and Solute Exchange/Glycocalyx
707	Microvascular Mechanics/Hemodynamics/Rheology
708	Pericytes and Stem Cells
709	Tissue-Microvessel Interactions/Extracellular Matrix
710	Microvascular Pathophysiology-Pharmacology, Therapeutics and Translational Aspects
711	Kaley Award Featured Topic: Cerebral Vascular Dysfunction and Impaired Cognitive Function
712	Cerebral Circulation
713	Regulation of Blood Flow in Health and Disease
714	Blood Pressure Regulation
715	Hypertension I
716	Kidney and Immunity in Hypertension
717	Myocardial Ischemia and Infarction
718	Innate and Adaptive Immunity in Cardiovascular Physiology
719	Diabetes, Insulin Resistance and Obesity II
720	Diabetic Renal Disease
721	Renal Hemodynamics and GFR
722	Vascular Responses to Exercise and Environmental Stress
723	Ergogenics and Detection
724	Exercise and Nutrition
725	Neural Control of the Circulation during Exercise
726	Getting Blood to Where it Needs to Go: Emerging Mechanisms Regulating Skeletal Muscle Blood Flow in Health and Disease
727	Intermittent Hypoxia and Oxidative Stress
728	Cellular Responses to Hypoxia
729	Placental Hypoxia and Ischemia
730	Differences in Autonomic Regulation in Aging or Sex
731	Autonomic Balance: Sympathetic and Parasympathetic
732	Central Regulation of Autonomic Control: Hypothalamus
733	Central Regulation of Autonomic Control: Brain Stem
734	Central Regulation of Autonomic Control: CNS
735	Inflammation and Autonomic Regulation
736	Sympathetic Activation in Kidney Disease

Session #	Session Title
737	Psychological Stress Disorders: Novel Concepts and Mechanisms
738	Astrocyte and Neuroglial Interactions
739	Brain Development and Aging
740	Neuroinflammation/Neuroprotection and Ischemia
741	Neuroendocrinology/Neuroimmunology
742	Control of Breathing: Development
743	Control of Breathing: Respiratory Motoneurons and Muscles
744	Lung Physiology: Airway Epithelial Cell Biology
745	Lung Physiology: Alveolar Epithelial Cell Biology
746	Lung Physiology: Signal Transduction and Intercellular Communication in Lung Plasticity, Injury and Repair
747	Epithelial Transport Group II
748	Physiology and Pathophysiology of Barriers in Endothelia, Epithelia, and the Blood Brain Barrier
749	Transporters for Transmitters, Nutrients, Metabolites, and Drugs
750	Ion Channels, Transporters, and Pumps in Health and Disease
751	Trafficking, Membrane Domains, Polarity, and Protein Targeting
752	microRNAs in Health and Disease
753	Non-Coding RNA: miRNA, siRNA, and Long ncRNA
754	From Gene to Function of Complex Traits: Analysis of Genes Identified in Human GWAS and Animal Models
755	Genetics, Genomics, Gene Expression, and Epigenetics
756	GI Hormones, Peptides and Receptors
757	Gastrointestinal Nutrient Sensors
758	Gastric Physiology and Pathophysiology
759	Effects of Diet on GI and Liver Physiology
760	Alcoholic and Nonalcoholic Fatty Liver Diseases
761	Barrier Function and Repair
762	Nutrient Metabolism in the Gut
763	Impact of Diet and Electrolytes on Blood Pressure Regulation
764	Gastrointestinal Motility
765	Microbiome of the GI Tract
766	Gut-Brain Interactions and Control of Feeding Behavior
767	Nutrition and Nutrient Metabolism I
768	Exercise, Muscle and Bone Metabolism
769	Nutritional Regulation of Sarcopenia and Muscle Regeneration
770	Smooth Muscle, Physiology/Pharmacology
771	Redox Biology: A Unifying Theme in the Etiology of Human Diseases
772	Innovations in Physiology Education I
773	Innovations in Physiology Education II

# Poster Sessions:

## Tuesday, April 24

Session #	Session Title
843	Novel Discoveries in Vascular Physiology
844	Novel Approaches, Techniques and Models in Water and Electrolyte Research
845	Protective Mechanisms in the Vasculature
846	Endothelial Cell Biology in Health and Disease I
847	Hypertension II
848	Cardiac Function, Dynamics and Electrophysiology I
849	Acute Kidney Injury
850	Systems Biology and Sex Differences
851	Nutrition, Exercise and Metabolic Syndrome
852	Regulation of Cardiac Skeletal/Muscle Contraction
853	Exploring Novel Mechanisms to Improve Exercise Tolerance in Health and Disease
854	Cardiac Responses to Exercise
855	Exercise Training Responses
856	Muscle Atrophy and Hypertrophy
857	Muscle Plasticity and Gene Regulation/Expression
858	Physiological Adaptations to Hypoxia: From Mountain Top to Ocean Bottom
859	The Effects of Environmental Challenges on Performance and Metabolism
860	Comparative Cardiovascular and Respiratory Function
861	Comparative Metabolic, Endocrine and Muscle Physiology
862	Evolutionary Physiology
863	Systems Biology, Computational Modeling, and Bioinformatics
864	Cell Signaling: Proteins, Pathways, and Mechanisms
865	Orai and STIM Proteins in Calcium Signaling
866	Prokaryotic Transport, Metabolism, and Cell Signaling in Nutrition, Health, and Disease
867	Extracellular Matrix, Cell Interactions, and Tissue Organization
868	Epithelial Mechano-sensitivity in Health and Disease
869	Cell Migration, Contractility, Cytoskeleton, and Adhesion
870	Immune Modulation of Blood Pressure and Vice Versa
871	Intestinal Inflammation and Pathophysiology
872	GI and Liver Stem Cells
873	GI and Liver Physiology and Disease
874	Microbes and Nutrition



Session #	Session Title
875	Prebiotics, Probiotics and Gut Function
876	Metal Ion Transport
877	Cognition and Behavior
878	Neuroexcitability, Neurotransmission and Neuroplasticity
879	Mitochondrial Function in Endocrinology and Metabolism
880	Neuroendocrinology, Hypothalamus and Pituitary
881	Stress and Trauma
882	Reproduction, Sex Hormones, and Gestational Biology
883	Developmental Programming and Cardio-Renal Function
884	Battle of the Reflexes: Chemo- versus Baroreflexes during Physiological Stressors, Aging and Cardiovascular Disease
885	Hot Topics in Autonomic Regulation
886	Chemoreflex Function and Autonomic Regulation
887	Autonomic and Respiratory Interactions
888	Autonomic Regulation of Neuroendocrine Function
889	Autonomic Regulation of Body Fluid Volume
890	Autonomic Adjustments to Behavioral Stress
891	Autonomic Adjustments to Exercise
892	Lung Physiology: Pulmonary Arterial Hypertension
893	Control of Breathing: Connectivity, Neuromodulation and Neurotransmission
894	Control of Breathing: Chemoreception

# Poster Sessions:

## Wednesday, April 25

Session #	Session Title
895	Mathematical models of organ systems, tissues or cells
896	Mechanobiology
897	Regenerative Medicine
898	Tissue Engineering
899	Mechanotransduction in Cardiovascular Function
900	Post-Translational Modifications in Cardiovascular Disease
901	Cardiac Function, Dynamics and Electrophysiology II
902	Endothelial cell biology in health and disease II
903	Heart Failure
904	Renin-Angiotensin-Aldosterone System in Regulation of Blood Pressure and Renal Function
905	Stress, Sleep, Circadian Rhythms and Blood Pressure Regulation
906	Cardiovascular and Renal Mechanisms of Hypertension, Metabolic Syndrome and Diabetes
907	Exercise and Skeletal Muscle as Key Regulators of Whole Body Aging
908	Role and Importance of Mitophagy in Skeletal Muscle Health and Disease
909	Altitude and hypoxia
910	Fluid Balance, Blood Volume Regulation and Trauma
911	Fluid Balance and Blood Pressure Regulation during Pregnancy
912	Reduced Gravity and Hyperbaric Environments
913	Control of Breathing: Integrated Responses
914	Control of Breathing: Influence of State on Cardiorespiratory Control Mechanisms
915	Control of Breathing: Rhythm Generation
916	Lung Physiology: Development and Plasticity
917	Lung Physiology: Endothelial Cell Biology
918	Sympathetic Regulation in Hypertension
919	Sympathetic Regulation in Diabetes and Obesity
920	Autonomic Control and Autoregulation of the Cerebral Circulation
921	The Gut-Brain Axis
922	Blood-Brain Barrier, Brain Blood Flow and Metabolism
923	Central Regulation of Food Intake and Body Weight
924	Brain-Gut Microbiota Interactions in Cardiovascular and Metabolic Control
925	Nutrition and Nutrient Metabolism II



# Late Breaking Poster Sessions:

## Wednesday, April 25

Session #	Session Title
19601	Teaching of Physiology
19602	Comparative and Evolutionary Physiology
19603	Translational Physiology
19604	Sex Differences in Physiology
19605	Biomedical Engineering
19606	Environmental and Exercise Physiology
19607	Microcirculation
19608	Cardiovascular
19609	Water and Electrolyte Homeostasis
19610	Renal Physiology
19611	Gastrointestinal and Liver Physiology
19619	Neural Control and Autonomic Regulation
19612	Nutrition Physiology
19613	Endocrinology and Metabolism
19614	Respiration
19615	Hypoxia
19616	Cell and Molecular Physiology
19617	Epithelial Transport
19618	Central Nervous System (CNS)
19620	Physiological Genomics
19621	Muscle Biology

## Special Events: Thursday, April 19

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### **APS Council Meeting** *(By Invitation Only)*

2:00 PM-10:00 PM, Marriot, Catalina

## Special Events: Friday, April 20

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### **APS Council Meeting** *(By Invitation Only)*

7:30 AM-6:00 PM, Marriot, Catalina

### **APS Joint Council/Section Advisory Committee Meeting** *(By Invitation Only)*

7:00 PM-10:00 PM, Marriot, Mission Hills

### **APS Section Advisory Committee Meeting** *(By Invitation Only)*

1:00 PM-6:00 PM, Marriot, Malibu

## Special Events: Saturday, April 21

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### **APS 51st Non-annual Control of Respiration Mixer 2018** *(By Invitation Only)*

6:30 PM-10:00 PM, Marriot, San Diego Ballroom Salon C

### **APS Animal Care and Experimentation Committee Meeting** *(By Invitation Only)*

8:30 AM-11:00 AM, Marriot, Malibu

### **APS CaMPS Steering Committee Meeting** *(By Invitation Only)*

2:30 PM-4:30 PM, Marriot, Coronado Room

### **APS Cardiovascular Section Programming Committee Meeting** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, Coronado Room

### **APS CNS Section Steering Committee Meeting** *(By Invitation Only)*

11:00 AM-1:30 PM, Marriot, Presidio

### **APS Committee on Committee Meeting** *(By Invitation Only)*

8:00 AM-11:00 AM, Marriot, Coronado Room

### **APS Frontiers in Physiology Research Community Leader Orientation**

*(By Invitation Only)*

2:30 PM-5:00 PM, Marriot, Conference Room 2

### **APS Joint Program Committee Meeting** *(By Invitation Only)*

8:00 AM-12:00 PM, Marriot, Mission Hills

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**APS Minority Travel Fellow Orientation and Porter Reunion Reception**

*(By Invitation Only)*

3:00 PM-5:30 PM, Marriot, Marriott Grand Ballroom 10

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**APS NCAR Steering Committee Meeting *(By Invitation Only)***

11:00 AM-1:00 PM, Marriot, Newport Beach

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**APS Pan Am Congress Meeting *(By Invitation Only)***

1:30 PM-5:00 PM, Marriot, Catalina

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**APS Physiologic Genomics Group Steering Committee Meeting *(By Invitation Only)***

5:30 PM-7:00 PM, Convention Center, Room 28A

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**APS Physiological Genomics Editor Retreat *(By Invitation Only)***

8:00 AM-12:00 PM, Marriot, Torrey Pines 2

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**APS Physiology EIC Meeting *(By Invitation Only)***

12:00 PM-1:30 PM, Marriot, Malibu

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**APS President's Reception *(By Invitation Only)***

8:00 PM-11:00 PM, Marriot, Marina Ballroom DEF

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**APS Renal Section Steering Committee Meeting *(By Invitation Only)***

12:00 PM-1:30 PM, Marriot, Dana Point

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**APS Teaching Section Steering Committee Meeting *(By Invitation Only)***

12:00 PM-2:00 PM, Marriot, Leucadia

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**APS Undergraduate Orientation *(By Invitation Only)***

3:30 PM-5:30 PM, Marriot, Marriott Grand Ballroom 12-13

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**APS WEH Section Steering Committee Meeting *(By Invitation Only)***

11:00 AM-2:00 PM, Marriot, La Costa

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**APS WEH Section Trainee Symposium and Data Diuresis**

2:00 PM-5:00 PM, Convention Center, Room 26AB

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**IUPS 2018 *(By Invitation Only)***

1:30 PM-6:00 PM, Marriot, Newport Beach

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**IUPS ExCo Meeting *(By Invitation Only)***

9:00 AM-5:00 PM, Marriot, Laguna

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# Special Events: Sunday, April 22

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## **Accelerating the impact of your research: managing your dissemination with Kudos**

12:00 PM-12:20 PM, Convention Center, Exhibit Hall

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## **APS AJP-Cell Physiology Editorial Board Meeting** *(By Invitation Only)*

7:30 AM-8:30 AM, Marriot, Marriott Grand Ballroom 4

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## **APS AJP-Endocrinology & Metabolism EIC Meeting** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, Conference Room 3

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## **APS AJP-Gastrointestinal and Liver Physiology Editor Meeting** *(By Invitation Only)*

12:00 PM-2:00 PM, Marriot, Conference Room 2

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## **APS AJP-Lung, Cellular & Molecular Physiology EIC Meeting** *(By Invitation Only)*

12:30 PM-2:00 PM, Marriot, Dana Point

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## **APS Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award Lecture**

12:00 PM-1:30 PM, Marriot, Marriott Grand Ballroom 9

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## **APS Cardiovascular Section Steering Committee Meeting** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, Catalina

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## **APS CEPS Steering Committee Meeting** *(By Invitation Only)*

8:30 AM-10:30 AM, Marriot, Dana Point

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## **APS Communications Committee Meeting** *(By Invitation Only)*

12:30 PM-2:00 PM, Marriot, Palomar

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## **APS David Bruce Undergraduate Poster Session & Horwitz/Horowitz Awards Ceremony**

3:00 PM-5:30 PM, Convention Center, Sails Pavilion

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## **APS Davson Trainee Breakfast Poster Blitz** *(By Invitation Only)*

7:00 AM-10:00 AM, Marriot, Marriott Grand Ballroom 1

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## **APS Editorial Boards Meeting Breakout 2** *(By Invitation Only)*

7:00 AM-8:30 AM, Marriot, San Diego Ballroom Salon B

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## **APS Editorial Boards Meeting Breakout 3** *(By Invitation Only)*

7:00 AM-8:30 AM, Marriot, San Diego Ballroom Salon C

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## **APS Editorial Boards Meeting Main Group/Breakout 1** *(By Invitation Only)*

7:00 AM-8:30 AM, Marriot, San Diego Ballroom Salon A

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**APS Endocrinology and Metabolism Section Steering Committee Meeting**

*(By Invitation Only)*

11:00 AM-2:00 PM, Marriot, Malibu

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**APS Environmental & Exercise Physiology Section Program Committee Meeting**

*(By Invitation Only)*

2:00 PM-4:00 PM, Marriot, Catalina

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**APS Environmental & Exercise Physiology Section Steering Committee Meeting**

*(By Invitation Only)*

4:30 PM-6:30 PM, Marriot, Palomar

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**APS Environmental Exercise Physiology Section Adolph Lecturer & Trainee Luncheon**

*(By Invitation Only)*

12:00 PM-1:00 PM, Marriot, Miramar

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**APS ETG Steering Committee Meeting**

*(By Invitation Only)*

12:30 PM-2:00 PM, Marriot, Mission Hills

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**APS GI & Liver Meet-the-Experts Breakfast**

8:00 AM-9:30 AM, Marriot, Miramar

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**APS Horwitz/Horowitz Award Poster Judging**

*(By Invitation Only)*

9:00 AM-1:00 PM, Convention Center, Sails Pavilion

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**APS Journal of Neurophysiology EIC Meeting**

*(By Invitation Only)*

11:00 AM-12:30 PM, Marriot, Conference Room 1

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**APS Medical Physiology Course Directors Meeting**

*(By Invitation Only)*

2:00 PM-3:30 PM, Marriot, Newport Beach

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**APS Physiological Reports Editorial Board Meeting**

*(By Invitation Only)*

7:30 AM-9:00 AM, Marriot, Balboa

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**APS Physiological Reports EIC Meeting**

*(By Invitation Only)*

10:00 AM-11:00 AM, Marriot, La Costa

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**APS Physiologists in Industry Committee Meeting**

*(By Invitation Only)*

12:30 PM-2:00 PM, Marriot, La Costa

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**APS Physiologists in Industry Mixer**

6:45 PM-8:00 PM, Marriot, Oceanside

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**APS Physiology Understanding Week Poster Session**

7:00 AM-9:00 AM, Marriot, Marina Ballroom DE

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**APS Porter Physiology Development & Minority Affairs Committee Meeting**

*(By Invitation Only)*

11:00 AM-12:30 PM, Marriot, Newport Beach

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**APS Publications Committee Banquet** *(By Invitation Only)*

7:00 PM-11:00 PM, Marriot, San Diego Ballroom ABC

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**APS Renal Section Posters & Professors**

5:30 PM-7:30 PM, Marriot, Marina Ballroom Salon F

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**APS Respiration Section Trainee Highlights Breakfast**

7:30 AM-10:00 AM, Marriot, Marriott Grand Ballroom 3

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**APS Science Policy Committee Meeting** *(By Invitation Only)*

8:00 AM-10:00 AM, Marriot, Mission Hills

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**APS Teaching Section Roundtable Box Luncheon**

12:00 PM-1:00 PM, Convention Center, Room 20BC

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**Experimental Biology Christian Fellowship**

7:00 PM-9:00 PM, Marriot, Miramar

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**Graduate Program Director Meeting** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, Marriott Grand Ballroom 1

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**Olympus FV3000RS: Industry Fastest in Speed and Sensitivity**

11:00 AM-11:20 AM, Convention Center, Exhibit Hall

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**Stop synergy or drug-drug combinations from blowing your mind!**

11:30 AM-11:50 AM, Convention Center, Exhibit Hall

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**Water and Electrolyte Homeostasis Section Luncheon**

*(Tickets must be purchased in advance)*

12:30 PM-2:00 PM, Roy's San Diego Waterfront, 333 West Harbor Drive

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## Special Events: Monday, April 23

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**APS - AJP-Renal Physiology EIC Meeting** *(By Invitation Only)*

7:30 AM-9:00 AM, Marriot, Malibu

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**APS AJP-Heart & Circulatory Physiology EIC Meeting** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, Palomar

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**APS Association of Chairs of Departments of Physiology (ACDP) Meeting**

*(By Invitation Only)*

4:30 PM-5:30 PM, Marriot, Malibu

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**APS Awards Committee Meeting** *(By Invitation Only)*

12:30 PM-1:30 PM, Marriot, Mission Hills

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**APS Book Committee Meeting** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, Dana Point

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**APS Career Opportunities in Physiology Committee Meeting** *(By Invitation Only)*

12:30 PM-2:00 PM, Marriot, Newport Beach

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**APS Chapter Advisory Committee Meeting** *(By Invitation Only)*

12:00 PM-2:00 PM, Marriot, Balboa

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**APS CNS Section Social**

5:30 PM-7:30 PM, Marriot, Marriott Grand Ballroom 1

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**APS Comparative and Evolutionary Physiology Section Meeting** *(By Invitation Only)*

8:30 AM-10:30 AM, Marriot, Coronado Room

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**APS Early Career Advocacy Fellowship Luncheon**

12:00 PM-2:00 PM, Marriot, Malibu

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**APS EEP Business and Awards Meeting** *(By Invitation Only)*

5:00 PM-8:00 PM, Marriot, Marriott Grand Ballroom 6

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**APS Endocrinology and Metabolism Section Business Meeting and Awards Reception**

6:00 PM-9:00 PM, Marriot, Marina Ballroom Salon F

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**APS Environmental & Exercise Physiology Section Social Mixer** *(By Invitation Only)*

8:00 PM-10:00 PM, Marriot, Marriott Grand Ballroom 3

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**APS Gastrointestinal & Liver Section Trainee Symposium**

3:00 PM-6:00 PM, Marriot, Marriott Grand Ballroom 8-9

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**APS GI & Liver Section Banquet and Business Meeting**

*(Tickets must be purchased in advance)*

6:30 PM-9:30 PM, Quad Alehouse, 868 Fifth Ave

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**APS Graduate Student Ambassador Program** *(By Invitation Only)*

9:00 AM-11:00 AM, Marriot, La Costa

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**APS International Liaison Committee for Microcirculation Meeting** *(By Invitation Only)*

8:00 AM-10:00 AM, Marriot, Catalina

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**APS International Physiology Committee Meeting** *(By Invitation Only)*

12:00 PM-2:00 PM, Marriot, Catalina

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**APS Journal of Applied Physiology EIC Meeting** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, La Costa

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**APS Membership and FAPS Committee Meeting** *(By Invitation Only)*

7:00 AM-10:00 AM, Marriot, Mission Hills

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**APS Minority Travel Fellow Networking Lunch** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, Marina Ballroom Salon D

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**APS Physiology for Life Science Students Workshop** *(By Invitation Only)*

12:30 PM-4:00 PM, Marriot, Marina Ballroom Salon F

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**APS Physiology for Life Science Teacher Student Workshop Lunch**

11:30 AM-12:30 PM, Convention Center, Room 20C

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**APS Physiology for Life Science Teachers Workshop** *(By Invitation Only)*

12:30 PM-4:00 PM, Marriot, Marina Ballroom Salon G

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**APS Physiology Journal Managing Board Meeting** *(By Invitation Only)*

10:15 AM-11:30 AM, Marriot, Dana Point

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**APS Physiology Majors Interest Group Networking Discussion (P-MIG)**

2:00 PM-3:30 PM, Marriot, Marriott Grand Ballroom 4

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**APS Physiology Workshop for Life Science Teachers and Students** *(By Invitation Only)*

8:00 AM-12:00 PM, Marriot, Marina Ballroom Salon E

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**APS Renal Section Banquet/Dinner** *(Tickets must be purchased in advance)*

6:00 PM-10:00 PM, Adventure Hornblower Cruise, Marriott Marina F Dock

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**APS Respiration Section Steering Committee Meeting** *(By Invitation Only)*

12:00 PM-2:00 PM, Marriot, Coronado Room

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**APS Teaching Section Banquet Dinner** *(Tickets must be purchased in advance)*

7:00 PM-10:00 PM, The Fish Market, 750 North Harbor Drive

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**APS Teaching Section Business Meeting**

5:30 PM-7:00 PM, Marriot, Marina Ballroom Salon G

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**APS Trainee Advisory Committee Meeting** *(By Invitation Only)*

11:00 AM-12:30 PM, Marriot, Newport Beach

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**ASIOA Annual Award Ceremony**

5:00 PM-10:30 PM, Marriot, Marriott Grand Ballroom 13

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**Cardiovascular Section Banquet** *(Tickets must be purchased in advance)*

6:00 PM-10:00 PM, San Diego Central Library, 330 Park Blvd.

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**Cell and Molecular Physiology Section Banquet** *(Tickets must be purchased in advance)*

6:00 PM-10:00 PM, The Harbor House San Diego, 831 West Harbor Drive

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**Comparative and Evolutionary Physiology Section Banquet**

*(Tickets must be purchased in advance)*

7:00 PM-10:00 PM, Horton Grand Hotel, 311 Island Ave



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**Comparative and Evolutionary Physiology Section Trainee Mixer** *(Tickets must be purchased in advance [trainees only])*

5:00 PM-7:00 PM, Horton Grand Hotel, 311 Island Ave

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**Decoding Quantitative Western Blotting**

12:30 PM-12:50 PM, Convention Center, Exhibit Hall

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**EB Y.E.S. Mixer**

9:00 PM-11:00 PM, Marriot, TBD

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**GIL Programming Committee Meeting** *(By Invitation Only)*

12:00 PM-1:00 PM, Marriot, Conference Room 3

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**Microcirculatory Society Membership Business Meeting**

4:30 PM-5:30 PM, Convention Center, Room 20A

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**NCAR Reception and Awards**

6:30 PM-8:30 PM, Marriot, Marriott Grand Ballroom 2

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**NIH F Awards: Navigating NIH Programs to Advance Your Career**

9:00 AM-10:30 AM, Convention Center, Room 31A

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**NIH K Awards: Navigating NIH Programs to Advance Your Career**

11:30 AM-1:00 PM, Convention Center, Hall D, CRC-3

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**Nutritional Physiology Interest Group Committee Meeting** *(By Invitation Only)*

4:00 PM-5:00 PM, Marriot, Dana Point

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**Physiological Genomics Group Luncheon and Awards Ceremony**

*(Tickets must be purchased in advance)*

12:00 PM-1:30 PM, The Old Spaghetti Factory, 275 Fifth Ave

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**Respiration Section Banquet** *(Tickets must be purchased in advance)*

7:30 PM-10:00 PM, The Harbor House San Diego, 831 West Harbor Drive

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**Respiration Section Trainee Networking Session and Mixer**

*(Tickets must be purchased in advance (trainees only))*

6:30 PM-7:30 PM, The Harbor House San Diego, 831 West Harbor Drive

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**Translational Physiology Steering Committee** *(By Invitation Only)*

12:00 PM-2:00 PM, Marriot, Conference Room 1

# Special Events: Tuesday, April 24

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## **APS Advances in Physiology Education EIC Meeting** *(By Invitation Only)*

7:30 AM-9:00 AM, Marriot, Malibu

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## **APS AJP-Cell Physiology EIC Meeting** *(By Invitation Only)*

7:00 AM-8:30 AM, Marriot, Newport Beach

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## **APS AJP-Regulatory, Integrative & Comparative Physiology EIC Meeting**

*(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, Malibu

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## **APS Comprehensive Physiology Advisory Board Meeting** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, La Costa

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## **APS Conference Committee Meeting** *(By Invitation Only)*

7:00 AM-8:30 AM, Marriot, Coronado Room

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## **APS Education Committee Meeting** *(By Invitation Only)*

11:00 AM-12:30 PM, Marriot, Newport Beach

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## **APS Frontiers in Physiology Research Community Leader Awards** *(By Invitation Only)*

8:30 AM-10:00 AM, Marriot, Marina Ballroom Salon E

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## **APS GIL Section Steering Committee Meeting** *(By Invitation Only)*

12:15 PM-1:15 PM, Marriot, Dana Point

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## **APS History of Physiology Business Meeting and Lecture**

12:30 PM-2:00 PM, Marriot, Marriott Grand Ballroom 3-4

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## **APS Joint Program Committee Meeting** *(By Invitation Only)*

12:00 PM-2:00 PM, Marriot, Marina Ballroom Salon D

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## **APS PECOP Networking Session**

2:00 PM-4:00 PM, Marriot, Balboa

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## **APS Respiration Section Programing Committee Meeting** *(By Invitation Only)*

11:45 AM-1:00 PM, Marriot, Marriott Grand Ballroom 9

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## **APS Teaching Section Trainee Networking Session**

4:30 PM-5:30 PM, Marriot, La Costa

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## **APS Trainee Advisory Committee Luncheon Mixer** *(By Invitation Only)*

12:00 PM-1:30 PM, Marriot, Mission Hills

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## **APS Women in Physiology Committee Meeting** *(By Invitation Only)*

12:30 PM-2:00 PM, Marriot, Newport Beach

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**Muscle Biology Interest Group Committee Meeting** *(By Invitation Only)*

12:30 PM-1:30 PM, Marriot, Conference Room 2

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**NIH F Awards: Navigating NIH Programs to Advance Your Career**

12:00 PM-1:30 PM, Convention Center, Hall D, CRC-2

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**NIH K Awards: Navigating NIH Programs to Advance Your Career**

9:00 AM-10:30 AM, Convention Center, Room 31A

## Special Events: **Wednesday, April 25**

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**APS Council Meeting** *(By Invitation Only)*

7:30 AM-9:30 AM, Marriot, Catalina

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**APS Minority Travel Fellow Luncheon** *(By Invitation Only)*

12:00 PM-2:00 PM, Marriot, Marina Ballroom Salon E

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**EB2018 Resume Critique & Career Counseling**

9:00 AM-12:00 PM, Convention Center, Exhibit Hall

# APS SCIENCE POLICY

How can you **get involved** with  
APS' Science Policy office?

## SPEAK UP FOR SCIENCE

**Join an APS committee.**

[the-aps.org/Nominations](http://the-aps.org/Nominations)

## BUILD UP YOUR ADVOCACY SKILLS

**Apply for an APS fellowship.**

[the-aps.org/AdvocacyFellowship](http://the-aps.org/AdvocacyFellowship)

## KEEP UP WITH THE CONVERSATION

**Follow us on Twitter.**

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## READ UP ON SCIENCE POLICY NEWS

**Subscribe to APS' science policy  
e-newsletter.**

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## PICK UP A SCIENCE POLICY BUTTON

**Wear your support at EB.**

#ActualLivingScientist buttons available at  
booth #1630.

Stop by  
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learn how  
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"Being a member of APS  
has given me the opportunity  
to meet with my legislators  
and their staff on Capitol Hill  
to advocate for increased  
federal funding for biomedical  
research."

—John Chatham



For a complete current listing, visit  
**[the-aps.org/SciencePolicy](http://the-aps.org/SciencePolicy)**.



Notes:

Handwriting practice lines consisting of multiple sets of three horizontal dotted lines for letter formation.



# APS MEETINGS & CONFERENCES

The American Physiological Society (APS) holds specialty conferences each year. In addition, APS joins with other societies to sponsor Intersociety Meetings as interest warrants.

## UPCOMING EVENTS

**2018 Institute on Teaching and Learning Workshop**  
June 18–22 • Madison, WI

**2018 Cardiovascular, Renal and Metabolic Diseases:  
Sex-Specific Implications for Physiology**  
September 30–October 3 • Knoxville, TN

**2018 Intersociety Meeting,  
Comparative Physiology: Complexity and Integration**  
October 25–28 • New Orleans, LA

**2019 Control of Renal Function in Health and Disease**  
June 23–29 • Charlottesville, VA

**2019 The Interface of Mathematical Models and  
Experimental Physiology: Organ Function from the  
Microvascular Perspective**  
September • Scottsdale, AZ

**2019 9th Annual International Conference of  
Aldosterone and ENaC in Health and Disease: The  
Kidney and Beyond**  
October 2–6 • Estes Park, CO

APS members receive discounted  
registration to EB and APS conferences.



For our complete current listing, visit  
[the-aps.org/conferences](http://the-aps.org/conferences).



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