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EDITORIAL

A goal of the UAN is to form a community, and nowhere was this more evident than the spirited and fun Undergraduate Poster session at the 2007 Experimental meeting held in Washington D.C.. Students hung posters and chatted nervously while the judges reviewed rules and formed teams. During the session students met future colleagues, discussed research and career goals, and made plans to attend the Young Scientist Mixer. Faculty judges worked together, expressing their ideas on what makes the perfect poster and student research experience. Picking award honorees from so many accomplished students was not easy.

Since we first began holding biochemistry education sessions at the 1997 Experimental meeting we have seen an increase in the number of educators at the annual conference. We sense an increased pride in our work. For faculty, it presents an opportunity to connect with other educators, find a common cause, a collaborator, or simply someone to share lunch in a new city. Many faculty bring students to the conference, and students now account for the fastest growing segment of the ASBMB!

One way to stay connected and prepare for the next annual conference is to hold a regional meeting. ASBMB can help you, by providing funds for publicity and travel awards as prizes. Contact your regional Director for more information!

Marilee Benore-Parsons
Mid-West Region Director

About Enzymatic

Enzymatic is a newsletter of the Undergraduate Affiliate Network (UAN) of the American Society of Biochemistry and Molecular Biology (ASBMB). Information about the society and the UAN can be found at: www.ASBMB.org

The Enzymatic Editor and Editorial Board are Directors of Regional UANs
Marilee Benore-Parsons, University of Michigan-Dearborn, Editor
Kathleen Cornely, Providence College
Ann Aguanno, Marymount Manhattan College
Neena Grover, Colorado College
Dave Peterson, Texas A&M University
Joseph Provost, Minnesota State University, Moorhead
Takita Sumter, Winthrop University
Mark A. Wallert, Minnesota State University Moorhead

To submit articles or make inquiries contact Marilee Benore Parsons at mparsons@umich.edu
All articles are the opinions of the authors and do not necessarily reflect the views of ASBMB.
Past issues of Enzymatic can be downloaded free from the ASBMB web site. JBC (Journal of Biological Chemistry), MCP (Molecular & Cellular Proteomics), JLR (Journal of Lipid Research) and ASBMB Today are publications of the ASBMB.
The annual Experimental Biology meeting featured fascinating talks and research across several disciplines. In addition to the molecular biologists and biochemists, nutritionists, physiologists and many other life sciences were represented. It was a terrific opportunity to learn more and meet others in research and education. Highlights of the meeting were featured in ASBMB Today.

Dr. Sarah Elgin received the award for outstanding contributions in Education. This annual award has been created by the ASBMB Education and Professional Development committee to recognize exemplary individuals who have provided tremendous contributions and shown a continued commitment to science education. The award is presented each year at the ASBMB national meeting.

The July 2007 issue of ASBMB Today indicated that students are the most rapidly growing segment of ASBMB members!

SAVE THE DATE in 2008!

ASBMB 2008 Annual Meeting
held in conjunction with Experimental Biology (EB'08)
April 5-9, 2008 San Diego, CA

Get your UAN memberships in early to qualify for travel grants! The rules for forming a UAN and for qualification for travel awards are available on the web.

Regional UAN News

Many colleges and universities were represented by undergraduate students at the UAN poster session. The list of student winners and pictures are found in the section "Focus on our Future"

MANY THANKS TO THE OUTSTANDING JUDGES THAT MADE THIS EVENT A SUCCESS.

More pics on facebook!
Learning From Shared Experiences: Building an Outreach Resource

The importance of educated citizenry cannot be overestimated. In a world increasingly dependent on scientific and technological resources, it is important to make informed choices. As scientists it is our obligation to be involved in educating our communities in science. The form these education programs take depends on our individual strengths, interests, available resources and the needs of the community. We could choose to educate the elected officials on why they should increase NIH and NSF budgets or participate in science fair projects; we could discuss our research projects with strangers on the airplanes or start salons to discuss moral and ethical issues in science today. One thing that connects all these activities is that it requires scientists to communicate with a broader audience about large concepts beyond our individual research projects.

Those who enjoy doing science whether as a graduate student in science, a middle school science enthusiast, high school science teacher or a professor at a university, are all involved in some type of science outreach (whether they know it or not). We talk about why we do science and discuss our views on various scientific issues in many venues. Many of you have thought about your science outreach activities and formalized these programs; others have never considered doing any outreach work, as it is yet another activity for which we have to find more time and energy in our already full lives. Yet whenever I give talks on science outreach, people have stories about their experiences. Often people have combined their many interests in creative ways to do outreach work; here is your opportunity to share these stories. Whether your outreach activities are big or small, with K-12 or with a community garden, we are asking you to tell us about your outreach activities so others who are interested can find examples to follow.

The Education and Professional Committee of ASBMB has created a new Science Outreach website at: http://www.faseb.org/asbmb/epd/k-12.html. This website is a being developed as a common resource for those interested in outreach work. We aim to collate examples of outreach activities from various sources and provide ideas and resources to each other. If you have ideas on what makes outreach successful or have created (or know of) websites that should be linked to the outreach page, send in this information. In this issue of Enzymatics, Mike Bradley of Washington University discusses outreach activities at Washington University, St Louis. I strongly encourage you to publish your outreach stories here at Enzymatics and to help build the outreach website of ASBMB.

Neena Grover, Department of Chemistry and Biochemistry, Colorado College, Colorado Springs, CO 80903

Please submit your articles to Neena Grover NGrover@ColoradoCollege.edu
Undergraduate Affiliates enjoy many advantages and the gratification of sharing a community! The benefits of forming a UAN group include special travel awards for UAN affiliates. Student members will receive on-line subscriptions to *JBC* on-line and *ASBMB Today*. Faculty will enjoy being part of a team of educators and receive priority for undergraduate faculty travel awards.

A UAN group can be formed at any school that has a minimum number of interested students and a faculty mentor that is a member of ASBMB. Various options for forming a chapter can be found on the web at: [ASBMB.org](http://www.ASBMB.org)

Questions? Contact your Regional Director for more information!

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**Focus on Faculty**

**Ann Aguanno**

Dr. Ann Aguanno is the new Regional Director for the Northeast UAN area. Dr. Aguanno received her BA in Biology and Physical Anthropology from SUNY at Buffalo. She attended NYU for graduate school where she obtained a MS and PhD in Molecular Biology with a focus on Development and Neuroscience. She conducted research as a post-doctoral fellow at the Roche Institute of Molecular Biology at the Hoffman La Roche Pharmaceutical Company and held faculty positions at Stevens Institute of Technology and Rutgers University. Dr. Aguanno is currently an Associate Professor of Biology at Marymount Manhattan College (MMC) in New York City, where she recently earned tenure. Her lab currently investigates the role of a member of the cyclin dependent kinase family in the development of the mammalian nervous system. She established an undergraduate research program at MMC, where she guides the research of students within the Biology major. Her research students have met with great success, both in the research arena by earning first and second place awards in various Research Poster competitions and in productive post-baccalaureate careers.
Student winners and honorable mentions were:

**ASBMB Best Poster Winners (certificate and $500 award check)**

**Systems Biology:**
Sadie Bartholomew  
Otterbein College

**Nucleic Acid:**
Paloma Maria Guzzardo  
University of Puerto Rico- Rio Piedras

**Enzymes:**
Akiko Doi  
Bates College

**Signaling:**
Victor Fedorov  
University of Richmond
ASBMB Honorable Mentions (Framed Certificate)

**Systems Biology:**
- Caitlin Rice, Hope College
- Charles G. Sierzant, Hope College

**Enzymes:**
- Angela M. Bopra, Grand Valley State University
- Sebastian Brown, University of Richmond
- Brent Hehl, Grand Valley State University
- Kenneth Maksimchuk, Pennsylvania State University
- Carolyn Scheel, University of Richmond

**Nucleic Acid:**
- David Scott Booth, The Colorado College
- Byron Denison Eason, The Colorado College
- Jessian Munoz, Univ. of Puerto Rico at Cayey
- Christopher James Pelham, Northwest Missouri State University
- Byran Denison Eason, The Colorado College

**Signaling:**
- Lindsay Morgan Higdon, Univ. of Delaware
- Alyssa Johnson, Hope College
- Callie Nguyen, Minnesota State University Moorhead
- Jennifer Taves, Minnesota State University Moorhead
- Wen Allen Tseng, University of Delaware
Using abstracts as a teaching tool.
For more information contact Marilee Benore-Parsons, University of Michigan- Dearborn, 4901
Evergreen Rd, Dearborn, MI 48128 mparsons@umich.edu

The scientific literature is the foundation of research communication, and understanding and interpreting primary articles is a skill undergraduate students should master. Most of us teach them how to search the literature. We also need to instruct students how to read and use the articles, and provide practice examples and feedback on student interpretation and understanding. This will help them to become more adept at writing research articles. I have found that advanced undergraduate students still have difficulty grasping how to write an article, nor do they fully appreciate how the experimental results must be obtained and presented to establish the conclusions. One area they have difficulty writing is the abstract. Students need to be aware of how significant the abstract is and how much information is found within that short section.

One way I try to accomplish this is by teaching students how to extract the information from the abstract that indicates what was done, why it was done, and how the results were obtained. In my advanced classes we examine each section of the selected paper in detail. We focus on how the abstract summarizes the major points explaining the goals and results. We then examine several different abstracts. Some abstracts indicate specific techniques while others only indicate the result. For example, the abstract might include a statement that the paper demonstrates specific binding affinity of a protein to DNA but does not include the technique used. We read the abstract, and then discuss what types of techniques the authors might have used, what type of information could be obtained from the technique, and even what type of data would be obtained. We discuss what types of research might have led to the results, and we try to predict how the data would appear in the paper. This is significant as it allows the students to understand how they must use data to confirm their own hypotheses, and allows them to appreciate how the data in their own experiments will provide the framework around which the conclusions are drawn. The next step is to work in groups, providing each small team with an abstract, and requiring them to report to the class the goals, results and significance of the work. Part of this project requires them to actually draw the tentative results. For example, they might draw a mock Scatchard analysis depicting the binding affinity, or draw a gel-shift illustration demonstrating specific binding.

In this way they not only learn how to read the abstract, but take the next step, which is envisioning what type of data supported the study. In turn, this helps them understand what proof they will need to prove a hypothesis in their own research.

On exams, I provide a selection of three abstracts and students choose one to evaluate. They are asked to explain what was done, why the finding is significant and to predict (draw or write) a figure or table that might be found in the results section of the paper. A rubric can be used to evaluate each part of the question. Students can later be presented with a copy of the paper to determine how well they predicted the author’s proof of results!

Abstracts can be easily found in JBC (Journal of Biological Chemistry) as the index is arranged in sections that correlate to biochemistry and molecular biology topics. Abstracts for articles are easily obtained, and JBC articles in press are free. Recent topic areas included:

- DNA Replication Repair Recombination and Chromosome Dynamics
- Protein Synthesis Post-Translation Modification and Degradation
- Enzyme Catalysis And Regulation
Science Outreach Initiatives at Washington University in St. Louis
Mike Bradley
Washington University, St. Louis, MO

Science outreach has played an important role at both campuses of Washington University in St. Louis for several years. Two programs in particular highlight the ongoing involvement of WashU faculty, graduate, undergraduate, and medical students in several science outreach initiatives: Science Outreach at the Danforth campus, and the Young Scientist Program at the School of Medicine.

In 1990 WashU Biology professor Dr. Sarah C.R. Elgin founded the Science Outreach program (http://www.so.wustl.edu/). The mission of Science Outreach is “to improve learning in math and science through hands-on, investigative teaching methods.” This initiative has grown over the years to include several components including K-12 curriculum development, investigative teaching methods, exposing K-12 teachers and students to current research, and several other teaching resources focused on attracting the next generation of scientists, engineers, and mathematicians. Science Outreach has obtained funding from many sources including the NIH, NSF, and HHMI. Dr. Elgin has continued her commitment to improving science education and was recently named an HHMI Professor for her work in enriching the undergraduate biology curriculum and science outreach. At WashU Dr. Elgin has created a bioinformatics lab and a research course in genomics along with science outreach initiatives including a video tour of the Genome Sequencing Center at WashU and a summer research program for high school teachers. Dr. Elgin also recently received the 2007 ASBMB Award for Exemplary Contributions to Education.

Realizing the need for targeted science outreach that focuses on St. Louis city public schools, the Young Scientist Program (http://medicine.wustl.edu/~ysp/index.html) was founded in 1991 by WashU medical and graduate students in the biomedical sciences. YSP programs are “designed to attract high school students from disadvantaged backgrounds into scientific careers through activities emphasizing hands-on research and individualized contact between young people and active scientists. In addition, the YSP targets St. Louis City Public High School teachers with resources that facilitate inquiry-based learning in the classroom.” All YSP initiatives are organized and run by graduate/medical students and postdoctoral volunteers. YSP has
several components including Teaching Teams that visit area high schools, a Summer Focus research experience program for high school juniors, a Teacher and Researcher partnership that translates current research into “active learning” for high school students, and a Lab Equipment/Supply Recycling program that donates used lab equipment to area teachers. YSP has attracted support from HHMI in the past and is currently funded by several sources including Pfizer, Inc. In addition, YSP is currently building an endowment and was recently featured in an article published by the journal Science.

While these are some stand-out examples of science outreach initiatives, it is important for every researcher who cares about getting the next generation involved to start somewhere regardless of scale, scope, or funding. Hopefully those starting out can draw something from these examples or others provided on the EPD website. Visit http://www.faseb.org/asbmb/epd/k-12.html for more details.

Resources for Faculty

Interested in working with religious groups to help explain evolution?

Michael Zimmerman, Professor of Biology and Dean of the College of Liberal Arts and Sciences of Butler University, is working with the The Clergy Letter Project, a collection of more than 10,700 Christian clergy members who have signed The Clergy Letter (www.evolutionsunday.org), asserting that Christianity and modern science can comfortably coexist and recognizing the centrality of evolution in modern science. The goal of the Clergy Letter Project is to assist clergy members and connect them with a local scientist who might be willing to help them with some aspect of a sermon on which they are working or with some question a parishioner has or who might be willing to run an adult education class for their congregation.

As The Clergy Letter Project matures, Zimmerman and colleagues are attempting to provide more and better resources to clergy members who understand the importance of science and who do not find science to be a threat to their faith. That’s where you come in....The Clergy Letter Project is beginning to create an on-line data base of scientists who are willing to answer questions posed by clergy members and who are excited about the possibility of interacting with clergy members and their parishioners in an attempt to explain the beauty and power of science. If you, as a science faculty member, are interested in joining this data base of scientists who might be willing to provide technical support to clergy members in need of such support, please sign up.

Interested? Write directly to Michael Zimmerman at mz@butler.edu Visit The Clergy Letter Project on the Web at this site: www.evolutionsunday.org

Videos

Found any great videos that students enjoy? Send in your favorites. A few are listed here:
Bio Visions at Harvard University Video-**The Inner Life of the Cell**  This video is beautifully done and students love watching it.
http://aimediaserver.com/studiodaily/videoplayer/?src=harvard/harvard.swf&width=640&height=520

**Demystifying SDS-Page**  Two students explain (with humorous analogies) the chemistry of an SDS PAGE gel.
http://www.youtube.com/watch?v=snJMzL6KG_M&mode=related&search=Demystifying

**Comedy:**  
**Biochemistry with the stars.** Conan O'Brien hosts this show featuring celebrities in faux lab experiment contests.
http://www.youtube.com/watch?v=sJZ8g1L1z98

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**Dates and Deadlines**

*Verify all information at the participating web sites, as deadlines and information are updated regularly.*

**Project Kaleidoscope (PKAL)** has initiatives and conferences to help faculty and their institutions develop plans for science, technology, engineering and mathematics (STEM) education. The goal of PKAL is to form action plans to achieve success. 2007 PKAL Faculty for the 21st Century National Assembly  November 2 - 4, 2007  http://www.pkal.org

**NIH Academic Research Enhancement Award (AREA) Grants - (R15)**  
**due dates:** October 25,  www.NIH.gov

**NIH New Investigator - R01 due dates** July 20, November 20  www.NIH.gov

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**Resources for Students**

Interested in graduate school? Talk to your advisor! Faculty are excellent sources for information about graduate programs. In addition, guides such as the Peterson’s web site provide background information about various programs. Choose a program that fits your needs and interests. Many graduate programs include a stipend for living expenses and will cover tuition. Next year come to the poster session and check out the sponsoring graduate schools and talk to their faculty!

- ASBMB.org
- Peterson Guide http://www.petersons.com/

Interested in a career in biochemistry?
- Search for jobs on-line at http://sciencecareers.org, ASBMB.org and other sites.
- Read the article about Career Options in the October 2004 issue of *Enzymatic*.
- Download the career publication available from ASBMB.
- Join the UAN and network at the meetings!