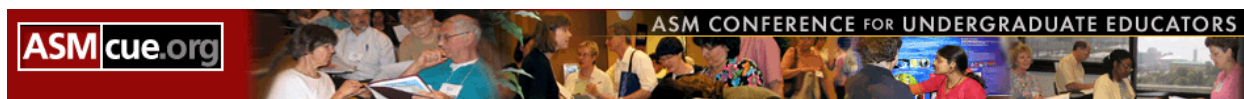




**ASM
Conference for Undergraduate
Educators Past Proceedings**

1995-2008



2nd Annual ASMCUE Highlights, Marymount College, Arlington, VA

Innovative Teaching Strategies, Assessment Strategies, and the Future of Microbiology Education

Sean Ervin - Saba University School of Medicine

The Second Undergraduate Microbiology Education Conference was held 19 to 21 May 1995, at Marymount College in Arlington, Virginia. The conference drew together 120 educators from the continental United States and from other locations, such as Puerto Rico, Finland, England, and Saba. The common theme was to share innovative and alternative teaching methodologies for the large lecture classroom and the undergraduate teaching laboratory.

The conference was organized around three thematic topics--innovative teaching strategies, assessment strategies, and the future of microbiology education. Conference attendees were exposed to capable and innovative instructors who showed the participants how stale recipes for teaching could be revitalized. Jean Douthwright presented an interesting discussion of how to access and to use the Internet in the undergraduate microbiology curriculum. Bob Benoit and Dennis Opheim presented a complex discussion of current assessment strategies (testing strategies) and inquiry-based instruction.

Throughout the conference the planning committee created blocks of time for break-out sessions for participants from similar institutions to share ideas, discuss the day's meetings, and network. Saturday evening saw a large group discussion on the Core Knowledge, the curriculum guidelines published by the ASM and devised at the First Undergraduate Conference in 1994. In an era when grant awards seem to be few and far between we were pleased to have representatives from the National Science Foundation. The forbidding task of writing and submitting grants was made a little less imposing by their presentation.

We are all looking forward to conference planned for 1996.

3rd Annual ASMCUE Highlights, Louisiana State University, Baton Rouge, LA

Going Beyond Content

Spencer A. Benson, University of Maryland, College Park, MD

At the first ASM Undergraduate Microbiology Education Conference in May 1994 a set of proposed themes and concepts for an introductory Microbiology course was assembled (see ASM News VOL. 60, 1994). At the first conference and again at the second ASM Undergraduate Microbiology Education Conference, May 1995, the participants called for a conference that focused on teaching strategies for this Microbiology Core Curriculum. That call was answered at the third annual ASM Undergraduate Microbiology Education Conference, "Actively Learning Microbiology: Strategies for Incorporating the Core Curriculum", 17-19 May 1996 at Louisiana State University, Baton Rouge, LA. Nearly one hundred educators from community colleges, small liberal arts colleges, four-year colleges and universities, and large comprehensive R1-universities met in a working conference and developed more than thirty different teaching strategies that can be used to help students learn the Microbiology Core concepts. This collection of strategies, entitled *Active Learning Strategies for Microbiology Classes*, has been distributed to all of the 1996 conference participants to be class-tested and refined. Improvements will be forwarded to the ASM Office of Education and Training. Eventually the strategies will be incorporated into an ASM teaching resource that will be available to all teachers.

Update: January 2003 - Many of the Active Learning Exercises for Microbiology Classes are now published in ASM's MicrobeLibrary. Search the Curriculum Resources using keyword: "active" or any of the dropdown lists on the search page. For more information, contact MicrobeLibrary@asmusa.org.

On Friday evening participants were welcomed by the conference planning committee that consisted of Spencer Benson (planning committee chair), Rodney Anderson (chair of the planning committee for the May 1997 conference), Dana Boyd, Amy Chang, Marcia Cordts, Betty Eidemiller, Judith Kandel, John Lennox, Jeffery Sich and Marion Socolofsky, who, with Mary Lou Potter, served as the local host. The participants were given the charge of working in concept teams to develop the active learning strategies in the six Microbiology Core theme areas. Participants had been presorted into seventeen concept teams based on their interest and expertise. To help the teams several experts gave presentations. Dr. Bonwell's presentation "Creating Excitement in the Classroom" was a stimulating hands-on presentation that set the tone of the conference. He provided examples of teaching and lecture techniques that could be used in a variety of classroom settings. Drs. Rosa Buxeda and Eileen Gregory described their use of active learning techniques in teaching microbiology. The real players at the conference were the faculty participants who spent many hours working in small groups to develop the collection of Active Learning Strategies. At the Sunday morning session the faculty were able to hear a sample of the strategies developed during the conference.

Beyond the goal of producing a collection of active learning strategies a variety of other microbiology educational issues were integrated into the conference. There was an afternoon session on crosscutting issues such as laboratories, writing, technology-assisted learning, large classes, and simulations. On Saturday evening fourteen participant presented abstracts in two concurrent sessions. The topics ranged from a laboratory demonstration to sessions on classroom diversity, writing, use of computers, and a Microbe Zoo computer learning tool for grades K-16. Three of the abstract presenters received ASM Faculty Travel Grants - Mark Gallo, Niagara University; Rebecca Kapley, Cuyahoga Community College; and Robin Patterson, Butler County Community College- as did Susan Gibson, South Dakota State University, for her poster at the ASM General Meeting in New Orleans. An exit survey of the conference participants showed that more than 85% of the respondents felt that the conference addressed important educational issues and 98% indicated that the conference content had met their needs. The 1998 Conference will again provide a forum in which educators can come together to discuss issues in microbiology education, exchange ideas, present refinements on the Active Learning Strategies developed last year, renew friendships and acquaintances, and build new ones. Members are encouraged to participate in this year's meeting which will be 2-4 May in Fort Lauderdale, Florida, and focus on the Microbiology Laboratory.

4th Annual ASMCUE Highlights, Broward Comm Coll and Nova Southeastern Univ, Fort Lauderdale, FL

Defining Instructional Goals for the Microbiology Laboratory: Content, Process, Skills, and Safety

Rod Anderson, Ohio Northern University

The fourth ASM Undergraduate Microbiology Education Conference was held May 2 to 4, 1997, at Broward Community College and Nova Southeastern University in Fort Lauderdale, Florida. One hundred and fifty microbiology educators from 38 U.S. states and territories and 3 other countries actively participated in outlining a core curriculum shared by all introductory microbiology labs (presented in the accompanying article) and developing lab activities that integrated the core concepts. Lab activities will be field tested and revised before being made available on ASM's Web page. In addition, conference participants unanimously agreed that a laboratory be required for every introductory microbiology course.

Those arriving in advance of the conference could attend several early bird sessions that featured a variety of topics on revitalizing lectures with active learning, using the World Wide Web in the classroom, and new CD-ROM material for microbiology educators. On Friday afternoon the conference participants were welcomed by conference chair Rod Anderson on behalf of the planning committee (including Robin Patterson, Tom Terry, Rosa Buxeda, and John Lammert) and Jeff Sich, on behalf of the ASM Undergraduate Education Committee. Dr. Anderson opened with a challenge to work cooperatively to find the common components of an introductory microbiology lab. During working sessions on Friday and Saturday, participants undertook the difficult task. Common features which were essential to teach in every course were discussed to identify core areas in lab safety, lab skills, information processing, and lab content. Working groups initially focused on a single core area, with the discussion groups stratified into those who taught majors or those who taught nonmajors or allied health students. The lab core was then revised by reorganizing groups across lines of teaching emphasis. Finally, all working groups within a core area formed a consensus on the items essential to teach in an introductory course. A panel discussion for all participants was used to formulate the lab core presented with this article. Comments have been solicited over the summer from conference participants, and revisions will be made based on those comments and those received from the Focus on Microbiology Education readers before being disseminated to the ASM membership.

In addition to developing a core curriculum for the microbiology lab, participants also developed investigative lab activities that integrated portions of the lab core. At the end of the conference on Sunday morning, new lab activities were presented in a poster session format. To provide background for these projects, speakers discussed issues in assessment, investigative labs, and lab safety. Virginia Anderson, Towson State University, spoke on "Assessment at 400X." Her microbiology background and expertise in assessment strategies provided valuable ideas for assessing a wide variety of activities associated with labs. Dan Udovic, the plenary speaker from the University of Oregon, discussed "So What Are Investigative Labs, Anyway? And What Do Students Learn from Them?" His experience with systemic change in curriculum with the Workshop Biology project enabled him to discuss the benefits and difficulties of incorporating investigative labs into the curriculum. Diane Fleming, a biosafety consultant, emphasized the importance of running a safe working environment for students in her talk on "Integrating Safety into the Microbiology Teaching Laboratory." Several other speakers presented examples of innovative and effective laboratory instruction. These included Spencer Benson, University of Maryland, "Integrating Assessment and the Virtual Workplace in a Microbial Genetics Laboratory"; Phil Stukus, Denison University, "Benefits and Limitations of Using Investigative Projects in a General Microbiology Laboratory"; and Sarah Lauffer for Jo Handelsman, University of Wisconsin, "Biology Brought to Life: Teaching Microbiology and Scientific Thinking".

Participants were able to review new teaching materials, books, CDs, and software during a session on "What's New in Microbiology and Teaching Resources" and also discussed posters on the themes of (i) classroom testing of active learning strategies; (ii) creative, investigative, and cooperative lab activities; and (iii) teaching ideas to share.

As you can tell from the information above, the conference was filled with activities useful to microbiology educators. The most common complaint I hear about the ASM Undergraduate Education Conferences is that participants have picked up so many great ideas that it is difficult to incorporate them into their courses. The result of getting together 150 microbiology educators is always fun, and I believe each of us is challenged to revise our teaching to better enhance student learning.

5th Annual ASMCUE Highlights, Emory University, Atlanta, GA

Frontiers in Microbiology Education: Curriculum Resources, Content Enrichment, and Instructional Technology

Tom Terry and Kim R. Finer, University of Connecticut and Kent State University

The 5th Annual Undergraduate Microbiology Education Conference was held at Emory University in Atlanta Ga., 15 to 17 May 1998. With the theme Frontiers in Microbiology Education driving the program, attendees were treated to three days of seminars, activities, and discussion addressing Frontiers in Content, Technology, and Curriculum Development. All participants were housed in student dormitory suites in one residence hall, conveniently located within a few minutes' walk of all meeting and dining areas. The conference was filled to its capacity of 200. About two-thirds of the participants were attending an ASM undergraduate education conference for the first time, including a few intrepid travelers from as far away as Brazil and New Zealand.

Meeting attendees arriving early had the opportunity to participate in "early bird" workshops on several topics or to tour and lunch at the Centers for Disease Control and Prevention (CDC), located just a block away. The opening session, Content Frontiers, held Friday afternoon at the CDC, included talks by CDC scientists Dr. Stuart Nicoll, Special Pathogens Branch, and Dr. Fred Tenover, Chief, Nosocomial Pathogens Laboratory Branch. Dr. Nicoll presented information on Hanta and Ebola viruses, both of which, he noted, are not newly evolved pathogens but preexisting viruses that appear to have reemerged due to ecological factors. Dr. Tenover discussed emerging problems with antimicrobial resistance, including pneumococcal resistance, selective pressure, and the transfer and genetic nature of extended-spectrum *B*-lactamases. Participants took full advantage of the speakers' expertise in extensive question-and-answer sessions following each talk.

The Friday evening session, Curriculum Development, began with a review of the wide variety of resource materials that have been developed or are under development through ASM efforts. Despite the unexpected appearance of Dr. Murphy, whose famous law managed to shut down the lecture hall computer system for the evening, participants were treated to an impressive look at what has been accomplished over the past few years by this group. The remainder of Friday evening and Saturday afternoon was devoted to small work group activities. The principal objective of the 1998 conference work groups was to review and refine 24 classroom and 17 laboratory activities that had originally been developed during two previous conferences. In addition, the work groups were to determine each activity's potential for publication on the ASM Web site. The status awarded was "candidate" (an appropriate and safe activity that could enhance the learning of core concepts but that needs further testing and development), "portfolio" (an activity that has been tested and shown to be appropriate and safe and is ready for publication on the World Wide Web [WWW]), or "rejected" (an activity that is not appropriate and/or safe for undergraduate microbiology courses). With the help of an evaluation rubric and field testing data from colleagues, the work groups ultimately arrived at a consensus recommendation on the status of each activity. Two laboratory and six classroom activities were awarded candidate status. Eight laboratory and three classroom activities were rejected, while the remaining seven laboratory and 15 classroom activities were recommended for further development. To continue the activity begun by the work groups, an editorial committee chaired by Tom Terry will be established. This committee will develop procedures for guiding learning/laboratory activities through further revision and ultimate Web publication at ASM. Those interested in participating in further development should contact Tom at terry@uconnvm.uconn.edu.

The Saturday morning session, Technology, began with a plenary lecture on Building Assessment Tools into Educational Technology Learning Environments by Don Buckley, University of Hartford, Hartford, Conn. Don treated us to an impressive look at a variety of multimedia tutorials which he has developed for teaching biology. Unlike most tutorials, whose only focus is to present a scientific concept, Don's efforts include feedback that continually informs the student and the instructor about which learning tasks are completed successfully (see ASM Earns an "A" in Assessment, this issue). Following this lecture, participants chose three of five concurrent sessions on a variety of topics involving technology (e.g., using PCR, scanning probe microscopy, or the Internet in teaching microbiology) and curriculum development (e.g., low-cost biotechnology or how to develop multimedia).

Highlights of Sunday's program included opportunities for attendees to contribute to the development of a case study on Hanta virus and to participate in roundtable discussions of various classroom- and faculty-centered issues (e.g., teaching virology and immunology, assessment, safety, teaching as scholarship, student projects, and diverse student populations). The final afternoon session included introductions of Jeff Sich, Robin Patterson, and Jean Douthwright as chairs of next year's Gordon Conference on Undergraduate Microbiology Education, to be held at Connecticut College in New London. We also celebrated the wonderful work that Betty Eidemiller has done in coordinating the last three conferences and wished her well as she leaves ASM for a new job with an hour-shorter commute.

Even though participants worked hard throughout the meeting, there was ample opportunity for networking, socializing, and commiserating. A guitar appeared, and songs were sung by a small group on both evenings; a few paper airplanes arrived from higher floors with such helpful messages as "Don't give up your day job!" Hopefully, all participants left Atlanta with a renewed enthusiasm for teaching, as well as some tools and resources to bring into the classroom. While the physical portion of the meeting ended on 17 May, all participants are now linked electronically via the discussion list, which will provide a forum for continuation of the exchange of ideas, tips, and resources throughout the coming year.

6th Annual ASMCUE (Gordon Conference-no report available)

Please note: The Sixth Undergraduate Microbiology Education Conference was held as a Gordon Conference in 1999. A final report not available.

7th Annual ASMCUE Highlights, California Polytechnic State University, Pomona, CA

The Cutting Edge of Microbiology Education

Erica Suchman, Colorado State University

Approximately 189 microbiology educators attended the Seventh Annual ASM Undergraduate Microbiology Education Conference held May 19-21, 2000, at the California Polytechnic State University, Pomona. Titled "The Cutting Edge of Microbiology Education," this meeting was designed to prepare participants for the new millennium by providing information on important, recent advances in both microbiology and education. The conference opened with Mark Goldsmith of the Gladstone Institute and David Relman of Stanford, who gave interesting and informative reviews titled "HIV and the Immune System: Emerging Concepts in Pathogenesis of AIDS" and "Searching for Previously Unrecognized Microbial Pathogens", respectively. Mark Gallo (Niagara University) and Chris Woolverton (Kent State University) followed with demonstrations of how they teach bioinformatics using active learning strategies.

Keeping with the tradition of past conferences, this too was a working conference. This year participants worked to develop active learning strategies designed to teach either immunology or bioinformatics. After a wonderful session on assessment given by Virginia Anderson (Towson State University), participants prepared assessments of the active learning strategies they had developed. The final task taken on by the participants was to develop tentative curricular guidelines for (1) undergraduate programs leading to degrees in microbiology, (2) inclusion of microbiology in undergraduate programs in biology, and (3) inclusion of microbiology in courses for nonscience majors. The products of all groups were shared with the entire conference. The activities and curricular guidelines will be further refined and developed for eventual electronic publication in ASM's digital library (<http://www.microbelibrary.org/>).

In addition to the plenary and working sessions, there was a poster session, and there were presentations about teaching scholarship, the publication of education-related articles, the training of students for the biotechnology workforce, active learning, and bioinformatics.

The committee extends our heartfelt thanks to all the people who took time out of their busy schedules to prepare and present the interesting, useful, and informative sessions given at this year's meeting. As co-chair I thank Janet Fulks for all of her hard work, as well as the rest of the committee (Sam Fan, Chris Woolverton, and Mark Gallo) and everyone on the ASM staff, with special thanks to Amy Chang for making this a pleasurable experience.

8th Annual ASMCUE Highlights, University of Central Florida, Orlando

The Spectrum of Microbiology Education

Chris Woolverton and Peggy Johnson; Kent State University, OH, and Mesa Community College, AZ

The 8th ASM Undergraduate Microbiology Education Conference entitled "The Spectrum of Microbiology Education" was held on May 18-20, 2001, hosted by the Department of Molecular Biology and Microbiology at the University of Central Florida in Orlando.

This year's conference was attended by 203 educators (including 90 first time attendees). There were five conference exhibitors (four publishers and one scientific equipment supplier) who also participated in the conference. Forty-two abstracts were submitted for review and 36 of them were selected for presentation at the evening poster/social hour. Twelve conference travel grants were awarded to poster presenters. Four attendees received awards from the Faculty Enhancement Program.

The Conference was preceded by three workshops designed to provide educators with hands-on teaching techniques for the classroom. This year John Lennox and Bill Costerton taught "Biofilms in Undergraduate Teaching." Lewis Tomalty taught "Using ASM Resources in Powerpoint Presentations." "Designing and Conducting Research in Science Education" was taught by Rosa Buxeda and Deborah Moore.

This year's scientific presentations included plenary sessions by Bill Costerton (on Biofilms) and Joan Rose (on Coastal Water Quality). The curriculum and instruction presentations included The Scholarship of Undergraduate Education (Brain Coppola), Writing Successful NSF Grants (Jeff Pommerville and Terry Woodin), Including Microbiology in the General Biology Curriculum (Jo Handelsman and Carol Pollock) and Keeping Microbiology Visible (Martin Dworkin). Concurrent sessions offered insight and recommendations for preparing successful submissions to ASM education resources (Neil Baker, Terrance Johnson, Linda Sherwood, Kristine Snow, Kim Finer, Tom Terry and Amy Vollmer). An additional session provided classroom examples of active learning strategies (Sue Merkel). A panel discussion was held on using the ASM video series "Unseen Life on Earth." The panel was chaired by Spencer Benson and included Bill Coleman, Linda Fisher, Dixie Kullman and Karen Nakaoka. In addition to the scientific and pedagogical sessions, George Boggs, Roger Casey and Robert Gennaro presented administrators' viewpoints on scholarship in undergraduate education. A highlight of this year's conference was the small-group sharing of "best practices" by all conference attendees. Building on previous conference workgroups, editing and approval of core curricular recommendations for microbiology courses for programs in biology, microbiology, allied health, biotechnology and general education were completed.

The evening social gatherings were rewarding as they provided opportunities for relaxed conversation and networking. (At least one of the conference co-chairs was even more relaxed when an unnamed ASM official tossed him in the pool.) Special thanks go to Tom Terry for leading us in song by the pool's edge.

On a personal note, we wish to thank Neil Baker and the Committee on Undergraduate Education for the opportunity to serve ASM and our colleagues in our capacity as co-chairs of the conference. It has been a humbling and rewarding event. The success of the conference is certainly a comment on the dedication of microbiology educators who continue to support the mission of excellent undergraduate education. We especially acknowledge and thank our fellow committee members Linda Fisher, Frances Hite and Paul Tomasek. We also thank the ASM staff for their impressive expertise, enthusiasm and competence. We certainly congratulate them on a job well done. The only thing left to say is "See you in Utah."

9th Annual ASMCUE Highlights, University of Utah-Salt Lake, UT

Emerging Issues in Microbiology: Expanding Educational Horizons

Indiren Pillay and Frances Hite; Southwest Tennessee Community College and Louisiana State University Health Sciences Center

Amidst the beautiful backdrop of snow-capped mountains and the Great Salt Lake, the 2002 Undergraduate Microbiology Education Conference was held on the University of Utah campus, sponsored by the University of Utah's Health Sciences Department. Many of the 175 attendees, including 65 first time participants, stayed in the same dorms that housed Olympic athletes a few months earlier! Seven exhibitors, including Benjamin Cummings who again sponsored our Saturday night reception, supported the conference. This year's conference was entitled "Emerging Issues in Microbiology: Expanding Educational Horizons," and that is exactly what we did over our three intense days—we expanded our horizons!

Prior to the opening session, three workshops were offered to attendees: Bioinformatics, Active Learning in the Classroom, and National Science Foundation and National Institutes of Health Grant Writing. Julian Davies (University of British Columbia) gave the opening plenary with a session on Emerging Issues in Microbial Biodiversity. Together with Anna Louise Reysenbach's (Portland State University) session Saturday on Life in Extreme Environments, these sessions provided an excellent overview of the magnificent diversity found amongst organisms in the microbial world. Ron Atlas (University of Louisville) followed the opening plenary with a session on Bioterrorism and captivated attendees with the latest information and developments regarding regulations and the position of the ASM on bioterrorism issues. His session was so well received that it stimulated our attendees to begin developing curriculum guidelines for teaching bioterrorism. Breakout groups, sorted according to teaching discipline, developed recommendations that will be edited and disseminated later this year.

Friday afternoon's breakout sharing sessions, jokingly nicknamed "Group Therapy," facilitated the exchange of Best Teaching Practices and provided encouragement and solutions for members' Worst Teaching Problems. We are in the process of deciding the best way to distribute these Best Practice descriptions to all members. Additionally, due to the overwhelming success of this session, participants were encouraged to submit their best practices to the ASM MicrobeLibrary. Good job on your "homework" gang!!

In addition to the excellent music and songs we usually have in the evenings, the Friday evening session by Helen Davies (University of Pennsylvania) using songs as a creative teaching strategy was so well received that she

obliged us with a double encore, once that evening and again at our closing on Sunday! As we joined her in singing microbiology songs, her enthusiasm and creativity was contagious. This session was truly incredible.

Plenary sessions on Saturday morning focused on science teaching reform methods. First, Jeffrey Pommerville and Maria Harper-Marinick (Maricopa Community Colleges) encouraged us to develop and implement strategies to facilitate active learning in the classroom. Next, Eugene Judson (Arizona State University) demonstrated ways to evaluate instruction methods and assess the impacts of teaching reform. These two sessions were quite thought provoking, causing the audience to begin pondering ways to use information on emerging issues from this conference in their classrooms.

At the Saturday evening poster session, 27 posters were presented in the Fort Douglas Officers' Club; a total of 28 abstracts were submitted and 27 were accepted. Eight of the poster presenters were awarded Travel Grants. Additionally, there was one successful application for the Faculty Enhancement Award. The awardees were recognized at the Saturday evening dinner banquet.

Charles Bonwell (Active Learning Workshops) gave our final plenary on Sunday morning entitled "Extending our Understanding of Active Learning: a Focus on Critical Thinking." His reliance on audience participation, along with his animated style, truly motivated and challenged us to contemplate new ways to use active learning in our classrooms. This forum allowed us to share active learning and critical thinking methods currently being used and build on these approaches.

The experience of contributing to this meeting has been a unique and extremely rewarding one. We are convinced that there is no better group of people to work alongside! As co-chairs of the 9th ASM Undergraduate Microbiology Education Conference, we would like to express our sincere appreciation to the ASM Education Staff members who made this conference such a success. Susan Musante, Carlos Pelham, Kristen Catlin, and Amy Chang are certainly treasured resources and also made this experience enjoyable and fun. In addition, we owe much gratitude to our other Planning Committee members, whose contributions were essential: Bruce Alexander and Russ Nordeen, our abstract reviewers, and Becky Buxton, our site coordinator at the University of Utah. Finally, our appreciation is extended to Neil Baker and the Undergraduate Education Committee for allowing us the opportunity to co-chair this event.

The 2003 conference will be held in Washington, D.C. This 10th ASM Undergraduate Microbiology Education Conference is going to be an extraordinary celebration of a full decade of supporting, improving, and intensifying Microbiology Education. It is going to be very exciting; we hope to see you all there!

10th Annual ASMCUE Highlights, University of Maryland at College Park

Focused on the Future

Lorraine A. Findlay and Mark A. Gallo; Nassau Community College/Medial Center and Niagara University

At the Tenth Anniversary of the Undergraduate Microbiology Education Conference, we reflected on an astonishing decade of development in the fields of microbiology and microbiology education. As we "Focused on the Future," the theme of our conference, our fellow conference participants were provided an opportunity to interact personally and exchange ideas and information, as well as to explore, design, and impact on the future course of these fields. Our host campus was the beautiful University of Maryland at College Park.

We were able to offer four pre-conference workshops: "Using Online Bioinformatics Tools and Databases in the Undergraduate Biology Curriculum"; "Integration of Molecular Biology Techniques in the Undergraduate Laboratory"; "Biofilms in the Undergraduate Laboratory"; and "Designing Your Project in the Scholarship of Teaching and Learning."

It was exciting to enjoy four plenary sessions by prestigious speakers. Rita Colwell, Director of the National Science Foundation, offered "Biocomplexity's Spiral." Lee Shulman, President of the Carnegie Foundation for the Advancement of Teaching, offered "Learning from Experience Through a Scholarship of Teaching." Eric Green, Scientific Director of the National Human Genome Research Institute, presented "Beyond the Human Genome Project." Finally, Kenneth Nealson, Wrigley Professor of Geobiology at the University of Southern California and previously Senior Research Scientist of the Jet Propulsion Laboratory, took us to Mars with "Searching For Life on Earth and Off."

On Friday afternoon, an interactive group sharing session was conducted using our participants' contributions of their Best Practices and Biggest Challenges in Assessment. This Best Practice Sharing Session has become one the most enjoyed and valuable aspects of the Undergraduate Microbiology Education Conferences.

On Friday evening, participants were treated to an Imagination Stage Theater Presentation. This was a thought provoking play, presented by a local theater company, on the ethics and controversies concerning cloning. After the play, the performers encouraged audience participation and feedback. This theater production was well received and made for a unique evening. The entertaining theater was then followed by a wonderful reception.

Saturday's schedule prodded participants to "put on their thinking caps" and engage in Group Working Sessions, wherein critical thinking exercises were developed. These exercises were later posted during the afternoon Exhibit Showcase, providing all attendees an opportunity for feedback, and were adopted by participants volunteering to bring the exercises to fruitful publication in the Microbe Library.

Saturday's agenda also provided the first round of Concurrent Sessions, many of which were then repeated on Sunday morning. These sessions offered a wide variety of topics, and, as always, everyone had to make hard choices on which session to attend. Among some of the topics that these sessions included were: safety, bioethics, scholarship of teaching, active learning, case studies, service to ASM, online learning, bacterial unknowns, and assessment.

Of course, the traditional poster session was conducted with a record number of forty abstracts having been submitted this year. Thirty-five posters were presented and six poster contributors received travel awards to attend the conference. The posters remained displayed throughout the early evening Exhibit Showcase. The Exhibit Showcase enabled a variety (about a dozen) of exhibitors to introduce and share their products with attendees; this portion of the agenda is always enjoyed as an opportunity for everyone to meet, network, share, and interact.

A special dinner and reception in the atrium of the campus Art Building capped off Saturday's activities. To celebrate the Tenth Anniversary, attendees were asked to come dressed as their favorite microbe. The evening unfolded as an event of ingenuity, imagination, and sheer fun, as the costumed group formed a dance line and snaked their way around the atrium as "Microbes on Parade." Benjamin Cummings graciously provided sponsorship for the reception.

Another feature that was newly added to the conference agenda this year was an opportunity for attendees to attend a Homeroom session each morning. This session enabled groups to discuss prior sessions, hear important announcements, and again share and interact.

Judith Kandel and Jeff Sich, two of the original "founders" of the Undergraduate Microbiology Education Conference, brought the conference to a close on Sunday morning with a special plenary session. Jeff and Judy not only provided a nostalgic tour of the past, but then helped us plan the future with "New Directions for Microbiology Education." The audience participated with their thoughts and comments on the direction that the conference should take for the future.

This year, at the University of Maryland, there were 207 registered participants, with 84 first-time attendees, and 4 from countries outside the United States. The weather was rainy but this did not dampen the enthusiasm and steadfast commitment of all conference participants to the present and future of microbiology education. We look forward in great anticipation to the 11th Conference for Undergraduate

11th Annual ASMCUE Highlights and Proceedings, Xavier University, New Orleans, LA

Facilitating Student Learning in Diverse Environments

Jeffrey Pommerville and Lucy Kluckhohn Jones; Glendale Community College and Santa Monica College

In New Orleans – the Big Easy – the 2004 ASM Conference for Undergraduate Educators was held on the campus of **Xavier University of Louisiana**. This year's conference was the largest yet; 247 registrants participated, including 137 first-time attendees. In addition, a record thirteen exhibitors helped support the conference. The conference theme – "**Facilitating Student Learning in Diverse Environments**" – provided opportunities for all attendees to connect with friends and colleagues, to assist in the development of new microbiology laboratory exercises, and to find solutions to some of our biggest teaching challenges.

Three pre-conference workshops were held on Friday morning. These included: "**Behind Closed Doors: The Clinical Microbiology Laboratory and What REALLY Goes on in There,**" "**Creating Positive Learning Environments for Your Students: Strategies for Teaching the Psychology of Learning,**" and "**Electronic Classrooms: Instant Feedback to Bioinformatics.**"

We had four fascinating and noteworthy plenary speakers. ASM President-elect **James Tiedje** from Michigan State University presented the opening plenary entitled "Microbes at Work in Nature." Saturday's two plenary sessions dealt with student learning. The morning plenary "The Latest Research on the Biological Basis of Thinking and Learning" was given by **Kenneth Wesson**, Education Consultant in Neuroscience. **Barbara Millis** of the United States Air Force Academy spoke on "Moving from Research to Practice" A Focus on Learning in Biology Courses" in the afternoon plenary. The Sunday morning plenary was given by **John Roth** from the University of California, Davis. His talk was entitled: "Adaptive Mutation: Selection Can Speed Appearance of Mutants without Changing the Mutation Rate."

The Friday afternoon breakouts were devoted to "Best Laboratory Exercises." Organized and run by **Erica Suchman** and **Mark Martin**, Erica first described the procedures to follow so the exercises could be submitted to the ASM MicrobeLibrary. Then, the author of each exercise met with the breakout group assigned that exercise as

“homework” prior to the conference. After the author provided an overview, the group leader facilitated discussion of the exercise and its development into the MicrobeLibrary format. The outcome is that all 15 exercises will be put into a final form by the author and submitted to the MicrobeLibrary.

On Friday evening, **Helen Davies** of the University of Pennsylvania led us in an encore performance of “Creative Best Practices.” As in Salt Lake City two years ago, she used familiar melodies with novel lyrics to demonstrate a teaching strategy that permits her students to learn infectious disease characteristics easily. Everyone joined with Dr. Davies in the singing of wonderful microbiological songs. This was followed by a pleasant reception sponsored by **Benjamin Cummings Publishers**.

On Saturday, after Kenneth Wesson’s plenary talk, the Concurrent Sessions began. As always, they covered a wide variety of topics. To help alleviate the difficult decision as to which topics to attend, only six topics were offered during any one concurrent session. Two cycles of sessions were offered on Saturday morning, with a third on Sunday. Between the three sessions, each topic was offered twice. The topics of the sessions concerned: biofilms, virtual labs, field bacteriology, student incivilities, math and chemistry in microbiology, active learning, undergraduate research, extreme halophiles, and lab biosafety.

Following Barbara Millis’ plenary, breakout sessions composed of the same faculty leaders and group members reconvened for: “Finding Solutions to Biggest Challenges.” From their “homework assignment,” group members identified a teaching challenge in need of a solution. After all challenges were presented, the group selected one or more challenges for solutions development. At the report out, each group presented the challenge and solution(s) to the entire group of attendees. The challenges and solutions can be found on this web site.

At the Saturday night dinner, **Neil Baker**, Chair of the ASM Committee on Undergraduate Education, presented the Travel and Faculty Enhancement awards. Congratulations to all the 2004 Winners!

Early-Career Travel Grant Awardees:

Jean Cardinale, Alfred University, Alfred, NY
Josephine Ebomoyi, University of North Colorado, Greeley, CO
Mary Farone, Middle Tennessee State University, Murfreesboro, TN
Janelle Hare, Morehead State University, Morehead, KY
Steven Lipson, St. Francis College, Brooklyn, NY
Iruka Okeke, Haverford College, Haverford, PA
Teri Shors, University of Wisconsin, Oshkosh, WI
Elise Sullivan, University of New Hampshire, Durham, NH
Sattiraju Sundari, Jaypee Institute of Information Technology, Uttar Pradesh, India
Davis Treves, Indiana University Southeast, New Albany, IN

Faculty Enhancement Program Awardees:

Connie Chow, Simmons College, Boston, MA
Marc Daniels, William Carey College, New Orleans, LA
Alenka Hlousek-Radojic, Richard Bland College, Petersburg, VA
Veronica Neumann, Milwaukee Area Technical College, Milwaukee, WI
Randy Strobel, Metropolitan State University, St. Paul, MN
Joel Stryker, Evergreen Valley College, San Jose, CA

Not only was this the largest attended conference, it also had the largest number of posters (56). The poster session along with the exhibit showcase allowed attendees to chat with the poster presenters and visit with the 13 exhibitors who introduced and displayed their products. It provided the perfect venue to network, share ideas, and socialize, since the reception overlapped with the poster session and exhibit showcase.

On Sunday morning, attendees heard John Roth’s plenary lecture, then dispersed to participate in the third cycle of concurrent sessions. This was followed by the conference wrap-up. Sue Merkel and Christine Snow were introduced as the co-chairs for the 2005 conference. Sue helped us solicit conference topics from the attendees for next year’s meeting.

The ability to design, organize, and manage a conference of this magnitude takes a team effort. We would like to thank Neil Baker and the Undergraduate Education Committee for the honor to co-chair this conference. We also want to thank the poster abstract reviewers: **Bruce Alexander**, **Min-Ken Liao**, and **David Westenberg**. The efficient running of the facilities at Xavier University of Louisiana would not have been possible without our hosts, **Todd Stanislav**, the on-site coordinator, and **Bill Whalen**. As co-chairs, our work was made much easier (and actually fun!) by working with a magnificent and very talented ASM Education staff. We are deeply indebted to **Kelly Gull**, **Kristen Catlin-LeBaron**, and **Amy Chang**. You are simply the best!

Cheers to all – we look forward to seeing everyone at the twelfth ASM Conference for Undergraduate Educators, which will be held in Atlanta, Georgia from June 3-5, 2005.

12th Annual ASMCUE Highlights and Proceedings, Emory University, Atlanta, GA

Learn Something New! Try Something New!

Conference Co-Chairs:

Sue Merkel
Cornell University

Kristine Snow
Fox Valley Technical College

Co-Sponsored by:

ASM Education Board
Emory School of Medicine, Department of Microbiology and Immunology
Emory University, Department of Biology
Emory College Center for Science Education
The Emory Faculty Science Council

Southern Hospitality

Emory University served as our host institution and opened classrooms, labs, and beautiful dorm rooms for our 248 registrants (229 attendees and 19 exhibitors). Several Emory University science departments sponsored our Saturday night reception and we appreciated their southern hospitality! Fifteen sponsors and exhibitors also helped sponsor events during the week-end. "Action packed" is the best description for our week-end at Emory.

Pre-conference workshops

Six pre-conference workshops highlighted the start of our week-end: **Calibrated Peer Review**, Arlene Russell; **Immunology Labs**, Jon Lammert; **Investigative Case Based Learning**, Margaret Waterman and Ethel Stanley; **Making Student Learning Outcomes and Assessment Work for Your Microbiology Class**, Janet Fulks; **Symbiosis in the Lab: Microbes as Symbionts**, Benjamin Wise, Lorraine Olendzenski, Betsey Dyer and **Teaching Bioinformatics and Structural Genomics**, J. Ellis Bell. All workshops were well attended and enjoyed by all.

Plenary speakers

Four incredible plenary speakers highlighted our week-end. We began with Norman Pace speaking on *Emerging Themes in Microbial Evolution and Diversity*. He provided us with new ideas about the microbial world. Following our Friday dinner, Hazel Barton gave us a fascinating look at *Amazing Caves: Amazing Microbes*. We all found ourselves wondering how she could *do* that! Saturday morning Venkatachalam Udhayakumar from CDC provided us with an incredible overview of the status of *Malaria Pathogenesis*. Sunday morning Harvey Holmes from CDC spoke on *Smallpox: From Ancient to Modern History* – a fascinating survey of history and microbiology.

The format of our meeting took a new twist this year. We parted from the "product oriented" meeting and moved to new ways to teach: **Try Something New!** AND updates in microbiology: **Learn Something New!** We found that our colleagues have incredible ideas and incredible knowledge.

Try Something New! – Many new and long-time ASMCUE participants lead our sessions on developing new teaching approaches. All sessions focused on techniques that could be used immediately in the classroom with all microbiology students. The sessions included: *Authentic Assessment Techniques in Microbiology*, Janet Fulks; *Active Teaching: Helping Students Put Their Entire Brain To Work*, Robin Wright; *Investigative Case Based Learning*, Margaret Waterman and Ethel Stanley; *Just-in-Time Teaching*, Kelly Cowan; *MicrobeLibrary Atlas and Protocol Project*, Ann Smith; *Uncooking the Lab: How to Convert a Traditional, Cookbook Lab into an Inquiry-based Lab*, Sarah Lauffer; *Using Web-based Learning Objects for the Instruction of Both Traditional and Online Microbiology Students*, Gary Kaiser; *Writing in the Life Science Classes Using Calibrated Peer Review*, Arlene Russell.

Learn Something New! These sessions focused on what's new and what students need to know. All sessions were 45 minutes and participants left with new, up-to-date, classroom information. The sessions included: *Bioterrorism*, Jeffrey Pommerville; *Extremophiles: An update on Their Biology and What Students Need to Know*, Michael Madigan; *Immunology*, John Lammert; *Symbiosis in the classroom: A New Paradigm for the Biology Curriculum*, Benjamin Wise, Lorraine Olendzenski, Betsey Dyers; *Teaching Bioinformatics and Structural Genomics*, J. Ellis Bell; *Virology*, Erica Suchman.

Listserv Lunch, Munch and Talk a Bunch – Another new addition to the teaching conference, these sessions allowed Listserv participants to meet face-to-face with others with similar interests. Participants discussed issues over lunch and proposed next steps. The tables included discussions on: Curriculum issues of microbiology majors, non-majors/ general education, allied health/ nursing, and biology/ biotechnology; preparing precollege teachers, mentoring undergraduate students and addressing cultural diversity in the curriculum, and quantitative approaches to teaching microbiology, safety updates and a MicrobeLibrary (www.MicrobeLibrary.org) curriculum collection review opportunity. A good time was had by all!

Meet the Author! ASMCUE participants also write! Several textbook authors took this opportunity to show their textbooks and discuss ideas with participants.

The Poster Sessions were held Saturday afternoon with amazing work presented. There were 37 posters presented in two sessions. Saturday evening found us viewing posters, relaxing and enjoying a reception sponsored by several departments at Emory University.

Congratulations to all Awardees!

Faculty Enhancement Program Awardees: Sanjay Kapoor, Haryana Agricultural University, Hisar, India; Rene Kratz, Everett Community College, Everett, WA; Dora Som-PimPong, North Carolina A&T State University, Greensboro, NC; Litu Yu Ursuline College, Pepper Pike, OH

Early-Career Travel Grant Awardees: Toye Ekunsanmi, University of Wisconsin, Washington, County, West Bend, WI; William Huddleston, University of Calgary, Calgary, Canada; Lee Hughes, University of North Texas, Denton, TX; Jeanne Kagle, Mansfield University of Pennsylvania, Mansfield, PA; Nathalie Kuldell, Massachusetts Institute of Technology, Cambridge, MA; David Kushner, Dickinson College, Carlisle, PA; Caroline O'Farrell, Oral Roberts University, Tulsa, OK; Amy Reese, Cedar Crest College, Allentown, PA; Michele Shuster, New Mexico State University, Las Cruces, NM

A special thanks to Kelly Gull and Amy Chang for their hard work and their organizational talents. They make volunteering for ASM activities a pleasure! Thanks to Neil Baker, Chair of the Undergraduate Committee, for asking us to co-chair the 2005 conference. It was great fun.

We would also like to **thank the poster reviewers** Min-Ken Liao, Department of Biology, Furman University, Greenville, SC; Donald Breakwell, Department of Microbiology, Brigham Young University, Provo UT; and Janelle Hare, Department of Biological and Environmental Science, Morehead State University, Morehead, KY. Great work – we couldn't have done it without you.

We look forward to seeing everyone at ASMCUE in 2006!

13th Annual ASMCUE Highlights and Proceedings, University of Central Florida, Orlando

Recombination of Ideas in Teaching Microbiology

Conference Co-Chairs:

Donald Breakwell
Brigham Young University
Provo, Utah

Jackie Reynolds
Richland College
Dallas, Texas

Highlights by Donald Breakwell and Jackie Reynolds

ASMCUE returned to the campus of the University of Central Florida for its 13th annual meeting. Our theme was **"Recombination of Ideas in Teaching Microbiology."** The program drew on a variety of sources to allow the approximately 275 participants to draw from each other's strengths and experiences and recombine them to improve their teaching of microbiology.

Pre-conference workshops were well attended. Jack G. Chirijian from Edvotek, Inc. sponsored and presented hands-on applications of molecular biology methods to clinical sciences and medical. Mary Allen and Mary Dominiacki joined to discuss the use of case studies in microbiology teaching. Karen Klyczek and Mark Bergland engaged participants in computer simulations of protein and DNA analysis of infectious diseases. Brad Goodner helped us grapple with the explosion of genomic sequencing and how to incorporate undergraduates into bioinformatics research. We were also pleased to have Jeanne Rudzki Small join us from the National Science Foundation to help participants prepare to write successful grant proposals.

To add our knowledge of current topics in microbiology, we heard from **outstanding plenary lecturers**. **Joan W. Bennett**, an outspoken advocate of undergraduate education, spoke on "Molds and Mycotoxins, Genes and Genomes." Not only was she able to use her career-long work in mycology, but she also drew from her recent personal experience with mold infesting her home following the floods in New Orleans. **Derek Lovely** fascinated us with his work on metal reduction and particularly with his development of microbial fuel cells. On Saturday, **Edward DeLong** examined the application of genomics to the study of microbial ecology and biogeochemistry. His presentation provided another view to how microbes, particularly the *Archaea*, harvest energy using proteorhodopsin, a novel light-driven proton pump. Our final plenary speaker was **Terrence Tumpey**, whose presentation focused on the virulence of Influenza A H5N1 and its relationship to the 1918 influenza pandemic.

During 2006 ASMCUE we continued the successful "Learn Something New, Try Something New" concurrent sessions. A diverse array of topics and approaches to teaching and learning were presented by enthusiastic experts and well-engaged participants.

Learn Something New sessions included, *Biology Curriculum*, Graham Walker; *Giving Your Course the Genomics Touch*, Brad Goodner; *Going for the Gold: Using the Enrichment Culture in and Introductory Microbiology Course*, Mark Martin; *Identification of Microorganisms in a Clinical Setting Based on Molecular and Genetics Testing—PCR, DNA Probes, RNA analysis, etc.*, David Hillyard; *Microbiology NSF Funding Updates*, Jeanne Rudzki Small; *Scientific*

Underpinning for Professional Practice: The Essentials of Baccalaureate Education for Professional Nursing Practice, Jean D. Leuner; *Teaching Microbiology Without Teaching Microbiology: The Dual Use Debate*, Chris Woolverton; *Using History to Teach Microbiology*, Joan W. Bennett.

Try Something New sessions included, *Case-based Learning Using Protein and DNA Simulations to Analyze Cases Based on Infectious Diseases*, Karen Klyczek and Mark Bergland; *Is It Possible To Teach Metabolism Interactively?* Amy Cheng Vollmer; *Pathways to Scientific Teaching: Active Learning and Assessment*, Diane Ebert-May; Using Concept Maps as a Creative Tool for Teaching and Assessment of Learning, Clarissa Dirks; *Applying the Scholarship of Teaching and Learning: Research on Students' Concept Mastery, Attitudes, Beliefs, and Interest*, Steven Pollock; *Mathematical Modules in Biology*, Meghan Burke; *Searches on DNA Sequences: Another Tool in the Active Learning Tool Kit*, Marcia Cordts; *Using Clickers Wisely*, Erica Suchman.

From *MicrobeLibrary*, Ann Smith and Jean Cardinale also led very helpful sessions on the Atlas-Protocol Project and Curriculum Activity Development.

We would like to thank our **abstract reviewers** for the time they have spent. Because of the increasing number of applicants (61 posters were accepted) at this year's meeting, we drew on the expertise of more reviewers. This year the reviewers were Janelle Hare, Lee Hughes, Don Lehman, Sue Merkel, and Gail Goodman Snitkoff. Their efforts certainly contributed to the quality of this conference.

The **poster sessions** at this year's meetings were very successful. Our observation is that the degree of scholarship of teaching and learning is increasing, with creative and rigorous assessment being conducted.

In this year's lunch work session, entitled, "**Lunch, Munch, Talk and Plan a Bunch: Branching Out 2010**," regional groups met and planned how they can add an educational focus to ASM branch meetings. Participants were also encouraged to be involved in their respective ASM Branch meetings.

Several textbook authors were available between sessions for "**Meet The Author**" Book Corners. As always ASMCUE appreciates the support of corporate sponsors, such as Benjamin Cummings (co-sponsoring the Listserv Lunch and a refreshment break) and McGraw-Hill (sponsoring a refreshment break Saturday morning.)

Our congratulations are again extended to all the **Faculty Enhancement Program and Early Career Travel Grant Awardees**: Cliff K. Grimsley, Gaston College, Saron Z. Henry, Milwaukee Area Technical College, Johana Melendez, Hillsborough County Community College, Madhura M. Pradhan, The Ohio State University, T.G. Thomas, Bakersfield College, Mary N. Boyle, Vermont Technical College, Jennifer Renee Brigati, University of Tennessee, Paul Dean Brown, University of the West Indies, Naowarat Cheeptham, Thompson Rivers University, Ciraj Ali Mohammed, Melaka Manipal Medical College, Jennifer Ann Herzog, Herkimer County Community College, Himgauri K. Kulkarni, MiraCosta Community College, Jennifer Kraft Leavey, Georgia Institute of Technology, Emily L. Lilly, University of Massachusetts Dartmouth, Tracey Meilander, Kent State University, Stephanie S. Strand, Washington University, Anh-Hue Thi Tu, Georgia Southwestern State University, and Debra Lynn VanHouten, Chemeketa Community College.

We greatly appreciated all the help given to us by our host institution, The University of Central Florida. Particularly, we thank Robert Gennaro, Professor Emeritus and former chair of the UCF Molecular Biology and Microbiology Department, who was a very gracious host and coordinated the scheduling of facilities at UCF.

Finally, our sincere thanks are extended to Kelly Gull and Amy Chang for the administrative expertise and organizational skills that make an annual success of ASMCUE. Neil Baker, Chair of the Undergraduate Committee continues to provide the much-needed support and humor from the ASM Board of Education. At his request, we were honored for the opportunity to co-chair the 2006 conference.

We look forward to meeting everyone again at ASMCUE 2007 in or nearby Toronto, Canada!

14th Annual ASMCUE Highlights and Proceedings, University of Buffalo, SUNY North Campus, Buffalo, NY

Microbiology: Diversity of Life, Diversity in Learning, Connecting Disciplines

Conference Co-Chairs:

Aaron Best
Hope College
Holland, Michigan

Jennifer Herzog
Herkimer County Community College
Herkimer, New York

Highlights by Aaron Best and Jennifer Herzog

Although the ASM General Meeting was held in Toronto, ASMCUE made the decision to keep this year's meeting stateside at SUNY at Buffalo. Several economic factors led to the decision to keep ASMCUE "across the border." First, the meeting is heavily subsidized by ASM (i.e. operates at a loss to the Society) and it would have been difficult keeping attendee costs in line with previous years if the meeting was held in Canada on a holiday weekend (Victoria's Day). Also, polls of previous attendees indicated that most faculty would have difficulty securing funding to attend an "international" meeting as many institutes do not authorize professional development travel outside the US. Evidenced by the fact that we had a record number of attendees, this was a very pivotal decision made by the ASM Education Board. Their efforts to make a smooth transition from our meeting to Toronto were also well received, as nearly 25% of the attendees used the complimentary bus service to make the trip from Buffalo to the ASM General Meeting on Monday morning.

In light of ASM's new focus to reach out to all branches of the biological sciences, the theme of this year's meeting was "Microbiology: Diversity of Life, Diversity in Learning, Connecting Disciplines." As a committee, we felt that this best exemplified ASMCUE's dedication to gathering educators for the purpose of learning effective techniques for teaching microbiological concepts in a variety of biology courses. The entire program was developed with this theme in mind, and based upon initial feedback we found that participants found it every timely, engaging and useful.

The following is a breakdown summary of each of the major sessions offered at ASMCUE 2007:

Pre-Conference Workshops: Friday, 6-9:30pm

Three Pre-Conference Workshops were organized for ASMCUE 2007 (we had a 4th cancel that we could not reschedule). Gary Kaiser, of The Community College of Baltimore County, presented a session on using Flash Animation software in the classroom, focusing on the implementation and the creation of animation for beginners. Steve Pechous from the National Center for Biotechnology Information of the National Institutes of Health held a session giving participants an overview of microbial genomes and how to employ bioinformatics into a course. Finally, Stephen Nold, of the University of Wisconsin, presented a workshop on writing effective case studies for the classroom.

The schedule for the Pre-Conference Workshop and ASMCUE was very different this year due to the ASM General Meeting beginning on Monday evening instead of the typical Sunday evening start. Workshops were offered Friday evening and 53 attendees participated in the three workshops.

First-Timers Breakfast: Saturday, 7-8am

This year, the Committee decided to make a big change in the format of the opening day breakfast. Attendees were separated into two groups: first-timers and returning participants. This new grouping was done to facilitate a planned activity (a "treasure hunt"!) for the first-timers group which represented 42% of ASMCUE attendees. As Co-chairs, we presented nine individuals who graciously volunteered to be "interviewed" by first-time participants throughout the Conference. The volunteers represented the various faculty professional development offerings from ASM including members of the Education Board, individuals serving on the various editorial boards of MicrobeLibrary and Chairpersons of various Education Committees. The first-timers heard a few "words of wisdom" from the volunteers, saw their faces, and then were off to have their cards signed by at least 6 of the 9 individuals. On Sunday, all completed cards were eligible for a variety of prizes generously donated by ASMCUE exhibitors and ASM. In all 45 cards were collected and 20 prizes were awarded during the final wrap-up session on Sunday. Initial feedback at the conference was overwhelmingly positive and we hope to conduct similar activities to welcome the "newbies" at future conferences.

Plenary Lectures: Saturday and Sunday

This year, three plenary sessions were presented. They covered a wide array of topics in the discipline of microbiology. Dr. Robert Doms, University of Pennsylvania School of Medicine, started off our conference with a lecture on HIV/AIDS at 25 years. His clinical experience combined with his research expertise allowed him to tell a very informative, engaging story of the virus and moreover illustrated how easy it is to employ the HIV/AIDS model in teaching undergraduate students. Dr. Durland Fish, Yale Center for EcoEpidemiology, spoke on Saturday evening regarding the topic of "ecoepidemiology". His talk reinforced the idea that microbiology today is not a stand alone discipline, but overlaps with many other areas of the biological sciences (i.e. ecology, genetics, evolution, etc.). Finally, our last speaker was Dr. Naomi Ward, T.I.G.R., who spoke about her work in microbial genomics. Her real-life examples of how bioinformatics and genomics have been successfully employed in microbiology gave our educators concrete and fascinating examples to employ in their classrooms.

Learn Something New/Try Something New Sessions: Saturday and Sunday

As indicated below, a variety of topics and approaches to teaching and learning were presented during these sessions at ASMCUE 2007:

Learn Something New:

Effective Outreach Materials to Teach Microbiology to Pre-College Students (Leslie Miller and Liliana Rodriguez); How to Get Service-Learning into Microbiology Courses (Cynthia Cooper); Microbiology Food Safety Issues-Real World Problems that Get Undergrads Excited About Microbiology (Martin Wiedmann); Microbiology in the Nursing Curriculum (Carolyn Holcroft Burns); Preparing for the Future of Biology (and Microbiology) Education at NSF (Daniel Udovic); Teaching Evolution and the Nature of Science: Pitfalls and Opportunities (Ross Nehm).

Try Something New:

Exploring Active Teaching: How Not to be a Talking Head (Sue Merkel); Integrating Research into Your Classroom: What Works? (Stephen Nold); Integration of Math and Micro Across the Curriculum (John Jungck and Anthony Weisstein); Microbial Ecology: Opportunities for Inquiry-Based Learning (Mary Puterbaugh Mulcahy and Harry Edenborn); Podcasting in Education (Rita Alisaukas and Chris Condayan) and Rubrics Cube: Development of Six Rubrics to Aid with Student Performance Assessment (Marcy Kelly).

MicrobeLibrary Sessions: Saturday, Lunch and Sunday, 9-10:30am

Members of the MicrobeLibrary led two very well-attended sessions at this year's meeting. In response to comments from ASMCUE 2006, the committee decided to alter the format of the Saturday lunch session. Attendees to the lunch session were divided into 7

groups, and each group had the task of reviewing the 2007 MicrobeLibrary Atlas-Protocol projects. Initial feedback from the lunch indicated that this format was a great success.

In addition to the above event, the Curriculum Editorial Board Committee of the MicrobeLibrary sponsored a session on "Half-fermented Ideas" on Sunday morning. Participants were asked to complete a homework assignment discussing a class/lab activity that they successfully employ in their courses. During the session, these activities were shared and built upon as a means of potentially submitting them for review into the Curriculum Collection.

Poster Sessions: Saturday and Sunday

We had 46 posters accepted and presented at this year's conference. It was wonderful having all of the posters displayed in one area amongst the rooms used for all of the sessions during the conference. It greatly increased the traffic at all of the poster sessions throughout the weekend. We also noticed an increase in the use of effective assessment tools in many of the posters presented, which supports our commitment to continuing Try Something New sessions on this topic.

We would like to thank our abstract reviewers for the time and efforts: Janelle Hare, Lee Hughes, Marcy Kelly, Jeanne Kagle and Michele Shuster.

Author Corners: Saturday and Sunday

Five publishing companies sponsoring eight Author Corners a time set aside for meeting textbook authors and discussing their work. We recognize and appreciate the support of this year's corporate sponsors: John Wiley & Sons (Friday reception co-sponsor), ASM Press (Saturday pre-dinner reception sponsor), and Benjamin Cummings (Sunday Lunch sponsor). As the exhibit and sponsorship program grows, we earnestly look forward to the day when the conference will be self-supporting or at least "less subsidized" by ASM.

Exhibit Showcase: Sunday, 9am-1pm

This year, we had 11 companies participate in the Exhibit Showcase. The effort of the Committee to arrange such a variety of vendors paid off and ASMCUE participants were able to network with publishers, biotechnology companies and government agencies alike.

Travel Grants:

Our congratulations are again extended to all the **Faculty Enhancement Program and Early Career Travel Grant Awardees:** Julius Afolabi, Savannah State University; Anthony Arment, Central State University; Sagarika Dash, Glendale Community College; Mireya Macias, Merced College; Peggy Ann Mason, Brookhaven College; Jennifer Bennett, Juniata College; Cheryl Blake, Pima Community College; Jorge Gomez-Moreno, University of Florida; Maria Guerrero, Miami Dade College; Troy Jesse, Broome County Community College; Joanna Klein, Northwestern College; Tamara McNealy, Clemson University; Michelle Parent, University of Delaware; Srebrenka Robic, Agnes Scott College; Rachel Robson, Morningside College and Audra Swarthout, Delta College.

"Thank You's":

We greatly appreciate the assistance of our host institution, SUNY at Buffalo. We thank Dr. Michael E. Ryan, Vice Provost and Dean of Undergraduate Education, for taking the time to speak at our opening "Welcome" session on Saturday morning. The efforts of Dr. Gerald B. Koudelka, Professor and Chair, Department of Biological Sciences, were invaluable in making this conference a success including making copies, moving boxes and making a quick dash to the local hardware to buy wingnuts and bolts for the poster stands donated by the Department of Chemistry! His willingness to work with ASMCUE staff in planning this conference and during the event itself went over and above any expectations of our hosts. Another huge thank you is due to Joseph Helfer, Executive Officer in Department of Biological Sciences. Joe worked hard on scheduling the classrooms, a/v services and even managed to wake up his two teenage daughters VERY early on Sunday morning to help lug even more boxes out to the exhibitor tables. The food service, technical and all other associated staff at SUNY at Buffalo were top-notch and their hard work appreciated as well.

Thank you as well to Neil Baker, Chair of the ASM Education Board and Marjorie Kelly Cowan, Chair of the Undergraduate Education Committee which oversees ASMCUE for their continued support of our efforts in planning the Conference. Their attendance at the conference was appreciated and their feedback is always useful in making this the most effective conference for microbiology educators.

Finally, our most sincere thanks are extended to the ASMCUE staff: Amy Chang, Kelly Gull, Michelle Godinez, Veronica Dove and Jean Kayira. They were tireless in the planning and execution of ASMCUE 2007, and their efforts were recognized by every participant at this conference. THANK YOU, LADIES!

In closing, we hope you found ASMCUE 2007 to be a worthwhile experience. Planning has already begun on ASMCUE 2008 and we hope to see you (*and maybe a coworker!*) in Boston!

15th Annual ASMCUE Highlights and Proceedings, Endicott College, Beverly, MA

Fifteen Years of Teaching Excellence

Conference Steering Committee

Donald P. Breakwell, Ph.D. Brigham Young University, Jennifer Herzog, Ph.D. Herkimer County Community College, Donald Lehman, Ed.D. University of Delaware

An ocean side setting was ideal for celebrating "Fifteen Years of Teaching Excellence" at the 2008 American Society for Microbiology Conference for Undergraduate Educators (ASMCUE). Beautiful Endicott College in Beverly, Massachusetts is set among woods,

rocky outcrops, a lake, and stony beaches. Aside from a Saturday punctuated with rain showers, the weather was warm with an occasional cool sea breeze. All the facilities were within a short walk, so there was plenty of opportunity to enjoy the surroundings.

This year's conference was particularly well attended with 327 attendees, an almost 25% increase over last year's meeting. Having the conference at the end of May might have contributed to that because most colleges and universities have finished spring semester. Approximately 42% participants were first timers with eight international visitors also in attendance. We were particularly pleased to have representatives of the American Society of Human Genetics at the conference.

The Microbrew sessions broke new ground. These sessions were a great start to the academic part of the conference. Designed to have educators bring their ideas for and about successful teaching strategies in microbiology and biology education; nine sessions covered topics from course development and research pedagogy to inexpensive labs and service learning. Thank you to all participants for making this a resounding success. The steering committee received many positive comments about these sessions, and we will be addressing requests to increase the number of these session

Our plenary speakers bridged wide-ranging topics from basic science to pedagogical approaches. Stuart Levy (Tufts University School of Medicine) discussed adaptation to and genetics of drug resistance. Colleen Cavanaugh (Harvard University) shared the fascinating chemosynthetic ecology of oceanic volcanic vents. This year's meeting also saw a panel presentation of genomics initiatives in education. Brad Goodner (Hiram College) spoke about involving undergraduates in genome annotation, Tuajuanda Jordan (Howard Hughes Medical Institute) discussed a phage genome project through HHMI, and Cheryl Kerfeld (Joint Genome Institute) shared "Adopt a (microbial) Genome" project. Ricki Lewis, Alden March Bioethics Institute, and widely published author of life science texts, gave pointed examples of how the media mangles genetics.

In response to feedback from previous participants, this year's "Learn Something New" sessions focused on updates in microbiology and related disciplines. Larry Aaronson (Utica College) drew from his vast experience on encouraging and mentoring undergraduate researchers. TJ Bliss (University of Nebraska) discussed inquiry-based labs using nematodes and their bacterial symbionts. Charlie Calisher (Colorado State University) made us uneasy with his presentation of emerging viruses and bats. Kathleen Jagger (Transylvania University) and Jeffrey Sich (Maryville University) presented not only topics in current immunology but ways to teach them. Judy Daly (University of Utah) gave us an update on careers in clinical microbiology. Two leaders in genomics education initiatives, Tuajuanda Jordan (Howard Hughes Medical Institute), and Cheryl Kerfeld (Joint Genome Institute) presented forthcoming projects available through their institutions.

The "Try Something New" sessions at ASMCUE are designed to showcase current pedagogical approaches and how to implement them. Using microbial ecology as their model, Mary Allen (Hartwick College) and Ruth Gyure (Western Connecticut State University) presented how to teach experimental design and sampling methods. Dave Baumler (Genome Center of Wisconsin) shared the vast number of genomics tools and resources available to educators. Spencer Benson (University of Maryland) and Alix Darden (The Citadel) enhanced our scholarship of teaching and learning by sharing appropriate rubrics, surveys, and taxonomies in assessment. An application of these ideas, specifically on Bloom's Taxonomy, was made by Clarissa Dirks (The Evergreen State University). Diane O'Dowd (University of California, Irvine) presented how physical demonstrations and cognitive exercises can be used to engage students in large classes. Ricki Lewis also shared how writing a news release can help students learn genetics. Technological tools for teaching and learning were also presented: Sandra Burnett (Brigham Young University) lead participants through the creation of iLectures, a form of podcasts. Laura Tuhela-Reuning (Ohio Wesleyan University) and Michele Shuster (New Mexico State University) discussed how clickers may be used effectively in different student populations.

This year there were a record number of posters in three sessions. The scholarship of teaching and learning was well exhibited as an increasing number of submissions had appropriate assessment and demonstrable outcomes. Our sincere thanks to those who participated as abstract reviewers and on the travel award committee.

Congratulations to this year's travel award winners. The ASMCUE Textbook Travel Award, generously donated by several text book authors, was awarded to Paul Lepp (Minot State University). Faculty Enhancement Program Awardees were Ruth Negley (Harrisburg Area Community College), Angela NewMyer (St. Louis Community College at Forest Park) and Sherrie Sprangers (University of Maine – Machias). Early-Career Travel Awardees were Min Cao (Clemson University), Sylvia Franke (Skidmore College), Elizabeth Joyce (Stanford University), Samantha Kerry (St. Mary's College of Maryland), Barbara May (St. John's University/College of St. Benedict), Kimberly Metera (Durham Technical Community College), Amy Miller (University of Cincinnati), Kimberly Murphy (Waldorf College), Traci Ness (Armstrong Atlantic State University), and Michele Zwolinski (Weber State University). Travel awards were also generously granted by the Northeast Branch of ASM and the American Society for Human Genetics.

Our sincere appreciation goes to President Richard Wylie of Endicott College who literally opened doors for our visit to Beverly, MA and made a gracious host. We also thank the local planning committee Dr. Peter Eden, Dean of Arts and Sciences, and our own Joyce Shaw who initially suggested Endicott College.

As always we are indebted to the following for their continuing support of this conference: Neil Baker (Chair of ASM Education Board); Kelly Cowan (Chair of Undergraduate Education); and Amy Chang, Kelly Gull, Michelle Godinez, Leslie Robinson and Jean Kayira of the ASM Education Department.