Response to Texas Tuning Of Biology

Earlier this year, a subset of biology instructors in Texas received a survey from the Texas Higher Education Coordinating Board soliciting feedback on a draft document describing expected levels of competency achievement in biology, *Tuning of Biology*. Although aspects of the draft were clearly drawn from the *Vision and Change in Undergraduate Biology Education* report from the NSF and the AAAS, there were significant weaknesses and omissions of key physiological concepts in the *Tuning* document.

Education Committee members saw the *Tuning* draft as an opportunity to advocate for an increased recognition of physiology by a state with a major influence on curriculum development in the U.S. Accordingly, with approval from the Council Executive Committee, an Education sub-committee, together with Dee Silverthorn (Univ. of Texas), prepared a formal letter on behalf of the Society that details these concerns for transmission to the Texas Higher Education Coordinating Board.

Professional Skills Courses

Live Short Course

In January 2012, APS offered the live PST Course on Writing and Reviewing for Scientific Journals. Thirty students participated in the course, and APS members, Kim Barrett, Hedwenn Brooks, Charles Lang, Cindy Meininger, Peter Wagner, Mike Wyss, and Irv Zucker served as instructors. This course is targeted toward their first first-author manuscript. In the course, students learn the essentials of manuscript writing and reviewing while gaining valuable opportunities for networking and collaboration. The course includes an online component (pre-workshop readings, exercises, and reflections) and a weekend live workshop that includes nine plenary sessions that combine lecture, group activities, and instructor panels. The course also utilizes small group discussions led by an experienced, well-published researcher in the students’ field.

Online Courses:

The online courses are scheduled throughout the year and, using interactive technology through Blackboard.com and Skype, offer a convenient and effective mechanism to offer professional development to more students at a reasonable cost. The APS offers a number of online courses each year and the number of students taking the courses is increasing as their availability and quality becomes more known. During the 2011-2012 academic year, 43 students participated in the online courses, and APS members, Carmen Hinojosa-Laborde, Mark Knuepfer, Jodie Krontiris-Litowitz, Thomas Pressley, Mike Ryan, Mesia Steed, Johana Vallejo-Elias, and Mike Wyss, served as instructors.

New Course Development:

The Education Office and Publications Department, in collaboration with the Society for Biological Engineers and Biomedical Engineering Society, have submitted a proposal to NSF to support the development of professional skills training materials on publication ethics.

Physiology Graduate Program Directors

Plans are underway for the 2013 meeting. Both APS staff and the Education Committee chair are receiving updates from the planning committee. The University of North Texas Health Sciences Center in Fort Worth has been selected as the host for the 2013 meeting.
Medical Physiology Course Directors Meeting
At EB 2012, approximately 15 medical physiology course directors attended the meeting. Education Committee member Tom Ecay led participants in a discussion about endocrinology content and how best to teach it. There is considerable interest among the group members in exploring the possibility of having an “NDOGS-type” meeting of medical physiology course directors.

Medical Physiology Learning Objectives (MPLO) Project
In conjunction with the ACDP and APS sections, the learning objectives were updated and republished in 2012. They are available in PDF format at the APS website. APS Archive resources are coded and searchable by each MPLO; changes in objectives for the 2012 edition were also created in the Archive and related teaching resources were recoded appropriately.

ADInstrumentsMacknight Progressive Educator Award
The Education Committee received five applications for 2012. Application review criteria included:

- Greatest potential for incorporating innovative teaching techniques
- Effectively utilizing technology resources
- Engaging undergraduate students in physiology

The Committee unanimously recommended APS member Terrence Sweeney of the University of Scranton in Scranton, PA, as the 2012 awardee. His application included a description of a “mechanical model of the cardiovascular system for pedagogical use” that he has developed for use with undergraduate students. Dr. Sweeney attended EB 2012 to receive his award. In addition, last year’s awardee, Gregor Belusic, Department of Biology, Biotechnical Faculty, Ljubljana, Slovenia, was able to attend EB this year and meet with colleagues from both the Education Committee and Teaching Section.

APS Refresher Courses at EB
The 2012 Refresher Course focused on endocrinology with an emphasis on diabetes. It was organized by Clintoria Richards-Williams and Michael Ryan. Consistent with previous years, the sessions were well-attended. The session presentations are being prepared for the web and Advances publication. The EB 2013 Refresher Course will focus on immunology and is being organized by Michael Ryan and Kim Henige.

Undergraduate Research at EB
In 2011, 72 applications were received and 26 Undergraduate Abstract Awardees were selected. From these awardees, a subcommittee selected 11 Undergraduate Research Awardees. In addition to support from the APS, the David S. Bruce Award program has received generous contributions from Dr. Isis, the APS Central Nervous System Section, and individual APS members Marlowe W. Eldridge, Thomas F. Hopkins, Ida J. Llewellyn-Smith, and Thomas Pressley.

Frontiers in Physiology Professional Development Program for Teachers
For 2011-2012, the APS returned to the comprehensive Frontiers in Physiology Summer Research Teacher Fellowship, including the laboratory experience but not the week-long Science Teaching Forum workshop. The comparative study of the online and comprehensive program showed that the pedagogy skills learned at the Science Teaching Forum could be effectively taught online.
However, teachers who did not have the research experience did not gain the in depth knowledge of the processes of basic research as did teachers who only did an online unit about basic and clinical research. The project is sponsored by the APS, the individual Society members who serve as research mentors, an NCRR SEPA grant, and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) at the NIH. The NIDDK funding supports the involvement of underrepresented minority teachers and teachers working primarily with minority students underrepresented in science. From a pool of 40 applications, the Education Committee selected 17 teacher fellows to participate in this program.

**Physiology Understanding Week (PhUn Week)**

In 2011, more than 10,000 students were reached at 64 event sites across the nation and Puerto Rico. This effort involved 54 APS member Lead Coordinators and a total of 274 scientists presenting and partnering with 327 classroom teachers and educators. The program exceeded its 2011 goal with outreach to 10,275 students. Distribution by grades included nearly 30% in high school classrooms, 40% in the primary and elementary classrooms, and 30% in middle school classrooms. The number of physiologists (274) and teachers (327) exceeded projected goals, while the number of event sites (65) was just short of the 2011 goal of 70.

**USA Science and Engineering Festival (USASEF)**

The 2012 Intel ISEF was held in Pittsburgh, PA, May 13-18. More than 1,500 students from about 70 countries, regions, and territories presented their research. During the two evenings of awards ceremonies, more than $3 million in scholarships, cash prizes, and awards were distributed in categories ranging from behavioral science to engineering and medicine.

This year’s APS judging team leader was Education Committee member Christopher Woodman assisted by Committee member Catherine Clark. They presented the First Place Award of $1,500 to Aprotim Cory Bhowmik of Parkview High School, Lilburn, GA, for the study “Arterial Hemodynamics in Atherosclerosis Patients, a Mathematical Model.” The Second Place Award of $1,000 went to Peiyan Duan of No. 2 Secondary School Attached to East China Normal University, Shanghai, China, for an “Exploration of Antidiabetic Compound in Foxglove and Its Molecular Mechanism of Action.” A Third Place Award of $500 went to Christina Diane Collins of Caddo Parish Magnet High School, Shreveport, LA, for “The Evaluation of Small Molecule Inhibitors of PKM2, a Downstream Product of mTOR, in Neuroblastoma.” In recognition of an innovative and independent project performed without significant access to research or industrial resources, the APS Exceptional Science Award of $500 was presented to Christina Ren of Monte Vista High School, Danville, CA, for her study, “The Effect of Deer Antler on the Proliferation of Endothelial Cells in vitro.”

**APS Archive of Teaching Resources**

The Archive added 1,764 new items in the past year and now includes more than 4,800 peer reviewed teaching resources. The Archive now includes 39 collections of items that can be searched and shared. More than 6,300 users have registered but many more use the site (registration is not required). In 2012, the Archive was redesigned with a new look and exciting new tools for educators that will help us change the Archive from a place to “come and get” resources to a place to not only find good teaching resources, but to participate in a community of educators, sharing ideas and practices with colleagues around the world. Registered users are asked to indicate the
courses they teach; when they log on, they are offered a list of the resources most highly rated by colleagues who teach the same course. They are encouraged to rate and review resources they have downloaded/accessed through the Archive. They also are encouraged to share resources through social media (Facebook, etc.) and, with a one-click generator, through their class or faculty webpage. Many Archive users create a folder that contains all of their submissions to the Archive along with articles in *Physiology, Advances*, etc. and embed it on their faculty page.

**Archive Scholars Program**

With support from NSF, the Archive also is adding a professional development program for K-12 and undergraduate educators. The Archive Scholars program will be an entirely online fellowship focused on finding and using digital resources to enhance science teaching and learning.