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2016 Guyton Physiology Educator of the Year Award

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Nancy J. Pelaez

As a physiologist and member of the American Physiological Society for more than 20 years, I have enjoyed both laboratory and educational research in physiology. During this time, the Society has supported my ability to manage educational innovations by providing information about the historical, institutional, and sociocultural practices that must be called upon to advance knowledge of physiology. The leaders and members of the American Physiological Society have provided support, as well as the experience of the annual Experimental Biology meetings, which have influenced the development of my philosophy of teaching and success in my career.

Continuous exposure to cutting-edge science research has helped me to understand the educational process as continually changing, but not in a gradual or chaotic way. Instead, I see educational change as episodic due to factors that interact with the educational process, such as new science discoveries, changing student factors, and social-institutional factors. My role as an instructor is to manage all of these factors to concentrate resources to maximize the potential for all students, including those whose cultural and language backgrounds are different from my own, to learn knowledge that will position them to discover, and to make meaningful contributions.

Although educational programs and courses can reach a state in which faculty may favor maintaining the status quo at the expense of introducing innovative change, to my mind, a good educator is also always on the lookout for positive changes that can be phased in with an "evolutionary" rather than a "revolutionary" approach that could lead to negative responses. My passion is to seek out such opportunities for innovative change and to always base them on both sound theoretical principles of curriculum design (10) and empirically based educational research, an approach that is contributing to the advancement of physiology education and keeping us in line with advancements in physiological research. In managing an educational change process, one must take into account dynamic features of

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A Matter of Opinion

Survivor 2016

For years, the U.S. has demonstrated its appreciation for the programs offered by our colleagues overseas. It has been most notable in the TV industry where numerous foreign shows have been adapted for the U.S. market. Some examples include *All in the Family*, *Homeland*, *Dancing with the Stars*, *Shark Tank*, and *American Idol*. Unfortunately, the U.S. has not been able to model its election format after that of other foreign democracies. Wouldn't it be nice if we could elect a President in the 4 days it took for Theresa May to replace David Cameron? Instead of a speedy transition, the U.S. is subjected to *Survivor 2016 – Election Edition*.

In the current election cycle, the first candidate declared his intention to run

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Christine Maric-Bilkan

Science Beyond Academia

As a few on this forum have already pointed out, a PhD degree, at least until recently, prepared you primarily (and often only) for a career in academic research (2, 7). Very few could boast of knowing what else there may be out there for someone with a PhD in biomedical sciences. I will be the first to admit that a career in academic science seemed appealing to me at the time, and I did not even think to look at alternatives: It was what I was training for after all, right? Knowing what I know now, I may not have done any differently given a second chance in terms of beginning in academic research, but I most certainly would have explored other options before making educated decisions about my lifelong career path.

After completing my PhD and postdoctoral training, I was encouraged to apply for research funding and was lucky enough to receive a grant the very first time I submitted (off to a great start)! Since faculty positions are very hard to come by in Australia (and thus becoming "independent" becomes all that much harder), I moved to the U.S. I was very fortunate to have been surrounded by very supportive colleagues and mentors. As a result of this, I quickly learned the rules of the "game" and started to establish myself as an "independent" research scientist in an academic setting. Sounds like a success story, so why would I think about an alternative career?

I actually learned to think laterally when it comes to choosing a career path through training graduate students and postdocs. While on the surface it seemed that most of them had similar aspirations of remaining in academic research, a few were courageous enough to say: I am not sure I want to lead an independent lab, am I a "failure"? First, I salute those who take the time to think about what it is that they really want to do, and second, by no means should one consider oneself unsuccessful for not taking the beaten path. I feel the failure of most PhD programs to provide some guidance and education on alternative careers has made it challenging for individuals to build a successful career in fields they had no or very little training in. Thus succeeding in an alternative career path, to my mind, may be considered an even more challenging quest. I would not, however, want to put blame only on academic programs for their shortcomings (many are actually improving); there are many other key players and stakeholders who should pay attention to preparing PhDs for alternative careers, but this is another story altogether. My goal is to stress that, if you haven't already thought about exploring your career options, please do so, even if you do end up in academia (it is still a very good life for many!). This is becoming increasingly more important not just in terms of finding a fulfilling job and career but especially in light of recent reports documenting fewer secure academic positions for the number of PhDs being trained (3).

Before I offer any further thoughts and advice, let me go back to finishing my personal story on how and why I chose an alternative career path, since it may help some of you. After 16 years of academic research, 12 years of leading an independent laboratory, many grant applications (some successful and some not) and manuscripts, I became a health science administrator (HSA; more about what this position actually is below). Why did I give up my academic job? As many of you may be currently experiencing, it was becoming increasingly harder to secure grant funding, even though I was well funded at the time and quite enjoyed writing grant applications. However, I sensed that the type of research that was actually getting funded wasn't the kind I was interested in doing. I liked the bigger picture and enjoyed identifying significant scientific problems and gaps,

but didn't necessarily want to study them personally. So can one still be involved with looking for scientific questions that need to be answered and grant applications without having to do all the experiments? The answer is yes . . . that is exactly what a HSA, Program Officer (PO) to be more precise, at the National Institutes of Health (NIH) does.

Transitioning from Academia into Government

Transitions are never easy, especially when the change is so dramatic, or is it? People's reaction to learning that you are becoming an HSA is quite interesting: Really? You want to sit at your desk all day long reading manuscripts and grant applications, following trends in science? Well, when you think about it, how much different is that from being in academia? I remember spending a significant amount of time on administration, including grant application, manuscript writing and reviewing, etc. at the associate professor level. But there are differences, and the biggest one that you have to face is that you are no longer a principal investigator (PI). You are no longer directing your own research but rather a public "servant" who is there to help PIs in their endeavors. At first, you may feel as if you have lost something or someone, a big void. You miss the excitement of getting new data and designing new studies to try and answer those questions that the study you just completed opened. But, the feeling does go away . . . with the first phone call of PIs calling to express their frustration with the summary statement they just received on their grant review!

For the position of a PO (and I suspect this is also the case with other HSA positions at the NIH), there were a number of things that made the transition from academia to administration easier. Having had previous experience in grant writing and understanding the trials and tribulations that go with it most definitely helped (and possibly got me the job in the first place). The scientific portfolio that I was administering was directly related to the field of research I was in during my academic career. As such, I was already familiar with the research of about 75% of the grants in my portfolio. This not only helped make the transition seamless for me, but I also feel that the PIs of the grants I was administering felt more conformable speaking to me and asking for help because they knew me. Ultimately, transitions really are personal, so a positive outlook may make a big difference!

WHAT Can I Do as a Scientist in Government?

As a PO at the NIH, your responsibilities can generally be divided into interactions with the extramural grantee community and providing scientific expertise related to the mission of the Institute (in my case, National Heart, Lung and Blood Institute) (4). Interactions with the extramural grantee community include advising PIs (especially new and early stage investigators) on current funding opportunities and how to actually apply for grants (if you are overwhelmed by the sheer number and type of grants you can apply for, POs can guide you). They can also help you determine whether your proposed research topics fit within their portfolio and what institute may be the best fit. Once your grant gets reviewed, the PO will also help you interpret those dreaded reviewer comments and advise on the next steps. Once your grant gets funded, your PO will remain your main point of contact through the duration of your funding period. They will monitor research progress and provide advice on any changes you may need to make to the aims proposed in your original grant application and, basically, help you manage your grant. I would like to use this opportunity to strongly encourage all of you intending to apply for NIH funding to establish a working relationship with your POs – they really can and like to help!

When not liaising with the extramural grantee community and administering scientific portfolios of grants and contracts, POs may be developing and writing requests for applications and program announcements, organizing workshops on topics of unmet scientific need, and generally keeping up with the trends in science. On occasion, we also provide scientific expertise in answering inquiries from the public, professional societies/organizations, and the U.S. Congress.

In addition to POs, there are numerous other administrative positions for scientists with PhDs at the NIH. You may be familiar with Scientific Review Officers, or SROs, whose main responsibility is to ensure that the scientific review group (aka, study section) identifies the most meritorious science for funding (1). If you happen to have an MD, you may also qualify for a position of a Medical Officer, who typically oversees

large clinical trials (PhDs may also be involved with monitoring clinical trials).

Working for the federal government as a scientist is often incorrectly equated to being an administrator. If sitting at a desk for most of your time is not your cup of tea, there are many positions within the federal government, the NIH in particular, where you can still be part of, if not lead, your own research lab! The NIH is not only the world's largest funding agency but also the largest biomedical research agency on the planet (5). I would have to say, however, that positions of tenured staff scientists or head of laboratories at the NIH are not so easily obtainable, mainly because there are very few [each year the NIH recruits around 30 tenured and tenure-track positions (6)], but, nonetheless, these opportunities do exist for PhDs in biomedical sciences.

Although this article mainly focuses on careers within the NIH, there are many other government agencies, at both the federal and the state levels, with career opportunities for PhDs in biomedical sciences. The few that first come to mind are National Science Foundation (*http://www.nsf.gov*), The Center for Disease Control (*http://www.cdc.gov*), U.S. Food and Drug Administration (*http://www.fda.gov*), National Aeronautics and Space Administration (*https://www.nasa.gov*), Department of Defense (*http://www.defense.gov*), etc. This list is by no means exhaustive, and I refer any of you potentially interested in these positions to the section on *How to Apply for a Federal Job* below for further information.

Working for the Federal Government: Pros and Cons

One of the main advantages of working for the federal government is the relative job security, which is especially relevant in the fiscally challenging times we are facing these days. Compared with jobs in academia, positions within the federal government are accompanied by less pressure to obtain funding and grants. As such, scientists in government labs tend to have more flexibility and freedom to do their research unrestricted by other academic commitments (e.g., teaching). Because of resources available, opportunities for collaborations and interactions between research groups are plentiful. Jobs in the federal government come with federal benefits, including health insurance, retirement, and vacation. There are also moral incentives to working for the federal government: the work you do impacts the health of every American and even the lives of people around the world!

Some of the benefits of working for the federal government are also weaknesses. For example, although scientists in the federal government have more protected time to do research since they don't have to teach or write grants, their research may have to undergo several levels of review within the agency (a procedure that is quite cumbersome). For HSAs, although you are free to write manuscripts, they also undergo several layers of review within the agency before you are permitted to submit for publication. The many rules and regulations about everything you do at the federal government make many activities (e.g., travel and conference attendance) either prohibitive or very difficult. However, as a grant reviewer would typically conclude, the strengths outweigh the weaknesses, thus the enthusiasm for working for the federal government as a scientist remains high!

How to Apply for a Federal Job

Did you know that the U.S. government is the largest single employer in the U.S., employing over 1.6 million full-time, permanent positions? Not all of these jobs are appropriate for PhDs in biomedical sciences, of course, but the point being that you are likely to come across many different kind of positions that you may not have known existed. Your first and most extensive source of information on currently available jobs within the federal government is *www.USAJobs.gov*. This website is essentially a database of nearly all federal jobs, searchable by keyword, location, income level, and other parameters. The USAJobs website is also the exclusive portal for applying for those federal jobs. You may also find useful information on highly rated places to work within the federal government at *http://bestplacestowork.org* and information on federal benefits and salaries as well as the demographics of the federal work force at *www.opm.gov*. ●

Disclosures

The views expressed in this article are those of the authors and do not necessarily represent the views of the National Institutes of Health or the United States Department of Health and Human Services.

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Christine Maric-Bilkan is a Program Officer in the Vascular Biology and Hypertension Branch, Division of Cardiovascular Sciences, at the National Heart, Lung and Blood Institute/National Institutes of Health. Maric-Bilkan received her PhD from the University of Melbourne, Australia in the field of renal physiology. Following postdoctoral training at the University College London, UK, she joined Georgetown University Medical Center in 2001 as an Assistant Professor in the Department of Medicine, after which she was appointed to Associate Professor in the Department of Physiology and Biophysics at the University of Mississippi Medical Center in 2008. During her academic career, Maric-Bilkan's research focused on the pathophysiology of diabetic end-organ complications, renal in particular. Maric-Bilkan has been an active member of the APS, having served as the chair of the Awards Committee and steering committee for the Water and Electrolyte section.

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the interacting factors. Thus, as an educator, I aim to be flexible, adaptive, and experimental at scales compatible with the interests, needs, and motivations of my students.

New Science Discoveries

A fascinating destabilizing process has been the rapid accumulation of new knowledge in physiology and the life science disciplines. It is no longer possible for students to learn all of the facts in a textbook, so they must learn about the discovery process by engaging with the subject matter in a way that can help them understand how experimental research is done to yield new knowledge of complex mechanisms. In 2011, I was a contributing author to the *Vision and Change* report (1), which was based on compiled examples from scientists who reached consensus about the need for students to learn about the methods and competencies that are indispensable to the advancement of the life sciences. Physiologists and other scientists are saying that learning about all of the facts in a textbook of encyclopedic proportions is far less important than engaging with physiological research and learning about the discovery and experimentation process used to yield such new factual knowledge. Thus I am focused on developing resources that promote students' knowledge and competence with life science research.

Although these ideas are not new (5), surprisingly little is known about what students actually learn from experimental research, let alone what competencies they need to develop to acquire expert-like abilities. To advance biology as a research endeavor, the shift toward greater emphasis on the research process must be matched by a coordinated shift in expectations for our students to become competent in thinking and working like scientists, and a concomitant demand for developing and deploying effective strategies of instruction as a means to achieving that end. I have been working to address this prickly educational problem by establishing an interdisciplinary network of scientists and science educators to improve student competence with experimental research. At first, there was a need to better characterize the competencies, concepts, and skills associated with experimentation in biology (2, 3), to identify existing and needed tools for instruction and assessment (3), as well as to document the process we are using to forge partnerships among diverse people who respect the values of physiologists and other biologists who investigate by experimentation.

Changing Student Factors

The merging of science with science education expertise is necessary to address the impact of student factors. Examples from my own work illustrate how expertise as a science education-focused professional informs physiology education. First, my work is focused on addressing student difficulties that stem from ideas students bring to class. Difficulties can arise from the students' prior experiences, alternative belief systems, problematic use of analogies, and confusion between the scientific meaning of a term and its common meaning. For example, as reported in "Prevalence of blood circulation misconceptions among prospective elementary teachers" (6), persistent difficulties hindered learning about blood circulation among prospective elementary teachers: 70% did not understand the dual blood circulation pathway, 33% were confused about blood vessels, 55% had wrong ideas about gas exchange, 19% had trouble with gas transport and utilization, and 20% did not understand lung function (as indicated by the frequency of errors on a final exam interview). Second, to remedy these difficulties, as an educator I needed to assess students in different ways that allowed me to observe and understand ideas the students would need to modify with appropriate feedback. Assessment involves proposing a task for students that makes it possible to observe their responses and then evaluating their work by comparing their performance with the expected expert response. Third, I put together a team to help me apply this method. For example, at Purdue, I teach a parallel course for peer leaders alongside my biology course. Peer-led student teams in my non-traditional interactive classroom encourage first-year biology students to develop a question that both is personally relevant to them and could be answered by engaging with physiological information. Problem sets and essay questions that I design give students practice reasoning through examples of experimental research to examine the evidence. For example, they might be required to analyze the results from MacKinnon's experimental test for the hypothesis that the amino acid sequence of the potassium channel ion filter is absolutely required for potassium ion selectivity (4). MacKinnon looked at potassium ion channels with mutations introduced into

the pore to compare the wild-type potassium channel sequence (glycine, tyrosine, glycine, aspartic acid) with the deletion mutant sequence (glycine, aspartic acid). Potassium and sodium ion flux was recorded with different ions in the bath solution. Mutant ion channels were no longer selective for potassium ions. These data demonstrate that very small differences in the primary structure of an ion channel can account for extreme functional diversity. In this task, students needed to identify the experimental treatment and the response variables, and to sketch a graph of the findings they thought MacKinnon might have reported about the mutant channel investigation. At a grading party, peer leaders characterized all the different ways students came up with an expert answer. Even more importantly, they also characterized the range of difficulties that interfered with reasoning about this experiment. By diagnosing students' experimental design knowledge and difficulties, the peer leaders were able to provide caring support and assistance to students who struggled to figure out the link between causal claims and the experimental basis for the material they were learning.

Social-Institutional Factors

Work like the above-mentioned examples focused on experimental design difficulties has enabled me to also inform colleagues and thus influence what is taught in other classes and not just my own as part of the educational process. By collaborating, we are able to change our institutional environment to maximize impact by spreading innovations. In my view, it would be insufficient for only my own students to examine evidence for potassium ion selectivity. Furthermore, a parallel course for peer leaders is not something most scientists can take time to do. Instead, to facilitate student learning about experimentation, many grad-student and scientist collaborators have joined me in developing rubrics (2) and guidelines (9) to inform everyone about problems that can be addressed even within a traditional classroom (10). At least in part as a result of this work, with scientists in my department and from other universities as collaborators, we are defining experimentation competencies for students to be developing and methods to help them do this as they progress through their undergraduate biology and physiology courses. As PI of the NSF-funded Research Coordination Network project, Advancement of Competence in Experimentation-Biology (ACE-Bio) Network (NSF no. 1346567), I lead a team that has been working to better characterize factors important for learning experimentation in biology (as illustrated above), as well as to document the process we are using to forge partnerships with respect for differing values of people in other biology subdisciplines who, like physiologists, conduct experiments.

Two more examples illustrate how new science discoveries, changing student factors, and social-institutional factors can be considered jointly and in an integrated way in developing educational innovations.

Reviews of medical discoveries illustrate science as a human and cultural endeavor where groups share knowledge and productive research practices, such as when physiologists make discoveries by doing experimental research. However, productive new directions for research can also be informed by the underpinnings of biological evolution, but future investigators must be trained to strive for insight within the framework that evolution supplies. As a true biological theory, evolution shows the way for scientific progress. Among the biomedical fields, American Physiological Society members are unique in having the opportunity at meetings to learn how comparative physiologists advance research with an evolutionary perspective. For example, the mechanism for hypoxic pulmonary vasoconstriction and the identity of the oxygen-sensing mechanism in mammalian lungs has remained elusive. Consider, however, that the evolutionary history of eukaryotic animals began in aquatic environments where organic and nutrient-rich places tend to become hypoxic due to decomposition. There has clearly been selective pressure on those animals that survived to be capable of shifting their blood flow to sites of gas exchange, since hypoxia is so common in aquatic environments. Hypoxic vasoconstriction is found in animals that are not mammals (7). It will not be surprising to find the oxygen sensor involved with vasoconstriction linked throughout eukaryotic evolution. I advocate for (and teach) a course on evolution to deepen understanding of evolutionary concepts for all students and not just for those studying comparative physiology or evolutionary biology.

As a final example of my commitment to innovative education, consider a capstone course I developed in collaboration with biomedical engineers, which I now teach as a physiology laboratory course. In Purdue's BIOL44215 Multidisciplinary Design of Systems & Devices for Physiology Measurement course, students

practice both engineering design and hypothesis-driven experimental science as tools to solve complex real-world physiology problems. The lessons physiology students previously learned are applied with protocols that respectfully use live animals, such as rats. Students are given a reason to know and use the Henderson Hasselbalch equation when they observe pH changes as they begin to bubble a Krebs solution with carbon dioxide. They work through interesting problems with teammates, such as building equipment to indirectly measure air flow and lung capacities during respiration by calibrating mV signals measured with pressure transducers. And they are explicitly taught how to ethically treat animals and the importance of discoveries based on measurements from live animals (such as Pap-stained vaginal smears as indicators of hormone status at different stages in the rat reproductive cycle). They also use freshly isolated tissue for answering important research questions. Throughout this innovative laboratory course, I find that, with high expectations, I can ask my students to be creative by teaching them to break down a problem into reasoning about concepts and reasoning about the modes of representation that define the problem (3), and then to propose a solution and test it. In a course like mine, in line with a true research experience, there are multiple solutions to any given problem, such as how to track the vitals of an obese pet. Amazingly, due to changes in our students who now use cell phones more than laptops, I no longer need to provide a small camera with the PowerLab video capture module to sync uterine contractile behavior with pressures measured to indicate responses to membrane depolarization. Now, my students record with their cell phones while planning to develop their own apps with Swift programming language. Last year, students proposed to invent ways to harvest renewable energy from living tissue, and this year my students designed devices to track their pet vitals by building a pedometer, a sphygmomanometer, a halter with a spirometer and a blood pulse transducer, and even a photosensitive LED detector to track blood glucose and oxygen saturation of capillary blood with devices they designed. Thus I am excited to report that these students see their knowledge of physiology as a useful key for solving problems and overcoming challenges they might face in their future careers – a major goal of any good teaching approach.

In summary, my approach to physiology instruction is based on methods that place me at the cutting edge of changes in sync with new science discoveries, changing student factors, and social-institutional factors that should lead students toward a promising future. Physiology is an integral part of my students' future capacity to interact productively with the living world, where creative innovations are becoming the norm. In closing, I would like to thank the mentors and models who welcomed me into the American Physiological Society: Marsha Matyas, C. Subah Packer, Joel Michael, Harold Modell, Dee Silverthorn, and many others too numerous to mention who contributed to my foundation as a physiologist (8). It is an honor to be nominated by Dee Silverthorn, and then selected by the APS Guyton Award Committee chaired by Michael Lee, for the 2016 Guyton Educator of the Year Award. I am proud to show how the clarity of ideas presented by Arthur C. Guyton in his textbook of medical physiology can be brought into a future where physiology provides the foundation for discovery and innovation with tools and skills that will continually be changing to advance the next generation. I sincerely thank the APS members and Elsevier for recognizing the importance of educators in the American Physiological Society. ●

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Survivor 2016

for President in March 2015, some 20 months before the Election Day, which will be Tuesday, November 8th. As with the TV show *Survivor*, two tribes are competing, but in this case it is a marathon of finger pointing, name calling, and innuendo to select candidates to lead their parties into the election. The Republican tribe grew to a band of 17 candidates, whereas the Democrat tribe was far smaller with only 6 contestants. By the time you read this, the Democrats will have met in Philadelphia and the Republicans will have met in Cleveland to develop their parties' platforms and to finalize their selection of candidates for President and Vice President. Although *Survivor 2016 – Election Edition* has dragged on for too long, soon we, the voting public, get to make the final decision. It is hard to know what to do when one considers the negatives associated with each candidate, but it is still our responsibility to vote one of the two candidates off the island.

For those interested in the candidates' stance on research funding, I would encourage you to take advantage of Research! America's national voter education initiative. Campaign for Cures encourages all candidates to share their views on biomedical research and articulate their plans to speed medical progress. For more information, visit www.campaignforcures.org. Campaign for Cures will help you explore the opinions of the Presidential candidates as well as the candidates for the Senate and the House of Representatives.

Knowing the views of Congressional candidates is especially important because Congress is responsible for legislation that impacts not only research funding but all aspects of the country. In recent years, our elected representatives have failed the public because instead of legislating to make this country better, they have tried to ensure that they were re-elected. Our Congress has forgotten the art of compromise, which is the only way to effectively govern and to create legislation that enhances our lives. The polarization in politics has negatively impacted all that we do and all that we need to do!

As a 501(c)(3) not-for-profit organization, the American Physiological Society cannot advocate for a candidate or for a party. All we can do is urge you to play the game of *Survivor 2016 – Election Edition*. Play the game by going to the polls on November 8 and voting for the candidate or candidates that have our interests in mind and are willing to compromise to pass legislation that will make things better. Maybe then we can find a way to shorten the U.S. election cycle. ●

Martin Frank

APS News

Dinner With a Nobel Laureate

Daria Ilatovskaya
Renal Section Trainee Advisory Committee Representative

Apart from attending the late-breaking posters and sessions, or hanging out with friends and colleagues for an extra day, there is yet another good reason to stay until the very end of the Experimental Biology meeting – the Nobel Prize Lecture, the true culmination of the Wednesday program. This year in San Diego, some of the Trainee Advisory Committee members, including Tiffany Thai (Cell and Molecular Physiology Section), Angelina Hernandez (Teaching), Brendan Dougherty (CNS), and Daria Ilatovskaya (Renal) got a special APS-sponsored treat: dinner with Dr. Roger Tsien, who shared the 2008 Nobel Prize in Chemistry with Osamu Shimomura and Martin Chalfie for "the Green Fluorescent Protein: Discovery, Expression and Development."

Left to *right:* Tiffany Thai, Daria Ilatovskaya, 2008 Nobel Prize Awardee (Chemistry) Dr. Roger Tsien, Angelina Hernandez, and Brendan Dougherty

An . . . actual . . . dinner . . . with . . . a . . . Nobel . . . laureate. I would not exaggerate by saying that we all were waiting with eager anticipation!

The evening started with the public Nobel Prize Lecture; without dispute, the discovery of GFP was a tremendous advancement in the field, and I am sure many of us could not stop thinking about how often we use Dr. Tsien's discovery in our labs. Yet Dr. Tsien was too modest to spend his entire lecture talking about this accomplishment. Rather, he decided to excite us with a new provocative theory about how human memories work. The idea came to him while traveling when he came upon an old map. Although the writing had nearly disappeared, holes on the map indicating landmarks were still visible. He wondered whether our brains work in the same manner. Could "holes" in the brain form a web of long-lasting memories? Dr. Tsien is pursuing this new venture to unravel a mystery with zeal.

After the Lecture, Dr. Tsien was bombarded with fans, some of them rather pushy in the same way that any celebrity fan would be. We watched him sign hundreds of autographs and were struck by how Dr. Tsien was most at ease, most comfortable, and most excited when discussing science and his experience with everyone. But despite the acclaim and celebration that follows Dr. Tsien, he is a great example of modesty. One of the first things he told us was that Douglas Prasher, a molecular biologist who cloned the GFP gene, should have also been included to shake the hand of the Swedish King along with the three 2008 Nobel Prize winners. Unfortunately, Dr. Prasher had left science, and the Nobel Committee would not include him as an awardee. But thanks to the efforts of Drs. Tsien and Chalfie, he was invited to be the guest of honor at the Nobel Prize Ceremony (and he eventually returned to science!). This surprising show of humility surely touched every one of us.

But, have you ever wondered what you would feel if you were nominated for the Nobel Prize? Likely, if you are a scientist, you might have thought about this, even if just for a moment. Would you feel excitement, agitation, exhilaration? Undoubtedly. Well, if you are in the U.S., you'd also feel very sleepy since the call from Stockholm comes very late at night (or early in the morning). No wonder Dr. Tsien, who admitted he had not been expecting to win the prize, decided to take a sleeping pill to avoid the tiring anxiety of the night. It may have been that either Dr. Shimomura or Dr. Chalfie took more potent sleeping pills or the phone rang especially loud in Dr. Tsien's house, but he was the only one the Stockholm Committee was able to reach. He had to fight against sleep and talk science, all at 4 AM. What a night to remember!

After more than 2 hours of talking with Dr. Tsien, we left with a unanimous feeling of hope that, throughout our careers, we will still light up with the enthusiasm for science just as he did. The lesson we learned from Dr. Tsien: As long as you are passionate, honest, and positive about your research, you will succeed! ●

Chapter News

Michigan Physiological Society Third Annual Meeting Report (2015-2016)

E. A. Wehrwein ***(President) and V. VanRyn (Secretary-Treasurer)***

The Third Annual Meeting of the Michigan Physiological Society (MPS) was hosted by Wayne State University School of Medicine in Detroit, MI on May 12-13, 2016. Additional events of the conference, including a poster session and dinner, were held at the Detroit Historical Museum. The meeting hosted 180 attendees, representing 12 institutions: Adrian College, Alma College, Brock University, Central Michigan University, Michigan State University, Michigan Technological University, Northern Michigan University, Oakland University, University of Michigan, The University of Western Ontario, The University of Wisconsin School of Veterinary Medicine, and Wayne State University. Additionally, 18 educators from high schools across the state of Michigan participated in our first Life Sciences Teacher Workshop offered on May 13, 2016.

Registration took place during the afternoon of Thursday May 12th. After registration, Erica Wehrwein [President, Michigan State University (MSU)] and Pat Mueller [President-Elect, Wayne State University (WSU)] greeted MPS members, special attendees, and guests during the opening session. Additionally, Stephen Lanier (WSU Vice President for Research) and Jian-Ping Jin (WSU Chair of Physiology) welcomed the membership to the Wayne State University campus.

All oral presentations, aside from the keynote lecture, were given by trainees. Trainees also served as session co-chairs. The first oral session ensued immediately following the meeting opening. Presenters were selected by the awards committee based on judging of submitted abstracts. Trainees gave 10-minute talks with 5 minutes for questions. The question-and-answer sessions were moderated by the trainee session co-chairs, and MPS leadership has a stated goal that trainees in the audience, rather than the faculty, ask questions. Oral presentations were judged to determine the top presentations for award honors. There were 16 total trainee oral presentations over the 2-day conference. This first session, regarding molecular and cellular topics, was co-chaired by Brandon Couglin (MSU) and Zeljka Minic (WSU), and featured excellent talks by three individuals: Vanessa Ramseyer (WSU), Molly Thorson (Univ. of Michigan), and Ryan Pettit-Mee.

The Society then welcomed Keynote Speaker Hannah V. Carey of The University of Wisconsin School of Veterinary Medicine, Department of Comparative Biosciences. Carey's keynote address was titled "Seasonal Remodeling of the Host-Gut Microbe Symbiosis in Hibernation." A group photo was taken (Fig. 1), and the members traveled to the nearby Detroit Historical Museum for an opening reception.

2015-2016 MPS member photo.

Life Sciences Teacher Workshop Career Panel. MPS members (from *left* to *right*): Valerie VanRyn, Adele Denison, Monica McCullough, Jason Carter, and Anthony Anzell.

Oral Presentation Award Winners. MPS members (from *left* to *right*): Erica Wehrwein (MPS President), Ankita Jaykumar, Janice Diaz-Ortero, Kevin Gordish, and Monica McCullough (Oral Judging Chair). Not pictured: Amanda Shoemaker and Kevin Steelman.

Poster Presentation Award Winners. MPS members (from *left* to *right*): Erica Wehrwein (MPS President), Brandon Coughlin, Kiera Fisher, Hannah Marti, Shibandri Das, Konstadionos Bakoulas, Mohamad-El Chami, and Naveen Sharma (Poster Judging Chair).

The evening session included a reception, the first poster session, and dinner. Hors d'oeuvres were served during a reception where members mingled among themselves and navigated through the first poster session, which included roughly half of the 68 total posters. Submitted poster abstracts were judged in advance by the awards committee to determine which posters would be further evaluated at the meeting. Poster presentations were scored by a panel of judges to select award recipients. At the conclusion of the poster presentations, the museum was opened for public viewing, and a "Streets of Detroit"-themed dinner was served as live music resonated throughout the corridors.

After morning announcements on Friday, May 13, the second oral session began. This session, regarding respiratory/cardiovascular and neuro-physiology, was co-chaired by Andrew Chapp (MTU) and Dragana Komnenov (WSU), and featured excellent talks by six individuals: Amanda Shoemaker and Kevin Steelman (CMU), Joanne Garbincius (Univ. of Michigan), Andrew Kulek (WSU), Janice Diazz-Ortero (MSU), and Stephen Klassen (Brock Univ.).

Three concurrent breakout sessions took place during the meeting. The highlighted foci were "Individual Development Plan" with Tony Nunez (MSU), "Opportunities to Involve Undergraduates in Research" with Rasheeda Zafar (WSU-IMSD) and Jennifer Tabb (WSU-Re-B.U.I.L.D. Detroit), and "Models for Physiologist-Teacher Collaboration" (see information regarding Life Sciences Teacher Workshop below) with Dinesh Pal (Univ. of Michigan). The second poster session was held on Friday afternoon. Posters were available for further viewing during the lunch period.

Following a catered lunch, the third oral session began. This session, regarding neuro-physiology, was co-chaired by Travis Wakeman (MTU) and Brandon Sauer (CMU), and featured excellent talks by four individuals: Kelsey Kusch (Adrian), Katelyn Norton (Univ. WO), Robert Larson (MTU), and Mark Badrov (Western Univ.). Brief refreshments were offered before the fourth oral session began. This session was co-chaired by Shibandri Das (MSU) and Isola Brown (MSU), and featured excellent talks by four individuals: Zachery Krease (WSU), Nusrat Matin (MSU), Ankita Jaykumar (HFH, WSU), and Kevin Gordish (HFH, WSU).

In a parallel session on Friday, a Life Sciences Teacher Workshop was offered. The APS Chapter Program and APS staff partnered with the MPS this year to develop and evaluate a model program, Regional Professional Learning Communities (RPLC). The workshop hosted 18 local high school life science teachers. Teachers were provided a full-day workshop with travel reimbursement and lunch to engage in the activities of our chapter activities including the poster session, integrate the Six Star Science principles into chapter K-12 outreach activities, and inform both teachers and researchers in the region about the APS Frontiers program and Physiology Understanding Week. Margaret Shain-Stieben, of the APS education office, traveled to MI to run this event with the assistance of the MPS K12 Chair Karen Ball (Alma College) and session moderator Dinesh Pal (Univ. of Michigan). Hannah Carey from the Univ. of Wisconsin gave a

Executive Board and Planning Committee. MPS members (from *left* to *right*): John Durocher (Awards Chair), Jason Carter (Past-President), Karen Ball (K12 Chair), Erica Wehrwein (President), Sue Barman (Membership and Fundraising Chair), Nusrat Matin (Trainee Affairs Chair), Pat Mueller (President-Elect), James Poteracki (Secretary-Treasurer), and Kevin Gordish (Website Coordinator).

stimulating lecture entitled "Hibernation: A cool Way to Spend the Winter," MPS members served on a career panel moderated by Erica Wehrwein (Fig. 2), and Steve DiCarlo (WSU) opened his laboratory for a private demonstration regarding his research models.

All members and guests reconvened for the Business Meeting on Friday afternoon. Secretary-Treasurer James Poteracki (MSU) discussed the budget, expenses, and donations from the previous year. Subsequently, Erica Wehrwein announced the date of the next Annual Meeting at Alma College (June 8-9, 2017). She then offered thanks to the outstanding members of the Executive Board who completed terms: Jason Carter (MTU, Past-President) and James Poteracki (MSU, Secretary-Treasurer). A ballot was distributed at the meeting, and a popular vote was taken to elect new members. The results were tallied afterward, and two new members were elected to the Executive Board: Karen Ball (Alma, President-Elect) and Valerie VanRyn (MSU, Secretary-Treasurer). The meeting concluded with the Awards Ceremony. Awards were funded by generous donations from our members. Of the 16 total oral presentations, 4 talks were honored, and oral award recipients were presented with a $250 check (Fig. 3). Of the 68 total poster presentations, 6 posters were honored, and poster award recipients were presented with a $100 check (Fig. 4).

The MPS was extremely pleased with the robust member turnout for the Annual Meeting of 2015-2016. The year showed continued growth in numbers of members and attendees. The meeting welcomed international members from Canada for the first time.

We owe many thanks to the planning committee (Fig. 5) and local volunteers for the execution of this meeting, and are grateful to The American Physiological Society for their continuous support. We also appreciate the financial support of our benevolent sponsors: Michigan State University College of Human Medicine (Aron Sousa, Dean); Wayne State University, Initiative for Maximizing Student Development (Joseph Dunbar, Program Director); Wayne State University, Office of the Vice President for Research (Stephen Lanier, Vice President); Henry Ford Health System (Margot LaPointe, Vice President for Research); Michigan State University College of Natural Sciences (R. James Kirkpatrick, Dean); Michigan Technological University, Graduate School (Jacqueline E. Huntoon, Dean); Michigan Technological University, Department of Kinesiology & Integrative Physiology (Jason Carter, Chair); Michigan Technological University, Department of Biological Sciences (Shekhar Joshi, Chair); Wayne State University, School of Medicine (Dean Jack Sobel); Wayne State University, School of Medicine, Department of Physiology (J.-P. Jin, Chair); Michigan State University, Graduate School (Judith Stoddart, Interim Dean); Michigan State University, Office of the Vice President for Research & Graduate Studies (Stephen Hsu, Dean); Wayne State University, School of Medicine, Research Office (Linda Hazlett, Interim Vice Dean); Wayne State University, School of Medicine, BioMed Graduate Programs (Stanley Terlecky, Associate Dean); Wayne State University School of Medicine Cardiovascular Research Institute (Karin Przyklenk, Director); Wayne State University Graduate School (Ambika Mathur, Dean); and Mayo Graduate School Biomedical Engineering & Physiology Program. ●

Education

10th Anniversary of PhUn Week Celebrated at EB 2016

More than 100 physiologists and teachers attended the EB 2016 PhUn Week Training session on Sunday, April 3 to share PhUn Week activities and strategies and to celebrate the 10th anniversary of the APS-sponsored program. Thirty-four poster presenters described strategies for outreach and hands-on physiology-related activities across primary, elementary, middle, and high school levels. The poster session format fosters a community of sharing best practices and grassroots outreach efforts by APS members who participate in the APS annual Physiology Understanding Week (PhUn Week) outreach program held each fall (*www.PhUnWeek.org*). In addition to classroom activities, topics included working with a teacher, recruiting and training of a volunteer team, and organizing special community events. APS Education Committee member Jennifer Sasser organized and opened the poster session. Attendees interacted with poster presenters and enjoyed a continental breakfast session co-sponsored by the APS and ADInstruments, Inc.

Members recognized for 5+ years of PhUn Week participation recognized during the PhUn Week Training

Poster discussion during the PhUn Week poster session

As part of the 10th anniversary celebration, Jeff Osborn (APS Education Committee Chair) recognized 25 APS members for 5 or more years of PhUn Week participation. The dedication of these members has contributed greatly to the success of the PhUn Week program over the past 10 years:

- Caroline Appleyard, Ponce Health Sciences Univ.
- Sue Barman, Michigan State Univ.
- Jackie Brittingham, Simpson College
- Aaron Bunker, Morningside College
- Gladys Chompre, Pontifical Catholic Univ. of Puerto Rico
- Perry Chowdhury, Univ. of Arkansas for Medical Sciences
- Jeff Falcone, Univ. of Louisville
- Barb Goodman, Sanford School of Medicine of the Univ. of South Dakota
- Andrea Gwosdow, Gwosdow Associates Science Consultants
- Lisa Harrison-Bernard, Louisiana State Univ. Health Sciences Center
- Patricia Halpin, Univ. of New Hampshire
- Kim Henige, California State Univ., Northridge
- David Holtzclaw, Univ. Of Nebraska Medical Center
- Jessica Ibarra, Univ. of the Incarnate Word
- Dexter Lee, Howard Univ.
- Keisa Mathis, Univ. of North Texas Health Science Center
- Diane Munzenmaier, Center for BioMolecular Modeling
- Milwaukee School of Engineering
- Kathy Ryan, U.S. Army Institute of Surgical Research
- Michael Ryan, Univ. of Mississippi Medical Center
- Jennifer Sasser, Univ. of Mississippi Medical Center
- Christine Schnackenberg, GlaxoSmithKline
- Jessica Taylor, College of Osteopathic Medicine William Carey Univ.
- Mike Wyss, Univ. of Alabama, Birmingham
- Bill Yates, Univ. of Pittsburgh

A special Department Award was given to the Univ. of Nebraska Medical Center for their regular participation in PhUn Week over the years.

The table lists the presenters and poster titles for the 2016 PhUn Week Training Session. ●

Table 1. Poster titles and prensenters at 2016 PhUn Week Training Session

Title	Presenter
Recruitment and Training of a Volunteer Team with Varying Levels of Outreach Experience	Alicia Schiller
Combining Physiology and Health Care Professions Education in Rural High School-aged Students: High Tech PhUn!	Alvaro Gurovich
Exploring Physiology with Elementary and Middle School Students	Amber Fairley
Boston Children's Museum: A Wonderland for Physiology	Andrea Gwosdow
Teaching the Themes: PhUn Week Student-Led Stations	Anne Crecelius
Activities in Exercise and Physiology with 7th Graders	Barb Goodman
PhUn Week at Hawkins Elementary School	Bishoy Samy
Planning of a One Day Event Designed to Reach Native American Indian Middle and High School Students	Bryan Becker
Glomerular Damage Can be PhUn! Introducing Renal Physiology to Elementary School Students	Carmen De Miguel
Spread the PhUn, Not the Germs! Teaching Hand Hygiene to 1st Graders	Carmen DeMiguel
Exploring the Nervous System in Elementary School: How Do We Know What We Sense?	Christine Schnackenberg
Bilingual PhUn Week in a Spanish Immersion Elementary School in Kentucky	Daniela Terson de Paleville
7th Grade Students at Moanalua Middle School Have PhUn with Exercise Physiology	Dao Ho
Stressing Cardiovascular PhUnction with Seventh Graders	Debra Irsik
An Active Heart is a Healthy Heart!	Diane Munzenmaier
Outcomes Obtained by Giving the Same Lecture to Middle and High School Students in a PhUn Week Activity	Gladys Chompre
Using Course-Based Honors Projects to Create and Expand Outreach Activities	James Poteracki
PhUn Week: Learning Beyond the Walls	Jessica Ibarra
"I Can Hear Heart Sounds Too, How About You?" Familiarizing First-Graders to Heart Sounds with Homemade Stethoscopes and Encouraging Heart Healthy Eating Habits from an Early Age	Jessica Taylor
Kindergarteners Love Exercise Physiology Too!	Kim Henige
Developing Young Female Minds: UMMC's GWIMS Chapter Host PhUN Events	Kristine DeLeon-Pennell
Student Exploration Teaching Cardiovascular Concepts at a Title I School During PhUn Week	LaShauna Evans
Physiology Understanding Week: PhUn with the Forces	Lisa Leon
Using PhUn Week as a Service-Learning Activity	M. Lourdes A. Fortepiani
PhUn at the Mississippi Children's Museum	Michael Ryan
APS PhUn Week Presentation at the University of Arkansas for Medical Sciences	Parimal Chowdhury
A PhUn Week Incursion in Australia Teaches 3-4 and 5-6 Graders Exercise Physiology	Patricia Halpin
Making Science PhUn: Build, Design, and Connect	Patricia Silveyra
Learning About Physiology is PhUn at an Elementary School in Ponce, Puerto Rico	Raymond Isidro
Measuring Brain Wave Activity in High School Students through Biopac Science Lab	Robert Pawlak
Teaching Muscle Recruitment Using Applied Technology in High School Students	Shelby Cole
Collaborating With a Local Teacher for Nutrition Education Partnership	Sneha Pusapati
Helping Change Baltimore: One Young Scientist at a Time	Stanley Andrisse
Teaching Reaction Time Using Applied Technology in High School Students	Taylor Anthis

High School Students and Science Teachers Explore Physiology at EB

More than 120 San Diego-area high school teachers and their students attended the EB 2016 APS Physiology Workshop for Teachers and Students, Monday, April 4. Representatives from ADInstruments, Education Committee members, APS members, and the 2015 Frontiers Research Teachers also participated. Patricia A. Halpin (University of New Hampshire and APS Education Committee member) was lead organizer for the daylong event.

Students participated in interactive demonstrations of lab equipment used in teaching and research laboratories by APS members, K-12 Minority Outreach Fellows, and ADInstruments staff. APS member, Warren Lockette (University of Missouri Medical School) presented the keynote talk "Human Performance in Extreme Environments." His talk was followed by an interactive Career Panel that included Lockette, APS Travel Minority Fellows Nick Aguirre and Annie Whitaker (Louisiana State University Medical Center). The panel was moderated by 2015 Frontiers in Physiology Lead Mentor Instructor Robert Manriquez. Twenty-two APS members served as tour guides during lunchtime visits to the exhibit hall, where they accompanied teachers and students through the exhibits and posters, and shared a box lunch while discussing physiology careers.

The afternoon student session was led by Halpin, Manriquez, and several APS members. Students used the "Junkyard Digestion" activity on modeling the digestive system with common household items (*http://www.lifescitrc.org/resource.cfm?submissionID=384*). A separate session for teachers included "Using the Next Generation Science Standards," an exercise in using student-centered activities in the classroom led by Barbara Goodman (University of South Dakota) and Tonya Smith (Frontiers in Physiology Mentor Teacher).

Student groups working on digestive system design

The students commented that one of the best parts of the event was meeting physiologists one on one during the lunch hour tour to the exhibit hall and scientific posters. The APS Education Committee plans to continue the workshop program for high school students and teachers at EB in Chicago, IL. APS members who are interested in participating should contact the Education Office (*education@the-aps.org*). ●

High school students discuss how to assemble their model digestive system during the EB student workshop

Student groups working on digestive system design

Augusta University Undergraduates Win Annual Video Contest

"Hyperthyroidism: Not as Grave as You Think," a video submitted by undergraduate students Emilee Friedman and Jennie Wiggins of Augusta University, beat out eight other videos to win both the First Place Award and Viewer's Choice Award in the 2016 APS Presents . . . Phantastic Physiology Voyage: "Function Follows Form" Video Contest. The students received their award during the APS Undergraduate Poster Session held at Experimental Biology (EB) 2016. The winning video can be viewed at *https://www.youtube.com/watch?v=1MRQ4ckB13Q*.

The APS Career Opportunities in Physiology Committee (COPC), chaired by Thomas Pressley (Texas Tech University Health Sciences Center), chose this year's First Place Award video based on originality, creativity, and quality of the video; whether the video explained the scientific principle at issue clearly and accurately; whether the video made physiology more interesting and relevant; and the overall impact.

Selection of the Viewer's Choice Award winner was based on the total number of YouTube views from date of posting on YouTube through the first day of the EB meeting.

The award-winning video team received $750, up to $1,000 in travel reimbursement to attend the EB meeting, and certificates of recognition. For the Viewer's Choice Award, the team received an additional $250 and certificates of recognition.

Entries from this year's video contest, as well as those from previous years, can be found at *www.the-aps.org/video*. ●

Undergraduate Research Highlighted at Special EB Poster Session

This year, 167 undergraduate students presented their research to over 200 APS members and guests during the 13th annual APS Undergraduate Poster Session held at Experimental Biology 2016. This special session, organized by the Education Committee (chaired this year by Jeffrey L. Osborn, University of Kentucky), provides undergraduate students an additional opportunity outside of the main poster sessions to present their physiology research and network with members. Approximately 200 APS members and guests were in attendance at the session, with many comments heard as to the high quality of research being presented by the students.

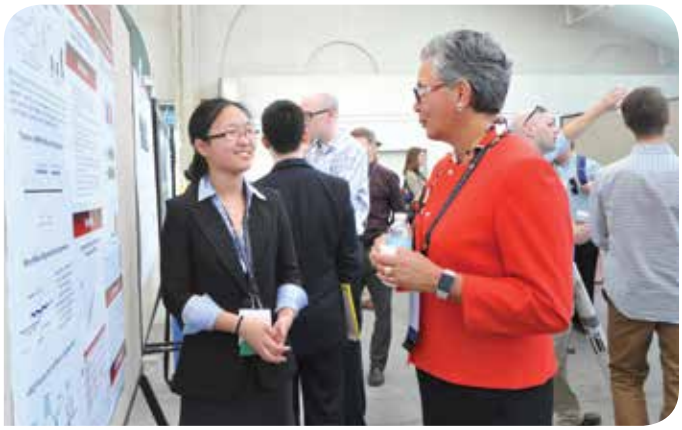
In addition to presenting their work, undergraduate students also discussed their future career plans with faculty from graduate programs across the country. APS would like to thank the following institutions and programs for participating in this professional development opportunity and sponsoring the Undergraduate Poster Session:

- Augusta University, The Graduate School
- Brigham Young University, Department of Physiology and Developmental Biology (PDBio), MS and PhD Programs in PDBio and Neuroscience
- Des Moines University, Master of Science in Biomedical Sciences
- Louisiana State University Health Sciences Center at New Orleans, Department of Physiology
- Mayo Graduate School, Biomedical Engineering & Physiology Graduate Program
- Medical College of Wisconsin, Department of Physiology
- Michigan State University, Department of Physiology
- Saint Louis University School of Medicine, Graduate Programs in the Biomedical Sciences
- The University of Tennessee Health Science Center, College of Graduate Health Sciences

Undergraduate students discussing research with APS members

- Tulane University, New Orleans, LA, Physiology, Biomedical Sciences Graduate Program, and the Bioinnovations Graduate Program
- University of California, Davis, Molecular, Cellular, & Integrative Physiology Graduate Program
- University of Cincinnati, Systems Biology and Physiology
- University of Mississippi Medical Center, School of Graduate Studies in the Health Sciences
- University of Minnesota, Graduate Program in Integrative Biology & Physiology
- University of Nebraska Medical Center, Integrative Physiology & Molecular Medicine Doctoral Program
- Wayne State University, School of Medicine, Department of Physiology

APS looks forward to hosting the APS Undergraduate Poster Sessions at Experimental Biology 2017 in Chicago, IL. Undergraduate students doing research in physiology are encouraged to submit abstracts to EB, apply for the David Bruce Award, and attend this poster session. Departments interested in sponsoring the 2017 Undergraduate Poster Session and displaying materials for their departments should contact the APS Education Office (*education@the-aps.org*). ●



Bruce Award Recipient Yunwei Xia discussing her research with APS President Patricia Molina

Departments and programs discuss their graduate offerings with undergraduate students

David S. Bruce Outstanding Undergraduate Abstract Awards and Excellence in Undergraduate Research Awards Presented During Experimental Biology 2016

Ninety-three undergraduates competed for 30 Outstanding Undergraduate Abstract Awards and 15 Excellence in Undergraduate Research Awards as part of the 2016 APS David S. Bruce Awards. The APS Education Committee (chaired by Jeffrey L. Osborn, University of Kentucky) selected the winners. For the Abstract Awards, applicants were judged on abstract quality, abstract novelty, and a letter describing their career goals, research, and why they were particularly deserving of the award. All Abstract Award winners then competed for the Excellence in Undergraduate Research Awards in a special Experimental Biology poster session. Judging teams (organized by Education Committee member Carmen De Miguel, The University of Alabama at Birmingham) scored student presentations based on their research project knowledge.

Jeffrey L. Osborn and APS President Patricia Molina presented all 45 awards during the APS Undergraduate Poster Session. Outstanding Undergraduate Abstract Awardees received $100, 2 years of complimentary APS undergraduate membership, and a certificate of recognition. Excellence in Undergraduate Research Awardees received $400 and a certificate of recognition.

For the third year in a row, an APS member generously donated funds to allow the top-ranked Research Awardee to receive an additional $250.

APS congratulates all of these students on the quality of their research, abstracts, and presentations. APS also thanks Members John M. Horowitz, Barbara A. Horwitz, Ida J. Llewellyn- Smith, and J. Michael Wyss for their support of the David S. Bruce Awards. ●

2016 Bruce Excellence in Undergraduate Research Awardees

2016 Bruce Outstanding Undergraduate Abstract Awardees

2016 David S. Bruce Outstanding Undergraduate Abstract Awardees

Outstanding Abstract Awardee	Institution	Laboratory of
Isaiah Adetoro	Pensacola Christian College	Pamela A. Lucchesi, The Commonwealth Medical College
Benjamin Aleckson	University of Wisconsin-Madison	William G. Schrage, University of Wisconsin-Madison
Samantha Chavez	University of California Santa Barbara	Timo Rieg, University of California, San Diego
Emmanuel Garcia	Kansas State University	Bradley J. Behnke, Kansas State University
Joshua Gaudette	Albion College	Bradley Rabquer, Albion College
India Gill	Elon University	Jennifer K. Uno, Elon University
Allison Giuffre	University of Illinois at Chicago	Sakthivel Sadayappan, Loyola University Chicago
Heather Hackett	University of British Columbia Okanagan	Glen E. Foster, University of British Columbia
Amanda Hayek	University of Kentucky	Esther E. Dupont-Versteegden, University of Kentucky
Thuy Hoang	University of Minnesota	Young Soo Han, Mayo Clinic
Lillian Horin	Pitzer College	Rudy Ortiz, University of California, Merced
Michael Hudock	University of Dayton	Anne Crecelius, University of Dayton
Alex Ismail	Michigan State University	Stephanie Watts, Michigan State University
Elizabeth Kelsch	University of Dayton	Anne Crecelius, University of Dayton
Trinity Kronk	Emory University	Brandi M. Wynne, Emory University School of Medicine
Taylor Levin	UW Hospitals and Clinics	Marlowe W. Eldridge, University of Wisconsin School of Medicine and Public Health
Mirandy Li	Emory University	Clintoria Williams, Emory University
Lauren Newhouse	Mayo Clinic	Michael Joyner, Mayo Clinic
Marvin Nicoleau	Franklin and Marshall College	Sean D. Stocker, Penn State College of Medicine
Samuel Norton	University of Iowa	Darren P. Casey, University of Iowa
Ta'Shariah Robinson	University of Mississippi Medical Center	Jennifer Sasser, University of Mississippi Medical Center
Zachariah Scruggs	Mayo Clinic	Michael Joyner, Mayo Clinic
Brady Slater	Chapman University	Ken Sumida, Chapman University
Atzie Sobotik	University of Wisconsin-Madison	Marlowe W. Eldridge, University of Wisconsin School of Medicine and Public Health
Megan Strehlke	University of Minnesota Medical School, Duluth	Jean F. Regal, University Minnesota Medical School, Duluth
Daniel Tavakol	University of Virginia	Shayn Peirce, University of Virginia
Tyler Witte	UC San Diego	Ellen Breen, University of California, San Diego
Yunwei Xia	Cornell University	Jennifer L. Sones, Cornell University
Tracylyn Yellowhair	University Of New Mexico	Nikki Jernigan, University of New Mexico
Jacob Young	University of Missouri-Columbia	Kevin J. Cummings, University of Missouri-Columbia

2016 David S. Bruce Excellence in Undergraduate Research Awardees

Excellence in Undergraduate Research Awardee	Institution	Laboratory of
Allison Giuffre	University of Illinois at Chicago	Sakthivel Sadayappan, Loyola University Chicago
Lillian Horin	Pitzer College	Rudy Ortiz, University of California, Merced
Michael Hudock	University of Dayton	Anne Crecelius, University of Dayton
Alex Ismail	Michigan State University	Stephanie Watts, Michigan State University
Elizabeth Kelsch	University of Dayton	Anne Crecelius, University of Dayton
Trinity Kronk	Emory University	Brandi M. Wynne, Emory University School of Medicine
Taylor Levin	UW Hospitals and Clinics	Marlowe W. Eldridge, University of Wisconsin School of Medicine and Public Health
Mirandy Li	Emory University	Clintoria Williams, Emory University
Lauren Newhouse*	Mayo Clinic	Michael Joyner, Mayo Clinic
Marvin Nicoleau	Franklin and Marshall College	Sean D. Stocker, Penn State College of Medicine
Samuel Norton	University of Iowa	Darren P. Casey, University of Iowa
Ta'Shariah Robinson	University of Mississippi Medical Center	Jennifer Sasser, University of Mississippi Medical Center
Zachariah Scruggs	Mayo Clinic	Michael Joyner, Mayo Clinic
Brady Slater	Chapman University	Ken Sumida, Chapman University
Megan Strehlke	University of Minnesota Medical School, Duluth campus	Jean F. Regal, University Minnesota Medical School, Duluth
Taylor Levin	UW Hospitals and Clinics	Marlowe W. Eldridge, University of Wisconsin School of Medicine and Public Health
Mirandy Li	Emory University	Clintoria Williams, Emory University
Lauren Newhouse	Mayo Clinic	Michael Joyner, Mayo Clinic
Marvin Nicoleau	Franklin and Marshall College	Sean D. Stocker, Penn State College of Medicine
Samuel Norton	University of Iowa	Darren P. Casey, University of Iowa
Ta'Shariah Robinson	University of Mississippi Medical Center	Jennifer Sasser, University of Mississippi Medical Center
Zachariah Scruggs	Mayo Clinic	Michael Joyner, Mayo Clinic
Brady Slater	Chapman University	Ken Sumida, Chapman University
Atzie Sobotik	University of Wisconsin-Madison	Marlowe W. Eldridge, University of Wisconsin School of Medicine and Public Health
Megan Strehlke	University of Minnesota Medical School, Duluth	Jean F. Regal, University Minnesota Medical School, Duluth

*Top ranking awardee

The David S. Bruce Awards are named in honor of APS member David S. Bruce (1939-2000), who served as Chair of the APS Teaching Section and was a professor of physiology at Wheaton College from 1978 to 2000. Bruce was a dedicated physiology educator who had a particular interest in engaging undergraduate students in scientific research. Bruce not only encouraged and supported his students in participating in research, but he also regularly brought undergraduate students to the Experimental Biology meeting, often to present their research findings.

Pulver Receives ADInstruments Macknight Early Career Innovative Educator Award

Stefan Pulver from the School of Psychology and Neuroscience at the University of St. Andrews (St. Andrews, United Kingdom) received the sixth annual ADInstruments Macknight Early Career Innovative Educator Award. Pulver was selected based on the laboratory activity he developed entitled "Using Optogenetic Tools in *Drosophila* to Study Central Pattern Generator Networks in Teaching Laboratories" to use in the teaching and outreach of cutting-edge physiology to a variety of audiences including, but not exclusive to, laypeople, undergraduate students, neuroscience educators, and postgraduate students at the Cold Spring Harbor Laboratory (CSHL).

This award honors an early career APS member who demonstrates the greatest potential for incorporating innovative teaching techniques and effectively utilizing technology resources in engaging undergraduate students in physiology education. It is sponsored by ADInstruments in honor of its co-founder, Tony Macknight.

The APS Education Committee, chaired by Jeffrey L. Osborn (University of Kentucky), selected Pulver from the pool of applicants. He was chosen based on a 2- to 3-page description of a laboratory experiment or activity that exemplifies innovative use of technology in physiology education, an explanation of how this activity/technique can be integrated in the curriculum to best benefit students, a CV, and a letter of recommendation from his department chair or administrator.

Pulver received a $1,500 Travel Award to attend Experimental Biology, a certificate of recognition, and an Institutional Grant providing the University of St. Andrews with a PowerLab PTB 4152 LabTutor Physiology Teaching Bundle or its equivalent.

Pulver will receive the ADInstruments Macknight Early Career Innovative Educator Award at the 2017 Experimental Biology Meeting in Chicago, IL. ●

Stefan Pulver (University of St. Andrews), 2016 ADInstruments Macknight Early Career Innovative Educator Awardee

Undergraduate Summer Research Fellows Attend EB

More than 50 undergraduate students involved in five APS fellowship programs attended Experimental Biology 2016 to present their research (Table 1). Patricia Molina (APS President), David Pollock (APS Past-President), and Jane Reckelhoff (APS President-elect) congratulated the Fellows on their scientific research efforts and presented them with award certificates during the APS Undergraduate Orientation Session, which was attended by over 150 students.

During orientation, students listened to presentations from Thomas Pressley (Chair of the Career Opportunities in Physiology Committee), Erica Dale (Chair of the Trainee Advisory Committee), and Carissa Krane (member of the Education Committee) covering topics such as how to navigate the meeting, learning how to read the EB program and maximize your time, attending career development sessions, learning how to introduce yourself, and attending the APS Undergraduate Poster Session. At the end of the orientation, students had the opportunity to meet with APS Members from the three sponsoring committees to ask questions about their careers.

2015 IOSP Fellows at Experimental Biology 2016

2015 STRIDE Fellows at Experimental Biology 2016

2015 UGSRF Fellows at Experimental Biology 2016

Table 1. Number of undergraduate Fellows in each program, Fellows attending Experimental Biology, and Fellows presenting during Experimental Biology 2016

APS Fellowship Program	Fellows	Fellows in Attendance	Fellows Presenting First-Author Abstract
Integrative Organismal Systems Physiology (IOSP)	8	7	5
Short-Term Research Education Program to Increase Diversity in Health-Related Research (STRIDE)	19	18	15
Short-Term Research Experience for Underrepresented Persons (STEP-UP)	22	2*	2
Undergraduate Summer Research Fellows (UGSRFs)	24	24	18
Undergraduate Research Excellence Fellows (UGREFs)	6	5	5

*EB attendance is not required.

2015 UGREF Fellows at Experimental Biology 2016

On Sunday, Fellows participated in the APS Undergraduate Poster Session and presented their posters to APS members, in addition to their regularly scheduled scientific session.

On Monday morning, the IOSP, STRIDE, and STEP-UP Fellows attended the Minority Travel Fellow Networking Breakfast to meet graduate students, postdoctoral fellows, and early career faculty from diverse backgrounds, as well as members of the Porter Physiology Development and Minority Affairs Committee. Tables with topics such as "Choosing a Graduate School or Medical School," "Networking," and "Mentor Selection" were organized to facilitate these roundtable-style discussions.

Overall, the Fellows found the EB meeting to be a very positive learning experience and appreciated the opportunity to come and present their research.

The IOSP undergraduate summer program is supported by APS and NSF Grant IOS-1238831. The STRIDE undergraduate program is supported by APS and NIH NHLBI Grant 1R25 HL-115473-01. The STEP-UP undergraduate program is supported by APS and NIDDK Grant 1R25 DK-095492-01. The UGSRF and UGREF programs are supported by APS. For more information about these programs, visit *www.the-aps.org/summerresearch* or contact *education@the-aps.org*. ●

MD or DO Students Receive Travel Award for Excellence in Professional Student Research

The American Physiological Society is proud to honor MD and DO students who were first authors on an abstract submitted to EB 2016 and eligible to apply for the Excellence in Professional Student Research Travel Awards.

The APS Career Opportunities in Physiology Committee chaired by Thomas A. Pressley (Texas Tech University Health Sciences Center) selected 10 awardees from the applicants. Awardees were chosen based on the quality of their abstract; a one-page letter discussing their role in the research, the significance of the research, and their career plans; and a recommendation letter from their research advisor.

The 2016 MD/DO Excellence in Professional Student Research Travel awardees

The awardees received a certificate of recognition, a $1,800 travel allowance, and complimentary advanced registration for the EB 2016 meeting. They also met with meeting mentors, MD researchers in physiology.

Students received their awards and met with their meeting mentors at a breakfast orientation session. Pressley and committee member Rasna Sabharwal (University of Iowa) spoke to the students about APS, translational research opportunities, and navigating the EB meeting. In addition, APS President Patricia Molina spoke to the students about her career path as an MD doing biomedical research.

The 2016 Excellence in Professional Student Research Travel Awardees are listed in the table below. ●

The 2016 Excellence in Professional Student Research Travel Awardees are listed in the table below.

Student	Meeting Mentor
Aslam, Usman NY Institute of Technology College of Osteopathic Medicine	**Prabhleen Singh** UCSD & VA San Diego Healthcare System
Castellano, Andrew Philadelphia College of Osteopathic Medicine	**Mathias Riess** Vanderbilt University
Paresh, Jaini Univ. of North Texas Health Science Center	**Ronaldo Rumbaut** Baylor College of Medicine
Jesse, Nicholas University of Nebraska Medical Center	**Nuria Pastor-Soler** University of Southern California Keck School of Medicine
Maloy, Charles Texas College of Osteopathic Medicine	**Jeff Sands** Emory University
Mehaffey, Eamonn Tulane University School of Medicine	**Kenneth Hallows** University of Southern California Keck School of Medicine
Newell, Maegan Medical College of Georgia at Georgia Regents University	**Vivek Bhalla** Stanford University School of Medicine
Parikh, Chirag NY Institute of Technology College of Osteopathic Medicine	**Monte Willis** University of North Carolina
Rozentsvit, Artur NY Institute of Technology College of Osteopathic Medicine	**Pascale Lane** Oklahoma University Health Sciences Center
Shepherd, John Mayo Clinic	**Arohan Subramanya** University of Pittsburgh School of Medicine

Novel Disease Model Awards Granted to Graduate Student and Postdoctoral Fellow

The APS congratulates predoctoral students and postdoctoral fellows who were first authors on an EB 2016 abstract and successfully competed for an APS Novel Disease Model Award. The Predoctoral Awardee was Renato Gaspar (Federal University of Maranhão, Sao Luis, Brazil) for his abstract entitled "Polycystic Ovary Syndrome Phenotype in Hyperinsulinemic but Normoandrogenic Monosodium L-Glutamate Obese Rats." The Postdoctoral Awardee was Kavaljit Chhabra (University of Michigan, Ann Arbor, MI) for his abstract entitled "Hypothalamic POMC-deficiency Impairs the Function of Leptin to Decrease Food Intake and Bodyweight." Awards were presented at EB during the APS Business Meeting.

2016 Novel Disease Model Awardees Renato Gaspar (predoctoral; Federal University of Maranhão, Sao Luis, Brazil) and Kavaljit Chhabra (postdoctoral; University of Michigan, Ann Arbor, MI) receive awards from President Patricia Molina *(left)* and Eugene Shek *(right)*

The predoctoral awardee received $500, a certificate of recognition, and complimentary advanced registration for the EB 2016 meeting. The postdoctoral awardee received $800, a certificate of recognition, and complimentary advanced registration for the EB 2016 meeting. Chhabra will be invited to co-chair the PIC Novel Disease Model Symposium at EB 2017.

The APS Physiologists in Industry Committee (PIC) is chaired by Eugene Shek from Beijing Novo Nordisk Pharmaceuticals Science and Technology Co., Ltd. Since 2014, the Novel Disease Model Awards have been sponsored by Novo-Nordisk. The awardee selection was made by the PIC members and chaired by committee member Gerald M. Herrera (Catamount Research and Development). Awardees were chosen based on the novelty of the model and the potential utility of the system for future research related to a disease process. ●

APS and Janssen Pharmaceuticals Support Minority Travel Fellows at EB 2016

Thirty-nine APS Minority Travel Fellows (MTFs) attended the APS' annual meeting, Experimental Biology (EB) 2016, in San Diego (see Table 2). Six of the 39 Fellows were funded by support from Janssen Pharmaceuticals Company of Johnson and Johnson. In addition, five of the six 2015-2016 Porter Physiology Development Fellows received travel awards to attend EB. The APS annually provides $125,000 in funding for travel fellowships for underrepresented minority physiologists to attend EB and APS conferences. The fellowships provide funds for registration, transportation, meals, and lodging expenses.

Fellows in the Minority Travel program also received professional guidance through pairings with APS members who served as "meeting mentors" to the Fellows for the duration of the conference. Thanks to the time and expertise offered by mentor volunteers, Fellows were able to expand their network of professional colleagues.

During EB, several events were offered as part of the Minority Travel program, including an orientation and reception on Saturday afternoon, a networking breakfast on Monday, and a luncheon on Wednesday. All events were very well attended by Fellows, meeting mentors, Porter Physiology Development and Minority Affairs Committee members, members of the APS leadership including APS President Patricia Molina, APS President-Elect Jane Reckelhoff, Past President David Pollock, and Executive Director Martin Frank. During the networking breakfast on Monday, students and meeting mentors had the opportunity to interact with one another again to exchange contact information, provide career-related answers or advice, and introduce students to other possible mentors in their particular research areas and/or geographical areas. This year, the early morning networking breakfast program included roundtable discussion topics with discussion leaders and resource handouts (see Table 1).

Minority Travel Fellow Luncheon Keynote Speaker Sue Bodine

The Wednesday luncheon provides an additional opportunity for students and mentors to solidify their interaction and discuss or clarify concepts learned and acquired during the meeting. The highlight of the luncheon was the keynote address given by Sue

Travel Fellows at the EB 2016 Minority Travel Fellows Luncheon

Bodine (University of California, Davis). Bodine's talk, "Fostering Successful Scientific Collaborations Between Academia and Industry," provided perspectives on her career path from academia to industry and back. Bodine's presentation will be available online at *http://www.the-aps.org/mm/Education/Minority-Program/Educational-Projects/Minority-Travel-Fellows-Program/Program-Resources*.

The APS' Minority Travel Fellowship Awards are open to graduate students, postdoctoral students, and early career faculty (within 5 years of earning a PhD) from groups underrepresented in science (i.e., underrepresented racial/ethnic minorities and persons with disabilities). Applicants must be attending U.S. institutions and conducting research within the 50 states and U.S. Territories. The specific intent of this award is to increase participation of underrepresented pre- and postdoctoral students in the physiological sciences. For more information, contact the APS Education Office at *education@the-aps.org* or visit *www.the-aps.org/minoritytravel*. ●

Table 1. Networking breakfast discussion topics and leaders

Topic	Leader(s)
Perfecting Your CV and Writing a Cover Letter	Jessica Ibarra, PhD, Univ. of the Incarnate Word
Finding Grant Opportunities	Sarah K. England, PhD, Wash. Univ. School of Medicine in St. Louis
Interviewing Skills	Stanley Andrisse, PhD, Johns Hopkins Univ. School of Medicine
Tips on Writing and Defending a Dissertation	Rayna J. Gonzales, PhD, Univ. of Arizona College of Medicine
Mentor Selection	Rudy Ortiz, PhD, Univ. of California, Merced
Graduate School vs. Medical School	Quentin J. Pittman, PhD, University of Calgary
The Clinical Research Point of View	Carmen Hinojosa-Laborde, PhD, U.S. Army Institute of Surgical Research
How to Advance and Tackle Tenure Track	Martha I. Davila-Garcia, PhD, Howard Univ. College of Medicine
How to Get Hired as a Postdoc/First Year Expectations	Kristine DeLeon-Pennell, PhD, Univ. of Mississippi Medical Center
Expectations After Year Two and Beyond How to Transition from Postdoc to Senior PI	Dexter Lee, PhD, Howard Univ. College of Medicine
Alternative Career Options	Maj. Robert Carter III, PhD, U.S. Army Medical Research & Materiel Command

Table 2. APS Travel Fellows and meeting mentors at Experimental Biology 2016

Travel Fellow, Institution Abstract Title or Research Focus	Meeting Mentor and Institution
Njotu Agbor, PhD University of Iowa Smooth Muscle Specific Expression of a Dominant Negative Cullin 3 Mutant (Cul3Δ9) Causes Vascular Dysfunction in Mice Mediated by RhoA/Rho-Kinase	**Alice Zemljic-Harpf, PhD** University of California, San Diego
Nicholas Aguirre University of California, Davis Research focus: Understanding the role of an amino acid transporter (LAT1) in anabolic resistance within skeletal muscle, which could contribute to the onset of sarcopenia	**Erin Glynn, PhD** BEACHBODY, LLC
Stanley Andrisse, PhD Johns Hopkins University School of Medicine Low Dose DHT Impairs Glucose Metabolism via Increased Hepatic Gluconeogenic Output and Decreased Adipose Tissue Glucose Uptake	**Mentor to Alina Hamilton**

Table 2. APS Travel Fellows and meeting mentors at Experimental Biology 2016 (continued)

Travel Fellow, Institution Abstract Title or Research Focus	Meeting Mentor and Institution
Ashley Archer University of Kansas Medical Center Regulation of Metabolism by Estrogen Receptor Alpha	**Alexis Jones, PhD** Northeastern State University
Ronique Beckford University of Tennessee Knoxville Enriching the maternal diet in long chain n-3 polyunsaturated fatty acids alters lipid metabolites and adiposity in broiler chicks	**Min Du, PhD** Washington State University
Isola Brown Michigan State University Regulation of the Antioxidant Glutathione by Enteric Glia during Inflammation	**Layla Al-Nakkash, PhD** Midwestern University
Dahima Cintron* Mayo Clinic Differential Effects of Menopausal Hormone Formulations on Plasma Orexin A Levels in Women of the Kronos Early Estrogen Prevention Study	**Matthew Barlow, PhD** Eastern New Mexico University
Laura Corrales-Diaz Pomatto University of Southern California The Sex-Specific Adaptation of the Mitochondrial Lon Protease in the Model Organism, *Drosophila melanogaster*	**Sydella Blatch, PhD** Stevenson University
Me'lisa Crawford* Arizona State University In the Short Term, Poor Nutrition Promotes Simple Steatosis without Inflammation in Adolescent Rats	**Annie Whitaker, PhD** LSU Health Sciences Center-New Orleans
Carmen De Miguel, PhD University of Alabama at Birmingham Endothelial-Derived Endothelin-1 Distinctly Mediates the Development of Renal Apoptosis in Male and Female Mice	**Jennifer Sullivan, PhD** Georgia Regents University
Ninotchska Delvalle-Dorta Michigan State University Tachykinin Activation on Enteric Glia: A Novel Mechanism of Enteric Nervous System Dysfunction in Irritable Bowel Syndrome	**Madhusudan Grover, MD** Mayo Clinic
Jada Domingue (Porter Fellow) University of Illinois at Chicago Chenodeoxycholic Acid Initiates Distinct Signaling Mechanisms to Stimulate Cl- Transport in Intestinal and Non-Intestinal Epithelial Cells	**Jonathan Kaunitz, MD** UCLA
Shannon Dunn Texas Tech University Health Sciences Center Endothelial Dysfunction and Outward Remodeling in Coronary and Mesenteric Arteries in Response to High Fat Diet in Mice	**Ana T. Palei, PhD** University of Mississippi Medical Center
Leandra Figueroa-Hall Oklahoma State University Center for Health Sciences Characterization of Toll-like Receptor 4 Neuroinflammatory Signaling and the Effects of Fentanyl Citrate on CHME-5 Human Microglial Cells	**Kedra Wallace, PhD** University of Mississippi Medical Center
Katiria Flores University of Connecticut ATP-Binding Cassette Transporters and Cytoprotective Genes Respond Differentially to a Hepatotoxic Dose of Acetaminophen in Male and Female Mouse Brain	**Utpal Sen, PhD** University of Louisville School of Medicine
Selina Garcia University of New Mexico School of Medicine Acid Sensing Ion Channel 1 Contributes to Endothelium-Dependent Vasodilation in Mesenteric Arteries	**Flavia Souza-Smith, PhD** LSU Health Sciences Center-New Orleans

Travel Fellow, Institution Abstract Title or Research Focus	Meeting Mentor and Institution
Albert Gonzales, PhD* University of Vermont Contractile Pericytes Determine the Direction of Blood Flow at Capillary Bifurcations	**R. Brooks Robey, MD, FASN, FAHA** White River Junction VA Medical Center/ Dartmouth
Sabrina Gonsalez Tulane University Salt Inducible Kinase: A Potential Intracellular Signal Involved in DOCA-Salt Induced Hypertension?	**Zhengrong Guan, MD., PhD, FAHA** University of Alabama at Birmingham
Alina Hamilton University of Texas Rio Grande Valley Utilizing the Novel Manganese-Induced Precocious Puberty Rat Model Identifies Progesterone Receptor as an Important Mediator between Female Puberty and Breast Cancer	**Stanley Andrisse, PhD** Johns Hopkins University School of Medicine
Ronee Harvey Mayo Clinic Cerebrovascular Reactivity Is Reduced in Postmenopausal Women with a History of Hypertensive Pregnancy Disorders	**Kathy Ryan, PhD** US Army Institute of Surgical Research, Fort Sam Houston, TX
Daniel Huereca Wayne State University School of Medicine Developing Manganese-Enhanced MRI as a Non-invasive Measure of In Vivo Neuronal Activity in the Rostral Ventrolateral Medulla of Sedentary and Physically Active Rats	**Alexandra E. Soto Piña, PhD** Universidad Autónoma del Estado de México
Raymond Isidro Vega (Porter Fellow) Ponce Health Sciences University & Ponce Research Institute The Probiotic Mixture VSL#3 Attenuates Colitis, Decreases Macrophage Infiltration, and Reduces Serum Cytokine Levels in an Acute Colitis Model	**Declan McCole, PhD** University of California, Riverside
Roxana Loperena* Vanderbilt University Hypertensive Mechanical Stretch: A Model for Monocyte-Derived Dendritic Cell Differentiation	**Aaron Polichnowski, PhD** Hines VA Hospital
Tanecia Mitchell, PhD University of Alabama at Birmingham Monocyte Mitochondrial Function as a Marker of Calcium Oxalate Stone Formers	**Linda Gallo, PhD** Mater Research Institute-UQ, Translational Research Institute, Woolloongabba, Australia
Edwin Miranda* University of Illinois at Chicago Production of Soluble Receptor for Advanced Glycation End-Products following Acute Aerobic Exercise Is Gender Specific	**Gregory L. Brower, DVM, PhD** Texas Tech University Health Sciences Center
Ashley Newsome University of Mississippi Medical Center Effect of Aging on Kidney Function in Male Intrauterine Growth Restricted Rats	**Carmen De Miguel, PhD**
Ijeoma Obi (Porter Fellow) University of Alabama, Birmingham Early Life Stress Induces Increased Interleukin 1 Beta in Renal Tubular Epithelial Cells in Adult Rats	**Mathilde Bonnemaison, PhD** University of Nebraska Medical Center
Trevi Ramirez (Mancilla) University of Texas Health Science Center San Antonio Doxorubicin-Induced Chronic Upregulation of Transforming Growth Factor-Beta	**Jamie Mayo PhD** University of Melbourne, Parkville
Naiomy Rios-Arce Michigan State University Mechanism of Action of [italic]Lactobacillus reuteri[/italic] ATCC PTA 6475 in Colon Epithelial Cells	**Utpal Sen, PhD** University of Louisville School of Medicine

Table 2. APS Travel Fellows and meeting mentors at Experimental Biology 2016 (continued)

Travel Fellow, Institution Abstract Title or Research Focus	Meeting Mentor and Institution
Jinae Roa (Porter Fellow) Scripps Institution of Oceanography Soluble Adenylyl Cyclase Senses Alkalosis in Epithelial Base-Secreting Cells	**Lynn Hartzler, PhD** Wright State University
Megan Rhoads University of Kentucky Both Alpha and Beta Adrenergic Receptor Expression Is Increased in the Renal Medulla of Spontaneously Hypertensive African Green Monkeys	**Adrienne Bratcher, PhD** University of Louisville
Joshua Sheak University of New Mexico Chronic Hypoxia Elevates Basal Tone in Neonatal Pulmonary Hypertension through PKCβand Reactive Oxygen Species Signaling	**Jessica Ibarra, PhD** University of the Incarnate Word
Lindsey Stavola (Porter Fellow) Yale University Expression of Polycystins in LLC-PK1 Cells Does Not Increase Flow-Activated Calcium Fluxes	**Adrienne Bratcher, PhD** University of Louisville
Lia Taylor Georgia Regents University A high Fat Diet Increases Blood Pressure and Leads to a Renal Proinflammatory Immune Cell Profile in Female Dahl Salt-Sensitive Rats	**Catherine Uyehara, PhD** Tripler Army Medical Center, Hawaii
Jeremy Townsend University of Central Florida Intramuscular NF βB Signaling in Response to Resistance Exercise and Recovery in Untrained Males	**Zachary Graham, PhD** National Center of Excellence for the Medical Consequences of Spinal Cord Injury/VAMC, Bronx, NY
Matthew Valdez University of California Riverside Perinatal Exposure to Brominated Flame Retardants Reduces Social Recognition in Adult Male Mice Concomitant with Reduced Amygdalar Avp Expression	**Chaya Gopalan, PhD** Southern Illinois University-Evansville
Annie Whitaker, PhD* Louisiana State University Health Sciences Center New Orleans Inhibition of ERK Phosphorylation Decreases Post-stress Avoidance in High Stress Reactive Rats	**Meeting Mentor to Me'lisa Crawford**
Amanda Whitmill University of North Texas Health Science Center at Fort Worth Disruption of the Mouse Tip110 Gene Leads to Early Post-implantation Lethality and Prohibits Embryonic Stem Cell Development	**Denise Al Alam, PhD** CHLA
Bryan Wilson Wake Forest University School of Medicine Internalization of Angiotensinogen in Renal Proximal Tubules: Evidence for Mitochondrial Trafficking	**Mingyu Liang, MB, PhD** Medical College of Wisconsin

*Janssen Fellow

Graduate Students and Postdoctoral Fellows Receive tum Suden/Hellebrandt Professional Opportunity Awards to Attend EB 2016

The APS Women in Physiology Committee (WIPC), chaired by Caroline Rickards (University of North Texas Health Sciences Center), selected 53 awardees from a pool of 117 eligible applicants. Applicants were required to be APS members (either student or regular) at the time of application and could not have won the award previously as a graduate student (if currently a graduate student) or as a postdoctoral fellow (if currently a postdoctoral fellow). Applicants were chosen based on the quality and novelty of their abstracts and letters written by the candidates describing their career goals, research, and why they were particularly deserving of the award. Each awardee received $500, a certificate of recognition, and complimentary advanced registration for the EB 2016 meeting; the Fleur Strand Awardee receives $1,000. Awardees also received biography cards with information about each of their named awards (tum Suden, Hellebrand, Horvath, and Strand).

Awards were presented during the APS Business Meeting to:

Last Name	First Name	Institution
Ait Aissa	Karima	Medical College of Wisconsin
Almohazey	Dana	The Saban Research Institute at Children's Hospital Los Angeles and University of Southern California
Baker	Sarah	Mayo Clinic
Bentley	Robert	Queen's University
Boerman	Erika	University of Missouri
Brunt	Vienna	University of Oregon
Brooks	Steven	West Virginia University
Chan	Brandon	University of Alberta
Chapp	Andrew	Michigan Technological University
Domingue	Jada	University of Illinois at Chicago
Feng	Di	Beth Israel Deaconess Medical Center and Harvard Medical School
Ferguson	Brian	University of Illinois at Chicago
Fields	Daryl	University of Wisconsin-Madison
Ford, Jr.	Stephen	Louisiana State University Health Sciences Center New Orleans
Foss	Jason	Vanderbilt University
Gagnon	Daniel	Texas Health Presbyterian Hospital Dallas and University of Texas Southwestern Medical Center
Garbincius	Joanne	University of Michigan
Greaney	Jody	Pennsylvania State University
Harvey	Ronee	Mayo Clinic
Huber	Michael	Michigan Technological University
Irsik	Debra	Georgia Regents University
Jaykumar	Ankita Bachhawat	Henry Ford Hospital
Kadlec	Andrew	Medical College of Wisconsin
Kasztan	Malgorzata	University of Alabama at Birmingham
Kinsman	Brian	The Pennsylvania State University College of Medicine
Kuczmarski	James	The Pennsylvania State University College of Medicine
Lee	Seungyong	University of Delaware

Last Name	First Name	Institution
Maxi	John	Louisiana State University Health Sciences Center New Orleans
Miller	Kathleen	University of Wisconsin-Madison
Moralez	Gilberto	University of North Texas Health Science Center
Natarajan	Niranjana	Johns Hopkins University School of Medicine
Nation	Haley	Pennsylvania State University
Neidert	Leslie	Auburn University
Newsome	Ashley	University of Mississippi Medical Center
Ninh	Van	Louisiana State University Health Sciences Center New Orleans
Norlander	Allison	Vanderbilt University
Peltonen	Garrett	University of Wisconsin-Madison

Last Name	First Name	Institution
Pham	Grace	University of North Texas Health Science Center
Pollow, Jr	Dennis	University of Arizona
Rhoads	Megan	University of Kentucky
Ross	Amanda	Pennsylvania State University College of Medicine
Rutkai	Ibolya	Tulane University
Schaible	Niccole	Mayo Clinic
Shell	Brent	University of North Texas Health Science Center
Syed	Maryam	University of Mississippi Medical Center
Torres	Maria	East Carolina University
Turner	Sara	University of Florida
Walsh	Jeremy	Queen's University
Wenceslau	Camilla	Georgia Regents University
Williams	Cassondra	University of California, San Diego

2016 tum Suden, Strand and Horvath Awardees at EB 2016 with Caroline Rickards, Chair, WIPC

2016 Steven M. Horvath Professional Opportunity Award Recipients		
Last Name	**First Name**	**Institution**
Pires, PhD	Paulo	University of Nevada School of Medicine
Santisteban, PhD	Monica	University of Florida

2016 Fleur B. Strand Professional Opportunity Award Recipient		
Last Name	**First Name**	**Institution**
Racine	Matthew	Colorado State University

Please see "American Physiological Society 169th Business Meeting" in the July issue for photographs of the Strand and Horvath awardees (p. 167).

Graduate students and postdoctoral fellows who were first authors on an abstract submitted to Experimental Biology 2016 were eligible to apply for the Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Awards, a fund established to honor the memory of Caroline tum Suden and Frances A. Hellebrandt, two female scientists who were instrumental in advancing the status of women in physiology. Two designation awards emerged from the Caroline tum Suden/Frances A. Hellebrandt Awards to provide support for the top two underrepresented minority awardees and top-ranked awardee. The two awards are named after Steven M. Horvath and Fleur L. Strand, distinguished APS members who were committed to promoting the achievements of junior physiologists.

For information about applying for the 2017 Caroline tum Suden/Frances Hellebrandt Professional Opportunity Awards, visit *http://www.the-aps.org/tumsudenstudent* (graduate student applicants) and *http://www.the-aps.org/tumsudenpostdoc* (postdoctoral fellow applicants); or contact *education@the-aps.org*. The application deadline for the 2017 awards is November 17, 2016 (*https://www.the-aps.org/awardapps*). ●

APS President Patricia Molina *(left)* with 2016 Horvath Awardees Monica Santisteban *(middle)* and Paulo Pires *(right)*.

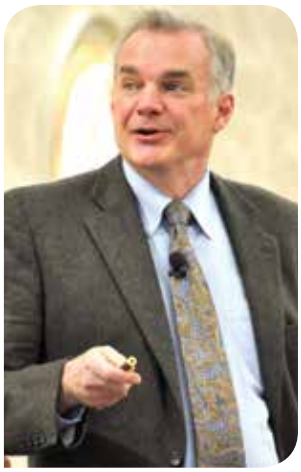
APS President Patricia Molina *(left)* with 2016 Fleur B. Strand Awardee Matthew Racine *(right)*.

Ormond MacDougald Receives Schmidt-Nielsen Distinguished Mentor and Scientist Award at EB 2016

The APS Women in Physiology Committee hosted a lecture and reception at Experimental Biology 2016 to honor Ormond MacDougald (University of Michigan Medical School), who was selected as the 13th recipient of the Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award.

MacDougald's colleagues, trainees, and EB awardees gathered to celebrate and hear his award lecture entitled "Mentoring Tips from a Fat Physiologist." The talk will be published in a future issue of *The Physiologist* and has been posted on the awardee webpage (*http://bit.ly/1BiJGiQ*). Linda Samuelson (University of Michigan) introduced MacDougald, and Caroline Rickards (Chair of the Women in Physiology Committee) gave the award presentation introduction. Patricia Molina (APS President) and Janie Reckelhoff (APS President-elect) gave the award to MacDougald.

MacDougald is Professor, Departments of Molecular & Integrative Physiology, and Internal Medicine, Division of Metabolism, Endocrinology, and Diabetes at the University of Michigan Medical School. He earned his PhD in 1992 from Michigan State University and completed his postdoctoral training at Johns Hopkins University School of Medicine from 1992 to 1996. MacDougald joined the University of Michigan Medical School in 1996 as an assistant professor, and was promoted to professor in 2006, then named the John A. Faulkner Collegiate Professor of Physiology in 2010.



Ormond MacDougald delivering his Schmidt-Nielsen Award Lecture during EB 2016

His major contributions to science have been in the field of adipocyte physiology and development. MacDougald's breakthrough discovery that lithium was not inhibiting adipogenesis through C/EBPα but through effects on Wnt signaling was published in *Science* in 2000. MacDougald's research achievements have been recognized with the APS Henry Pickering Bowditch Award, election as a Fellow of the AAAS, a Fulbright Fellowship (2013-2014), and numerous prestigious national and international invited lectureships. MacDougald has also been successful in securing continuous funding since 1996 from multiple granting agencies and foundations.

In addition to his scientific accomplishments, MacDougald also is an outstanding mentor to trainees in both his laboratory and the greater scientific community. He views mentoring of trainees of equal or greater importance to running a successful research program and spends considerable time and effort training and mentoring undergraduates, graduate students, and postdoctoral fellows. His trainees have obtained national and international awards and fellowships while in his laboratory, and have gone on to be successful in varying careers from academia and clinical practice to industry.

Caroline Rickards *(left)*, Chair of the Women in Physiology Committee, congratulating Ormond MacDougald *(middle)*, 2016 Schmidt-Nielsen Awardee, along-side Patricia Molina *(right)*, APS President

APS members are encouraged to nominate members for the 2017 Bodil Schmidt-Nielsen Award, which will be sponsored by Novo Nordisk. For more information, see the APS website (*www.the-aps.org/schmidtnielsen*) or contact *education@the-aps.org*. The application deadline is September 15, 2016. ●

Science Policy

New Overtime Rules to Affect Postdoctoral Working Conditions

Giovanna Collu
Icahn School of Medicine at Mount Sinai, New York

On May 18, 2016, the Department of Labor announced revisions to the Fair Labor Standards Act (FLSA), which defines the threshold below which salaried workers must be compensated for overtime. The threshold was increased from $23,660 to $47,476 (*https://www.dol.gov/featured/overtime*). This means that, as of December 1, 2016, anyone earning a salary below $47,476 may be eligible for overtime pay on hours worked above 40 per week. Importantly, this rule applies to postdoctoral fellows, many of whom work significantly longer than 40 hours per week.

Why Have the Overtime Rules Changed?

In 1975, the original FLSA rules established the 40-hour working week and a minimum wage. They also gave most hourly and lower-level salaried workers the right to time-and-a-half for overtime work. White-collar workers in managerial jobs were exempt from the overtime requirement because they received higher salaries and greater benefits. The last time the salary threshold for overtime eligibility was updated was in 2004, when it was set at $23,660 per year. The threshold has not kept pace with rises in the cost of living and in managerial salaries. As a result, many workers earning salaries above the threshold are ineligible for overtime but do not have the benefits associated with managerial jobs. The 2016 revisions to FLSA are designed to protect workers in every sector of the U.S. economy (*https://www.dol.gov/featured/overtime*), but they will also have a significant impact on research through required changes to postdoc working conditions.

How are Postdocs Affected?

The annual average postdoc salary is estimated to be $45,000, with many institutions using the Ruth L. Kirschstein National Research Service Awards (NRSA) level as their minimum. Based on current levels, those in the first 3 years of their fellowships would be eligible for overtime when the new threshold goes into effect. To comply with the new rules, research institutions have three options: track hours worked and pay time-and-a-half for qualifying hours; limit postdocs to 40-hour work weeks; or raise salaries above the new threshold.

Many postdocs work significantly longer than 40 hours per week, and their work hours can be difficult to track. Reading articles at home, discussing research with colleagues, and attending conferences are all expected of postdocs yet are complicated to monitor for overtime calculations. The added administrative burden of tracking postdoc working hours or the loss of research output through a 40-hour limit may make the option of raising salaries the most appealing choice. Indeed, institutions across the country are already starting to do this. In a joint opinion piece, timed to coincide with the FLSA update, Labor Secretary Tom Perez and NIH Director Francis Collins announced that the NRSA stipends are to increase to reflect this change and will therefore raise postdocs above the threshold (*http://www.huffingtonpost.com/francis-s-collins-md-phd/fair-pay-for-postdocs-why_b_10011066.html*).

One caveat is that postdocs with a significant teaching commitment will still be ineligible for overtime because teaching positions are exempt from the overtime rules. For researchers in the sciences, this exemption will not apply (*https://www.dol.gov/sites/default/files/overtime-highereducation.pdf*). The situation is more complicated for researchers in the humanities, many of whom also teach, because, according to the Department of Labor, "... to the extent that [postdoctoral researchers] have a primary duty of teaching, they will be subject to the teaching exemption and not entitled to overtime compensation" (*https://www.dol.gov/sites/default/files/overtime-highereducation.pdf*). Adjunct faculty teaching positions in both the sciences and the humanities would also be exempt from the overtime rule.

What's Next for Postdoc Salaries?

These new FLSA rules come at a time when there is widespread discussion of reforming the system for postdocs. The current FLSA changes include automatic increases in the overtime threshold every 3 years [projected to be $51,168 in 2020 (*https://www.dol.gov/sites/default/files/overtime-overview.pdf*)]. In the short-term, without additional support from institutions or funding bodies, a larger proportion of each grant will go toward postdoc salaries. The follow-on effect in terms of the number of postdocs who can be supported is unclear. There are calls to rebalance a system in which too many people remain in training positions on low salaries with few prospects for long-term academic employment. A recent report by the National Academies of Sciences recommended reducing the number of training positions and increasing the starting salary to $50,000 to better reward the skills and qualifications of postdoctoral researchers, in addition to creating more professional research positions for experienced scientists (*http://www.nap.edu/catalog/18982/the-postdoctoral-experience-revisited*). The new overtime rules will hopefully take us a step in the right direction. ●

Giovanna Collu is an APS Early Career Advocacy Fellow and a postdoctoral researcher at the Icahn School of Medicine at Mount Sinai.

Fiscal Year 2017 Federal Funding on Hold

Appropriations Committees in the House of Representatives and the Senate will likely complete their work on most of the 12 appropriations bills for fiscal year (FY) 2017 before their summer recess. However, with elections looming, political gridlock, and few working days left, final passage of these measures before the October 1 start of the new fiscal year seems unlikely. Therefore, it is widely expected that Congress will enact a continuing resolution to keep federal agencies and programs operating at FY 2016 levels until after the election. Whether final work on FY 2017 spending measures will take place during a lame-duck session or after the 115th Congress is sworn in next January remains to be seen.

The table below shows the current proposed funding levels for research agencies: ●

	FY 2016 Enacted Levels	White House FY 2017 Proposed[1]	House FY 2017 Proposed	Senate FY 2017 Proposed	FASEB/ APS FY 2017 Recommendation
NIH	$32.3 B	$33.1 B	$33.1 B	$34.1 B	At least $35 B
NSF	$7.46 B	$7.96 B	$7.4 B	$7.5 B	At least $7.9 B
VA Med. & Prosthetic Research	$630.7 M	$663 M	$663 M	$663 M	$664.7 M
NASA	$19.3 B	$19 B	$19.5 B	$19.3 B	N/A

[1]The White House's FY 2017 proposed budget for the NIH, NSF, and NASA included a combination of discretionary and mandatory spending.

People and Places

Marder Receives Kavli Prize in Neuroscience

Eve Marder

APS member Eve Marder (Brandeis University) was one of three investigators sharing the $1 million Kavli Prize in Neuroscience presented to the group for revealing the adaptability of the nervous system. The announcement was on June 2 by the Norwegian Academy of Science Letters in Oslo. The Prizes are made in astrophysics, neuroscience, and nanoscience, and are named for Fred Kavli, a Norwegian-American inventor, businessman, and philanthropist who started the awards in 2008 and died in 2013. The Kavli Prize in Neuroscience was presented to Marder for her studies illuminating the flexibility and stability of the nervous system through her work studying crabs and lobsters, and the neurons that control their digestion. Marder shared the Kavli Prize in Neuroscience with Michael M. Merzenich (University of California, San Francisco) and Carla J. Shatz (Stanford University). ●

Eric S. Bennett Appointed Professor and Chair

Eric S. Bennett

APS member Eric S. Bennett has been appointed professor and chair of the Department of Neuroscience, Cell Biology and Physiology, at Wright State University, effective October 1, 2016. Bennett comes to Wright State from the University of South Florida Morsani College of Medicine (USF MCOM), where he served as professor and vice chair of the Department of Molecular Pharmacology and Physiology and associate dean for PhD and Postdoctoral Programs. ●

Membership

New Regular Members

***transferred from student membership**

Samuel Olusegun Adeosun
Univ. of Mississippi Med. Ctr., Jackson, MS

Dennis Barbour
Washington Univ. in St. Louis, St Louis, MO

David Bruce Bartlett
Duke Univ., Durham, NC

Mark Samuel Blumberg
Univ. of Iowa, Iowa City, IA

Marijke Brink
Univ. of Basel, Basel, Switzerland

Jarrod A. Call
Univ. of Georgia, Athens, GA

Hiutung Chu
Caltech, Pasadena, CA

Alexander A. Chubykin
Purdue Univ., West Lafayette, IN

Shannon E. Currie
Tel Aviv Univ., Tel Aviv, Israel

Tracy Davis
Wingate Univ., Wingate, NC

Cynthia J. Downs
Hamilton Coll., Clinton, NY

Louise Christine Evans
Med. Coll. of Wisconsin, Milwaukee, WI

Laszlo Farkas
Virginia Commonwealth Univ., Richmond, VA

Lynn Z. Fuller
Sullivan Coll. of Pharmacy, Louisville, KY

Bernadette Grayson
Univ. of Mississippi Med. Ctr., Jackson, MS

Leslie Griffith*
Brandeis Univ., Waltham, MA

Priscila Da Silva Guimaraes
Federal Univ. of Alagoas, Maceio, Brazil

Stuart Donald Inglis
Univ. of South Dakota, Vermillion, SD

Erika Iwamoto
Sapporo Med. Univ., Sapporo, Japan

Dianna Jaffin
Univ. of Texas at Dallas, Dallas, TX

Philip X. Joris
KU Leuven, Leuven, Belgium

Daniel P. Kelly
Sanford Burnham Prebys. Med. Discovery Inst., Orlando, FL

Stephen T. Kinsey
Univ. North Carolina-Wilmington, Wilmington, NC

Guillaume S. Masson
CNRS & Aix-Marseille Univ., Marseille, France

Tobias A. Mattei
Brain & Spine Ctr.-Invision Hlth., Williamsville, NY

Sromona Mukherjee
Kent State Univ., Fairview Park, OH

Durba Mukhopadhyay
Parker Univ., Dallas, TX

David D. Murphy
Univ. of Bristol, Bristol, United Kingdom

Rachael Nelson
Central Michigan Univ., Mt. Pleasant, MI

Abderrahim Nemmar
United Arab Emirates Univ., Al-ain, United Arab Emirates

Matt Panasevich
Univ. of Missouri, Columbia, MO

Raju Panta
Trinity Sch. of Med., Kingstown, St. Vincent and Grenadines

Ruben Daniel Peluffo
CENUR Litoral, Norte Salto, Uruguay

Sarah Maier Peterson
Maine Med. Ctr. Res. Inst., Scarborough, ME

Melody D. Phillips
Texas Christian Univ., Fort Worth, TX

Leslie Ann Quinn
Wheeling Jesuit Univ., Wheeling, WV

Khadija Rafiq
Thomas Jefferson Univ., Philadelphia, PA

Phyllis Yvonne Reaves
Florida A&M Univ., Tallahassee, FL

David Resuehr
Univ. of Alabama at Birmingham, Birmingham, AL

Glenn C. Rowe
Univ. of Alabama at Birmingham, Birmingham, AL

Amrita Sarkar
Thomas Jefferson Univ., Philadelphia, PA

Kayoko Sato
Tokyo Women's Med. Univ., Tokyo, Japan

Rebecca Scalzo
Univ. of Colorado-Denver, Aurora, CO

Terez Shea-Donohue
Univ. of Maryland Sch. of Med., Baltimore, MD

Sanket Shukla
Thomas Jefferson Univ., Philadelphia, PA

Corey Smith
Case Western Reserve Univ., Cleveland, OH

Espen E. Spangenburg
East Carolina Univ., Greenville, NC

Joe Starnes
UNC Greensboro, Greensboro, NC

Bora Sul
BHSAI/HJF, Frederick, MD

Elinor Louise Sullivan
Oregon Hlth. Sci Univ., Beaverton, OR

Yumiko Takahashi
The Univ. of Tokyo, Tokyo, Japan

Michael Tarpey
East Carolina Univ., Greenville, NC

Christopher Toepfer
Harvard Med. Sch., Boston, MA

Graciela A. Unguez
New Mexico State Univ., Las Cruces, NM

Robert J. Van Beers
Vrije Univ. Amsterdam, Amsterdam, The Netherlands

Tiffani Nicole White*
Carmago Pharmaceutical Sci., Cary, NC

Daniel Boyd Yaeger
Willamette Univ., Salem, OR

New Graduate Student Members

Farjana Akther
Univ. of the Pacific, Stockton, CA

Awad Almuklass
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James Boyett
Univ. of North Texas, Harrisonburg VA

Aria L. Byrd
Univ. of Kentucky, Atlanta, GA

Toby L. Chambers
Ball State Univ., Muncie, IN

Fotini Dagli
Pagotto, Athens, Greece

Shirley Dehn
Northwestern Univ., Chicago, IL

Bianca Rose Flores
Vanderbilt Univ., Nashville, TN

Kimberley Mei Ling Fong
IU Sch. of Med., Indianapolis, IN

Dave Frank
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Christine P. Gibson
Midwestern Univ., Glendale, AZ

Nathan Hodson
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Univ. of Southern Mississippi, Hattiesburg, MS

Jennifer Kulhei
Max Planck Inst. for Heart and Lung Res., Bad Nauheim, Germany

Jonghae Lee
Univ. of Houston, Houston, TX

Zhijie Lin
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Mark Henry Mannino
St. Louis Univ., St. Louis, MO

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Ball State Univ., Bay City, MI

Melissa Anne May
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Berlin Sch. of Mind and Brain, Berlin, Germany

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Ladoke Akintola Univ. of Tech. Coll., Lagos, Nigeria

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Univ. of Michigan, Champaign, IL

Bindiya Patel
Univ. of Alabama at Birmingham, Birmingham, AL

Jeffrey Lawrence Perry
St. Louis Univ., St. Louis, MO

Zack Sapinsley
Univ. of Colorado-Boulder, Boulder, CO

Geoffrey Solares
Univ. of Texas at Austin, Austin, TX

Ben Stocks
Univ. of Birmingham, Birmingham, United Kingdom

Kaela Margaret Varberg
Indiana Univ. Sch. of Med., Indianapolis, IN

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Univ. of Utah, Salt Lake City, UT

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UMBC, Baltimore, MD

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Univ. Federal De Minas Gerais, Belo Horizonte, Brazil

Stephen Morgan
St. Vincent's Hosp., Sydney, Australia

Rajasekhar Ramakrishnan
Columbia Univ., New York, NY

Hazel Rovno
N/A, Pennington, NJ

Minnie Schlesinger
Coll. of Southern Nevada, North Las Vegas, NV

Publications

2015 Impact Factors Released for APS Journals

The 2016 Journal Citation Reports (JCR) published by Thomson Reuters has released the 2015 impact factors for APS journals.

Nine of our 14 journals experienced impact factor increases. *Physiological Reviews* remained the top-ranked physiology journal at 30.924 (up from 27.230 in 2014). Other titles seeing significant jumps are *Physiology* at 6.541 (up from 4.847), *Comprehensive Physiology* at 6.364 (up from 4.739), *Advances in Physiology Education* at 1.753 (up from 0.944), and *AJP-Lung* at 4.721 (up from 4.080). Other titles that experienced increases are *AJP-Endo, AJP-Renal, AJP-Regu,* and *Physiological Genomics.*

Impact factor evaluates a journal's citation impact compared with others in the same field. It provides a ratio of citations to the journal normalized by an estimate of the journal's scholarly article contribution. The 2015 impact factor takes into account citations in 2015 compared with papers published in 2013 and 2014.

The 2015 JCR includes an update to the Five-Year Impact Factor, Cited Half-Life, and Eigenfactor™ metrics. Eigenfactor™ metrics use citing journal data from the entire JCR file. The Eigenfactor™ score and the Article Influence™ score are calculated based on the citations received over a 5-year period. ●

Journal	Thomson Reuters Impact Factor Data and Eigenfactor™ Metrics										
	2011	2012	2013	2014	2015	% Change	5-Year Impact Factor	2015 Cited Half-Life	2015 Rank Among Physiology Journals	2015 Eigenfactor™ Score	2015 Article Influence™ Score
Physiological Reviews	26.866	30.174	29.041	27.32	30.924	13%	35.523	>10.0	1	0.03565	13.528
Physiology	7.953	6.750	5.645	4.857	6.541	35%	7.024	6.6	4	0.00714	2.821
Comprehensive Physiology	-	-	1.685	4.739	6.364	34%	5.938	3.2	5	0.00910	2.208
AJP-Lung	3.662	3.523	4.041	4.080	4.721	16%	3.983	8.4	8	0.01669	1.091
AJP-Endo	4.746	4.514	4.088	3.785	3.825	1%	4.266	8.5	16	0.03026	1.489
AJP-Cell	3.536	3.711	3.674	3.780	3.395	-10%	3.502	8.9	19	0.02371	1.183
AJP-Renal	3.682	3.612	3.300	3.248	3.390	4%	3.395	8.4	20	0.02478	1.017
AJP-Heart and Circ	3.708	3.629	4.012	3.838	3.324	-13%	3.579	9.8	21	0.03696	1.154
AJP-GI and Liver	3.431	3.649	3.737	3.798	3.297	-13%	3.593	8.6	22	0.02167	1.182
AJP-Regul Integr Comp	3.336	3.284	3.529	3.106	3.168	2%	3.260	>10.0	23	0.02492	1.078
J Applied Physiology	3.753	3.484	3.434	3.056	3.004	-2%	3.421	>10.0	27	0.03405	1.112
J Neurophysiol	3.316	3.301	3.041	2.887	2.653	-8%	3.193	>10.0	32	0.05662	1.339
Physiological Genomics	2.735	2.806	2.812	2.374	2.615	10%	2.995	7.8	33	0.00829	1.002
Advances in Physiol Educ	1.547	1.217	1.237	0.944	1.723	83%	1.481	8.4	59	0.00125	0.395

Current Calls for Papers

Physiological Genomics

- Genetics of Metabolic Syndrome
- Gut Microbiota in Health and Disease
- Systems Biology and Polygenic Traits
- Single Cell Analysis
  (Submission deadline: May 31, 2017)

Journal of Neurophysiology

- Spinal Control of Motor Outputs
  (Submission deadline: December 31, 2016)
- Building Neural Circuits: Wiring and Experience
  (Submission deadline: December 31, 2016)
- Biology of Neuroengineering Interfaces
  (Submission deadline: December 31, 2016)
- Where Are You Going? The Neurobiology of Navigation.
  (Submission deadline: June 30, 2017)
- The Mouse Visual System
  (Submission deadline: June 30, 2017)
- Central Pattern Generators
  (Submission deadline: June 30, 2017)

Advances in Physiology Education

- Historical Perspectives and Living Histories

Journal of Applied Physiology

- Recovery from Exercise

American Journal of Physiology – Cell Physiology

- Cell-to-Cell Communication and Signaling Pathways
  (Submission deadline: December 31, 2016)
- Cellular Mechanisms of Proteostasis
  (Submission deadline: December 31, 2016)
- Gasotransmitters
  (Submission deadline: December 31, 2016)
- Pathophysiology of Skeletal Muscle Loss
  (Submission deadline: December 31, 2016)
- Single Cell Physiology
  (Submission deadline: December 31, 2016)
- Stem Cells: Physiology and Microenvironment
  (Submission deadline: December 31, 2016)

American Journal of Physiology – Gastrointestinal and Liver Physiology

- Microbiome and Host Interactions
- Nutrient Sensing, Nutrition, and Metabolism
- Systems Biology
- Translational Human Pathophysiology

American Journal of Physiology – Heart and Circulatory Physiology

- Metabolism, Cell Signaling and Disease
  (Submission deadline: September 15, 2016)
- The Cardiorenal Syndrome-Integrative and Cellular Mechanisms
  (Submission deadline: September 15, 2016)
- Advances in Cardiovascular Geroscience
  (Submission deadline: November 30, 2016)
- Heart Failure – Novel Therapeutic Pathways Emerging from Basic Science
  (Submission deadline: February 15, 2017)

American Journal of Physiology – Lung Cellular and Molecular Physiology

- Electronic Cigarettes: Not All Good News?
  (Submission deadline: October 1, 2017)
- Ion Channels and Transporters in Lung Function and Disease
- Age-Related Dysfunction in Lung Barrier Function in Health and Disease
- Real-Time Visualization of Lung Function: from Micro to Macro
  (Submission deadline: January 2017)
- Biomarkers in Lung Diseases: from Pathogenesis to Prediction to New Therapies
  (Submission deadline: January 2017)

- Translational Research in Acute Lung Injury and Pulmonary Fibrosis
  (Submission deadline: January 2017)

American Journal of Physiology – Regulatory, Integrative and Comparative Physiology

- Exploiting Environmental Factors to Improve Health and Performance
  (Submission deadline: March 31, 2017)
- Model Systems for the Study of Integrative Physiology: The Rebirth of Translational Biology
  (Submission deadline: May 1, 2017)
- Sex and Gender Differences in Cardiovascular, Renal and Metabolic Diseases
  (Submission deadline: October 1, 2016)
- Hypertensive Disorders of Pregnancy: Effects on Mother and Baby
  (Submission deadline: December 1, 2016)

American Journal of Physiology – Renal Physiology

- Endothelin in Renal Physiology and Disease
  (Submission deadline: June 30, 2017)
- Imaging Techniques in Renal (Patho)physiology Research
  (Submission deadline: June 30, 2017)
- Inflammation and Inflammatory Mediators in Kidney
  (Submission deadline: June 30, 2017)
- Purinergic Signaling Mechanisms in the Lower Urinary Tract
  (Submission deadline: June 30, 2017)
- Mechanism and Treatment of Renal Fibrosis and Treatment
  (Submission deadline: June 30, 2017)
- Transport Proteins as Regulators of Blood Pressure Homeostasis
  (Submission deadline: June 30, 2017)
- Renal Hemodynamics
  (Submission deadline: June 30, 2017)
- Gender and Hormones in Lower Urinary Tract Function
  (Submission deadline: June 30, 2017)

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

Books Received

Respiratory Mechanics
By Theodore A. Wilson
Switzerland: Springer International Publishing, 2016, 64 pp, $54.99 (soft cover)
ISBN: 978-3-319-30508-0

Book Review

Animal Physiology 4th Edition

Richard Hill, Gordon Wyse, and Margaret Anderson
Sunderland, MA: Sinauer Associates, 2016, 828 p., 675 illus, $159.95 (hardback)
ISBN: 9781605354712

The fourth edition of *Animal Physiology* by Hill, Wyse, and Anderson places great emphasis on the need for conceptual frameworks for organizing knowledge in modern animal physiology. The authors stress the importance of these frameworks relative to the need for synthesis in the context of the current availability of large amounts of information. Based on my 24 years of experience in teaching physiology to undergraduate students, graduate students, medical students, and veterinary students, I wholeheartedly agree with the authors' views on the need for conceptual frameworks. Along these lines, the authors state that their most important goal for the book is to explain the overarching themes and hypotheses in the field. The authors consistently and effectively pursue this goal throughout the book.

Inside the front cover is a list of 15 overarching themes along with a brief explanation of each, an example of the theme in action, and references for more thorough explanations of each theme found in various parts of the book. Examples of these themes include integration of the sciences, an emphasis on quantitative methods, the comparative method, phylogenetic reconstruction, the centrality of the environment, interdependence of function and form, applicability of the laws of chemistry and physics, and the critical importance of control mechanisms. The authors' stated approach in addressing these themes employs mechanistic, evolutionary, comparative, environmental, and integrative points of view.

The book's 30 chapters are logically organized into six modules/parts. They are: Part I - Fundamentals of Physiology; Part II - Food, Energy, and Temperature; Part III - Integrating Systems; Part IV - Movement and Muscle; Part V - Oxygen, Carbon Dioxide, and Internal Transport; and Part VI - Water, Salts, and Excretion. Part I consists of chapters 1-5, which are foundational for the book as a whole. These foundational chapters are: Chapter 1 - Fundamentals of Physiology; Chapter 2 - Food, Energy, and Temperature; Chapter 3 - Genomics, Proteomics, and Related Approaches to Physiology; Chapter 4 - Physiological Development and Epigenetics; Chapter 5 - Transport of Solutes and Water.

The authors intend for the subsequent five modules/parts of the book to be freestanding in the sense that students who have mastered Part I will be well prepared for any of the other five parts of the book. Flexibility in the order of reading is also facilitated by page and cross-referencing, the new index, and the glossary. Eleven appendices near the end of the book should be helpful to students with respect to the physical sciences, quantitative concepts, and fundamentals related to cell biology and biochemistry. Illustrations, tables, and graphs are well done and effectively placed throughout the book. Attractive photographs of animals in their natural habitats are found at the beginning of each chapter.

Special "At Work" chapters are included at the ends of Parts II through VI of the book. The major goal of these chapters is to illustrate how the material in each module/part can be integrated in a way that promotes overall understanding of animal function. These chapters are also meant to convey how physiologists employ the process of discovery in their work. These "At Work" chapters and their associated modules/parts are: Chapter 11 - The Lives of Mammals in Frigid Places (Part II - Food, Energy, and Temperature); Chapter 18 - Animal Navigation (Part III - Integrating Systems); Chapter 21 - Plasticity in Response to Use and Disuse (Part IV - Movement and Muscle); Chapter 26 - Diving by Marine Mammals (Part V - Oxygen, Carbon Dioxide, and Internal Transport); and Chapter 30 - Mammals of Deserts and Dry Savannahs (Part VI - Water, Salts, and Excretion).

Examples of specific topics new to this edition or substantially revised from previous editions include bioluminescence, cardiac muscle of vertebrates, CRISPR, evolution of electric fish, genomics, gills of ram-ventilating fish, human individual variation in

maximal oxygen consumption, human thermoregulation, hunger and satiation, insect juvenile hormone, neuron population coding, ocean acidification, owl auditory localization, PGC-1 roles in exercise training, physiological "personalities," python gut and cardiac genomics, voltage-gated channels, and TRP channels.

In my opinion, this is an excellent comprehensive textbook for upper-level undergraduate and entry-level graduate courses in animal physiology. I have a diverse background in comparative, exercise, and medically oriented physiology and can readily appreciate the authors' exceptional efforts in producing this textbook. It conveys the relevance and value of the comparative approach to all areas of physiology very effectively and in a highly engaging manner. ●

John G. Bailey
University of Southern Mississippi

Positions Available

Assistant/Associate Professor: The Department of Neuroscience, Cell Biology & Physiology at Wright State University Boonshoft School of Medicine (BSOM) is seeking applicants for an assistant/associate professor, professorial educational track position. The selected candidate will create teaching and learning materials as well as strategies for physiology education, and will be a key leader and collaborator in the development and delivery of the medical school's new curriculum that will start in August 2017. The incumbent will instruct and coordinate physiology education across the new curriculum in close concert with the department faculty as well as pharmacologists, pathologists, and clinicians throughout the BSOM. The minimum requirements for the position include a PhD, MD, or equivalent doctoral degree, appropriate credentials for appointment at the assistant or associate professor level, experience with medical student and/or other health science professional education, including course/curriculum design and assessment, the use of innovative teaching and learning strategies, and excellent oral and written communication skills. Please submit a cover letter, curriculum vitae, the names and contact information for three references, and a 1-page summary describing educational experiences and philosophy. Applications must be submitted to *http://jobs.wright.edu/postings/10410*. Review of applications will begin July 1, 2016 and will continue until the position is filled. Please visit *http://med.wright.edu/ncbp* to learn more about the department and *http://wright.edu* for information regarding Wright State University and the Dayton area. Wright State University is an NSF ADVANCE institution (*http://wright.edu/leader*). Wright State University, an equal opportunity/affirmative action employer, is committed to an inclusive environment and strongly encourages applications from minorities, females, veterans and individuals with disabilities.

Assistant/Associate Professor: The Indiana University School of Medicine-Terre Haute seeks candidates for a tenure-track assistant/associate professor position in the Department of Cellular and Integrative Physiology. Responsibilities will include participation in teaching in the new integrated medical school curriculum. Establishing and conducting an independent externally funded research program will also be expected. Applicants must have a PhD degree and demonstrated excellent qualifications in teaching and research. The successful candidate will have experience in any aspect of human physiology or a related field. Candidates working at any or all ranges of physiology (molecular, cellular, and organismal) will be considered. Research areas of particular interest include cellular metabolism and inflammation, proteomics, and translational research. Applicants at the associate professor level are expected to have external funding and national recognition for creative research productivity and excellence. Laboratory space and start-up funds are available. Indiana University School of Medicine-Terre Haute promotes a collaborative environment with access to core facilities. Indiana University is an equal-employment and affirmative-action employer, and a provider of ADA services. All qualified applicants will receive consideration for employment without regard to age, ethnicity, color, race, religion, sex, sexual orientation or identity, national origin, disability status, or protected veteran status.

Assistant/Associate/Full Professor: American University of the Caribbean School of Medicine (AUC) is actively seeking experienced full-time physiology faculty to join a dynamic teaching group in the Department of Neuroscience and Physiology. The Physiology faculty members team-teach the Physiology I course, which is taught to first-year medical students three times a year. The successful candidate will have had significant experience teaching medical students cardiovascular physiology in a comprehensive, medical curriculum in accredited U.S., Canadian, or British medical education institutions, with demonstrated competence in course administration. American University of the Caribbean School of Medicine is where teaching and mentoring aspiring physicians on their journey to successful careers is the main focus of the faculty. Our dedicated faculty are part of a caring, collaborative educational community working toward one common goal: student success. *Responsibilities:* preparation and delivery of course materials such as course syllabus, lecture notes, and powerpoints; prepare and evaluate examinations to assess student academic competence; advise students in academic matters and exercise professional judgement in referring students to appropriate personnel; actively participate in relevant professional activities to improve teaching and subject matter competence; serve on institutional committees as appointed or elected. *Qualifications:* MD and/or PhD from an accredited U.S., United

Kingdom, or Canadian medical school; academic teaching experience at the assistant professor rank or higher; experience teaching medical cardiovascular physiology to American, English, or Canadian medical students; skilled in cardiovascular physiology lecture delivery and designing learning assessments; ability to evaluate students' understanding of subject matter. American University of the Caribbean, founded in 1978 and located on the island of St. Maarten, is one of the highest ranked Caribbean medical schools and has placed nearly 6,000 physicians into U.S. residency programs. Our mission is to provide an excellent medical education to qualified students of diverse backgrounds. This is accomplished within an atmosphere of academic integrity and scholarship, which fosters the highest standards in professional ethics and competence. The majority of our students are from the U.S. and Canada. Students complete their first 2 years of medical sciences on our campus in St. Maarten before completing clinical rotations at our affiliated hospitals in the U.S. and United Kingdom. For a complete job description, go to *https://aucmed-devry.icims.com/jobs*. Discover AUC at *http://www.aucmed.edu*. A competitive salary, relocation assistance, and a comprehensive benefits package await the right candidate. Please send your CV with a cover letter explaining your interest in teaching cardiovascular physiology full time at AUC along with a list of cardiovascular physiology lectures you have taught and the number of years teaching those lectures to medical students. Interested candidates can apply online at *https://aucmed-devry.icims.com/jobs/search?ss=1&hashed=124496084* or contact Barbara Roberge, Senior Talent Acquisition Consultant, e-mail: *BRoberge@devrygroup.com*.

Assistant/Associate/Professor: St. George's University (Grenada, West Indies) invites applicants for a full-time teaching position in the Department of Physiology and Neuroscience beginning in Fall 2016 in our Keith B. Taylor program located in Newcastle in the UK. The program is co-hosted with our partner institute Northumbria University. The primary role will be to teach Medical Physiology and act as Associate Course Director for Medical Physiology in the Basic Sciences component of the 4-year U.S.-based MD program. The medical Physiology course is distinct from our Neuroscience course and encompasses all systems apart from the CNS. Aspects of cellular, pharmacology, muscle, cardiovascular, renal, pulmonary, endocrinology, reproductive, and gastrointestinal physiology are covered. Ideally, the candidate will also be willing to develop and sustain an active research program that involves medical students in a subject specific area or in medical education for their subject. *Minimum qualifications:* The candidate should have a terminal degree in an affiliated subject, i.e., PhD or MD MSc MD PhD, and experience in a U.S.-based medical curriculum is an advantage. Evidence of proficiency in teaching and scholarly activity in the subject will be used as selection criterion. Familiarity with USMLE Step I board exams and experience with STEP style assessment is desirable. *Special requirements:* The candidate should be willing to spend some time in Grenada, West Indies, to familiarize themselves with St. George's University curriculum and the host department faculty who design and implement the medical physiology course in Grenada. *Special instructions to applicants:* To ensure full consideration, complete application materials should be submitted to the St George's University website at *http://www.sgu.edu/employment/index.html*. Salary: Salaries, paid in Great British Pounds, are competitive with those offered by U.S. medical schools. Review of applicants will be ongoing until the position is filled. For inquiries about the position, please contact Dr. Mark Clunes (*mclunes@sgu.edu*). St. George's University School of Medicine is an internationally recognized institution, attracting students from over 80 nations and boasting a new campus with state-of-the-art facilities. The School offers a unique opportunity to work in a stimulating multicultural environment (*http://www.sgu.edu/life-at-sgu/index.html*), alongside a dedicated faculty and a highly motivated student body. The Keith B.Taylor Global Scholars Programme (KBTGSP) is a joint venture between St. George's University (SGU) School of Medicine (Grenada) and Northumbria University. In essence, the KBTGSP is the First Year of Basic Sciences of SGU's MD programme, from which students progress to Year 2 Basic Sciences in Grenada (and subsequently to clinical rotations in Years 3 and 4 in either the U.S. or the UK). The KBTGSP was founded in January 2007 and is taught jointly by SGU and Northumbria faculty members. Over 1,600 students have successfully completed the program, and over 900 of these students have graduated as MDs, with the rest currently completing their degrees. The subjects taught in First Year Basic Sciences are Anatomy, Histology & Cell Biology, Medical Biochemistry, Medical Physiology,

Neuroscience, Immunology, Medical Genetics, Bioethics and Community, and Preventative Medicine in a systems based-curriculum. St. George's University is located in the English-speaking island state of Grenada, a pristine and beautiful Caribbean country. Salaries, paid in U.S. dollars, are competitive with those offered by U.S. medical schools. The contractual obligation is for 10 months, but salary is paid as a 12-month contract. In addition to a generous vacation allowance, childcare, healthcare, and veterinary care services through the University are subsidized. The School of Medicine supports professional development, and a generous annual allowance for conference attendance is included of $3,000 USD, along with a book allowance of $200 USD. To submit an application, go to *http://www.sgu.edu* and select *Faculty*. Closing date: January 1, 2017

Associate Service Fellow: The National Institute for Occupational Safety and Health (NIOSH) is pleased to announce an opening for an associate service fellow with an emphasis on pulmonary toxicology/pharmacology to join its Pathology and Physiology Research Branch (PPRB) in the Health Effects Laboratory Division (HELD; *www.cdc.gov/niosh/contact/im-held.html*) in Morgantown, WV. *Responsibilities:* The successful candidate will develop hypothesis-driven pathophysiological investigations of lung toxicity caused by substances inhaled in the workplace. The ideal candidate will have experience developing disease models at the in vivo and in vitro levels. Expertise in assessment of pulmonary function, airway reactivity, isolated airway preparations, and cell culture is highly desirable. *Qualifications:* The successful candidate should have a PhD in toxicology/pharmacology or a closely related field and at least 2 years of postdoctoral training. Experience with laboratory animals and in vivo methodology is required. *Facilities:* The HELD is a fully equipped research facility at which all biomedical disciplines are represented and collaborations with biomedical engineers are a strength for the development of inhalation models. The campus is located in Morgantown, WV, one of the top small cities in the U.S., with fine schools and cultural features. It is adjacent to West Virginia University, and close collaborations with investigators and Adjunct Faculty appointments are established there. *Application:* Applicants should send a curriculum vitae, a statement describing past and current research interests, and contact information for three letters of reference to Jeffrey S. Fedan at *jsf2@cdc.gov. NIOSH* is an affirmative-action/equal-opportunity employer.

Assistant/Associate/Full Professor: The Department of Molecular Pharmacology and Physiology at the University of South Florida Morsani College of Medicine invites applications for tenure-track faculty positions at the assistant/associate/full professor levels. A doctoral degree in medical or biomedical sciences (PhD, MD, or DVM) is required. Applicants must demonstrate strong records of academic accomplishments with NIH-supported research programs. Expertise in research within the cardiovascular/circulatory or respiratory systems is preferred. Experience in immunology or cellular/molecular mechanisms of inflammation will also be considered. The Department consists of 25 core faculty members with strong research expertise in circulation, cardiorespiratory diseases, metabolic disorders, kidney injury, and neuropharmacology. Investigators have access to state-of-the-art core laboratories in microscopic imaging, electrophysiology, histology, animal facilities, genomics, and proteomics. Opportunities are available for interaction with USF Byrd Alzheimer's Center, USF Health Heart Institute, Center for Drug Discovery and Innovation, and the NCI-designated Moffitt Cancer Center. Additional information about the department and faculty is available at *http://health.usf.edu/medicine/mpp/index.htm*. USF Morsani College of Medicine offers generous laboratory space, substantial start-up packages, and competitive salaries. The Tampa metropolitan area is rapidly developing and provides a culturally diverse environment with a tropical climate. Candidates should send their curriculum vitae that include previous and current research funding, a statement of research plans, teaching experience, and the names/contact information of three references in a single PDF to: Victoria Mothershed at *vmothershed@health.usf.edu*. USF Health is committed to increasing its diversity and will give individual consideration to qualified applicants for this position with experience in ethnically diverse settings, who possess varied language skills, or who have a record of experience that support/benefit diverse communities or teaching a diverse student population. The University of South Florida is an EO/EA/AA employer. For disability accommodations, contact Bridget Shields at (813) 974-2543 a minimum

of 5 working days in advance. According to FL law, applications and meetings regarding them are open to the public.

Assistant/Associate/Full Professor: The Department of Biomedical Sciences at the West Virginia School of Osteopathic Medicine is seeking a full-time, tenure-track faculty position with emphasis in medical physiology. The successful applicant must have a PhD in Physiology or related field and should be able to teach multiple physiological systems with special interest in respiratory physiology. A commitment to excellence in teaching is required since this is the primary responsibility of this position. Completion of a postdoctoral fellowship is expected. An equivalent combination of relevant and recent experience, education, and/or training that provides the required knowledge, skills, and abilities may be considered. The successful candidate will also be expected to conduct research or scholarly activity. Research facilities and start-up funds are available. WVSOM utilizes a patient presentation-based curriculum in which disciplines are integrated. A variety of formats and modalities are utilized, including lecture, lab, small group, and team-based learning. This position will be filled at the rank of assistant, associate, or full professor commensurate with experience and accomplishments in both teaching and research. Salary and faculty rank will be commensurate with experience and includes an excellent benefits package including moving expenses. Research laboratory space and start-up funds can be provided to interested applicants. Teaching facilities at WVSOM include a cutting-edge lecture facility, multipurpose laboratory, and digital microscopy. Teaching duties will include delivery of lectures to medical students as well as participation in and design of active learning sessions. The successful candidate will also be expected to conduct independent professional development activities. WVSOM has a rich diversity of faculty research interests and excellent facilities that accommodate laboratory animal research. WVSOM has been consistently recognized as "A Great College to Work For" by the Chronicle of Higher Education. WVSOM is a free-standing medical school nestled in the Allegheny Mountains. Located in "America's Coolest Small Town" (Budget Magazine 2011), WVSOM is just minutes from the famed Greenbrier Resort, a Five Diamond hotel and spa and host of the PGA's annual Greenbrier Classic. WVSOM brings over 40 years of history serving the health and wellness needs of the Greenbrier Valley, the state of West Virginia, and beyond. The school's small-town, rural community cherishes its connection with the college, and our students are actively engaged in service outreach and support for over 40 non-profit organizations in this area. Additionally, WVSOM faculty and staff enjoy a vibrant cultural community, which features one of only four operating Carnegie Halls in the world, as well as the state professional theater of West Virginia. Throughout the year, employees enjoy live plays and musicals, a broad representation of visual artists, an annual chocolate festival, a flourishing literary series, and live music events within a historic preservation area featuring 19th century architecture, unique shops and dining, and limitless outdoor recreation. This one-of-a-kind environment brings together farmers and artists, lumbermen, and world-renowned musicians, holistic physicians, and thrill-seeking whitewater rafters in a diverse melting pot that is truly unique! *Application:* Interested applicants should apply online by visiting: *http://www.wvsom.edu/employment*. The search committee will begin its review of applications upon receipt, and the search will remain open until the position is filled. Applications are considered confidential, and references will not be contacted without notification to the applicant. The West Virginia School of Osteopathic Medicine is an equal-opportunity employer and is committed to enhancing diversity among its faculty and staff.

Assistant/Associate/Full Professor: Florida International University is classified by Carnegie as a R1: Doctoral Universities-Highest Research Activity and recognized as a Carnegie engaged university. It is a public research university with colleges and schools that offers 196 bachelor's, master's and doctoral programs in fields such as engineering, computer science, international relations, architecture, law, and medicine. As one of South Florida's anchor institutions, FIU contributes almost $9 billion each year to the local economy. FIU is worlds ahead in finding solutions to the most challenging problems of our time. FIU emphasizes research as a major component of its mission. FIU has awarded more than 220,000 degrees and enrolls more than 54,000 students in two campuses and three centers including FIU Downtown on Brickell, FIU at I-75, and the Miami Beach Urban Studios. FIU's Medina Aquarius Program houses the

Aquarius Reef Base, a unique underwater research facility in the Florida Keys. FIU also supports artistic and cultural engagement through its three museums: Patricia & Phillip Frost Art Museum, the Wolfsonian-FIU, and the Jewish Museum of Florida-FIU. FIU is a member of Conference USA and has more than 400 student-athletes participating in 18 sports. For more information about FIU, visit *http://www.fiu.edu/*. *Director of Web Based Curriculum.* The Herbert Wertheim College of Medicine at Florida International University is currently seeking candidates for a non-tenure full-time, open-rank, faculty position to lead the development and deliver the basic medical sciences in the MD degree program. This position is primarily for the purpose of development and the planning and delivery of an alternative study-track for the MD degree based on our current curriculum. The alternative study-track is predominantly a time-extended pre-clerkship program that will include web-based instruction during the evenings and on weekends. Planning and implementation of the new study track are the priorities for this position. Participation in the current curriculum on faculty teams in integrated basic science courses is an option for this position. The ideal candidate would have experience facilitating online courses, including facilitating online discussions and leveraging online tools to encourage independent learning. Experience in developing and teaching hybrid courses is ideal. Additionally, the candidate would have knowledge of adult learning principles in an online environment and experience in multimedia design. Minimum requirements include a doctoral degree, PhD or MD. Discipline expertise is open, but candidates must have the ability to teach across disciplines. Experience with web-/distance-based teaching and learning including both the technology and management of the formats are essential for this position. Preferred qualifications include at least 3 years of experience in basic medical science education, particularly in multidisciplinary/integrated (non-disciplinary) courses. Experience in curriculum and course development for distance learning, case-based, and other active learning formats are priorities. Pharmacology, physiology, and cellular biology may have some preference but not exclusively, and experience, willingness, and interest in collaborative teaching with clinical faculty are essential. Candidates with experience in development of formative, summative, and competency-based assessments in the basic medical sciences along with experience in curriculum development, course development, and course management are of high priority for the selection process. It is expected that this position will lead in building the faculty and curriculum in this new venture. The Herbert Wertheim College of Medicine is located in Miami Florida and is one of the newer medical schools in the U.S., first accredited by the Liaison Committee of Medical Education (LCME) in 2008. The inaugural class was admitted in 2009, the college received full LCME accreditation for the MD Degree Program in 2012, and will be graduating its fifth class in May 2017. Qualified candidates are encouraged to apply to Job Opening ID 511569 at *https://facultycareers.fiu.edu/* and attach letter of interest and curriculum vitae in a single pdf file. Candidates will be requested to provide names and contact information for at least 3 references, who will be contacted as determined by the search committee. To receive full consideration, applications and required materials should be received by July 15, 2016. Review will continue until position is filled. FIU is a member of the State University System of Florida and an Equal Opportunity, Equal Access Affirmative Action Employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability status, protected veteran status, or any other characteristic protected by law. Apply at *http://www.Click2Apply.net/pcsh3fd9xw*.

Industrial Position: Eccrine Systems is seeking a highly motivated individual to serve as our resident physiology expert. This individual will become a pioneer in the field of the physiology of eccrine sweat, guiding the company's research initiatives to broaden our understanding of sweat and its contents. *Position:* Full-time. Title will be commensurate with experience. *Location:* Cincinnati, OH. *Duties include:* Understanding the state of the science in this field; designing and/or conducting studies that further our knowledge of sweat physiology and collection; setting research priorities for the company; preparing reports by collecting, analyzing, and summarizing information and trends; building a world-class network of academic collaborators to further the state of the science. *Preferred qualifications and skills:* A PhD in a field such as physiology, kinesiology, integrative physiology, or related field and an outstanding publication record; experience in the areas of human subject testing, molecular biology, and/or skin physiology; demonstrated research

interests with alternative biofluids such as sweat, saliva, respiratory fluid, or tears; experience in human subject testing including designing and implementing protocols; strong interpersonal skills including a proven track record of building and maintaining effective working relationships with team and industry partners; an entrepreneurial spirit, enthusiasm and vision about converting cutting-edge science into commercial applications; excellent oral and written communication skills, including experience presenting research at conferences and meetings; ability to manage multiple assignments effectively in a quickly evolving environment; motivation, energy, and enthusiasm, with a desire to succeed. If interested in this position, please contact *careers@eccrinesystems.com*. Be sure to note "Applied Physiologist" and attach a PDF of your resume. All inquiries are handled confidentially. Eccrine Systems, Inc., is an equal-opportunity employer. Qualified applicants will be considered without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality, sex, religion, or veteran status.

Chair: The Arkansas College of Osteopathic Medicine is taking applications for an inaugural faculty position of Chair, Department of Physiology, Pharmacology and Pathology. The Chair will be responsible for the planning, directing, and implementation of college programs, policies, and procedures, and for assisting in the development of a curriculum that integrates the specialty areas of physiology, pathology, and pharmacology in team-based, large- and small-group learning environments. The Chair also will provide service to the college and professional communities and engage in innovative scholarship and research to advance medical knowledge. Minimum qualifications include 3 years academic experience as a full-time faculty member at a College of Osteopathic Medicine, College of Allopathic Medicine, or College of Health or Allied Sciences, experience as a course coordinator, and development of curriculum for physiology, pathology or pharmacology students. Demonstrated leadership, productivity, and administrative experience with faculty, staff, and students in professional, research, or educational settings is required. Previous experience as a Chair or Assistant Chair of a physiology, pathology, or pharmacology department is a plus. Individuals wishing to apply should send a letter of intent, CV, and educational philosophy to Barbara Jetton, Director of Human Resources, at *careers@acheedu.org*. Please put position title in the subject area of your e-mail. ARCOM is an Equal Opportunity Employer.

Research Scientist: Position for experienced research scientist is available in Section of Digestive Diseases at Yale School of Medicine to work with a NIH-funded physician-scientist. Investigations are focused on studies aimed at identifying the molecular mechanisms and motors regulating endocytic and exocytic traffic of ion transporters into and out of the brush border and their relevance to intestinal diseases. Studies focus on mechanisms of regulation of ion transporters that lead to constipation and diarrheal diseases. Interested candidates should be U.S. citizens or green card holders; possess strong writing, communication, and organization skills; have molecular, physiology, and cell biological experience; and have a strong interest in epithelial cell biology and ion transport physiology. Interested candidates please send CV and 2 letters of recommendations to Nadia Ameen, MD, Associate Professor Pediatrics, Cellular and Molecular Physiology, *Nadia.Ameen@yale.edu*; office: 203-785-4649.

Postdoctoral Fellow: A postdoctoral scientist position is available in the USF Department of Molecular Pharmacology & Physiology to study ion channels in the physiology and pathophysiology of the heart rhythm. The appropriate candidate will have a PhD or its equivalent. Experience in the field of eletcrophysiology is required. Experience with one or more of the following techniques are preferred: animal surgery, conventional molecular and cellular biology, optical mapping, and patch clamp. Interested candidates should send their CV, a brief research statement, and a list of 3 references to Dr. Sami Noujaim at *snoujaim@health.usf.edu*.

Postdoctoral Fellow: There is an opening for a postdoctoral scholar to join the exciting and expanding Heart and Vascular Institute collaboration with the MRI Research Center at the Penn State College of Medicine on the Penn State Hershey campus. The research group is focused on understanding the role of the sympathetic nervous system in the control of cardiovascular function during exercise in health and in cardiovascular disease. Specifically, the major goal of our laboratory is to understand how the rise in blood pressure during exercise interacts with

blood flow and oxygen delivery to important organs in the body. These studies utilize MRI along with Doppler ultrasound, near-infrared spectroscopy (NIRS), and microneurography under various exercise paradigms and pharmacological interventions. The candidate should have an advanced degree (MD or PhD) in Physical Science, Electrical Engineering, Biomedical Engineering, Exercise Physiology, or related fields, with at least 1 year of MRI research and data-processing experience. The candidate should have background and career interest in integrated physiology, the autonomic nervous system, and blood flow regulation in humans. The candidate should also have experience in the application of MRI to biological models, and experimental MRI techniques. The studies will be conducted in the Penn State Clinical Research Center (CRC) that is part of the Penn State Clinical and Translational Science Institute (CTSI) Clinical Services Key Function and The MRI Core Facility. The MRI facility houses a 3T Siemens PRISMA-Fit scanner equipped with two-channel parallel transmission and 128 receive channels. Highly motivated candidates should bid on this position (*https://psu.jobs; job number 64568*) by attaching a cover letter emphasizing your relevant experience, your curriculum vitae, and the names of at least 3 references. Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce. ●

Meetings & Congresses

2016

September 5-8

7th International Congress of the African Association of Physiological Sciences, Lagos, Nigera. *Information:* internet: *http://aapslagos2016.org/*

September 8-10

6th Annual Meeting of the North American Artery Society (NAA) - Arterial Dysfunction in Cardiometabolic Disorders: Advances in Mechanisms, Diagnosis and Treatment, Chicago, IL. *Information:* Matthew Hansen, Hansen Global Event Management, LLC;. e-mail: naa@hansenglobalevents.com; internet: *http://naartery.org/page-1710768*

September 9-11

ILCA 2016 - The International Liver Cancer Association's 10th Annual Conference, Vancouver, Canada. *Information:* internet: *http://www.ilca2016.org*

September 18-21

2016 SPS/CSPT/JSPS Joint Meeting, Vancouver, BC, Canada. *Information:* internet: *http://www.safetypharmacology.org/am2016/*

September 25-28

2016 International Conference on Physiological Sciences, Beijing, China. *Information:* internet: *http://www.pco-online.com/icps2016*

November 2-4

APS Intersociety Meeting: The Integrative Biology of Exercise VII, Phoenix, Arizonia. *Information:* internet: *http://www.the-aps.org/mm/Conferences/APS-Conferences/2016-Conferences/Exercise; #IBExercise7*

2017

April 22-26

2017 Experimental Biology, Chicago, IL.

May 27-June 1

International Neuromodulation Society 13th World Congress, Edinburgh, Scotland. *Information*: internet: *http://www.neuromodulation.com/ins-congress*

August 1-5

IUPS 38th World Congress: Rhythms of Life, Rio de Janeiro, Brazil. *Information:* Internet: *http://iups2017.com/*

Meetings and Conferences

APS Intersociety Meeting: The Integrative Biology of Exercise VII

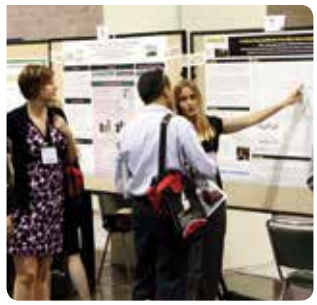
November 2-4, 2016 • Phoenix, Arizona

Experimental Biology 2017

April 22-26, 2017 • Chicago, Illinois

APS Conference: Physiological Bioenergetics: Mitochondria from Bench to Bedside

August 30–September 2, 2017 • San Diego, California



For more information on APS meetings, please visit:
the-aps.org/conferences

APS Members receive discounted registration to EB and APS Conferences!
The American Physiological Society usually holds one or more specialty conferences each year. In addition, APS joins with other societies to sponsor Intersociety Meetings as interest warrants. Please send an email to: meetings@the-aps.org for questions or to propose APS Conferences.

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