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The Physiologist

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2012 ARTHUR C. GUYTON EDUCATOR OF THE YEAR AWARD
(sponsored by Elsevier)

Teaching Physiology to 21st Century Medical Students

Richard E. Klabunde, PhD
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Indianapolis, IN

Richard E. Klabunde

On a bookshelf above my desk is an old textbook with a red cover. I used this textbook in 1968 as an undergraduate student at Pepperdine Univ. The book is a 2nd edition of Arthur *Guyton's Textbook of Medical Physiology*. That book, along with a two semester physiology course, became my inspiration for a career in physiology. A few years later, as a physiology graduate student at the Univ. of Arizona, I had the privilege of listening to Dr. Guyton lecture and enjoyed having informal conversations with him. Although not always appreciated by physiology faculty, students found that Guyton's textbook offered clear and simple explanations of many difficult topics. Because of his own background in medicine, Guyton had a good grasp of the important physiological concepts that a medical student should understand in order to become a competent physician. Despite all of his honors as a researcher and mentor of many of today's prominent physiologists, Guyton never lost his ability to explain difficult concepts in a manner that was understandable, especially to those just beginning their studies of physiology. As I reflect on this, I see how my own career as a researcher and medical educator has been shaped by some of my early impressions of Dr. Guyton and his textbook.

My teaching philosophy has changed considerably since my first full-time faculty appointment in 1978 at West Virginia Univ. In those early years of my career, basic science instruction in medical schools was conducted almost exclusively by faculty lecturing to students, supplemented with some teaching laboratory experiences. In my lectures, I would occasionally project transparencies or slides on a screen, but most of the time I would simply write and draw on the blackboard as I lectured. Since my cardiovascular lectures were a four-week block of time in a Medical Physiology course, I had plenty of time to go into considerable detail in my lectures. It was not uncommon to derive equations on the board and draw diagrams to summarize the research findings of Starling, Sonnenblick, Sarnoff, Guyton and others. I even tossed into

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my lectures some of my own research findings on muscle blood flow regulation. Guyton's textbook was felt by most of my faculty colleagues to be too elementary to use, although many students would still buy it despite our recommending other textbooks because of its clear presentation of fundamental concepts. Were the students on to something that the faculty had not yet appreciated and embraced? Was understanding fundamental concepts of physiology more important to medical student training than learning about the latest research?

After a few years of teaching as a new faculty member, I realized that my teaching style did not stimulate student learning as much as I had hoped. My expectations for learning by the medical students was not that much different than for my graduate students, who were often compared to each other. It is interesting to note that the graduate students sat in on the medical student lectures, but the graduate students also had additional group learning opportunities that were very interactive, which facilitated their understanding of difficult physiological concepts. Would medical student learning have been enhanced if they had been given the same opportunity for interactive learning in small groups? Having small group learning activities was not in vogue during the early 1980s, but I did take the step to begin supplementing my medical physiology lectures with interactive problem sets and cardiovascular models. What I found was that student learning was greatly enhanced when they were able to actively participate in the learning process. An awakening began in me at that time, but more than a decade would pass before my thinking and practice about medical education would be substantially transformed.

I left West Virginia Univ. in 1985 and did not re-emerge into a full-time academic position until 1998. During those 13 years as a researcher at Abbott Laboratories and then as a senior scientist and Director of the Deborah Research Institute, I continued to teach medical cardiovascular physiology and pharmacology at nearby medical schools. My teaching style, however, fell back into the old familiar and comfortable pattern of simply giving lectures. Nevertheless, those years afforded me the opportunity to expand my scientific horizons into new areas of physiology and more importantly into the clinical application of physiology.

When I assumed a full-time faculty position at the Ohio Univ. Heritage College of Osteopathic Medicine (OU-HCOM) in 1998, I found an academic environment that encouraged innovation. I was skeptical at first because some of my new colleagues were talking about medical students learning basic science without formal lectures, an idea that was very new to me. At that time, OU-HCOM had a well-established problem-based learning (PBL) curriculum for one-fourth of its students, and I was asked to conduct several clinically oriented cardiovascular problem sets with those students. I had previously conducted many problem sets with students, but only after extensive lecturing on a topic. How would the students be able to delve deeply into the basic science that undergirds clinical problems if they had not already been primed with detailed lectures? To my surprise, I discovered that students in the PBL curriculum were quite capable of understanding the complexities of cardiovascular physiology without first listening to lectures, provided there was some level of faculty-directed involvement in their learning. Because many entering medical students today have little or no undergraduate exposure to physiology, I found that it was very helpful to their learning if I directed them to which physiological concepts needed to be learned in order to maximize learning during group discussions of clinical cases. Some have argued that students need no faculty guidance in their learning. While that may be true for a small subset of students, I have found that students are generally better prepared for discussing a clinical case if they are given explicit guidance in their preparation. Working with students in the PBL curriculum taught me that a professor's role should not be limited to disseminating knowledge through didactic lectures, but include other types of learning activities that engage students in the learning process. The goal is to train students to become "thinking physicians," and I would frequently state this goal to my students.

"To my surprise, I discovered that students in the PBL curriculum were quite capable of understanding the complexities of cardiovascular physiology without first listening to lectures, provided there was some level of faculty-directed involvement in their learning."

My experience with the PBL curriculum helped to inform my thinking regarding how I could better encourage active learning in the larger lecture-driven, Clinical Presentation Continuum (CPC) curriculum at OU-HCOM. This curriculum was comprised of multidisciplinary blocks, most of which were taught by more than a dozen non-clinical and clinical instructors. Blocks were organized around clinical presentations associated with specific organ systems. I was responsible for all the physiology and a large portion of the pathophysiology and pharmacology content in the Cardiovascular Block. Over several years, I decreased the number of lectures that I gave and increased the number of interactive learning activities, such as problem sets, case vignette discussions, computer simulations, and journal article discussions. About one-third of my contact hours in the cardiovascular block involved these types of interactive learning activities. Nevertheless, lectures still remained an important component of the block. To better engage students during my lectures, I incorporated an audience response system to challenge student understanding during each lecture. My lectures emphasized major concepts that students traditionally found difficult to understand. My personal goal as an instructor was gradually being transformed from disseminating knowledge to challenging and inspiring students to learn the complexities of the cardiovascular system.

There were some important topics that were not covered in my lectures because of time limitations. Instead, students were assigned readings from textbooks and online resources. Student understanding of these topics was reinforced by interactive learning activities. This approach to teaching shifts more responsibility for learning onto the student, which will be required if they are to become "life-long learners." Although students need to assume more responsibility for learning, I have found that it is still important for faculty to assist them by providing an appropriate framework for their learning. One way I assist student learning is by providing a clinical framework for the basic science topics. Medical students comprehend and apply

basic science concepts best when they are learned and assessed in a clinical context. We are training students to become physicians, and that is different than training graduate students to be researchers. When medical students take their licensing board exams, questions are written in a clinical context. By teaching basic science in a clinical context we better prepare students for their board exams and clinical practice.

I have also found it important to provide students with learning resources that are appropriate for their level of medical training. Because of my interest in technology and the web, I chose to provide learning resources for students by developing two teaching websites: www.cvphysiology.com and www.cvpharmacology.com. These sites have been an important resource for my students and for more than 250,000 unique visitors who go to these websites each month. The physiology website not only covers all of cardiovascular physiology, but also provides a clinical context for learning physiology. I make use of tutorials and self-assessment tools to guide and reinforce student learning. Many students prefer to utilize web-based resources over printed textbooks because of cost and convenience. Another important resource for assisting my students in their learning has been my textbook, *Cardiovascular Physiology Concepts*, published by Lippincott Williams & Wilkins in 2004 and 2011. In the last few years, I have produced mini-lectures (five-15 minutes in length) on specific topics and posted these on my physiology website and on YouTube in formats that can be used by different types of digital devices.

Understanding how 21st century students learn best is also important because of the exponential increase in basic and applied medical knowledge. Physicians cannot know everything even if they are highly specialized in a field of medicine. Therefore, they need to know how to efficiently seek out knowledge, to critically evaluate what they read or hear, and then be able to apply new knowledge to the practice of medicine. Today's medical students, when confronted with a new clinical challenge ten years from now, will not open up dusty binders containing notes from old lectures. Instead, they will most likely connect to online resources to find answers to their questions. Our challenge today, therefore, is to prepare students to be able to utilize many types of learning resources to aid them in clinical decision-making. Furthermore, we need to train our students to be able to discern between appropriate and inappropriate sources of medical knowledge. These new challenges in medical education have made my career as a medical educator all the more exciting because I must be able to respond creatively to changing educational paradigms.

In conclusion, my philosophy for teaching 21st century medical students can be summarized by the following key points:

- engaging students in active learning during lectures and interactive learning activities;
- assisting student learning by providing learning resources that are appropriate and clinically relevant for medical students; and
- inspiring students to become thinking physicians and life-long learners.

Even as I write these words, my mind is frequently going back to the mental images I have of Dr. Guyton speaking to a classroom full of students or speaking to room full of physiologists. Dr. Guyton significantly impacted my career, and, therefore, being awarded the Arthur C. Guyton Educator of the Year Award in 2012 has been a very special honor.

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APS Council Holds Fall Council Meeting

Due to Hurricane Sandy, the Council met via GoToMeeting on Monday, October 29.

Council received reports from the Publications, Finance, Membership, Education, and other Committees. APS staff members Marsha Matyas, Robert Price, Alice Ra'anan, and Rita Scheman joined the meeting to assist with the committee report presentations.

Based on a recommendation from the Daggs Award Committee, Council approved the selection of APS member James Schafer, Univ. of Alabama, Birmingham, as the 2013 Daggs Awardee. He will receive his award at the 2013 APS Business Meeting on Tuesday, April 23 at EB13.

The Publications Committee reported that Willis K. Samson, St. Louis Univ. School of Medicine, has been appointed as the next Editor of the *AJP-Regulatory, Integrative and Comparative Physiology*; his term will begin July 1, 2013. The Committee also reported that P. Darwin Bell, Medical Univ. of South Carolina, has been appointed as the next Editor of the *AJP-Renal Physiology*; his term will begin July 1, 2013. The Committee also reported that David Pollock, Georgia Health Sciences Univ., was selected as the new editor of *Comprehensive Physiology*; his term will begin July 1, 2013.

The Publications Committee reported that the 2011 Journal Impact Factors for *PRV* was 26.866, which was ranked highest among all physiology journals (and sixth among all journals indexed in Thomson Reuters). The Committee reported that since March 2011, *AJP-Renal* has published one audio podcast/month; *AJP-Heart* has published 2-3 audio podcasts per month since December 2010.

The Publications and the Education Departments jointly submitted a successful application to the NSF for the development of modular course materials on ethics education in science and engineering. Additional collaborators on the project are the Biomedical Engineering Society (BMES) and the Society of Biological Engineers (SBE). The amount of the grant is $400,000 awarded over a three-year period.

An app for an optimized version of the journals' websites for mobile web devices is currently being developed and should be ready for release soon. The apps will be accessible remotely via UN/PW and via a voucher system that will enable users to obtain access within their institutional IP address for remote use.

The Finance Committee presented Council with the projected final 2012 budget and the proposed 2013 budget, both of which were accepted and approved by Council.

The Science Policy Committee reported that beginning in 2013, chapters will be able to request a speaker to address an advocacy topic as part of the SPC/ACE Joint Chapter Outreach Program. The SPC will try to identify an appropriate speaker from the Science Policy (SP) or Animal Care and Experimentation (ACE) Committee. Requests will be considered on a first-come, first-serve basis, subject to the availability of a speaker. Three basic presentations are currently offered, including a General Advocacy Presentation (includes both funding and animal research); a presentation on Research Funding Advocacy; and a presentation on animal research issues.

Additional details of the Council's 2012 fall meeting will be presented to the membership at the 2013 APS Business Meeting. The Business Meeting will be held at EB13 on Tuesday, April 23, at 5:45 pm in the Boston Convention and Exposition Center. All APS members are encouraged to attend.

Council Action Items

• Council approved the recommendations of the Finance Committee accepting the estimated 2012 budget and approved the 2013 proposed budget.

• Council unanimously approved a motion to transfer 13 regular members to emeritus membership status.

• Council unanimously approved the selection of James Schafer as the 2013 Daggs Awardee.

• Council approved a motion to decrease one programming slot each for the Respiration Section and the Cell and Molecular Physiology Section, and increase one programming slot each for the Neural Control and Autonomic Regulation Section and the Environment and Exercise Physiology Section for the EB 2014 meeting through the EB 2016 meeting.

• Council unanimously approved the proposal from the Communications Committee to "develop and support a translational physiology blog" that would be targeted to the general-public. ❖

Physiology in Perspective: The Walter B. Cannon Award Lecture (Supported by Sucampo AG)

Michael J. Joyner
Mayo Clinic

"Is Physiology Redundant?"

Saturday, April 20, 5:30 pm

Henry Pickering Bowditch Award Lecture

Johnathan Tune
Indiana Univ. Sch. of Med.

"Translational Insights Into the Regulation of Coronary Blood Flow

Sunday, April 21, 5:45 pm

Claude Bernard Distinguished Lectureship of the APS Teaching of Physiology Section

Eric Mazur
Harvard School of Engineering and Applied Sci.

"Confessions of a Converted Lecturer"

Sunday, April 21, 10:30 am

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

Amira Klip
The Hospital for Sick Children

"Insulin Signal Transduction Meets Vesicle Traffic via Rab GTPases and Unconventional Myosins"

Sunday, April 21, 2:00 pm

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

Donald E. Kohan
Univ. of Utah Health Sci. Ctr.

"Collecting Duct Endothelium: The Last Word in Sodium and Water Excretion and Blood Pressure Regulation"

Sunday, April 21, 3:15 pm

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

Roger A. Dampney
Univ. of Sydney

"Central Mechanisms Regulating Co-ordinated Cardiovascular and Respiratory Function in Stress and Arousal"

Monday, April 22, 8:00 am

Solomon A. Berson Distinguished Lectureship of the APS Endocrinology and Metabolism Section

Ellis R. Levin
Univ. of California, Irvine

"Extra-nuclear Estrogen Receptors: Functions for Physiology and Patho-Physiology"

Monday, April 22, 10:30 am

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

Douglas R. Seals
Univ. of Colorado

"The Remarkable Anti-aging Effects of Aerobic Exercise on Arteries"

Monday, April 22, 2:00 pm

Joseph Erlanger Distinguished Lectureship of the APS Central Nervous System Section

Charles W. Bourque
McGill Univ. and Montreal Gen. Hosp.

"Verney's Osmoreceptor: An Integrated Unit Comprising Ion Channels, Glial Cells and Mechanosensitive Neurons"

Monday, April 22, 3:15 pm

Carl W. Gottschalk Distinguished Lectureship of the APS Renal Section

Jeff Sands
Emory Univ. Sch. of Med.

"Regulation of Renal Urea Transport"

Monday, April 22, 3:15 pm

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

Aron Fisher
Univ. of Pennsylvania Sch. of Med.

"The Serpentine Path to a Novel Mechanism Based Inhibitor of Acute Inflammatory Lung Injury"

Tuesday, April 23, 10:30 am

Robert M. Berne Distinguished Lectureship of the APS Cardiovascular Section

David J. Lefer
Emory Univ. Sch. of Med.

"A Long and Winding Road: The Story of Nitric Oxide in the Heart"

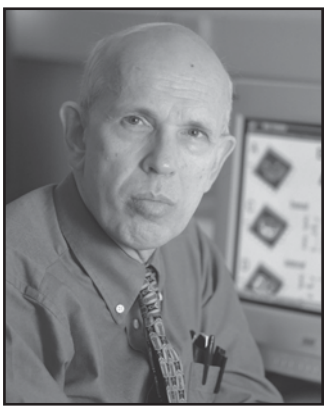
Tuesday, April 23, 2:00 pm

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

Stan Lindstedt
Northern Arizona Univ.

"From Tusko to Titin: Giant Insights from Comparative Physiology"

Tuesday, April 23, 3:15 pm



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

Ole H. Petersen
Cardiff Univ.

"Calcium Signal Mechanisms in Epithelial Cells: Roles in Physiology and Pathology"

Tuesday, April 23, 3:15 pm

APS President's Symposia
Nobel Prize in Physiology or Medicine Lecture

Linda Buck
Fred Hutchinson Cancer Res. Ctr.

"Unraveling Smell"

Wednesday, April 24, 4:45 pm

The Fifth Annual Meeting of the Arizona Physiological Society

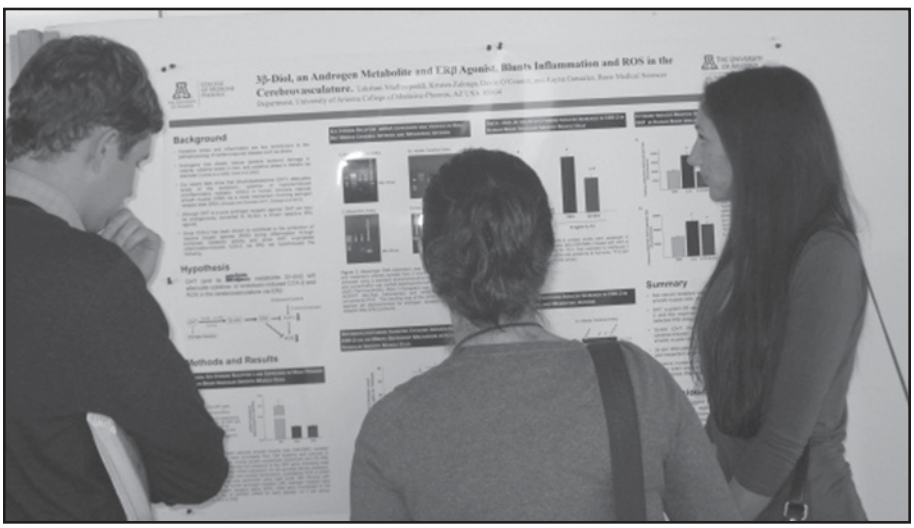
A very successful fifth annual meeting of the Arizona Physiological Society (AzPS) was hosted by the Department of Physiology at the Univ. of Arizona, Tucson during November 2-3, 2012. In attendance were 101 registrants, from five state-wide Univ. campuses: Univ. of Arizona-Tucson (UA-TUC), Univ. of Arizona-Phoenix (UA-PHX), Arizona State Univ. (ASU), Northern Arizona Univ. (NAU), and Midwestern (MWU).

Attendance represented 89% of the current membership. Of those in attendance, 31% were faculty members, 36% were graduate student/medical student trainees, 11% were postdoctoral trainees, 20% were undergraduate trainees and 2% were other (research associates, local high school teachers). A record number of high quality abstracts (58 total) were submitted from; undergraduate students (11), graduate students (37), postdoctoral fellows (7), and research technicians (3). The meeting was jointly sponsored by; The American Physiological Society, Univ. of Arizona-Tucson Department of Physiology, The Cardiovascular Training Grant Univ. of Arizona-Tucson, Midwestern Univ. Department of Physiology and the Department of Basic Sciences, Rainin Pipetting 360?, Roche Diagnostics Corporation (Applied Science Division), and Kent Scientific Incorporation. Linda Baughn (UA-TUC) served as the roaming photographer during the meeting.

The meeting commenced with an introduction and welcome given by Society President, Scott Boitano (UA-TUC), and followed with the first session of the conference "Physiology Research in Arizona, Part I", chaired by Cara Sherwood and Leah Penrod. There were six talks in this session, with the topics ranging from those using human subjects ("Bronchodilation during exercise in patients with cystic fibrosis: a comparison to albuterol administration" by Sarah Baker, UA-TUC), to those utilizing animal models ("Necrotizing entercolitis and probiotics" by Bohuslav Dvorak, UA-TUC, and "The effects of a titin mutation on tremor frequency during shivering thermogenesis" by Kari Taylor, NAU).

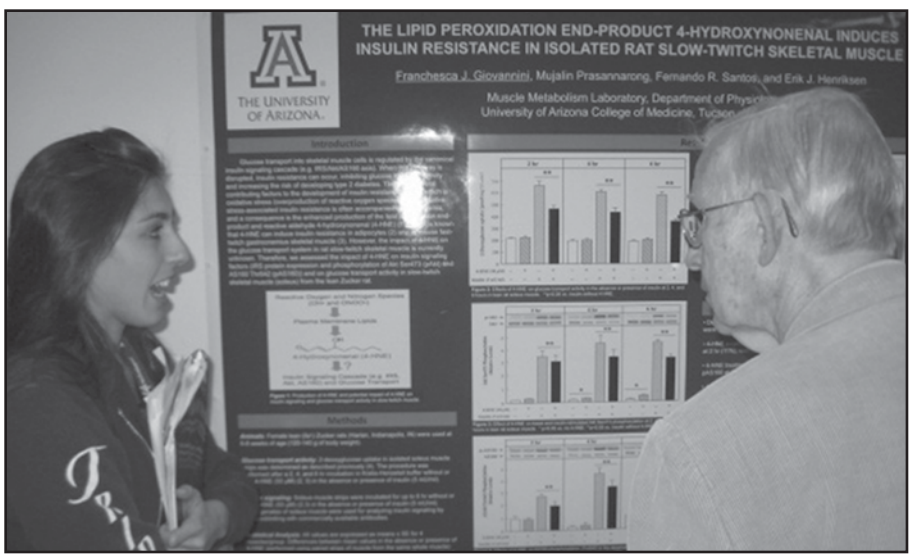
The next session was devoted to "Teaching Physiology in Arizona, Part I" and was chaired by Drs. Claudia Stanescu and Scott Boitano. Talks included "Brain Academy: A unique educational outreach partnership to engage high school juniors in neuroscience and medicine outside of the classroom" by Sarah Lewis (UA-TUC), and "Why should we care if they understand science: teaching physiology to the non-scientist" by Cindy Rankin (UA-TUC). The five talks in this session prompted thought-provoking discussion relating to the difficulties involved regarding teaching physiology to non-scientists, and undergraduates alike.

The keynote lecture, introduced by



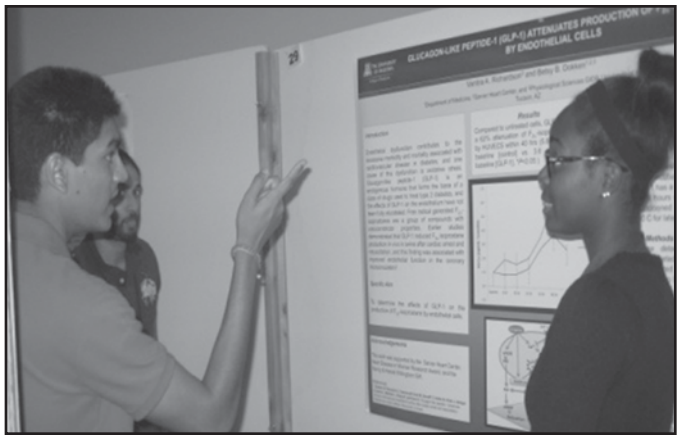
Poster presentation discussion with Devin O'Connor, Rayna Gonzalez and Lakshmi Madhavpeddi.

The Arizona Distinguished Lecturer, Patricia Hoyer and the conference Keynote Speaker, Benjimen Walker.



Poster presentation discussion with Franchesca Giovannini and Charles Tipton.

Several posters presented during the conference.



Poster presentation discussion with Vanitra Richardson (UA-TUC).

Karen Sweazea (ASU), was given by Benjimen Walker (Univ. of New Mexico Health Sciences Center) and entitled "Novel mechanisms of vascular control in hypoxia". This lively and engaging keynote talk was followed by a reception and the return of the popular minute poster presentations (whereby each poster presenter is given one minute of microphone time to "advertise who they are, and give a brief overview of the research poster they will shortly present"). A delicious buffet dinner followed with continued libations, and two poster sessions that included research presentations by 29 members.

The second day of the meeting began with the Symposium "Teaching-Part II", chaired by Cindy Rankin (UA-TUC). The speakers shared interesting insights relating to teaching Physiology at different levels of education; "Using active learning techniques in the classroom" by Donna Cataldo (ASU), and a refreshing and informative talk by Lucina Lopez (Flowing Wells High School, APS Teaching Fellow) entitled "Teaching HS Physiology. Is it true that…? The problem with the google generation".

Erik Henriksen (UA-TUC) then introduced the Arizona Distinguished Lecturer Patricia Hoyer (UA-TUC), who gave an excellent and inspiring lecture regarding her research entitled "VCD as a tool for understanding ovotoxicity and modeling menopause".

The final oral communication session of the meeting, "Physiology Research in Arizona - Part II", was chaired by Sarah Kuzmiak and Nathaniel Hart (UA-TUC) and comprised five oral presentations on such topics as "Role of cardiac fibroblasts in mediating early inflammatory responses in hypertensive heart disease" by Taben Hale (UA-PHX), and "Residual force enhancement among mdm genotypes along the length tension curve" by Cinnamon Pace (NAU).

After a brown bag lunch, attendees were treated to another minute poster session which included three raffled Visa gift cards to the attendees (generously provided by Rainin Pipettes 360?). This second and final poster session included 26 posters presented by members. The fifth annual AzPS conference concluded with the business meeting that was chaired by President Scott Boitano. He thanked members of the executive council who had completed their terms of service for their hard work, including, Sarah Kuzmiak (Graduate Student Representative), and Leah Penrod (Postdoctoral Representative). He then welcomed new members that included Layla Al-Nakkash (MWU-President), Cara Sherwood (Postdoctoral Representative), and Anthony Hessel (Graduate

Shane Meehan receiving 1st place undergraduate abstract.

Abstract Category	Postdoctoral Fellow	Graduate Student	Undergrad./Med. Student
First place	Carlos Hidalgo (UA-TUC)	Mei Methawasin (UA-TUC)	Shane Meehan (NAU)
Second place	Chris Pappas (UA-TUC)	Justin Hoffman (UA-TUC)	Tamara Armstrong (US-TUC)
Third place	Cinnamon Pace (NAU)	Samantha Behunin (UA-TUC)	Karl Martineau (MWU)

Student Representative). Taben Hale (UA-PHX) will continue to serve as Secretary-Treasurer. Subsequently, financial awards were given for abstract submissions that represented $100 for first place, $50 for second place and $25 for third place. Listed in Table 2 are the names and institutions associated with the various awards

Boitano then passed the gavel to President Layla Al-Nakkash who thanked him for a "job well done" and asked for a motion to close the meeting. It was received, seconded and the meeting was adjourned at 3.40PM.

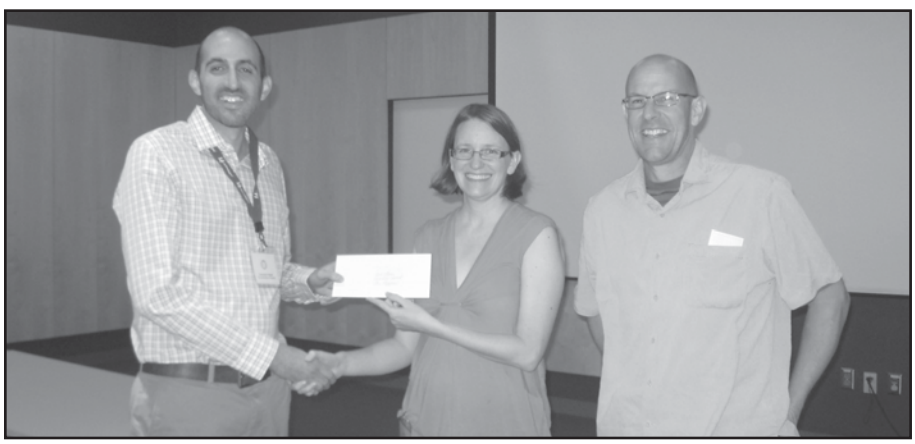
Directly preceding the AzPS Chapter Conference, a student career Networking event was organized for the evening. This event was funded by an APS Chapter Activity Grant. The following companies were in attendance and their respective representatives shared experiences with students regarding potential career opportunities: Rainin Pipettes 360?, Thermo Fisher, BIO5 Media Facility, Roche Applied Sciences, Ventana Medical Systems, Inc. and W.L. Gore & Assoc. In addition, the following Arizona Univ. Programs had representatives on hand to share information regarding academic or healthcare career path opportunities: from the Univ. of Arizona (College of Pharmacy, College of Pharmacology, College of Public Health, College of Nursing, College of Medicine, Grad. Program–Cancer Biology, Grad. Program–Applied Math, Grad. Program–Physio. Sciences), from Northern Arizona Univ. (Dept. of Physicians Asst. Studies and Physical Therapy), and from Midwestern Univ. Glendale (Osteopathic Medicine, Physician Assistant and all other programs available). ❖

Layla Al-Nakkash
Midwestern University.

Mei Methawasin receiving first place graduate student abstract from Taben Hale and Scott Boitano.

Justin Hoffman receiving second place graduate student abstract.

Passing of the gavel from past Society President Scott Boitano to incoming Society President Layla Al-Nakkash.



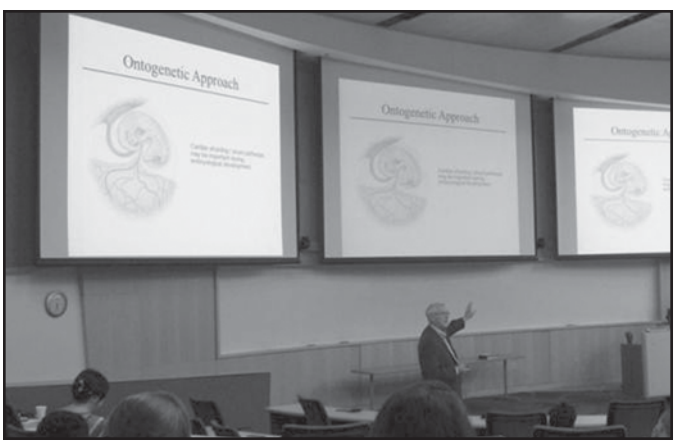
Chris Pappas receiving second place postdoctoral fellow abstract from Taben Hale and Scott Boitano.

Ohio Physiological Society 2012 Report

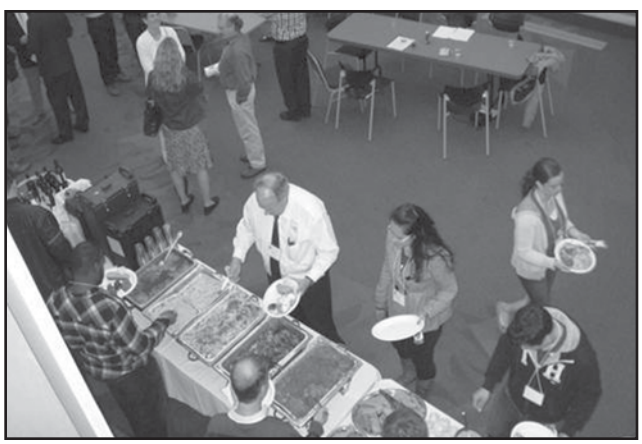
The Ohio Physiological Society held its 27th annual meeting at Wright State Univ. Boonshoft School of Medicine on October 26-27, 2012. With 127 registrants from 14 of Ohio's universities, there was ample opportunity for energetic exchange of ideas between attendees. OPS 2012 opened Friday evening with a keynote address given by James W. Hicks from the Univ. of California, Irvine who spoke on "Tales from the Heart: Form and Function of the Vertebrate Cardiovascular System." Hicks' talk was enthusiastically received and generated a lively discussion that was continued through the banquet following the keynote address. We appreciate the financial support from the American Physiological Society to bring in a keynote speaker.

Saturday's portion of the OPS 2012 meeting began with research presentations from four new investigators in Ohio: Nadja Grobe, Wright State Univ.; Peter MacFarlane, Case Western Reserve Univ.; Yana Zavros, Univ. of Cincinnati; and Peter Piermarini, Ohio State Univ., Ohio Agricultural Research and Development Center. Following a break, we reconvened for a trainee data blitz where students and postdoctoral fellows had the opportunity to briefly introduce their research and highlight a figure from their posters. Trainees volunteering to participate in the data blitz included Joseph Santin, Wright State Univ.; Ahmed Obeidat, Wright State Univ.; Venkateshwar Mutyam, Univ. of Dayton; Amy Engevik, Univ. of Cincinnati; Melinda Engevik, Univ. of Cincinnati; Rituparna Ganguly, Northeast Ohio Medical Univ.; Hari Somineni, Wright State Univ.; Adam Deardorff, Wright State Univ.; Eric Niespodzany, Univ. of Cincinnati; Santosh Kumar Maurya, Ohio State Univ.; Jeannine Crum, Wright State Univ.; Robert Palmer, Wright State Univ.; and Andy Koesters, Wright State Univ.

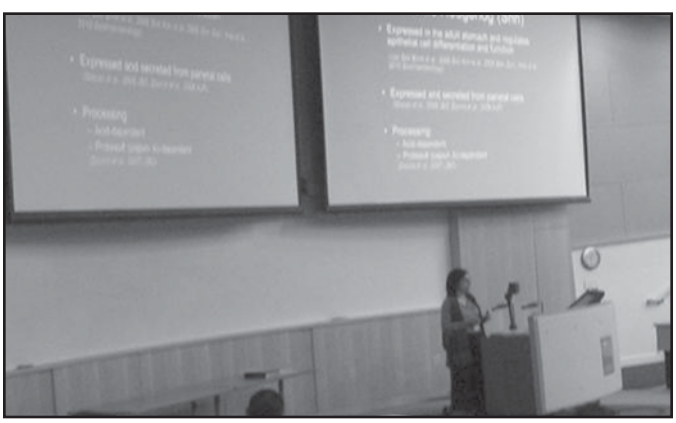
Two consecutive poster sessions following lunch gave opportunity for the presentation of research posters by six faculty/research staff, seven postdoctoral fellows, 43 graduate students, and 14 undergraduate students. Thanks to the generosity of the American Physiological Society, Ohio Physiological Society members, especially Norma Adragna, Francisco Javier Alvarez-Leefmans, and Peter K. Lauf, we were able to award four $500 travel awards to support trainees' attendance at Experimental Biology 2013 in Boston.



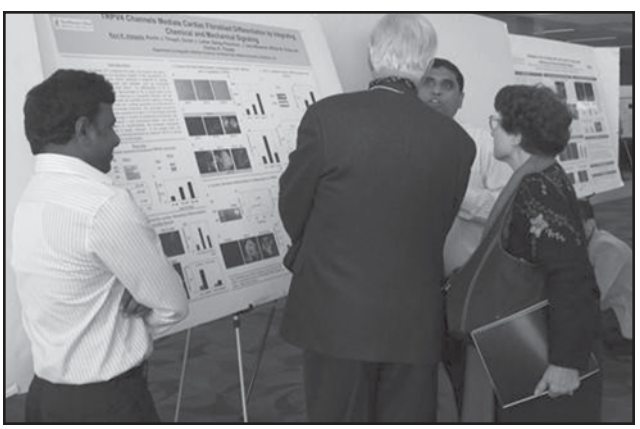
James W. Hicks, Univ. of California, Irvine, giving his keynote address opening OPS 2012.



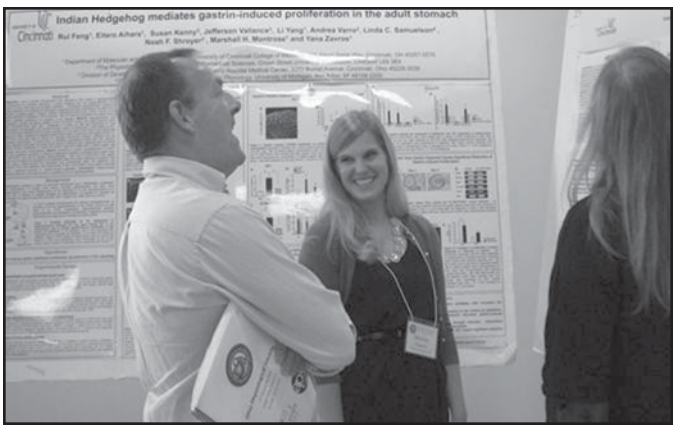
OPS 2012 attendees enjoying the banquet.



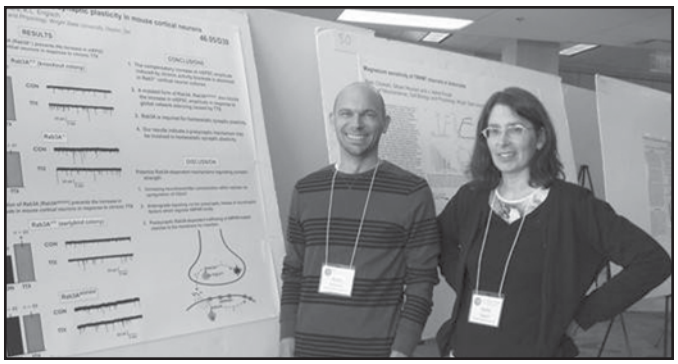
Yana Zavros, Univ. of Cincinnati, discussing the role of a developmental morphogen in adult tissue.



Ravi Adapala and Charles Thodeti discuss their work on TRPV4 channels.



Roger Worrell and Melinda Engevik enjoying Jessica Donnelly's presentation of her work on gastric inflammation.



Andy Koesters and Kathrin Engisch presenting their work on synaptic vesicle proteins.

Christopher Wyatt and J. Ashot Kozak organized poster competitions, and, with the assistance of other faculty judges, awarded these travel awards to postdoctoral fellow Santosh Kumar Maurya, Ohio State Univ.; and graduate students, Kim Sun Wook, Univ. of Cincinnati; Joseph Santin, Wright State Univ.; and Amy Engevik, Univ. of Cincinnati.

Congratulations to these trainees and best wishes on your EB presentations! Adam Deardorff, Wright State Univ., was given an honorable mention for his excellent presentation. In addition, four undergraduates were highlighted for their outstanding poster presentations: Jonathon Price, Wittenberg Univ.; Savannah Doliboa, Wright State Univ.; Orly Leiva, Wright State Univ.; and Spencer Barnhill, Miami Univ. Congratulations to all of these poster competition winners and to all of our presenters for their high quality research posters.

OPS 2012 meeting finished with our business meeting in which our primary objective was for the 2012 OPS president, Lynn Hartzler, Wright State Univ., to welcome the 2013 OPS president, J. Gary Meszaros, NEOMED, to announce the next OPS meeting. Meszaros warmly welcomed all Ohio physiologists to join him at NEOMED in Rootstown, OH for our next OPS meeting in 2013. The OPS members present elected Thad Wilson from Ohio Univ. as our Ohio Physiological Society's President Elect. Lynn also gratefully acknowledged the local organizing efforts of Dan Halm (OPS Treasurer), Susan Halm, Barbara Barr, J. Ashot Kozak, and Christopher Wyatt for their assistance with making the 2012 OPS meeting an exciting, trouble-free event, as well as the generous financial support provided by the American Physiological Society, Wright State Univ.'s departments of Neuroscience, Cell Biology and Physiology (Timothy Cope, chair), Biological Sciences (David Goldstein, chair), Pharmacology and Toxicology (Mariana Morris, chair), and Wright State Univ.'s College of Science and Mathematics (Yi Li, dean; Kathrin Engisch, assoc. dean; and Joyce Howes, asst. dean). The success of our 2012 OPS meeting was due to the excellent participation of our attendees and the efforts and support of the individuals organizing and supporting the meeting. We look forward to OPS 2013 at Northeast Ohio Medical Univ. next year! ❖

Award winners from left to right, above: Santosh Kumar Maurya, Ohio State Univ.; Kim Sun Wook, Univ. of Cincinnati; Amy Engevik, Univ. of Cincinnati; Adam Deardorff, Wright State Univ.; Joseph Santin, Wright State Univ.; Savannah Doliboa, Wright State Univ.; Spencer Barnhill, Miami Univ. Not pictured: Jonathon Price, Wittenberg Univ.; Orly Leiva, Wright State Univ.

17th Annual Meeting of the Iowa Physiological Society

The 17th Annual Meeting of the Iowa Physiological Society (IPS) was held on Saturday, September 29th at the Olsen Medical Education Center on the campus of Des Moines Univ. (DMU) in Des Moines, IA. The meeting was financially supported by the American Physiological Society (APS), DSI, Kent Scientific, Cyber Anatomy Corp., and Des Moines Univ. The meeting organization was supported by the Continuing Medical Education Department of Des Moines Univ.

The meeting began with Opening Remarks by IPS President Kim Tran, from the Department of Physiology and Pharmacology, Des Moines Univ. Following the opening remarks, a research presentation was given by Kimberly Huey, Associate Professor, College of Pharmacy, Drake Univ. Her talk was entitled "Skeletal Muscle Adaptation to Chronic Changes in Loading and Activation." A teaching presentation followed by Mike Lyons, Grandview Univ. His presentation was entitled "Peer Collaboration to Improve Understanding and Retention of Complex Concepts." This was followed by another teaching presentation, "PBL, TBL, CBL – What the hell? What can I do if I'm trapped in a lecture-based curriculum?" by Matthew Henry, Des Moines Univ. A coffee break and poster session followed, with presentations from graduate, undergraduate, postdoctoral fellows and faculty investigators.The Keynote Address in Physiological Research was then delivered by Michael Sturek, Indiana Univ. School of Medicine. The title of his address was "Mechanistic and Translational Research in Coronary Vascular Biology."

In the afternoon, there were two group activities that concurrently took place. The group discussion on research worked on the theme "Current challenges of doing research at the levels of community colleges, undergraduate environment, medical school and graduate school levels and how to adapt your research tool kit and network to meet those challenges." This group was moderated by Harald Stauss, Univ. of Iowa, Julia Moffitt, Des Moines Univ., and Mike Sturek, who started the discussion with a short presentation titled "Productively stupid … and loving it." The presentation was based on a 2008 essay by Martin Schwartz, "The importance of stupidity in scientific research" in *Journal of Cell Science*. Active discussion followed with exchanges of challenges and how to cope with them in doing research at the many different environments.

The group discussion on teaching focused on the theme "Current challenges of teaching physiology at the levels of community colleges, undergraduate environment, medical school and graduate school levels and how to adapt your teaching tool kits to meet those challenges." This group was moderated by Thomas Pressley, Texas Tech Univ. Health Sciences Center, Matt Henry, Des Moines Univ., and Dee Silverthorn, Univ. of Texas at Austin. Following the group discussions, representatives from the moderators of each group presented highlights from the discussion to the whole audience.

A research presentation was then given by VanjaDuric, Des Moines Univ., on the "Role of MKP-1 in Neurobiology of Depression." After a coffee break,

Kimberly Huey presented a research talk.

Michael Sturek delivered the Keynote Address in Research.

Dee Silverthorn delivered the Keynote Address in teaching.

Kim Tran with all poster winners. Front row: Lara Terry, Michelle Godar, Ashley Urra; Back row: Amanda Jepson, Katrin Hollinger, Michael Stencel.

another session of poster viewing and poster competition took place. The Keynote Address in Physiology Teaching was then delivered by Dee Silverthorn, Univ. of Texas at Austin. The title of her talk was "The Up Side Down Lecture: How to Make Students Come to Class." The afternoon sessions ended with poster awards and recognitions. Six prizes were given to the graduate and undergraduate categories. The first prize winners received $200, the 2nd prize winners received $100 and the third prize winners, $50. The first prize in the graduate category went to Amanda Jepson, a DO student at Des Moines Univ. The first prize in the undergraduate category went to Lara Terry, a Drake student working in the mentored research program at Des Moines Univ. The second prizes in graduate and undergraduate categories went to KatrinHollinger, Iowa State Univ., and Ashley Urra, St. Ambrose Univ. The third prize winners in the graduate and undergraduate categories went to Michael Stencel, Des Moines Univ., and Michelle Godar, Drake Univ. Concluding remarks were given by Kim Tran, Des Moines Univ.

IPS business meeting followed. The meeting was chaired by Kim Tran, DMU, and attended by Harald Stauss, Julia Moffitt, Ron Torry, Matthew Henry, Jackie Brittingham, Joshua Selsby, and Mike Lyons. Joshua Selsby was unanimously elected to be President of IPS in 2013. Jackie Brittingham is the President-Elect. A major focus of the discussions was related to the IPS Physiology Seminar Series that was funded through the APS Chapter Activity Grant program. The board also discussed the potential of IPS participating in some PhUn Week activities. ❖

Respectfully Submitted,
Kim Tran
Past President, IPS

Association of Chairs of Departments of Physiology Meeting Highlights

The Association of Chairs of Departments of Physiology (ACDP) held its annual meeting at NOW Larimar Hotel, Punta Cana, Dominican Republic, on November 28–December 2, 2012.

President Marshall (Chip) Montrose (Univ. of Cincinnati) developed a program focused on national and local issues being currently faced by department chairs and a scientific program highlighting the diverse science in the discipline.

Research talks included the sixth Arthur C. Guyton Lectureship given by Irena Levitan (Univ. of Illinois at Chicago) on *"Cholesterol Regulation of K+ Channels: From Biophysics to Vascular Biology."* The new chair research presentation was by Geoffrey Hammond (Univ. of British Columbia) on "*Integrating the Pure and Applied Sciences into Biomedical Research: Unprecedented Opportunities for Innovation.*" In addition, Ernest Wright (ACDP Distinguished Service Awardee from Univ. of California, Los Angeles) discussed his research and scientific career in a presentation entitled "*Physiology in the 21st Century–A Case Study on SGLTs*."

On the national level, Chairs heard a presentation focusing on workforce issues by Sandra Degen (Univ. of Cincinnati) entitled *"Outcomes and Implications of the NIH Biomedical Workforce Report."* She was a member of the NIH Taskforce and reported on its charge, analysis of data garnered from various sources and external input, and its consequent recommendations to NIH.

ACDP President Marshall (Chip) Montrose presents Irena Levitan with the 6th Guyton Lectureship Award.

Tony Mazzaschi (AAMC) gave an update on "*Reaffirming Academic Research's Social Contract in Fiscally Perilous Times.*" He talked about the current climate in Washington, DC after the recent election and about the potential upcoming "fiscal cliff."

Dee Silverthorn (Univ. of Texas, Austin) notified the group about the new credentialing issues being faced by some universities and sought input from the chairs on how to address them. They also received an update on APS activities and issues facing the discipline of physiology from APS Executive Director, Martin Frank.

NOW Larimar Hotel, Punta Cana, Dominican Republic.

An extended discussion was held on the recently announced changes to the AAMC's Council of Academic Societies (CAS) being reformed into the Council of Faculty and Academic Societies (CFAS).

On a more departmental administrative level, a panel discussion of "*Incentivizing, Creating, and Sustaining Cross-disciplinary Teams*" was led by Patricia Molina (Louisiana State Univ., New Orleans), M. Bishr Omary (Univ. of Michigan), and Gary Sieck (Mayo Clinic).

James Pichert (Vanderbilt Univ.) facilitated a workshop for the chairs on "*Addressing Challenging Colleagues and Situations Requires a Plan (and Skill).*" Francisco (Paco) Andrade (Univ. of Kentucky) followed that with a presentation on "*Time Management: Confessions, Strategies, and Discussion*."

A new design for the ACDP logo was voted on by the members present. The final version will be shared with all members shortly.

The ACDP voted to support the David S. Bruce Awards for Undergraduate Research with a donation of $2,000/year for the next three years. These awards are given by APS at the Experimental Biology meeting.

Officer elections were held with the following results. Michael Reid (Univ. of Kentucky) was elected President-elect, Chris Cheeseman (Univ. of Alberta) and Joseph Metzger (Univ. of Minnesota) were elected to three-year terms as Councilor. Marshall (Chip)

Montrose (Univ. of Cincinnati) was elected to a three-year term as a representative to the Council of Faculty and Academic Societies (AAMC).

Gary Sieck (Mayo Clinic) was thanked for his service as Past President. Patricia Molina (Louisiana State Univ., New Orleans) and Michael Reid (Univ. of Kentucky) were thanked for their service as Councilors. L. Gabriel Navar (Tulane Univ.) was thanked for his long-time service and efforts as a representative to the Council for Academic Societies.

President-elect Marshall Muthu Periasamy (Ohio State Univ.) announced the 2013 ACDP annual fall meeting location is still under consideration. For more information on the 2013 meeting, watch the website (http://www.acdponline.org/) for news. ❖

Wright Honored at Annual ACDP Meeting

The ACDP's highest award, the Distinguished Service Award, was presented to Ernest Wright, PhD, DSc, Distinguished Professor of Physiology, Mellinkoff Professor in Medicine, Department of Physiology, David Geffen School of Medicine, Univ. of California, Los Angeles, during the organization's 2012 fall meeting in Punta Cana, Dominican Republic. Marshall (Chip) Montrose (Univ. of Cincinnati), President of the Association of Chairs of Departments of Physiology (ACDP), presented the award.

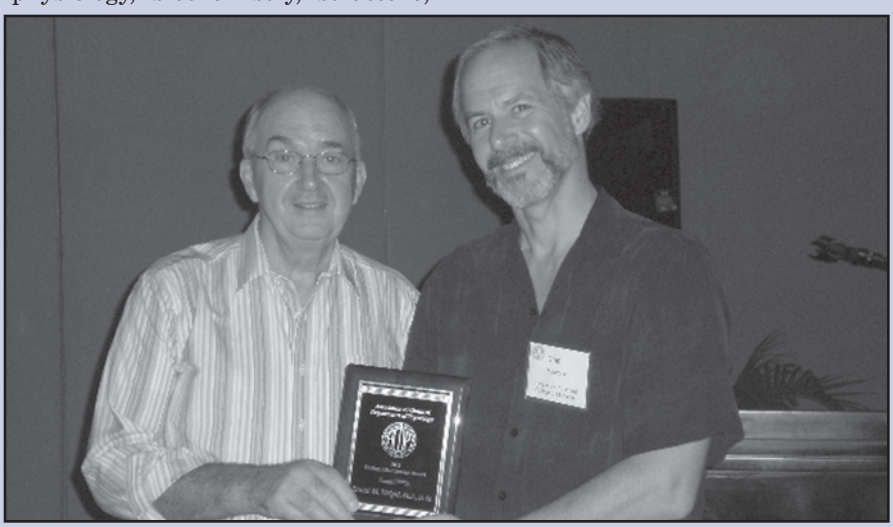
Wright was selected to receive the ACDP Distinguished Service Award for his long and illustrious service as an institutional and national leader of physiology, and for his wonderful contributions to scientific discovery that have highlighted the importance and value of Physiology research.

Wright earned his BSc in Chemistry and Physiology at the Univ. of London, UK, and subsequently completed his PhD in Physiology at the Univ. of Sheffield, UK, under the supervision of David Smyth. He was a member of the faculty at Sheffield for two years, prior to undertaking a Research Fellowship at Harvard Medical School where he studied with Jared Diamond, Peter Curran, and Stanley Schultz in the Biophysics Laboratory headed by Arthur K. Solomon. In 1978, he was awarded a DSc in Physiology from the Univ. of London.

Wright joined the Department of Physiology at the Univ. of California at Los Angeles School of Medicine in 1967. He served as Chair of Physiology between 1987 and 2000. He was awarded the Sherman M. Mellinkoff Distinguished Professorship in Medicine in 1999 and was appointed Distinguished Professor of Physiology in 2004. He was Visiting Professor at the Center for Advanced Studies at the National Polytechnic Institute in Mexico City in 1973, at the Max-Planck Institute for Biophysics in Frankfurt in 1974-75, and at Queen Elizabeth College at the Univ. of London in 1977. Wright received the Janssen Award for Achievement in Digestive Sciences in 2004 and also became a Named Fellow of the Biophysical Society that year.

His research focuses on the general physiology of epithelial cells, especially those in the intestine, kidney, and brain, with special interest in the physiology, biochemistry, structure, molecular genetics and human genetics of sodium co-transport proteins, such as the Na+/glucose co-transporter. Wright was named a Fellow of the British Royal Society in 2005. He was elected as an Honorary Member of the Physiological Society (UK) and to the German National Academy of Science (Leopoldina) in 2006. The American Society for Nephrology selected Wright for the 2012 Homer W. Smith Award.

Because of his scientific endeavors; his dedicated service to the field of epithelial and transporter physiology and biophysics, and his distinguished service to APS, ACDP, and other scientific organizations, the ACDP was proud to present its 2012 Distinguished Service Award to Ernest Wright. ❖



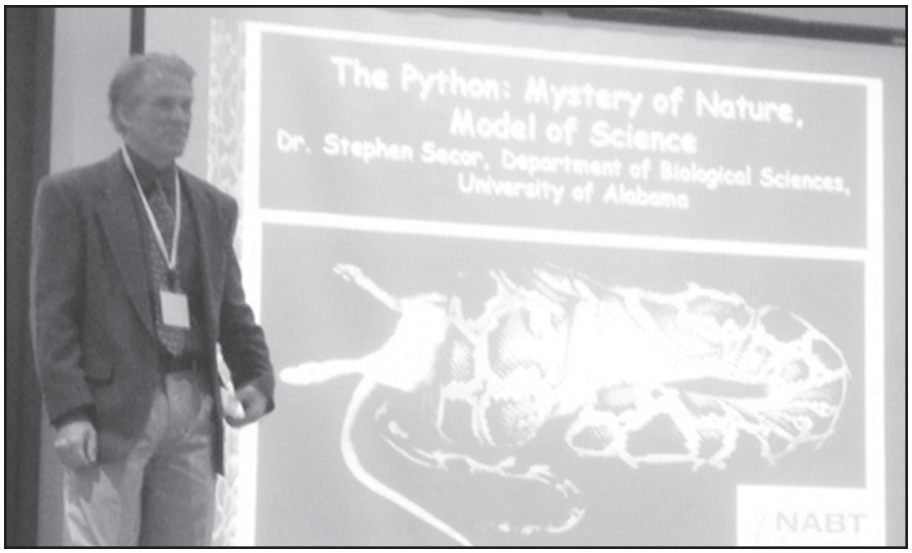
ACDP President Marshall Montrose presents Ernest Wright with the 2012 Distinguished Service Award.

APS Promotes Physiology to Mid-Level Educators at National Convention

The APS highlighted physiology for middle school science teachers and administrators at the annual Association for Middle Level Education (AMLE) Conference held in Portland, OR November 8-10. This was the second year for an APS presence at the AMLE Conference which is attended by more than 4,000 teachers, administrators, and counselors from across the country. The APS booth was extremely busy and well received with many questions about the APS Archive of Teaching Resources, physiology careers materials, and the Frontiers in Physiology Program. APS was one of very few scientific organizations reaching out to this large, multidisciplinary organization. Since most students complete career education activities during the middle school years, reaching out to middle school teachers encourages promotion of physiology careers to students.

Rebecca J. Evans (Frontiers Research Teacher 2006) led a hands-on workshop with help from Margaret Shain, APS K-12 Education Programs Coordinator and Miranda Byse, APS Archive Coordinator. Teachers were challenged to diagnosis patients with kidney ailments as they worked through several modules from the APS unit, Kidney Under Pressure. Teacher reviews of the workshop were excellent, and many commented on the need for more hands on learning workshops that help teachers understand inquiry teaching methods.

The 40th annual Conference for Middle Level Education will take place in Minneapolis, MN November 7-9, 2013.



APS member Stephen Secor was the featured speaker at the 2012 NABT National Conference in Dallas, TX. Secor presented his research on the digestive systems of Burmese pythons.

APS Promotes Physiology to Biology Educators at National Convention

The APS once again highlighted physiology for K-12 biology teachers at the National Association of Biology Teachers (NABT) 2012 Conference in Dallas, TX. The annual national conference, held the first week of November, attracts middle and high school teachers as well as 2- and 4-year college faculty from across the nation. APS sponsored an exhibit booth and featured speaker, presented a hands on workshop, and highlighted the APS Archive of Teaching Resources during the C3 (Cyberlearning at Community College) Workshop. The C3 Project Workshop was funded by the National Science Foundation through the National SMETE Digital Library Program of the Division of Undergraduate Education.

This year's speaker was APS member Stephen M. Secor, Department of Biological Sciences, Univ. of Alabama Tuscaloosa. Secor presented a plenary talk on the development of the python model for studies in the regulatory mechanisms of physiological performance. He also discussed his comparative studies that identified the adaptive relationship between feeding habits and the regulation of digestive performance.

In a hands-on workshop led by Robert Manriquez, APS Frontiers Mentor Teacher, Dr. Secor, and Margaret Shain, APS K-12 Education Programs Coordinator, teachers were given the opportunity to explore the digestive system in a new and exciting way. Teachers were challenged to build a digestive system using only household items in a teacher developed unit, Junkyard Digestion (1). Melinda Lowy, APS Higher Education Programs Coordinator, showcased APS Education Programs and teacher fellowships at the exhibit booth through-out the three-day conference.

Next year the NABT meeting will be held in Atlanta, GA and will mark the 75th anniversary of the NABT.

1. Hill, D. Junkyard Digestion (APS Archive of Teaching Resources Item #384). [Online]. Bethesda, MD: American Physiological Society, 2002. http://www.apsarchive.org/resource.cfm?submissionID=384. ❖

Teachers interact as they work through the Junkyard Digestion lesson during this year's NABT workshop.

Science Policy Committee Meets with NHLBI Director

On October 2, 2012 the APS President Sue Barman, Science Policy Chair John Chatham, and members of the Science Policy Committee met with leadership at the National Heart, Lung and Blood Institute (NHLBI), including Director Gary Gibbons. The meeting also included Susan Shurin, Carl Roth, Sonia Skarlatos, James Kiley, Keith Hoots and Sheila Pohl.

Prior to the meeting the committee submitted a list of discussion questions to NHLBI. The following are excerpts of the responses:

APS: What is your vision for NHLBI over the next five years? What areas of research you would like to see grow?

NHLBI Response: Just as the NHLBI's past investments in biomedical research enabled dramatic improvements in public health that we are currently appreciating, so too will the research investments we make over the next five years ensure further public health benefits for future generations. My vision is to build on the Institute's successes by continuing to adhere to several enduring principles for successful management while pursuing unprecedented new scientific opportunities. Over the next five years we will work to:

NHLBI Director, Garry Gibbons

- value and support investigator-initiated fundamental discovery science;
- maintain a balanced, cross-disciplinary portfolio that includes a mix of basic, clinical, and population science;
- support educational outreach and the application of new knowledge to improve health;
- train and nurture the next generation of researchers;
- apply new knowledge in all communities to eliminate health disparities;
- be a nimble, adaptive, learning organization;
- leverage resources and partners;
- develop and apply new knowledge and new tools;
- connect with local and global communities; and
- pursue provocative, "what if" stretch goals such as moving toward the remission or preemption of chronic heart, lung, and blood disorders.

We will focus on promising new research areas such as systems biology, reparative biology, predictive health, health disparities, and global health that have tremendous potential to revolutionize not only our understanding of heart, lung, and blood diseases and disorders, but also the ways in which we prevent, diagnose, and treat them. We also now have a number of new tools such as -omics and imaging technologies, informatics, and stem cell technologies that will allow us to approach research questions in entirely new ways.

APS Science Policy Committee Chair John Chatham, Gary Gibbons and APS President Sue Barman.

APS: How do you plan to balance basic research and translational research?

NHLBI: The Institute recognizes the importance of supporting both the basic science needed to develop new approaches to prevent, diagnose, and treat disease and the translational/clinical research needed to establish the efficacy of new approaches. The Institute invests approximately 50% of its extramural budget in basic research and 50% in clinical research and translational projects.

Although the NHLBI has begun a number of new efforts focused on translation, the Institute will continue its commitment to funding for basic research, an essential component of the Institute's overall strategy for pursuing its mission. Many important NHLBI successes have relied on basic research advances. For example, basic research on hypertension and cholesterol metabolism led to identification of factors that directly influence blood pressure and cholesterol levels, verified that treatments directed toward lowering LDL levels and controlling hypertension resulted in improved cardiovascular health, and permitted pharmaceutical companies to develop multiple agents to treat hypercholesterolemia and hypertension. Furthermore, the NHLBI recognizes that while basic research enables industry to develop improved diagnostics and therapeutics, industry is unlikely to support the basic research projects that necessarily precede any such development efforts. Therefore, support for basic research by the NIH and other Federal agencies is not just critical, but essential.

APS: How do you plan to sustain investigator-initiated research with current financial constraints?

NHLBI: The NHLBI has historically maintained a commitment to investigator-initiated research grants, with approximately 70 percent of its extramural budget allocated to their support. Regardless of the size of its budget, the Institute remains committed to a research agenda that provides leadership and support for a national program in diseases of the heart, blood vessels, lungs, and blood; and blood resources. The NHLBI will maintain its commitment, to the greatest extent possible, to (1) funding investigator-initiated research, the Institute's preponderant and most important funding approach, (2) fostering career development of new investigators, and (3) preserving an appropriate program balance. In making decisions about the budget, we also will continue to rely upon outside experts as we seek to identify future research needs and scientific

opportunities and to determine whether they can be most effectively addressed by investigator-initiated research or Institute initiatives.

To read more about NHLBI's plans to encourage diversity in the biomedical research workforce and support trainees, go to: http://the-aps.org/NHLBI.

Election 2012 Brings Modest Changes to House and Senate

No major power shifts occurred in Washington a result of the November 2012 elections. Democrats gained a few seats in each chamber, and there were changes in the leaders and members of some key committees in the 113th Congress due to defeats and retirements. However, with the challenges of the addressing the fiscal cliff occupying the 112th Congress during its lame duck session, a number of committee assignments remained undecided.

As the year drew to a close, Senate Democrats had announced who would fill various committee vacancies, while Senate Republicans had not yet done so. In the House, Republicans quickly made committee assignments, while Democrats announced only a few high-profile posts.

Senate Democrats Add to Their Majority

The new Democratic majority in the Senate now stands effectively at 55–46. This is an increase of two seats counting the two Independents (Bernie Sanders of Vermont and Angus King of Maine) who will caucus with the Democrats. However, it still does not give Democrats the 60 votes they need to pass legislation in the face of a filibuster.

Perhaps the biggest change in Senate Committee leadership occurred not because of the election, but as a result of the death of long-time Senate Appropriations Committee Chair Daniel Inouye (D-HI). Inouye, a World War II veteran who had represented Hawaii in the House and the Senate ever since it became a state, died of respiratory complications on December 17. It was widely expected that Sen. Patrick Leahy (D-VT) would assume the chairmanship of this powerful committee because of his seniority on the panel. However, in an unexpected move, on December 20, it was announced that Sen. Barbara Mikulski (D-MD) would become the chair because Leahy and another senior member, Sen. Tom Harkin (D-IA) both declined the post because they preferred to retain their current leadership positions on other committees. Mikulski has been a strong supporter of funding for science and research agencies including the NIH, NSF, and NASA. Harkin, another strong NIH supporter, is expected to remain chairman of the Appropriations Subcommittee on Labor-HHS-Education.

Other changes to the Senate Appropriations Committee will include a new Ranking Member. Sen. Thad Cochran (R-MS) has already spent six years in that position so under Republican Conference rules, he will have to relinquish that post. Sen. Richard Shelby (R-AL) was generally expected to succeed him as the panel's senior Republican, but as the end of December neared, Senate Republican committee assignments had not been announced. Three senators—two Democrats and one Republican—left the Appropriations Committee due to retirement. However, since the Democrats increased their overall Senate majority, three Democrats rather than two were added to the panel. They are Sens. Tom Udall (D-NM), Jeanne Shaheen (D-NH), and Jeff Merkley (D-OR). In the wake of Sen. Inouye's death, Majority Leader Harry Reid indicated that another Democrat would also be added.

Changes also occurred in other Senate Committees relevant to biomedical research. Sen. Bernie Sanders (I-VT) will become the new chair of the Senate Veterans Affairs Committee, and freshman Senators Richard Blumenthal (D-CT) and Mazie Hirono (D-HI) will join the panel. In addition, three newly-elected senators will join the Senate Health, Education, Labor and Pensions Committee, which oversees research and development in science, engineering, and technology. They are Sens. Tammy Baldwin (D-WI), Chris Murphy (D-CT), and Elizabeth Warren (D-MA). Sen. Patty Murray (D-WA) will chair the Senate Budget Committee, and Senators Baldwin, Tim Kaine (D-VA), and Angus King (I-ME) will join the Democrats on that panel. The Budget Committee sets broad spending targets that provide the blueprint for government spending on all programs including biomedical research.

House Republicans Retain a Reduced Majority

In the House, Republicans lost eight seats but still retain a 234-201 majority. This still provides 16 seats more than the 218 needed to keep the Speaker's gavel on the Republican side of the aisle. Of greater significance is the fact that there will be about 80 new Representatives. Forty seats changed hands due to retirements, 13 due to primary losses, and 36 as a result of the general election. In addition, incumbents lost to other incumbents when districts were merged due to redistricting.

Rep. Harold Rogers (R-KY) remains Chair of the House Appropriations Committee, but due to the retirement of Rep. Norm Dicks (D-WA), there will be a new senior Democrat. In one of the few Democratic committee assignments already made, it was announced that Rep. Nita Lowey (NY) would become the new Ranking Member of that committee. Given House Democrats' typical deference to seniority, this pick was something of a surprise because Lowey is junior to Rep. Marcy Kaptur (OH), who also wanted the post. The House Appropriations Committee will also get six new Republican members, including two freshmen. In addition, the Labor HHS Appropriations Subcommittee, which funds NIH, will get a new Chair because Rep. Denny Rehberg (R-MT) gave up his House seat in an unsuccessful run for the Senate. However, as of the end of December, that post had not yet been filled, nor had House Democrats announced the full roster of committee assignments for their caucus.

In a leadership change on another key House Committees, Rep. Lamar Smith (R-TX) will take over as Chairman of the House Science, Space, and Technology Committee because Rep. Ralph Hall (R-TX) had already spent six years as chair. This is the maximum permitted under Republican Conference rules that limit the terms of committee chairs. The Science Committee has oversight authority for research and development in the areas of science, engineering, and technology. As a result of retirements and electoral defeats, there will also be nine new Republican members of this committee.

Senator Wyden Notes Chimp Research Needs

A last-minute push to bring the Great Ape Protection and Cost Savings Act (GAPCSA) to the Senate floor during the lame duck session hit a roadblock when Senator Ron Wyden (D-OR) announced that he had placed a "hold" on the bill. Although Senate rules allow legislative holds to be placed anonymously, Wyden took the extra step of explaining his opposition in the *Congressional Record*.

Wyden's December 13 statement first outlined the "significant oversight and regulation" that is in place at National Primate Centers to "ensure the highest quality and ethical care for animals." He also noted that these Centers "provide outstanding research and powerful research tools that are vital to our understanding of human health and disease." He further explained that the NIH has already convened a panel to determine the best way to implement the Institute of Medicine's (IOM) recommendations for limiting the use of chimpanzees in biomedical research. Passage of a bill prior to the expected January 22, 2013 release of the NIH panel's findings, "would circumvent this ongoing process," Wyden said.

Supporters of the legislation to end all invasive research on chimpanzees had made significant revisions to the bill as part of the push to bring it to the Senate floor during the lame duck session. However, the new version would still effectively ban all biomedical research on chimpanzees, despite the IOM finding that such a ban would be "disruptive" and that "chimpanzees may prove uniquely important to unraveling the mystery of diseases that are unknown today."

The revision nominally offers a way for researchers to petition the Secretary of Health and Human Services for permission to conduct research on a study-by-study basis, but the onerous procedure calls for passing judgment on research without any meaningful scientific peer review and publishing details of the application in the *Federal Register*. As FASEB President, Judith S. Bond, told Nature's News Blog, "[The Government] prohibiting the use of a research model is a frightening concept."

NIH Changes Planned Chimp Move

An important factor in the effort to bring the revised GAPACSA bill to the floor was the fact that the Congressional Budget Office scored it as "cost neutral," whereas the earlier version was expected to cost the government $56 million over four years. That is because the new version called for retiring chimpanzees in place—at research facilities—instead of moving them to sanctuaries. However, as other recent events demonstrate, it is highly unlikely the organizations pushing for GAPACSA's passage would be satisfied with such an arrangement.

In September, when the New Iberia Research Center said it would not renew its application for funds to maintain its colony of NIH-owned chimpanzees, the agency announced that it would retire these animals from any further research. The original plan was to move 10 chimpanzees to the Chimp Haven sanctuary and send 100 to Texas Biomedical Research Institute, another National Primate Research Center. Although the animals had been designated "permanently ineligible" for research, animal rights groups objected and urged that the entire group be moved to Chimp Haven, despite the fact that the sanctuary does not have the capacity to house them. Over the next few months negotiations ensued, resulting in a new plan announced December 18 to raise $2.3 million dollars to expand facilities at Chimp Haven so that a total of 113 chimpanzees could be moved there over the next 12–15 months. ❖

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Graduate Students: Our Underlying Questions

As the graduate students of today look to the careers of tomorrow, there are many compelling, and sometimes daunting questions that arise. With the changing face of tenure-track positions and ever-narrowing funding lines, many graduate students today may feel uncertain as to what their next big career step will be or what possibilities may be available for them. Many students may also be wondering what steps they can take during their time as a graduate student to: 1) figure out what it is they actually want to do upon graduation; and 2) market themselves to their desired career path. This article will highlight several questions that I believe are essential to address during graduate student training, in and outside of the laboratory.

• How can we be sure to make the right career choices?

Most students will start graduate school with a specific career goal in mind. For some, this will remain constant, but for others, it may change as their education progresses. This is an important factor to consider, as what may be best for one student is not necessarily the ideal career path for another. Ideally, students work with their mentors to develop a career plan and choose a path that fosters their strengths not only as a scientist, but also as an individual. One of the most obvious answers to this may be to simply make graduate students aware of post-graduate opportunities and career paths, both traditional and non-traditional. What resources may be helpful in identifying post-graduate opportunities and career paths? A good place for graduate students to start is the recent individual development plan from the AAAS Science Careers website: http://myidp.sciencecareers.org/. Another source to consider may be your own institution of study. Most universities have career service centers to assist in professional development and career planning.

• What to look for in a postdoc?

For students who are seeking to obtain a postdoctoral position upon graduation, certain important questions should be considered. Certainly, the type of postdoctoral position to pursue is a key issue. For those who aspire to obtain a tenure-track faculty position, is a postdoctoral fellowship at an academic institution considered the best option? In contrast, students may

Jennifer DuPont

pursue postdoctoral positions in hospital settings, government laboratories, or industry. Additionally, is it best to pursue a postdoc that offers unique opportunities where you can develop new skills and learn new techniques in an area of study different to your graduate training, or should you find a postdoc that is a natural extension to the training you received in graduate school? Ideally, any postdoc position should allow for the integration of skills and experiences for you to form your own independent research agenda and find your "niche" in your field of interest that is connected to, but separate from, your graduate and postdoc advisor/s. In contrast to a heavy research-based faculty position, some students may desire to seek out faculty positions with an emphasis on teaching and education, with less research responsibilities. Is it recommended or even necessary for these students to pursue a postdoc position before seeking a faculty position with a primary emphasis on teaching? For answers to these questions and more information, visit the following link on the APS website: Searching for and Selecting the Right Postdoctoral Position.

• Are there enough jobs in academia for recent and upcoming graduates?

Recent trends indicate an increase in the hiring of adjunct faculty and less tenure-track positions becoming available (1). This changing face of faculty is largely in response to reduced governmental funding for higher education institutions, which leads to measures being taken to cut costs, i.e., hiring adjunct faculty in place of full-time faculty. This trend poses an interesting dilemma to graduate students who wish to continue their careers in academia. As we begin to apply for faculty positions, how can we market ourselves to stand out among other applicants? In addition to clearly defined criteria, such as a strong publication records, extramural funding success, and excellent oral/written communication skills, are there additional factors that may increase job placement success? Considering how challenging it may be to obtain a tenure-track faculty position, what may be some alternate career paths that graduate students should consider? This also raises the question of those students who may not be fortunate enough to have an academic advisor that encourages alternative career options. The APS website is a valuable resource that can help answer these questions, particularly the APS Career Development and Mentoring Forum, offering information on career choices, planning, professional networking, job searches, and interviewing.

• Will the challenges of getting tenure be changing in the next 5-10 years and how can we rise to these challenges?

As obtaining a tenure-track position becomes more and more competitive, many students may be questioning how we can rise to this challenge. Not only will it be a challenge to obtain a tenure-track position but the accomplishment of actually achieving tenure is also a

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daunting task, particularly with the limited research funding available. What can we, as graduate students, be doing today to prepare ourselves for the challenges of tomorrow? Along with a successful and independent research agenda, what other skills/requirements should be given consideration as we navigate through our graduate education? Perhaps giving thought to completing several postdoctoral fellowships, with distinct objectives (e.g., learning a new technique, gaining teaching experience) may be an effective career move as graduate students begin to think about their projected career paths. However, this also poses the risk of becoming a perpetual postdoc. It is also important to remember that career opportunities, other than a traditional academic tenure-track position, may not require postdoc experience. In addition, the National Institutes of Health now encourages the best and brightest junior scientists to skip the postdoc phase with the NIH Director's Early Independence Award. Thus, this may be another option for qualified graduates.

• What will my responsibilities be if I acquire a full-time faculty position?

For those students who wish to pursue a tenure-track position at traditional research institutions, some responsibilities may not be as obvious as others. Most of us know that we will be expected to establish an independent research agenda and acquire extramural funding. What may be thought of less often, however, are the responsibilities of undergraduate student advising and teaching (undergraduate and graduate classes), along with service to the department and to the wider scientific community. Depending on the source of funding for graduate students and the type of academic institution (e.g., medical school vs. undergraduate school), some students may have the opportunity to teach undergraduate classes. Often these are laboratory-based classes with minimal lectures required, but some students may obtain experience teaching traditional lecture-style classes. Other students, especially at graduate and medical institutions, may not have the opportunity to teach during their graduate training. With these varied opportunities, how can graduate students with little teaching experience obtain the skills necessary for teaching in their first faculty position? In addition to teaching responsibilities, undergraduate advising may also be required as a full-time faculty member. What tips and advice may be offered to assist new faculty in this role? Undoubtedly, there are other responsibilities and skills required of full-time faculty members that current graduate students may not be aware of - what are some of these additional responsibilities and skills, and where do we find out about them? Answers to this question can also be found on the APS Career Development and Mentoring Forum (http://www.the-aps.org/mm/Careers/Mentor).

• How to successfully transition out of academia?

This question is for those students who may not want to continue down the academic path but have interests in a career with industry, government, research administration, or science communication, among many other options. Are there specific experiences/expertise that can be obtained during graduate school that will allow for a successful transition out of academia? Additionally, it is important to consider what resources may be available during each students training that may assist in job placement outside of academia. For example, perhaps students wishing to obtain an industry job could obtain a part-time internship or be exposed to networking opportunities with industry professionals. What other resources may be helpful? The Career Choices and Planning (http://www.the-aps.org/mm/Careers/Mentor/Career-Choices-and-Planning) link on the APS Career Development and Mentoring Forum provides some resources to address this question.

It is certainly daunting to face the next set of challenges that lay ahead for current graduate students, but exploring all of your options and becoming as informed as possible are keys to success in the future. The resources mentioned in this article are a good starting point for graduate students considering these same questions and will hopefully generate productive discussion among graduate students and faculty.

To comment on this article, go to: the-aps.org/forum-gradquestions.

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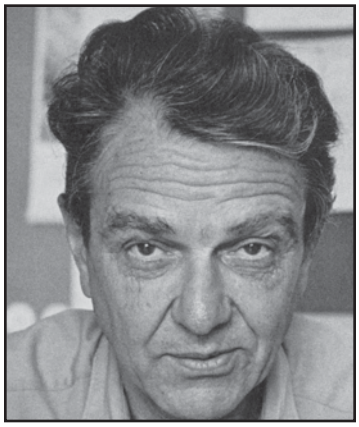
The Physiologist
Vol. 56, No. 1, 2013

Björn Folkow (1921-2012) [1]

Björn Folkow, MD, PhD, professor of physiology at the Univ. of Gothenburg, died on July 23, 2012 at an age of 90. He was a member of the Royal Swedish Academy of Sciences and a foreign member of the Danish Academy of Sciences, the Russian Academy of Natural Sciences, and an honorary member of the American Physiological Society.

Björn Folkow was born in Halmstad, a city on the west coast of Sweden halfway between Gothenburg and Lund. He received his medical education at the Univ. of Lund during the years between 1940 and 1948, when he became an MD. Lund Univ. was then one of only three proper universities in Sweden. In the forties and fifties, the department of physiology at Lund Univ. became a breeding place for young scientists not seldom ending up as professors of physiology, pharmacology or clinical physiology. The enthusiastic and charismatic driving force behind this explosion of professors was Georg Kahlson, professor of physiology and one of the founders of the Swedish medical research council. He was also Björn Folkow´s scientific "father". Two other persons were also important for Folkow´s thesis: the aforementioned Börje Uvnäs and Fritz Buchtal, a Dane of Jewish descent, who like most Danish Jews had fled to Sweden one night in October 1943. Buchtal introduced Folkow into the physiology of smooth muscle. Folkow´s thesis, defended in 1949, dealt with myogenic characteristics of vascular smooth muscle and its nervous control.

Folkow´s intention was to become a psychiatrist after his thesis work in physiology. However, Georg Kahlson persuaded Folkow to apply for an associate professorship in physiology at the newly founded medical school in Gothenburg. Sweden had not been devastated by the Second World War, and after the war the Swedish government greatly expanded research and education at Swedish universities. This included the establishment of a medical school in Gothenburg. In 1948 a full medical school with preclinical and clinical departments started up. In 1950, Björn Folkow became one of the two first professors in physiology at the age of 29. Hence, Folkow started his work at this physiological department more or less from scratch. However, Folkow was going to establish one of the world´s leading groups in cardiovascular physiology in the new department and, as a charismatic teacher and lecturer, he made the course in physiology one of the most appreciated courses at the medical faculty.



Björn Folkow

Folkow published nearly 400 papers and supervised about 40 graduate students. His scientific studies covered most aspects of vascular physiology. As noted above his thesis dealt with the myogenic characteristics and the nervous control of vascular smooth muscles. His thorough experimental knowledge of these two research fields led him to propose the hypothesis for the development of arterial hypertension for which he may be most well known. According to Folkow arterial hypertension in man is the result of interplay between the central nervous system and the vascular smooth muscles. Repeated boosts of arterial pressure, evoked by central nervous activation of the sympathetic vasoconstrictor fibres, eventually lead to a hypertrophy/hyperplasia of vascular smooth muscles, which, in turn, increases arterial pressure by increasing vascular resistance to blood flow.

Folkow´s broad knowledge in cardiovascular physiology is also reflected in the book called *Circulation* that he wrote together with the English physiologist Eric Neil (Folkow & Neil 1971). He wrote three review articles in *Physiological Reviews* covering such disparate subjects as nervous vascular control (Folkow 1955), the pathophysiology of arterial hypertension (Folkow 1982) and the physiology of aging (Folkow & Svanborg 1993).

Björn Folkow was an outstanding scientist with an unusually great scientific intuition. In the scientific world, which is being invaded by scientists with big egos, Björn Folkow was brilliant and very successful, yet humble and modest with great integrity. He fostered many physiologists and often maintained long-lasting friendship with the pupils. His influence on Swedish medical science was therefore greater than the direct influence of his own writing since Folkow´s pupils often became professors in clinical or preclinical departments continuing their cardiovascular research.

The fact that the medical school in Gothenburg was newly started when Björn Folkow became professor implied that it was not burdened by academic traditions existing at other Swedish universities. This, together with Folkow´s open-minded personality, was apparent in his dealings with students. Examinations with Björn often took place with the professor´s feet on his desk and the student called by their first name. Björn´s openness was reflected also in the ease with which one could get hold of him. The door to his room was almost always open.

Until the last day at the department, about one month before his death, he stayed in touch with his colleagues and friends using an old electrical typewriter to write letters that after typing mostly were edited by hand and then sent by "snail mail". Since he was continuously present in this department for 62 years, his absence is strongly and sadly noted. ❖

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[1] Adapted from the full obituary and reprinted with permission of John Wiley and Sons, *Acta Physiologica* 206(4): 251-254, 2012 (December issue)

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Current Calls for Papers

Physiological Genomics

Mitochondrial Metabolism

NextGen Sequencing Technology-Based Dissection of Physiological Systems

Technology Development for Physiological Genomics

Journal of Applied Physiology

Eccentric Exercise (*February 1, 2013*)

Advances in Physiology Education

Teaching and Learning of Professional Ethics

AJP-Gastrointestinal and Liver Physiology

Physiology and GI Cancer

Intestinal Stem Cells in GI Physiology and Disease

Innovative and Emerging Technologies in GI Physiology and Disease

AJP-Heart and Circulatory Physiology

Pathophysiology of Hypertension (*March 31, 2013*)

AJP-Lung Cellular and Molecular Physiology

Bioenginering the Lung: Molecules, Materials, Matrix, Morphology, and Mechanics

Translational Research in Acute Lung Injury and Pulmonary Fibrosis (*July 1, 2013*)

American Journal of Physiology—Endocrinology and Metabolism

Islet Biology
(*June 30, 2013*)

Novel Aspects of Adipocyte Biology
(*June 30, 2013*)

CNS Control of Metabolism
(*June 30, 2013*)

AJP-Regulatory, Integrative, and Comparative Physiology

Fetal and Neonatal Programming: Epigenetic Modification of Phenotype
(*June 30, 2013*)

Integrative and Translational Physiology: Inflammation and Immunity in Organ System Physiolgy
(*June 30, 2013*)

Integrative and Translational Physiology: Integrative Aspects of Energy Homeostasis and Metabolic Diseases
(*June 30, 2013*)

AJP-Renal Physiology

Renal Solute Co-Transporters and Exchangers (*July 1, 2013*)

Chronic Kidney Disease and Fibrosis (*July 1, 2013*)

Renal Acid-Base Physiology (*July 1, 2013*)

Pathophysiology of Acute Kidney Injury (*July 1, 2013*)

For a complete list of current Calls for Papers, visit *The Physiologist* website.

Zierath Appointed Chairman

The Nobel Assembly at the Karolinska Institute has appointed APS Member Professor Juleen R. Zierath as Chairman of the Nobel Committee for Physiology or Medicine. She succeeds Professor Urban Lendahl, who concluded his 6-year term on the Nobel Committee. Professor Zierath, who was born in Milwaukee and holds both Swedish and American citizenship, is the first woman to chair the panel.

Lydic Recognized with Excellence in Research Award

APS Member Ralph Lydic, Univ. of Michigan, was recognized by the American Society of Anesthesiologists with the 2012 Excellence in Research Award. The Award was made for Lydic's research on the neurobiology of sleep and anesthesiology. His research has helped lead to an understanding that anesthesiology can further enhance patient care by a systematic focus on issues previously considered the purview of neurology or sleep disorders medicine.

Sweeney Named Inaugural Director

APS Member H. Lee Sweeney, PhD, the William Maul Measey Professor at the Perelman School of Medicine, Univ. of Pennsylvania, has been named the inaugural director of Penn's Center for Orphan Disease Research and Therapy. Sweeney will continue to serve as chair of the Department of Physiology until June 2013, a position he has held since 1999. He has also directed the Paul D. Wellstone Muscular Dystrophy Cooperative Research Center at Penn since 2005.

APS Perkins Memorial Award for International Physiologists Awardees Selected

The John F. Perkins Award Committee has selected four recipients to receive the fall 2012 APS Perkins Memorial Award for International Physiologists. All the awardees will be working in the lab of an APS member. Dr. Masaki Kajimoto will be working with Michael Portman, Seattle Children's Research Institute; Dr. Shihan Wang will be working with Virend K. Somers, Mayo Clinic; Dr. Kyungjoon Lim will be working with Irving Zucker, University of Nebraska Medical Center; and Dr. Lonnie Petersen will be working with Peter Norsk, USRA/NASA Johnson Space Center. The Perkins award promotes cultural exchange and scientific collaborations by providing supplementary aid to families of foreign scientists working for a minimum of 3 months in the US. Additional information for the Perkins award can be found at http://www.the-aps.org/mm/awards/Other-APS-Awards/Early-Career-Professional#Perkins.

Lloyd B. Minor, is now in the Office of the Dean, Stanford Univ. School of Medicine, Stanford, CA. Prior to this move Minor was Provost / Sr. VP of Academic Affairs, Johns Hopkins Univ., Baltimore, MD.

Rebecca Danti Larson is now Assistant Professor in the Department of Health and Exercise Science at the Univ. of Oklahoma, Norman, OK. Prior to this move, Larson was Postdoctoral Research Associate in the Department of Kinesiology at the Univ. of Georgia, Athens, GA.

Jerome W. Breslin has moved and is now Associate Professor in the Department of Molecular Pharmacology and Physiology at the Univ. of South Florida, Tampa, FL. Prior to this move Dr. Breslin was Assistant Professor in the Department of Physiology at Louisiana State Univ., New Orleans, LA. ❖

Book Review

Physiological Tests for Elite Athletes-2nd Edition

Australian Institute of Sport (Author), Rebecca Tanner (Editor), Christopher Gore (Editor)
Illinois, USA: Human Kinetics, 2012, 560 pp, $89.00
ISBN: 978-0736097116

As emphasized in this book's Introduction, over the past several decades, sport sciences have played an increasingly prominent role in the preparation of athletes at the elite, and even the non-elite, level. The stated purpose of Physiological Tests for Elite Athletes-2nd Edition is therefore "to provide working procedures for athletic testing that have a sound theoretical basis and known precision" based on the collective experience of the Australian Institute of Sport (AIS). Given the wide variety of sports in which athletes compete and accordingly the wide range of physiological demands placed upon them, as well as a frequent lack of interaction and integration across different sports, this is actually a major undertaking. For the most part, however, the book achieves its stated goal, although the organization of the book and its multi-author nature make it longer than necessary and make quickly locating and extracting relevant information more challenging than it could be.

The book is divided into four major sections (plus a 41-page Appendix of sample data collection forms). The first section, Laboratory and Athlete Preparation, covers issues of data quality and management, especially within the context of the governmentally-organized AIS system. As such, many of the details discussed are not directly relevant outside of this system, and there is some redundancy across the three chapters that comprise this section, a theme that is repeated through-

out the book. Nonetheless, the overall presentation serves to emphasize the critical importance of applying scientific rigor even when data are collected for non-research, i.e., service purposes. Moreover, a number of practical tips and useful forms and checklists are provided, making this section potentially very helpful to someone setting up a new athlete testing facility.

The second section, Testing Concepts and Athlete Monitoring, provides information on the principles and protocols used for the laboratory-based assessment of certain important physiological determinants of athletic performance. The first four chapters—which address measurement of neuromuscular power, anaerobic capacity, lactate threshold, and VO2max, respectively—are generally well-done, with the chapter on lactate threshold being especially so, serving to nicely clarify what is often a very confusing area for neophytes. This chapter also contains numerous references to the primary scientific literature, allowing readers to readily delve more deeply into this area should they desire—in fact, the frequent inclusion of relevant scientific references is one of the major strengths of the book. The chapter on VO_2max, on the other hand, focuses rather heavily on technical matters related to the measurement of VO_2 itself, with less consideration given to relevant physiological issues, e.g., optimal protocol design. For example, there is no discussion of the distinction between VO_2max and VO_2peak, and the importance of exercise modality (i.e., sport specificity) when measuring VO_2max merits but one sentence, which is then undermined by emphasizing the limited correlation between VO_2max and exercise performance in a homogeneous population such as elite athletes. The true "odd men out" in this section, however, are the chapters on altitude, heat, and recovery methods, which are more a compendium of information related to the research interests of various AIS scientists than any sort of practical guidance. For example, there is nothing in the chapter on altitude on how to adjust testing protocols or attempt to correct data for the known effects of altitude on human exercise physiology, and while the chapter on heat provides some guidance on how to best assess core temperature or hydration status, details are lacking, and there is no discussion of how to determine sweating rate (beyond simple pre-post measurement of body mass), electrolyte losses, etc. The chapter on recovery protocols is even more out of place, as it simply contains nothing related to the stated purpose or title of the book. Conversely, what is seemingly missing from Section 2 is a separate chapter on measurement of exercise efficiency or economy, with this material instead being scattered across several chapters in Section 4 (discussed below).

The third section, Fundamental Assessment Principles and Protocols, is really just an extension of Section 2 described above, and it is unclear precisely why the two were separated. In any case, topics covered in this section include physique (body composition) assessment, agility testing, strength and power measurement, field testing, and motor control. As with the previous section, each individual chapter is generally well-written (although the chapter on strength and power measurement perpetuates the use of the coaching terms "speed-strength" and "strength-endurance" rather than the scientifically-correct term, "power") and contains useful information and numerous relevant references. Again, however, the multi-author nature of the work leads to some redundancy and disorganization. For example, there is significant overlap between Chapters 12 and 14, both of which describe and discuss various forms of shuttle runs, sprint tests, etc. Likewise, the material in Chapter 13 on what the authors refer to as "speed-strength" is logically related to that presented previously in Chapter 4 on measurement of neuromuscular power, but no attempt is made to connect them. Fortunately, though, issues such as these are unlikely to confuse a reader, although they may at times frustrate them, especially when attempting to relocate previously read material.

The fourth section, Physiological Protocols for the Assessment of Athletes in Specific Sports, constitutes almost half the book, and is intended to provide detailed information about the test protocols used by the AIS for 18 different sports. Each chapter begins with a summary of the physiological demands of the sport in question, followed by specific recommendations for test procedures and tables of normative data for Australian athletes of varying age, sex, and/or caliber. Most of these chapters are also quite well, yet succinctly, written, and contain considerable information potentially useful to practicing sport scientists. On the other hand, while seemingly logical, this sport-by-sport approach of presenting the information does result in considerable redundancy, simply due to the overlapping nature of the physiological demands of (and hence appropriate test procedures for) various sports. For example, the yo-yo intermittent recovery test (a type of shuttle run) is presented, in greater or lesser detail, at least seven different times in Section 4, despite having been previously discussed in Chapters 12 and 14 in Section 3. There is also significant overlap between the material presented in the three chapters on runners, triathletes, and cyclists, and the latter seems a bit dated since it is acknowledged that the AIS has largely moved away from laboratory-based testing to field tests using bicycle-mounted power meters (in line with this reviewer's long-standing argument that "the best predictor of performance is performance itself"). This section of the book could have been condensed considerably, with little or no loss of information, simply by grouping sports together more based on commonalities in their physiological demands, rather than presenting each sport separately. The approach actually employed, however, does have advantages if/when the book is used/viewed as a working laboratory manual rather than just general reference material.

Overall, this is a reasonably well-written book containing a wealth of information about the principles and practice of testing elite athletes. It would, therefore, likely represent a worthwhile acquisition for many working in this arena, especially for students or technicians who are just starting out. Individuals with significant experience already, however, may not really learn anything new, and the organization of the book somewhat diminishes its value as a more general reference. ❖

Andrew R. Coggan
Washington Univ.

Letter to Terry Dwyer

John A. Resko writes: "Thank you and the Society for your sentiments of best wishes on the occasion of my 80th birthday. Enclosed is an updated curriculum vitae for deposit in the APS archives. At the age of 67, I retired from the position of Chair of the Physiology Department at the Oregon Health & Science Univ. in Portland, OR. I served in this position for 16 years. Before this I held the position of scientist at the Oregon Regional Primate Research Center. As chairman of a Physiology Department (which merged with the Pharmacology Department in the latter years of my tenure), I performed all those functions, which chairpersons of these departments perform, elsewhere. I taught medical and graduate students, supervised an active research program, served on NIH study sections, volunteered my time to scientific societies including the APS, and served as Associate Dean of Graduate Studies for a few years, etc. After retirement in 1998, I continued my work in the department for about two years until a new chair was recruited and arrived in Portland. During this time I completed the research projects that were funded by the NIH.

"After the new chair arrived, I decided to leave the university so as to allow the new chair to do his own thing. I did maintain a loose relationship with the department and the Univ., which continues to this day.

"I planned to write a book in the general area of Human Growth and Development, in which I would emphasize the development of behaviors, but after careful consideration decided not to embark on this project. During this time, I received an e-mail from a second cousin, once removed, who lived in North Carolina. She found my name on the Internet after searching for her mother's maiden name (Resko). She inquired about her grandfather, Michael Resko who lived originally in Patton, PA. Was he a relative of mine? Michael Resko was my father's brother and my Uncle Mike. I provided her with information about her grandfather and her reply to me 'Why don't you write a memoir?' planted the first seed, a project that I might enjoy doing.

"My first shot at writing this memoir made me realize that this genre differed greatly from scientific writing about which I had much experience. Beginning in 2002, I composed a rather large manuscript, which included not only my early life but my scientific career as well. A former Jesuit who had been recommended to me by the university, read the manuscript and delivered a rather gloomy message to me on a rather gloomy day in December. He said, 'You have at least two memoirs in this manuscript.' In the days after my recovery period I began a rewrite. I divided the manuscript into two parts. The first part, entitled The Gates of Saint Charles, covered the period from 1932, the year if my birth, until September 1957, the day that I left Saint Charles Seminary located in Philadelphia. This part of the memoir was published in 2010 by iUniverse Inc. of Bloomington, IN. Before iUniverse, I experienced the wonderful world of publication in which no one would read the manuscript unless I hired an agent. A faculty member in my former department recommended a Books on Demand publisher, of which iUniverse is one. Publication of the book was a pleasant and interesting experience.

"Even more interesting was the promotion of the book, which is ongoing. I was invited to hold a reading at in new library in my home town, Patton, PA. About 50 persons crowded the reading room of the library. Many persons that I had not seen in many years, including grade school classmates, family friends and those with whom I formed friendships during summer jobs attended. Their loyalty was touching

"The second manuscript is in the last phase of completion. This manuscript deals with my scientific career, the period from 1957 until retirement. It is entitled Cherish the Exception with the subtitle Hormones and Behavior, the Way I Remember it and the People that Made it Happen, A Memoir.

"So this is what I have been doing in retirement. I have chosen not to stay at the university. After having spent so many years at the school, however, I have great affection for the school and its faculty." ❖

Positions Available

Faculty Positions

Department Chair: The Loyola Univ. Chicago Stritch School of Medicine has started a national search for the next Chair of the Department of Molecular Pharmacology and Therapeutics. The department engages in multidisciplinary research in neuro-, cancer, and cardiovascular pharmacology, with particular strengths in cellular signal transduction. The Department offers graduate training inprograms leading to PhD, MD/PhD, MS, and MS/MBA degrees with a pharmacology emphasis. The department seeks an individual with strong leadership skills and the vision to develop and maintain robust, collaborative basic and translational research programs, and continue the strong commitment to graduate and medical education. The successful applicant will have a PhD and/or MD degree, a strong record of academic achievement, a significant level of past and current extramural research funding, extensive experience in graduate and medical student education and/or success in drug discovery and translational research in the pharmaceutical industry. Interested applicants should submit a cover letter, a description of their leadership vision, curriculum vitae and the names of five references by email to Michael Nishimura, PhD, Chair of the Search Committee (Pharmacology-Search@luc.edu). Review of applications will begin January 1, 2013 and all applications and nominations will be considered until the position is filled or until an adequate applicant pool is established. The Loyola University Chicago Stritch School of Medicine is a Catholic Jesuit institution dedicated to excellence in education, research, service and health care and is an Affirmative Action, Equal Opportunity Employer, and encourages applications from women, minorities, and others who can contribute to the University's research, teaching, and service missions. Additional information about the Department and the Chair search can be found at: http://www.stritch.luc.edu/depts/pharmacology/index.cfm.

Assistant Professor: The Center for Cardiovascular and Pulmonary Research at Nationwide Children's Hospital and The Ohio State University Department of Pediatrics invites applications for a tenure-track Faculty Position at the rank of Assistant Professor. A PhD, MD or MD/PhD degree (or equivalent), plus additional postdoctoral experience are required. All areas of basic or translational research are of interest but strong preference will be given to applicants with expertise in vascular biology and molecular mechanisms of abdominal aneurysms. Competitive salary, laboratory space and start-up funds are available. The successfully candidate is expected to bring an independent research program with extramural funding. Interested individuals should email a CV, and a brief research description [no more than 2 pages], by January 31, 2013 to: heidi.blake@nationwidechildrens.org. Reference letters will be requested after consultation with candidates. Applications will be reviewed immediately upon receipt. Nationwide Children's Hospital is an equal opportunity employer that values diversity. Candidates of diverse backgrounds are encouraged to apply.

Assistant Professor: Tenure track position as Assistant Professor with expertise in Physiology and/or Developmental Biology at the Department of Biology, Texas Woman's Univ. (TWU), Denton. Qualifications include a PhD in a Biological Science with graduate training in Physiology/Developmental Biology. Postdoctoral research experience is required. Duties include: 1) teaching undergraduate and graduate courses in physiology and/or developmental biology; 2) developing an externally funded research program; and 3) contributing to the department, college and university through service. Univ. Information: Texas Woman's Univ. occupies a notable position in higher education as the nation's largest university primarily for women. Established in 1901, TWU is a doctoral/research-intensive public university which emphasizes the liberal arts and sciences as well as specialized and professional studies in business, nursing, health sciences, and education. The College of Arts and Sciences, with over 35% of TWU's graduate and undergraduate population of over 14,700, prepares students for success in a global world. TWU operates three campuses: Houston, Dallas, and the main campus in Denton (population 115,000), located 40 miles north of the Dallas/Fort Worth area. This metroplex, the nation's fourth largest urban center, has world-class museums, orchestras, opera, ballet, theatre companies, as well as an array of professional and collegiate sports venues. Additional information about the Univ. is available at http://www.twu.edu. Texas Woman's University, an AA/EEO employer, supports diversity. Men and women, and members of all racial and ethnic groups, are encouraged to apply. All offers of employment will be contingent on the candidate's ability to provide documents which establish proof of identity and eligibility to work in the United States. All positions at Texas Woman's University are deemed security sensitive requiring background checks. To apply: Please submit a cover letter, curriculum vitae, brief summary of research and teaching interests, copy of graduate transcripts, and names with email addresses and phone numbers of three references via email to Facultyjobs@twu.edu (e-mail Header or Subject line must include job title and job code number 13AS-BIO01. Position open until filled.

Assistant Professor in Applied Physiology: The School of Applied Physiology at the Georgia Institute of Technology invites applications and nominations for a tenure-track position in the area of muscle physiology at the Assistant Professor level. Although all areas of interest will be considered, primary consideration will be given to applicants with experimental experience in the cellular mechanisms of skeletal muscle plasticity, regeneration, or related areas. Applicants must have an earned PhD and strong record of publication. The successful candidate will be expected to contribute to the development of a strong graduate program, to teach and mentor students, and to support the growth of the School. The School of Applied Physiology is in a rapid growth phase with strong support from upper levels of Institute administration. Current faculty members are active in the areas of biomechanics, motor control, and muscle physiology. Collaborations currently exist at Georgia Tech with the Center for Assistive Technology and Environmental Access, the School of Psychology and the College of Engineering, and with Emory Univ. School of Medicine and the Atlanta Veterans Administration Hospital. Interested individuals should send a letter of application, curriculum vitae, three recent publications and the names, addresses, email addresses and phone numbers of at least three individuals we would contact for letters of recommendation. Applications will be reviewed beginning immediately and continue until the position is filled. Anticipated start date is August 2013. A Unit of the Univ. System of Georgia. An Equal Education and Employment Opportunity Institution. Contact: Thomas Burkholder, email: thomas.burholder@ap.gatech.edu, Georgia Institute of Technology, School of Applied Physiology, 555 14th Street, Atlanta, GA 30332-0356, voice 404-894-1029, fax 404-894-9982. ❖

Book Received

Science on the Far Horizon
G. Edgar Folk with Diana L. Thrift
Pennsylvania, USA: Infinity Publishing, November 2012, 248 pp, $19.95
ISBN: 978- 0-7414-7899-7 ❖

Wine Wizard

Hi all: Harrieth and I were in Australia the first three weeks of November. We do have a wine report from the trip, but I will not make it this month's column because it is 110 pages of single spaced text. But it does discuss 954 different wines we tried at over 60 wineries in McLaren Vale and the Barossa Valley, so if any of you are planning a wine trip to those areas any time soon, I would be glad to send the full report to you so you can pick and choose where to invest your time.

Sparklers worth having

Just as last year and the year before that, I thought I would now triplicate-publish my sparkling wine suggestions verbatim—so self-plagiarism, since I have not tasted the wines this year. As I reread the following from Dec 2010 and 2011, I think the discussion still applies; the prices are likely higher, I have not checked. But likely not that much higher:

Low price: Freixenet is a big Cava (Spanish equivalent of champagne) producer and they make some very dependable and tasty white sparklers. I like Carta Nevada Brut and Cordon Negro Brut. Both are very widely available. The former is a touch sweet but full of tasty fruit and costs just $6. Goes very well with cheese and crackers, smoked oysters and olives in front of the fire. The latter (wine, not the fire) is dryer and technically "superior" to the former and costs $9 (Trader Joe San Diego prices). Both have just 11.5% alcohol so they will not dissolve your brain tissue.

Medium price: Schramsberg and Roederer Estate are two very reliable California sparkler houses that also make excellent bubbly. Schramsberg blanc de blancs is mid-$20's; their blanc de noirs low-$30's. Roederer Estate's non-vintage brut is about $20. These are all classical sparklers with finesse, dryness, and light, zesty, apply/yeasty flavors and are clearly high quality.

Higher end: Veuve Clicquot is a true French champagne and is always excellent, again with light, clean, dry elements yet tasty and long-lasting. But it costs $35-$40. Still, that is less than many high end French bottles, and excellence is guaranteed.

And do not forget Australian sparkling Shiraz if you can find it. Not much gets to the USA, sadly, but if you can find one, give it a try. The makers usually leave a touch of residual sugar in the wine, but usually there is very good depth of flavor. Great with any red meat, obviously. No

Peter Wagner

specific names to suggest because they are so rare—just ask your wine shop, and you never know. They vary in price from $10 to $30. I probably would not pick the cheapest.

Now that the *AJP* Editors (or perhaps I, as editor of the *J Applied Physiology*) will arraign me/myself on ethics violations, I shall redeem myself with the following original material.

Whites

2011 Pewsey Vale Riesling, Eden Valley, Australia $13. The nose and palate both have very nice lemon notes with a floral edge. The palate is rich (so many dry(er) Rieslings are a bit thin), clean and has just right acid – bright but not tart, and the finish is barely off-dry. There is no "kerosene" which is a typical aging characteristic in Australian Riesling. Very appealing indeed, available here, not just in Oz.

2011 Chateau Haut Mayne Blanc, Graves $12. This wine has a nice apricot and citrus nose and palate. It is light and fresh, clean and with bright acidity. The wine is dry and there is a pleasing richness.

2011 Mohua Sauvignon Blanc, Marlborough NZ $13. Another in a long line of really tasty NZSB's. Distinctive herbal gooseberry on the nose and palate, with some passionfruit as it airs in the glass. Not too tart or acidic, it is rich and enjoyable alone or with sea food. Very good length and balance. I thank Connie Hsia for showing me this one in Dallas last week.

2011 Opolo Roussanne, Central Coast CA $18. Should you be looking for a heavier white that has a touch of sweetness (residual sugar)—and it is Christmas—this one works, although it is a bit expensive. Roussanne is a classical Rhone region white grape. The wine is quite varietal (ie tastes like it oughta), with pear and citrus on the nose and palate, medium acid, a lush viscous mouthfeel and good length and balance.

Reds

Wish I could run through the several hundred very nice reds we tasted in Oz, or even the 40 or so top class wines from among them, but a) no room; b) no USA availability; so c) no reason to write them up.

2011 Garnacha de Fuego, old vines, Calatayud, Spain $7. aka Grenache, a Rhone red grape. Grenache has the following stereotypical features: A color that is often lighter than most reds, sometimes like Pinot Noir. A nose of candied red fruit, usually raspberry, coming across as ripe, even sweet. A palate that is similar, and which often displays heat (i.e., you can actually taste the sweet burn of ethanol on the extreme sides of your tongue, usually at the finish), consistent with the commonly seen high alcohol level (15% or more). Soft tannins and very good acid make for a ripe, almost sweet but bright flavor that is too easy to drink. The alcohol adds to the sweet sense. Count this example as among that stereotype. 15.5% alcohol. Note absence of a listed winemaker. Someone made it, it did not get there unassisted. It was bottled for Bodegas Breca; selected by Jorge Ordonez and imported by Henry wine group. And despite this chain of middle men, and non-name maker, what a deal for $7.

2011 Evodia old vine Grenache, Calatayud, Spain $7. yes, a double take, and almost the identical wine in appearance (deeper than many Grenache); nose –as above; palate – as above; and price - as above. There is a little bit of black pepper on the nose and palate and a slight stemminess that sharpens the wine in a good way. 15% alcohol.

2009 Artesa Pinot Noir, Carneros, CA $14. Artesa does good stuff relatively inexpensively. This one has a nose with more coffee grounds and oak char than fruit, but the palate is the total reverse – Really good, strong, bright cherry fruit, cola, earth, real Pinot varietal flavors, some oak char, very good length, good acid, medium tannin and good length. This is very good, very serious Pinot at a decent price.

My best holiday season wishes to you all, and may you have enough good wine that you remember none of it. ❖

2013

March 7-10

The 6th International Conference on Ocular Infections (ICOI), Santa Monica, CA. *Information:* Shirley Dinenson, Conference Secretary, 18 Avenue Louis-Casai, 1209 Geneva, Switzerland. Tel.: +41 22 5330 948; Fax: +41 22 5802 953; Email: sdinenson@paragon-conventions.com; Internet: http://www.ocularinfections.com/.

March 10-13

The Jeruslem International Conference on Neuroplasticity and Cognitive Modifiability, Jeruslem, Israel. *Information:* Internet: http://www.brainconference.com/en/.

April 22-23

The 60th International Conference of the Israel Heart Society, Jerusalem, Israel. *Information:* Michal Keinan, 60 Medinat Hayehudim St., Herzliya 46766. Tel.: 972-3-5767738; Email: secretariat@icimeeting.com; Internet: http://www.israelheart.com.

May 6-7

NHLBI Mitochondrial Biology Symposium, Bethesda, MD. *Information:* Internet: http://www.nhlbimitochondrialbiology.com.

May 17-22

2013 American Thoracic Society International Conference, Philadelphia, PA. *Information:* ATS International Conference Department. Tel.: 212-315-8652; Email: conference@thoracic.org; Internet: http://conference.thoracic.org/2013/.

June 22-25

6th International Conference on Children's Bone Heath, Rotterdam, Netherlands. *Information:* Janet Crompton. Tel.: +44 (0)1453 549929; Fax: +44 (0) 1453 548919; Email: iccbh@ectsoc.org; Internet: http://www.iccbh.org.

June 23-28, 2013

The 34th Annual Meeting of International Society for Gravitational Physiology: Gravita-tional Effects from Micro to Macro Biology, Toyohashi, Aichi, Japan. *Information:* ISGP34@sozo.ac.jp; Internet: http://www2.sozo.ac.jp/~ISGP34/.

June 30 to July 3, 2013

24th International Symposium on Pharmaceutical and Biomedical Analysis (PBA 2013), Bologna, Italy. *Information:* http://www.pba2013.org.

July 15-19

10th World Congress on Neurohypophysial Hormones, Bristol, England. *Information:* Internet: http://www.vasopressin.org/#/wcnh-x/4014208.

July 20-23

Cell Senescence in Cancer and Ageing, Cambridge, United Kingdom

Information: Internet: https://registration.hinxton.wellcome.ac.uk/display_info.asp?id=342

July 21-26

37th Congress of the International Union of Physiological Sciences (IUPS 2013), Birming-ham, United Kingdom. *Information:* Internet: http://www.iups2013.org/.

September 6-9

45th European Brain and Behaviour Society Meeting, Munich, Germany. *Information:* Internet: http://ebbs2013.com/.

September 29-October 2

Lipids in Cardiac Health and Diesease: From Toxicity to Protection the 11th Annual Meeting of the Society for Heart and Vascular Metabolism, Cambridge, MD. *Information:* Internet: http://heartmetabolism.org/2013/.

2014

June 24-28

The International 22nd Puijo Symposium "Physical Exercise in Clinical Practise - Critical Appraisal of Randomized Controlled Trials", Kuopio, Finland. *Information:* Email: saila.laaksonen@uef.fi; Internet: http://www.puijosymposium.org.

August 25-29

7th World Congress for Psychotherapy, Durban, South Africa. *Information:* Janie Koeries, Paragon-Conventions, Milnerton Mall, Loxton Road, Milnerton, Cape Town, South Africa. Tel.: 021 552 8679; Email: jkoeries@paragon-conventions.com; Internet: http://www.wcp2014.com.

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