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The Physiologist

Giving Back to the Community: Working as a Temporary Program Director at the National Science Foundation

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INSIDE

The National Science Foundation (NSF) funds the bulk of non-medically biological sciences research in the US. Most, but not all, of this funding comes from the Directorate of Biological Sciences (BIO). This directorate is divided into four divisions: Biological Infrastructure, Environmental Biology, Molecular and Cellular Biosciences, and Integrative Organis-mal Systems (IOS). Each of these divisions has a division director, a deputy division director, administrative staff, and program directors (formerly called program officers). Program directors are responsible for managing the review of research proposals, making recommendations for the award or decline of funding for research proposals, monitoring the progress of awarded projects, communicating with the scientific community and individual PIs, and providing input to the NSF regarding scientific and policy issues. There are two types of program directors at the Foundation: permanent program directors and rotators; their duties are essentially the same. Permanent program directors are, as the name indicates, permanent federal employees, whereas rotators serve as program directors for a term usually of one to three years (see this website for more information: http://www.nsf.gov/about/career_opps/rotators/index.jsp). A large fraction of the program directors in the BIO are rotators (e.g., at the time this article was written 70 % of the IOS program directors are rotators). The following description of the temporary program director position is based on my experience as rotator in IOS (2007-2010).

Why does NSF employ rotators when it means that there will be a regular turnover of the scientific staff?

Academic scientists are a hard-working, self-motivated work force that provide the NSF with a direct link to the scientific community, thus, preventing this federal agency from becoming isolated from the community it serves. As active scientists, rotators are aware of the pressures and demands made of academic scientists, and rotators can and do alert the NSF administration when suggested policies could place an undue burden on the scientific community. In addition, there are lively discussions between the program directors and the administration when it comes to how research funds should be allocated. For example, many program directors have expressed the view that NSF should continue to emphasize the practice of allowing the scientific community to drive the direction of biological research through the submission of "unsolicited proposals" in broadly conceived "core programs" (i.e., the

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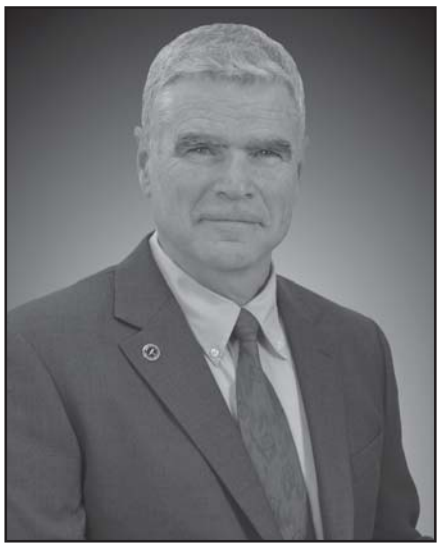
Mentoring as a Player Coach

M. Harold Laughlin
2010 Bodil Schmidt-Nielsen Distinguished Mentor and Scientist Awardee
Univ. of Missouri-Columbia

The Bodil Schmidt-Nielsen Distinguished Mentor and Scientist Award is given by the American Physiological Society in honor of an inspirational mentor and scientist, Dr. Bodil Schmidt-Nielson. This award is given to honor a member of the American Physiological Society who is judged to have made outstanding contributions to physiological research and demonstrated dedication and commitment to excellence in training of young physiologists whether by mentoring, guiding and nurturing their professional and personal development, developing novel education methods/materials, promoting scientific outreach efforts, attracting individuals to the field of physiology, or by otherwise fostering an environment exceptionally conducive to education in physiology. Being selected for this award is both a blessing and a humbling experience. I am grateful to receive this recognition based on the evaluation of my scholarship and the opinions of those I have mentored.

The purpose of this brief manuscript is to summarize the talk presented at the Bodil Schmidt-Nielsen Distinguished Mentor and Scientist Award Reception at the 2010 Experimental Biology Meeting. As outlined in the materials provided to me, the presentation, and, therefore, this paper, was to be presented primarily for "…students, postdoctoral fellows, and new investigators about mentoring and being a successful mentor (or topics of a similar nature)." *My preparation for this task was a challenge because there is a lot of good material available, including the previous presentations of Bodil Schmidt-Nielsen Distinguished Mentor and Scientist Awardees available at this web address (*http://www.the-aps.org/awards/society/bodil-ecipients.htm*).*

There are two primary purposes with this communication. The first is to summarize the eight goals I have for those I mentor. These goals have evolved somewhat over the years; but as I look back, they have remained the same in principal. The second purpose is to summarize key factors and mentors in my life that have contributed to making me the person I am. The skills of a good mentor are the result of life experience and a commitment by the mentor to working for the good of others through disciplined focus. Because life experiences are varied I found myself wondering; from where did my mentoring skills come? As I considered this question, several important sources came into focus: family and home, teachers and coaches, faculty, graduate school experiences, and mentors in everyday life. These factors will be summarized below. Before discussing my goals for mentoring and the factors that have molded me into who I am, it seems appropriate for us to agree on a definition of a mentor.



M. Harold Laughlin

What is a mentor?

According to Webster's Dictionary (1992): "..a mentor is an experienced and trusted friend and advisor." The word "mentor" can be traced back to Homer's poem *The Odyssey* in which Mentor is the friend of Odysseus and the tutor of his son Telemachus. Thus, the concept of "mentor" is that of an experienced and trusted friend and advisor who also serves as a tutor. As I considered mentorship and leadership over the past few months preparing for this award, I concluded that my style of mentoring is most like that of a player coach A player coach is one who simultaneously holds playing and coaching duties. A friend recently gave me a copy of Bill Russell's book entitled *Russell Rules.* Bill Russell was a successful mentor to many basketball players as he won 11 championships in 13 seasons with the Boston Celtics and coached the team in two of those championships. He was the first African-American coach in the NBA and the first and only player/coach to win two NBA championships. He was the first to win an NCAA championship, an Olympic Gold Medal, and an NBA championship all in one year. HBO concluded that Bill Russell is the greatest player/coach and the greatest winner of the twentieth century. I have selected some quotes from Bill Russell because he is an outstanding mentor, as well as being the greatest player/coach of our time.

Bill Russell stated that "*Great leaders …possess three flexible skills: toughness, tenderness, and the ability to know when is the right time to use one or the other."*(p. 73). In my view, this is true of great scientific mentors, as well as great leaders in any walk of life. There are times a mentor must be tough and times that a mentor must be tender. A major challenge is knowing when it is best to be tough and when it is best to be tender. Keeping the goals of mentoring in mind was helpful to me in deciding when to be tough and when to be tender.

Goal 1. Prepare each trainee for his/her future.

As I mentioned above, there is a large amount of literature available about mentoring. Review of this material makes it clear that there are several successful approaches to mentoring. I will not summarize them all; rather, I will outline the goals for mentoring that I have applied over the years. Only summarizing my approach and not summarizing others is not intended to suggest that my approach to mentoring is superior to the others; rather, it is how I have mentored. My primary goal for mentoring is to prepare my students/fellows for what they want to be, or in other words, what they believe their career will involve. It is not my goal to form more scientists like me or to use them as hands to accomplish my research. Some trainees are not sure what type of career they desire, so this expands the goal to include helping the trainee discover what they want to be as a scientist.

Goal 2. Encourage independent research ASAP in training programs.

The second major goal is to encourage

independent research as soon as possible for each mentee. It is important for the mentees to begin to do independent research as soon as possible after joining the laboratory because the most fulfilling research experience, I believe, is that which sprouts from the investigator doing the research. I encourage PhD students to incorporate into their thesis research new techniques/approaches that have not been previously developed and perfected in our laboratory. The importance of the trainees doing independent research was also of value to Schmidt-Nielsen, as reported by Dantzler. Dantzler indicated that "Dr. Schmidt-Nielsen believed that creative research was the only thing of any importance and that any other aspect of graduate education was relatively unimportant." Schmidt-Nielsen "was an ideal mentor for the highly independent student." Bodil Schmidt-Nielsen was an inspirational mentor. (Dantzler, W. H. Living History of Physiology: Bodil Schmidt-Nielsen. *Adv Physiol Educ* 30:1-4, 2006). Navar also emphasized the importance of a mentor inspiring the trainees and encouraging independent research as he stated, "A good mentor should be a shining beacon helping the mentee make decisions, but never making them for the mentee, and helping to provide the pros and cons of various avenues without directly telling them which one to take." (L. Gabriel Navar, *The Physiologist* 49: 6, December 2006).

I think it is very important to help the mentee develop an area of research that can be continued when their training is completed. This is especially important for postdoctoral fellows. They need to start down the road of independence and be able to establish themselves without concern about competing with their mentor. To this end, we plan for the postdoctoral fellow to develop an independent research program during the second and third year of training and to develop at least one independent grant application by the end of year three.

Goal 3. Teach the trainee that science is a passionate pursuit of truth.

The third goal of mentoring is to teach the mentee that science is a passionate pursuit of truth, not a pursuit of glory. I believe this is the heart of bio-ethics in biomedical sciences. Given that the reason for doing research is discovery, then misconduct does not make sense, for it will slow down or prevent discovery. Also, as summarized below under goal 7, a good mentor needs to teach mentees the importance of peer review. Peer review is critical in the passionate pursuit of truth.

Goal 4. Create and maintain a rich, scholarly environment.

One of the most important things I do as mentor is to create and maintain an environment in which developing scientists can flourish. How well they do in the environment is largely determined by them and how they use what is offered. My job is to try to sustain a positive, exciting environment. Part of maintaining a powerful environment is the recruitment of students and postdoctoral fellows to the laboratory. I believe that research is more fun and productive when accomplished in collaborative groups. Quality students and fellows are attracted to a strong environment in the laboratory, in the department, and at the institution. I have been blessed by having quality students and postdoctoral fellows over the years.

Goal 5. Teach and demonstrate solid experimental design.

My fifth goal of mentoring is to teach solid experimental design. In my experience this is best accomplished through demonstrating solid experimental design in ongoing projects, developing research projects, and in the student's thesis research. Developing scientists need to learn how to determine required control experiments and to seek peer review of experimental design at each step of experiments. Also, trainees need to learn to ask questions and experience the fact that it is more important to understand than to appear smart.

Goal 6. Invest time in each trainee.

My sixth goal of mentoring is to invest sufficient time in each trainee. Investing sufficient time in each mentee became a challenge when I was appointed as Department Chair. To help assure sufficient time, I strive to schedule a one hour meeting each week with each student and postdoctoral fellow. Sometimes we don't spend the whole hour; sometimes we do. Mentees are also expected to attend bimonthly lab meetings and weekly journal club. In addition mentees are expected to attend seminars in the Departments of Biomedical Sciences and Medical Pharmacology and Physiology, and as well as at the Dalton Cardiovascular Research Center at MU. Trainees are also encouraged to attend weekly cardiology grand rounds at the school of Medicine. All of these venues provide opportunity to talk about science and help the trainees fine tune their interactive skills.

Goal 7. Teach trainees to seek and appreciate peer review.

Teaching mentees the importance of peer review is another key goal of mentoring in my laboratory. Peer review should be sought by the mentees in the laboratory, among local colleagues, and outside the university. For many, being criticized is an unpleasant occurrence. Indeed, often I hate it. However, criticism can make science better. Compliments just make you feel better for a time, but they do not make the science you do better. Criticism can make your science better. Trainees need to cultivate peer review and learn to appreciate and be thankful for criticism, even when it hurts. One important component of this is for them to attend national meetings and present results at these meetings. We strive to have trainees attend an APS scientific meeting and one other national meeting each year.

Goal 8. Provide support to the trainees throughout their careers.

Ideally mentoring establishes a relationship. These relationships are a rich blessing.

Being a mentor does not end when the mentee moves on to the next stage of career development. Indeed, the relationships can be as rich after the trainee has moved on as they are while they still work in the laboratory. The mentor should provide support for as long as needed. I have found that the relationship with each mentee is unique, but one constant is that I care about them. It is fun and gratifying to watch the careers of the mentees develop. While development of a good relationship is important in mentoring, it is important to emphasize that while I am thankful for the mentoring experiences I have had over the past 25 to 30 years, it has not been easy. Mentoring is hard work and often it is necessary to be tough even if you are a "nice guy."

What were key developmental components in my life that developed me as a mentor?

For the sake of argument, let's accept the assumption that I am a good mentor. What were the key components in my life that developed mentoring skills? As I have thought about this question over the past few months, I concluded that I cannot over estimate

the impact my first mentors, Mom and Dad, had on me. My father, Charles Maurice Laughlin, had severe health challenges as a child and endured years of physical therapy before he could walk. Throughout his life, he had limited use of his right leg and very limited use of his right arm and hand. Dad was an outstanding farmer committed to food animal husbandry and producing food for mankind. He encouraged me to find something to do with my life that I would enjoy so much that I would be happy to work hard at it. Dad considered hard work a virtue and desired to outwork anyone with whom he worked. In his opinion, my job was not hard work because hard work did not include reading, writing, or anything done while one is seated at a desk.

Dad consistently refused to use the phrase "I can't." He could not accept that he couldn't do something he considered needed to be accomplished. He often said that "There is nothing you cannot do unless you are willing to say, 'I can't.'" Phil. 4:13 states: "I can do all things through Christ who strengthens me." I think this attitude developed in my dad as he spent years in physical therapy and throughout his life as he struggled with his disabilities, but I do not know for sure. Dad sustained this attitude to a fault as age mercilessly took the strength from his arms and legs. Yet this attitude was required for success for much of Dad's life, and I believe this attitude can be an asset in many areas of life for everyone.

My mother, Charlotte Olive (Starke) Laughlin, taught me the importance of things of faith. She is a Methodist preacher's daughter and has lived out a wonderful relationship with God through Jesus Christ for over 92 years. My commitment to the search for truth, integrity, and relationships was formed in this context. Even today, the most important relationship I have is with Jesus Christ. Psalms 21:1 states, "The Lord is the strength of my life; of whom shall I be afraid?" My mom and dad taught me the importance of priorities: God, family, country, friends and profession.

Bill Russell said, "I spent my early years around people who did not have material wealth or big names but who taught me everything I needed to know about winning. I learned that it did not matter what kind of job you had but what kind of work you did." (p. 213). When Bill Russell says what kind of work you do, he is referring to the quality of your work. My parents had similar views about work. They believed that no matter the task you should work hard to accomplish the task and do it well. In my parents' view, any job (profession/employment) is a good job. Dad assigned me many jobs on the farm that I did not consider good jobs at the time. However, I now realize that I learned important lessons from these jobs.

I am thankful for the rich mentoring I received as I grew up on a small Iowa farm. I remain to this day an Iowa farm boy who loves physiology. The family team work and community team work required to farm in those days were rich experiences. I believe these experiences were important in developing the enjoyment I have from, and success I have had with, collaborative research.

The great mentors I had throughout my schooling were also important in my development. My coaches: Coach Hansen (track), Coach Brooks (baseball), Coach Ward (basketball and life), and my favorite science teacher, Mr. Graves, taught me the importance of discipline, attention to details/basics, and hard work. In the sports in which I participated, I loved practice, even when all we did was conditioning. These were men of integrity who were committed to education and to helping boys and girls become good adults. I also had good mentors during my college years at Simpson College. Ms. Stockton, Dr. Watson and Dr. Meintz fueled my love of science, and the discovery and wonder of biology and chemistry.

John Diana was my thesis advisor in graduate school at the Univ. of Iowa. He taught me a love for the microcirculation of cardiac and skeletal muscle. He and the faculty in the Department of Physiology and Biophysics at Iowa prepared me well with fundamental physiology. I took every physiology course I could fit into my schedule. Also, the comprehensive exam used there was a great experience for me. I remember with fondness the experiments I did with Jack Rall using thermocouples to measure the heat produced by contracting skeletal muscle. I also remember doing experiments with cardiac glycosides on isolated rat papillary muscles for Mike Brody, as well as the other projects I was assigned for my comprehensive exam. What a great six months it was.

My postdoctoral training at the Univ. of Iowa was accomplished with Drs. Tipton and Diana. Working with Dr. Tipton taught me so much about exercise science and about running a laboratory. I also learned how to use laboratory meetings/journal clubs to teach students and fellows to think critically and communicate science rigorously as I worked as a trainee in Tipton's laboratory. There are many memories of issues that relate to mentoring that I remember from Dr. Tipton. One example is that I credit him with telling me that one can help a good student become a good scientist, and one can slow a good student down; but if that student is interested and equipped to be a good scientist, that student will develop with or without help. He also taught me to not worry about competition in science because there is always room at the front of the line. During those years, I also learned much about the coronary circulation from Dr. Mel Marcus.

Following four years of research experience in the United States Air Force as an Aerospace Physiologist, I came back to academia. My mentors when I became a new Assistant Professor were Bob Armstrong and Fred Peterson. Fred Peterson was a key advisor, good friend, and role model of a committed teacher and research scientist. Bob Armstrong is the best example of a mentor for a new faculty member that I have known. He was, and is, an experienced scholar and research scientist, trusted friend, superb advisor and effective teacher. I learned many secrets of success in teaching and research from Bob**.** Bob Armstrong was nothing short of a wonderful mentor. I still believe that Bob was more excited about the funding of my first NIH grant than I was. Those years of working with Bob Armstrong, who was never concerned about who got the most credit for our work, remain as precious memories for me. As has been true throughout my life, I grieved the transition in my career that took me from that phase of my life to the next phase. However, now I realize that the Univ. of Missouri was the perfect place for the final development of my career.

The move to the Univ. of Missouri has been wonderful. The large number of outstanding colleagues at MU has provided a rich, stimulating, exciting environment in which to develop most of my career. Early on, I learned about grantsmanship from Drs. Allen Jones and Richard Adams, my department chairs at the time. There are a large number of outstanding colleagues at

MU who have provided a rich, stimulating, and exciting environment in which to develop my career and train students and postdoctoral fellows over the past 25 years. I have also been blessed with outstanding staff in my laboratory. Currently, Pam Thorne, Ann Melloh, and Dave Harah play key roles in training students and postdoctoral fellows in my laboratory. They are key components of my research and of mentoring trainees in my laboratory.

For the past 40 years, there is one person who has been the central focus of my life and the major tool God has used to make me who I am, my wife. She is the love of my life. She and my family have been a major force in making me who I am. Doing the best I could to be a father to my three bright, energetic, and wonderful sons taught me much about mentoring. My family, as well as many of my trainees, knows that I am quite boring. I enjoy work, exercise, and solace. But the joy of my life is linked to my wife and family. Lynne is my love, the mother of my sons, grandmother of my grandchildren, my best friend and my constant advisor/partner. It is important to emphasize that I do not believe I sacrificed family for career. Rather, I believe that my wife and family chose to sacrifice time, energy, and resources along with me, to allow me to pursue my science dreams. We did this together. Equally, we strove together to fulfill the dreams of each member of my family. When the boys were young, this was soccer. As they matured, they each developed their dreams.

I love physiology and biomedical science, but my identity is not just as a scientist. I am a man, husband, father, and grandpa who teaches and does science. I think it is important to sustain relationships and love in your life while completing what must be accomplished to be a successful scientist. This can only be accomplished by discipline driven by priorities. The principle of living a full life while working hard to be an outstanding scientist is one that I have tried to live out for my trainees.

So in closing, I must express that I am grateful for the recognition, and I am honored to be associated with an award named after Dr. Bodil Schmidt-Nielsen. It is both a blessing and a humbling experience being selected for this award. I am grateful to receive this recognition based on the evaluation of my scholarship and the opinions of those I have mentored. Further, it is an honor to be both associated with an award named after Dr. Bodil Schmidt-Nielsen and with the colleagues who are listed as previous Bodil Schmidt-Nielsen Distinguished Mentor and Scientist Awardees. I thank the APS Women in Physiology Committee for establishing the Distinguished Mentor and Scientist Award. I also thank Dr. Jane Reckehoff and the members of the Selection Committee for selecting me for this award. I thank those who supported my nomination, both my colleagues and trainees.

I recognize that I am still just an Iowa farm boy who loves science and who has been exceedingly blessed. As I look back over the years, I find that I am deeply thankful for the series of appointments/jobs I have had. I am thankful for the wonderful colleagues and mentors with whom I was blessed to work. I am also thankful for the outstanding students, fellows, and junior faculty with whom I have worked. I honestly believe that any scientist, who was identified as the mentor of these students and postdoctoral fellows, would appear to be an outstanding mentor. I am thankful for my role in their lives and for all I have learned from them. The research and publications that this award recognizes were the result of the outstanding students and fellows who have worked with me. Truly, the award should be to all of us as a team, not just to me. I thank each of my trainees who were able to attend the luncheon; I was greatly honored by your presence. Finally, all the glory should be to God. I thank my Lord and Savior for all the blessings I have tried to summarize herein. ❖

Temporary Program Director

proposal submission is not in response to a specific targeted announcement but is based on a PI's interest in an important biological question). This "bottom up" policy is in contrast to the recent trend of diverting funds from core programs in order to finance research based on proposals answering to solicitations in more narrowly focused, mission-oriented areas as defined by NSF ("top down" policy). Finally, NSF benefits from the scientific expertise of the rotators who are hired to deal with proposals in a specific, albeit quite broad, scientific area (e.g., animal physiology). Therefore, when a PI speaks with the rotator, he or she is speaking with a scientist who has a direct, relevant, and recent understanding of the unique challenges of that discipline.

What would motivate a scientist to leave his or her academic institution to work at the NSF for a year or more?

Rotators are generally mid- or late-career scientists who are motivated by a desire to "give back" to an agency that has supported their research, provide a service to the greater scientific community, and satisfy their curiosity about how the NSF actually operates. In addition to satisfying these motivations, there are other benefits to serving as a rotator. Management of proposals exposes the program director to a diversity of cutting edge research, resulting in an increased appreciation for the breadth of questions being addressed in the biological sciences. In addition, program directors learn about educational and research initiatives in biology, as well as other areas of science and engineering through seminars and participation in committees and working groups across the Foundation. Finally, serving as a rotator means living in the greater Washington, DC area where cultural, dining, and entertainment opportunities abound.

One of the greatest challenges for rotators, however, is making sure their own research program does not suffer while working at NSF. All program directors (including permanent ones) are allowed 50 days per year to pursue scholarly activities (termed Individual Research/Development, IR/D). For rotators this usually means time to return to their own research laboratories to oversee operations there. In addition, program directors keep in touch with their labs via the phone and videoconferencing. IR/D can also be used for other activities such as traveling to collaborator's laboratories, writing papers, attending scientific meetings, or taking courses. NSF

pays for the travel costs associated with IR/D.

What are the specific activities of a program director?

In BIO, there are two deadlines per year for unsolicited proposals and these proposals are reviewed by *ad hoc* reviewers as well as an advisory panel. When unsolicited proposals arrive, the program directors look over the proposals to see if they have been sent to the correct programmatic area. If there is a question about this, the program director will contact program directors managing other programs to see if the proposal should be transferred to that program or perhaps co-reviewed with another program. A program director is responsible for a given number of proposals each grant cycle and solicits *ad hoc* reviews for these proposals via an electronic correspondence system. Usually more than one program director is involved in assembling an advisory panel, assigning proposals to panelists, and conducting the panel. After the panel is over and program's budget has been established, the program director then has the difficult task of deciding which proposals are to be recommended for funding and which are to be recommended for a decline. The program director is not expected to make award recommendations based solely on the panel's rating (e.g., high priority, medium priority, low priority, not competitive). In addition to taking in consideration the reviews as well as the panel's comments and ranking, the program director must consider the nature of the proposals that have been recently funded so that specific research areas, types of institutions (e.g., large research universities versus small undergraduate colleges), geographic localities, as well as PI gender and ethnicity are appropriately represented. Another reason to look beyond the panel ratings when making an award decision is that panels can be risk-averse. I was told by my division director, "If everything you recommend for funding works, then you are not doing your job." That is, NSF does not just fund "safe" research. Recommending the funding of meritorious, high-risk, high-reward projects that might have not fared well in the panel is part of a program director's job. The program director also has the discretion to fund a project for a shorter term or a different amount than requested by the PI. All recommendations are accompanied by a justification called a review analysis. This is an internal document that describes the program director's rationale for recommending a decline or award of a proposal. The program director's recommendation must be approved by the Division Director before final action is taken. It should be noted that, in practice, a program director's recommendation is rarely reversed.

Unfortunately, given the budget climate, more proposals that are worthy of funding are declined rather than awarded. Program directors spend a good deal of time on the phone talking to PIs about strengths and weaknesses of a declined proposal and giving them a greater insight into the panel's opinion of the proposal. Although these PIs may be frustrated or disappointed, most PIs are very appreciative of this input and I encourage all PIs to talk to their program director if their proposal is declined.

In addition to managing proposals, program directors are involved in other activities inside and outside of NSF. Such activities include the review of project reports on current awards, participation on NSF committees, representing NSF at scientific meetings, and visiting academic institutions to make presentations that provide an overview of NSF and alert the scientific community about new programs and initiatives.

What is the work atmosphere like at NSF?

The day-to-day operation of an NSF division is different from that of an academic department and, therefore, a rotator must become accustomed to a different work environment. Whereas most academic departments operate as a loose association of independent units (professors, laboratories), an NSF division relies on teamwork in order to receive, review, and make decisions about submitted proposals in a timely manner. Program directors and the administrative staff have their own specific tasks and obligations in the division's work flow, so they must work closely together in order to get the division's work done.

The management structure of BIO is more rigidly hierarchical than one finds in a university system. This is probably typical for a federal agency, but rotators can be frustrated by what appears to be top-down, immutable decisions made by higher authorities in the division and directorate. Some degree of tension between academicians and a government system is to be expected, but NSF is to be credited for hiring rotators who are not shy about voicing their opinions and offering constructive criticism regarding long-range policies as well as day-to-day operations of the agency.

How are rotators selected?

Typically NSF seeks to recruit scientists who have active, externally-supported research programs, have served as *ad hoc* reviewers and/or panelists, and are broadly engaged with, and known by, their research communities. Usually more than one candidate is interviewed for a position and the interview involves meetings with the division director and deputy division director, program directors, the divisional administrative staff, NSF human resources, and the office of the general counsel. In addition, the candidate gives a seminar about his/her research. Most program directors start their job in midsummer to give them time to settle in, become familiar with the electronic resources used to process proposals, and try to learn the seemingly infinite number of government acronyms before the fall advisory panels begin. In addition, this timing is compatible with academic calendars.

BIO is an extremely pleasant and collegial place to work. Working with people who are focused on achieving the common goal of advancing science is very satisfying and the scientific discussions that take place among program directors are energizing. As several NSF senior managers told me, "Being a program director is the best job in the Foundation" and, in my opinion, they were right. In fact, I can honestly say that being a rotator was the best job experience I have ever had.

As a program director you are the face (or voice) of NSF to the scientific community and you intellectually benefit from exposure to new and exciting scientific research. If you are at a stage of your career when you feel you have the experience and desire to provide this extremely valuable service, your research program can survive (or perhaps flourish) in your absence, and your personal life can handle the disruption of a move to the DC area, then you might consider becoming a rotator at NSF. If you are interested, contact a current program director or appropriate division director (http://nsf.gov/dir/index.jsp?org=BIO). ❖

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Mary Susan Burnett
Medstar Health Res. Inst., Wash., DC
Sanjukta Chakraborty
Texas A&M HSC, College Station
Hema Kumar Chandru
Oklahoma Medical Res. Fndn.
Natalie Ann Chapados*
Montfort Res. Inst., Montreal, Canada
Yanfang Chen
Wright State Univ., OH
Dongbao Chen
Univ. of CA, Irvine
Sookyoung Choi
Tulane Univ., LA
James J. Chrobak
Univ. of Connecticut, Storrs
Gao Chun-Fang
150th Central Hosp., Luoyang, China
Paul Cisek
Univ. of Montreal, Canada
Meghan Clements
Genzyme, Framingham, MA
Andrea Corcoran
Dartmouth College, NH
Sangita Dandekar
New York Univ.
Chritophe De Jaeger
Inst. Euro.Pour La Longevite, France
Joern Diedrichsen
Univ. College of London, UK
William P. Dole
Novartis Inst. Biomed. Res., MA
Dongsheng Duan
Univ. of Missouri, Columbia
Heather Edgell
Univ. of Western Ontario, Canada
Laurence J. Egan
Nat'l. Univ. of Ireland, Galway
Vadim Fedorov
Ohio State Univ.
Xiuyan Feng
Emory Univ., GA
Scott H. Frey
Univ. of Oregon, Eugene
Dominique Gagnon
Univ. of Chicago, IL
María Galán
Tulane Univ., LA
Zhi-Dong Ge
Med. Coll. of Wisconsin
Nikki Danielle Gillum*
George Washington Univ., MD
Sergej Girman
Oregon HSU, Portland, OR
Joshua X. Gittelman
Univ. of Texas, Austin
Stella Goulopoulou*
Georgia HSU, Augusta
Paul Gribble
Univ. of Western Ontario, Canada
Stephen Grinton
Univ. of North Carolina, Cherryville
Jianguo Gu
Univ. of Cincinnati Coll. Med., OH
Rukhsana Gul
Univ. of Missouri, Columbia
Richard J. Gumina
Ohio State Univ.
Roger Joseph Hajjar
Mount Sinai Sch. of Med., NY
Mohammed Z. Haque
Henry Ford Hosp., Detroit, MI
Huijuan Hu
Drexel Univ. Coll. Med., PA
Katherine Heimburger Ingram*
Univ. of Alabama, Birmingham
Takuya Inoue
VA Med. Ctr., Los Angeles, CA
Hana A. Itani*
Univ. of Iowa, Coralville
Jun Izawa
Univ. of Electro-Communic., Japan
Jihang Ji
Louisiana State Univ., HSC
Hanjoong Jo
Emory Univ., Atlanta, GA
Jose Josan
Roche Lab, Lima, Peru
John Y. Jun
Penn State Hershey Med. Ctr.
Jagmeet S. Kanwal
Georgetown Univ., Washington, DC
Modar Kassan
Tulane Univ., New Orleans, LA
Stella Kim
Univ. of Southern CA, Los Angeles
Rishikesh Manohar Kulkarni
Univ. of Cincinnati, Coll. of Med., OH
Nicole J. Lecapitaine
Louisiana State Univ., HSC
Choongkil Lee
Seoul Nat'l Univ., Republic of Korea
Warren Lester Lee
St. Michael's Hosp., Toronto, Canada
Brenda Lilly
Nationwide Children's Res. Inst., OH
Isa Maria Lindgren
Johns Hopkins Sch. Med., MD
Janine M. Little*
Francis Tuttle Tech. Ctr., OK
Jennifer Lucitti
Univ. of North Carolina, Chapel Hill
Heather M. Mattern
Augustana College, Rock Island, IL
Xiuying Ma
Merck & Co., Inc., Rahway, NJ
Latronya McCollum
Mount Sinai School of Med., NY
Andrew D. McCulloch
Univ. of California, San Diego
Jawahar L. Mehta
Univ. of Arkansas, Little Rock
Michelle M. Monasky*
Univ. of Illinois, Chicago
Allan G. Murray
Univ. of Alberta, Winnipeg, Canada
Moni Nader
Alfaisal Univ., Riyadh, Saudi Arabia
Wei Ni
Univ. of California, San Francisco
Zahra Nourian
Univ. of Missouri, Columbia
Kathleen L. O'Connor
Univ. of Kentucky, Lexington
Sun-Young Oh
Chonbuk Nat'l. Univ., Republic of Korea
Elimelda Moige Ongeri
North Carolina A&T State Univ.
Manikandan Panchatcharam
Univ. of Kentucky, Lexington

Anil Kumar Pandey
GSL Med. Coll., Rajahmundry, India
Sungmi Park*
Univ. of Iowa
Jennifer Margaret Pell
The Babraham Inst., UK
Christopher Pattillo
Louisiana State Univ., HSC
Bernd Pelster
Univ. of Innsbruck, Austria
Frank Christian Pott
Bispebjerg Hosp., Copenhagen, Denmark
Laura Lucia Prieto Godino*
Univ. of Cambridge, UK
Yanfei Qi*
Univ. of Florida, Gainesville
Aijuan Qu
NCI, NIH, Bethesda, MD
Carie R. Reynolds*
George Washington Univ., Washington, DC
Stefano Rimoldi
Bern Univ. Hospital, Switzerland
Carmen I. Rios*
Univ. of Texas HSC, San Antonio
Michelle Sands
Univ. of New Mexico, Albuquerque
Robson A. S. Santos
Univ. of Fed De Minas Gerais, Brazil
Nicholas D. Schiff
Weill Cornell Med. Coll., NY
Christopher Shaw
Univ. of Birmingham, UK
Melissa Scotti
Northern Illinois Univ., Dekalb
Robert Wade Siggins
Louisiana State Univ. HSC, New Orleans
Sookjin Son
Georgia HS Univ., Augusta
William Edmund Sonntag
Univ. of Oklahoma HSC
Martha H. Stipanuk
Cornell Univ., NY
Prithu Sundd
La Jolla Inst. for Allergy and Immun., CA
Hua Tang
Univ. of Texas HSC, Tyler
Bertrand C.W. Tanner
Univ. of Vermont
Lise Thomas
Quinnipiac Univ., Hamden, CT
Kim Quang Tran
Des Moines Univ., IA
Phu V. Tran
Univ. of Minnesota
Jonas Thue Treebak
Univ. of Copenhagen, Denmark
Wouter David Van Marken Lichtenbelt
Maastricht Univ., Netherlands
Claudio Javier Villanueva
Univ. of California, Los Angeles
Brent Wagner
Univ. of Texas HSC, San Antonio
Watt W. Webb
Cornell Univ., Ithaca, NY
Ralf Wessel
Washington Univ., St. Louis, MO
William S. Wright*
Univ. of South Carolina, Spartanburg
Rob C.I. Wust
Univ. of Leeds, UK
Lumei Xu
Case Western Reserve Univ., OH
Tetsuo Yamamori
Nat'l Inst. for Basic Bio. Okazak, Japan
Katrina Go Yamazaki
Univ. of California, San Diego
Samantha Yeligar
Emory Univ., Atlanta, GA
Colin N. Young*
Cornell Univ., Ithaca, NY
Joseph P. Yuan
Univ. of North Texas HSC, Fort Worth
Joseph Zacharia
Univ. of Maryland, Baltimore
Spiros Zakynthinos
Evangelismos Hosp., Athens, Greece
David P. Zenisek
Yale Univ., New Haven, CT
Xiaoxu Zhou
Rhode Island Hosp., Providence
Jasenka Zubcevic
Univ. of Florida, Gainesville

New Graduate Student Members

Khaled Soliman Abd-Elrahman
Univ. of Calgary, Canada
Sherry Adesina
Emory Univ., GA
Elinette Albino
Ponce Sch. of Med., Puerto Rico
Charles Anderson
Virginia Commonwealth Univ.
Jessica Rose Anderson
Medical College of Georgia
Christopher John Arellano
Univ. of Colorado, Boulder
Richard Keith Babbs
Pennsylvania State Univ.
Yeshavanth K. Banasavadi-Siddegowda
Univ. of Toledo, OH
Alicia B. Barclay
Lehman College, NY
Andre Sales Barreto
Federal Univ. of Sergipe, Brazil
Richard Beard
Idaho State Univ.
Alexandre C. Beaudry
Univ. of Paris, France
Brenda Benson
Brigham Young Univ., UT
Subha Bhaskaran
Oakland Univ., CA
Randi Groslier Bjaelde
Aarhus Univ., Denmark
Odelia Yuh Ngala Bongmba
Univ. of Houston, TX
Andre Bowers
Univ. of the West Indies
Leryn Boyle
Univ. of Missouri
Inbal Brickner-Braun
Ben Gurion Univ., Israel
Damien Callahan
Univ. of Massachusetts
Kayla Campbell
Ball State Univ., IN
Stephen Jordan Carter
Univ. of Alabama
Benjamin W. Cartner
Appalachian State Univ., NC
Carlos Michel Castorena
Univ. of Michigan
Suraj Cherian
Univ. of Vermont
Avi Cohen
Ross Univ., Dominican Republic
Jason Cook
Mt. Sinai Sch. of Med., NY
Michael Devinney
Univ. of Wisconsin
Qiming Duan
Univ. of Toledo HSC, OH
Antonio Duarte
Gama Filho Univ., Brazil
Val Andrew Fajardo
Brock Univ., Canada
Richard J. Faris
Iowa State Univ.
Silmara Formenti
Fed. Univ., Sao Paulo, Brazil

Sara Brooks Fournier
West Virginia Univ .
Nathan Garvin
Pennsylvania State Univ.
Noah McGarrity Gibson
Univ. of Northern Colorado
Monica Gole
Univ. of Mississippi
Benjamin Thomas Gordon
Univ. of South Carolina
Matthew William Gorr
Ohio State Univ.
Niamh Goulding
Univ. College of Cork, Ireland
Satish Gowda
SUNY Downstate Med. Ctr., NY
Neil Greening
Univ. Hosp., Leicester, UK
Ahmed Fathi Halaweish
Univ. of Iowa Hospitals & Clinics
Jeffery Hatcher
Univ. of Central Florida
Grant Henson
Univ. of Colorado, Boulder
Eric Herbst
Brock Univ., Canada
Justin Perry Herdee
Appalachian State Univ., NC
Seth Holwerda
Univ. of Missouri, Columbia
Elliot J. Howard
Univ. of California, San Diego
Yang Hu
Oklahoma Univ. HSC
Matthew Hudson
Univ. of Florida
Bruna Inoue
Med. Coll. Univ., Sao Paulo, Brazil
Michele Nerissa Insanally
Univ. of CA, Berkeley
Ninitha A. Jeyaraj
Michigan State Univ.
Jay Steven Johnson
Univ. of Missouri
Priyanka Kakad
Loyola Univ. Med. Ctr., IL
Nishan Sudheera Kalupahana
Univ. of Tennessee
Sang Hwan Kim
Univ. of New Mexico
James Kuczmarski
Univ. of Delaware
Ning Lai
Johns Hopkins Univ., MD
Yang Lee
Texas A&M Univ.
Brittany Luckett
Pennsylvania State Univ.
Andrew Ludlow
Univ. of Maryland
Alexandra Michelle Machikas
Pennsylvania State Univ.
Marina Martinez
Univ. of Arizona
Gisele Maury
Univ. Catholique De Louvain, Belgium
Deneshia Jena McIntosh
Meharry Medical College, TN
Thomas H. Meek
Univ. of California, Riverside
Zeljka Minic
Wayne State Univ., MI
Manuel Montero
Loma Linda Univ., CA
Richard Garrett Morgan
Univ. of Utah
Gary Charles Mouradian
Med. Coll. of Wisconsin
Malay Kanti Mridha
Univ. of California, Davis
Rebecca Murray
Univ. of Louisville, KY
Rebecca Jane Naukam
Oklahoma State Univ.
Hildebrando Candido Ferreira Neto
Univ. of Sao Paulo, Brazil
Ejike Nwankwo
Univ. of Camerino, Italy
Gabriel Olorunleke Oludare
College of Med. Univ., Lagos
Francesca Pribble
Univ. of Louisville, KY
May M. Rabadi
New York Medical College
Anandharajan Rathinasabapathy
Univ. of Florida
Brian Reger
West Virginia Univ.
Jacob Richards
Univ. of Florida
Carolyn Roos
Mayo Clinic, MN
Roxanna Salim
Claremont Graduate Univ., CA
Sarah Ann Salyer
Univ. of Louisville, KY
Arpit Saxena
Univ. of South Carolina
Shiraj Sen
Univ. of Texas, Houston Med. Sch.
Deepak Sharma
BP Kiorala Inst. for Hlth. Sci., Nepal
Marianne Gerberg Skals
Aarhus Univ., Denmark
Marissa Smith
Virginia Tech.
Dana Smith
Univ. of Cincinnati, OH
Jesse Adam Solomon
York Univ., Canada
Shawn Andrew Stasko
Univ. of Kentucky
Kyle Sunderland
Univ. of Oklahoma
Ziauddin Syed
Wayne State Univ., MI
Dharendra Thapa
West Virginia Univ.
Ana Valencia
Univ. of Maryland
Gisele Vaz
Fed. Univ. Minas Gerais, Brazil
Jose Pablo Vazquez-Medina
Univ. of California, Merced
Kristine Wadosky
Univ. of North Carolina, Chapel Hill
Treniqka Walters
Meharry Medical College, TN
Junie Paula Warrington
Univ. of Oklahoma, HSC
Weijuan Wu
Univ. of Oklahoma, HSC
Tingting Xiong
Univ. of Michigan
Xi Yan
Cornell Univ., NY
Bartosz J. Zieba
Univ. of Virginia
Sarah Zohdy
Univ. of Helsinki, Finland

New Affiliate Members

Paul Brown
Central Comm. College, NE
Wilton Remigio
Clarkson Univ., CA
Sergiv Rudenkyy
Brentwood Biomed. Res. Inst., CA

New Undergraduate Student Members

Christopher T. Banek
Univ. of Minnesota, Duluth
Joshua Houston Briggs
Univ. of Arkansas, Fort Smith
Jessica Dahmus
Penn State Univ.
Matthew Patrick Darrow
Univ. of Arizona Sch. of Med.
Sabya Das
Univ. of California, Berkeley
Stephanie Veronica Eldred
Penn State Univ.
Robert Fidelibus
Ohio State Univ.
Casey French
Radford Univ., VA
Julia Victoria Gorgone
Univ. of California, Davis
Michael Gowen
Univ. of Pittsburgh, PA
Maria Gulas
Appalachian State Univ., NC
Jarl Marshall Haggerty
Univ. of Arizona
Robert Heler
Univ. of Richmond, VA
Tiffany Kuo
Univ. of California, Davis
Mali Lavi
Tel Aviv Univ., Israel
Anfei Li
Cornell Univ., NY
Erin McClure
Juniata College, PA
Edward Joseph McKenna
Univ. of Wisconsin, Madison
Stephanie Michelle Mutchler
The College of William and Mary, VA
Brittany Lauren Reinert
Wright State Univ., OH
Katherine Rivera
Pontificia Univ., Dominican Republic
Margaret Robotham
Barnard College, NY
Ting Ruan
Univ. of Utah
Louis Alexis Ruiz
Univ. of Puerto Rico
Amy Shiah
Univ. of California, San Diego
Asmae Toumi
McGill Univ., Canada
David Trac
Emory Univ., GA
Eliza Van Heerden
Bates College, ME
Rebekah Ireland Webster
Radford Univ., VA
Brian Paul Wynia
Univ. of Illinois, Chicago

Recently Deceased Members

Morton F. Arnsdorf
Chicago, IL
Nicholas S. Assali
Pacific Palisades, CA
Thomas B. Barnett
Chapel Hill, NC
John B. Bateman
London, UK
C. Gunnar Blomqvist
Dallas, TX
J. Richard R. Bobb
Holly Hill, FL
Edward G. Boettinger
Storrs Mansfield, CT
Ellen Brown
San Francisco, CA
Jerome J. Chart
Helena, MT
John K. Davidson
Atlanta, GA
Hugo Gonzalez-Serratos
Baltimore, MD
Keith S. Henley
Ann Arbor, MI
Donald J. Jenden
Olympia, WA
Jacques A. LeBlanc
Quebec, Canada
Alvin E. Lewis
Galveston, TX
Ira J. Lichton
Kailua, HI
Michael A. Linshaw
Boston, MA
Frederick W. Lorenz
Davis, CA
Elwin Marg
Berkeley, CA
Hildegard R. Maricq
Charleston, SC
John P. Mixner
Hendersonville, NC
E. Converse Peirce
Hancock, ME
Joseph H. Perlmutt
Chapel Hill, NC
Herbert Rackow
Whitestone, NY
Peter W. Ramwell
Cresskill, NJ
Irving Rothchild
Cleveland Heights, OH
Tong Winton
Alameda, CA
Seymour H. Wollman
Kensington, MD
Lester F. Wolterink
East Lansing, MI
Harry Y. C. Wong
Sunbury, OH

First Annual Meeting of the Indiana Physiological Society

The Indiana Physiological Society (INPhys) held its first annual conference on February 5, 2011 at the Van Nuys Medical Science Building at the Indiana Univ. School of Medicine (IUSM) in Indianapolis, IN. The theme of the meeting was "Physiology–Leading the way in mechanistic and translational research." The meeting was attended by 118 people, including 16 postdoctoral fellows and 53 students, representing 12 intuitions across the state, which was remarkable given severe ice and snow conditions. Overall, we achieved our main purpose of INPhys in promoting the increase of physiological knowledge, its dissemination, and its utilization in the state of Indiana. In particular, the contribution of students in their early phase of training enriched the meeting. Indiana is the home to over 50 universities and colleges, so the outreach of INPhys can have a major impact.

The INPhys meeting was opened by Dr. Michael Sturek, President of INPhys and Chair of the Dept. of Cellular & Integrative Physiology at IUSM. He cordially welcomed the attendees to the meeting. His colorful address touched on the rich history of physiology in the state of Indiana, highlighting the key role that Dr. Alec Clowes and the Eli Lilly & Company played in the development of insulin therapy. He pointed out the role of Charles Best, a medical student at the Univ. of Toronto, in the discovery of insulin and emphasized that the first presentation on insulin at a scientific society was at the APS Meeting in New Haven, CT in December 1921. Another Indiana contribution was Ferid Murad, MD, PhD, who received his BA from DePauw Univ. in Greencastle, IN and won the Nobel Prize for Physiology and Medicine in 1998 for the role of nitric oxide in physiological regulation. Sturek's address also challenged the audience to consider the bright future that lay ahead–a future that will be shaped by the postdoctoral fellows and students in attendance.

INPhys attendees owe many thanks to the Organizing Committee and staff who lead the efforts: Dr. David Basile, Dr. Bonnie Blazer-Yost, Dr. Suzanne Young, Joyce Lawrence, Dr. Sturek, Dr. Glenn Bohlen, Tracy McWilliams, Stanley Stump, Ellen Leonard, and Jessica Friedrich. Special recognition goes to Dr. Young, whose broad knowledge of the scientific content and her attention to details of the logistics and organization made the meeting a success.

Dr. Sturek's address was followed by the Keynote Speaker, Dr. John Hall, Arthur Guyton Professor and Chair of the Department of Physiology and Biophysics at the Univ. of Mississippi Medical Center. His speech was entitled, "Pathophysiology of Hypertension in Obesity/Metabolic Syndrome." The clarity, relevance, and integrative nature of Dr. Hall's presentation struck a chord with all in attendance and set a tone for what turned out to be an excellent meeting.

The afternoon session was highlighted with a presentation by another guest speaker, Dr. Matthew Breyer, from the Department of Biotherapeutics Discovery from Eli Lilly & Company. His discussion entitled, "Mouse models of Diabetic Nephropathy–Lost in Translation" touched upon the dearth of mouse models in this field and highlighted the hurdles that that must be overcome to translate laboratory findings into treatment regimens that can be applied in patients.

In addition to the guest speakers, the day was highlighted by 10 short presentations with several from graduate students and postdoctoral fellows. These sessions were moderated by IUSM physiology graduate students Julia Hum and Brent Penque, exemplifying the important role of students in making the meeting a success. Presentations and posters were at all levels of physiological research and reinforced not only the theme of translating from cellular and molecular to human subjects research, but also using human/clinical findings to guide cellular and molecular studies. Many opportunities for discussions were available during two separate poster presentations, which included 52 posters. The INPhys was able to provide 10 awards for graduate students presenting outstanding abstracts. These students were Sally Head, Meredith Kohr, Ketrija Touw, Zachary Berwick, Aarthi Maganti, Soyoung Park, Nolan Hoffman, Julia Hum, Lisa Riegle, and Anne Hillyard. Please visit our website to view our program, abstracts, and list of attendees (http://physiology.medicine.iu.edu/indiana-physiological-society/).

In closing statements, Dr. Michael

Atrium of Medical Sciences building at Indiana University School of Medicine was the site for posters and lunch.

attendees. Sturek gave a history of physiology in Indiana and introduced Keynote Speaker John Hall and guest speaker Matt Breyer.

Guest speaker Matt Breyer of Eli Lilly & Company.

Keynote Speaker John Hall of the University of Mississippi.

Jeff Elmendorf discusses posters with student member and Councilor Brent Penque (right), who also moderated the first session.

Student member Julia Hum moderated the second session.

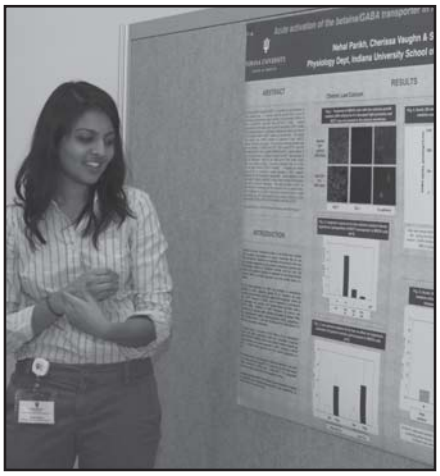
Sturek announced the newly elected officials for INPhys for 2011-2012.

President: Bonnie Blazer-Yost
Secretary/Treasurer: David Basile
President-Elect: Derron Bishop
Council: Kenneth Gould
Council: Mari Hooper
Student Council: Meredith Kohr

The meeting ended with a social hour at the Univ. Place Conference Center on the IUPUI campus. Support for the inaugural meeting came from the American Physiological Society, the Department of Cellular & Integrative Physiology at IUSM, Kent Scientific Corporation, and the Indiana University Conference Fund. ❖

Awards for graduate students presenting outstanding abstracts were given to (left to right) Ketrija Touw, Lisa Riegle, Zachary Berwick, Anne Hillyard, Nolan Hoffman, Julia Hum, Meredith Kohr, and (not present) Soyoung Park, Sally Head, and Aarthi Maganti.

John Lopshire of the Krannert Institute of Cardiology discusses posters with organizing committee member Suzanne Young.



Undergraduate student Nehal Parikh presents her first poster at the INPhys meeting.

Graduate students Zach Berwick and Mikaela McKenney interpret data in aposter.

Oklahoma Society of Physiologists

The 29th annual meeting of the Oklahoma Society of Physiologists (OSP) was held on Friday, June 18, 2010 at Oklahoma State Univ. Center for Health Sciences in Tulsa, OK. The theme of this one day conference was Integration of Clinical and Biomedical Sciences in Medical Schools. It was organized by Alexander Rouch, President of OSP for 2009-2010.

There were three one-hour presentations given by physiologists focusing on the theme: *1*) Alexander Rouch spoke on Curriculum Development for Medical Schools; *2*) Warren Finn and his research assistant Cody Rice spoke on Evidence-Based Medicine; and 3) Bruce Benjamin spoke on Simulation-Based Teaching. Rouch recommended the book written by David Kern and others entitled, *Curriculum Development for Medical Education: A Six-Step Approach*. Curriculum should be linked to ongoing assessment of health care needs, e.g., treatment of chronic disease is a need that must be imminently addressed. Finn spoke about the importance of medical students learning about how to access best practices and current advances for doctors using databases through internet and Smart phones. Benjamin spoke on their experience at OSU College of Osteopathic Medicine with the use of computer simulations of mannequins with various diseases for learning diagnosis.

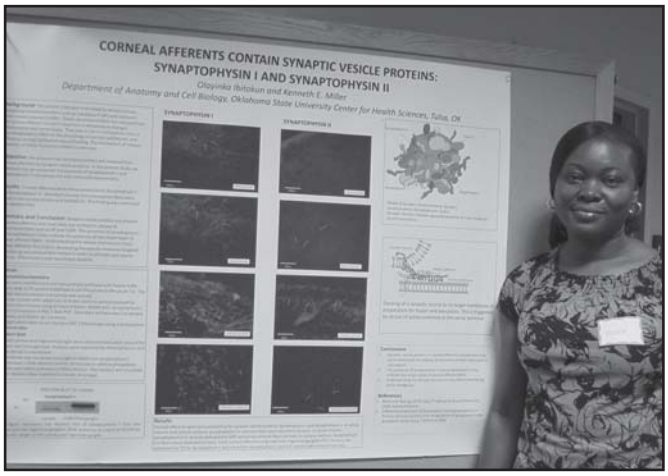
Other activities included posters, lunch, a business meeting and evening

Dr. Rouch talking about curriculum development in medical schools.

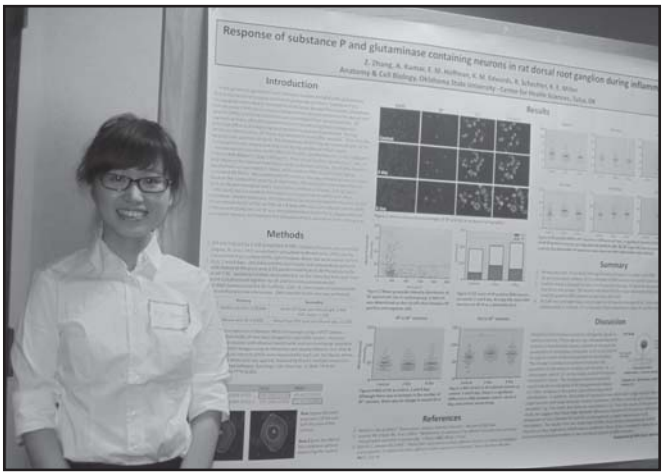
Dr. Benjamin talks about the powerful experience of using physiological simulations in a medical and graduate curricula.

Dr. Finn talks about Evidence Based Medicine in medical school curriculum and how physiology plays a significant role.

Dr. Suzanne Vincent interacts with a conference attendee.



Yinka Ibitokun, PhD Student, with her poster: Corneal afferents contain synaptic vesicle proteins: Synaptophysin I and Synaptophysin II.



Zijia Zhang, PhD Student, with her poster: Response of substance P and glutaminase containing neurons in rat dorsal root ganglion during inflammation.

fun. A number of posters were shown during two breaks, one in the morning and one in the afternoon. Lunch was provided courtesy of OSP from Noon to 1 p.m. in the atrium of OSU College of Osteopathic Medicine, followed by a business meeting. New officers for 2010-2011 are: President Suzanne Vincent, Oral Roberts Univ.; President-Elect Connie Hebert, Tulsa Community College; and Secretary-Treasurer Alexander Rouch, OSU-CHS. Rouch gave a budget report and a report from the State Chapters meeting that he attended during the April 2010 American Physiological Society conference. Brainstorming about next summer's OSP meeting 2011 was also done. Some participants of OSP attended the Tulsa Drillers baseball game in the evening.

Posters

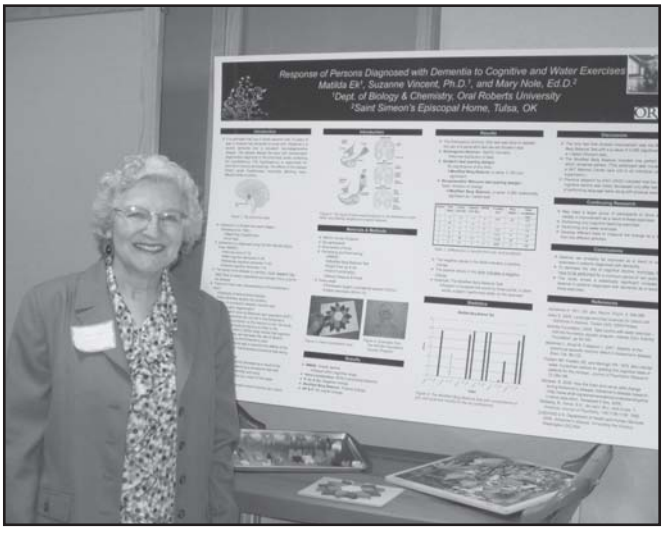
Response of persons diagnosed with dementia to cognitive and water exercises
Matilda, EK, Suzanne Vincent, and Mary Nole

Corneal afferents contain synaptic vesicle proteins: Synaptophysin I and Synaptophysin II
Ibitokun, O. and K.E. Miller

Response of substance P and glutaminase containing neurons in rat dorsal root ganglion during inflammation
Zhang, Z, E.M Hoffman, K.M Edwards, R. Schechter, and K.E. Miller

Response of rat dorsal root ganglion to peripheral inflammation
Wang, T., Z, Zhang, and K.E. Miller ❖

Ting Wang, PhD Student with her poster: Response of rat dorsal root ganglion to peripheral inflammation.



Dr. Suzanne Vincent with her poster: Response of persons diagnosed with dementia to cognitive and water exercises.

Forty-six Science Teacher Fellows From Across the Nation Participate in APS Fellowship Programs

This spring 46 teachers from across the nation are participating in the 2011 Frontiers in Physiology Professional Development Fellowship Programs sponsored by the APS (http://www.frontiersinphys.org). Seventeen teachers were selected as the 2011 Research Teacher (RT) Fellows and 29 teachers were awarded as the 2011 Online Teacher Fellows (OTFs). Frontiers in Physiology was recognized as a "Model for Excellence in Science Education" by the Center for Excellence in Education in 2010, and is sponsored by the APS, a Science Education Partnership Award from the National Center for Research Resources (NCRR), and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) at the National Institutes of Health (NIH).

One component of the traditional Research Teacher fellowship that the APS has offered over the last two decades is a local partnership between the science teacher and an APS member, who jointly applied to the program and committed to contributing a portion of the teacher's fellowship payments. APS members serve as hosts and mentors to the teachers by providing each teacher fellow with a physiology-based laboratory research experience for seven to eight weeks this summer. Through this opportunity, the RTs learn first-hand how the research process works, allowing them to enhance their own science teaching with their students in the classroom. The RTs will also be attending the "APS Science Teaching Forum," an intensive workshop week focused on student-centered teaching methods at the Airlie Center in Warrenton, VA. Along with an invited APS member physiologist, the 2011 K-12 Outreach Fellows, past teacher fellows who serve as teacher mentor/instructors, and APS Education Office staff, the RTs will use APS curriculum units that explore inquiry-based teaching strategies, how to integrate technology into their classroom, and equity and diversity issues in science education. As part of the fellowship in the fall, the RTs will develop and refine their own inquiry-based, student-centered lab activity for the science classroom. Finally, the RTs conclude their fellowship year by experiencing a scientific meeting at Experimental Biology 2012 in San Diego, CA.

The Online Teacher Fellow program was made possible with a supplemental grant awarded to the APS last fall as part of the existing SEPA teacher professional development program. The award allows the APS to replicate the pilot Frontiers Online Teacher Program established 2010. The online program delivered on a course management system is an adaption of the more traditional comprehensive RT program, which includes not only the online program, but a summer research experience, a summer workshop week, and travel to EB 2012 for participation and an awards ceremony.

The lessons, assignments, discussions, and activities in both fellowship programs are structured in the APS Six Star Science framework for promoting excellence in science education. The Six Star Science principles address student-centered learning, equity and diversity, technology in the classroom, authentic assessment on content and pedagogy, updated content, and intentional reflection. As part of the both fellowship programs, the RTs and OTFs will develop and refine their own inquiry-based, student-centered lab activity for the science classroom.

The following are the 2011 **APS Online Teacher Fellows**, listed alphabetically by the teacher's last name:

Katie Anderson, Dakota Middle School, Rapid City, SD; **Myra Arnone,** Redmond High School, Redmond, WA; **Daniel Bartsch,** Billings Senior High, Billings, MT; **Sarah Berlinger,** Littleton High School, Littleton, MA; **Rebecca Block,** Tulsa School of Arts and Sciences, Tulsa, OK; **Wanda Bryant,** Detroit Public Schools, Detroit, MI; **Regina Cowan,** Detroit Public Schools, Detroit, MI; **Greg Dierson,** Great Plains Lutheran High School, Watertown, SD; **Mary Eldredge-Sandbo,** Des Lacs-Burlington High School, Des Lacs, ND; **Myriaha Felker,** Cabell Midland High, Ona, WV; **Charles Galarza,** Nolan Richardson Middle School, El Paso, TX; **Ellen Gant,** Dakota Valley High School, North Souix City, SD; **Denise Gipson,** Jefferson High School, Shenandoah Junction, WV; **Jennifer Gonzales,** Tafolla Middle School, San Antonio, TX; **Mary Haus,** Los Osos High School, Rancho Cucamonga, CA; **Kelly Hennessey,** A.C. Davis High School, Yakima, WA; **Cora James,** Haskell High School, Haskell, OK; **Cathy Johnson,** Drayton Public School, Drayton, ND; **Nancy Keller,** Heritage High School, Vancouver, WA; **Tami Kepshire,** Portage High School, Portage, IN; **Carla McFadden,** Okanogan School District, Okanogan, WA; **Jannette Moehlman,** Dakota Middle School, Rapid City, SD; **Melanie Shaver,** West McDowell Jr. High, Marion, NC; **Tara Veazey,** Riverside High School, Charleston, WV; **Darrell Walker,** Elizabeth City Middle School, Elizabeth City, NC; **Pete Whipple,** Bowdish Middle School, Spokane Valley, WA; **William Wilson,** Clover Park High School, Lakewood, WA; **Debora Wines,** Central Catholic High School, Billings, MT; and **Daniel Zielaski,** Phelps ACE SHS, DC Public Schools, Washington, DC.

The following are the **2011 APS Research Teacher/Host Partnerships**, listed alphabetically by the teacher's last name:

Sandra Bickerstaff, South Carolina State Univ., Orangeburg, SC; **Sweitzer M. Sarah,** and **L. Britt Wilson,** Univ. of South Carolina, Columbia, SC;

Laura Carlino, Upper St. Clair High School, Upper St. Clair, PA; **Bill Yates,** Univ. of Pittsburgh, Pittsburgh, PA;

Elizabeth Charleston, York Country Day School, York, PA; **Leonard S. Jefferson,** Penn State Univ., Hershey, PA;

Nelia Delos Reyes, Hartman Middle School, Houston, TX; **Rolando E. Rumbaut,** Baylor College of Medicine, Houston, TX;

Laura (L.B.) Fogt, Olathe North High School, Overland Park, KS; **Shrikant Anant,** Kansas Univ., Kansas City, KS;

Elizabeth Hunt Esco, Olathe High School, Olathe, KS; **Norberto C. Gonzalez,** Kansas Univ., Kansas City, KS;

Ashley Ivins, Mescalero Apache High School, Mescalero, NM; **Nancy Kanagy,** Univ. of New Mexico, Albuquerque, NM;

Julia Lawrence, DeSoto Independent School District, Glenn Heights, TX; **Tony G. Babb,** Texas Health Presbyterian Hospital Dallas/UT Southwestern Medical Center;

Fredrica Nash, Hillside New Tech High School, Durham, NC; **Amy M. Pastva,** and **Jo Rae Wright,** Duke Univ., Durham, NC;

Jane Raabis, North High School, Worcester, MA; **Stephen Doxsey,** Univ. of Massachusetts, Worcester, MA;

Devalyn Rogers, Pershing Middle School, Houston, TX; **Patrick M. Dougherty,** Univ. of Texas, Houston, TX;

Pauline Schork, Clinton High School, Clinton, WI; **Kathryn M.S. Johnson,** Beloit College, Beloit, WI;

Stacy Schurtz, Pike Township School District, Indianapolis, IN; **C. Subah Packer,** Indiana Univ., Indianapolis, IN;

Sue Speirs, Grosse Pointe Public Schools, Grosse Pointe Woods, MI; **Patrick Joseph Mueller,** Wayne State Univ., Detroit, MI;

Christopher Stotts, Lincoln Memorial Univ., Harrogate, TN; **Stan C. Kunigelis,** DeBusk College of Osteopathic Medicine, Harrogate, TN;

Lucina Velasquez-Lopez, Flowing Wells High School, Tucson, AZ; **Thomas L. Pannabecker,** Univ. of Arizona, Tucson, AZ; and

Leslie Worton, Edison High School, Fresno, CA; **Henry A. Lester,** California Inst. of Technology, Pasadena, CA. ❖

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Research Advisor's Checklist

Michael Sturek
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The relationship between the research advisor and advisee has many facets and expectations. While some of the expectations are explicit, many are implicit. We are fortunate that the APS has outstanding resources available for mentoring and being mentored, which make these expectations more transparent (e.g., http://www.the-aps.org/careers/). While I was a member of the Career Opportunities in Physiology Committee it became apparent that a concise checklist—an abbreviated "how to" list—would also be helpful. That concept prompted this Advisor's Checklist shown in Table 1.

Although I have created the checklist somewhat more through the eyes of the laboratory research advisor, the advisee should also find it very useful to gain an understanding of expectations that many mentors have and to facilitate their own training to become an advisor, whether in academia or the private sector.

The overall organization of the checklist is based on **action** items and whether these actions were completed, i.e., whether the goals were **achieved**. Although the process seems a binary Yes or No, cut-and-dried decision, the process is, in many cases, continuous. See the "Ongoing" status in the right column of the checklist labeled "ACHIEVED?" In many cases, however, one can and should establish a **deadline** for achieving the actions.

The checklist is also organized by the phase of the advisee's training. The phase "**Before the advisee is in the class or laboratory, general principles**" in many ways is a philosophy of behavior and will involve some soul-searching and up-front decisions about whether this is what the advisor sees as important. In essence, the advisor should reflect on what kind of advisor/mentor one wants to be (1). These **actions** more specifically define the character of the advisor. **Actions** for the advisor then go through **early (and/or short-term) projects**, **mid-through later-projects**, the **thesis**, **postdoctoral fellowship**, and **after the training**. Some of the items are obvious, so I will not go into detail about each. Instead, I will highlight some critical items (in ***bold italics***) to stay within the scope of this brief article.

Michael Sturek

Before the Advisee is in the Class or Laboratory, General Principles

First, the no-brainer is that you must ***establish your laboratory***. Although trainees can gain much experience from setting up a laboratory, starting absolutely from scratch can make a naïve trainee feel very insecure. Give yourself a specific date as a deadline and mark proudly the column "Yes!" when you have achieved this milestone of setting up a functional laboratory.

The next 10 action items largely define the character of the advisor. First and foremost, please note that you do not simply achieve these once and call it quits; instead, these are ongoing, disciplined behaviors that need continuous practice.

Leading by example and being a role model adds the strongest credibility to your message. This is the "walk the talk." Although being the most inspiring and competent research physiologist does not guarantee that all advisees will succeed, if the advisor says one thing and does another this is a sure way to stifle their chances for success. Indeed, internal integrity is a cornerstone of science and business practice. Despite what we academics may think, some of the best examples come from the business world and there are excellent sources on the subject of leadership, including leadership by example (4). Be clear and be proud and communicate that you ***expect excellence*** (unless you do not expect excellence, which is a different conversation that you should have with yourself.)

Be honest and mean what you say. Although we should have learned this in kindergarten, we might have evolved and become jaded to think that there are exceptions for adults. Again, leadership principles indicate that the long-term working relationship is best developed by making these pacts and honoring commitments. Think of it as a principle of physics and the way the universe should run (3).

Recognize outstanding potential and nurture it*, while *appreciating everyone's individual talents. For example, not everyone will love whole animal physiology and not everyone will love transcriptional regulation of gene expression. Perhaps one of the most difficult concepts to assimilate is to ***stop wanting to be liked by the advisee*** (1). If you are true to other aspects of ***mutual respect***, etc., then you are better prepared to tolerate most of the possible frustration or dislike the advisee might have for you regarding your clear expectations for excellence and hard work. Our primary purpose is not to be friends or to make the project easy. Instead, our primary purpose to help the advisee to fully develop her/his talents in physiological research. Often, the harshest advice may be the best. Kinship is clearly cherished and an added bonus of the advisor-advisee relationship, but it is not the main goal.

Go into each advising experience with the clear mindset that you will ***learn from your advisees***. You will learn patience, how to develop your own talents, and you will even learn science. We advisors probably learn more from our advisees than they learn from us.

After the big 10 general principles have been considered, you're ready for an ***initial meeting*** with the potential advisee. One of the most penetrating questions from the potential advisor is "***What would you like to do if you could have any project in the lab?***" The question tests whether the advisee has really done her/his homework about your laboratory research and it typically prompts the advisee to think very actively on her/his feet. Advisees, this question may seem too direct, but

it allows you to take stock of your goals. Are you just doing a research project so that it looks good on your resume or do you truly want to learn? This initial meeting can actually be a point at which one or both parties decide that this relationship will not work, which can be due to differences in research interests and/or expectations.

Communicate clearly with advisee—possible projects, expectations. Although creative play in the laboratory is enjoyable, typically time is too short and usually a person will flounder without clear initial plans. Information on the nuts and bolts of ***Institutional Animal Care and Use Committee (IACUC), biosafety, other regulatory issues*** should be provided as soon as possible. Document, document, document. Mark those completion deadlines and achievements in the checklist. Please make this an active process.

Early (and/or Short-term) Laboratory Project

The first several items and overall aims of this category are structure and organization: ***establishing ground rules, expectations (dress code, hours, etc.), and setting and enforcing deadlines***.

In addition, ***unless the advisee knows exactly what s/he wants to do, assign a manageable project*** **and** ***complete a formal agreement.*** The ***formal agreement*** of performance expectations may sound too stuffy and legalistic and stifling to the advisee's creativity, but in the early stages of a project my opinion is that there is much to be learned regarding the overall concepts and laboratory methods. The research novice must have a framework of knowledge before blindly venturing too far. Further, objective criteria for performance more strongly legitimize grading for academic credit for the research project and better enable the advisor to differentiate between levels of performance of trainees.

More active learning can be facilitated if the advisee is ***provided only an outline of the project and required to revise*** it before creating the formal agreement.

Some consider it most appropriate to ***discuss long-term goals*** only annually after the advisee has had substantial experience and a clearer picture of her/his options. However, my perspective is to ask the advisee to state a

Table 1. Research Advisor's Checklist

ACTION	DEADLINE	ACHIEVED?
Before the advisee is in the class or laboratory, general principles		
Establish your laboratory		
Lead by example; be a role model		**Ongoing**
Expect excellence		**Ongoing**
Be honest; mean what you say		**Ongoing**
Recognize outstanding potential and nurture it		**Ongoing**
Appreciate everyone's individual talents		**Ongoing**
Show mutual respect		**Ongoing**
Treat the advisee as you would want to be treated		**Ongoing**
Stop wanting to be liked by the advisee		**Ongoing**
Always praise when appropriate; praise more than criticize		**Ongoing**
Learn from your advisees		**Ongoing**
Be timely for initial meeting (and all)		
Advisee should describe his/her interests and experiences; advisor should listen attentively		
Ask advisee what s/he would like to do if s/he could have any project in the lab		
Communicate clearly with advisee—possible projects, expectations		
Provide IACUC, biosafety, other regulatory information		
Early (and/or short term) laboratory project		
Establish ground rules, expectations—dress code, hours, etc.		
Set deadlines and enforce		
Complete IACUC training, if needed		
Complete biosafety training, if needed		
Unless the advisee knows exactly what s/he wants to do, assign a manageable project		
Provide an outline of the project and require advisee to revise		
Complete formal agreement, if required		
Discuss long-term goals		**Annually**
Provide direct, hands-on instruction (by either advisor or senior lab member) in all aspects of project		
Present project design and work-in-progress in regular group laboratory meetings		**~Weekly**
Provide written authorship guidelines		
Promote personal confidence		**Ongoing**
Regular (weekly) reserved time for one-on-one discussion of progress, etc.		**Weekly**
Have an open door policy … during designated times		**Ongoing**
Collect enough data for abstract and/or contribution to manuscript in laboratory		
Introduce advisee to other faculty, leaders in the field		**Ongoing**
Advisee should summarize project in writing		
Complete formal evaluation of advisee		

vision of a long-term goal; in essence, to begin with the end in sight. This puts the planned research experience within the hopes and dreams of the advisee. It enables the advisor to ask "How can I help you achieve your long-term goals?" This is especially important for the varying needs of undergraduate, graduate, medical scientist trainees, and postdoctoral fellows. Tailor their research activities to mesh with their future, long-term goals. If their overall goals change over the course of work in the laboratory, then reflecting upon their goals at the conclusion of some period is highly instructive.

The trainee's first project has been planned and now one jumps into it with great energy. Despite the level of training that the advisee has from previous work, it is still highly recommended that you ***provide direct, hands-on instruction (by either advisor or senior lab member) in all aspects of project.*** Start the advisee with a solid basis and avoid procedural drift that can occur when laboratory methods are passed along to numerous members without quality control checking.

Although sometimes threatening to new trainees, they should ***present project design and work-in-progress in regular group laboratory meetings*** as soon and as frequently as possible. This is best to learn the language of science communication, but it also provides excellent motivation for the advisee to make continuous progress. Additional opportunities for students to practice their presentation skills should be at local scientific meetings at their institutions or at the state level (e.g., APS Chapters) and then progress to larger regional and national conferences (e.g., Experimental Biology). Ideally, advisees should obtain experience with poster and oral presentation formats.

Very soon after her/his first several presentations, the advisee should have a feel for her/his contribution to a project and should be thinking of scholarly works, thus, it is essential to ***provide written authorship guidelines*** relatively early in training. No authorship guidelines (criteria) are absolute and it is best to deal with authorship up front at the start of a project. The APS also has excellent resources and examples of authorship guidelines (http://www.the-aps.org/publications/author-info/) on the website.

The increasing time demands for the principal investigator/lab director make it all the more important for ***regular (at least weekly) reserved time for one-on-one discussion of progress, etc.*** Related to that, many advisors boast an *open door policy* and I wholeheartedly agree ***… during designated hours.*** The time for advisee and advisor are more optimally used during these time blocks. Otherwise, there is frustration from inability to schedule and, worse yet, time fragmentation, which divides one's creative

Table 1. Research Advisor's Checklist (continued)

ACTION	DEADLINE	ACHIEVED?
Mid through later laboratory projects		
Regular (weekly) reserved time for one-on-one discussion of progress, etc.		**Weekly**
Have an open door policy … during designated times		**Ongoing**
Recognize that a team accomplishes more than any individual		
Always maintain their individual contributions, projects		
To avoid "procedural drift" require advisee to contribute to laboratory methods notebook (lab manual)		
"Audit" data to help safeguard data integrity (to avoid scientific misconduct)		**Monthly**
Conduct annual review; may include graduate committee		**Annually**
Promote more independence		
Although advisee may be more independent, visit the lab even just briefly to observe, etc.		**~Weekly**
Formally assign advisee as mentor of junior lab member		
Publish manuscript(s)		
Gain experience in business for the life sciences, i.e. technology transfer		
Doctoral fellowship application, if appropriate		
Thesis		
All of the above, plus emphasis on …		
Regular (weekly) reserved time for one-on-one discussion of progress, etc.		**Weekly**
Have an open door policy … during designated times		**Ongoing**
Focus on writing, excuse from many common laboratory duties		
Student should complete all graduate college deadlines, etc. in a timely manner		
Postdoctoral fellowship		
All of the above, plus …		
Set goals for independent career (Individual Development Plan) and refine continually (e.g. from Philip Clifford "Clifford.ppt" on APS website)		**~Annually**
Determine whether teaching experience is needed		
More grant writing experience		**~Annually**
More formalized written annual review (e.g. from Philip Clifford "SampleAnnualReviewPostdoc.pdf" on APS website)		**Annually**
After the research project, degree (BS, MS, PhD, MD, DVM., etc.), or postdoctoral fellowship training		
Maintain contact and support		**Ongoing**

energy and thought processes. This is further exacerbated by unlimited email and text message access.

A meaningful laboratory experience, e.g., 6- to 12-week project, should enable the advisee to ***collect enough data for an abstract and/or contribution to a manuscript in the laboratory***.

At appropriate times one should **i*ntroduce the advisee to other faculty and leaders in the field***. Early introductions are important to give impressions to students.

Finally, the advisee should ***summarize the project in writing*** to enable assessment of their understanding and ability to organize data.

Formal evaluation of the advisee should include attention to criteria, such as the level of commitment (time, reliability, conscientiousness, punctuality), self-reliance, independence, intellectual curiosity, communication skills, mastery of concepts of the research (scientific comprehension, intellectual involvement), and laboratory skills (specific methods, organization of data, recording keeping, accuracy).

Mid- Through Later- Laboratory Projects

The early (short-term) project should provide an excellent foundation for continuing in these more advanced stages in laboratory research. Again, ***regular meetings*** are essential. It is hoped that the advisee and advisor appreciate this predictable, regular time for discussion. The current nature of highly interdisciplinary research is likely to be maintained and further expanded, thus, making it essential to communicate that a ***team accomplishes more than any individual,*** while allowing the advisee to ***always maintain their individual contributions, and projects.***

The sense of ownership of their project is highly motivating in high quality advisees. These actions are facilitated by ***requiring the advisee to contribute to laboratory methods notebook (lab manual)***, which also helps ***avoid the "procedural drift"*** that occurs, especially in large laboratories.

The importance of ethical conduct of research has been highlighted recently (2), hence a periodic ***"audit" of data could help safeguard data integrity (to avoid scientific misconduct).*** Progress in the research experience will be facilitated by ***promoting more independence*** in a stepwise manner at every opportunity.

As we should know from being an advisor and teacher (whether teaching coworkers or students), we learn the most when we must teach. Accordingly, an important step is to ***formally assign the advisee as a mentor of a junior lab member.*** In addition to the benefit of the advisee learning her/his project even better, their performance and formal teaching/mentoring can be documented and put into their permanent record, which is very useful for future recommendations regarding teaching experience. This does not substitute for formal classroom teaching, but one-on-one supervision is a critical part of their scholarly mission.

As the student becomes more senior in the program the advisor should ***introduce the advisee to other faculty and leaders in the field.*** Unlike the early stages of training, the introductions should involve more discussion of the student's work or their career plans, so that the students can interact further with these faculty and leaders.

Publishing manuscripts must be a priority at this stage. The advisee should not only write the manuscripts but should also be a full part of the submission process, which includes any online procedures, recommendation of reviewers, revision, etc.

The changing landscape of biomedical research now requires, in my opinion, that students ***gain experience in business for the life sciences, i.e., technology transfer.*** This includes some knowledge of market analysis and stages of drug and device development.

A successful ***doctoral fellowship application*** for support of their studies has been shown to be a strong predictor of future academic success; thus, should be completed at the appropriate stage of their training.

Thesis

If the advisee has a thesis requirement for their program, the above **actions** should proceed relatively unabated, in fact, accelerated. The exception would be allowing the advisee in later stages to ***focus on writing and be excused from many common laboratory duties.***

Postdoctoral Fellowship

Many of the previous mentoring **actions** are also needed for the postdoctoral fellowship phase. The absolutely crucial step for development of an independent scientist is to ***set goals for an independent career with an Individual Development Plan and refine it continually.*** The APS website resource materials (http://www.the-aps.org/careers/careers1/EBSymposia/EB2004symposium.htm) are excellent for this.

Depending on the goals of the advisee, one can ***determine whether teaching experience is needed***. The amount of teaching should not be excessively burdensome.

More grant writing experience should prime the candidate for an independent career. This is a critical step, since the postdoctoral fellow may be supported by funds that require more focused work on the mentor's research grant and would not best facilitate independence from the mentor's work. Ideally, postdoctoral fellowship grants would enable the fellow to work on grants sufficiently different than the advisor's work to make steps toward independence.

A ***more formalized written annual review*** can set the stage for transition to an independent position (see sample document at http://www.the-aps.org/careers/careers1/EBSymposia/EB2004symposium.htm).

After the Research Project, Degree (BS, MS, PhD, MD, DVM, etc.), or Postdoctoral Fellowship Training

After the advising/training period,

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another satisfying stage for the advisor is to ***maintain contact and support***. The mutual pride of advisor and advisee show the long-term outcome of conscientious advisory programs and communication.

Overview

This relatively long list only scratches the surface of the mentor-mentee relationship, which can be explored in many readings (e.g., see Ref. 1). The single best piece of advice is to personalize this advisor's checklist with some revisions and make it a working, living document. Finally, one item that is blatantly absent from the checklist is "Care for your advisees" … but you already know that if you've read this far.

Acknowledgements

I thank the members of the APS Career Opportunities in Physiology Committee for commenting on my discussion of the Advisor's Checklist. In particular, I thank student member Zachary Sellers, for his review and written comments on the checklist.

Please see the APS website to download the Word version of the Research Advisor's Checklist, so that you can revise to suit your specific needs and make this a working, living document and plan. ❖

To comment on this article, go to: http://www.the-aps.org/careers/careers1/mentor/advisorschecklist.htm.

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Journal of Applied Physiology

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(Submission deadline: August 1, 2011)

Advances in Physiology Education

Teaching and Learning of Professional Ethics

Using Classic Papers to Teach Physiology

American Journal of Physiology—Gastrointestinal and Liver Physiology

Physiology and GI Cancer

Intestinal Stem Cells in GI Physiology and Disease

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American Journal of Physiology-Regulatory, Integrative and Comparative Physiology

Integrative and Translational Physiology: Inflammation and Immunity in Organ System Physiology
(Submission deadline: April 30, 2012)

Integrative and Translational Physiology: Integrative Aspects of Energy Homeostasis and Metabolic Diseases
(Submission deadline: April 30, 2012)

American Journal of Physiology—Renal Physiology

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(Submission deadline: July 1, 2011)

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(Submission deadline: July 1, 2011)

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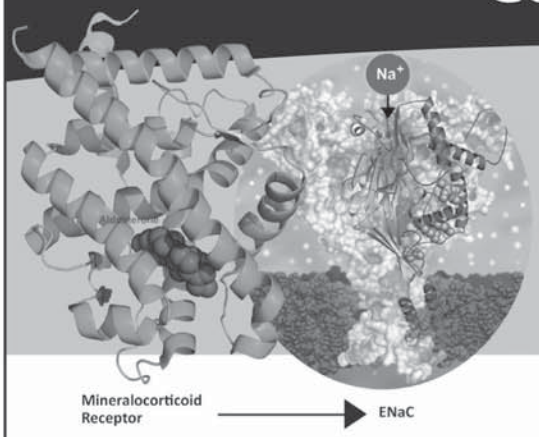
2011 American Physiological Society Conferences



2011 APS Conference:

7th International Symposium on Aldosterone and the ENaC/Degenerin Family of Ion Channels: Molecular Mechanisms and Pathophysiology

DATE: September 18-22, 2011
PLACE: Asilomar Conference Grounds
Pacific Grove, California (USA)

Abstract: June 1, 2011
Registration: August 12, 2011
Housing: August 12, 2011

For more information or to register, visit:
www.the-aps.org/enac

Preliminary Program

- Structure and Function of ENaC and Related Transporters
- Structure and Function of Mineralocorticoid and Glucocorticoid Receptors
- Regulation of ENaC Biogenesis, Trafficking and Gating
- Aldosterone Synthesis and Regulation of Adrenal Cortex Function
- Non-Epithelial Actions of Aldosterone and Crosstalk with Other Systems
- ENaC Pathophysiology
- Aldosterone Pathophysiology

2011 APS Conference:

Physiology of Cardiovascular Disease: Gender Disparities

DATE: October 12-14, 2011
PLACE: University of Mississippi
Medical Center
Jackson, Mississippi (USA)

Abstract: June 20, 2011
Advance Registration: September 12, 2011
Housing: September 15, 2011

For more information or to register, visit:
www.the-aps.org/gender2011

Preliminary Program

- Aging and Cardiovascular Disease
- Gender Disparities in Renal Disease
- Diabetes, Obesity and Cardiovascular Disease
- Neuro Mechanisms and Depression in Cardiovascular Disease
- Gender Disparities in Cardiology
- Cardiovascular Disease and Inflammation
- Gender Differences in Vascular Function
- Cardiovascular Disease and Fertility

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APS Leadership Visits Capitol Hill

On Tuesday, March 15, 2011 APS President Peter Wagner, Past President Gary Sieck, President-elect Joey Granger and Science Policy Chair John Chatham met with several Congressional offices to discuss funding for biomedical research, the humane use of animals in research and publications access. The meetings took place at a critical point in the appropriations process, as Members of Congress worked to avoid a government shutdown and complete spending bills for the remainder of FY 2011 (see Congress finalizes FY 2011 budgets). In a challenging fiscal climate that is focused on cutting federal spending, members of the APS leadership were assured that investment in research is a priority for many Members of Congress, but that no federal programs will be exempt from consideration as Congress seeks to achieve long-term deficit reduction.

APS leadership at the US Capitol. Left to right: Science Policy Chair John Chatham, President Peter Wagner, President-elect Joey Granger, Past-President Gary Sieck and Director of Government Relations Alice Ra'anan.

Drs. Wagner, Sieck, Granger and Chatham thanked Members of Congress for their support of federally funded research and emphasized the need for predictable, sustainable budget increases to allow scientists to capitalize on decades of federal investment in research. APS leadership also stressed the important role that federal funding plays in training the next generation of researchers and expressed concern that dwindling funding and dismal success rates may discourage young scientists from pursuing academic careers.

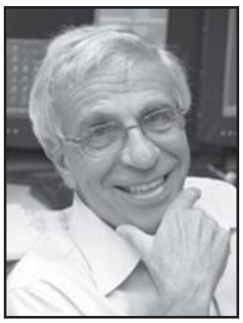
In the Senate Drs. Wagner, Sieck, Granger and Chatham met with staff in the offices of Senators Richard Shelby (R-AL), Thad Cochran (R-MS) and Al Franken (D-MN). In the House of Representatives, they met with Representative Brian Bilbray (R-CA) and staff for Representative Susan Davis (D-CA).

Congress Finalizes FY 2011 Budgets

On April 14, 2011, Congress passed a bill to fund federal programs and agencies for the remainder of the current fiscal year, including research at the National Institutes of Health (NIH), the National Science Foundation (NSF), VA Medical and Prosthetic Research and NASA. The legislation extended funding levels for FY 2010 through September 30, 2011, with a few modifications.

- The NIH budget was reduced by $260 million compared to FY 2010. $210 million of the cuts will be spread across all the institutes and centers in proportion to their total budgets. $50 million was cut from the buildings and facilities budget.
- The NSF budget was reduced by a total of $53 million, with $43 million cut from Research and Related Accounts and $10 million from Education and Human Resources.
- VA Medical and Prosthetic research was level funded.
- NASA sustained a cut of $175 million, with $38 million cut from education, $83 from cross-agency support and $54 million from construction and environmental compliance. ❖

Goldberg Elected to NAS



Michael E. Goldberg

The National Academy of Sciences announced the election of 72 new members and 18 foreign associates from 15 countries in recognition of their distinguished and continuing achievements in original research. Included among those elected was APS Member Michael E. Goldberg, David Mahoney Professor of Brain and Behavior, and director, Mahoney Center for Mind and Brain, Columbia Univ. College of Physicians, New York City. The total number of active NAS members is 2,113 and the total number of foreign associates is 418.

Silverthorn Named Outstanding Alumnae

APS Member Dee Silverthorn was chosen as the Outstanding Alumnae of 2011 for the Newcomb Alumnae Association (NAA) of Tulane Univ. She was honored at Under the Oaks, a ceremony honoring new graduates, the 50-year Newcomb Reunion class, and other NAA awardees, on May 11.

Timothy G. Buchman is currently the Director, Critical Care Center, Emory Univ. Hospital, Atlanta, GA. Prior to this position, Buchman was Director of Burn, Trauma and Critical Care, Washington Univ. School of Medicine, St. Louis, MO.

Olivier J. Devuyst is presently a Professor at the Univ. of Zurich Institute of Physiology, Mechanisms Inherited Kidney Disorders Group, Zurich, Switzerland. Prior to this position, Devuyst was at the Univ. of Louvain Medical School, Division of Nephrology, Brussels, Belgium.

Carie S. Facemire is currently a Research Instructor at the Univ. of North Carolina at Chapel Hill in the Department of Cell and Molecular Physiology. Previously, Facemire was at the Duke Univ. Medical Center, Department of Medicine, Durham, NC.

David G. Harrison has been appointed the Director of Clinical Pharmacology at Vanderbilt University, Nashville, TN. Harrison also was named the Betty and Jack Bailey Professor of Medicine and Pharmacology. He previously served as the Director of Cardiology at Emory University.

Steven B. Heymsfield is presently the Executive Director at Pennington Biomedical Research Center, Department Clinical Research and Metabolism, Baton Rouge, LA. Prior to this position, Heymsfield was at Merck & Co., Rahway, NJ

Ganesan Ramesh has taken a position at Georgia Health Sciences Univ., Medicine and Vascular Biology Center. Augusta, GA. Prior to this position, Ramesh was a Research Associate at the Pennsylvania State Univ. College of Medicine, Hershey, PA.

Chantal A. Rivera, is now a Scientific Review Officer, at the National Institutes of Health, Bethesda, MD. Prior to this position, Rivera was Associate Professor of Physiology at Louisiana State Univ. Health Science Center, Shreveport, LA.

H. Richard Winn is now Professor in the Department of Neurosurgery at North Shore Lenox Hill Hospital, New York, NY. Prior to this position, Winn was a Professor in the Department of Neurosurgery at Mt. Sinai School of Medicine, New York, NY. ❖

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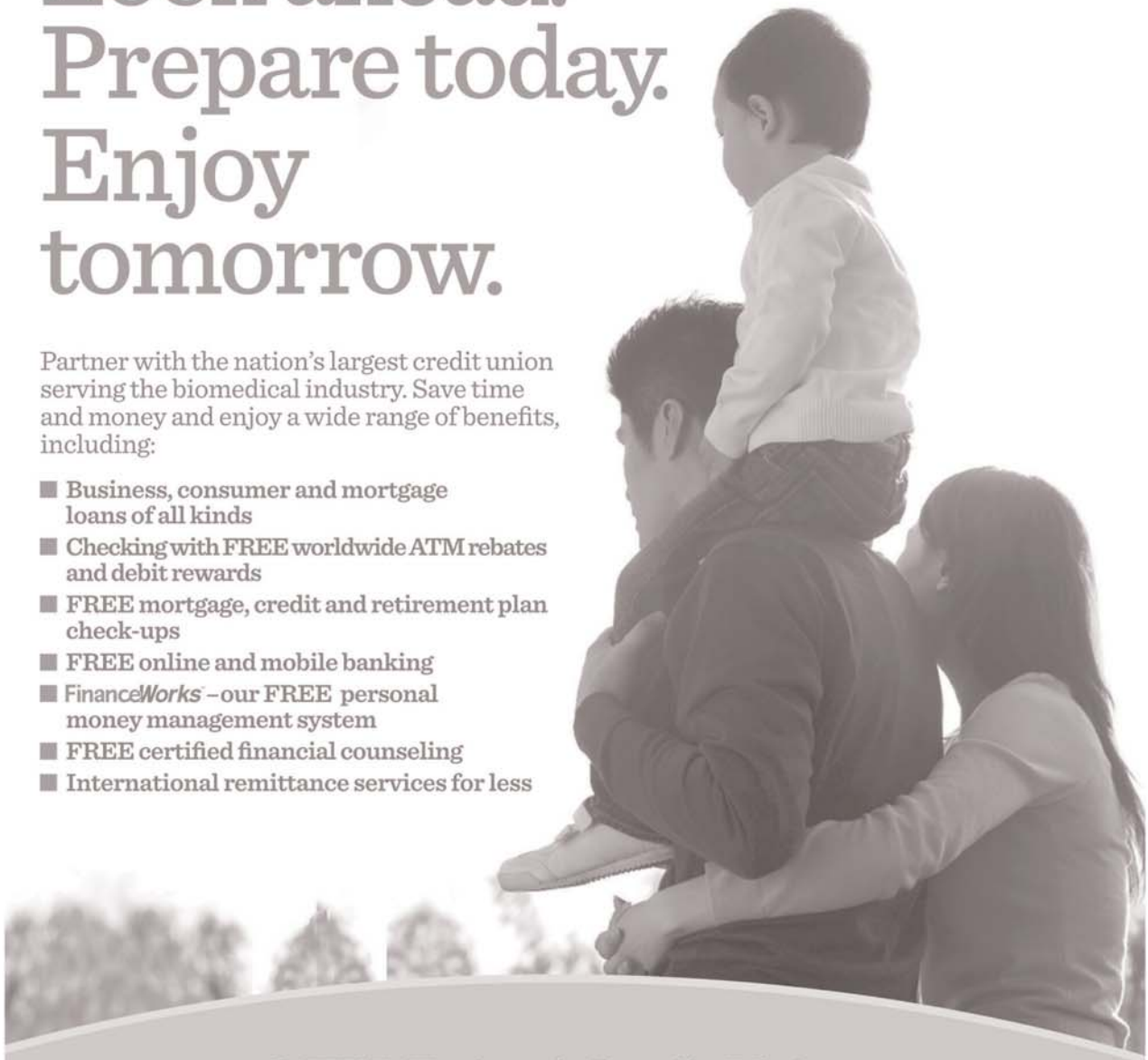

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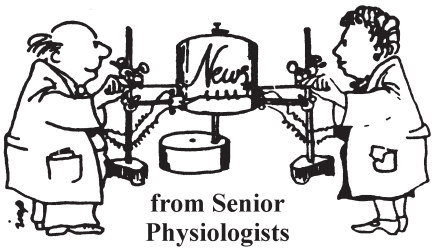
Letters to Margaret Anderson

Heinrich Taegtmeyer writes: "The fact that I was born on Valentine's Day predestined me to become a cardiologist. The fact that I grew up in post-war Germany gave me the experience that life can only get better, year after year. I graduated from medical school at the Univ. of Freiburg in 1968. With the help of Ed Sonnenblick, I came to Boston in 1971 intending to complete my training in medicine before joining his research lab at the Peter Bent Brigham Hospital. Things turned out slightly different when I had my first R01, and in 1978 my family and I moved back to Europe so I could study metabolism in Oxford. I was already over 40 when I joined the faculty at The University of Texas Medical School at Houston in 1982, and when I felt confident to call myself a physician-scientist. This has remained my preferred job description to this day.

"Who were my teachers? It was one of my high school teachers (Herr Kotula, I will never forget him) who excited me about biology. Later on, my love for cardiovascular physiology and metabolism was kindled as a medical student by Albrecht Fleckenstein (in Freiburg), as a cardiology fellow by Michael Lesch (in Boston), and as a graduate student by Hans Krebs (in Oxford). To my many teachers I shall always be grateful for bringing out what I inherited from my father and paternal grandfather: The love for nature.

"My 70th birthday turned out to be a perfect day. It was a Monday, and all patients showed up for their appointments in my clinic. When I returned to the lab, I was greeted by the news that the competing renewal application for our R01 (entitled "Self-renewal of the Cardiomyocyte") had received a very competitive score. So I am happy to be in the lab for another five years, to have students and to pay back what has been given to me by my teachers. Perhaps the greatest pleasure for my wife and me is to know that our three children chose either medicine or social work for their careers. Two of them even earned MD/PhD degrees and are now "bleeding heart" academics. In life as in nature, all is in flux. Heraclitus knew this already 2,500 years ago."

John R. Claybaugh writes: "I am finally responding to some correspondence I received about eight months ago. In that letter you [……]asked



about our scientific activities.

"I officially retired in May of 2007, and was asked by my institution to stay on as the IACUC chair, which I had done for the previous 16 years. This was primarily due to fact that we had an AAALAC-International inspection coming up in the following spring. So, I was hired on as consultant and have been able to keep a small office and work one day a week for pay. This allows me all of the library access I need to continue some writing. Also, I provide statistical and experimental consultation to the residents and fellows in training here at Tripler Army Medical Center.

"I continued to speak at a couple of symposia in 2008, and also I will attend the Experimental Biology meetings this spring to speak at the Leonard Share Memorial Symposium. Also, I have done some manuscript reviewing for *AJP Reg* and *Aviat Space and Environ Med*., but for the most part I turn those opportunities down because I have always put too much time in to them.

"I recently completed a chapter for the second edition of the American College of Sports Medicine textbook in *Advanced Exercise Physiology* (in the publishing editor's hands at this point), and have been working on other manuscripts I plan for peer review.

"Right now I feel a nice balance between work and play, and fortunately I have two children that work for different airlines, so my wife and I can leave Hawaii as much as we want and visit the grandchildren in Atlanta and Houston, and get away from the ones that live in Hawaii. Life is good!"

Letter to Franklyn Knox

Eric Stone writes: "As I approach the end of my scientific career, I have taken to dividing my time between research and rationalism/politics. With regard to the first, partly because of my age and partly the paradigm shift to genomic studies, research grants have become virtually impossible for me to obtain. My area is the neuroscience and neuropsychopharmacology of depressive illness and I have been supported by grants largely from the NIMH for the past 40 years. However, but the six grant applications, which were judged to be excellent and highly innovative by my colleagues, weren't even scored by the study sections! Some of the reasons given were astonishing and I have chosen not to waste any more time and effort for these. However, I still have a small amount of remaining funds which I'm using for the development of new rapidly-acting antidepressant drugs. I find the lack of deadline pressures and fear of grant loss to be most welcome and the shift from basic to more translational studies actually to enhance my productivity and insight. I currently have very little technician help, but don't mind this since the work in the lab is a good balance to writing and reading. I also have become involved in collaborations with some of my younger, more molecularly-oriented, colleagues in their studies of depression. My reading of the relevant literature for the past 40 years has given me a perspective and memory database that my younger colleagues simply do not have yet. This allows me to contribute meaningfully and significantly to their projects, which I find very rewarding.

"With regard to my efforts on behalf of rationalism and politics, this is a response to the deeply troubling rise of science-denial in our country, spearheaded by both the religious-right and animal rights movements and their wealthy right-wing and some left-wing backers. Biological science has now become so highly politicized that the very health of the enterprise in our country is now threatened. I think we scientists now have to devote a significant part of our time to fighting back with our most effective weapon, our rationality. Consequently, I have formed my own rationalist group in my home town and take part in the annual conventions, blogs and chatrooms of rationalist, freethought and skeptic movements. This occupies about 50% of my time and involves arguments with irrationals who seem to have very limited knowledge of either scientific or historical fact. I'm happy to say that the presence of rational groups in universities and even high schools is growing steadily. I have found associating with other rationalists, from all walks of life, not just science, to be very heart-

ening and encouraging and recommend it highly to all scientists, both young and old."

Letter to Bill Dantzler

Jack McBroom writes: "I received my PhD from the Univ. of Oklahoma Medical Center under the supervision of Kurt Weiss. I began my medical school career with a nine-year stint at the Univ. of South Dakota, followed by 14 years at Kuwait Univ. Faculty of Medicine.

"Early in my time in Kuwait, I met Ann Harrison, who joined the Department of Community Medicine and we were married in 1981. Our tenure in Kuwait was truncated by the 1990 invasion and ensuing 'first Gulf war.' We then spent five years at the United Arab Emirates Univ. Faculty of Medicine, Al Ain, Abu Dhabi, UAE. That was followed by an additional five years at St. Georges Univ. School of Medicine on the Island of Grenada, West Indies. We both retired from St. Georges Univ. School of Medicine at the end of 2000.

"We retired to the Shenandoah Valley of Virginia to a property we had discovered and acquired during my sabbatical year (1986-87) in Fran Haddy's Department at the Uniformed Services Univ. of the Health Sciences and Ann's sabbatical at NIH in Bethesda, MD. I did a brief stint as visiting professor at St. Georges in 2001, after which we retired from medical teaching/research in earnest. We maintained a welcome period of travel, developed something of an avocation of collecting, researching and repairing antique, primarily English, clocks. This rather Utopian period recently has been superseded somewhat by our latest venture.

"During the past year (2010), Ann established an infant/toddler pantry which provides formula/food, diapers, donated clothing and other essentials to children 0 to 36 months of age. (http://helpingshenandoahcountyinfantsinneed.blogspot.com/). I soon became involved in that pursuit with her, along with a number of other volunteers, and much of our time is now spent in that sphere.

"You asked for any words of wisdom for younger colleagues, so I will offer the following: Being a physiologist has been a wonderful career. It is rewarding, satisfying, challenging and most of all very enjoyable. Even with the pressure to publish, etc., I would counsel perpetually inhabiting neither a lab nor a classroom. The global world has so many thrilling things to offer and, with those things ever more accessible, I encourage going where your soul takes you and being both a physiologist (or whatever) and a happy person." ❖

Positions Available

Postdoctoral Positions

NIH-supported postdoctoral position available at the Univ. of California, Berkeley: The Forte lab studies the involvement of membrane-cytoskeleton interactions in membrane trafficking and establishing epithelial polarity. The laboratory uses gastric, renal and intestinal cell models to study regulated recruitment of transporters (proton pumps) to the cell surface. Studies in primary cell culture evaluate the role of ERM proteins as membrane/cytoskeleton linkers and the establishing and regulating the plasticity of surface projections. Recent studies are also directed toward isolating gastric epithelial stem cells from neonatal animals and establishing lineages to adult secretory cells. For further information and literature citations see http://mcb.berkeley.edu/faculty/CDB/fortej.html. Successful candidates will have a PhD or equivalent, and experience in cell biology, biochemistry and/or membrane biophysics. A competitive salary commensurate with qualifications will be offered. Send CV, reprints, statement of career goals, and contact information for three references to: Dr. John Forte, Dept. of Molecular & Cell Biology, Univ. of California, 245 LSA, MC#3200, Berkeley, CA 94720, Email: jforte@berkeley.edu.

Postdoctoral Research Fellow: Position is available immediately in the Department of Pharmacology, College of Medicine, at the Univ. of Illinois at Chicago (UIC) to investigate the role of microtubule-binding proteins in regulating permeability of lung endothelium. Candidates must have PhD or MD/PhD degree with excellent skills in Cell and Molecular Biology and Biochemistry (as demonstrated by research publications). Special consideration will be given to individuals who will complement our existing strengths in the study of lung physiology. Qualified applicants should submit: a letter describing research interests, a current curriculum vitae and the names, phone numbers and email addresses of three references. Application must be submitted via Email to Dr. Yulia Komarova, ykomarov@uic.edu.UIC is an [AA/EOE].

Postdoctoral Position: A postdoctoral position is immediately available in the laboratory of Prof. Helio C. Salgado, Department of Physiology, School of Medicine of Ribeirão Preto, Ribeirão Preto, SP, Brazil. The applicant must have a PhD. Writing and oral communication skills are central. The selected applicant will investigate in rats and mice with chronic heart failure developed after coronary artery ligation, the chronic effect of acetylcholinesterase inhibition with pyridostigmine on autonomic balance, heart rate and arterial pressure variability in time (variance) and frequency domain (spectral analysis). In addition, he will also investigate the reflex control of heart rate by means of the evaluation of spontaneous sensitivity of the baroreflex using the sequence method. The studies of cardiovascular variability in mice will be undertaken using telemetry. In this project it will be evaluated also, in anesthetized rats and mice, the influence of chronic acetylcholinesterase inhibition with pyridostigmine upon the cardiac function by means of the pressure vs. volume curve of the left ventricle using the Millar equipment. To ensure full consideration for the position, applicants should submit their application by June 30th, 2011. Interested candidates are

encouraged to submit their Curriculum Vitae and three names or letters of references to the Email (hcsalgado@fmrp.usp.br) of Dr. Helio C. Salgado, MD, PhD, Department of Physiology, School of Medicine of Ribeirão Preto, Av. Bandeirantes 3900, 14049-900, Ribeirão Preto, SP, Brazil.

Postdoctoral (Military) Environmental Physiologist: The Thermal & Mountain Medicine Division, US Army Research Institute of Environmental Medicine invites applicants for a postdoctoral Environmental (cold stress, heat stress and high-altitude) Physiologist position. This position requires United States Citizenship and commissioning as a Medical Service Corps officer. Benefits include salary ($79-84K including base pay and allowances) and free family health benefits. Applicants should have a strong background in integrative or exercise physiology. Molecular biology skills are desired but not required. The successful candidate should have a demonstrated aptitude for grant writing and publication. Women and minorities are strongly encouraged to apply. Send cover letter and curriculum vitae to Dr. Michael N. Sawka, Chief, Thermal & Mountain Medicine Division, US Army Research Institute of Environmental Medicine, Kansas Street, Natick, MA 01760-5007. (Tel.: 508-233-5665, Email Michael.Sawka@us.army.mil). Address inquires to CPT David DeGroot, Research Physiologist (Tel.: 508-233-6229, Email david.degroot@us.army.mil).

Postdoctoral Position: A postdoctoral position is available at the Johns Hopkins University School of Medicine for a motivated individual interested in renal physiology and/or sensory systems (candidate must have a PhD and/or MD). Research in the lab focuses on elucidating the role of sensory signaling pathways in regulating renal and cardiovascular function, and employs a variety of in vitro and in vivo techniques. To apply, please send (preferably in pdf format) a cover letter which includes a description of research background/interests, curriculum vitae, and the Email addresses and phone numbers for three referees to Jen Pluznick at jpluznick@jhmi.edu, with the subject heading, "Postdoctoral Position."

Faculty Position

Assistant or Associate Professor: The Univ. of Nebraska Medical Center (UNMC), Department of Cellular and Integrative Physiology, is seeking applications to fill an Assistant or Associate Professor position. The successful candidate will be expected to develop a solid, extramurally funded research program and contribute to teaching medical and graduate students. He/she will be expected to employ modern genetic, cellular, molecular, electrophysiological and/or integrative approaches to address questions related to physiology or pathophysiology. We are interested in individuals who apply new and innovative state-of-the-art molecular biology and/or imaging techniques to address and complement the integrative approaches already ongoing in this department. Outstanding candidates in physiology will be considered, with special consideration given to investigators who will complement existing strengths of the department, which include Cardiovascular and Renal Physiology. Candidates should have a PhD, MD, or appropriate doctoral degree and relevant postdoctoral experience. Highly competitive salary and startup packages, including new state-of-the-art laboratory space, are available. The Department has a long history of national prominence in the areas of neural control of circulation, microvascular regulation, renal physiology and integrative physiology, and is located in the new Durham Research Center which houses 116 research laboratories. An adjacent second tower with 100 research laboratories further enables multi-departmental and multi-disciplinary research interactions. Omaha, the nation's 42nd largest city, offers an outstanding school system, family-friendly attractions, low cost of living and numerous recreational activities. Please send CV, description of research interests and names of three references to: Kaushik P. Patel, PhD, Chair, Search Committee, Department of Cellular and Integrative Physiology, Univ. of Nebraska Medical Center, 985850 Nebraska Medical Center, Omaha, NE 68198-5850. Applications will be processed and considered upon receipt, and will be accepted until August 1, 2011. Electronic applications (in PDF format) are preferred and should be submitted to physiology@unmc.edu. The review of applications will continue until the position is filled.UNMC is an equal opportunity employer. Individuals from diverse backgrounds are encouraged to apply.

Research Position

Director of Cardiovascular Research Services Core Facility: An expert is sought in the area of Cardiovascular Research to direct the Center for Cardiovascular Research Services Core Facility, Research Resources Center (RRC), at the Univ. of Illinois-Chicago (UIC) . The successful applicant will manage, oversee and perform core research services in physiological monitoring and production of experimental animal models of heart disease for the UIC Center for Cardiovascular Research. The applicant should also possess expertise in echocardiography and production of surgical animal models of disease, including pressure overload hypertrophy and post-MI remodeling, particularly in rodents. The core director will be expected to maintain a high level of technological proficiency in the techniques offered by the laboratory, while continuing to expand their skill set to incorporate the latest technological advances. The role of the director encompasses those of the bench scientist in addition to responsibilities for personnel and budget management, day-to-day technical operations of the lab, assisting UIC faculty in obtaining competitive grants, and developing and maintaining a satisfied customer base. The director is also expected to participate in research protocol design for institutional approval. We are seeking an experienced scientist (with PhD or MD) with an outstanding track record in animal models of cardiovascular disease. Academic rank and salary will be commensurate with qualifications and experience. More detailed information about the Research Resources Center may be found at: http://www.rrc.uic.edu/ Applicants should submit: cover letter highlighting key qualifications; current curriculum vitae with complete bibliography; names and addresses of four references; a one-page summary of the applicant's philosophy of core facility operation. For fullest consideration, applications should be received by April 15, 2011, but the advertisement will remain open until the position is filled. Applications must be submitted through the hire touch system at https://jobs.uic.edu/default.cfm?page=job&jobID=7843. No emails please. Materials should be addressed to Dr. William Hendrickson c/o: Brenda Paige, HR Director, RRC.

The Physiologist
Vol. 54, No. 3, 2011

Nerve and Muscle

4th Edition
Richard D. Keynes, David J. Aidley, Christopher L.H.Huang

One of the attributes of the 2011 edition of this textbook is its historic perspective, which is written in a succinct, readable style. At the same time, this perspective is at the heart of its limitations, because the information covered does not parallel the advancement in knowledge during the past decade; barely 10% of the references cited were written since 2001. The book is very ambitious in its effort to cover membrane phenomena as well as the characteristics of skeletal, cardiac and smooth muscles.

The "nerve" portion of the book provides a condensed description of the basics of membrane excitability and synaptic transmission. It provides nicely the historical perspective of how our knowledge has evolved, starting with the landmark work of Hodgkin and Huxley. The book does not, however, cover some key developments. The description of ion channel structure remains at the protein sequence level, such as transmembrane segments predicted from hydropathy plots of protein sequences, despite great advances made through the use of techniques such as X-ray crystallography and cryo-electron microscopy. It would have been helpful to present modern images of ion channel structures, such as those of voltage-gated K^+ channels (MacKinnon et al) or nicotinic acetylcholine receptors (Unwin et al). In Chapter 7 the author mistakenly refers to the four, rather than five subunits of the acetylcholine receptor. In the discussion of ion channel gating, which involves at least two processes, activation (opening) and inactivation (closing), the mechanisms underlying inactivation are not presented in appreciable detail. Classical work by Armstrong and colleagues showed that parts of the channel protein serve as an inactivation gate, as originally hypothesized by Hodgkin and Huxley. Application of proteases to the intracellular face of Na^+ channels can abolish the inactivation process, hence the ball-and chain model. Advances made by the work of Aldrich and colleagues as well as structural work by MacKinnon demonstrating the location of the inactivation gate within the channel protein have been ignored.

With respect to the presentation of synaptic transmission in the nervous system, interesting discoveries related to activity-dependent changes in synaptic strength, such as long term potentiation or depression are given little attention. These phenomena, which reflect the dynamic nature of neurotransmission, are fundamental and help to understand the computational power of the brain.

Perhaps the weakest parts of the book are on muscle. This is where time has virtually stood still, based on the omission of recent advances in our understanding of the structure of the sarcomere and the functional role of accessory proteins such as titin, nebulin, myomesin, C-protein and others. There is no mention of the crossbridge cycle, which, at the very least, would have provided context for the discussion of *in vitro* motility assays, although this was presented in earlier editions. Discussion of activation of contraction of skeletal muscle also emphasizes work done a decade or more ago. Painfully little information is provided on the operation and regulation of ryanodine receptors, despite great advances in this area and importance in disease. In the chapter on contractile function in skeletal muscle, one is struck by the emphasis on very early literature. For example, in the text and in the form of (excessively large) images, there is a focus on antiquated techniques, such as the use of smoke-drum kymographs for recording muscle contraction, and inclusion of a break-away image of a photocell used to detect the movement of a lever, assuming that these will be instructive. Important principles are presented, but their treatment is incomplete. For example, the fact that the force-velocity relationship initially described by Hill takes the form of a rectangular hyperbola is presented (as in earlier editions), but without reference to the physiological implications of the constants used to describe the relationship or to the relationship of Vmax to the actin-myosin ATPase of the muscles. Heat production by muscle is emphasized, but with no reference to recovery heat or its basis. The treatment of cardiac muscle does cover more recent findings, primarily from the author's own work. However, inadequate attention is given such basic functions as regulation of contraction and its modification by autonomic stimulation. The treatment of smooth muscle is totally inadequate and fraught with errors. Some of the most exciting and functionally important discoveries regarding smooth muscle, made within the time frame covered for striated muscle as well as in recent years, are ignored. These include the role of interstitial cells as pacemakers, electromechanical coupling, pharmacomechanical coupling and mechanisms of the regulation of contraction. The scheme presented for the regulation of contraction is certainly a figment of the author's imagination, invoking a role for caldesmon that seems to be based on information available only to the author, and not in published or even widely known, let alone accepted schema. This criticism extends as well to the mention of structure of smooth muscle, which is out-dated and erroneous. This is exemplified by the dangerous practice of using images from old textbooks, such as the cartoon of a smooth muscle cell showing an oblique arrangement of contractile filaments as the normal physiological structure in tissues. This is contrary to the original work in which the author (Fay) stipulated that this arrangement occurs only in freely shortened isolated cells.

In summary, this book, unlike the preceding editions, is overly ambitious in scope and very disappointing in failing to reach its goal of advancing knowledge. Students seeking up-to-date information on nerve and muscle would not be well served by reading this book. ❖

Marion J. Siegman,
Thomas M. Butler,
Ji-fang Zhang

Jefferson Medical College
Philadelphia, PA

The Wine Wizard

Peter Wagner

Hi all: Now that EB is over and I can go back to being an ordinary citizen, I can focus on the important things in life: talking to my grape vines (grape clusters starting to form), telling the birds to stay off the peaches, executing weeds, and watching the electric meter spin backwards, thanks to the solar panels. And a little winetasting.

Whites:

2009 Elk Cove Pinot Gris, Oregon $13. Here is what I said in January, 2011 about this wine (I tasted it again this past weekend, and it was every bit as good this time, so I list it again): This is a very high quality wine, and very varietal. There is peach and apricot on the nose with some citrus as well. The palate is crisp and clean with good acidity and lots of ripe peach and apricot flavored fruit. No oak. Yum. For this price, well worth it.

2010 Dashwood Sauvignon Blanc, Marlborough, New Zealand $8. The obligatory NZ SB for the column. This wine has—surprise—loads of clean, herbal, grassy gooseberry/passionfruit/lime flavors, strong but not excessive acidity, great body and length. As good as most, & cheaper than every other good NZ SB I have come across.

2010 Kim Crawford Sauvignon Blanc, Marlborough, New Zealand. $13. It is slightly richer than the Dashwood, but unless you have them side by side, you will not notice any difference. Last year, this one beat out 11 other NZ SB's in our tasting group's blind evaluation, and I think it is just as good again this year. Has the same features as the Dashwood, just a bit more concentrated.

2009 Wolftrap white blend, South Africa $8. This is an odd mix of Viognier, Chenin Blanc and Grenache Blanc, but it's quite tasty. The nose has pear and apple; the palate is viscous with pear, apple and citrus. Medium acidity and

Peter Wagner

length, it is a pleasant party wine.

2009 Lava Cap Sauvignon Blanc, El Dorado (Sierra Foothills) $11. Gotta have one Californian in the column. The nose has melon, with a mineral edge. This wine has very ripe fruit, and seems to have a little residual sugar making it a touch sweet. It is viscous, with stone fruit, pear, and apricot on the palate. It is really not recognizable as a Sauvignon Blanc, but if you can cope with that, it's a good wine with cheese etc.

Red wines

2008 Stalking Horse Shiraz, McLaren Vale, South Australia $13. No, I haven't a clue how horses stalk, or, more importantly, why. This is classic over the top stuff – 15% alcohol; almost black; The nose is forward with dark plums and a little cream corn (American oak flavor); very ripe, jammy, soft, fleshy, almost sweet, non-tannic palate with plums and blackberries. Another "Mae West in a bottle,"a metaphor I have used before.

2007 Conn Creek "Herrick Red", Napa, CA $15. This is a Bordeaux blend plus syrah (a Rhone varietal). You have to like American oak to enjoy this one: Lots of dill on the nose and palate. Lots of dark cherry fruit too, smooth with some spice, some green pepper, medium tannins, good acid, and good length.

2006 William Fevre Carmenere "Gran Cuvee", Maipo, Chile $8. Despite its age, this wine tastes quite young (a good thing). The nose is forward, with lots of dark berry fruit, and also lots of dill (American oak). The palate has very rich dark plumy fruit, slight earth, slight green olive, medium tannin and medium acid. Balance is excellent. This is a dinner-quality wine, not a party wine, despite its price. Mind you, I would be happy to slurp it at a party too.

2009 Screaming Deal Cabernet Sauvignon, Livermore valley CA $12. This is a very young and voluptuous wine, a bit simple now, but when it reaches puberty, watch out. Very forward nose of grape juice and dark cherry, a little earth. The palate is rich, simple, viscous, with medium tannin and good acid. It has a very long finish. Try it now, but please buy two so you can check it out a year from now.

Here's a first: A *negative* recommendation. Don't waste your time, dollars or palate on it. Why then bother to mention it, you ask? Because Robert Parker gave it a 92 and Wine Spectator has it ranked at #68 out of the top 100 wines in 2010, and not that many wines in their top 100 are under $20:

2009 Achaval Ferrer Malbec, Mendoza, Argentina $19. Fish oil (sardines) on the nose and palate, with tons of tannin and sour tart cherry fruit. What were these guys thinking? ❖

Books Received

Life In A Shell: A Physiologist's View of a Turtle
Donald C. Jackson
Massachusetts, USA: Harvard Univ. Press, 192 pp, illus, $29.95
ISBN: 978-0-674-05034-1

The Pituitary, 3rd Edition
Edited by Shlomo Melmed
California, USA: Academic Press, 2010, 744 pp, illus, index, $179.95
ISBN: 978-0-12-380926-1

Nerve and Muscle, 4th Edition
Richard D. Keynes, David J. Aidley, and Christopher L.-H. Huang
New York, USA: Cambridge Univ. Press, 2011, 194 pp, illus, index, $45.00
ISBN: 978-0-521-73742-5

A History of Nerve, Muscle & Synapse Physiology
Clifford Ladd Prosser, Brian Albert Curtis, Editor & Producer: Esmail (Essie) Meisami
Illinois, USA: Stipes Publishing, 2009, 572 pp, illus., index, $99.95
ISBN: 978-1-58874-705-1

July 1-4
SEB Glasgow 2011, Glasgow, United Kingdom. *Information:* Talja Dempster, Conference and Communications Manger, Society for Experimental Biology, Charles Darwin house, 12 Roger Street, London, WC1N 2JU. Tel.: +44 (0) 207 6852605; Fax: +44 (0) 207 6852601; Email: t.dempster@sebiology.org; Internet: http://sebiology.org/meetings/glasgow_2011/glasgow.html.

July 4-6
Asian Conference for Emergency Medicine 2011 (ACEM2011), Bangkok, Thailand. *Information:* Internet: http://www.acem2011.org/.

July 6-9
Molecular Biology of Hearing and Deafness, Hinxton, Cambridge, UK. *Information:* Pam Garland, Conference & Events Organiser, Wellcome Trust Scientific Conferences, Hinxton, Cambridge, CB 10 1RQ, UK. Email: p.garland@hinxton.wellcome.ac.uk; Internet: http://www.wellcome.ac.uk/conferences.

July 10-12
International Congress on Carnosine in Exercise and Disease, Ghent, Belgium. *Information:* Email: carnosine@medicongress.com; Internet: http://www.carnosinecongress.org/.

July 14-18
8th IBRO World Congress of Neuroscience, Florence, Italy. *Information:* Scientific Secretariat, Domenico E. Pellegrini Giampietro, Department of Preclinical and Clinical Pharmacology, University of Florence, Viale Pieraccini 6, 50139 Florence, Italy. Tel.: +39 055 4271.205; Fax: +39 055 4271.280; Email: domenico.pellegrini@unifi.it; Internet: http://www.ibro2011.org/site/home.asp.

July 22-27
30th International Congress of Psychology - ICP 2012, Cape Town, South Africa. *Information:* Fatima Seedat. PO Box 989, Houghton 2041, South Africa. Tel.: +011 486 3322; Fax: +011 486 3266; Email: info@icp2012.com; Internet: http://www.icp2012.com/index.php?bodyhtml=home.html.

August 1-5
12th International Congress on Amino Acids, Peptides and Proteins, Beijing, China. *Information:* Professor Gert Lubec, FRSC (UK), c/o Medical University of Vienna, Währinger Gürte 18, A-1090 Vienna, Austria. Fax: +43.1.40400 6065; Email: gert.lubec@medunivwien.ac.at.

August 2-4
International Human Cadaver Prosection Program, Gary, IN. *Information:* Ernest F. Talarico, Jr., Ph.D., Assistant Directory of Medical Education & Assistant Professor of Anatomy & Cell Biology, Director, International Human Cadaver Prosection Program. Tel.: 219-981-4356; Fax: 219-980-6566; Email: cadaver@iun.edu; Internet: http://iusm-nw.medicine.iu.edu/.

August 6-11
International Gap Junction Conference 2011, Ghent, Belgium. Information: Internet: http://www.ugent.be/ge/mbw/en/igjc/en.

August 7-17
Laboratory Training Course: Oocyte and Preimplantation Embryo Molecular Biology, Philadelphia, PA. *Information:* Keith E. Latham, Ph.D., Department of Biochemistry, Temple University School of Medicine, 3307 North Broad Street, Philadelphia, PA. Tel.: 215-707-7577; Fax: 215-707-1454; Email: klatham@temple.edu; Internet: http://www.pregercourse.org/ .

August 14-17
2011 National HIV Prevention Conference - The Urgency of Now: Reduce Incidence. Improve Access. Promote Equity., Atlanta, GA. *Information:* Tel.: 888-234-6291; Email: info@2011NHPC.org; Internet: http://www.2011nhpc.org/.

August 14-21
Wellcome Trust School on Biology of Social Cognition 2011, Hinxton, Cambridge, UK. *Information:* Internet: https://registration.hinxton.wellcome.ac.uk/display_info.asp?id=233.

September 1-4
5th International Conference on Oxidative Stress in Skin Biology and Medicine, Andros, Greece. *Information:* M. Rallis, University of Athens, School of Pharacy, Panepistimiopolis Zografou 15771, Athens, Greece. Tel.: +30-210-7274699; Fax: +30-210-7274027; Email: rallis@pharm.uoa.gr; Internet: http://www.pharm.uoa.gr/oxstress.

September 6-9
International Psychogeriatric Association 15th International Congress, Hague, The Neterlands. *Information:* Email: info@ipa-online.org; Internet: http://www.ipa-online.org/.

September 7-11
EMBO Conference Series on Protein Synthesis and Translation Control, Heidelber, Germany. *Information:* Internet: http://www.embl.de/training/events/2011/TCR11-01/info/index.html.

September 9-11
Oskar Kellner Symposium 2011: Metabolic Flexibility in Animal and Human Nutrition, Warnemunde, Germany. *Information:* Email: oks-info@fbn-dummerstorf.de; Internet: http://oks.fbn-dummerstorf.de/.

September 11-14
The 7th FAOPS Congress, Taipei, Taiwan. *Information:* Secretariat of FAOPS 2011, Department of Physiology, College of Medicine, National Cheng Kung University Tainan, Taiwan 70101. Tel.: 866-6-2353535 ext. 5436; Fax: 866-6-2362780; Email: FAIOS@conf.ncku.edu.tw; Internet: http://conf.ncku.edu.tw/faops/index.htm.

September 11-14
The Twelfth International Conference on Endothelin (ET-12), Cambridge, United Kingdom. *Information:* Amalie Brown, ET-12 Conference Secreteriat, c/o The British Pharmacology Meetings Secreteriat, London, UK. Tel.: +44 207 239 0183; Email: meetings@bps.ac.uk; Internet: http://www.endothelin-conferences.org/Cambridge2011/.

MEMBERSHIP APPLICATION FORM
The American Physiological Society

1. Check membership category you are applying for: ❑ Regular ❑ Affiliate ❑ Graduate Student ❑ Undergraduate Student

2. Name of Applicant: _____ / _____ / _____
Last Name or Family Name *First Name* *Middle Name*

3. Date of Birth _____ / _____ / _____ Optional: Male ❑ Female ❑
Month *Day* *Year*

4. Institution Name _____ Department _____
(Please do not abbreviate Institution Name)

5. Institution Street Address _____

6. City/State/Zip/Country _____

7. Home Address ***(Students Only)*** _____

8. Work Phone _____ Home Phone _____

9. Fax _____ E-mail _____

10. **Educational Status:** ▶ **IMPORTANT for STUDENTS: ** If you are enrolled as a graduate student for an advanced degree, or as an undergraduate student, please include the month and year you expect to receive your degree.**

Dates**	Degree	Institution	Major Field	Advisor

11. **WHAT IS YOUR SECTION AFFILIATION?** Please identify your primary sectional affiliation with a "1" and check (✓) up to two additional sections with which you would like to affiliate. **There can be only one "Primary" affiliation.**

___Cardiovascular	___Endocrinology & Metabolism	___Renal Physiology
___Cell & Molecular Physiology	___Environmental & Exercise Physiology	___Respiration Physiology
___Central Nervous System	___Gastrointestinal & Liver Physiology	___Teaching of Physiology
___Comparative & Evolutionary Physiology	___Neural Control & Autonomic Regulation	___Water & Electrolyte Homeostasis

12. **DO YOU WORK IN INDUSTRY?** ❑ YES ❑ NO

13. **SPONSORS** (Sponsors must be Regular APS Members. If you are unable to find sponsors, check the box below, and we will locate them for you.) *Undergraduate Students do not require sponsors but must supply proof of enrollment such as transcripts or letter from your advisor.*

CHECK THIS BOX IF APPLICABLE: ❑ Please locate sponsors on my behalf.

#1 Sponsor Name _____	#2 Sponsor Name _____
Mailing Address _____	Mailing Address _____
_____	_____
_____	_____
Phone _____	Phone _____
Fax _____	Fax _____
E-mail _____	E-mail _____
Sponsor Signature* _____	Sponsor Signature* _____

**signature indicates that sponsor attests applicant is qualified for membership.*

▶ **Please turn over for more questions...and mailing instructions.**

Membership Application (Continued...) **Applicant Last Name** (please print) _____

14. OCCUPATIONAL HISTORY [Check if student ❑]

Current Position:

Dates	Title	Institution	Department	Supervisor

Prior Positions:

Dates	Title	Institution	Department	Supervisor

15. LIST YOUR MOST SIGNIFICANT PUBLICATIONS, WITH EMPHASIS ON THE PAST 5 YEARS (Publications should consist of manuscripts in peer-reviewed journals. List them in the same style as sample below.)

Sample: MacLeod RJ and Hamilton JR. Volume Regulation initiated by Na^+ -nutrient contransport in isolated mammalian villus enterocytes. Am J Physiol Gastrointest Liver Physiol 280: G26-G33, 1991.

16. DOCTORAL DISSERTATION TITLE (if applicable):

_____

_____

17. POSTDOCTORAL RESEARCH TOPIC (if applicable):

_____

_____

18. WHICH FACTOR INFLUENCED YOU TO FILL OUT OUR MEMBERSHIP APPLICATION?

❑Mailer ❑Meeting (Which meeting? _____) ❑Colleague ❑Other _____

Mail your application to: Membership Services Department, The American Physiological Society
9650 Rockville Pike, Bethesda, Maryland 20814-3991 (U.S.A.)
(or fax to 301-634-7264) (or submit online at: www.the-aps.org/membership/application.htm)

Send no money now—you will receive a dues statement upon approval of membership.

Approval Deadlines: Membership applications are considered for approval on a monthly basis.

Questions? Call: 301-634-7171 • Fax: 301-634-7264 • E-mail: members@the-aps.org • Web: www.the-aps.org