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91st President of the APS

Jeff M. Sands

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I was very pleasantly surprised and deeply honored when I got the call from Marty Frank informing me that I had been elected the 91st President of APS. I have been an APS member since 1986, almost as long as Marty has been Executive Director. One of the many joys of being elected was the opportunity to work closely with Marty throughout my presidency. I doubt that you can imagine my shock and surprise when Marty announced his plans to retire! Mere words cannot convey the debt of gratitude that I and all APS members owe Marty for his many decades of service and leadership as Executive Director of APS.

I have been active in section, committee, journal, or council activities since 1992. As a result, I have been privileged to know and work with many distinguished APS presidents and members. I greatly appreciate the faith shown by the membership in electing me to serve as the 91st president. This is especially true since I have an MD degree rather than a PhD in Physiology. Although I self-identify as a renal physiologist first and a nephrologist second when I introduce myself around the council or study section table, the honor of being elected president of the APS means to me that I have been accepted by the membership as a true member of the physiology community. I am truly appreciative of this honor.

My association with Physiology goes back a ways. I started doing Physiology research as an undergraduate. As a college junior, I was looking for an opportunity to perform research that would be the basis for a senior honors thesis. Although I was majoring in Applied Math, my advisor suggested that I talk to a medical school faculty member in the Department of Physiology who was willing to take on an undergraduate student. I did so, and I have been engaged in physiology research ever since. My mentor told me that to be a true physiologist, one must publish in AJP. I am not sure whether impact factors even existed back then, but the scientific stature of the APS publications was the predominant factor in where I was encouraged to publish. I was able to continue doing research during medical school in the summers and during my elective time in the fourth year. I presented posters at scientific meetings during medical school, and, as a result, I missed dermatology every year, and I still struggle to diagnose a rash. After clinical training, I returned to the lab as a post-doc at the NIH.

My background, which is atypical for an APS president, forms the basis of my vision for APS. I am passionate about physiology, proud to call myself a physiologist, and still get excited whenever I have a paper accepted in an APS journal. In my dual role as a physician and a scientist, I understand how physiology is the basis of medicine. As medicine residents proceed through their training, they often ask me about the physiological basis for how they treat patients so that they can understand why a therapy works, or, more importantly, why it may not work in a specific patient. The further along they get in their training, the more they appreciate the importance of physiology to medicine. I encourage

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Natalie C. Tronson


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With all the excitement and energy of starting a new lab, one of the Big Things is recruiting graduate students to work with you. It seems easy enough; I mean, you are younger and less jaded than many of your colleagues, you have the cutting-edge new techniques at your fingertips, or you will once you have the brand-new shiny equipment[1] in the lab and running, you have start-up money to burn through, and you have that very recent memory of all the good—and bad—mentoring from your graduate school and postdoctoral experiences. Surely everyone will want to work with you!

But there are a couple of problems that come up: the big one is that people don't know your lab exists yet. Another that comes up is that belief that good mentoring comes from people with well-established labs. Both of these impact who will apply to your lab, and the latter will also impact who will accept an offer to join.

There are a few strategies for finding and increasing applicants. Some are obvious, and some seem obvious in retrospect, after seeing other people successfully use them.

Getting Applications

1) **Your department's/program's applicant pool.** The easiest strategy is to rely on your program's applicant pool, and hope that enough applicants are interested in your general field of research. Although you might not be on the list of an applicant's possible mentors, if there are individuals whose research interests fit with your lab, reach out to them. This is great when it works, but it isn't usually enough.

2) **Word of mouth.** Tell friends, mentors, and other people in your field that you are looking to recruit graduate students, and ask them to pass that information on to undergraduates/masters students looking to apply to grad school. If they have students looking to apply to graduate school, or inquiries from potential applicants, they will know to suggest you as someone to contact.

3) **Make sure colleagues in your department/program know you are looking.** Make sure everyone knows, but particularly those people who have some overlap in research area. More established PIs get more e-mails of interest, and they will be able to suggest students contact you instead/as well as them. Be sure to ask your colleagues to do this.

4) **Advertise.** This one sounds obvious, but it wasn't something I ever thought about until I saw someone do it. I'm not talking about a sign at a poster at a major meeting (but do that too!), I'm talking about ads in society journals/job posting sites. Colleagues who have done this have had a much larger pool of applicants to choose from and have the opportunity to ask students to contact them before applying, helping with the application process and allowing some to apply for fellowships (e.g., NSF GFRP) before starting graduate school. Advertising is especially useful if you do interdisciplinary work, and students from one field might not see your lab listed in a totally different kind of department.

5) **Reply to e-mails expressing interest.** As soon as your lab website or faculty profile is live, you will probably receive at least a few e-mails from interested students asking whether you are planning to take on a student the following fall. Reply, *Yes! You are definitely recruiting.*[2] But go further. In your reply, e-mail-introduce them to graduate students in the program or graduate students/undergrads who were in the lab you came from (get

[1]Including the machine that goes *ping*.

[2]Yes, Captain Obvious. But make it a priority so those e-mails don't get lost in your inbox. Also, there is recent data showing that there are racial disparities for whose e-mails get responses, so have a strategy (an enthusiastic form e-mail, for example) to ensure you can easily respond to everyone.

their permission first, of course) and encourage the applicants to get in contact with them. Offer to talk on the phone or via Skype. Provide additional details about the program and application process, and take it as an opportunity to show your enthusiasm and willingness to help.

6) **Departmental recruiting events.** Just say *Yes!* This is essentially free advertising for your lab, geared toward students already interested in your program/department. Be a part of your program's table at graduate fairs. If you are in a rotation program, this also applies to student-run events, and invitations to speak at the weekly seminar, department/program retreat, or other events. Increasing your visibility to current graduate students means you will be someone who "springs to mind" when students are talking about labs, and word of mouth is extremely helpful for new students looking for labs to join or rotate in.

7) **Describe the advantages of being in the lab of a new PI to students interested in your lab.** Enthusiasm! Time to be hands-on! Students will learn techniques from you rather than from the person who learned it from the post-doc who learned it from the person who . . . learned it from you! A smaller lab means more small-group interactions. These are just some of the real advantages of being in a smaller lab.

8) **. . . and have strategies for dealing with disadvantages.** Sure, you don't have the experience mentoring graduate students, but your institution has training and support for mentors? Talk about your commitment to taking part in that. Yes, training grants often need more senior mentors. Have people in mind who could serve as co-mentors for your students (as both a fellowship-writing strategy and a standard benefit for students).

From Applications to Successful Recruiting

So you've done all this and you have a lot of applications, or at least a few. For programs that accept students directly into labs, you will have to decide on who to select. Now "How to select the perfect graduate student" could be a lot of long posts all of its own (preferably written by someone else so that I can learn from them), but there are a couple of additional things that are useful to do or keep in mind as a new PI.

1) **Serve on the graduate student application committee.** I know, I know, you've been given the (excellent) advice to not do service in your first year or so of your job. In this case, the service is very beneficial. You get to see all of the applications, so even if one doesn't mention your lab or research as a possible match, you can flag them (see *Getting Applications #1*), you get to fight harder for the motivated and promising students whom you've talked with already, and you get an insider view into how the process works, which can help advise students the following year.

2) **Think about strategy.** If you are recruiting students to start directly in your lab, then the easiest strategy for getting at least one student would be to go ahead and make offers to everyone who looks good. But there are two problems: first, you might end up with too many students, and second, chances are good that your program has limits on how many students they can accept, and so won't allow you to use that strategy anyway. Obviously, you should take the best applicant (or applicants), but what does "best" actually mean? Highest GPA? Research experience? Motivation? Absolute dedication to academia? (Probably not GRE[3]). Part of your calculation of "best" should include likelihood of joining the lab—because recruiting someone is (usually) better than not recruiting someone.[4] So get as much information about their interests and goals and so on even before interviews. Talk to everyone you would consider taking. Talk to them before applications are due, talk to them before you decide on whom to invite for interviews, call their letter writers, talk to them at interviews and again after offers go out. Ask them questions about science and research experience and future goals, but also ask about where they are applying, where they are excited to live/visit, what their ideal location would be. Yes, some are going to say "your school" and "your research" and "your town," but it can be easier to read through the lines than you expect, and many are more honest than

[3]Moneta-Koehler L, Brown AM, Petrie KA, Chalkley R. The limitations of the GRE in predicting success in biomedical graduate school. *PLoS One* 12: e0166742, 2017. doi:10.1371/journal.pone.0166742.

[4]The exception here is taking on someone you have concerns about just to have a graduate student.

you'd think. Ask colleagues to interview them and get their opinions on whether this student is likely to join the program/your lab.

Will Students Join My Lab?

Maybe! According to some of my colleagues, which students will accept an offer remains something of a mystery. But here is what we know: people make decisions about graduate school (and pretty much everything else) based on a huge number of factors, including geographic location, institution and program reputation, the students (both current and interviewing) they meet at interview/recruitment weekends, stipend levels, family, advice from others, and somewhere on that list is also the type of research and potential mentors. That is to say, rejection is often not about you, but sometimes your research, energy, genius,[5] enthusiasm, and very convincing description of "why new PIs are the best" might just be what tips the balance to a *yes*. ●

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Natalie C. Tronson Biography

Natalie C. Tronson earned her PhD from Yale University in 2006 and is currently an assistant professor in the Department of Psychology at the University of Michigan, and, along with several amazing graduate students, is working on molecular mechanisms of memory.

[5]Obviously!

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all of us to be proud to call ourselves physiologists, regardless of the department or center where we have our primary appointments.

The APS at a Time of Transition

Although APS, like everything, is constantly changing and adapting, I cannot recall a period of greater change. As I mentioned at the start of this article, Marty Frank is retiring after 33 years as executive director. Dennis Brown, our 90th President, wrote about the completion of the most recent APS strategic plan and the initial steps that have been undertaken to implement the plan (7). In addition, APS is moving its headquarters from Bethesda to Rockville due to the sale of the FASEB campus. Thus we have a perfect storm of change: the search for a new executive director, implementation of the new strategic plan, and moving the headquarters to a new location. Any one of these changes would place an enormous stress on the APS staff, let alone having all three occur at the same time.

One of my duties as president-elect is to chair the search committee to select Marty's successor. Who knew that this would be part of the job of the president-elect—it has not happened since 1985! In November, we formed a search committee consisting of Dennis Brown (current president), Jane Reckelhoff (past-president), Patricia Molina (past-past-president), David Gutterman (council), Jennifer Pollock (council), Ron Lynch (council), and Sean Stocker (SAC chair). We have hired a search firm to coordinate the search. Our goal is to select the next executive director before the Experimental Biology meeting in April so that s/he can attend the meeting and then start work in July.

One of the major recommendations that emerged from the recent strategic plan is the need to focus our resources on our primary audience: researchers, educators, and trainees (graduate students and postdoctoral fellows). This has led to an extensive and thoughtful review of virtually every aspect of the society. Seven strategic plan task forces were formed at the 2017 summer council meeting: Publications, Experimental Biology, Awards, Conferences, Governance, Education, and Social Media/Website/Communications. These task forces presented their initial findings to the Section Advisory Committee (SAC) and Council in November. The task forces received feedback from SAC and Council and are now continuing their work, with the goal of having action items to present to Council at EB in April. There are many innovative changes being considered, including development of a postdoctoral fellowship program, expanding APS conferences, and launching a new, high-impact journal. However, these are ideas that are being developed and evaluated by the task forces. There are no action items that have been fully developed and brought to Council for a vote, so it would be premature for me to write more about them at this time. I hope to do so in the update that will appear later this year in *Physiology*.

The one exception is the recommendation of the Experimental Biology (EB) task force. Making plans for EB 2018 and EB 2019 were time-sensitive and needed to be acted on at the November Council meeting. The EB meeting is undergoing a significant transition. The American Society of Nutrition left the EB meeting after the 2017 meeting. The 2018 meeting will include APS, ASPET, ASBMB, ASIP, and AAA. These five societies met last June to discuss creation of cross-society programing. It was decided that the EB 2018 meeting will start on Saturday with the Tang Lecture and opening reception for all EB attendees. Under the leadership of Robert Hester, the daily program for APS will be significantly different. The oral sessions will be 90 minutes, rather than 120 minutes. Posters will be in the late morning and be unopposed by oral sessions or lunch. Discussions are ongoing about harmonizing the time for oral sessions and posters across all societies to make it easier to program cross-society sessions or to attend sessions sponsored by different societies. Discussions are ongoing by Robert Hester, Linda Allen, and their counterparts in the other EB societies to expand cross-society programming at EB 2019 and beyond. In addition, I have reached out to Edward Morgan, president-elect of ASPET, about joint APS-ASPET programming for EB 2019 and possibly a joint conference. Another big change coming in 2019 is that the EB meeting will end on Tuesday rather than Wednesday. A consequence of shortening the meeting by 1 day is that it will result in fewer programming slots for every section or interest group. Robert has worked to make this reduction as equitable as possible. However one cannot fit 4 days of sessions into 3 days without reducing the number of sessions that every section or interest group has had in the past.

Although the strategic plan lists undergraduates and medical students, amongst others, as a secondary

audience, I remain enthusiastic about giving them the opportunity to perform physiological research. It engenders a respect for our discipline, sometimes results in a trainee deciding to spend their career engaged in physiology research, and occasionally results in one of them becoming a president of APS.

This is an Exciting Time to be a Physiologist

Although there are many challenges facing our discipline, physiologists are making major research advances. I would like to highlight some of these to emphasize some of the many contributions that physiologists are making. I want to thank SAC and the APS editors for their suggestions of advances to include. This list will not be comprehensive, so I apologize in advance to anyone who feels that I have overlooked their contributions. Most of these advances were published in 2017, and many are in APS journals. I hope that we will all feel proud of the scientific advances being made in physiology laboratories across the world.

Ferroptosis is a new, iron-dependent form of regulated, non-apoptotic cell death that links de-regulated iron metabolism with peroxidative lipid injury (11). Ferroptosis is a significant type of cell death in cardiomyocytes (CMs), and the mechanistic target of rapamycin (mTOR) plays an important role in protecting CMs against excess iron and ferroptosis (5). Ferroptosis also contributes to acute kidney injury (AKI). Heme oxygenase-1 (HO-1) is a cytoprotective enzyme induced in response to cellular stress, is protective against AKI due to its anti-apoptotic and anti-inflammatory properties, and plays an important anti-ferroptotic role in renal epithelial cells (2).

Nuclear factor erythroid 2-related factor 2 (Nrf2) is a master transcriptional regulator of redox homeostasis that impacts antioxidant gene expression. In chronic heart failure, central oxidative stress and reduced antioxidant enzyme expression in the rostral ventrolateral medulla (RVLM) contribute to sympathoexcitation. Nrf2 gene deletion in the RVLM increases sympathetic outflow, elevates blood pressure, and may impair baroreflex function by impairing antioxidant enzyme expression (14).

Mitochondrial health is essential for the maintenance of functional skeletal muscle during exercise. Mitochondrial content and turnover are regulated by two opposing processes: mitochondrial biogenesis and mitophagy. PGC-1α plays a prominent role in exercise-induced transcription factor EB transcription and activation, providing novel insight into the effect of exercise on mitochondrial turnover (12). Accumulation of dysfunctional mitochondria has been implicated in aging. Interventions that promote mitochondrial fission could delay the onset of pathology and mortality in mammals when applied in midlife (26).

Measuring protein synthesis rates without consideration of the contribution of cell proliferation can lead to misleading conclusions about protein turnover. Considering protein synthesis rates in the context of cell proliferation/replication provides critical insights about cell physiology, specifically about how new protein synthetic resources are being allocated, either to support new cells or in the maintenance of the existing proteome (23).

Heart rate and exercise in diving Narwhals illustrates a paradoxical escape response characterized by very low heart rates combined with high exercise intensity underwater. Because of these conflicting demands—low HR for diving and conserving oxygen while also exercising at high intensity using muscles that consume oxygen—Narwhals are highly specialized and may not be able to adapt to the rapidly declining sea ice due to climate change, which also puts them into more contact with humans in their habitats (30).

White-nose fungal disease has killed millions of bats in North America. This study tested the hypothesis that bats with the disease exhibit higher metabolic rates during torpor and increase evaporative water loss (EWL), which leads to decreased survival. Both metabolic rate and EWL increased in infected bats and contribute to white-nose disease pathophysiology in bats (22).

Vagus nerve stimulation mediates protection from kidney ischemia-reperfusion injury through alpha7nAChR splenocytes. A pair of papers using cutting-edge neuroscience tools and renal physiology demonstrate that restraint stress activates a specialized set of neurons in the hindbrain (C1 neurons) to provoke an anti-inflammatory reflex. This stress preceded ischemia-reperfusion-injury by 24–48 hours and successfully improves renal outcomes, measured as serum creatinine (1, 19).

A recent study tested the generally accepted idea that increasing salt intake increases drinking and urine volume by studying men living under ultra-long-term controlled conditions. An increase in salt intake decreased the level of rhythmical mineralocorticoid release and elevated rhythmical glucocorticoid release. Humans regulate osmolyte and water balance by rhythmical mineralocorticoid and glucocorticoid release, endogenous accrual of surplus body water, and precise surplus excretion. This water-conserving mechanism of dietary salt excretion relies on urea transporter-driven urea recycling by the kidneys and on urea production by liver and skeletal muscle. Thus this natriuretic-ureotelic, water-conserving principle relies on metabolism-driven extracellular volume control and is regulated by concerted liver, muscle, and renal actions (20, 25).

The human gastrointestinal tract is immature at birth. It must adapt to dramatic changes such as oral nutrition and microbial colonization, which can lead to severe inflammatory disease in premature infants. Using the epithelium of human pluripotent stem-cell-derived human intestinal organoids, a study showed that the immature epithelium is intrinsically capable of establishing a stable host-microbe symbiosis. Microbial colonization leads to complex contact and hypoxia-driven responses resulting in increased antimicrobial peptide production, maturation of the mucus layer, and improved barrier function. These studies lay the groundwork for an improved mechanistic understanding of how colonization influences development of the immature human intestine (17).

Brain capillary endothelial cells express inward rectifier K^+ channels (KIR 21) that sense small changes in extracellular K^+ concentration, transducing these changes into membrane hyperpolarization that is conducted into upstream arterioles producing vasodilation and an increase in local blood flow directed at the capillary where the original increase in K^+ was sensed. This mechanism importantly contributes to neurovascular coupling (the coupling of blood flow to neural activity, aka functional hyperemia), and answers a classic question in cardiovascular physiology (21).

A clinical trial evolved from 15 years of basic physiology following the initial observation that, in anesthetized rats, exposure to intermittent hypoxia, but not continuous hypoxia for the same period of time, causes a gradual increase in phrenic motor output to the diaphragm; the phenomenon is called long-term facilitation or LTF. The most surprising aspect of this initial observation is that it moved people from thinking about the respiratory control system as a hard-wired immutable network involved in homeostatic control of blood gases to viewing it as a network, like most others in the brain, which is highly plastic. The same mechanisms can be invoked in other motoneurons to enhance their output. Work then moved quickly to spinal cord injury with the hope that something as simple as a 15-min intermittent hypoxia treatment (cheap, easy, no side effects) can enhance the function of the motoneurons that remain in patients with incomplete spinal cord injury, even those who have been injured for a long time (15).

Several studies address important issues related to prenatal and postnatal development. These have ranged from papers describing modern methodologies for monitoring fetal development (4) to new approaches to deliver therapeutics to the developing fetus (3, 6). The effects of environmental insults to mother and offspring are being identified (9, 24, 27–29). These studies have not only provided novel insights into the fetal-maternal interface but also the long-term consequences of perturbations of that interface. They also demonstrate the power of integrative physiology and the importance of marrying modern methodologies to established physiological models for discovery and therapeutic development.

The Nobel Prize was awarded in 2017 for the discovery of clock gene expression. Circadian rhythms are also observed in isolated mammalian red blood cells (RBCs), which lack nuclei, suggesting the existence of posttranslational cellular clock mechanisms in these cells. Electrophysiological and pharmacological approaches show that human RBCs display circadian regulation of membrane conductance and cytoplasmic conductivity that depends on the cycling of cytoplasmic K^+ levels. Inhibition of K^+ transport abolishes RBC electrophysiological rhythms. Thus RBCs maintain a circadian rhythm in membrane electrophysiology through dynamic regulation of K^+ transport (16).

Adaptive thermogenesis refers to the activation of mechanisms that generate heat for the purpose of regulating body temperature or metabolism in the face of environmental stresses, such as change in diet or cold. Uncoupling protein 1 (UCP1) plays a central role in nonshivering thermogenesis in brown fat. A robust UCP1-independent thermogenic mechanism is present in beige fat that involves enhanced ATP-dependent

Ca^{2+} cycling by the sarco-/endoplasmic reticulum Ca^{2+}-ATPase 2b (SERCA2b) and the ryanodine receptor 2 (18).

Early life stress (ELS) in humans is associated with elevated pro-inflammatory markers. A rat model of ELS, maternal separation (MatSep), involves separating pups from the dam from *postnatal day 2* to *postnatal day 14* for 3 h/day. MatSep induces priming of the immune response in the kidney (10).

The "Guytonian paradigm" places the direct effect of arterial pressure on renal excretion of salt and water at the center of long-term control of blood pressure, and thus the pathogenesis of hypertension. However, in multiple models of salt-sensitive hypertension, the major abnormality appears to be failure of the vasodilator response to increased cardiac output, seen in salt-resistant animals, rather than an increase in cardiac output itself. There is also evidence that renal control of extracellular fluid volume is driven chiefly by volume-dependent neurohumoral control mechanisms rather than through direct or indirect effects of changes in arterial pressure, compatible with the concept that renal sodium excretion is controlled by parallel actions of different feedback systems, including hormones, reflexes, and renal arterial pressure. Thus the events by which volume retention may develop in response to hypertension is characterized by increased peripheral resistance remain enigmatic (13).

Although *Advances in Physiology Education* does not have typical research advances, they have published recent papers on using pop culture superheroes as a vehicle with which to communicate science to different audiences, including the general public (8, 31).

I do not know how many of the above advances were made by investigators in a Department of Physiology, nor whether they self-identify as physiologists. However, these advances represent just a small sample of the contributions that physiological scientists are making to advance knowledge.

Conclusion

This is a tremendously exciting and challenging time for physiology and the APS. I want to thank Marty Frank for his 33 years of dedicated and stellar service. I know that he will continue working diligently for APS until he retires at the end of June. We have the perfect storm of change, but I am confident that the exceptional staff at APS will get us through the transition and that APS will emerge even stronger than it is today. Our scientific progress is outstanding, and the advances that physiologists are making will make our journals, conferences, and EB meeting even better. Finally, I want to sincerely thank Dennis Brown and Jane Reckelhoff, who have been outstanding presidents and role models for me. I have learned a tremendous amount from them during my president-elect year and hope that I can continue their tradition of excellence as your 91st president. ●

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Jeff M. Sands Biography

Jeff M. Sands is the Juha P. Kokko Professor of Medicine and Physiology, and Director of the Renal Division, at Emory University School of Medicine. Sands received his BA from Harvard College in 1977 and his MD from Boston University School of Medicine in 1981. He trained in Internal Medicine at the University of Chicago from 1981 to 1983 and at the NIH's National Heart, Lung, and Blood Institute (NHLBI) from 1983 to 1984. He obtained his renal research fellowship training in the Laboratory of Kidney and Electrolyte Metabolism, NHLBI, NIH from 1984 to 1988, after which he did a clinical nephrology fellowship at Emory from 1988 to 1989. Sands joined the Emory faculty as an assistant professor in 1989, was promoted to associate professor in 1993, and to professor 1998. He accepted the Kokko Professorship and Division Director position at Emory in 2002. He served as Associate Dean for Clinical and Translational Research from 2006 to 2010, and as Executive Vice-Chair of Medicine from 2009 to 2015.

Jeff Sands has been an active member of APS and the Renal Section since 1986. He has served on the Renal Section Steering Committee from 1992 to 1999, and as Renal Section chair from 1999 to 2002. Sands served as Editor-in-Chief of the *American Journal of Physiology—Renal Physiology* from 2001 to 2007. He served as an APS Councilor from 2003 to 2006 and as APS Finance Committee Chair from 2009 to 2014. Sands has also been active in other societies, including serving as Chair of the American Society of Nephrology Program Committee in 2004 and as Chair of the American Heart Association Kidney Council from 2008 to 2010. He served on the NIH General Medicine B study section from 1998 to 2002 and on the NIDDK Board of Scientific Councilors from 2008 to 2013.

Sands has received several honors. In 2006, he received the Distinguished Alumnus Award from Boston University School of Medicine. In 2013, he was the Carl Gottschalk Distinguished Lecturer for the APS Renal Section. In 2014, he received the Distinguished

Achievement Award from the American Heart Association. In 2015, he was the Barry M. Brenner Endowed Lecturer for the American Society of Nephrology. In September 2018, he will receive the Doctor Medicinae Honoris Causa (dr.med.h.c.) from Aarhus University in Denmark. Sands is a member of the American Association of Physicians, the American Society for Clinical Investigation, and the American Clinical and Climatological Association.

Sands has received continuous support from the NIDDK since joining the Emory faculty in 1989. He is PI of an R01 that has been funded since 1989. Over the years, he has had other R01s, an R21, and been a project PI on a P01. He has also had several grants from the American Heart Association. In addition to research grants, Sands is the PI on the Emory Renal Division's T32 NIH Postdoctoral Training Grant and an R25 to train undergraduate students in renal research.

Sands' research focuses on urea transport proteins and the urine concentrating mechanism. His research is directed at understanding the physiology of urea transport proteins, the renal inner medulla, and the urine concentrating mechanism. His research is focused on defining the molecular physiology of urea transporters, since urea transport is a key component in the urine concentrating mechanism. These studies use rat and mouse models of abnormal concentrating and diluting ability, including genetically engineered mice. Sands uses a combination of isolated perfused tubule studies to measure urea transport, and antibodies to measure changes in the amount, phosphorylation, or localization of the urea transport proteins. Using perfused rat terminal inner medullary collecting ducts (IMCDs), his lab showed that vasopressin, a key hormonal regulator of the urine concentrating mechanism, not only affects water transport within minutes but also stimulates urea transport. His group demonstrated that this dramatic response to vasopressin occurred via phosphorylation of the UT-A1 and UT-A3 urea transporters, and then showed that UT-A1 is accumulated in the apical membrane of rat IMCDs. They then demonstrated how these findings were translated into animal models of urine concentrating disorders (e.g., diabetes mellitus or lithium-treatment).

More recently, his group investigated whether there are non-vasopressin-mediated pathways that increase urea and water transport as a potential strategy to treat congenital nephrogenic diabetes insipidus. They used knockout mice to show that urea transport can be stimulated by hyperosmolality, independent of vasopressin, through PKCα. They also showed that activating AMPK with metformin can increase urea and water transport, and urine concentrating ability, in V2R knockout mice and in rats treated with tolvaptan, a V2-vasopressin receptor inhibitor. Sands and his long-time colleague, Janet Klein, are currently pursuing studies of AMPK activators for the treatment of X-linked congenital nephrogenic diabetes insipidus. Their work has led to a recently issued patent and the formation of a start-up company.

Sands has over 150 peer-reviewed manuscripts, the majority of which are published in APS journals. He also has over 90 invited reviews or book chapters and has co-edited 1 book. He has given over 30 invited talks at national or international scientific meetings and over 100 invited lectures at other U.S. or international universities.

Jeff and his wife of over 30 years, Abbe, have two grown children. Jared is a lawyer who is currently clerking for a judge in Prince Georges County in Maryland. Jenna is a senior at Emory College and is majoring in biology.

Science Policy

Agencies Seek Ideas for Reducing Administrative Burden

Three federal agencies are conducting a review of animal welfare oversight regulations in response to a Congressional mandate to "reduce administrative burden on investigators while maintaining the integrity and credibility of research findings and protection of research animals." As part of this effort, representatives of NIH, USDA, and FDA held a listening session on January 9, 2018. The mandate stems from a bill known as the 21st Century Cures Act that won overwhelming bipartisan support in both the House and Senate and was signed into law in December, 2016. It authorized new research directions at the NIH and called for improvements in drug approval processes at the FDA. It also included a provision instructing NIH, USDA, and FDA to "take steps to eliminate or reduce identified inconsistencies, overlap, or duplication" of animal welfare oversight regulations and policies.

At the January 9 meeting, Patricia Brown, head of NIH's Office of Laboratory Animal Welfare, (OLAW) explained that an inter-agency working group has been meeting quarterly since February, 2017 and is now seeking input from stakeholders. A request for public comments will be issued soon in the *Federal Register*, and additional agency listening sessions will be held throughout 2018. The discussion topic on January 9 was "What could OLAW, USDA, & FDA change to reduce burden on researchers?" In addition to Brown, the other officials present were Betty Goldentyer of USDA's Animal and Plant Health Inspection Service and Estella Jones of the Food and Drug Administration. Some 50 people attended the session, and others participated via conference call. Participants included representatives of research institutions, professional associations, and animal rights groups.

One recurrent topic of discussion was the report *Reforming Animal Research Regulations* (*http://www.the-aps.org/ReformingRegulations*) published in October, 2017. This report was based on a workshop convened several months earlier by FASEB, the Association of American Medical Colleges, Council on Government Relations, and National Association for Biomedical Research. Workshop participants sought to identify ways to improve the efficiency of animal research oversight in light of the 21st Century Cures mandate. (For more information about this report, see "Groups Urge Streamlining Animal Research Oversight" at *http://www.the-aps.org/StreamlineOversight*.)

J.R. Haywood, an APS member who is also a Past President of FASEB and one of the workshop organizers, submitted *Reforming Animal Research Regulations* for the record and explained its genesis. He noted that the current oversight system has been in place for 30 years and has been expanded but not reviewed critically. Workshop participants were therefore asked to suggest changes that could make the system more effective in both protecting animals and advancing research. He underscored that addressing both of these considerations was the guiding principle for the workshop.

American College of Laboratory Animal Medicine President Stuart Leland recommended that the agencies apply a risk-based approach to animal research review requirements, similar to the approach used for human-subject research under the Common Rule. By using a tiered system according to the nature of the activity, agencies and institutions could calibrate the review process according to what is needed to ensure the animals' welfare.

Norman Peterson of MedImmune urged the agencies to engage pharmaceutical companies, pointing out that they are also stakeholders in the regulatory process and have important expertise to share.

Ellen Paul spoke on behalf of the Ornithological Council, a coalition of 11 scientific societies whose members study more than 10,000 different species of birds. She noted that divergent requirements from different agencies can make it difficult for ornithologists to know which rules apply to their work. She also urged the agencies to seek input from researchers earlier in the regulatory process and to avoid issuing internal guidance documents that skirt the formal rulemaking process.

Representatives of several animal rights groups objected to the premise of the meeting. They urged the agencies to expand on existing regulations rather than seeking to reduce them. Many also offered suggestions that would require changes to current laws, which may be beyond the scope of the current inter-agency review. Several also criticized recommendations of the *Reforming Animal Research Regulations* report.

Cathy Liss of Animal Welfare Institute (AWI) questioned whether there were any data showing that animal research regulations are burdensome to scientists. She called it "appalling" that agencies would consider reducing regulations and said her organization would "vehemently oppose" any reduction in protection to animals.

Alka Chandna of People for the Ethical Treatment of Animals (PETA) said that her organization believes that the recommendations of *Reforming Animal Research Regulations* would "gut the current, minimal protections" provided to research animals.

Ryan Merkley of Physicians for Responsible Medicine (PCRM) said that to reduce regulatory burden, agencies should reduce the use of animals. He suggested that this might be done by requiring researchers to use alternative methods when available and by removing the FDA's requirement for animal safety and efficacy data to be submitted for new drugs.

Jennifer Ball of Humane Society of the U.S. (HSUS) called on the agencies to "streamline" regulations by requiring the "highest level of care for the most animals."

Sue Leary of Alternatives Research and Development Foundation (ARDF) urged the agencies to apply the *Guide for the Care and Use of Laboratory Animals* more broadly and to harmonize U.S. regulatory requirements with those of other countries. ●

Animal Research Design Symposium to be Offered at EB 2018

The Animal Care and Experimentation Committee is sponsoring a symposium on "Avoiding Common Pitfalls in Preclinical Animal Research Design." It will include presentations on selecting the appropriate animal model, satisfying FDA requirements for preclinical data, and addressing appropriate biological variables in NIH grant applications. Speakers include James Fox (MIT), Valerie Hamilton (Merck, Sharp and Dohme), and Tom Cheever (NIAMS). The session will be held Saturday, April 21, from 1:00 PM to 2:30 PM in the San Diego Convention Center Room 25B. For more information, see *http://www.the-aps.org/ResearchDesignSymposium*. ●

USDA to Offer Incentive for Self-Reporting Noncompliance

USDA is offering an incentive for facilities to proactively identify, report, and correct animal welfare issues. According to a notice published in December, APHIS Animal Care (AC) inspectors will not issue citations for noncompliance reported by facilities when certain criteria are met. At the same time, USDA underscored that such self-reporting is voluntary.

"Non-critical" noncompliance involves issues that do not impact animal welfare. To avoid a USDA citation for non-critical items, the problem must be identified promptly through the institution's own compliance monitoring; the institution must take immediate corrective action; and it must put measures in place to prevent recurrences.

In some cases, facilities may even be able to avoid citations for critical non-compliant items, i.e., those that may impact animal welfare. The criteria for this include:

- The institution has not had either a repeat or a critical noncompliance identified on a USDA inspection during the preceding 12 months.
- The institution promptly discovered the noncompliance through its own compliance monitoring program.
- The item in question does not involve the same section and subsection of the AWA regulations that was cited during the preceding 24 months.
- The institution took immediate corrective action and established measures to prevent recurrence.
- The institution reported the issue to USDA either orally or in writing "promptly," i.e., within days of discovering the problem.

If the incident involves noncompliance and the facility meets these criteria, Animal Care will not cite the issue on the next inspection, but it will make an internal note of the voluntary report with the facility's customer number, the date the voluntarily reported incident occurred, and the section and subsection of the applicable AWA regulation or standard. This record-keeping requirement has raised concerns that non-cited, self-reported incidents could be made public through FOIA requests.

For more information on the Tech Note, see *https://www.aphis.usda.gov/publications/animal_welfare/2017/ac-tech-note-incentives-animal-welfare-act-compliance.pdf.* ●

Election Results

The American Physiological Society announces the results of the election of officers for 2018. Meredith Hay of University of Arizona is the new President-Elect. The three newly elected Councilors taking office on April 25, 2018 are David Mattson (Medical College of Wisconsin), Timothy Musch (Kansas State University), and Larissa Shimoda (John Hopkins University School of Medicine). The Councillors will each serve a 3-year term.

Meridith Hay, President-Elect

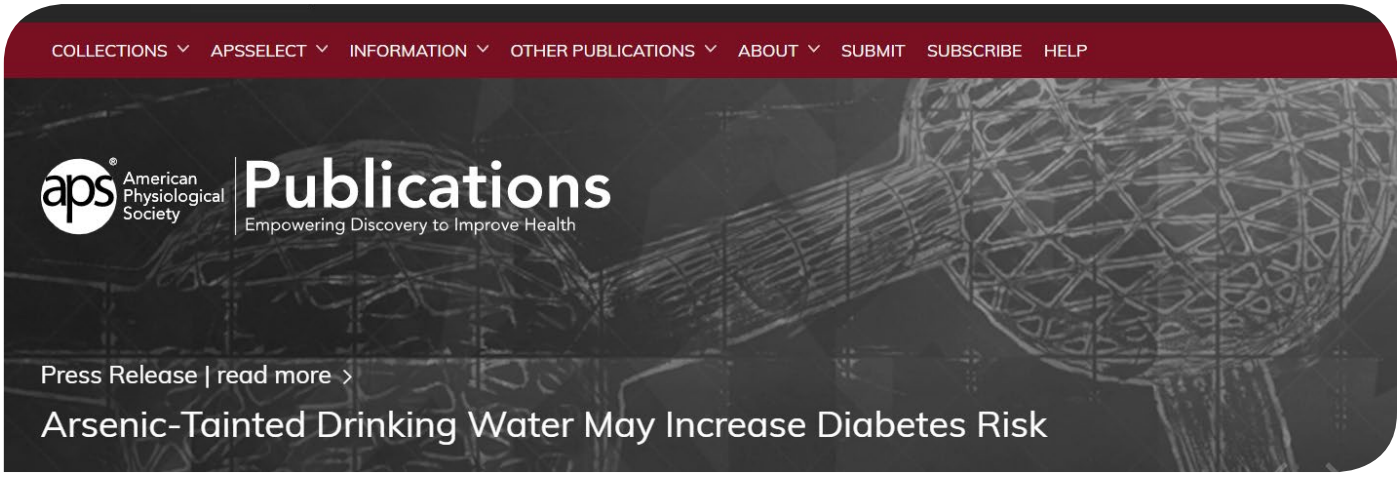
David Mattson, Councilor

Timothy Musch, Councilor

Larissa Shimoda, Councilor

Publications

APS Publications Launches New Platform



On December 7, 2017, The American Physiological Society Publications went live on a new platform (*http://www.physiology.org/*) for 13 journal titles and over 165,000 articles.

The new site, hosted by Atypon (*http://www.atypon.com/*), enables APS to manage the publishing process with a high level of flexibility. It offers our authors, members, and other users state-of-the-art features and functionality such as:

- a redesigned and upgraded user experience
- an integrated Publications homepage (*http://www.physiology.org/*) that brings cohesiveness to our journals program
- responsive design (site adjusts to screen size regardless of the device)
- universal login (with APS member credentials, if desired)
- side-by-side full-text reading experience (view figures and references alongside the article text)
- more interactive "PDF Plus" option—enlarged images and linked reference citations
- more prominent display of audio-visuals (e.g., video abstracts and podcasts)
- enhanced and openly viewable article-level usage statistics (Altmetrics)
- and much more!

To sign up for content alerts (including APSselect), go to *http://www.physiology.org/action/showPreferences?menuTab=Alerts* and login with your APS member credentials.

For more information, the APS has posted an FAQ (*http://www.physiology.org/FAQ*) and a video (*https://youtu.be/ZWjWRV06bBc*) demonstrating the new features. The *physiology.org* homepage is updated weekly, so check back often for new featured articles and announcements. ●

APS Releases 2017 "Most Shared" Article List

The APS Publications Division has released the top 10 most-shared articles of 2017, according to Altmetric.com. The scores represent a weighted score of the number of times the articles were shared or mentioned on news sites, blogs, research portals, and various social media venues. The top venues for sharing APS articles were Twitter, Facebook, and news sites. (To read more about how a score is calculated, visit *http://support.altmetric.com/knowledgebase/articles/83337-how-is-the-altmetric-score-calculated*.) ●

Rank	Altmetric Attention Score	Article Title	Journal	Publication Date
1	803	*Cardiovascular benefits associated with higher dietary K+ versus lower dietary Na+: Evidence from population and mechanistic studies*	*American Journal of Physiology: Endocrinology & Metabolism*	2/7/2017
2	746	*Neither load nor systemic hormones determine resistance training-mediated hypertrophy or strength gains in resistance-trained young men*	*Journal of Applied Physiology*	5/12/2016
3	738	*Exercise Is the Real Polypill*	*Physiology*	1/1/2013
4	720	*Role of Inactivity in Chronic Diseases: Evolutionary Insight and Pathophysiological Mechanisms*	*Physiological Reviews*	10/1/2017
5	633	*The Power of the Mind: The Cortex as a Critical Determinant of Muscle Strength/Weakness*	*Journal of Neurophysiology*	9/30/2014
6	604	*The response of muscle protein synthesis following whole-body resistance exercise is greater following 40 g than 20 g of ingested whey protein*	*Physiological Reports*	8/1/2016
7	538	*Changes in intestinal microbiota composition and metabolism coincide with increased intestinal permeability in young adults under prolonged physiologic stress*	*American Journal of Physiology: Gastrointestinal & Liver Physiology*	3/23/2017
8	531	*Prolonged sitting-induced leg endothelial dysfunction is prevented by fidgeting*	*American Journal of Physiology: Heart & Circulatory Physiology*	5/27/2016
9	513	*"Drink at least eight glasses of water a day." Really? Is there scientific evidence for "8 × 8"?*	*American Journal of Physiology: Regulatory, Integrative & Comparative Physiology*	1/1/2002
10	506	*Metabolic effects of fructose and the worldwide increase in obesity*	*Physiological Reviews*	1/1/2010

Current Calls for Papers

Physiological Genomics

- -Omic Approaches to Understanding Muscle Biology
  Submission deadline: March 1, 2018
- Single Cell Analysis
  Submission Deadline: May 31, 2018
- Genetics of Metabolic Syndrome
  Submission Deadline: June 30, 2018

Journal of Neurophysiology

- Neuroscience at the 38th World Congress of the International Union of Physiological Sciences
  Submission deadline: June 30, 2018
- Progress in Motor Control
  Submission deadline: June 30, 2018
- The Role of Eye Movements in Perception, Cognition, and Action
  Submission deadline: June 30, 2018
- Model Systems of Synaptic Transmission
  Submission deadline: December 31, 2018
- Society for the Neural Control of Movement
  Submissions deadline: December 31, 2018
- Advances in Vestibular Research: A Tribute to Bernard Cohen, MD
  Submission deadline: December 31, 2018

Advances in Physiology Education

- Historical Perspectives and Living Histories

American Journal of Physiology – Cell Physiology

- Advanced Cell Culture: Organoids in Cell Physiology
  Submission deadline: June 30, 2018
- Correlating Muscle Function with Muscle Health Makers
  Submission deadline: June 30, 2018
- Endoplasmic Reticulum Functions in Cell Physiology and Disease
  Submission deadline: June 30, 2018
- Mitophagy, Autophagy and Cell Death
  Submission deadline: June 30, 2018

American Journal of Physiology – Gastrointestinal and Liver Physiology

- The Engineered Gut: Targeting Intestinal Stem Cells, the Stem Cell Niche, and Prospects for Tissue Engineering
  Submission deadline: June 1, 2018
- Immune Regulation, Homeostasis, and Cancer in the Digestive System
  Submission deadline: June 1, 2018
- Mechanisms of Host and Microbiome Interactions in the Digestive System
  Submission deadline: June 1, 2018
- Gut Hormones, Metabolism, Appetite, and Obesity
  Submission deadline: June 1, 2018
- Gastrointestinal Motor, Secretory, and Sensory Functions
  Submission deadline: June 1, 2018
- Digestive Functions in Aging
  Submission deadline: June 1, 2018
- Enteric Nervous System in Health and Disease
  Submission deadline: June 1, 2018
- The Role of the Extracellular Matrix in Gastrointestinal and Liver Physiology
  Submission deadline: June 1, 2018
- The Gut-Liver Axis
  Submission deadline: June 1, 2018

American Journal of Physiology – Heart and Circulatory Physiology

- Right Ventricular Physiology in Health and Disease
  Submission deadline: June 30, 2018
- Cancer Therapy-Induced Cardiovascular Toxicity
  Submission deadline: June 30, 2018
- Sex Differences in Cardiovascular and Cerebrovascular Physiology, Disease, and Signaling Mechanisms
  Submission deadline: June 30, 2018

- Cardiac Regeneration and Repair
  Submission deadline:
  February 1, 2018

- Extracellular Matrix in Cardiovascular Pathophysiology
  Submission deadline:
  February 1, 2018

- Novel Mechanisms of Myocardial Ischemia, Ischemia-Reperfusion, and Protection by Myocardial Conditioning
  Submission deadline:
  February 1, 2018

American Journal of Physiology – Lung Cellular and Molecular Physiology

- Electronic Cigarettes: Not All Good News?
  Submission deadline:
  December 31, 2018

American Journal of Physiology – Regulatory, Integrative and Comparative Physiology

- Cardiovascular and Metabolic Consequences of Sleep and/or Circadian Disruption
  Submission deadline:
  May 1, 2018

American Journal of Physiology – Renal Physiology

- Inflammatory Mediators in Kidney\Bladder Diseases, and in Hypertension
  Submission deadline:
  June 30, 2018
- Mechanism and Treatment of Renal Fibrosis
  Submission deadline:
  June 30, 2018
- Mechanisms of Inflammation and Hyperplasia in the Prostate
  Submission deadline:
  June 30, 2018
- Physiology of Rebuilding the Kidney
  Submission deadline:
  June 30, 2018
- Precision Medicine in Kidney Disease and Injury
  Submission deadline:
  June 30, 2018
- Sex and Gender in Renal Health and Function
  Submission deadline:
  December 31, 2018

For a complete list of current Calls for Papers, visit the APS website.

Education

Undergraduate Opportunities at EB 2018

APS Undergraduate Orientation Session

Saturday, April 21
3:30–5:30 PM
Marriott Marquis and Marina, Room TBA

Undergraduate students get tips on presenting their posters and navigating through the EB meeting

Come and network with other undergraduate researchers; hear great suggestions on how to get the most out of EB; get hints to make presenting your poster easier; meet the APS President and Executive Director; and meet members from the Careers, Education, and Trainee Advisory Committees.

For more information, go to *the-aps.org/ugorient* or contact Allison Hood, Program Coordinator, Undergraduate Programs (*ahood@the-aps.org*).

APS David Bruce Undergraduate Poster Session

Undergraduate Students: Sign Up to Present Your Poster

APS Members: Come Meet the Future of Physiology!

Sunday, April 22
4:00*–5:30 PM
San Diego Convention Center, Sails Pavilion
**Undergrad students must arrive by 3:00 PM to put up their poster and meet with graduate departments and programs*

Over 125 undergraduate students will be presenting their research on a wide range of topics. Don't miss this opportunity to support undergraduate students and encourage them to pursue a career in biomedical research. It's also a great time to look for your next graduate student!

An undergraduate student presents her research findings to an APS member

Meet the Barbara A. Horwitz and John M. Horowitz Outstanding Abstract Awardees and be among the first to discover which of those students win the Barbara A. Horwitz and John M. Horowitz Excellence in Undergraduate Research Award.

Watch the video submissions from the 2018 APS Physiology Video Contest: "Function Follows Form" and learn which among those were selected as the award winners.

For more information, go to *the-aps.org/ugposter* or contact Allison Hood, Program Coordinator, Undergraduate Programs (*ahood@the-aps.org*).

Recruitment Opportunity for Graduate Programs

The APS Education Committee invites graduate physiology departments and programs to attend and recruit graduate students at the APS David Bruce Undergraduate Poster Session.

NEW Packages for Purchase

Standard ($250)

- NEW extended interaction time. Dedicated *hour* to interact with students before the poster session begins (3:00–4:00 PM; food served)
- Table space for distributing graduate school information (6-ft. table)
- Inclusion on signage at poster session (department name and institution if you purchase table by the stated deadline)

Graduate departments and programs talk with undergraduate students about advance degree opportunities at their institutions

- Listing in special session program booklet (department name and institution if you purchase table by the stated deadline)
- Listing in Undergraduate Orientation slideshow and on table tents
- Inclusion in direct e-mail to undergraduate presenters
- Access to a contact list of undergraduate students from the session who are interested in graduate school

Intermediate ($300)
- Standard package PLUS
- Visibility at Undergraduate Orientation (printout with institution logo, short blurb about department/program, and department URL included in the Undergraduate Orientation folders)
- *See website for full details*

Advanced ($350)
- Intermediate package PLUS
- Social media promotion on the Undergraduate Researcher Facebook page, featuring a link to the department page, institution logo, a short video from the institution (if available), and program director contact information PLUS
- Department information [link to department page, institution logo, a short video from the institution (if available)] on the Undergraduate Poster webpage PLUS
- Eligibility to participate in the Table Ticket Program (see web link below for more information)
- *See website for full details*

To purchase a table, go to *the-aps.org/ugposter* or contact Allison Hood, Program Coordinator, Undergraduate Programs (*ahood@the-aps.org*). ●

APS Video Contest: "Function Follows Form"

Visit the-aps.org/video to view submissions and vote for your favorite video.

Deadline for voting for Viewer's Choice Award:

April 21, 2018

2018 A. Clifford Barger Underrepresented Minority Mentorship Awardee

The Porter Physiology Development and Minority Affairs Committee is pleased to announce that Patricia Molina (Louisiana State University Health Sciences Center) is the second A. Clifford Barger Underrepresented Minority Mentorship Award recipient for 2018. For more information, please visit *the-aps.org/barger*. ●

Patricia Molina, 2018 A. Clifford Barger Underrepresented Minority Mentorship Awardee

2018 Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientists Awardee

The Women in Physiology Committee is pleased to announce that Merry Lindsey (University of Mississippi Medical Center) is the 2018 Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award recipient. For more information, please visit *the-aps.org/schmidtnielsen*. ●

Merry Lindsey, 2018 Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientists Awardee

APS Physiology Video Contest

Deadline for voting for Viewer's Choice: April 21, 2018

Check out the entries for the 2018 APS Video Contest, "Function Follows Form," and vote for your favorite video! The video with the most "views" as of April 21 will win the Viewer's Choice Award ($250).

For links to the 2018 Viewer's Choice videos, see *the-aps.org/video* (under *Resources*). ●

Don't Miss the APS Medical Education Refresher Course at EB 2018!

GI Physiology: Not Just the Gut Anymore

Saturday, April 21, 8:00 AM–12:00 PM
San Diego Convention Center, Room 20A
Sponsored by the APS Education Committee Organizers: Jennifer Sasser, Ed Merritt
the-aps.org/refresher-gutphysiology

The goal of the annual APS Refresher Course is to provide instructors of Medical Physiology courses with updates to their lecture content and to provide materials for non-specialists who have teaching responsibilities in specific content areas. At Experimental Biology 2018, the Refresher Course will review updates in teaching gastrointestinal physiology in a session entitled: *GI Physiology: Not Just the Gut Anymore.*

Four lectures will be presented to cover a broad range of topics to review current topics covered in medical physiology and to highlight new areas of interest, including the role of the gut microbiota, to those teaching in this area. Presentations include:

- **Strategies to Teach GI Physiology** (Dexter F. Speck, University of Kentucky Medical Center)
- **Intestinal Epithelial Function** (Jessica Dominguez-Rieg, University of South Florida)
- **Strategies for Investigating the Interaction Between the Microbiota and the Gut Brain Axis** (Stephen Collins, McMaster University Health Sciences Center)
- **Immune Interactions in the Intestinal Epithelium** (Karen Edelblum, Rutgers New Jersey Medical School) ●

Introducing the NEW APS Trainee Hour During Experimental Biology

Help APS launch the inaugural trainee hour with a bang! Sunday, Monday, and Tuesday mornings during Experimental Biology (EB), from 7:00 to 8:00 AM, come and hear the professional development-track talks just for trainees.

2018 topics include career paths, mentoring, and data reproducibility. Each speaker will give a 15- to 20-minute presentation followed by a short period for questions and answers by the speaker.

Coffee and pastries will be provided. Visit the symposia websites or the APS EB meeting website for details. Spread the word and we will see you there! ●

Symposium, Convention Center Room & Sponsor	Sunday 7:00 AM – 8:00 AM	Monday 7:00 AM – 8:00 AM	Tuesday 7:00 AM – 8:00 AM
2018 Career Symposium, Room 25B COPC Organizers: Brandauer, Becker	Defining and Establishing Collaborations	Maintaining Momentum in Collaborations	Preventing and Managing Conflict
2018 Mentoring Symposium, Room 25C WIPC Organizers: Al Alam, Wallace, Ho	Implicit and Explicit Bias in Science and Science Education	Implicit Bias: What Is It – and What Can We do About It?	Surviving and Thriving in the Post-Weinstein World
2018 Trainee Symposium, Room 25A TAC Organizers: Downey, Obi	Enhancing the Value Of Research Findings: Ongoing Activities at NIH and Beyond	Building Bridges: Learning to Work Effectively with Regulatory Committees *and* Practical Applications of Rigor and Reproducibility in the Laboratory	Publishing Reproducible Research: Ensuring That Editors, Reviewers and Readers Have Confidence in Your Findings

Symposium Title, Sponsor, and Website	Symposium Abstract	Presentation Titles and Speakers
2018 APS Career Symposium: Hallmarks of and Ground Rules for Productive Collaborations in Science Career Opportunities in Physiology Committee (COPC) *the-aps.org/collaborations-in-science*	As scientific inquiry becomes more complex and multidisciplinary, collaborations become an essential component of many successful research groups. Collaborations with clearly defined responsibilities can be particularly beneficial endeavors that enhance productivity and career progression. However, numerous challenges and potential conflicts must be navigated in any collaborative effort. A diverse panel of investigators with abundant experience will discuss features of successful collaborations and provide insight into avoiding and resolving conflict through presentations and panel discussion. The specific goals of this symposium are to *1)* identify available collaboration opportunities, *2)* discuss hallmarks of successful and productive collaborations, *3)* identify characteristics of successful industry-academic collaborations from both perspectives, and *4)* provide strategies for preventing and resolving conflicts within collaborations. Panelists will discuss specific questions including: How do I establish and maintain a successful collaboration? What does communication and data sharing look like in a productive collaboration? What does a "typical" collaboration look like and entail? How are intellectual property rights and authorship managed across collaborations?	**Defining and Establishing Collaborations** Stephanie Watts, Michigan State University, and Carrie Northcott, Pfizer **Maintaining Momentum in Collaborations** David Pollock, University of Alabama at Birmingham, and Christine Schnackenberg, GlaxoSmithKline **Preventing and Managing Conflict** Irving Zucker, University of Nebraska Medical Center, and Carol Moreno Quinn, Medimmune
2018 APS Mentoring Symposium: Recognizing and Responding to Implicit Bias in Science Women in Physiology Committee (WIPC) *the-aps.org/implicit-bias-in-science*	Gender bias and sexism in science, whether conventional or non-conventional (targeting women, men, LGBTQ), has historically improved, but it still affects a great number of scientists every day. It is important for scientists at all levels to be able to work and thrive in an environment free of gender bias and overt sexism. Recently, it has become more common to openly talk about sexism in science. This is especially true ever since Nobel Prize laureate Tim Hunt made a public sexist comment that forced him to resign. Many cases of gender bias and sexism in academic and non-academic institutions have been brought to light and dealt with since this event. The Women in Physiology Committee Mentoring Symposium for 2018 will focus on how to recognize and react to implicit bias in the workplace, as well as how we can create a positive environment where everyone can thrive. First, we will address how to identify sexism in all its forms: conventional, non-conventional, subtle, or forthright. The goal of this symposium is to educate the audience about implicit bias in science, and to advocate and encourage scientists from all backgrounds and at all levels to create and promote for themselves and others an environment free of such bias.	**Implicit and Explicit Bias in Science and Science Education** Charlotte Tate, San Francisco State University **Implicit Bias: What is It - and What Can We do About It?** Tamera Schneider, Wright State University **Surviving and Thriving in the Post-Weinstein World** Gretchen Dahlinger Means, University of Southern California
2018 APS Trainee Symposium: How to Achieve Rigorously Reproducible Research Trainee Advisory Committee (TAC) *the-aps.org/rigorously-reproducible-research*	Scientific progress relies on experiments being rigorously designed and conducted in a manner that is reproducible by other scientists. In response to the growing awareness concerning the need for science to meet these criteria, the NIH introduced a new initiative to improve reproducibility and transparency in late 2013. Accordingly, new policies and guidelines have been implemented in pursuit of this goal. Despite informational resources disseminated by the NIH and societies such as the American Physiological Society, researchers and trainees are still asking, *How can I make my data more rigorous and reproducible as well as fulfill the new NIH guidelines required for grant submissions?* To address this question, this trainee symposium will feature four speakers delivering critical points and considerations on topics that trainees and established scientists can immediately apply in their current research to increase the rigor and reproducibility of their experiments. Each speaker will address a key topic including *1)* Experimental Design, *2)* Data Recording and Analysis, *3)* Publishing and Results, and *4)* Data Management and Storage. To this end, speakers are experts in both identifying reproducibility problems in science and creating programs and policy to improve scientific rigor.	**Enhancing the Value Of Research Findings: Ongoing Activities at NIH and Beyond** Shai Silberberg, NINDS/NIH **Building Bridges: Learning to Work Effectively with Regulatory Committees** Bill Yates and Sean Stocker, University of Pittsburgh **Practical Applications of Rigor and Reproducibility in the Laboratory** Sean Stocker, University of Pittsburgh **Publishing Reproducible Research: Ensuring That Editors, Reviewers and Readers Have Confidence in Your Findings** Kim Barrett, University of California, San Diego

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***transferred from student membership**

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Experimental Biology

Experimental Biology 2018 Distinguished Lectures

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

Ole H. Petersen

Cardiff University

The Roles of Ca^{2+} and ATP in Pancreatic Physiologi and Pathophysiology

Sunday, April 22, 2018, 5:30 PM

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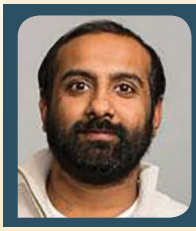

Henry Pickering Bowditch Memorial Award

Yatrik M. Shah

University of Michigan

Oxygen Sensing Pathways: A Critical Link Between Inflammation and Cancer

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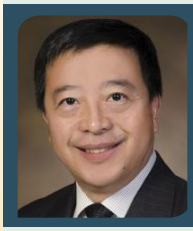


Robert M. Berne Distinguished Lectureship of the APS Cardiovascular Section

Jason Yuan

University of Arizona Health Sciences

Mechanisms of Pulmonary Vascular Disease: Pathogenic Role of Ion Channels

Tuesday, April 24, 2018, 3:30 PM

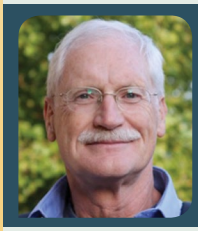
Hugh Davson Distinguished Lectureship of the APS Cell and Molecular Physiology Section

Paul Quinton

University of California, San Diego

Confessions of a Long-Term Extra-Marital Affair with Bicarbie

Sunday, April 22, 2018, 3:30 PM



Joseph Erlanger Distinguished Lectureship of the APS Central Nervous System Section

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Getting the Best Reward: Neuronal Mechanisms for Utility Maximisation

Monday, April 23, 2018, 3:30 PM

August Krogh Distinguished Lectureship of the APS Comparative and Evolutionary Physiology Section

Stanley S. Hillman

Portland State University

Anuran Amphibians as Models for Understanding Extreme Dehydration Tolerance

Tuesday, April 24, 2018, 3:30 PM

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Erik A. Richter

August Krogh Institute

The BIG story: the Beautiful, Integrative, Glucose Metabolism and Exercise

Monday, April 23, 2018, 3:30 PM

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

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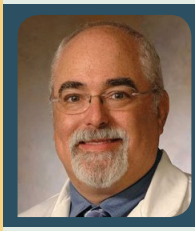
Kansas State University College of Veterinary Medicine

Muscle Microcirculation: Gateway to Function and Dysfunction

Monday, April 23, 2018, 1:30 PM



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

Jerrold R. Turner

Brigham and Women's Hospital

Mucosal Barriers: Pathways and Pathologies

Tuesday, April 24, 2018, 3:30 PM

History of Physiology Group Lecture

Peter B. Raven

University of North Texas Health Science Center

Bengt Saltin, MD, DSci (1935–2014): Exercise is Medicine

Tuesday, April 24, 2018, 1:00 PM

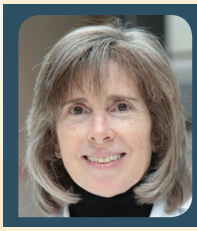
Carl Ludwig Distinguished Lectureship of the APS Neural Control and Autonomic Regulation Section

David Paterson

University of Oxford

Heart Meets Brain: Brain Meets Heart: Therapeutic Opportunities

Monday, April 23, 2018, 1:30 PM



Carl W. Gottschalk Distinguished Lectureship of the APS Renal Section

Lisa M. Satlin

Icahn School of Medicine at Mount Sinai

In the Flow: Cell-Specific Expression and Regulation of BK Channels in the Distal Nephron

Monday, April 23, 2018, 3:30 PM

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

Bert Forster

Medical College of Wisconsin

Interdependence of Neuromodulators in the Control of Breathing

Tuesday, April 24, 2018, 3:30 PM

Claude Bernard Distinguished Lectureship of the APS Teaching of Physiology Section

Jenny L. McFarland

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Transformations – Paths to Student-Centered, Evidence-Based Physiology Education

Sunday, April 22, 2018, 3:30 PM

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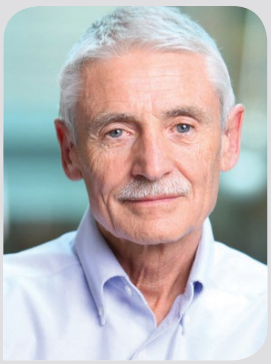
Ernest H. Starling Distinguished Lectureship of the Water and Electrolyte Homeostasis Section

David L. Mattson

Medical College of Wisconsin

Diet, Inflammation and Hypertension

Sunday, April 22, 2018, 3:30 PM



APS Nobel Prize Award Lecture

Leland Hartwell

The Biodesign Institute, Arizona State University

Wednesday, April 25, 2018, 3:30 PM

Experimental Biology 2018

April 21–25, 2018, San Diego, CA

PHYSIOLOGY PLATFORM SESSIONS

Saturday, April 21, 2018

Room	Times as Indicated		
20A	8:00 AM–12:00 PM *Education Committee Refresher Course* GI Physiology: Not Just the Gut Anymore **Sasser/Merritt**	2:15 PM–5:15 PM *WEH Section Award Session* WEH Trainee Award Finalists and Data Diuresis **O'Conner/Polichnowski**	
22			3:00 PM–5:00 PM *NCAR Section* Data NCARNation
24	9:30 AM–11:30 AM *MCS President's Symp*	1:00 PM–3:00 PM *MCS Abstract-based Symp*	3:30 PM–5:30 PM *MCS Abstract-based Symp* 6:00 PM–8:00 PM *MCS Poster Discussion*
25A	9:00 AM–5:00 PM ETG Pre-Meeting		
25B		1:00 PM–2:30 PM *ACE Committee Symp* Avoiding Common Pitfalls in Preclinical Animal Research Design **Michele/Uray**	
25C			3:00 PM–4:30 PM *Communications Committee Symp* Social Media for the Professional Scientist **Goodman**
26		1:00 PM–3:00 PM *Techniques Workshop* Sex and Age as Biological Variables in Physiology Research **Yosten/Kolar**	3:00 AM–5:00 AM *Techniques Workshop* Transformative Technologies Enabling Ecological Assessment of Human and Wildlife Physiology **Sandberg/Crossley**
27		1:00 PM–2:30 PM *AFMR Symp* The Role of TIEG1 in Disease Processes: From Bench to Bedside **Rajamannan/Hawse**	3:00 PM–4:30 PM *AFMR Symp* The Mevalonate Pathway: A Fundamental Player in Human Disease **Zeki/Ghavami**
28A		1:00 PM–5:15 PM *PGG Special Session* 5th Annual Physiological Genomics Conference	

Sunday, April 22, 2018

Room	8:30–10:00 AM	1:30–3:00 PM	3:30–5:00 PM
20A	*IPSS Symp* Ischemic and Hypoxic Conditioning: Potential for Protection of Vital Organs **Rickards/Sprick**	*APS President's Symp Series* Exosomes: The New Frontier. Cell Biology of Exosomes **O'Driscoll**	*MCS Lecture* MCS Landis Award Lecture and Business Meeting 5:30 PM–6:30 PM *APS Cannon Lecture* Supported by Sucampo AG **Petersen**
22	*MBG Symp* Maintenance and Remodelling of the Neuromuscular Junction in Health and Disease **Ljubicic**	*CV Section Symp* American Journal of Physiology Heart and Circulatory Physiology Editors Symp **Zucker/Lindsey**	3:30 PM–5:00 PM *CV Section FT* Kaley Award FT: Cerebral Vascular Dysfunction and Impaired Cognitive Function **Roman**
23	*CV Section Symp* Of Mice and Men: What Have We Really Learned About the Regulation of Coronary Vascular Function in Health and Disease? **Phillips/Goodwill**	*GIL Section FT* Cell Plasticity and Repair and Disease Mechanisms in the Stomach, Liver and Intestine **Powell**	3:30 PM–4:30 PM *WEH Section* *Starling Lecture* **Mattson** 4:30 PM–5:30 PM *WEH Section* New Investigator Award Lecture **Hinojosa-Laborde/Madhur**
24	*CV Section FT* Role of the Microbiome in Cardiovascular Disease **Buys**	*CV Section FT* Innate and Adaptive Immunity in Cardiovascular Physiology **Madhur/Cornelius**	
25A	7:00 AM–8:00 AM *TAC Symp* Hallmarks of and Ground Rules for Productive Collaborations in Science: Defining and Establishing Collaborations **Downey/Obi** 8:30 AM–10:00 AM *ETG Symp* Building Epithelial Organs In Vitro to Study Physiology and Pathogenesis of Disease **Nørregaard/Dixon**	*Renal Section Symp* ENaC Proteins As Mechanosensors in Endothelial and Vascular Smooth Muscle Cells **Drummond/Ashley**	*Resp Section FT* Communication and Miscommunication in Lung Injury and Repair **Koval/Birukov**
25B	7:00 AM –8:00 AM *Careers Symp* 2018 Careers in Physiology Symp I **Brandauer/Becker** 8:30 AM–10:00 AM *Translational Physiology Interest Group FT* Translational Physiology Showcase: TBD **Young**	*EEP Section FT* Exploring Novel Mechanisms to Improve Exercise Tolerance in Health and Disease **Harris/Barnes**	*EEP Section Symp* Epigenetic Memory of Environmental Exposure: a Physiological Perspective **Murashov/Clanton**

Sunday, April 22, 2018, continued

25C	7:00 AM–8:00 AM *WIPC Symp* Recognizing and Responding to Implicit Bias in Science: Implicit and Explicit Bias in Science and Science Education **Al Alam/Wallace/Ho** 8:30 AM–10:00 AM *EEP Section Symp* Too Hot to Handle: Controversies in Exertional Heat Stroke Prevention and Treatment **Laitano/King**	*CEP FT* Comparative and Evolutionary Physiology Section Trainee-Driven FT **Crossley**	*NCAR Section FT* Psychological Stress Disorders: Novel Concepts and Mechanisms **Sabharwal**
26	*NCAR Section FT* NCAR Young Investigator Awards **Moraes/Poglitsch**	*CNS Section Symp* Sex Differences in Central Circuits **Wainford/Browning**	*Teaching Section* *Bernard Lecture* Supported by ADInstruments **McFarland**
27	*WEH SectionSymp* Inflammation and Sodium Reabsorption **Lee/Pai**	*Resp Section Symp* Non-Canonical Functions of the Lung in Immunity and Hemostasis **Kuebler/Juss**	*Cell Section Davson Lecture* **Quinton**
28A	*Renal Section FT* Renal Section Young Investigator Award FT: Novel Roles for Renal GPCRs **Pluznick/Caplan**	*Cell Section Symp* Organoids: Modelling Cell Physiology and Disease in 3D **Bradbury/Ameen**	*CNS Section Symp* Intersection of Central Pain and Reward Circuitry in CNS Disorders **Edwards/Roberto**
28B	*Teaching Section Symp* Addressing Higher Levels of Bloom's Taxonomy in the Teaching and Learning of Physiology **Clements-Jewery/Hopper**	*PGG FT* From Gene to Function of Complex Traits: Analysis of Genes Identified in Human GWAS and Animal Models **Solberg Woods**	*Resp Section FT* Microglia as Effectors of Respiratory Plasticity in Health and Disease **Kinkead/Powell**
28DE	*PGG Nonfunded FT* Physiological Genomics Trainee Highlights	*SfRBM Symp* Redox Biology: A Unifying Theme in the Etiology of Human Diseases **Case/Kevil**	*GIL Section* John Forte GIL Plenery Session **Uno/Frey**

Monday, April 23, 2018

Room	8:30–10:00 AM	1:30–3:00 PM	3:30–5:00 PM
20A	*IPSS Symp* Bioartificial Organs: Using Donor and Synthetic Scaffolds **Harrison-Bernard**	*President's Symp Series* Exosomes: The New Frontier. Pathophysiology of Exosomes **Théry**	
22	*Sex Group Symp* Impact of Sex-Specific Size of the Normal and Failing Left Ventricle: Studies in Humans and Mice **Kerkhof/Miller**	*CV Section Symp* CV Section – Young Investigator Symp **Goulopoulou/Belin de Chantemele**	*CV Section FT* Protective Mechanisms in the Vasculature: Wiggers Award Session **Sigmund**
23	*Hypoxia Group Symp* Novel Physiologic-Based Approaches to Treating Sleep Apnea **Dempsey/Bates**	*GIL Section Symp* Identification of Novel Drug Targets For the Modulation of Gastrointestinal Motility **Uray/Perrino**	*CV Section Symp* Brown Adipose Tissue and Cardiovascular Function: Insulin Resistance, Vascular Tone, and Cardioprotective Effects **Stanford/Scherrer-Crosbie**

Monday, April 23, 2018, continued

24	*NCAR Section FT* Novel Insights on Sympathetic Activation in Kidney Disease: From Animal Models to Clinical Trials **Park/Becker**	*NCAR Section Ludwig Lecture* **Paterson**	*Renal Section Gottschalk Lecture* **Satlin** 5:30 PM–6:30 PM *APS Bowditch Lecture* **Shah**
25A	7:00 AM–8:00 AM *TAC Symp* Do it Again: How to Achieve Rigorously Reproducible Research: 1) Building Bridges: Learning to Work Effectively with Regulatory Committees and 2) Practical Applications of Rigor and Reproducibility in the Laboratory **Downey/Obi** 8:30 AM–10:00 AM *PGG FT* Non-coding RNA Regulation of Inflammation in Cardiovascular, Kidney, and Respiratory Diseases **Kriegel/Rogers**	*ETG FT* Hans Ussing Lecture of the Epithelial Transport Group **Akiba**	*Resp Section FT* Molecular, Cellular and Systems-Level Mechanisms Driving Ventilation and CO2 Sensitivity during Acute and Chronic Hypercapnia **Hodges/Hawkins**
25B	7:00 AM–8:00 AM *Careers Symp* Hallmarks of and Ground Rules for Productive Collaborations in Science: Maintaining Momentum in Collaborations **Brandauer/Becker** 8:30 AM–10:00 AM *Renal Section Symp* New Concepts in JGA Physiology **Peti-Peterdi/Buckley**	*Renal Section FT* Advances in Renal Physiology I **Ortiz**	*Translational Group Symp* Altering Phenotype Without Genotype **Sones/Reijnders-Most**
25C	7:00 AM–8:00 AM *WIPC Symp* Recognizing and Responding to Implicit Bias in Science: Implicit Bias: What is It – and What Can We do About It? **Al Alam/Wallace/Ho** 8:30 AM–10:00 AM *Cell Section FT* Ion Channels and Transporters in Health and Disease **Worrell**	*Cell Section Symp* Biophysical and Metabolic Regulation of Stem Cells **Rehman/Shin**	*CEP Section Symp* Comparative Perspectives on Maximal O2 and CO2 Transport in Animals **Hedrick**
26	*Nutrition Symp* The Physiology of Personalized Nutrition **Voy/Anthony**	*PIC Symp* Biosensors in Health and Disease **Bucher/Olver**	*CNS Section Erlanger Lecture* **Schultz**
27	*CV Section FT* Regulation of Blood Flow in Health and Disease **Ohanyan**	*EEP Section Adolph Lecture* **Poole**	*EM Section Berson Lecture* **Richter**
28A	*EM Section FT* Gut-Brain Interactions and Control of Feeding Behavior **Stein**	*EM Section Symp* The role of REDD1 in the Regulation of Skeletal Muscle Metabolism **Steiner**	*WEH Section FT* Impact of Diet on Blood Pressure Regulation **Greene/Stodola**

Monday, April 23, 2018, continued

28B	*Teaching Section FT* Abstract-Driven FT **Osborne**	*History Group Symp* The Physiological Challenges of Escaping Extreme Environments: DIsabled Subs and Stratospheric Bailouts **Ryan/Dean**	*Teaching Section Symp* Synergizing Teaching and Scholarship **Harris**
28DE	8:30 AM *Pubs Symp* Publishing 101: How to Get Your Work Published and Avoid Ethical Minefields **Sigmund**	1:30 PM *NCAR FT* Hot Topics in Autonomic Regulation **Mathis/Banek**	

Tuesday, April 24, 2018

Room	8:30–10:00 AM	1:30–3:00 PM	3:30–5:00 PM
20A	*IPSS Symp* Tissue-Distributed Control of Sex Differences in Diabetes and Cardiovascular Disease **Stafford**	*President's Symp Series Symp* Exosomes: The New Frontier. Exosomes in Diagnostics and Therapeutics **Jones**	5:30 PM–7:00 PM *APS Business Meeting*
22	*EM Section Symp* Mechanisms Underlying Skeletal Muscle Adaptation in Health and Disease **Lang/Molina**	*CV Section Symp* Steroid Receptor Signaling in Cardiovascular Health and Disease **Hamblin/Clayton**	*MBG FT* Exercise and Skeletal Muscle as Key Regulators of Whole Body Aging **Jackson/Brooks**
23	*NCAR Section Symp* Neuro-Immune Interactions in Inflammatory Homeostasis **Marvar**	*GIL Section FT* GI and Liver Physiology and Disease **TBD**	*GIL Section Davenport Lecture* **Turner**
24	*Cell Section Symp* Molecular Mechanisms for Salt-induced Cardiovascular Disease **Kirbo/Ruggeri Barbaro**	*Resp Section Comroe Lecture* **Forster**	
25A	7:00 AM–8:00 AM *TAC Symp* Do It Again: How to Achieve Rigorously Reproducible Research: Publishing Reproducible Research: Ensuring that Editors, Reviewers, and Readers Have Confidence in your Findings **Downey/Obi** 8:30 AM–10:00 AM *Renal Section FT* Advances in Renal Physiology II **Inscho**	*Cell Section FT* Epithelial Mechano-Sensitivity in Health and Disease **Beyder/Chebib**	*ETG FT* Hebert Lecture of the Epithelial Transport Group **Subramanya**

Tuesday, April 24, 2018, continued

25B	7:00 AM–8:00 AM *Careers Symp* Hallmarks of and Ground Rules for Productive Collaborations in Science: Preventing and Managing Conflict **Brandauer/Becker** 8:30 AM–10:00 AM *EEP Section FT* Getting Blood to Where it Needs to Go: Emerging Mechanisms Regulating Skeletal Muscle Blood Flow in Health and Disease **Romero/Hearon**	*Resp Section FT* Cell Plasticity: Calcium, cAMP and Beyond **Mehta**	*WEH SectionFT* Adaptations in Fluid Balance and Blood Pressure Regulation during Pregnancy **Denton/Veiras**
25C	7:00 AM–8:00 AM *WIPC Symp* Recognizing and Responding to Implicit Bias in Science: Surviving and Thriving in the Post-Weinstein World **Al Alam/Wallace/Ho** 8:30 AM–10:00 AM *CEP Section FT* The Effects of Environmental Challenges on Performance and Metabolism **Williams/Hindle**	*EEP Section Symp* Molecular Transducers of the Physiological Adaptations to Exercise and Aging **Seals/Martens**	*EEP Section Symp* Respiratory and Limb Skeletal Muscle Weakness in Disease: Mechanisms and Treatments **Bowen/Ferreira**
26	*Resp Section Symp* Neuroplasticity of Airway Reflexes **Bolser/Pitts**	*Hypoxia Group FT* **Harris/Moya Cespedes**	*CEP Section Krogh Lecture* Supported by Novo Nordisk Fonden **Hillman**
27	*CV Section FT* Novel Discoveries in Vascular Physiology **Earley**	*WEH Section FT* Origins of Cardiovascular Disease: Does Metabolic Disease Always Come First? **Spradley/De Souza**	*CV Section Berne Lecture* **Yuan**
28A	*CNS Section FT* Interrogating Neuronal Circuits Mediating Body Fluid Homeostasis **Krause**	*CV Section Symp* The Vasculome: An Integrated Exploration of Vascular Reactivity, Lineage, and Specialization **Galis/Yin**	*Cell Section FT* Cell Signaling: Proteins, Pathways, and Mechanisms **Hamilton/Helms**
28B	*CV Section FT* Endothelial Cell Contraction or Retraction (Insights Into Barrier Function and Permeability) **Webb/Wenceslau**	*NCAR Section Symp* Sympathetic Neurovascular Transduction in Humans: Are we there yet? **Shoemaker**	*NCAR Section FT* Battle of the Reflexes: Chemo- vs. Baroreflexes during Physiological Stressors, Aging and Cardiovascular Disease **Kellawan**
28DE		*Renal Section Symp* Structure and Function of Renal Epithelial Cilia **Bell/Satlin**	
TBD		1:00 PM–2:00 PM *History Group Lecture* **Raven**	

Wednesday, April 25, 2018

Room	8:30–10:00 AM	1:30–3:00 PM	3:30–5:00 PM
20A	*IPSS Symp* Extracellular Matrix Remodeling and Integrin Signaling in Metabolic Diseases **Wasserman**		3:30 PM–4:30 PM APS Nobel Prize Award Lecture **Hartwell**
22	*CV Section Symp* Chemotherapy Induced Vascular Toxicity: Do Small Things Matter? Cosponsored by AJP - Heart and Circulatory Physiology **Beyer/Croce**	*WEH Section FT* Stress, Sleep, Circadian Rhythms and Blood Pressure Regulation **Gumz/Johnston**	
23	*Physoc Symp* Epithelial Crosstalk and Innate Immunity **Garnett**	*APS/Physoc Symp* DAMPs and Inflammasomes: A Clear and Present Danger **Khan**	
24		*WEH Section FT* Immune Modulation of Blood Pressure and Vice Versa **Ryan/Itani**	
25A	*GIL Section Symp* Bile Acids in the Small Intestine and Colon, Physiology, Pathophysiology, and Therapeutic Opportunities **Keely/Lajczak**	*SFiB Pan-American Symp* Pan-American Symp **Campagnole-Santos**	
25B	*CV Section FT* Post-translational modifications in cardiovascular disease **Scott/Kohr**	*EEP Section FT* AMPK-mediated control of mitophagy **Hood/Yan**	
25C	*CEP Section FT* Comparative Models of Disease **Pamenter**	*EM Section Symp* Cardiac Metabolism Moving Center Stage: New Insights Enabling Metabolic Modulation Therapy **Wende/Glatz**	
26	*MBG FT* Role and Importance of Mitophagy in Skeletal Muscle in Health and Disease **Beaudry/Deldicque**	*CV Section FT* Mechanotransduction in Cardiovascular Function **Thodeti/Lindsey**	
27	*Resp Section FT* The Influence of State on Cardiorespiratory Control Mechanisms **Cummings/Dutschmann**		
28A	*EM Section FT* Brain - Gut Microbiota Interactions in Cardiovascular and Metabolic Control **Collister**	*CNS Section FT* The Gut-Brain Axis **Torres-Reveron/Appleyard**	
28B	*WEH SectionFT* Novel Approaches and Techniques in Water and Electrolyte Research **Smith**	*Resp Section FT* Resp Section Abstract-Driven FT **Prakash/Koval**	

Chapter News

The Fourth Annual Meeting of the Greater Washington Chapter of the American Physiological Society

Nikki Gillum Posnack

The Fourth Annual Meeting of the Greater Washington Chapter of the American Physiological Society (dmvCAPS) was hosted by the George Washington University in Washington, DC on October 23, 2017. The meeting hosted 136 attendees, representing 12 local institutions, including Children's National Medical Center, The George Washington University, University of Maryland, Georgetown University, Howard University, John's Hopkins University, National Institutes of Health, Uniformed Services Health Sciences University, United States Food and Drug Administration, Virginia Polytechnic Institute and State University, Biomedical Research Institute, and the University of Virginia. Of those attending, 27% were faculty members, 19% were postdoctoral or clinical fellows, 18% were graduate or medical students, 1% were high school students, 14% were undergraduate students, and 21% were other.

dmvCAPS conference attendees take a quick photo break following the third session

After an early morning of registration and coffee, Nikki Posnack (President dmvCAPS, Children's National Medical Center) welcomed attendees and speakers. Attendees were also greeted by a special guest Martin Frank (Executive Director of The American Physiological Society), who also participated in the annual meeting. The oral sessions began immediately following the opening remarks and included a range of topics from physiology, biomedical engineering, translational science, and science policy.

Angel Moreno (*top left*) and Rebecca Zee (*top middle*) sell their science in "Minute to Win It." Kara Garrott and Adam Swiercz discuss research at the poster session (*top right*). Attendees mingle with mentors at the career-networking lunch (*bottom left*). Mark Haigney and Sarah Kuzmiak discuss the research presentations (*bottom middle*), and Matthew Kay's laboratory presents their recent data at the poster session (*bottom left*).

The first session was kicked off by Jennifer Pluznick (Assistant Professor, Johns Hopkins University) presenting her research on "Olfactory Receptors, Gut Microbiota, and the Kidney." This presentation was followed by Kevin Cleary (Professor, Sheikh Zayed Institute) who presented his laboratory's research on "Robotically Assisted Rehabilitation for Pediatrics," and Laura Olivieri (Cardiology, Children's National Health System) who presented her work, titled "3D Printing and Congenital Heart Disease: A Heart Model Speaks 10,000 Words." The session commenced with a presentation chosen by the Conference Organizing Committee from the submitted abstracts. Victoria Gillam (undergraduate

student, Howard University) presented her studies aimed at "Identifying and Localizing Necklace Olfactory Receptors in the Kidney." Each presentation was followed by a 10-minute question-and-answer session, moderated by Boris Lushniak (Dean, School of Public Health, University of Maryland).

The second session included Ed Lakatta (National Heart Lung and Blood Institute, NIH), the keynote speaker for the meeting, who presented on "Why and When your Next Heartbeat will Occur." This presentation was followed by An Massaro (neonatologist, Children's National) who shared her research on "Physiological Biomarkers of Brain Injury in Neonatal Hypoxia-Ischemic Encephalopathy." The second session commenced with two presentations chosen from abstracts: Clayton Domingues (postdoctoral fellow, George Washington University) who presented his studies related to "Transplantation of Modified Human Mesenchymal Stromal Cells Improves Glucose Homeostasis and Non-Alcoholic Fatty Liver Disease" and Sergey Kanovka (Georgetown University) who presented research on "Transmission Electron Microscopy Reveals a Reduction in Energy Efficiency of the Right Ventricular Myocyte in a New Model of Heart Failure." Presentations were followed by a question-and-answer session, moderated by David Mendelowitz (professor, George Washington University).

Top right: postdoctoral poster awardees Rafael Jaimes, Arnab Ditta, and Marchshall Hogarth, alongside Chapter President Nikki Posnack. *Top left:* undergraduate poster awardees Sarah Schrup, Larissa Wietlisbach, and Oleksiy Melnyk. *Bottom right:* graduate student poster awardees Armel Femnou, Nour Al-Muhtasib, Michael Entz, and Nouran Abu Alsaud. *Bottom left:* oral presenter awardees Victoria Gillam and Sergey Kanovka (Clayton Domingues/Yana Kropotova not pictured.

The afternoon career development and networking session provided attendees the opportunity to meet mentors from a variety of different science backgrounds and career paths. Aisar Atrakchi, Jonathan Reich, and Mitra Rocca were in attendance from the Food and Drug Administration. Paul Marvar, Colin Young, Jennifer Pluznick, Chung-Hyak Park, Sarah Glancy, and Nikki Posnack were in attendance to share experiences related to academia. Finally, Stephanie Devaney, Matthew Raymond, Erik Stemmy, Gail Pearson, Kristen Burns, and Armel Femnou served as mentors and provided guidance on career paths at the National Institutes of Health.

After the career networking lunch, Stephanie Devaney presented on her work related to science policy and the "All of Us" initiative at the National Institutes of Health. Next, Richard Lovering (associate professor, University of Maryland) presented his research titled "Assessment of Damage in Skeletal Muscle Injury and Disease." The final speaker of the afternoon, Steven Malin (assistant professor, University of Virginia) spoke about the "Role of Exercise Dose on Skeletal Muscle Glucose Metabolism and Delivery." A question-and-answer session was moderated by Yi-Wen Chen (associate professor, Children's National).

A highlight of the afternoon session was the "Minute to Win It." In this session, each poster presenters were given 60 seconds to tell the audience about their research, why it is important, and convince conference attendees to visit their poster to learn more. The enthusiastic trainees embraced this opportunity and spoke with passion, clarity, and brevity. This session energized the attendees for the poster session that immediately followed.

The poster session featured a total of 64 posters, which were grouped into 3 categories: undergraduate/pre-graduate students, graduate students, and postdoctoral trainees. Poster judges were extremely impressed with the work of these junior scientists. A total of 10 poster awardees were chosen, who received printed awards along with $100. Winners were announced by dmvCAPS President Nikki Posnack at the end of the poster session.

The business meeting followed the awards ceremony, and was chaired by Nikki Posnack. Treasurer Sarah Kuzmiak-Glancy (George Washington University) discussed the Chapter's expenses, donations, and budget for the current year. Secretary Kara Garrott (George Washington University) discussed current membership numbers and upcoming elections. Additional discussion was focused on forming and updating committees to assist with the next dmvCAPS annual meeting, sponsorship, and promoting APS in the DC, MD, and VA region. Attendees expressed enthusiasm regarding the level of research conducted by trainees, and the diversity of the institutions represented at the 4th annual meeting. Following Chapter elections (January 2018), organization of the 5th annual conference will begin, with the goal of increasing interaction and networking opportunities between trainees and more senior members of the society.

dmvCAPS would like to thank the generous sponsors who helped make this meeting possible. Our sincerest appreciation and gratitude to The American Physiological Society, The George Washington University Department of Biomedical Engineering, Data Sciences International, Emka Technologies, Children's National Heart Institute and the Sheikh Zayed Institute for Pediatric and Surgical Innovation, The George Washington University Department of Pharmacology and Physiology, Thermo Fisher, Takara, Nikon, ADInstruments, Thor Labs, and Harvard Biosciences for their generous support. A special thank you to our officers (Sarah Glancy, Treasurer; Kara Garrott, Secretary), conference meeting co-chairs (Matthew Barberio, Jhansi Dyavanapalli), the organizing committee, and the many volunteers who dedicated their time to supporting the annual meeting.

32nd Annual Meeting of the Ohio Physiological Society

Gary Meszaros
OPS President 2017

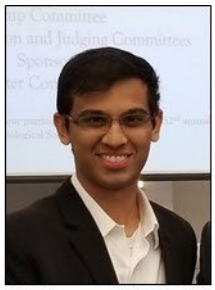
The Ohio Physiological Society held its 32nd annual meeting at the Northeast Ohio Medical University Education and Wellness (NEW) Center in Rootstown, OH on October 27, 2017. A total of 145 attendees from 12 of Ohio's universities, as well as 4 attendees from Marshall University (West Virginia) and 12 from Western Pennsylvania (Washington and Jefferson College, University of Pittsburgh, Westminster College) came to NEOMED for the event. Gary Meszaros (2017 Ohio Chapter President), Joseph Zarconi (Associate Dean), and William Chilian (Chair of Integrative Medical Sciences) from NEOMED came to the podium to welcome the attendees and keynote speaker. An outstanding keynote lecture was delivered by Kenneth Walsh, Distinguished Professor and Director of the Whitaker Cardiovascular Institute at the Boston University School of Medicine. Walsh's lecture, entitled "A Common Physiological Link Between Hematological Cancer and Cardiovascular Disease" was spirited and well-received by a crowd that swelled to nearly 200 people. In addition to displaying his cutting-edge scientific studies, Walsh included several appreciated pieces of mentoring and advice to the next generation of science trainees.

Graduate student talks were the focus of the oral presentations at the conference, with six graduate students being selected to present their research: Kevin McElhanon from Ohio State University (Noah Weisleder, mentor), Isha Mhatre from NEOMED (Jason Richardson, mentor), Loren Geiss from the University of Dayton (Carissa Krane, mentor), Alex Ruwe from the University of Cincinnati (Bryan McKenzie, mentor), Tori Czech from NEOMED (Moses Oyewumi, mentor), and Darren Gordon from the University of Toledo (Terry Hinds, mentor). The postdoctoral oral presentation was given by Taejeong Song from the University of Cincinnati (Sakthivel Sadayappan, mentor).

During lunchtime, an additional 22 student "blitz" presentations were given, which were 90 seconds in length and designed to stimulate interest for the afternoon poster sessions. In this group of presentations, there were nine that came from very talented undergraduate students! The afternoon was highlighted by two poster sessions that covered diverse and stimulating topics, and the exchange of ideas throughout the conference was robust. A total of 64 posters were displayed, presented, and judged during these sessions.


Loren Geiss


Darren Gordon


Chinmay Bakshi

Drs. William Chilian and Kenneth Walsh


Abdul-rizaq Hamoud


Anurag Jamaiyar


Emma Teal

The students who presented at the lunchtime blitz session followed by their poster sessions were eligible for the Peter K. Lauf Travel Awards to attend the Experimental Biology Meetings in April 2018 (San Diego). Thanks to the generosity of Peter Lauf, along with the Biomedical Sciences and Integrated Pharmaceutical Medicine Graduate programs (NEOMED), a total of six of these $750 travel awards were made possible. The 2017 Peter K. Lauf Travel awardees for the 2017 OPS were Lauren Geiss (University of Dayton; Carissa Krane, mentor), Darren Gordon (University of Toledo; Terry Hinds, mentor), Chinmay Bakshi (University of Cincinnati; Nira Ben-Jonathan, mentor), Abdul-rizaq Hamoud (University of Toledo; Terry Hinds, mentor), Anurag Jamaiyar (NEOMED; Liya Yin, Mentor), and Emma Teal (University of Cincinnati; Yana Zavros, mentor).

Additional outstanding poster presentation awards were given to four undergraduate students and three graduate students: Aubrey Rose (Ohio State), Justin Dunham (U Cincinnati), Samrawit Ghebrigziabh (U Akron), Nicholas Baker (Washington and Jefferson College); Kyle Spainhower (Youngstown State), Kevin Budge (NEOMED), Minqi Huang (Marshall). The outstanding postdoctoral poster awards were earned by Anantha Kanugula (NEOMED) and Lakshminarayan Teegala (U Akron). Congratulations to all of these poster competition winners and to all of our presenters for their high-quality research presentations and posters.

The conference benefitted from significant support, planning, and execution from our outstanding staff at NEOMED of Karen Greene, Ileen Ciccozzi, and Nicole

Smallwood, and generous financial support from several offices at NEOMED, Summa Hospital, Akron Children's Hospital, Best Medical and Research Supplies, FugiFilm-VisualSonics, VDM Biochemicals, B&B Microscopes LTD, and the American Physiological Society.

Before concluding the meeting, Peter Lauf (Wright State University), the founder and ardent supporter of the OPS, gave concluding remarks about his enthusiasm for the young scientists, their mentors, and their research projects. He also thanked the faculty and staff at NEOMED for hosting a successful and stimulating conference, with a special acknowledgement for Karen Greene, who has orchestrated a total of four OPS conferences at NEOMED dating back to 1993. He and all of our members thank Ken Walsh for taking time to fully participate in the 32nd Annual Ohio Physiological Society conference and delivering such an enthusiastic and superb keynote address. The business meeting then concluded as the "presidential torch" was passed from Gary Meszaros to the 2018 OPS President Bryan Mackenzie, as he and the University of Cincinnati will host the 33rd annual meeting in the fall of 2018. ●

Nebraska Physiological Society Meeting

Neeru Sharma
Secretary/Treasurer NPS

The 20th Anniversary meeting of the Nebraska Physiological Society (NPS), a chapter of the American Physiological Society (APS), was held on Saturday, October 28, 2017 at Mammel Hall-Auditorium on the campus of the University of Nebraska-Omaha. To celebrate the successful 20 years of NPS, a Friday Night Social was held on October 27, 2017 at Dudley's Pizza and Tavern in Aksarben Village. Fifty-one NPS members attended the social.

The APS, University of South Dakota (USD)-Sanford School of Medicine, University of Nebraska-Omaha College of Education, University of Nebraska Medical Center (UNMC) Department of Cellular & Integrative Physiology, UNMC College of Medicine, VisualSonics Fujifilm, Transonic, Data Sciences International, STEMCELL, and Fisher Scientific, in part, financially supported the conference.

One hundred twenty-one registered individuals, including high school, undergraduate, and graduate students, postdoctoral associates, and faculty members, participated in the scientific/educational conference. Overall, institutions from Nebraska, South Dakota, and Minnesota were represented.

The scientific/educational sessions began with welcome and opening remarks from Matthew Zimmerman (President of the NPS from the University of Nebraska Medical Center). Zimmerman acknowledged Kim

Friday night social at Dudley's Pizza

Kavan and Debra Davis from the Department of Cellular and Integrative Physiology at UNMC for their help in organizing the meeting. Zimmerman also described the format of the two debates presented in the meeting, one focused on graduate education, whereas the other focused on the use of animals in the biomedical research.

Following Zimmerman's introductory remarks, the education debate entitled "After Completing Required Coursework, Physiology Graduate Students Must Concentrate All of Their Efforts in the Research Laboratory" was presented. Two teams debated this statement. The *FOR* team included Kaushik Patel, faculty member at UNMC; Sarah Schlichte, graduate student at UNMC; and Julia Shanks, postdoctoral fellow at UNMC. The *AGAINST* team included Pamela Carmines, faculty member at UNMC; Songita Choudhary, MD/PhD student at UNMC; and Brenna Bray, graduate student at USD. After the debate, which included questions and discussion from the audience, there was time for a break in which attendees were able to visit exhibitor booths.

After the break, the APS-sponsored keynote research address was presented by John W. Osborn from the University of Minnesota. His presentation was entitled "Role of Afferent and Efferent Renal Nerves in Cardiometabolic Diseases." A coffee break followed his presentation.

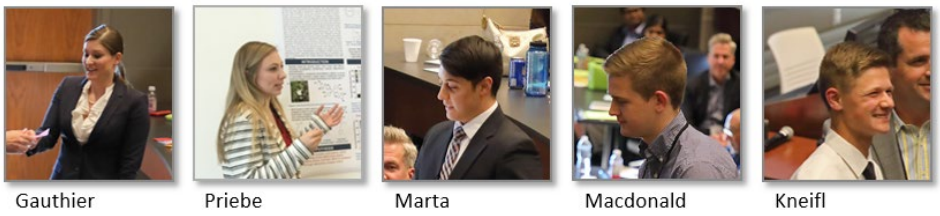
Poster session 1 (even numbered posters) was started following the break. There was a competition for best undergraduate, graduate, and postdoctoral fellow poster presentations. Viewing for *poster session 2* was started after lunch (odd-numbered posters). Overall, 62 posters, including 11 faculty, 14 undergraduate, 21 graduate, and 15 postdocs were presented, and the 2-hour period was earmarked for poster viewing and judging.

Keynote speaker John W. Osborn

After the poster session, the advocacy debate entwitled "The Use of Animal Models is Necessary for the Future of Biomedical Research and Development of New Therapeutics/Cures for Human Disease" was presented. The *FOR* team included Irving Zucker, faculty member at UNMC; Michael Price, MD/PhD student at UNMC; and Roopali Yadav, postdoctoral fellow at UNMC. The *AGAINST* team included Adam Case, faculty member at UNMC; Safwan Elkhatib, MD/PhD student at UNMC; and Bryan Hackfort, postdoctoral fellow at UNMC.

Education debate

After the advocacy debate, the conference continued with the announcement of debate winners and recognition of the best poster presentations. The result of the education debate was 27 total changed votes (21 changed *their* vote to *Against,* whereas 6 changed to *For*). As such, the winner was the Against Team. There were 24 total changed votes in the advocacy debate (19 changed to *Against,* whereas 5 changed to *For*). The winner was the Against Team. A gift card worth $25 was given to each debate participant as a token of participation. There were four poster awards for each category: undergraduate, graduate, and postdoctoral fellows. The award recipients received certificates and monetary awards of $300 (1st place), $200 (2nd place), $100 (3rd place), and $50 (4th place). The winners of the undergraduate poster competition were 1st place, Madeline Gauthier, University of Minnesota; 2nd place, Alaini Priebe, University of Nebraska at Kearney; tied 3rd place, Patrick Marta, Creighton University; tied 3rd place, Sarah Sweeney, University of Nebraska at Lincoln; tied 4th place, Brad Macdonald, Creighton University; and tied 4th place, Jacob Kneifl, Wayne Jr/Sr High School. The winners of the graduate poster competition were 1st place, Hanming Zhang, University of South Dakota; 2nd place, Constance Mietus, University of Nebraska Medical Center; 3rd place, Shamma Rahman, University of Nebraska Medical Center; and 4th place, Bangchen Wang, University of Nebraska Medical Center. The



Undergraduate student poster winners

Graduate student poster winners

Postdoc poster winners

winners of the postdoc poster competition were 1st place, Rajeshwary Ghosh, University of South Dakota; 2nd place, Peng Xiao, University of South Dakota; 3rd place, Julia Shanks, University of Nebraska Medical Center; 4th place, Penglong Wu, University of South Dakota.

Zimmerman recognized Cindy Norton, Executive Director, NPS, for her leadership in coordinating the NPS annual meeting for last 20 years. Zimmerman also appreciated Hamid Shahshahan from the Department of Cellular and Integrative Physiology at UNMC for his assistance in capturing the event with photographs.

At the closing of the conference, the NPS business meeting chaired by NPS President Zimmerman was called to order. An update on NPS outreach activities over the past year was reported in writing. NPS Secretary/Treasurer Neeru Sharma, from the University of Nebraska Medical Center, provided the treasurer's report. Zimmerman presented the Past-President Award for 2016 to Yifan Li, from the University of South Dakota. The ballot for NPS council members for 2017–2018 was collected, and the following were elected as NPS officers for 2017–2018: President, Saraswathi Viswanathan, University of Nebraska Medical Center; Past-President, Matthew Zimmerman, University of Nebraska Medical Center; President-Elect, Harold D. Schultz, University of Nebraska Medical Center; Councilor, Dustin Slivka, University of Nebraska-Omaha; Evelyn Schlenker, University of South Dakota; Paras Mishra, University of Nebraska Medical Center; Student Councilor, Anyun (May) Ma, University of Nebraska Medical Center; Secretary/Treasurer, Neeru Sharma, University of Nebraska Medical Center; Executive Director, Cindy Norton, University of Nebraska Medical Center; CAC Representative, Alicia Schiller, University of Nebraska Medical Center. Subsequently, Saraswathi Viswanathan, discussed new business and her vision for the 2017 meeting of NPS.

Zimmerman then made final remarks, and the meeting was adjourned. ●

Birmingham Physiology Network Meeting Report

The Birmingham Physiology Network (BPN) hosted its second annual fall event, titled "Flex Your PharmD/Ph.D." at Samford University's College of Health Sciences campus in Birmingham on November 16, 2017. This event was attended by Samford pharmacy students as well as graduate (PhD) students from UAB. The event began with an informal poster presentation by students who conduct research either in the Pharmacy School at the College of Health Sciences or at the graduate school at UAB. Following this, there were two distinguished speakers who talked about their careers, with a focus on industry and government career opportunities after graduation. The first speaker was Edress Darsey (PharmD), currently the Global Pediatric Medical Director at Pfizer and formerly a medical science liaison for Pfizer. She gave the audience a very good overview of her career path as well as the process for attaining internships into the Pfizer Fellowship programs and recommendation on how to complete the process successfully. She gave advice on how to prepare for careers in the pharmaceutical industry, whether as a PhD scientist or as a PharmD. The second speaker was Gowrisankar Rajam, who is an immunologist and lab lead at the Centers for Disease Control and Prevention (CDC) in Atlanta. He was very passionate about research and talked about vaccine design and development, and spoke to the attendees about the current position and responsibilities of the CDC in healthcare management. He also emphasized the importance of leading into CDC with research internships and fellow opportunities if students were interested in that avenue post-graduation. We were slated to have a third speaker, Eddie Underwood (PharmD), who is a medical liaison at Ironwood Pharmaceuticals but could not attend due to his travel arrangements.

Overall, this event was successful, with a good turnout of students from both Samford as well as UAB, and we look forward to more events of this nature that cater to developing and nurturing enthusiasm for research and opportunities in science within students at the undergraduate as well as graduate level. ●

Edress Darsey (*middle*) accepting a certificate and a token of appreciation from Randee Sedaka (*right*) (Graduate Student at UAB, President of BPN) and Bernadette D'Souza (*left*) (Samford Faculty representative of BPN)

Gowrisankar Rajam (*middle*) accepting a certificate and a token of appreciation from Randee Sedaka (*right*) (Graduate Student at UAB, President of BPN) and Bernadette D'Souza (*left*) (Samford Faculty representative of BPN)

IUPS

IUPS 2017: "Rhythms of Life"

Approximately 9 years ago, the Brazilian Society of Physiology (SBFis) had submitted the bid to the Executive Council of the International Union of the Physiological Sciences (IUPS) to host the IUPS World Congress in 2017. In 2009, at the 36th World Congress of the IUPS held in Kyoto, Japan, Brazil was elected to host the 38th World Congress of the IUPS in Rio de Janeiro in 2017. To prepare to host the IUPS Congress, the SBFis and the Local Organizing Committee (LOC) developed a long-term project, including the organization of several scientific activities, such as annual congresses of physiology in 2012, 2013, and 2015, and the successful 1st PanAmerican (PanAm) Congress of Physiological Sciences in Iguassu Falls in 2014.

With the experience accumulated in the organization of these previous congresses, the SBFis was able to successfully host the IUPS 2017 Congress, whose theme was "Rhythms of Life." In planning for the Congress, the leadership of SBFis developed valuable partnerships with The American Physiological Society (APS), The Physiological Society (PhySoc), and The Scandinavian Physiological Society (SPS). With these partner societies, SBFis worked together in the arrangement of several joint scientific activities at the national and international level. In addition, the substantial financial and logistical support from these three societies of physiology made a major contribution on the organization of the 38th World Congress of Physiological Science.

The scientific program for the 38th World Congress of the IUPS 2017 was constructed with the assistance of the International Scientific Programming Committee (ISPC) nominated by IUPS and SBFis. The ISPC met twice to select the best among those proposals presented by the world community of physiologists. The ISPC was comprised of two groups identified by the SBFis and the IUPS. The SBFis members were Benedito H. Machado (Co-Chair; Brazil), Aldo B. Lucion (Brazil), Alicia Mattiazzi (Argentina), Cecilia Hidalgo (Chile), Lisete C. Michelini (Brazil), Luciane Gargaglione (Brazil), Maria José Campagnole-Santos (Brazil), Patrícia R.M. Rocco (Brazil), Thiago S. Moreira (Brazil), Walter A. Zin (Brazil), Patricia Molina (U.S.), Ken O'Halloran (UK), Peter Bie (Denmark), and honorary members Eduardo M. Krieger, José Antunes Rodrigues, and Gerhard Malnic. The members of the ISPC appointed by the IUPS included Walter Boron (Co-Chair; U.S.), Denis Noble (UK), Janet Taylor (Australia), Jens Rettig (Germany), Katsuhiko Mikoshiba (Japan), Ludmila Filaretova (Russia), Penny Moody-Corbett (Canada), Peter Hunter (New Zealand), René Bindels (The

Vagner Antunes, Roger Kornberg, Benedito Machado


View from the Congress meeting venue


View of the Congress meeting venue

Table 1. Geographic distribution of speakers by country

Country	No. of Speakers	Country (cont.)	No. of Speakers
1. Argentina	8	18. Italy	2
2. Australia	9	19. Japan	12
3. Austria	3	20. Mexico	3
4. Belgium	3	21. New Zealand	8
5. Brazil	42	22. Nigeria	1
6. Canada	21	23. Norway	3
7. Chile	6	24. Portugal	1
8. China	10	25. Russia	2
9. Denmark	8	26. Spain	4
10. Finland	3	27. South Africa	1
11. France	18	28. South Korea	1
12. Germany	22	29. Sweden	2
13. The Netherlands	5	30. Switzerland	2
14. Hungary	2	31. Taiwan	1
15. India	4	32. United Kingdom	30
16. Ireland	1	33. Uruguay	1
17. Israel	3	34. United States	73

Netherlands), Robert Carrol (U.S.), Ryuji Inoue (Japan), Tobias Wang (Denmark), Yang-Sook Chun (Korea), and ex officio members Julie Chan, Peter Wagner, and Penny Hansen.

The members of the local organizing committee (LOC) for IUPS 2017 were Vagner R. Antunes (Chair; São Paulo/SP), Ruy R. Campos Jr (Co-Chair, São Paulo/SP), Ana Carolina Takakura (São Paulo/SP), Antonio Claudio Lucas da Nobrega (Niterói/RJ), Benedito H. Machado (Ribeirão Preto/SP), Carmen Cabanelas Pazos de Moura (Rio de Janeiro/RJ), Eduardo Colombari (Araraquara/SP), Maria José Campagnole-Santos (Belo Horizonte/MG), Pedro Leme (Rio de Janeiro/RJ), Thiago S. Moreira (São Paulo/SP). The success of the IUPS 2017 World Congress was a result of the many organizational tasks accomplished by the LOC over the past 8 years. Those successes contributed to the positive experiences of the 1,500 active physiologists from 64 countries who attended IUPS 2017.

In planning for the 38th IUPS Congress, the ISPC members met twice. The first meeting was held in Águas de Lindóia, Brazil, on July 31 and August 1, 2015, where the committee evaluated over 150 proposals of plenary and keynote lectures as part of the IUPS 2017 scientific program. The second meeting occurred on August 26–27, 2016 at the city of São Paulo in the campus of the University of São Paulo, where members of ISPC gathered to evaluate and select the approximately 120 symposia included on the program.

The scientific program announced on the Congress website included 6 plenary lectures, including 2 Nobel laureates, 21 keynote lect-ures, 59 symposia, and 2 workshops, comprising a total of 315 speakers from 34 countries (Table 1), and a gender distribution among the speakers of 61% male and 39% female.

A total of 1,028 abstracts, including 37 in the *Late-Breaking* call, were submitted to IUPS 2017 World Congress from 54 countries (Table 2) covering 16 areas of physiological science (Table 3).

A broad range of themes in physiological science was represented in the scientific program of the 38th World Congress of the IUPS, as we can see in absolute numbers.

Delegates from 64 countries were represented in the 38th World Congress of the IUPS 2017, with a total 1,540 registrants and a gender distribution of 51% male, 44% female, and 5% not declared.

According to the academic category from the total of 1,540 registrants, 38% were seniors, 34% were PhD students (master + doctorate), 17% were undergraduate students, and 11% were postdocs (Table 4).

In an effort to have a successful IUPS Congress, the SBFis LOC has been working with some of the largest societies of physiology around the world to gain their cooperation and support. These initiatives were very productive, resulting in significant financial help from these societies, and their respective journals, in support of scientific activities such as symposia and lectures, and also travel grants for their members.

- The American Physiological Society (APS) was an important partner of SBFis and LOC for the organization of the IUPS 2017 Congress. APS contributed $75,000 (USD) in support of 12 sessions tagged by APS journal, and the same amount ($75,000) was allocated in support for travel grant programs for their members. The APS contribution to the 38th IUPS World Congress was $150,000, with $25,000 of the amount coming from an NSF grant.
- The Trustees of The Physiological Society unanimously endorsed the strategic decision to forego its own annual meeting in 2017 in favor of a substantial commitment to fund lectures, symposia, and participants to the IUPS 2017 Congress in Rio de Janeiro. PhySoc and *Journal of Physiology* sponsored seven symposia, two plenary lectures, and four keynote speakers. In addition, PhySoc also provided funds to support a travel award program to enable the society members to attend the Congress in Rio de Janeiro. The total investment of PhySoc in the IUPS 2017 was £90,000.00 in support for travel grant programs of their members, and £30,000.00 allocated in support of symposia for a total PhySoc investment in the 38th IUPS World Congress of £120,000.
- The Scandinavian Physiological Society (SPS) was also an important partner society, and four symposia and two keynote lectures were sponsored by SPS. *Acta Physiologica* also sponsored two symposia. The total investment of SPS and *Acta Physiologica* in the IUPS 2017 was €28,000.

Four satellite meetings were organized before and after the 38th World Congress of IUPS 2017. It is important to note that all satellites meetings were organized by specific committees, and the LOC-IUPS 2017 helped promotion by giving access to the IUPS Congress website and some logistic support to their organization. The budget of each of these satellites was also independent of the IUPS 2017 Congress.

Table 2. Geographic distribution of abstracts submitted for poster presentation

Country	No. of Abstracts
1. Argentina	14
2. Australia	8
3. Belgium	2
4. Botswana	1
5. Brazil	611
6. Bulgary	8
7. Chile	38
8. China	24
9. Columbia	1
10. Croatia	1
11. Czech Republic	3
12. Denmark	9
13. Egypt	4
14. Finland	3
15. France	6
16. Germany	11
17. Hong Kong	1
18. India	9
19. Iran	1
20. Ireland	8
21. Italy	1
22. Japan	15
23. Lithuania	1
24. Mexico	1
25. The Netherlands	1
26. Nepal	6
27. New Zealand	9

Country (cont.)	No. of Abstracts
28. Nigeria	36
29. Norway	5
30. Pakistan	4
31. Peru	3
32. Poland	2
33. Portugal	1
34. Republic of Guana	1
35. Rwanda	1
36. Russia	12
37. Saudi Arabia	1
38. Serbia	1
39. Slovaquia	4
40. Spain	15
41. South Korea	4
42. Sri Lanka	1
43. Sudan	9
44. Sweden	3
45. Switzerland	2
46. Taiwan	7
47. Thailand	3
48. Turkey	12
49. United Arab Emirates	1
50. United Kingdom	60
51. Uruguay	1
52. United States	33
53. Zimbabwe	1

Entertainment at the IUPS Congress

Table 3. Physiological science areas represented at the 38th World Congress of IUPS

Physiological Science Area	No.
1. Cardiovascular Physiology	226
2. Cellular & Molecular Physiology	108
3. Central Nervous System	100
4. Comparative Physiology	43
5. Ecology, Environment, Biodiversity & Evolution	8
6. Exercise Physiology	94
7. Endocrinology & Reproduction	77
8. Gastrointestinal & Liver Physiology	31
9. History of Physiology	1
10. Metabolism	93
11. Muscle Biology & Bone	21
12. Neural Control and Autonomic Regulation	67
13. Physiome, Genomics Systems Biology & Mathematical Model	11
14. Respiratory Physiology	74
15. Renal Physiology	44
16. Teaching & Education Physiology	30

The following satellite meetings were presented in conjunction with the IUPS 2017 Congress.

- International Early Career Symposium 2017, From *Basic to Translational Physiology*, was held in the city of Rio de Janeiro on July 31, 2017, just before the IUPS 2017 Congress at the Federal University of Rio de Janeiro. The IECS 2017 was organized by an international committee of early career physiologists and offered an exciting opportunity for young investigators at the start of their career to present their work and network with a global audience. The theme for IECS 2017 was *From Basic to Translational Physiology,* with the aim of integrating basic physiological researches across all system and their possible therapeutic applications. The IECS 2017 scientific program included oral and poster presentations of postgraduate students and postdoctoral workers, invited lectures, and workshops.
- IUPS and ADInstruments Teaching Workshop 2017, "Harmonization of Teaching and Learning for Better Education," was held on August 5–8 in Armação de Búzios, RJ, Brazil immediately after the 2017 IUPS International Congress. The Teaching Workshop featured a mix of plenary talks with hands-on workshops and activities that engaged with current educational issues related to the teaching and learning of physiology. The workshop activities were organized in several tracks focusing on technology use in class, cooperative learning, and student self-assessment between others. Teaching laboratory experiences included interactive demonstrations of games, quizzes, and ADInstruments data acquisition systems, including LabTutor.
- The 12th World Congress on Neurohypophysial Hormones (WCNH 2017) was held in the Porto Real Resort, Mangaratiba, RJ, Brazil right before IUPS (July 26–29, 2017). The program covered all aspects of oxytocin and vasopressin research from cellular physiology to behavior. The most recent advances in the field were presented by leading researchers. There was also ample opportunity for new and emerging researchers to present their work as part of symposiums, oral presentation program, or at the poster session.
- Workshop on Exercise Physiology. The LOC provided support to Antonio Claudio Nóbrega, member of the LOC from the University Federal Fluminense, in Rio de Janeiro, to organize a workshop on Exercise Physiology, December 2–3, 2016, with an audience of more than 200 young physiologists. The purpose of this workshop was to bring attention to the importance of physiology as an essential discipline to understand the high performance of the athletes after the Olympic games. A financial proposal was approved Rio de Janeiro State Foundation for Research (FAPERJ), and Nóbrega coordinated all activities. The opening conference of this symposium, entitled "Physiology and the Rhythms of Life," was presented by Benedito H. Machado, Co-Chair of the ISPC, and members of the LOC for the IUPS 2017.

Conclusions

The IUPS 2017 Congress was a great success from the LOC's perspective. According to the survey launched by the MCI (PCO Agency) on the Congress website, the scientific program received the highest score by the majority of the participants who rank it as the top activity. Therefore, the Congress reached its main goal, which was to provide the global community of physiologists with a great scientific program at the highest level in terms of speakers and themes in the plenaries, keynotes, and symposia.

The number of registrants was below the expectations of the LOC, and a low number of participants from Brazil and abroad was likely due to restrictions of financial support for those attending international congresses these days, mainly for those physiologists from developing countries.

Although the number of participants was below expectations, it is important to note that the representation of delegates coming from 64 countries definitely provided the international feature of the Congress. It is also important to note that a large number of participants were young investigators (undergraduate, PhD students, and postdocs), indicating that the perspectives for the physiological sciences are very positive.

Unfortunately, the final balance of the Congress's budget was a deficit; however, we should consider that the World Congress of Physiological Sciences in Brazil was a great success, scientifically speaking. It is important to acknowledge the remarkable support from the executives of SBFis, APS, PhySoc, and SPS in all aspects of the Congress, especially for supporting the speakers and the young investigators with travel grants. In addition, the Congress benefitted from the vital support given by all of the Brazilian Research Funding Agencies.

Finally, the organizers extended their special thanks to the members of LOC and ISPC for their hard work. In addition, they expressed their appreciation to the community of Brazilian physiologists who had supported not only the 38th World Congress of the IUPS but also all scientific events organized by the Brazilian Society of Physiology during the past 8 years as part of the project "Rhythms of Life." ●

Table 4. Geographic distribution of 1,540 regristrants from 64 countries

Country	No. of Registrants	Country (cont.)	No. of Registrants
1. Antiglia and Barbuda	1	33. Netherlands Antilles	1
2. Argentina	22	34. Nepal	1
3. Australia	18	35. New Zealand	27
4. Austria	3	36. Nigeria	29
5. Belgium	5	37. Norway	8
6. Botswana	1	38. North Korea	1
7. Brazil	862	39. Pakistan	4
8. Bulgary	2	40. Peru	2
9. Canada	31	41. Poland	2
10. Chile	51	42. Portugal	1
11. China	39	43. Republic of Guana	1
12. Columbia	2	44. Rwanda	1
13. Croatia	1	45. Russia	14
14. Cuba	1	46. Saudi Arabia	2
15. Czech Republic	3	47. Serbia	3
16. Denmark	14	48. Slovaquia	4
17. Egypt	3	49. Spain	8
18. Finland	3	50. South Africa	17
19. France	18	51. South Korea	8
20. Germany	22	52. Sri Lanka	1
21. Granada	1	53. Sudan	9
22. Hong Kong	2	54. Sweden	5
23. Hungary	2	55. Switzerland	4
24. India	12	56. Taiwan	10
25. Iran	1	57. Thailand	3
26. Ireland	9	58. Trinity and Tobago	1
27. Israel	3	59. Turkey	12
28. Italy	9	60. United Arab Emirates	3
29. Japan	26	61. United Kingdom	83
30. Lithuania	1	62. Uruguay	3
31. Mexico	5	63. United States	100
32. The Netherlands	5	64. Zimbabwe	1

IUPS General Assembly Meets in Rio de Janeiro

The IUPS General Assembly met on August 1, 2017 in conjunction with the IUPS Congress in Rio de Janeiro, Brazil. The U.S. delegation was led by APS President Dennis Brown and included Susan Barman, Patricia Molina, Harold Schultz, Bill Yates, and Irving Zucker.

The first order of business was the approval of the agenda and the minutes of the 2013 General Assembly Meeting. Immediately following, the officers of the IUPS made presentations, most notably the presentation of Denis Noble, outgoing IUPS President. Noble has served as IUPS President since 2009, although his commitment began in 1993 when he chaired the Organizing Committee for the Glasgow Congress. Along with James Black, they published a book distributed to all Congress delegates called *The Logic of Life*, with the subtitle *The Challenge of Integrative Physiology*. In his remarks, Noble commented on how the sequencing of the human genome has made it possible to produce genome-based trees and networks of the evolution of species. At the same time, a major conclusion was beginning to emerge. Molecular biology began deconstructing its own dogmas, including the "central dogma" that information flows only one way from DNA to the organism. Also, other processes in addition to those formulated by 20th century evolutionary theory could have contributed to the evolutionary process. The outcome is that physiology necessarily returns to center stage in the biological sciences. The functional organization of organisms becomes important in the direction of evolutionary change. These developments are fundamental and create a great opportunity for the physiological sciences. He encouraged young physiological scientists to rise to the challenge and succeed in efforts to expand our discipline. Noble noted that the 21st century view of nature is already very different from what we were taught as students.

The Board of the General Assembly (BGA) presented their report on restructuring the IUPS to add regional representatives to the Council. In addition, Jayasree Sengupta (BGA Chair) and Susan Barman (BGA Vice-Chair) presented the report on *Physiology: Current Trends and Future Challenges*. Tobias Wang presented a report on the journal *Physiology*, which is jointly published by the IUPS and the American Physiological Society. Peter Hunter presented a report on the IUPS plans to create a new journal, *Physiome*. The aim of the journal is to support the reproducibility and reuse of mathematical models of physiological processes. The journal will publish details (modularity, curation, annotation, and documentation) of models that are part of research papers that have been accepted by a reputable physiology or bioengineering journal.

During the meeting, the General Assembly voted for officers and the new Council for the IUPS. The new IUPS officers include: President Julie Chan (Taiwan), 1st Vice President Susan Wray (United Kingdom); 2nd Vice President Peter Hunter (New Zealand); Secretary-General Ulrich Pohl (Germany); and Treasurer Patricia Molina (U.S.). Membership on the Council is determined by disciplinary commission or region. The new Council members include:

Commission I – Locomotion
Heikki Kainulainen, Finland

Commission II – Circulation and Respiration
Alicia Mattiazzi, Argentina

Commission III – Endocrine, Reproduction, and Development
Ludimila Filaretova, Russia

Commission IV – Neurobiology
Katsuhiko Mikoshiba, Japan

Commission V – Secretion and Absorption
Rene Bindels, Netherlands

Commission VI – Molecular and Cellular
Yoshihiro Kubo, Japan

Commission VII – Comparative: Evolution, Adaptation, and Environment
Tobias Wang, Denmark

Commission VIII – Genomics and Biodiversity
Yang-Sook Chun, Korea

Ethics Committee
Ashima Anand, India

Education Committee
Rob Carroll, U.S.

Physiome Committee
Andrew McCulloch, U.S.

Regional Representative – North/South America
Vagner Antunes, Brazil

Regional Representative – Europe/Africa
Markus Hecker, Germany

Regional Representative – Asia/Oceana
Xiaomin Wang, China

Regional Representative – At Large
Olusoga Sofola, Nigeria

The General Assembly also voted to admit Sri Lanka into the IUPS as a new member society. Benedito Machado and Vagner Antunes presented a report on the forthcoming 38th IUPS Congress. Xiaomin Wang (CAPS President) presented the plans for the 39th IUPS Congress to be held in Beijing in 2021. After the General Assembly approved the presentation from China, the IUPS flag was passed from Benedito Machado (Brazil) to Xiaomin Wang (China). Since the bid for the 2025 Congress was submitted by multiple European societies, it was combined into a joint bid, led by FEPS, the European Federation. The countries were Germany (the host), Austria, Slovenia, Spain, Switzerland, and the Scandinavian Physiological Society, and the plan was to host the Congress in Munich, Germany. The General Assembly unanimously approved the bid for the 2025 IUPS Congress. ●

2017 APS Travel Award Program for IUPS, Rio de Janiero

The 38th IUPS Congress was held August 1–5, 2017 in Rio de Janeiro, Brazil. Through its IUPS Travel Award Program, APS made 78 awards to APS members to help defray the cost of their attendance at the Congress. The Society also sent a delegation of members who represented the Society at the meeting of the IUPS General Assembly and participated in the various Congress activities. A generous grant from the National Science Foundation allowed the APS to support additional travel awards beyond what would have been possible from APS funds alone.

After attending the Congress, IUPS awardees were asked to complete a survey on their experiences. Of the attendees surveyed, more than 50% were junior investigators who received their degrees within the last 4 years. When asked to rank the Congress on a scale of 1–10 with 10 being the highest, 72.47% ranked the Congress as being 7 or higher. The most popular rank was a 9/10.

We asked the attendees what benefits they received both scientifically and personally as a result of their participation in the 38th IUPS Congress, and here is what some of them had to say:

Country	# of Awardees
Argentina	3
Brazil	8
Canada	3
Chile	4
Cuba	2
Egypt	1
India	3
New Zealand	1
Nigeria	10
Pakistan	1
Saudi Arabia	1
South Africa	2
Spain	1
Sri Lanka	1
Sudan	1
Sweden	1
The Netherlands	1
United Kingdom	4
Zimbabwe	1
U.S.	29
Total Number of Awards Made	**78**

"Through my participation at the satellite meeting and congress I was able to gain information that will help me in the future with my project. Additionally, giving an oral presentation has improved my skill and increased my confidence in presenting my work." *Esther Odekunle, Spain*

- "Scientifically, it has given me exposure to worldwide researches going on and made it possible to listen to Nobel laureates like Ada Yonath and Roger Kornberg. I met Dr. Montani, Dr. Deepak, Dr. Boron, Dr. Noble, and many more. Personally, I found some very good friends from different parts of the globe." *Om Lata Bhagat, India*
- "I have presented my research and have gotten good feedback with constructive notes from colleagues. I managed to attend very nice talks and symposia, which updated my knowledge and enriched my potential ideas. It was a great chance to communicate with peer scientists from Brazil and worldwide. I enjoyed Rio de Janeiro and the South American culture." *Ismaeel Bin-Jaliah, Saudi Arabia*
- "The congress gave me the opportunity to organize and chair a symposium involving researchers from several countries. It also gave me the opportunity to visit the laboratory of a potential collaborator prior to the meeting." *Eric Belin de Chantemele, U.S.*
- "Exposure to an international audience brings greater awareness of current thinking in the field. Large contingent from South America brings another interesting perspective to research. As a young post-doc, networking opportunities are always excellent at these" *Patrick Hosford, United Kingdom*
- "Participation in 38th IUPS congress was a great privilege. Personally, I appreciate the travel experience, exposure to various people of diverse languages and culture. Places of interest visited and development witnessed and modes of agricultural husbandry in Brazil were of interest to me that had great impact in my professional development. Also the lectures attended and abstract presentation sections gave me great opportunity to learn new research techniques, know about facilities that I can harness in some other laboratories in America and Europe. My contacts with Prof. Denis Noble (UK), Benedicto Machando (Brazil), Tobias (Denmark), Wang (Germany), Monica Santos (Brazil), and others that I met for professional and academic development, possible research visit opportunities, training and research collaboration and mentorship." *Adejumobi Olumuyiwa Abiola, Nigeria*

Awardees were also asked: What was the most positive aspect of your participation in the 38th IUPS Congress? Here are some of their answers:

- "It was great to meet former professors and colleagues. I am Brazilian, and most of my former colleagues don't attend the same meetings as I do in U.S. (EB, IAMSE). Also it was fascinating to attend the SBFis meeting with many former presidents. The poster sessions were well attended, and I had great discussions and input. The opening reception was great. Great music to show the natural happiness of Brazilians. I really like the entire event." *Helena Carvalho, U.S.*
- "I most enjoyed the talks in the symposia and plenary. The caliber was very good and I learned new things." *Deborah Kurrasch, U.S.*
- "This congress was valuable for me, which exposed a lot of the physiology that is going on around the world. Most importantly, it was my first conference during my PhD studies. Hence, I would like to thank the APS for facilitating the travel award. The Society's booth had many insightful news on physiology journals in addition to the workshop 'Getting Your Work Published in Physiology Journals.' Overall, this congress gave me an excellent opportunity to introduce with young to advanced researchers in physiology. I am grateful to the APS for supporting the travel award. After the congress, my impression is that computer science is an essential discipline for building software and modeling in physiology." *Dewan Mahabub Sarwar, New Zealand*
- "Our symposium was extremely well received—a few people even told me that they thought it was the best symposium of the entire congress. For the last day of the congress, the room was packed. Great feedback and lots of interest." *Denis Belsham, Canada*
- "The opportunity to directly interact with South American groups, who relatively rarely travel to international meetings." *Per Petersson, Sweden*
- "The most positive aspect was hearing talks and plenary lectures from world-renowned scientists on topics I never would have dreamed of learning about . . . like the cardiovascular system of a giraffe, for example. I also was fortunate enough to stay with members from a different lab during the conference and through that I was able to meet others." *Carissa Miyano, U.S.* ●

ACDP

Association of Chairs of Departments of Physiology 2017 Leadership Retreat Highlights

The Association of Chairs of Departments of Physiology (ACDP) held its annual Leadership Retreat at Hilton Rose Hall Resort in Montego Bay, Jamaica, on November 30 to December 3, 2017.

President Charles E. Wood (Univ. of Florida Coll. Med.) developed a program focused on issues being currently faced by physiology departments and programs.

Research talks included the 11th Annual Arthur C. Guyton Lectureship given by R. John Solaro (Univ. of Illinois, Chicago) titled "Sarcomere Signaling and Guyton's Analysis of Cardiac Output Regulation."

The 2017 ACDP Distinguished Service Award was presented to Hershel Raff (Medical College of Wisconsin/Aurora St. Luke's Med. Ctr., Aurora Res. Inst.), who gave a talk on "Basic and Clinical Physiology: A Team Approach," highlighting his involvement as a basic scientist in clinical research collaborations (see "Raff Honored at Annual ACDP Meeting" on p. 115).

The new chair research presentation was by Toni Pak (Loyola Univ. Stritch Sch. Med.) on "Estrogen Receptor β and the Aging Brain: Towards a Molecular Rationale for Hormone Replacement Therapy." Jennifer Zeitzer (Federation of American Societies for Experimental Biology) gave an update on the Federal scene titled "Assessing Support for Science Funding in the New Congress." The slides from her talk are available on the ACDP website (*acdponline.org/Home/Meetings/2017-Leadership-Retreat*).

The workshops presented covered a wide variety of topics. The first was on "Funding Physiology—Financial Models of Basic Science Departments," led by Wood. Attendees discussed various methods for generating departmental funds, including funding from deans, from undergraduate majors and master's degree programs, from online courses, and from core facilities. In addition, some departments generate revenue from technology transfer. The second workshop was on "Teaching Physiology—Medical, Other Professional, Graduate, and Undergraduate Teaching

ACDP President Charles E. Wood presents R. John Solaro (*left*) with the 2017 ACDP Arthur Guyton Lectureship Award

ACDP Council. *Back* (*left* to *right*): Walter Boron, Nick Delamere, V. Gustavo Blanco, Edward Morrison, T. Richard Nichols, Christopher Hardin, D. Buck Hales. *Front* (*left* to *right*): Gaylen Edwards, Marlene Wilson, Janice Urban, Charles Wood, Patricia Molina, Elsa Mangiarua, Kebreten Manaye. Not pictured: R. Clinton Webb.

Formats/Goals/Efficacy" led by T. Richard Nichols (Georgia Inst. of Technology). The group discussed last year's efforts to develop a list of 10 key principles that undergraduate physiology departments should teach. A new book published by APS from Joel Michael and Jenny McFarland expanded on their published list of principles. The book's content was discussed, and it was the group's consensus that the subcommittee should continue working on the ACDP list and present it as an alternate version, since some principles included were more appropriate for a biology, not a physiology, course, and some were deemed to be missing all together. Concern was also raised by attendees that there may be an attempt to by some to move to a model of a single online entity teaching all medical school students. This was seen as cause for great concern. The remaining two workshops: "Defining Physiology: A Discussion of Discipline" and "Defining the Future: A Meeting Wrap-Up Discussion of How We Might Drive the Research and Teaching Agenda" were included in the discussion following Martin Frank's presentation. Frank is retiring after over 30 years as APS Executive Director. He updated the group on "APS at a Time of Transition," specifically focusing on the recent APS Strategic Plan and resulting focus groups that are reviewing APS programs to determine which should be dropped or expanded in the various areas of meetings, publications, awards, education, membership, and marketing. He updated the attendees on the search for a new executive director and the results of the branding APS did with an outside consulting group. This led to a wide-ranging discussion about physiology as a discipline, how to raise awareness of physiology among students and faculty, and what programs APS should continue to concentrate on in the future. To that end, ACDP voted unanimously to strongly encourage the APS Council to continue its efforts on behalf of undergraduates to encourage them to consider a career in physiology.

ACDP President Charles E. Wood presents Martin Frank (*left*) with a plaque commemorating his many years of service to the discipline of physiology as Executive Director of APS

ACDP President Charles E. Wood turns over the Presidency and microphone to incoming President Janice H. Urban (photo by Tom Thrun, Classic Travel)

In recognition of Frank's career and long-time service, Wood presented him with a plaque from ACDP. In addition, Irving Zucker (Univ. of Nebraska Med. Ctr.) spoke on "Martin Frank: A Career to Remember . . . Service to the Discipline of Physiology." This led to a sharing of past experiences and memories from attendees who'd been past APS Presidents, members of APS Council, or attendees who had interacted with Frank when he was leading the NIH physiology study section.

Officer elections were held with the following results. Patricia E. Molina (Louisiana State Univ. Hlth. Sci. Ctr., New Orleans) was elected President-elect; Walter F. Boron (Case Western Reserve Univ. Sch. Med.) and Gaylen L. Edwards (University of Georgia Coll. Vet. Med.) were elected to 3-year terms as Councilors; and R. Clinton Webb (Augusta Univ.) was reelected to another 3-year term as CFAS Representative.

T. Richard Nichols (Georgia Inst. of Technology) was thanked for his service as Past President. D. Buck Hales (Southern Illinois Univ. Sch. Med.) and Kebreten F. Manaye (Howard Univ. Coll. Med.) were thanked for their service as Councilors.

President-elect Janice H. Urban (Rosalind Franklin Univ. of Med. & Sci., Chicago Med. Sch.) announced the

2018 ACDP Leadership Retreat will be held November 29 to December 2, 2018 at Fiesta Americana Coral Beach in Cancun, Mexico. As details are available, they will be added to the 2018 meeting webpage at *acdponline.org/*. The Leadership Retreat is open to chairs of departments of physiology or related areas, graduate directors in physiology or related areas, medical/osteopathic/veterinary physiology course directors, and undergraduate program directors. The meeting will build on this year's topics and will continue to focus on leadership issues and other areas of broad interest to those audiences. ●

ACDP 2017 Leadership retreat Attendees
(photo by Tom Thrun, Classic Travel)

Raff Honored at Annual ACDP Meeting

The highest award given by the Association of Chairs of Departments of Physiology (ACDP), the Distinguished Service Award, was awarded to Hershel Raff (Professor of Medicine, Surgery, & Physiology, Medical School, Medical College of Wisconsin; Professor, Pharmacy School, Medical College of Wisconsin; Director, Endocrine Research Laboratory, Aurora St. Luke's Medical Center, Aurora Research Institute). Charles E. Wood (Univ. of Florida Coll. Med.), President of ACDP, presented the award during the organization's 2017 Leadership Retreat at Hilton Rose Hall Resort in Montego Bay, Jamaica, on November 30 to December 3, 2017.

Raff was selected to receive the ACDP Distinguished Service Award for leadership in the discipline of physiology, educating the next generation of physiologists, outstanding research, and service to national and international organizations.

He received a BA from Union College in Schenectady, NY, where he majored in music but took many science courses as well. He received a PhD in Environmental Physiology in the laboratory of Robert Fitzgerald at the Bloomberg School of Public Health, Johns Hopkins University, studying endocrine adaptations to hypoxia. He did post-doctoral train-ing at University of California, San Francisco in the laboratory of Mary Dallman, where he contin-ued studies of the endocrine adapt-ations to hypoxia. He moved to the Medical College of Wisconsin (MCW) and Aur-ora St. Luke's Medical Center/Aurora Research Institute in 1983. He rose to the rank of Professor in 1991.

President Charles E. Wood presents Hershel Raff (*left)* ith the 2017 ACDP Distinguished Service Award

Raff's research focuses on two main areas of interest. His basic research on the hypothalamic-pituitary-adrenal axis focuses on the short- and long-term consequences of neonatal hypoxia. His laboratory has discovered that activation of the synthetic pathway for

corticosterone (the main glucocorticoid of the rodent) by neonatal hypoxia is mediated by a novel second-messenger cascade. He is also studying the role of renin in adrenal steroidogenesis using the renin knockout rat developed at MCW. His clinical research focuses on the development of diagnostic endocrine tests and, in particular, using the measurement of salivary cortisol to evaluate the hypothalamic-pituitary-adrenal axis in a variety of human stress models.

Raff's laboratory is also a clinical reference laboratory in association with ACL Labs. His laboratory measures testosterone for women and children by LCMSMS, and salivary cortisol, and ACTH by immunoassay. His laboratory is also responsible for management of hospital diagnostic testing, including inferior petrosal sinus sampling for ACTH for the differential diagnosis of Cushing's syndrome.

He has been in leadership positions in APS, where he was Chair of the Publications Committee, and in the Endocrine Society, where he served as Secretary-Treasurer and Council member.

Raff is heavily involved in medical, graduate, and undergraduate education. He teaches endocrine physiology to the first-year medical, graduate, and pharmacy students, and is course director of the integrated Endocrinology/Reproduction Course for the second-year medical students. He also teaches Applied and Rehabilitative Systems Physiology at Marquette University College of Health Science.

Raff was an inaugural inductee in the MCW Society of Teaching Scholars and received the MCW Beckman Basic Science Teaching Award four times. He is a co-author of three textbooks: *Vander's Human Physiology* (15th edition; in preparation), *Physiology Secrets*, and *Medical Physiology: A Systems Approach*.

Because of his scientific endeavors, his dedicated service to the field of physiology, and his distinguished service to APS and other societies, the ACDP was proud to present its 2017 Distinguished Service Award to Hershel Raff. ●

News from Distinguished Physiologists

Letter to Lois Heller

Wim Lammers writes: "Thank you very much for your nice letter on the occasion of my 70th birthday inviting me to reflect on my career, and on my future, in physiology.

"I started 'discovering' physiology at the University of Amsterdam in the early 1970s where Lennart Bouman gave his enthusiastic lectures. I also enjoyed very much the corresponding practicals and, after a few years, obtained a student-assistant job in that department, during which I became involved in teaching and also research. When a new medical school opened up in 1975 in Maastricht, The Netherlands, Maurits Allessie and Vic Bonke invited me to come and join their new research group.

"This research group was one of the first to develop electrical mapping of the heart using a large (>100) number of recording electrodes simultaneously. We started with mapping the atria of rabbits, studied normal and abnormal propagations, such as functional reentries, quantified inhomogeneity in propagation, which became the subject of my PhD thesis, and also started analyzing electrical propagations in the ventricles, together with Andrew Wit, from Columbia University, NY.

"After 13 years in Maastricht, the faculty was approached for help in setting up a new medical school in the United Arab Emirates in the city of Al Ain. Together with the dean of the medical school in Maastricht at that time, Co Greep, I became a consultant, developing curricula, laboratories, skills labs, etc., and after 2 years was invited to join this new school. Fortunately, the chancellor of that university, Sheikh Nayhan bin Mubarak, also wanted to develop research, and I could take one of our mapping systems from Maastricht to the university city of Al Ain.

"As the acting chair of the new physiology department, staff had to be recruited, and one new member, Taher El-Sharkawy, showed me that there was also electrical propagation in the GI system. Would it be possible to map at high resolution this type of electrical propagation in a different organ than the heart? We started with mapping isolated pieces of small intestine and could indeed show, at high resolution, propagating slow waves and spikes but also discovered, to our surprise, dysrhythmias in that organ. Logically, I moved on to other organs such as the pregnant uterus, the kidney pelvis, and the urinary bladder.

"Based on our first publications, and with the help of my former chair in Maastricht, Rob Reneman, I was introduced to the research lab of Janssen Pharmaceutica in Belgium, which was then led by Jan Schuurkes and Luc Ver Donck. There, I could perform, for the first time, high-resolution mapping in dogs in vivo, in the small intestine, and in the stomach. In the stomach, again to our surprise, we discovered several types of dysrhythmias. I wanted to call one of these 'fibrillation,' but the reviewer of that paper insisted that this term was reserved for the heart, and I had to call those dysrhythmias 'irregular activities'!

"I had the opportunity to work in the lab in Al Ain, UAE, with the technical help of Betty Stephen, for 26 years. Wonderful years, in which we could, for the first time, map at high resolution the normal and abnormal activities of many smooth muscle organs. Based on our publications, we developed collaborations with other research groups, such as with Jan Huizinga at McMaster, Canada, Herbert Schäfer at Zweibrucken in Germany, Andrew Blanks at Warwick Medical School, UK, and Andrew Pullan and Leo Cheng at the Biomedical Institute, Auckland University, New Zealand. This collaboration led us to the final goal of high-resolution mapping in humans.

"And now? Officially retired from the medical school in Al Ain, my wife Marijke and I returned back home to The Netherlands and are busy developing the third stage of our lives (after 1) childhood and 2) work). Busy reconnecting with family and friends, travelling, community services (I am a chronic prostate cancer patient), collaborating with several groups around the world, regularly attending physiology meetings (IUPS, FEPS), and, last but not least, developing physiological teaching websites with my former chair and good friend John Morrison (*neurones.co.uk*), and my own website (*BasicPhysiology.com*).

"Do I have any words of wisdom for my younger colleagues? Aside from the usual, such as work hard, keep up with your literature, and don't forget to enjoy life, I would like to add: work step-by-step, keep an eye on the unexpected, and, most importantly, follow your curiosity! After all, when I started way back as a student-assistant in Amsterdam 50 years ago, I never dreamed I would spend 26 years in Al Ain discovering reentries in smooth muscle organs. Good luck to you all!" ●

Letter to Lois Heller

Ivan Lang writes: "After 44 years, I am very fortunate to still be actively involved in the work I enjoy most, i.e., basic physiological research. I started in this endeavor as a MS student in Physiology and Biophysics at Temple University in 1973, and it continues to today. It amazes me that so much is still to be learned about the control of basic physiological processes. Most of my colleagues abandoned the study of basic physiology and focused instead on defining the molecular bases of these physiological processes, but there are still many physiological processes that have yet to be defined.

"As a result of my experience in physiological studies, my advice to younger physiologists is this: observe the responses very carefully and go with the data. Do not try to lead the studies in any direction, but go in the direction the data leads." ●

Book Review

The Biology of Exercise

Juleen R. Zierath, Michael J. Joyner, John A. Hawley (editors)
Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press, 2017, 395 p.
ISBN: 9781621821656

Exercise is recognized as a powerful means to improve health and physical function across the lifespan. Several disciplines have utilized acute and chronic exercise studies to address the many changes that occur in response to all forms of exercise. To provide a summary of the current state of knowledge in this area, the editors of *The Biology of Exercise* have created a useful resource. The book contains a large volume of information summarized in a way that provides readers with essential information about many physiological systems and processes. Each section emphasizes a specific topic area, and when the sections are combined, they create an almost complete synthesis about what is known about exercise, to date. Each section is written by content experts in that area and is presented as a review of the available literature.

The book begins with several overview sections that build the knowledge base necessary for the rest of the book. The first section, titled "Physiological Redundancy and the Integrative Responses to Exercise," is an excellent introduction for novice readers, with subsections such as "Magnitude of the Physiological Challenges with Exercise" and "Exercise Versus Physical Activity." Others topics covered in this section, such as "Physiological Redundancy and Exercise" and "Systemic and Remote Responses to Exercise" will also be of interest to readers more familiar with the content of the book without it feeling too oversimplified. The next section, "The Bioenergetics of Exercise," provides an in-depth overview of the energy systems in place to sustain exercise. Although it is more technical than the previous section, it is well-presented and easy to follow. The next two sections, "Health Benefits of Exercise" and "Theoretical and Biological Evaluation of the Link Between Low Exercise Capacity and Disease Risk" provide a discussion of the many ways that exercise can improve health while also providing a theoretical rationale (the energy transfer hypothesis) for the association between physical inactivity and morbidity and mortality. Finally, "Exercise Metabolism: Fuels for the Fire" builds on the information presented in the previous sections and gives a succinct, yet thorough, overview of substrate utilization by tissue and exercise intensity.

As the book proceeds, sections are then devoted to a specific tissue or organ system and become more technical. Skeletal muscle is the first topic to be covered. Mitochondrial biogenesis is presented first, followed by control of muscle force, fatigue, skeletal muscle hypertrophy, adaptations to training, autophagy, and aging. The editors and the authors of these eight sections successfully created a flow of information between sections that builds on each previous section. It is especially beneficial that aging is presented last, since this section partially summarizes the previous ones while also providing new information regarding age-related changes. The volume of information presented in these sections is presented clearly and is incredibly thorough, especially given the space provided. The book then breaks from skeletal muscle briefly to explain brain changes with exercise. The authors of "On the Run for Hippocampal Plasticity" generated a very helpful summary table that summarizes the current state of knowledge on exercise and neurological disorders. This sections also begins to address "cross talk" by mentioning the relationship between peripheral organs, such as muscle and adipose tissue, and brain function. The next section, "Skeletal Muscle as an Endocrine Organ: The Role of Myokines in Exercise Adapation," has a similar summary table that is helpful for readers. This section first introduces the secretome, which will be discussed again later in the "omics" section, as well as presents the various endocrine interactions with other systems (e.g., inflammation, vasculature, muscle-bone). "Muscle-Adipose Tissue Cross Talk" draws on the knowledge gleaned from the previous section to demonstrate how exercise can also train white adipose tissue. Finally, *The Biology of Exercise* again breaks from skeletal muscle to discuss "Effects of Exercise on Vascular Function, Structure, and Health in Humans." This section provides a clear synopsis of

the cardiovascular benefit of exercise in the context of treatment or prevention, and covers topics such as arterial remodeling and function.

The next series of sections further discuss the newly discovered and researched molecular mechanisms by which the body adapts to exercise. First, "Exosomes as Mediators of the Systemic Adaptations to Endurance Exercise" draws on the endocrine function of muscle from the previous sections to discuss "exerkines" and how their release within exosomes may regulate cross talk with other organs and tissues. In the next section, "Role of Nuclear Receptors in Exercise-Induced Muscle Adaptations," transcription factors, specifically the nuclear receptor superfamily, are defined and explained as they relate to different organs and tissues. Examples include thyroid hormone receptors, liver X receptor, vitamin D receptor, and estrogen-related receptors. Finally, "Control of Muscle Metabolism by the Mediator Complex" defines the mediator complex and its role in lipid and glucose metabolism, muscle GLUT4, and exercise responsiveness.

The book ends with two sections on emerging topics areas that will likely be of interest to many readers. The section on "Exercise and the Skeletal Muscle Epigenome" includes explanations of epigenetic mechanisms (i.e., DNA methylation, histone modifications), the role of epigenetic interactions with skeletal muscle in adaptive responses, and epigenetic therapies that are essential for the understanding of epigenetics as a whole. There is also a small subsection on epigenetic alterations in other tissues in response to exercise; it nicely complements the previous subsections dedicated to skeletal muscle changes and gives a preview of the state of the research in other organ systems. For readers unfamiliar with epigenetics, this chapter provides an excellent introduction to the topic presented in a way that is easy to follow. However, there are still higher-level specifics that will be a useful synopsis for those with more operational knowledge of epigenetics.

The last section, "Omics and Exercise: Global Approaches for Mapping Exercise Biological Networks," is especially exciting given the current state of "omics" approaches in exercise physiology. There are specific subsections dedicated to the genome and epigenome, the transcriptome, the proteome, the secretome, the phosphoproteome and acetylome, and the metabolome and lipidome. Considering that these areas of research are new methodological strategies for many readers, this section is particularly useful for giving a broad overview of the approaches, what they measure, and how they can be used. The final subsections, "Critical Gaps and Variables Underlying Biological Network Dynamics" and "Omics and Exercise Research Hurdles," are both fantastic overviews of future directions and potential challenges in collecting and interpreting omics data.

Overall, *The Biology of Exercise* is a thorough collection of information that will be useful for readers of all knowledge levels. There is a large amount of content covered in a way that is thorough but easy to interpret, which is a challenging task. The book is heavily focused on skeletal muscle, so other areas of interest, such as thermoregulation, bone, immunity, or pulmonary function, do not have dedicated sections. The large dedication of space to skeletal muscle is appropriate given the large body of knowledge in the area, and most sections mention interactions with other tissues and systems. Furthermore, many of these other areas of interest are touched on in "The Health Benefits of Exercise" and can be found throughout the text. However, it was surprising that there was only one section dedicated to aging and that there were no sections on sex differences, given the statements made by the editors' in the preface. Aging and sex differences are addressed in many sections, so this information is available, but it would've been helpful to have the current state of knowledge on sex differences discussed specifically and to have a larger dedication of space to age-related changes or adaptations. ●

Sarah J. Wherry
University of Colorado Anschutz Medical Campus

Positions Available

Assistant Professor: Eastern Connecticut State University, the state's public liberal arts university serving approximately 5,300 students, offers a wide range of undergraduate majors in the arts and sciences and professional studies, as well as selected graduate programs. Located in historic Windham County in the heart of eastern Connecticut, the university is midway between New York City and Boston, and only a short drive from Hartford, the state capital. We invite applications from candidates who have a strong commitment to teaching excellence, creative activity and scholarship, student advisement, and university and community service. ECSU is especially interested in faculty with demonstrated innovation and excellence in teaching in a liberal arts curriculum, and sensitivity to diverse populations and perspectives. Department: Health Sciences. Position: Assistant Professor – Physiology / Physical Therapy, Tenure Track. Start Date: Fall 2018. *Position description:* Primary teaching responsibilities would be to teach anatomy and physiology courses and expand the curriculum in their area of expertise. Secondary teaching responsibilities would include developing and teaching a course related to therapeutic exercise and also to teach courses such as biology for the health sciences. Applicants must demonstrate a commitment to excellence in teaching (preferably in a liberal arts setting), establishing a productive research program that involves undergraduates, and providing service to the department, university, and community. *Qualifications:* PhD in area related to biological science or doctorate in physical therapy. Preference will be given to applicants with a background in anatomy and physiology and physical therapy. Applicants also must demonstrate professional competence, an understanding of a liberal arts education, work productively with colleagues and students, and be interested in educating a diverse population of students. One year or more of undergraduate teaching experience is preferred. Send a CV, a copy of all graduate transcripts, statements of teaching philosophy and research interests, documentation of teaching ability, and the name and contact information for three references in a pdf file via e-mail to Dr. Amy Bataille, Search Chair at *HealthscienceSearch1@easternct.edu.* The search will continue until the position is filled. Eastern Connecticut State University does not discriminate on the basis of race, color, religious creed, age, gender, gender identity or expression, national origin, marital status, ancestry, present or past history of mental disorder, learning disability or physical disability, veteran status, sexual orientation, genetic information, or criminal record. The following person has been designated to handle inquiries regarding the non-discrimination policies: Stacey Close, Associate Vice President for Equity and Diversity, 860-465-5791, *closes@easternct.edu.*

Assistant/Associate Professor: Grace College invites applications and nominations for the position of assistant professor in biology, with emphasis in anatomy and physiology. Responsibilities include teaching, advising, department and college service, scholarly activity, and professional development. Grace College is a Christ-centered Liberal Arts College informed by pietist and evangelical traditions. Located in the resort community of Winona Lake, near Warsaw, Indiana (36 miles west of Ft. Wayne), Grace College offers 52 academic majors (38 minors). Central to the mission is developing character, sharpening competence, and preparing for service. Our goal in Christian living and teaching is to make Christ preeminent in all things. The programs of the college, as well as its community lifestyle commitment, are designed to encourage serious academic inquiry, a biblical worldview, spiritual understanding, and social conscience, all in the context of God's grace. The candidate will be expected to teach courses in general biology, microbiology, and anatomy and physiology throughout the academic year, as well as advise students. The successful applicant will have a strong commitment to liberal arts undergraduate education and will help support the Department's Faith, Science, and Reason Grace core course. Also, the candidate will be expected to develop a reasonable research plan, appropriate to the candidate's training and expertise, that includes undergraduate students in their program, as part of their scholarly growth. *Qualifications:* This position offers a challenging opportunity to a faculty member with both academic and research experience who seeks to grow the biology program. The successful candidate will have a PhD in biology, preferably in the area(s) anatomist or physiologist; assist in the growth of the biology program and coordinate with the nursing program by developing two streams of anatomy and physiology, one for the biology and pre-health majors, a second for the nursing program; a research plan that can involve undergraduate students appropriate for a 4-yr college; evidence of excellence in teaching; a desire to integrate faith with learning in all areas of life; a willingness to collaborate with colleagues and

students; evidence of relevant scholarship. *Application process:* Applications may be found at *www.grace.edu/about/employment/faculty/staff-applications.* Review of applications will begin immediately and will continue until the position is filled. The start date for this position is August 2018. Grace College and Theological Seminary seeks a diverse work environment by encouraging women and minorities to apply.

Postdoctoral Fellow: Pennington Biomedical Research Center in Baton Rouge, Louisiana invites applicants for postdoctoral fellowships on their NCCIH Institutional Training Grant entitled "Training in Botanical Approaches to Combat Metabolic Syndrome." We are seeking MDs or PhDs with biomedical research experience who are interested in conducting basic research into obesity and diabetes, and the use of botanicals to attenuate metabolic syndrome. Eligible applicants must be a U.S. citizen or green card holder. Evidence of motivation and skills in scientific writing such as publications and grant experience are highly desirable. Fellowships provide up to 3 years of funding for training in lab skills and coursework necessary for establishing an independent research career. For more information please visit *http://www.pbrc.edu/training-and-education/postdocs/botanical-approaches-to-combat-metabolic-syndrome/.*

Postdoctoral Fellow: A postdoctoral fellowship position is available in the laboratory of Dr. Alexander Jackson, Assistant Professor in the Department of Physiology and Neurobiology at the University of Connecticut (UConn), Storrs, CT. Research in the laboratory is focused on the cellular and synaptic neurophysiology of neural circuits in the hypothalamus that regulate fundamental behavioral states such as arousal and feeding. Techniques are centered on using whole-cell patch-clamp electrophysiology and pharmacology in mouse brain slices to elucidate the properties of specific hypothalamic cell types, their synaptic connectivity, and their role in behavior. This approach is carried out in concert with a toolbox of neuroanatomical methods and opto-/chemogenetic strategies to manipulate the excitability of genetically targeted neurons. For further information about our team see *https://wp.ajackson.lab.uconn.edu/.* Potential candidates should have recently completed a PhD (neuroscience, physiology, or related discipline) prior to joining the lab. Expertise in whole-cell patch-clamp electrophysiology in brain slices is required. Additional expertise in mouse neuroanatomical techniques, stereotactic surgery, and molecular techniques is also highly desirable. Ideal candidates will also have strong oral and written communication skills, strong quantitative skills, and the ability to work both independently and cooperatively in a team environment. The lab is located in the Department of Physiology and Neurobiology on the beautiful flagship campus of UConn, which is centrally located with respect to major centers—Boston, New Haven and Providence. UConn is committed to building and supporting a multicultural and diverse community of students, faculty, and staff. As an affirmative-action/equal-employment opportunity employer, UConn welcomes applications from every gender, sexual orientation, nationality, ethnicity, as well as people with disabilities, veterans, and members of traditionally underrepresented populations. To apply, please send a CV, a brief statement of research experience and interests, in addition to the names and contact information for 3 references to Dr. Alexander Jackson at the following email address: *alexander.jackson@uconn.edu.*

Postdoctoral Fellow: Position available immediately in the Laboratory of R. Erzurumlu, Department of Anatomy & Neurobiology, University of Maryland, School of Medicine, Baltimore. Successful candidate will work mainly on joint projects with Daniel O'Connor at the Department of Neurosciences, the Johns Hopkins University Medical School. Applicants must have demonstrated experience in in vivo and/or in vitro electrophysiology. Experience with optogenetics, axonal/cellular tracing and imaging techniques desirable. Available projects are on the development and plasticity of the mouse whisker-barrel system in wild-type and transgenic animals (see recent papers from the Erzurumlu and O'Connor laboratories listed on Pubmed.) Interested candidates should submit statement of research interest, current CV and names of 3 references by e-mail: *rerzurumlu@som.umaryland.edu.* University of Maryland is an equal-employment opportunity/affirmative-action employer.

Postdoctoral Fellow: Two (2) postdoctoral research associate positions are available in Dr. Jianhua Cang's lab at the University of Virginia to study the organization, function, and development of the mouse visual system. Our lab studies how neural circuits in the superior colliculus and visual cortex process sensory

information and how these circuits are shaped by experience during development. The incumbents will become key members in advancing these studies using an integrative approach that combines physiology, imaging, genetics, behavior, and computational techniques. A PhD or equivalent degree in neuroscience or a related discipline is required by the appointment start date. Candidates with a strong background in electrophysiology, two-photon imaging, and/or animal behavior are preferred. Initial appointment is for 1 year; however the position may be renewed up to an additional two, 1-year appointments contingent on satisfactory performance review and availability of funding. To apply, please submit a candidate profile online through Jobs@UVA (*https://jobs.virginia.edu*) and search posting number 0621823. Attach a cover letter, curriculum vitae, and the contact information for three references. Review of applications will begin immediately, and the position will remain open until filled. Questions regarding this position should be directed to Jianhua Cang (*cang@virginia.edu*), and questions regarding the application process should be directed to Michelle Atwell (*mla2d@virginia.edu*). The university will perform background checks on all new hires prior to making a final offer of employment. The University of Virginia is an equal-opportunity and affirmative-action employer. Women, minorities, veterans, and persons with disabilities are encouraged to apply.

Postdoctoral Fellow: The Dorrance/Jackson lab seeks a highly motivated postdoctoral researcher. The successful applicant will work on an NIH-funded research project to study calcium transients in cerebral endothelial cells from overweight rats with a view to establishing a link between calcium-mediated endothelium-dependent dilation and impaired cognitive function in overweight rats. The postdoctoral researcher will work primarily on calcium imaging and electrophysiology studies; they will also assist in experiment planning, data collection, and analysis. The successful applicant will also train and supervise students. The candidate will also be responsible for publishing the results and will assist in grant preparation. A recent PhD in pharmacology, physiology, or a related field is required. Please submit a CV, letter, and Statement of Research Interests via the *careers.msu.edu* website (*http://careers.msu.edu/cw/en-us/job/498044/research-associatefixed-term*). Also submit the names and contact information for three references to Dr. WilliamJackson (*jacks783@msu.edu*). MSU is an affirmative-action, equal-opportunity employer. MSU is committed to achieving excellence through a diverse workforce and inclusive culture that encourages all people to reach their full potential. The university actively encourages applications and/or nominations of women, persons of color, veterans, and persons with disabilities. Annual full-time salary rate based on appropriate NRSA postdoctoral stipend level (but will be posted as "Salary Commensurate with Experience").

Research Scientist: Florida Hospital Orlando seeks to hire a research scientist, postdoctural, who will embrace our mission to extend the healing ministry of Christ. Located on a lush, tropical campus, our flagship hospital, 1,107-bed Florida Hospital Orlando, serves as the major tertiary facility for much of the Southeast, the Caribbean, and South America. We are one of the busiest hospitals in the nation, providing service excellence to more than 32,000 inpatients and 125,000 outpatients each year. The Translational Research Institute for Metabolism and Diabetes (TRI) is the product of an innovative affiliation between Florida Hospital and Sanford-Burnham Medical Research Institute that bridges the gap between discovery research and clinical care. The TRI brings together the complementary strengths of Sanford-Burnham's basic science prowess and advanced research technologies, and Florida Hospital's compassionate, comprehensive clinical care and clinical/translational research expertise to accelerate the discovery and development of new approaches to diagnose, treat, and prevent obesity, diabetes, and their cardiovascular complications. *Work hours/shifts:* Full time, Monday–Friday, 8 AM to 5 PM. The postdoctoral research scientist will assist in the translational research at the Translational Research Institute and participate in industry-/NIH-/pharmaceutical- and government-sponsored and investigator-initiated research that supports the TRI scientific research plan. Responsibilities include: helping to develop a research program in their field area, and providing guidance to other support staff in the performance of protocol specific tasks; helping to ensure that all research performed under their direction is in compliance with all Florida Hospital, TRI, local, state, and federal laws, policies and procedures; participating in outstanding customer service and accepts responsibility in maintaining relationships that are equally respectful to all. *Requirements:* MD and/or PhD in a scientific field such as chemistry, biology, or

exercise science; knowledge of the development and operation of clinical and basic science research protocols; established competency in research as evidenced by published (peer reviewed) research and/or prior work experience; knowledge or experience in investigator-initiated research in a clinical/translational research setting; proven history of NIH, pharmaceutical, and/or equivalent research. If you want to be part of a team that is dedicated to delivering the highest quality in patient care, we invite you to explore the research scientist, postdoctoral opportunity with Florida Hospital Orlando. Apply online today to req. #257360 at *FloridaHospitalCareers.com*.

Meetings & Congresses

2018

March 25-29

Keystone Symposia: iPSCs–A Decade of Progress and Beyond, Olympic Valley, CA. *Information*: e-mail: *info@keystonesymposia.org*; Internet: *http://www.keystonesymposia.org/18C7*

April 21-25

Experimental Biology, San Diego, CA. *Information*: Internet: *http://experimentalbiology.org/2018/Home.aspx*

June 13-16

Keystone Symposia: Novel Aspects of Bone Biology, Snowbird, UT. *Information*: e-mail: *info@keystonesymposia.org*; Internet: *http://www.keystonesymposia.org/18E3*

June 18-22

APS Institute on Teaching and Learning, Madison, WI. *Information*: Internet: *http://www.the-aps.org/itl*; #ITLPhysiology

July 7-11

11th FENS Forum of Neuroscience, Berlin, Germany. *Information*: Internet: *http://forum2018.fens.org/*

September 5-8

8th International Congress of Pathophysiology, Bratislava, Slovakia. *Information*: Internet: *http://www.icp2018.com*

September 30-October 3

Cardiovascular, Renal and Metabolic Diseases: Gender-Specific Implications for Physiology on Sex and Gender, Knoxville, TN. *Information:* Internet: *http://www.the-aps.org/sexgender*

October

The 17th International Biochemistry of Exercise Conference (IEBC), Beijing, China. *Information*: Organized by the Chinese Association of Exercise Physiology and Biochemistry

October 18-21

34th World Congress of Internal Medicine, Cape Town, South Africa. *Information*: Internet: *http://www.wcim2018.com*

October 25-28

Intersociety Meeting. Comparative Physiology: Complexity and Integration, New Orleans, LA. *Information:* Internet: *http://www.the-aps.org/comparative*

2019

April 6-10

Experimental Biology, Orlando, FL.

APSConnect is an exclusive online community designed to serve as a hub for communicating with fellow APS members and physiology colleagues. Section and interest group communities within APSConnect are designed to provide open communication among section members and disseminate information.

Top Four Things You Can Do in the APSConnect Community:

1) Be Seen

Fill out your profile—don't forget to add a photo—or import your professional information from LinkedIn.

2) Participate

Post questions, announcements, events, and discussions to other APS members in your section.

3) Network

Search the member directory and message or add colleagues as contacts.

4) Compete

Score points, ribbons, and badges for posting to the community and compete with other active members.

Check out some of the communities you can join:

- Cardiovascular Section
- Cell and Molecular Physiology Section
- Central Nervous System Section
- Comparative and Evolutionary Section
- Endocrinology and Metabolism Section
- Environmental and Exercise Section
- Gastrointestinal and Liver Physiology Section
- Neural Control and Autonomic Regulation Section
- Renal Section
- Respiration Section
- Teaching of Physiology Section
- Water and Electrolyte Homeostasis Section
- and more!

New Job Board

connect.the-aps.org

Questions about APSConnect? Visit connect.the-aps.org/FAQ