

Tips for the Aspiring Physician-Scientist

Jeanie Park



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For most physicians, the pathway to a career in science often appears ambiguous and uncertain. Although the trajectory to becoming a practicing clinician is clearly defined, with well-demarcated milestones such as passing the USMLE step exams and completing residency training, the path to becoming a physician-scientist is not clear-cut. In fact, most physicians are unaware of the steps involved in fashioning a career in scientific research or the rewards and challenges involved in such a pursuit. In addition, unless one has dual

MD and PhD degrees, a physician without PhD training may feel like a "late bloomer" when pursuing a career in science and not adequately trained or prepared. We may feel that our PhD counterparts have been preparing for years throughout graduate school and postdoctoral fellowships for a research career, while we have been training for an entirely different type of career in clinical medicine and patient care. These and other obstacles have led to a relative dearth in the number of young physicians pursuing academic research careers. However, physicians may evolve into successful scientists with some planning and foresight, and enjoy fulfilling careers that combine scientific research with patient care and teaching.

What is a Physician-Scientist?

A physician-scientist is a practicing clinician who spends the bulk of his or her time doing research. Like their PhD counterparts, physician scientists conduct all types of biomedical research, including basic, translational, clinical, and population studies. Physician-scientists also engage in clinical activities, teaching, service, and administration. Unlike clinician-educators that usually spend a minority of their time pursuing scholarly activities, physician-scientists typically devote at least 50% or more of their time in research activities as a principal investigator funded by federal and foundation grants. Research activities include a variety of specific endeavors, with some variation depending on the type of research program. These include writing grants and papers, performing experiments, training students and research fellows, collaborating with other investigators, serving on study sections, and presenting at national meetings. Although physicians may have relatively less experience in these areas, such

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A Matter of Opinion Reflections—2018

Thirty-three years ago, I wrote my first editorial as the Society's new Executive Secretary-Treasurer (to become Executive Director in 1987). At the time, the Society was preparing for the 1987 Centennial Celebration and reflecting on our history. However, those who had hired me were concerned that efforts to reflect on the past were challenging the future of physiology and the Society. Although physiology's history was perceived to be focused on systems and organs or blood and guts physiology, in reality its focus was on using all the tools available, including molecular, cellular, and biophysical approaches to understand function. Over the last three decades, the methods used to define function, indeed to define our understanding of physiology, have greatly expanded

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APS News

Perkins Award: The Award of My Million Memories

Supaporn Kulthinee

From my undergraduate years through my postdoctoral training, I have spent the majority of my life performing physiological studies and research, and I know I will continue to do so throughout my life. I have a wonderful opportunity to complete my postdoctoral fellowship in the Department of Physiology at Tulane University School of Medicine in New Orleans under the direction of Dr. L. Gabriel Navar, who is a physiologist role model. Besides my love in physiology, my family means the world to me. Every Christmas season, my two daughters had only previously seen Santa Claus and snow on the television. I had to answer the same question from them every year: "When will we get to play in the snow?" Playing in the snow is a big dream of both my little princesses, as there is no snow in Thailand. I could only answer them that I hope our family will play in the snow together one day.

I am very grateful to the American Physiological Society—especially the committee for the John F. Perkins, Jr. Memorial Award. This award has given me and my family a great opportunity to be able to spend time together in the U.S. during my fellowship and provide a

wonderful cultural experience for all of us to share together. The support obtained from the award covered expenses including an English as a Second Language course for my husband, violin lessons for Aum, and art lessons for Ing-Ing. Our family flew to the Northeast to visit my friends, Pupay and Preaw, and they brought my family to play in the snow. We also visited several landmarks including the Statue of Liberty National Monument and Ellis Island in New York, the National Museum of National History, the Washington Monument, the White House, and the Abraham Lincoln Monument in Washington, DC. This short time together gave us a lifetime of treasured memories.

I am so lucky to live in one of the world's most fascinating cities—New Orleans—the birthplace of jazz. Even though I live in Thailand, I have fallen in love with the song "What a Wonderful World" by Louis Armstrong. Living in the city of his birthplace and the city with an abundance of great music makes me feel full of happiness. Our family was impressed by the French Quarter architecture, which blends Spanish, French, Creole, and American styles together. They have many beautiful buildings; the most recognizable for us is St. Louis Cathedral, which is one of the most impressive structures in the French Quarter. During our weekends, we like to have a picnic at Audubon Park. We enjoy the ever-beautiful oak trees, lagoons, and green space located within the park. Starting in the spring and lasting until late fall, there is a festival happening just about every weekend, including the glorious French Quarter Fest, Jazzfest, Seafood Festival, and many others. We could go on and on. We have enjoyed the unique cuisine from gumbo to beignets. New Orleans has given me an even deeper understanding of the meaning of the song "What a Wonderful World"!





We have had several other beautiful events with the Tulane Physiology team. Thanks to Debbie and her family, we were invited to celebrate Thanksgiving day with them. It was our first time celebrating this holiday, and we had a wonderful time sharing meals with turkeys, stuffing, and pumpkin pie. We also had a great time at Dr. Prieto's house, where we shared our various ethnic foods

including Thai, American, Mexican, and Spanish foods. My daughters also had so much fun swimming at her house. During Christmas time, we had an unforgettable Christmas party at Dr. Navar's house. Aum played Christmas songs on the violin at the party. I was surprised when my daughters received presents that they wished to have (one was a dog and one was a bear) from Dr. Navar and Mrs. Navar. I would like to thank all of them for their kindness to me and my family. We have nothing but great respect and love for all of them.

I would like to extend my appreciation to my former professors, Dr. Sanya Roysommuti and Dr. Dusit Jirakulsomchok, who sparked the idea for me to do research in the U.S. I would like to express my deepest gratitude to Dr. L. Gabriel Navar for my inspiration to work in the renal physiology field and who gave me such a great opportunity to complete my postdoctoral training with him. Finally, I would like to thank the John F. Perkins Jr. Memorial Award for International Physiologists along with the American Physiological Society for this award, which has provided our family with a million treasured memories. Please accept the sincere appreciation from me and my entire family. ●



EDUCATION

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Tips for the Aspiring Physician-Scientist

skills can be developed during fellowship and as a junior faculty member. In addition, physicians have unique perspectives and backgrounds, which include scientific and clinical expertise, both of which can be leveraged when competing for grants and establishing a research program. Physician-scientists identify clinically relevant questions at the bedside, study these questions in the laboratory, and then apply that knowledge back at the bedside.

Do You Have the Desire for an Academic Research Career?

Given our relatively late start as MDs, you may wonder whether you have what it takes to become a physician-scientist. Several resources list various qualities that are necessary to becoming a physician-scientist, including being hard-working, self-motivated with perseverance, capable of problem-solving and multi-tasking with the focus and ability to see things through to the end. I believe that, for the most part, physicians possess these intrinsic traits, since these are also the qualities necessary for surviving the rigors of medical school and clinical training. In my opinion, the essential ingredient necessary for success as a physician-scientist is the desire to pursue this career path, and the commitment to make it your goal. This commitment is crucial because it will ensure that you apply your skills and talents to establishing a scientific career with the same fervor that has made you successful thus far. This level of commitment is akin to the commitment made when completing medical school and residency; if one's mindset was open to giving up and opting for an alternative career if things got rough, then many of us may have given up medicine during our internship when working long hours on call under sleep-deprived and stressful conditions. However, giving up was not an option. When this same level of commitment is applied to pursuing an academic research career, then you have an excellent chance of successfully establishing a fulfilling and rewarding career as a physician-scientist.

There are many advantages of a physician-scientist career that make it a very attractive career choice. I particularly value the variety of the work. On any given day, I may be treating outpatients in the clinic, conducting experiments in the lab, rounding on hospital

patients with residents, discussing grant ideas with my postdoctoral fellow, attending a scientific meeting, etc. This type of variety allows me to use my creativity and exercise different parts of my brain in interesting and stimulating ways, as well as eliminate any threat of a mundane work life. Many physician-scientists also appreciate the constant learning and opportunity for advancement. After completing training and becoming an attending physician, some physicians are left with a sense of "what next," which can lead to long-term job dissatisfaction. In academic medicine, there are constantly new goals to be met, and endless ways to grow and evolve. Flexibility and autonomy are also important factors that enhance job satisfaction. Not only are the work hours more flexible in general than in private practice, but the type of work, including the types of clinical activities and research endeavors, is also more flexible and under my control. These advantages lead to a deeply satisfying sense that I am contributing on multiple levels: directly to patients through clinical work, broadly to scientific knowledge through research, and to the education of future physicians and scientists through teaching.

There are also a number of disadvantages that should be considered when pursuing this pathway. The salary of a physician-scientist is lower than that of physicians in private practice, which can be worrisome for those with large amounts of student loans. However, programs such as the NIH loan repayment program help to decrease the burden by paying a substantial portion of medical school debt for physicians engaged in research. Second, a career as a physician-scientist requires a great deal of troubleshooting. Unlike the clinical training years, your career as a physician-scientist may not follow the trajectory and timetable that you have set in your mind. Technical problems will arise, experiments may not go as planned, grants may take multiple attempts to get funded, and papers will be rejected. This kind of uncertainty and rejection may be difficult to deal with given that physicians are accustomed to achieving each expected outcome within an expected timeframe. However, science does not tend to work this way. Troubleshooting and adaptability are part of the scientific process. In short, failure is an essential part of the journey toward success in this line of work.

Tips for Preparing for a Physician-Scientist Career

1) Choose Your Scientific Niche

For physicians, research training often begins late in the game during residency or clinical fellowship. Therefore, it is crucial to think long-term when choosing a research area. Choose an area that you are passionate about, while leveraging the resources and expertise at your given institution, as well as your own strengths and talents. Given our late start in scientific training, you want to avoid switching fields during or after fellowship, and establish a foundation for a continuous line of research. For example, I became interested in autonomic regulation and its role in the pathogenesis of high blood pressure and kidney disease during my Nephrology fellowship. I became passionate about human physiology research and felt that there was a critical gap in our understanding and approach to treatment in this area to which I could devote my career long-term while continuing to treat patients.

2) Seek Mentorship

There is a consensus that good mentorship is a critical component of research training that can determine success or failure. However, mentorship is not a passive process on the part of the mentee. The mentee is not a receptacle into which a mentor pours his or her wisdom and guides each step of the way. Rather, the mentee will gain more by being an active player in the mentor-mentee relationship. It is best to understand your training needs and then actively seek out mentors who can fulfill those deficits. To that end, it is difficult to find a single person who can fulfill all of your training needs; therefore, you may have separate mentors for your science, career development, work-life balance, etc. Therefore, your mentors may be outside of your division, department, or even institution. However, one common characteristic of your mentors should be an interest in seeing you succeed, and the ability to offer honest advice with *your* best interests at the forefront.

3) Write a Fellowship Grant

Having the experience of writing a grant during your fellowship training will be an invaluable asset during your first faculty position. Even if you are fortunate enough to be supported on an institutional training

grant or have other guaranteed sources of funding, I would still highly recommend writing a fellowship grant. Why? The process of writing a grant allows you to formulate your short-term as well as your long-term objectives, and will serve as a useful springboard for your career development award application as a junior faculty member. Writing a fellowship grant will provide experience with formulating research aims and approach, grantsmanship and scientific writing, organization and submission process as the principal investigator, and responses to a summary statement. Submitting the first grant application is an arduous process with a steep learning curve; therefore, you do not want your first grant-writing experience to occur as a faculty member. Writing a fellowship grant will set you up for writing a much stronger career development award application as a faculty member.

4) Practice Independence

Practicing self-reliance during your training period will increase your likelihood of success when you are indeed independent. Although it may be easiest to go to your mentor with each problem or unexpected result, try your best to solve the issue initially as much as possible on your own. Doing so will improve your technical proficiency and troubleshooting abilities. Understand the nuts and bolts of every aspect of performing research, including IACUC or IRB process, data management, and safety monitoring. If possible, set up a lab or a new experimental protocol on your own. This experience will be invaluable when you start your first faculty job and need to set up your own lab. And importantly, don't rush it. This training period is a golden opportunity to gain as much proficiency as possible before embarking on your own. As such, it is in your best interest to continue training until you feel sufficiently prepared to develop your own program.

5) Find the Right First Faculty Position

The criteria for determining the right first faculty position will depend on many factors, both professional and personal. For instance, you may be restricted to a certain city or state due to family reasons, or institutions with a specific patient population that you need for enrollment into your studies. There is not one single type of institution that will guarantee success,

but rather many different institutions at which one has the potential to start a successful research career. What these institutions have in common is that the goals of the department align with your long-term career goals. For example, if the department's goal is to recruit a clinician-educator but your goal is to establish an independent research career, then this is likely not a good fit, even if the institution is a top-tier research institution or promises you some degree of protected research time. If the department's goal is to see you succeed in research, then it will be more open to providing resources and, importantly, protected time to develop your research program. At the same time, be sure to have a clear understanding of what you will need to be successful (lab space, clinical coordinator support, protected time, start-up funds, etc), and communicate those needs *before* you start the job. It is much more difficult to ask for these things after you have been hired.

Navigating the first faculty job and all of the new responsibilities will take time. Early on, invest your time into establishing your research career. You can always increase your clinical time later, but it is difficult to do the reverse. If possible, relate your clinical work and teaching to your research endeavors. In this way, your clinical work will inform your research, and your research will inform your clinical work. Moreover, you will further develop your scientific niche and your reputation as a leader (both clinically and scientifically) in your field. Be flexible and don't give up. Remember that troubleshooting is part of the process. And lastly, don't forget to enjoy your successes. They are well-deserved. ●

Further Recommended Reading

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Jeanie Park Biography

Jeanie Park received her BA in English from Rice University, and MD from University of Alabama at Birmingham (UAB). She then completed internal medicine residency at Washington University in St. Louis, and a nephrology fellowship at the University of Southern California, where she also received an MS in Biomedical and Clinical Investigations. She is currently an Assistant Professor of Medicine in the Renal Division at Emory University School of Medicine. She divides her time between caring for patients with kidney disease and conducting human physiology research in sympathetic nervous system regulation. She is a member of the Women in Physiology Committee for the American Physiological Society.

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such that our discipline joins many others in efforts to understand the living organism.

At the time I wrote the 1985 editorial titled "Reflections," I reflected on our past but also on a number of things that were coming in the near future. Specifically, I referred to the anticipation of "a modified governance structure reflective of the sectionalization of the Society" and to "a revised program structure for the Fall meeting." I also referred to efforts to promote "broader participation by investigators attempting to understand the larger system by studies at the cellular and molecular level" in the Society. Thanks to the efforts of the Society's leadership and you the members, our scientific meetings have changed with the incorporation of cellular, molecular, and genomic studies to facilitate our understanding of function, and the Society has not only modified its governance structure, but it has also drawn upon our sections, interest groups, and chapters to strengthen APS.

Although the items highlighted in my 1985 editorial have been addressed, working with the APS leadership, staff, and membership, APS has evolved into something much different from the Society that I inherited from Orr E. Reynolds, my predecessor. APS membership has grown from approximately 6,200 members comprised of regular, corresponding, associate, students (graduate), honorary, and emeritus members to nearly 11,000 regular, affiliate, students (both graduate and undergraduate), honorary, and emeritus members. One of the most noticeable changes was the elimination of the corresponding member category, which had been established for those individuals eligible for regular membership who resided in a foreign country. In 1987, as part of our Centennial Celebration, regular membership was opened to include all physiologists residing in The Americas, and, in 1999, the category was eliminated completely. As a result, the APS membership has grown, with over 30% of our members residing outside of the U.S. The membership application process has also been modified such that the APS office now reviews and approves applications, and candidates are no longer voted on at the annual business meeting.

Lastly, in an effort to recognize those long-standing members who have contributed to the discipline and the Society, the Council created the APS Fellows (FAPS) program in 2015.

A critical change in the Society occurred during the first few years of my tenure when we consolidated the operational budget. When I arrived, there were three distinct operational budgets, one each for the executive office, business office, and publications office. For those of you familiar with the Society's current budget, you could guess that the largest of the three was the publications budget, just as it is today. Because the budgets were segregated, any new non-publications initiative required the Council to ask the Publications Committee for funds. The segregation of budgets was an outgrowth of the 1950s and early 1960s when APS had a Board of Publications Trustees. When it was dissolved in 1961, the Council created a Publications Committee and a Finance Committee. However, the budgets were not consolidated. Through my early efforts at APS, the budget was consolidated, recognizing that the publications program was a part of the Society and that its profits could be used to benefit APS and the discipline of physiology.

The Society has been a publisher of physiological literature since the launch of the *American Journal of Physiology* in 1898. In 1977, the *AJP* was sectionalized, and in 1989 the seventh section, *AJP—Lung Cellular and Molecular* was added to the *AJP* family. When I arrived at APS, the Society was also publishing the *Journal of Applied Physiology*, the *Journal of Neurophysiology*, *Physiological Reviews*, and *The Physiologist*. In 1986, *The Physiologist* was split to create a smaller newsletter and to create *News in Physiological Sciences* (changed to *Physiology* in 2004), which is jointly published with the IUPS. In 1989, the Society started publishing *Advances in Physiology Education* as a supplement to *AJP*, and became a journal in its own right as interest in physiology education increased. In 1999, the APS expanded its journal offerings to reflect the growing use of genomics to understand function by creating *Physiological Genomics*. In 2013, the APS partnered with The Physiological Society and Wiley to publish

Physiological Reports, the Society's first foray into publishing a fully open access journal. The latest APS journal, *Comprehensive Physiology*, was launched in 2011. Its starting point was more than 30,000 pages of content from the American Physiological Society's renowned *Handbook of Physiology* series, which is presented in an online format as a supplement to Volume 1, Issue 1 of *Comprehensive Physiology*. The creation of *Comprehensive Physiology* was facilitated by Wiley's willingness to digitize the *Handbooks of Physiology*.

In the early 1990s, the APS and the Publications Committee began hearing about the forthcoming digital revolution. Like many societies, APS was trying to figure out which way to go in order to publish digitally. We had already begun accepting the submission of manuscripts on floppy discs for desktop copy editing, but there was a need to figure out how to disseminate the content electronically. In 1992, the Society began publishing abstracts of accepted manuscripts on a Gopher server. The publication, called APStracts, helped us to understand the power of the future World Wide Web. By 1994, APS had contracted with OCLC to publish our journals online. OCLC was selected because they possessed proprietary software that enabled the publication of scientific notation and mathematical equations inline as opposed to as bitmapped images. Unfortunately, just as we were getting ready to launch the *Journal of Applied Physiology* online, OCLC dropped its support for the software, and APS went off to work with Stanford University's HighWire Press (HWP). The *Journal of Applied Physiology* went online in 1996 as our first journal on the HighWire platform and the seventh journal that HWP hosted. Shortly after launch, we recognized that "if you weren't online, you didn't exist," which caused APS to accelerate its timeline to get all APS journals online by 1998. Shortly thereafter, APS arranged to have all its content, back to 1898, scanned for posting as the APS Legacy Content so it could be made available to the community for a one-time fee.

As a result of my involvement with the Society's move to online publishing, I became actively involved as a spokesperson for scholarly and society publishing. I spoke out against and wrote in opposition to the open

access movement and government efforts to mandate public access. APS and the American Association of Immunologist contracted with the law firm Foley Lardner to prepare a legal brief in response to NIH's proposed public access plan. Working with society publishers within the HWP family, I helped create the DC Principles Coalition for Free Access to Science, representing 75 not-for-profit publishers who believed in free access to content based on each publishers' business and publications model. We presented our case at a 2004 press briefing at The National Press Club. As a result, I found myself on Capitol Hill speaking with legislators to promote the not-for-profit publishing model. The highlight of those efforts was the opportunity to testify before the Subcommittee on Courts, the Internet, and Intellectual Property of the House Judiciary Committee in September 2008. I was one of four panelists participating in a 2-hour hearing to discuss H.R. 6845, The Fair Copyright in Research Works Act. Although we lost the battle against government-mandated access to the scientific literature, we were able to work with Congress to craft a policy that allowed for a 12-month embargo period instead of immediate public access.

When I joined the APS, the Society was also a publisher of books, self-publishing as we do with our journal program. Unfortunately, the program was losing money, and, in 1988, the Society partnered with Oxford University Press to publish its books. The move to OUP reduced our financial risk and provided us with a small royalty stream from the publication of APS monographs. However, as the digital revolution developed, the Society explored the possibility of moving our book program online, but OUP was not supportive of those efforts. As a result, APS moved its book program to Elsevier for a short period of time when we thought they would help us to go digital, but when they did not deliver, APS moved its book program to Springer, signing an agreement in 2011 that resulted in the digitization of 33 monographs and the production of new content available to APS members for free as e-books.

As we have all heard, "science has no borders!" The truth of the statement is evidenced by the

international nature of our laboratories and scientific interactions at meetings. Not surprisingly, APS and the U.S. are active participants in the IUPS and the quadrennial Congresses. In 1968, the APS hosted the IUPS Congress in Washington, DC, which generated revenue in excess of expenses. This allowed APS to establish a reserve fund to be used as the down payment for a future U.S. IUPS Congress and to provide income for a travel program to get physiologists to the Congresses. The U.S. and APS hosted the IUPS Congress in 2005 in San Diego, in conjunction with the Experimental Biology meeting. Nearly 6,000 physiologists from 65 countries participated in the Congress focused on "From Genomes to Functions." The Congress opened with a grand party on the North Embarcadero with games, food, music, and fireworks. The closing ceremony was held at Copley Symphony Hall and included the performance of "Body Notes," a symphonic suite written by APS member Hector Rasgado-Flores and performed by the San Diego Chamber Orchestra.

The APS has been involved in many international meetings and collaborations over the past 33 years. My first international meeting as APS Executive Director was a joint meeting with The Physiological Society held at Cambridge University. Although the scientific interactions were outstanding, the high point for me was being invited to sit at High Table in the Great Hall of King's College. Seated across from me were Sir Andrew and Lady Huxley, and alongside me was Lord Adrian. For a middle-class kid from Chicago, it was an unexpected thrill.

It is difficult to list all the international collaborations and meetings in which the Society has participated in over my tenure, but I will try to include some of them. During the 1987 IUPS Congress in Helsinki, Finland, Harvey Sparks, APS President-elect, and I worked with representatives from African countries to develop the bylaws for the African Association of Physiological Sciences. As a result of Sparks' interest, APS created a program designed to donate the APS journals to libraries in developing countries. Although we initially sent print copies to the institutions, APS now participates in Research4Life, which sends online journals to these institutions. In 1988, Frank Knox and I went to the Soviet Union to sign a bilateral exchange agreement with the Pavlov All-Union Physiological Society, which provided for the

exchange of physiologists between the U.S. and the Soviet Union. During the Presidency of Shu Chien, APS participated in a joint meeting with the Chinese Physiological Society (CPS) in Taipei, Taiwan. During Jim Schafer's Presidency, the Society met jointly with the Spanish Physiological Society in Benalmadena, Spain. In 2008, 2012, and 2016, APS joined with the Chinese Association for Physiological Sciences (CAPS) for meetings in Beijing and Shuzou, China. The APS also participated in multiple meetings with the Brazilian Society of Physiology (SBFis), including the 1st Pan-American Congress of Physiology hosted by Brazil in Iguassu Falls 2014. In preparation for the 2nd Pan-American Congress to be held in Havana, Cuba in 2019, Patricia Molina, David Pollock, and I went to Havana in 2015 to sign a Memorandum of Agreement with the Cuban Physiological Society, providing for on-going collaboration.

In addition to my taking over as the Society's Executive Secretary-Treasurer in 1985, I also took over from Orr E. Reynolds as the Society's Education Officer. The education portfolio was thin at the time since the slide-tape program of the 1970s had ended and the focus was on the Society's annual refresher course. However, the APS had already established itself as a supporter of diversity in 1967 when it converted the Porter Fellowship program into a Fellowship program for minority physiologists and provided support for both the Atlanta and the New Orleans Consortia. In 1987, I was able to obtain support from the NIDDK for a travel fellowship program to enable minority physiologists to attend APS meetings. In 1991, working with President Norman Staub, APS launched its high school science teachers program, which put teachers into research laboratories for the summer. Although APS submitted a Science Education Partnership Application (SEPA) to NIH, we did not get funded. It was not until I gave up the mantle of Education Officer and hired Marsha Matyas in 1993 that the Society received a SEPA grant and an expansion of our education and diversity efforts. Those efforts were ultimately recognized in 2003 with the presentation of the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM) to the Society.

The history of FASEB is intimately tied to the history of APS, especially since APS, along with the biochemistry and pharmacology societies, created FASEB in 1912

to serve as the host of our annual meeting. APS was also responsible for purchasing the Beaumont Campus as the home of FASEB and the member societies. By the time I arrived in 1985, FASEB had grown to six societies with the addition of pathology, nutrition, and immunology. The fact that FASEB was supported through an assessment based on a society's membership size had become a problem. By 1989, that assessment had grown to \$62/member, which led APS President Vernon Bishop to issue an ultimatum calling for the restructuring of FASEB to eliminate the assessment, allow for greater societal representation, and provide member societies the freedom to meet with non-FASEB societies without suffering financial repercussions. Biochemistry issued a similar ultimatum, with both societies threatening to withdraw from FASEB. This resulted in the restructuring of FASEB and its decision to focus on science policy and advocacy. FASEB also agreed to turn its annual meeting over to the participating societies that wanted to continue meeting jointly. As a result, FASEB has grown to 31 societies, representing nearly 150,000 scientists, and the member societies pay dues of \$16.50/regular member.

Although FASEB's science policy efforts are directed toward research funding and those Federal agencies that support the research conducted in the laboratories of FASEB members, the APS has also focused on the humane use of animals in research. In 1953, the Council approved the "Guiding Principles

in the Care and Use of Animals," a set of principles to guide Society members in their research and their scientific presentations at meetings and in publications. APS has defended members who have been targeted by animal rights activists. The leadership and I have debated and engaged animal activists in print, on radio, and in person. I have worked with two science policy professionals—William Samuels and Alice Ra'anana—both of whom have been strong spokespersons for the need for animal models for physiological research through testimony to Congress and to funding agencies, as well as in communications in media.

As I reflect upon my 33 years as APS Executive Director, it is amazing how much we have accomplished together. This article only touches on some of the things we have accomplished over my tenure. However, none of it would have happened without the leadership and direction of our Presidents and Council and your support as members. More importantly, I alone could not have made APS into what it is today without the efforts of the Society's outstanding staff. While I will be retiring as of June 30th, I intend to retain my APS membership and hope to continue to participate in the Society's activities. I hope you will also retain your membership and provide my successor with your support, wisdom, and experience. Thank you for allowing me to serve my discipline and you as APS Executive Director.

—Martin Frank

eBooks are free for members.

Access more books at the-aps.org/books.

Science Policy

APS Advocates for NIH, NSF Research

Earlier this year as Congress was working to complete fiscal year (FY) 2018 spending bills, APS helped bring attention to the need to increase biomedical research funding.

On February 21, 2018, APS President Dennis Brown sent letters to Congressional appropriators urging them to devote additional resources to federal research agencies in FY 2018. Citing the need to address emerging health challenges and foster the next generation of researchers, Brown called on Congress to provide NIH and NSF with predictable and sustainable budget growth in FY 2018 and beyond (<http://www.the-aps.org/mrn/SciencePolicy/News-and-Updates/NIH-NSF-Funding.html>). The letters asked for a \$2 billion increase in NIH funding, for a total of \$36 billion, and an additional \$530 million for NSF, bringing the agency's budget to \$8 billion.

On March 8, 2018, representatives of APS and other FASEB member societies came to Washington, DC to participate in the federation's annual Capitol Hill Day. APS was represented by Kevin Kregel (APS representative to the FASEB Board), Hannah Carey (FASEB VP for Science Policy), Laura McCabe (APS representative to the FASEB Science Policy Committee), and APS members Janice Urban, JR Haywood, and Dan Warren. The APS representatives joined representatives of 28 other societies to urge adoption of FASEB's FY 2018 and 2019 recommended funding levels (<http://www.faseb.org/Science-Policy--Advocacy-and-Communications/Federal-Funding-Data/Annual-Federal-Funding-Recommendations-.aspx>). ●



FASEB Vice President for Science Policy Hannah Carey (APS; right) joins Vivek Balasubramaniam (middle), and Mark DiStefano (left) for a meeting with Senator Tammy Baldwin (D-WI)



Hannah Carey finds some Wisconsin cheddar



APS Science Policy Committee Chair Laura McCabe, with Representative John Moolenaar (R-MI)



APS member Dan Warren and Lawrence Rothblum thank Senator Roy Blunt (R-MO) for his committed support of the NIH



Janice Urban, representing the Association of Chairs of Physiology Departments, and Frank Krause, FASEB Executive Director, in the Hart Senate Office Building with Alexander Calder's "Mountains and Clouds" in the background



Michigan researchers (left to right) JR Haywood (APS), Donna Martin, Laura McCabe (APS), Barbara Ducatman, and Charles Parkos in front of the U.S. Capitol

NSF Drafts New Sexual Harassment Policies for Funded Investigators

On February 8, 2018, the National Science Foundation (NSF) issued new proposed reporting requirements for sexual harassment involving funded investigators (<https://www.nsf.gov/pubs/issuances/in144.jsp>). The proposed policy changes were published in the *Federal Register* and were open for public comment through May 4, 2018.

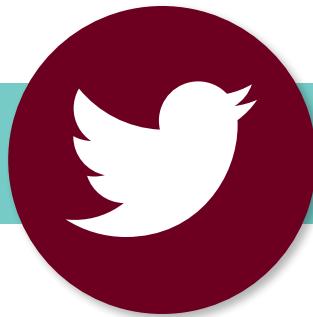
The new policy specifies that NSF considers principal investigators (PIs) and co-investigators to be in positions of trust and therefore expects them to conduct themselves in a responsible, professional, and accountable manner. Accordingly, NSF plans to add to its terms and conditions of award a requirement for grantee organizations to report any findings of sexual harassment, harassment, or sexual assault regarding an NSF-funded investigator. NSF will also require grantee organizations to report when NSF-funded investigators have been placed on administrative leave related to a harassment investigation. NSF will review each case and may take action to suspend or terminate related awards, or require replacement or removal of certain personnel. Responsibility for investigating and adjudicating reports of sexual harassment remains with the grantee organization.

In issuing the new policy, NSF noted its commitment to promoting safe and productive research and education environments for current and future scientists. Prior to the issuance of the new reporting requirements, NSF's

harassment policy focused on terminating funding to institutions found to be non-compliant with federal Title IX protections and non-discrimination laws (https://www.nsf.gov/news/news_summ.jsp?cntn_id=137466). The new requirements are intended to improve the flow of information between the NSF and grantee organizations.

Along with the new term and condition of award, NSF also announced that it expects all awardee organizations to "establish and maintain clear and unambiguous standards of behavior to ensure harassment-free workplaces wherever science is conducted," including at field sites, during conferences, and online. NSF's Office of Diversity and Inclusion will be responsible for developing a central web portal to consolidate information on harassment policies and procedures (<https://www.nsf.gov/od/odi/harassment.jsp>).

Following NSF's announcement of the proposed reporting requirements, the House Committee on Science held a hearing to examine how agencies and institutions handle harassment complaints under current law; assess the impact of harassment on women in STEM fields; and hear recommendations for improvement in harassment policies. Witness statements and a video recording of the hearing are available on the committee's website (<https://science.house.gov/legislation/hearings/subcommittee-research-and-technology-hearing-review-sexual-harassment-and>). ●



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Education

Meet the 2018–2019 Minority Outreach Fellows

The APS and Porter Physiology Development and Minority Affairs Committee congratulates the 2018 Outreach Fellows:



Anberitha Matthews



Crystal Taylor

- **Anberitha Matthews**, University of Tennessee Health Science Center
- **Crystal Taylor**, University of Alabama at Birmingham

Apply for Minority Travel Fellowship Awards to Attend the 2018 APS Conferences

APS will be offering Minority Travel Fellowship Awards, which provide up to \$1,800 in travel expense reimbursement, for the upcoming 2018 APS Conferences.



Minority Travel Fellows at the 2016 APS Conference: Inflammation, Immunity and Cardiovascular Disease in Westminster, CO

Fellows attend EB 2018 and 2019, participate in online outreach activities and PhUn Week, as well as attend conferences for minority students in the fall (ABRCMS or SACNAS national conference).

The APS Minority Outreach Fellowship fosters communication between underrepresented minority (URM) graduate and postdoctoral students and middle/ high school URM life sciences students. Program activities include year-long outreach fellowships for awardees to visit K-12 classrooms, participate in online professional development activities on outreach, help conduct teacher professional development workshops, and attend scientific meetings.

For more information, see the APS website at the-aps.org/minorityoutreach or contact Brooke Bruthers in the APS Education Office at education@the-aps.org. The application deadline for the 2019–2020 fellowship year is December 1, 2018. ●

Cardiovascular, Renal and Metabolic Diseases: Sex-Specific Implications for Physiology

September 30–October 3, 2018 in Knoxville, TN
#SexGender18

Intersociety Meeting

Comparative Physiology: Complexity and Integration
October 25–28, 2018 in New Orleans, LA
#ComparativePhys18

For more information about the Minority Travel Fellowship Award program and to apply, visit the-aps.org/minoritytravel or contact Brooke Bruthers, Senior Program Manager, Diversity Programs at education@the-aps.org. ●

Publications

CALL FOR NOMINATIONS



for the Editorship of
AJP-Regulatory, Integrative
and Comparative Physiology®

Nominations are invited for the Editorship of the *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology* to succeed Willis K. Samson, who will complete his term as Editor on June 30, 2019. The APS Publications Committee plans to interview candidates in the Fall of 2018.

Applications should be received before August 15, 2018.

Nominations, accompanied by a curriculum vitae, should be sent to the Chair of the APS Publications Committee via regular mail:

Curt D. Sigmund, PhD
American Physiological Society
9650 Rockville Pike
Bethesda, MD 20814

You may also send your nominations to Curt Sigmund via email, care of the APS Publications Department Administrative Assistant, Charmon Kight (ckight@the-aps.org).

ajpregu.org

CALL FOR NOMINATIONS



for the Editorship of
AJP-Renal Physiology®

Nominations are invited for the Editorship of the *American Journal of Physiology-Renal Physiology* to succeed Phillip Darwin Bell, who will complete his term as Editor on June 30, 2019. The APS Publications Committee plans to interview candidates in the Fall of 2018.

Applications should be received before August 15, 2018.

Nominations, accompanied by a curriculum vitae, should be sent to the Chair of the APS Publications Committee via regular mail:

Curt D. Sigmund, PhD
American Physiological Society
9650 Rockville Pike
Bethesda, MD 20814-3991

You may also send your nominations to Curt Sigmund via email, care of the APS Publications Department Administrative Assistant, Charmon Kight (ckight@the-aps.org).

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Current Calls for Papers

Physiological Genomics

- Single Cell Analysis
Submission Deadline: May 31, 2018
- Genetics of Metabolic Syndrome
Submission Deadline: June 30, 2018

Journal of Neurophysiology

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

Advances in Physiology Education

- Historical Perspectives and Living Histories

American Journal of Physiology – Cell Physiology

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

American Journal of Physiology – Endocrinology Physiology

- Role of Gut Microbiota, Gut-Brain and Gut Liver Axes in Physiological Regulation of Inflammation, Energy Balance, and Metabolism
Submission deadline: December 31, 2018
- Browning and Beiging of Adipose Tissue: Its Role in the Regulation of Energy Homeostasis and as a Potential Target for Alleviating Metabolic Diseases
Submission deadline: December 31, 2018
- Mitochondria Dysfunction in Aging and Metabolic Diseases
Submission deadline: December 31, 2018

- Immunometabolic Cross-Talk and Regulation of Endocrine and Metabolic Functions
Submission deadline: December 31, 2018

American Journal of Physiology – Gastrointestinal and Liver Physiology

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

- The Role of the Extracellular Matrix in Gastrointestinal and Liver Physiology
Submission deadline: June 1, 2018
- The Gut-Liver Axis
Submission deadline: June 1, 2018

American Journal of Physiology – Heart and Circulatory Physiology

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

American Journal of Physiology – Lung Cellular and Molecular Physiology

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

American Journal of Physiology – Regulatory, Integrative and Comparative Physiology

- 2018 New Investigator Review Award
Submission deadline: June 1, 2018
- Cardiovascular and Metabolic Consequences of Sleep and/or Circadian Disruption
Submission deadline: May 1, 2018

American Journal of Physiology – Renal Physiology

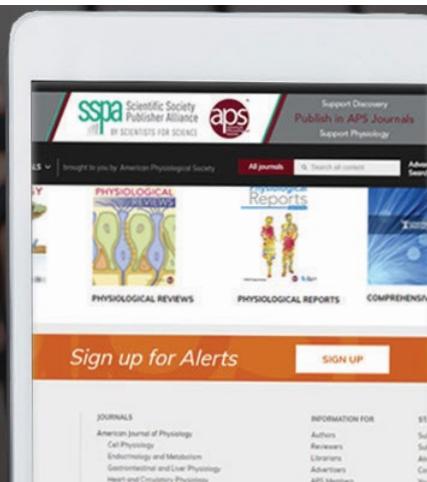
- Inflammatory Mediators in Kidney\Bladder Diseases, and in Hypertension
Submission deadline: June 30, 2018
- Mechanism and Treatment of Renal Fibrosis
Submission deadline: June 30, 2018
- Mechanisms of Inflammation and Hyperplasia in the Prostate
Submission deadline: June 30, 2018
- Physiology of Rebuilding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

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CALL FOR NOMINATIONS

for the Editorship of

Comprehensive Physiology



Nominations are invited for the Editorship of *Comprehensive Physiology* to succeed David M. Pollock, who will complete his term as Editor on June 30, 2019. The APS Publications Committee plans to interview candidates in the Fall of 2018.

Applications should be received before August 15, 2018.

Nominations, accompanied by a curriculum vitae, should be sent to the Chair of the APS Publications Committee via regular mail:

Curt D. Sigmund, PhD
American Physiological Society
9650 Rockville Pike
Bethesda, MD 20814-3991

You may also send your nominations to Curt Sigmund via email, care of the APS Publications Department Administrative Assistant, Charmon Kight (cright@the-aps.org).

comprehensivephysiology.com

Chapter News

Indiana Physiological Society Report

The Indiana Physiological Society (InPhys) 7th Annual Meeting was held at Butler University in Indianapolis, Indiana on February 18, 2017, in unusually spring-like weather. The central theme revolved around "Gender Impact on Physiology: From Cells to Scientists."

Following registration, breakfast, and an introduction by Laura Michael (InPhys President), Robert Soltis, Dean of the School of Pharmacy and Health Sciences, welcomed 109 attendees to the meeting. Participants represented large universities and small liberal arts institutions, including Indiana University School of Medicine, IUPUI, IU-Kokomo, Ball State, Marian University, as well as DePauw University, Taylor University, and Wabash College. Consistent with our theme, two keynote addresses by three distinguished women scientists anchored the day. Among faculty and industry professionals were 28 registered graduate students, 24 undergraduate students, and 11 high school students. The agenda included two highly interactive poster sessions and eight talks by high school, undergraduate, and graduate students, and postdoctoral fellows.

The first Keynote speaker was Erica Wehrwein, assistant professor of physiology at Michigan State University; she presented a talk entitled "The Mind Matters: Psychology as an Overlooked Variable within Physiology Studies." Wehrwein investigates



Left: the three keynote speakers, Liu, Wehrwein, and Lu. Right: Wehrwein during her morning keynote address.

the health impacts of mind-body practices and is a founding member of the Michigan chapter of the American Physiological Society. Following Werhwein's presentation, four 15-min talks were presented by graduate students from Indiana University School of Medicine, and Indiana University-Purdue University at Indianapolis. These four talks were followed by a well-attended 45-min poster session, where half of the 32 posters were presented and discussed.

A 45-min lunch was intercalated between the first and second poster sessions. The second poster sessions began at 1:30 PM, and the other half of the posters were presented and discussed with great enthusiasm. In the transition times between talks and during lunch, the many exhibits from vendors and sponsors were visited by the attendants. Among the sponsors were DSI, Eli Lilly, Indiana University Department of Cellular and Integrative Physiology, American Physiological Society, and Butler University. Supporters with exhibits



Left: poster presentation by high school students. Right: InPhys councilors during the lunch break.

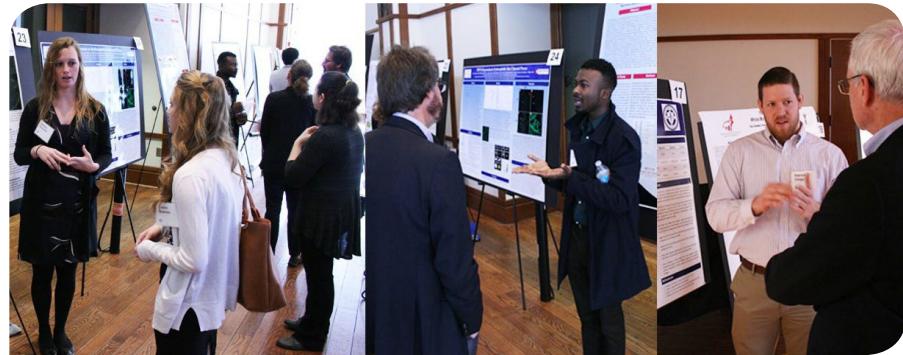
included Women & Hi Tech, Avant Healthcare, BioCrossroad, CINSO, Indiana Bioscience Research Institute, Indiana State Museum, INDY Science Connect, and Indiana University School of Medicine.

The afternoon keynote address was presented by Ling Liu and Jirong Lu, both women and scientists from Eli Lilly, on their “Ixekizumab Discovery Journey.” This provided the attendees with insights into the approach to basic and translational research, and the complexities attending the processes leading to a successful clinical drug. It also provided insights into the benefits of highly collaborative research between women scientists.

The meeting ended with the introduction of the new INPhys leadership team, the newly elected councilors, and the recognition of the prize-winning students and trainees. Award winners were: Ben Stivers (first place Travel award), Gary Long (second place Travel award), Greg Grosicki (first place PhD/postdoc oral presentation), Kaleen Lavin (second place PhD/postdoc oral presentation,) Natasha Hockaden (first place Undergraduate poster presentation,) Roshan Kaphle (second place Undergraduate poster presentation), and Christopher Basile (best high school poster presentation).

The InPhys leadership team for 2017–2018 are:

- Pascal Lafontant, President (DePauw University)
- Mikaela Drake, President-Elect (Butler University)
- Laura Michael, Past-President (Eli Lilly)
- Thad Wilson, Treasurer/Secretary (Marian University)
- Mark Kowala, Councilor (Eli Lilly)
- Brian Dewar, Councilor (Taylor University)



Students and trainees presenting their work during one of the two poster sessions to DePauw University undergraduate student Cassie Washam (left), Mark Kowala of Eli Lilly (middle), and Richard Klabunde of Marian University (right).



Students and trainees in conversation with faculty, lab managers, and industry professionals during the Careers Breakout Session.



Top: oral presentations by Olubusola Shifatu, undergraduate student (left); Ayeeshik Kole, graduate student (middle); and Supriya Chittajallu, high school student (right). Bottom: a question by Michael Sturek (left), and an exchange between Liu and Lu during the afternoon oral presentations (right).

Newly elected councilors:

- Alex Champagne (University of Southern Indiana)
- Jonathan Lowery (Marian University College of Osteopathic Medicine)
- Heidi Walsh (Wabash College)
- Wei Ni (Eli Lilly)
- Jill Baden (Indiana University School of Medicine) ●

Kentucky Chapter—APS 2017 Meeting Report

The Kentucky Chapter of the APS is a nonprofit organization that fosters education, research, and outreach in the discipline of physiological sciences. It was established in 2012, and held its 5th annual meeting at the Western KY University on March 18, 2017. About 60 people attended the meeting from regional universities (Sullivan University, University of Louisville, University of KY, and Western KY University). In addition, one high school student from Gatton Academy attended the meeting. Welcoming remarks

were presented by Wasana Sumanasekera (Sullivan University College of Pharmacy), executive member and the past president of KY-APS, and Scott Lyons, the Dean of the Graduate School, Western KY University. There were 6 oral presentations (2 undergraduates, 2 graduates, and 2 postdoctoral scientists) and 25 posters. Awards were given to the best oral presentation and best poster presentation from each category. In addition, the high school student also received an award. ●

36th Annual Meeting of Oklahoma Society of Physiologists

The Oklahoma Society of Physiologists (OSP) Annual Meeting was held on July 28, 2017 at OSU-CHS in Tulsa in conjunction with the Tulsa Chapter of the Society for Neuroscience (T-SfN) and the Tulsa Area Bioscience Education and Research Consortium (TABERC). Kath Curtis of T-SfN and Diana Spencer of TABERC contributed enormously to the preparation, organization, and overall success of this joint venture. The meeting included oral presentations by undergraduate TABERC students, a keynote seminar by Julia Moffitt, an oral presentation by Brandy Close on faculty perceptions of formative assessment, oral presentations by graduate students, and poster presentations by high school, undergraduate, and graduate students, and faculty.

Summary of Meeting

- 76 attendees
- 9 different universities/colleges and a few high schools
- 23 posters
- 4 symposia of a total 10 oral presentations



Kath Curtis welcomes attendees, recognizes funding support, and summarizes the events of the meeting



Diana Spencer introduces undergraduate TABERC students and their presentations



Julia Moffitt fielding questions

Special Thanks to APS

The American Physiological Society provided OSP with \$1,500 for the meeting. Funds were used for supplies, food, and awards.

Special Thanks to OCAST

The Oklahoma Center for Advancement of Science and Technology (OCAST) provides critical funding for research scientists in the state of Oklahoma. OCAST representatives accepted our invitation to attend this meeting and provided generous support. The bioscience research community in Oklahoma focuses on important health issues throughout the state, and OCAST has consistently provided financial support to scientists on a competitive basis. We sincerely appreciate the contribution from OCAST in helping to make our meeting a great success. ●

22nd Annual Meeting of the Iowa Physiological Society

Rasna Sabharwal
President, Iowa Physiological Society

The 22nd annual meeting of the Iowa Physiological Society (IPS) was held at the University of Iowa Carver College of Medicine, Iowa City, IA on September 29–30, 2017. The theme of the meeting was entitled “Advances in Cardiovascular, Renal and Metabolic Functions in Health and Disease.” The major objectives of the annual meeting were to facilitate exchange of scientific knowledge and to provide career development and networking opportunities for trainees, investigators, and educators in physiology-related disciplines from colleges and universities in Iowa and neighboring states. The large success of the 2017 IPS meeting was reflected by 70 abstract submissions and 160 registered participants!

The meeting was supported by generous contributions from the American Physiological Society (APS), APS Career Opportunities in Physiology Committee, University of Iowa (UI) Abboud Cardiovascular Research Center (ACRC), UI Department of Molecular Physiology and Biophysics, UI Department of Pharmacology, UI Department of Health and Human Physiology, and corporate sponsors including DSI, ADInstruments, Biotechne, Kent Scientific Corporation, TSE Systems, ThermoFisher Scientific, and Bachem.

I would like to thank the IPS officers and members of the UI Organizing Committee who volunteered to make the IPS conference a grand success. The 2017 IPS officers included Rasna Sabharwal, President (UI), James Lang, Past President (Iowa State University, ISU), Lilian Yuan, President-Elect (Des Moines University, DMU), Melissa Bates, 2018 President-Elect (UI), Francesca Di Sole, Secretary/Treasurer (DMU), Mark Chapleau, Advisory Committee (UI), Harald Stauss, Advisory Committee (UI), and Ronald Torry, Advisory Committee (Drake University). The UI Organizing Committee included Rasna Sabharwal (IPS President); Melissa Bates (2018 President-Elect); Mark Chapleau (IPS Advisory Committee); Harald Stauss (IPS Advisory Committee); Barry London (Director, Division of Cardiovascular Medicine & ACRC); Francois Abboud (Founding Director, ACRC); Curt Sigmund (Chair, Department of Pharmacology); Kevin Campbell (Chair, Department

of Molecular Physiology & Biophysics); and Kim Alan Johnson (Distinguished Professor, Department of Psychological & Brain Sciences).

The highlights of the 2-day meeting included two keynote research presentations, a IPS Lifetime Achievement Award, career development workshop, three invited short talks by early career investigators who have recently established their labs, abstract-based poster and oral sessions, and Friday evening reception for socializing and networking. Eighteen of the submitted trainee abstracts were selected for 10-min oral presentations, whereas the remaining were included in the “A Minute to Win It” poster session. Trainee presentations were judged for poster and oral competitions, and awards were given to best presentations in undergraduate, graduate, and postdoctoral categories.

Day 1 of the meeting began with opening remarks from the IPS President Rasna Sabharwal and Barry London (Director, UI Division of Cardiovascular Medicine & ACRC). Darren Casey (UI Physical Therapy and Rehabilitation Science) introduced the first keynote research presentation by Michael Joyner (Mayo Clinic, Rochester, MN) on “Exercise Physiology: What Next.” This was followed by a short-talk by Erika Boesen (UNMC, Omaha, NE) on “Iron is a Novel Contributor to Renal Injury in Lupus Nephritis” and six abstract-based trainee oral presentations. The afternoon session resumed with a short-talk by Matthew Potthoff (UI Dept. of Pharmacology) on “Endocrine Regulation of Carbohydrate Homeostasis by the Liver” and six abstract-based trainee oral presentations. Francois Abboud (Founding Director, ACRC) introduced the IPS Lifetime Achievement Award presentation by Ulla Kopp (UI Division of Nephrology) on “Afferent Renal Sensory Innervation,” and Virend Somers (Mayo Clinic, Rochester, MN) presented a special interest seminar on “Sleep Apnea & Sleep Deprivation: Does Sleeping Less Make You Fat?” The day ended with a reception and poster session moderated by Gary Pierce, Amy Sindler, and Melissa Bates (UI Dept. Health & Human Physiology).

Day 2 of the meeting began with Mark Chapleau's (UI Dept. of Internal Medicine) introduction of the keynote research presentation by Ann Schreihofer (UNTHSC, Fort Worth, TX) entitled "Autonomic and Cardiovascular Consequences of Metabolic Syndrome: Insights from Obese Zucker Rats." This was followed by a special interest seminar by Angela Grippo (NIU, DeKalb, IL) on "Thought-Provoking Interactions Between Psychology and the Cardiovascular System," a short-talk by Janice Robertson (UI Dept. Molecular Physiology & Biophysics) on "Investigating the Driving Forces of Membrane Protein Assembly in Membranes," and the last of the six abstract-based trainee oral presentations. The afternoon program included APS COPC-sponsored career workshop by Christine Schnackenberg (Glaxo Smith Kline, King of Prussia, PA) and Kathy Ryan (U.S. Army Institute of Surgical Research, San Antonio, TX) on diverse career opportunities available to students with PhDs, and DSI-sponsored research workshop by Justin Grobe (UI Dept. of Pharmacology) on "Vasopressin and G-protein Signaling in Preeclampsia." This was followed by announcing the 2017 poster and oral trainee presentation award winners:

- Undergraduate Student Oral Presentation: Christopher Sidwell (UI)
- Undergraduate Student Poster Presentation: Benjamin Mardis (Drake)
- Graduate Student Oral Presentation: Lucas BonDurant (UI)
- Graduate Student Oral Presentation: Rachel Luehrs (UI)
- Graduate Student Poster Presentation: Ahmed Aladham (DMU)
- Graduate Student Poster Presentation: Sharon Idiga (UI)
- Postdoctoral Fellow Oral Presentation: Po Hien Ear (UI)
- Postdoctoral Fellow Poster Presentation: Colleen Johnson (UI)
- Postdoctoral Fellow Poster Presentation: Masashi Mukhoda (UI)

Finally, the conference ended with the award ceremony and concluding remarks from myself.

As the 2017 IPS President, it has been my great pleasure and honor to serve in this role. I have strived to promote the Iowa Chapter and to interact with colleagues in the region. I will continue to support IPS/APS mission as we endeavor to advance IPS in the region. ●



Scenes from 22nd Annual Meeting of the Iowa Physiological Society

The 10th Annual Meeting of the Arizona Physiological Society

Karen Sweazea

Associate Professor, College of Health Solutions, Arizona State University

The 10th annual meeting of the Arizona Physiological Society (AzPS) was a great success (<http://www.azps.life/2017-meeting>). The meeting was hosted by Northern Arizona University in Flagstaff and took place October 13–14, 2017. In attendance were a total of 85 registrants from 7 universities throughout the state including, Arizona State University (ASU), AT Still University (ATSU), Grand Canyon University (GCU), Midwestern University (MWU), Northern Arizona University (NAU), and University of Arizona (UA-Tucson and Phoenix campuses). This was the first year that faculty and students from AT Still University and Grand Canyon University participated in the meeting. Of those attending, 24/85 (28%) were faculty or regular members, 7/85 (8%) were postdoctoral fellows, 32/85 (38%) were graduate or medical students, 12 (14%) were undergraduate students, and 10 (12%) were guests or not yet members. Sponsorship for the meeting was provided by The American Physiological Society, Arizona State University College of Health Solutions, Arizona State University School of Life Sciences, University of Arizona, Midwestern University, Northern Arizona University Office of the Vice President for Research, Northern Arizona University Center for Bioengineering Innovation, with additional contributions made by the following vendors: Pearson and VWR International LLC (both of which attended the meeting).

Following the commencement of the meeting by Society President Kiisa Nishikawa (NAU), Secretary/Treasurer Tobias Riede (MWU) introduced the high school teachers who were in attendance. Support for these teachers to attend the meeting was provided by a generous grant from the American Physiological Society. The goal of the grant is to encourage interaction between AzPS members and local high school teachers. This year's attendees included Kimberly Clarke (Science Teacher, Green Fields School in Tucson), Kristin Tollefson (Anatomy and Physiology teacher, Skyline High School in Mesa), and Brandon VanBibber (Science teacher, University High School in Tolleson). Each teacher was awarded a \$200 prize, complimentary registration to the meeting,



A sample viewpoint of attendees at a symposium

and a 1-year membership to AzPS. In addition, teachers participated in judging the poster presentations.

Immediately following the introductions, the first session on "Metabolic Physiology" included presentations from Michael Zawada (professor, ATSU) on the brain renin-angiotensin system; Ryan Lord (medical student, MWU), who presented research on genistein in models of cystic fibrosis; and Keane Urashima (graduate student, UA-Tuc), who spoke about metabolic syndrome. This was followed by a second session on "Comparative Physiology" chaired by President-Elect Karen Sweazea (associate professor, ASU). Presentations in this session were given by Jon Harrison (professor, ASU) on functional hypoxia in *drosophila*; Molly Shuman-Goodier (graduate student, NAU), who spoke about amphibian physiology and pesticide safety; and Victor Zhang (graduate student, NAU), who presented his work on the activity of suburban striped skunks.



Round-table discussion with high school teachers

The third session of the conference, "Musculoskeletal Physiology," was chaired by Uzma Tahir (NAU) and included presentations from Kathy Kuang (undergraduate student, UA-Tuc) on lower back pain; Anthony Hessel (graduate student, NAU), who discussed his work on twitch contractions and titin; and Alexander Pendleton (graduate student, UA-Tuc), who talked about impaired satellite cell differentiation in a model of impaired intrauterine growth restriction. This was followed immediately by the fourth session on "Cardiovascular Physiology" chaired by Anthony Hessel, which included a variety of presentations from undergraduate and graduate students, and postdoctoral fellows on topics ranging from the effects of age and ischemia on programmed necrosis to the effects of chronic maternal stress on gene expression in the newborn heart.

Kiisa Nishikawa (NAU) introduced the keynote speaker George Somero (David and Lucile Packard Professor in Marine Science, Emeritus, Stanford University), who presented his research on "Molecular Adaptation to Environmental Stress: Intrinsic vs. Extrinsic Solutions." This insightful and inspiring talk was followed by a reception and banquet along with a well-attended roundtable discussion of "Teaching Physiology in Arizona High Schools," with the guest high school teachers. Participants in the discussion agreed it was a promising start of direct interactions with high school teachers and were optimistic that collaborations would develop. The now-famous 1-minute poster session followed the informal discussion. During this session, each poster presenter gave a 1-minute spiel on the research they were presenting that evening. The minute poster session was chaired by Anthony Hessel (NAU) and was followed by the actual poster presentations, which included 4 undergraduate students, 12 graduate/medical students, 5 postdoctoral fellows, 2 faculty, and 2 non-members.

The second day of the meeting kicked off with a session on "Cutting-Edge Methods in Physiology," which included presentations on 3D scanning techniques to



AzPS Business meeting led by outgoing president Kiisa Nishikawa (NAU)

History of Physiology lecture by Charles Tipton (UA-Tuc)

assess dimensional changes in the human body and MRI-RHC-based pressure volume loops. This session was followed by an excellent "History of Physiology" lecture chaired by Stan Lindstedt (NAU). This inspiring lecture was presented by Charles Tipton (UA-Tuc), founder of AzPS and Professor Emeritus who spoke about "What I Failed to Learn in Kindergarten or Graduate School Concerning the History of Physiology." Tipton's lecture was followed by a second minute poster presentation series and poster session that included 3 undergraduate students, 12 graduate/medical students, 1 postdoctoral fellow, 4 faculty, and 4 non-members.

The conference concluded with the Business meeting chaired by Kiisa Nishikawa (NAU). The minutes of the 2016 meeting were approved unanimously. Members of the executive council and staff that had completed their terms of service were thanked for their hard work; Kiisa Nishikawa (President, NAU), John Kanady (Postdoctoral Councillor, UA-Tuc), Carissa Miyano (Graduate student Councillor, NAU), and Megan Coe (Administrative Assistant, NAU). Kiisa addressed the need for representatives from each of the universities in the annual meeting organization committee. These ex-officio members would bridge the gap between the organizing committee and the physiological community at each institution.

Table 1. Abstract awardees

Abstract Category	Postdoctoral Fellow	Graduate/Medical Student	Undergraduate
First Place	Alexandra Garvin (UA-Phx)	Brittney McCormick (ASU)	Kevin Hoskins (GCU)
Second Place	Rocia Zapata-Bustos (UA-Tuc)	Tia Alexander (MWU)	Sanna Rahman (UA-Phx)
Third Place	Samrat Dutta (NAU)	Meli'sa Crawford (ASU)	Christopher Whitney (NAU)

Financial awards were then given for poster presentations (Table 1). The annual AzPS chapter meeting has continued to bring physiologists from across the state together, including the participation of faculty and students from two additional institutions this year. With

the participation of high school teachers in the annual meeting this and next year, the impact of the AzPS will continue to grow and improve physiology teaching and research in Arizona. ●

Announcement for the 53rd Annual Meeting of the Lake Cumberland Biological Transport Group

The 53th annual meeting of the Lake Cumberland Biological Transport Group will take place Sunday, June 17 through Wednesday, June 20, 2018 at the Lake Cumberland State Resort Park in Jamestown, KY. This is an excellent, inexpensive forum for principal investigators, postdoctoral fellows, and graduate students to present both published data or work in progress and to receive feedback. Submission of a presentation title (i.e., no abstracts) is all that is necessary. Cell biology, physiology, molecular biology, and biochemistry presentations centered on the theme of biological transport and their potential applications in

translational research are all welcome. Presentations are made in an informal atmosphere, with open discussion encouraged. The scientific sessions will be held morning and evening. Afternoons are free to enjoy swimming, fishing, golfing, riding, hiking, or just relaxing in this beautiful 3,000-acre state park. Registration fees are only \$15 for students, \$25 for postdocs, and \$75 for established investigators. To find out more, please visit <http://www.cumberlandbio.org/> or contact the Chair Jim Clack (jclack@iupui.edu) or Vice-Chair Cara Schornak (cara.c.schornak@vanderbilt.edu). ●

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Positions Available

Assistant Professor: The Department of Physiology in the College of Medicine at the University of Arizona invites applications for a tenure-track faculty position at the assistant professor level. We seek outstanding candidates who have demonstrated exceptional productivity and creativity in research broadly in the cardiovascular and/or neuroscience disciplines or other areas that complement and integrate with on-going strengths in the department. Applicants must hold a PhD, MD, or equivalent degree and are expected to establish or continue active extramural-funded research programs, collaborate with other investigators in the Department of Physiology and at the University of Arizona, and participate in teaching of medical, graduate, and/or undergraduate students and mentoring students. Additional information about the department and its faculty is available at <http://physiology.arizona.edu>.

Assistant/Associate/Full Professor: The Department of Physical Therapy at Wingate University invites applications for a 12-month, full-time appointment at the rank of assistant/associate/full professor. Applicants with expertise in any of the following areas are especially encouraged to apply: human physiology, pathophysiology, pharmacology diagnosis & management of cardiopulmonary conditions, or pharmacology. Other areas that would be considered include diagnosis & management of integumentary conditions and management/administration in healthcare. Responsibilities include teaching in the entry-level DPT curriculum, including course coordination in the area of specialty, student advising, scholarship and service to the department, university, and community. Opportunities are also available to participate in the development of post-professional clinical residency programs. The innovative student-centered DPT program at Wingate University has a clear focus on a team-based, highly integrated curriculum that develops students to their fullest potential. The program is housed in a state-of-the-art facility in the center of campus with easy access to the student center, library, athletic facilities, and student services. Facilities include newly renovated classrooms, faculty offices, instructional laboratories, lounge and study areas, research labs, faculty work space, and a 10-cadaver dissection laboratory. The department currently has 11 full-time faculty members, who are respected in their fields and recognized as experts in education, scholarship, and professional service. More program information can be found at www.dpt.wingate.edu.

wingate.edu. Located approximately 20 miles southeast of Charlotte, NC, Wingate University is a private not-for-profit university with over 3,000 students on three campuses. Recently ranked as the sixth “best value” in the south based on quality of education and cost (2012, US News and World Report), the university offers 35 undergraduate majors, 37 minors/career concentrations, numerous pre-professional programs, graduate degrees in business, accounting, education, physician assistant studies, and sport management, and doctorates in pharmacy, physical therapy, and education. A doctor of occupational therapy will be offered beginning Fall 2019. **Qualifications:** The preferred candidate will have an earned doctoral degree from a USDE-recognized regionally accredited university (PhD, EdD, DPT). An established on-going scholarly agenda and teaching experience are pluses. Physical therapist candidates must be a physical therapist eligible for licensure in the State of North Carolina, have proven effective advocacy experience within the physical therapy professional organization (APTA), and demonstrate contemporary clinical expertise in other areas of the curriculum. Preference may be given to applicants with earned ABPTS board certification. **Applications:** The new faculty appointment are approved to begin in July 2018, with the application review process to begin immediately and continue until all positions are filled. Please email letter of application, current CV, and contact information for three references able to address the qualifications described above to: Diane Wrisley, PT, PhD, Chair, Faculty Search Committee, Professor of Physical Therapy, Director of Post-professional Programs, Wingate University, Department of Physical Therapy, P.O. Box 159, Wingate, NC 28174 (704) 233-8045; e-mail: d.wrisley@wingate.edu. **Equal Opportunity Employer:** It is the policy of Wingate University to abide by all Federal and State laws prohibiting employment discrimination solely on the basis of a person's race, color, creed, national origin, religion, age (over 40), sex, marital status, or physical handicap, except where a reasonable, bona fide occupational qualification exists. Successful candidates will be required to pass a criminal background check to the satisfaction of the university.

Assistant/Associate/Full Professor: The Department of Biology, Behavioral Neuroscience, and Health Sciences in the College of Liberal Arts and Sciences at Rider University is seeking candidates for a tenure-track position to support our expanding Health Sciences major. Successful candidates will have a terminal

degree (PhD, EdD, or professional practice doctorate) in their field of study, a strong record of undergraduate education, as well as the ability to engage undergraduate students in an active scholarly research program. The ideal candidate will have a strong research background related to physical activity and exercise, professional experience in health and/or exercise sciences, and clinical (internship) placement experience. The faculty member will be expected to: contribute to instruction and future development of the Health Sciences major; develop a research program involving undergraduate students (clinically based, physical activity/exercise science focus preferred); develop and supervise student internship sites and experiences; provide professional and academic advising for students interested in professional healthcare programs (i.e., physical therapy, physician assistant, occupational therapy, nursing, athletic training, etc.); engage in interdisciplinary collaboration, including participation in Rider's Health Studies Institute. The Rider University community is composed of faculty, staff, and students from a wide range of cultural backgrounds. Candidates with a demonstrated commitment supportive of the multicultural needs of Rider University and the surrounding community are highly desired. Rider University has once again been included as one of the nation's best universities by *US News & World Report 2016* and remained in the top tier in the Regional Universities, North category at number 22. Additionally, *The Princeton Review* named Rider among its "Best 378 Colleges" in the nation. Both publications have ranked the university favorably in their respective surveys for more than a decade. Please visit us at <http://rider.peopleadmin.com/postings/4775> to apply for Position No. 312128. Applications should include a cover letter with statements of research interest and teaching proficiency, curriculum vitae, and three professional references. Applications will be reviewed immediately. Rider University is an equal opportunity/affirmative action employer dedicated to excellence through diversity and does not discriminate on the basis of race, color, religion, national origin, age, sex, sexual orientation, handicap/disability, Vietnam-era/disabled veteran status, gender identity or expression, or any other non-job-related criteria.

Leadership Position: The University of Oregon is seeking a full-time director for a new Biological Imaging Core Research Facility. The position is centrally funded by the University of Oregon. The director will oversee

the day-to-day operation of this dynamic, multi-user facility. Responsibilities will include operating and maintaining microscopes and computers, working with a wide variety of users to devise and implement imaging-based studies, coordinating the use and development of custom optical equipment, training users on aspects of imaging and computational image analysis both formally and informally, coordinating the financial and administrative operation of the facility, and serving as a resource for university researchers regarding advances in biological imaging. We are looking for a candidate with excellent interpersonal, organizational, and communication skills. The candidate must have, at a minimum, 3 years' experience with optical imaging methods or an advanced degree in a biological or physical science or engineering. It is preferred that the successful candidate have experience with multiple optical imaging methods applied to biological systems, skills and experience related to the maintenance of microscopes, data management, and computational image analysis, experience working in a biological imaging user facility, and experience with training researchers on the use of imaging instrumentation and the design of experiments. The director will interact with faculty, students, and researchers in a variety of departments and institutes at the University of Oregon, as well as the University's new Knight Campus for Accelerating Scientific Impact (<https://accelerate.uoregon.edu/>). **Minimum Qualifications:** Bachelor's degree from an accredited university; 3 years' experience with optical imaging methods or an advanced degree (in a biological or physical science or engineering); experience with imaging biological systems. **Professional Competencies:** Analytical and problem-solving skills and the ability to think creatively; skills related to data management; skills related to computational image analysis; ability to communicate effectively with researchers from a variety of scientific fields. **Preferred Qualifications:** Experience with multiple optical imaging methods applied to biological systems; skills and experience related to the maintenance of commercial optical instruments, data management, and computational image analysis; experience working in a biological imaging user facility; experience with training researchers on the use of imaging instrumentation and the design of experiments. **Special Instructions to Applicants:** Please provide a cover letter to address how your qualifications are related to this position. Please also include a resume or CV with your online application. All offers of employment are contingent

upon successful completion of a background inquiry. The University of Oregon is proud to offer a robust benefits package to eligible employees, including health insurance, retirement plans, and paid time off. For more information about benefits, visit <http://hr.uoregon.edu/careers/about-benefits>. The University of Oregon is an equal opportunity, affirmative action institution committed to cultural diversity and compliance with the ADA. The university encourages all qualified individuals to apply and does not discriminate on the basis of any protected status, including veteran and disability status. UO prohibits discrimination on the basis of race, color, sex, national or ethnic origin, age, religion, marital status, disability, veteran status, sexual orientation, gender identity, and gender expression in all programs, activities, and employment practices as required by Title IX, other applicable laws, and policies. Retaliation is prohibited by UO policy. Questions may be referred to the Title IX Coordinator, Office of Affirmative Action and Equal Opportunity, or to the Office for Civil Rights. Contact information, related policies, and complaint procedures are listed on the statement of non-discrimination.

Lecturer: The Center for the Study of Human Health (CSHH) at Emory University is a relatively young and rapidly growing program that seeks a Lecturer in Nutrition Science to begin fall semester of 2018. CSHH is an interdisciplinary liberal arts program that supports a Bachelor of Arts (BA) in Human Health and minors in Global Health, Culture and Society; Nutrition Science; and Predictive Health through innovative courses and scholarly endeavors, with broad perspectives on health and the human condition. We seek an individual trained in nutrition science with additional broad expertise in any of the following: immunology, cancer, integrated physiology, epigenetics, development, policy, or health disparities. Experience teaching innovative, evidence-based nutrition science courses at an undergraduate level is necessary. Successful candidates should be capable of teaching courses on, but not limited to, the following topics: introduction to nutrition science; mechanistic pathways by which nutrition influences health; and sociocultural influences on nutrition. Successful candidates should demonstrate the ability to integrate their discipline with a broad liberal arts perspective and should have experience mentoring students outside the classroom. Candidates with a history of nutrition science research and an interest in exposing students to research are encouraged. This is a full-time, lecture-track position

requiring teaching of five courses per academic year, including large lecture courses and small seminars. The initial appointment will be for a period of 3 years with renewals and promotions possible within the lecture-track system, as detailed in the Emory College of Arts and Sciences Guidelines for Appointment of Lecture-Track Faculty (<http://college.emory.edu/home/administration/policy/lecturer.html>). Applicants who hold a relevant doctorate should submit a curriculum vitae, a personal statement describing teaching experience and teaching philosophy, two (2) syllabi from representative courses taught, a description of previous and current leadership efforts and contributions, transcripts, and contact information for three (3) references. Along with these materials, include a brief statement that addresses your past activities and future plans to advance equity, inclusion, and diversity in your professional career. References letters will be requested at a later date. Please direct questions to the Human Health Search Committee, Human.HealthSrch@emory.edu. Submit your application at <http://apply.interfolio.com/46827>. Emory University, Atlanta, GA is an equal opportunity/affirmative action/disability/veteran employer. Women, minorities, persons with disabilities and veterans are encouraged to apply.

Postdoctoral Fellow: A position for postdoctoral researcher is available at the Louisiana State University Health Sciences Center in New Orleans. Our research group is located within the LSUHSC-NO Comprehensive Alcohol-HIV / AIDS Research Center. Our Multidisciplinary Group studies mechanisms by which substance misuse leads to adverse health outcomes, particularly in people infected with HIV. Our focus is on microbiota- and immune-mediated pathways. Health outcomes of special interest include host defense against pneumonia, biological aging, and cardiometabolic syndrome. *Representative Recent Publications:* Am J Physiol Lung Cell Mol Physiol 2018; PLoS Pathogens 2017; Journals of Gerontology 2017; Am J Physiol Regul Integr Comp Physiol 2016; Lung 2016. Successful candidates will have unique opportunities to gain expertise in immunology, microbiology / microbiota, bioinformatic analysis, and translational science. All team members are expected to participate in the scientific process as an integral research group member. Postdoctoral team members are encouraged to advance along an academic career pathway. Resources and mentoring are provided to support career development. Required qualifications include 1) a PhD or MD degree; 2) at least 1 year of experience in a research environment;

3) willingness to work with animal models and human subjects/samples. Preferred qualifications include experience in immunology, microbiology, and/or computational biology. The LSUHSC School of Medicine in New Orleans encourages women and minority candidates to submit applications for this position. LSU Health is an equal opportunity employer for females, minorities, individuals with disabilities, and protected veterans. Interested candidates must apply at <https://www.lsuhsc.edu/Administration/hrm/CareerOpportunities/Home/Detail/1834>.

Postdoctoral Fellow: Three (3) postdoctoral fellow positions are currently available in Dr. Uma Sundaram's laboratory at the Department of Clinical Translational Sciences at Marshall University Joan C. Edwards School of Medicine, Huntington, WV, to study novel physiological and molecular mechanisms of altered intestinal nutrient and electrolyte transport in obesity and inflammatory bowel disease. This research will involve the formulation and testing of hypotheses, animal experimentation and surgery, cell culture, and molecular biology techniques. The postdoctoral fellows will be expected to be current in the field literature, to plan and conduct experiments, to interpret data, and to publish results. Successful candidates will have a significant record of accomplishment that demonstrates creativity and initiative, and will be working closely with the PI in his well-equipped state-of-the-art research facility. Applicants must have a PhD degree in any field of biochemistry, biology, pharmacology, or medicine. Candidates with research experience of at least 3–4 years in the field of transgenic mice research at the level of graduate school or postdoctorate are highly preferred. The candidates should also have the basic skills in molecular biology techniques, mammalian cell culture, use of radioactivity, and in vitro functional assays. Experience with membrane proteins is desirable. These fellowship appointments are 12 months; however, appointments may be renewed for an additional two, 1-year increments, contingent on available funding and satisfactory performance. Applicants should attach a cover letter, curriculum vitae, a description of their research experience, and current contact information for three potential references. Interested applicants must e-mail the above to bailey332@marshall.edu.

Postdoctoral Fellow: The Kohr Laboratory of Cardiovascular Redox Signaling has an immediate

opening for a postdoctoral fellow position. This is an excellent opportunity to join an exciting, NIH-funded research team focused on demystifying sex-specific, redox-dependent differences in the heart's response to ischemic injury, with the ultimate goal of identifying novel, cardioprotective signaling pathways. The role of protein S-nitrosation in the female heart, which is naturally protected from ischemic injury, is a major focus of current studies. We have developed a number of cutting-edge, mass spectrometry-based proteomic methodologies to map sites of S-nitrosation and other redox-based modifications, and we use these in tandem with cellular, molecular, and biochemical methods to assess the effects of S-nitrosation on the function, stability, and localization of specific protein targets. We also utilize a number of physiological approaches to evaluate myocardial function, including the Langendorff-perfused heart preparation, in vivo pressure-volume loop analysis, and echocardiography. Our lab primarily utilizes cell- and mouse-based models for experimentation. By defining female-specific and other protective signaling pathways in the heart, we are working to identify key therapeutic targets for the treatment of ischemic heart disease in both men and women. We are seeking a creative scientist to pursue independent and collaborative research within the Bloomberg School of Public Health and the School of Medicine at Johns Hopkins University. State-of-the-art facilities and excellent core laboratories are available for research projects. The applicant should possess a PhD, MD, or equivalent. Preferred qualifications include experience in heart physiology, proteomics, and/or redox biology. Interested applicants should send a cover letter and a curriculum vitae including publications in PDF format to mkohr1@jhu.edu.

Postdoctoral Fellow: An NIH-funded postdoctoral research associate position to study neural mechanisms controlling cardiovascular physiology is available in the Krause and de Kloet laboratories at the University of Florida. These laboratories use an integrative approach to evaluate neural circuits involved in blood pressure regulation. A particular interest of the group is in determining the mechanism(s) by which metabolic and psychological stressors disrupt these neural circuits and contribute to the co-morbidity among metabolic, cardiovascular, and stress-related diseases. The multi-level approach used by the laboratories spans the use of several molecular, genetic, physiological, and behavioral techniques that are performed in laboratory mice. Some

examples of the approaches used are telemetry, which is used to assess cardiovascular parameters; optogenetics, fiber photometry, neuronal tract tracing, mRNA in situ hybridization, and immunohistochemistry, which are used to characterize the structure and function of specific sets of neurons; and genetic recombination techniques, which allow for the manipulation of gene expression in specific cellular phenotypes. Multiple projects utilizing different combinations of these techniques are available to the successful candidate. Candidates should have a PhD in neuroscience, cardiovascular physiology, or a related discipline at the time of appointment; however, exceptional candidates from other disciplines will be considered. Preferred skill sets include technical experience conducting physiological experiments in mice (i.e., cardiovascular assessments using telemetry and/or the Millar catheter system), experience with neuroanatomical and optogenetic techniques, and

a conceptual understanding of the neural control of cardiovascular physiology. The responsibilities of the postdoctoral research associate will include data acquisition and analysis, manuscript preparation, and presentation of findings at lab meetings and scientific conferences. The postdoctoral associate will also gain experience with grant writing and with mentoring more junior lab members. Appointment is for 3 years, with each year contingent on satisfactory progress. Salary is commensurate with the NIH postdoctoral fellow pay scale. To apply, please send a cover letter briefly describing your research experience, a detailed CV, and the names and contact information for 3 references to Dr. Annette de Kloet at adekloet@ufl.edu and Dr. Eric Krause at ekrause@cop.ufl.edu. Review of applications will begin immediately and will continue until the position is filled. ●



With membership comes a community of resources.

The American Physiological Society (APS) has built networks among research scientists and teachers to foster communication and community among life science educators. The APS Institute on Teaching and Learning (ITL) workshop, June 18–22, offers those who teach physiology the opportunity to connect with peers and learn innovative ways to teach physiology in the classroom. APS members receive discounted registration. Learn more at the-aps.org/ITL.

Take advantage of your benefits today at the-aps.org/benefits.



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Meetings & Congresses

2018

June 13-16

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

June 15-16

Lifestyle, Arterial Function and Cardiovascular Risk, 8th Annual Meeting of the North American Artery (NAA) Society, Chicago, IL. Information: Internet: <http://naartery.org/page-1710769>

June 18-22

APS Institute on Teaching and Learning, Madison, WI. Information: Internet: [#ITLPhysiology](http://www.the-aps.org/itl)

July 3-6

SEB Florence 2018, Florence, Italy. Information: APS members receive discounted registration; e-mail: admin@sebiology.org; Internet: <http://www.sebiology.org/events/event/seb-florence-2018>

July 7-11

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

September 3-6

XXXIII FeSBE's Annual Reunion, Campos do Jordao, San Paulo, Brazil. Information: Internet: <https://www.facebook.com/pg/FeSBE-Federal%C3%A7%C3%A3o-de-Sociedades-de-Biologia-Experimental-328745400486246/posts/>

September 5-8

2018 Integrative Physiology of Exercise Conference, San Diego, CA. Information: Internet: https://members.acsm.org/ACSM/Events/Event_Display.aspx?EventKey=IPE2018

September 5-8

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

September 9-13

11th World Congress for Microcirculation, Vancouver, Canada. Information: Internet: <https://www.wcm2018.org/QuickEventWebsitePortal/11th-world-congress-for-microcirculation/wcm2018>

September 14-16

Europhysiology 2018, London, England. Information: Internet: <https://www.europhysiology2018.org/programme>

September 22-24

International Conference on Spreading Depolarizations, Boca Raton, FL. Information: e-mail: info@cosbid.org; Internet: <http://www.cosbid.org/icsd>

September 30-October 3

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

October

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

October 1-2

12th International Conference on Endocrinology, Diabetes and Metabolism, Osaka, Japan. Information: Internet: <https://endocrinology.conferenceseries.com/asiapacific/>

October 12-13

Fueling Innovation: Public Programs Driving Drug Discovery, Bethesda, MD. Information: Internet: <https://www.aspel.org/aspel/meetings-awards/other-meetings/past-meetings/2017-academic-drug-discovery-colloquium>

October 18-21

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

October 25-28

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

November 8-9

11th Edition of the International Conference: ICT for Language Learning, Florence, Italy. Information: Internet: <https://conference.pixel-online.net/ICT4LL/index.php>

2019

April 6-10

Experimental Biology, Orlando, FL.

June 10-13

14th FELASA Congress, Prague, Czech Republic.
Information: Internet: <http://www.felasa2019.eu/>



Meetings and Conferences

2018 Institute on Teaching and Learning

June 18–22, 2018 • Madison, WI

2018 Cardiovascular, Renal and Metabolic Diseases: Sex-Specific Implications for Physiology

September 30–October 3, 2018 • Knoxville, TN

2018 Intersociety Meeting, Comparative Physiology: Complexity and Integration

October 25–28, 2018 • New Orleans, LA

2019 Control of Renal Function in Health and Disease

June 23–29 • Charlottesville, VA

2019 The Interface of Mathematical Models and Experimental Physiology: Organ Function from the Microvascular Perspective

September 2019 • Scottsdale, AZ

2019 9th Annual International Conference of Aldosterone and ENaC in Health and Disease: The Kidney and Beyond

October 2–6, 2019 • Estes Park, CO

APS Members Receive Discounted Registration

The American Physiological Society holds specialty conferences each year, and joins with other societies to sponsor Intersociety Meetings as interests warrant. Members receive discounted registration to these and the annual Experimental Biology conference the-aps.org/benefits



For more information and a current schedule, visit the-aps.org/conferences and follow [Twitter](#) #PhysiolConf on Twitter.