Annual American Society for Microbiology Conference for Undergraduate Educators

Discipline: Microbiological and Biological Sciences

Workshop Leaders (PIs): 2012 – Chair, Jacqueline Washington, Nyack College, Nyack, NY; **Vice Chair**, Todd Primm, Sam Houston State University, Huntsville, TX

Funding Source(s): Registration, exhibitors, sponsorship and ASM speaker fund subsidy

Cost per participant: ~$600/participant

Costs/Fees paid by the participants (or their home institutions): Registration fee: ASM members – $699.00; Non-members– $799.00

Target Audience: Microbiology and biology educators from colleges, universities and international institutions.

Typical Attendance: 350

Workshop Duration: Four days

When Offered: annually in May or June

Workshop website: www.asmcue.org

Program Description

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Introduction

The American Society for Microbiology (ASM) is the largest life science professional organization with nearly 39,000 members. The Society has held an annual general meeting every year since 1899. In 1988, recognizing the unique needs of educator members to gather and share best practices, two education sessions at the general meeting were introduced. By 1993, ASM educators wanted even more opportunities for in-depth discussions, and a group met separately in order to discuss and design guidelines for the undergraduate microbiology curriculum. A core group of approximately 100 microbiologists gathered for consensus-building discussions prior to the ASM General Meetings of 1994 to 1996. These discussions culminated in the first version of the ASM Recommended Curriculum Guidelines for Microbiology (American Society for Microbiology, 2002). The meeting, held annually since then, is now known as the American Society for Microbiology Conference for Undergraduate Educators (ASMCUE).

ASMCUE participants model active learning.

Now in its 19th year, ASMCUE (www.asmcue.org) gathers over 325 microbiology and biology educators from around the world for an interactive four-day conference. The meeting is typically held in May or June alternating between East and West Coast locales. Attendees gather to improve their teaching techniques, engage in teaching as a scholarly endeavor, and identify with a community. Topics include teaching, learning and assessment, classroom and independent student research, student advising and mentoring, graduate training and professional skills development, K-12 outreach, and community service.

Conference attendees represent diverse types of institutions, from community colleges, universities, undergraduate, graduate, and international institutions. In general, half of the attendees have been teaching for less than 10 years. Courses taught range from Introductory Microbiology and Biology/Biotechnology to Upper Division Microbiology/ Biology and Human Anatomy and Physiology, and other courses. The typical students taught by the attendees are biology, microbiology or allied health/nursing majors, biology nonmajors, and students in doctoral or medical microbiology programs.

ASMCUE educators gather to learn and share the latest information in both the biological sciences and education research. The conference program includes plenary, concurrent, poster, and exhibit sessions. Participants engage in formal and informal small group discussions between colleagues all focused on the same goal: to improve teaching and learning in the biological sciences.

ASMCUE Program Format

Plenary lectures

The ASMCUE theme, "Blending Science and Education," seeks to blur the dividing line between science and education research. Four plenary lectures given by well-known, distinguished speakers, anchor each day of the four-day conference. Two of the lectures are on cutting-edge science and the other two focus on the latest research in science education.

Concurrent sessions

Attendees can choose to attend any one of three types of concurrent sessions: scientific, pedagogical, and resource. The sessions are one hour long and in general, each topic is offered twice throughout the four day conference.

Concurrent Scientific Sessions enhance participant knowledge of current topics in biology and science education through lectures given by the leaders in these areas. Presenters are encouraged to engage participants actively in their

presentations. Concurrent Pedagogy Sessions present practices and pedagogies that have been assessed for classroom effectiveness. Presenters provide background information and their approach to the strategy, leaving time for participants to practice and reflect upon how the new practice or approach can be implemented into their classrooms. Concurrent Resource Sessions provide attendees with topics and information to enhance their professional skill sets and scholarship. Presenters provide background information to tools, resources, and references for advancing in the profession. Speakers for these sessions may be invited by the conference committee, or selected from submitted abstracts. Effort is made not only to diversify the types of topics presented, but also to reflect the suggestions of attendees of previous conferences.

Microbrew symposia

Participants may also submit abstracts detailing their best teaching practices or laboratory activities to be considered for 15-minute "chalk talk" oral presentations. Abstracts submitted to these "Microbrew" sessions do not require assessment of student learning. These are very informal presentations, and serve as a forum for sharing ideas, best strategies or thoughts pertaining biology or microbiology education. An additional period of five minutes is allowed for discussion. Thus, Microbrews serve not only as a learning opportunity for attendees; the presenter can also obtain valuable feedback from the audience.

Poster sessions

Abstracts describing innovative teaching approaches or the specific activities conducted by the students that indicate how those changes affected student learning are accepted for poster presentations. The accepted abstracts cover microbiology and biology education research, and must fully demonstrate a scientific problem, including hypothesis, methodology, results, and conclusion. A decision was made in 2010 to publish abstracts selected for the poster sessions in the *Journal of Microbiology & Biology Education*.

Exhibit program

Typically, exhibitors at ASMCUE are textbook publishers and others offering services to educators. An interesting statistic that holds true every year for ASMCUE is that 40-50% of participants are first-time attendees of the conference. Exhibitors are delighted to have new customers every year and it also means that there is always "new blood" being added to this supportive community of educators to which exhibitors can demonstrate their products.

Peer review and networking/topical meal sessions

Attendees have many opportunities for networking. All meals during the conference except one are taken together. Attendees may sit together to join in discussion on topics of areas of common interest. The topics selected are gleaned from listserv discussions. Lunch sessions serve as opportunities where conference attendees may participate in any of several important initiatives.

Participants have the opportunity each year to provide input on several standard microbiology protocols during a lunch session. To date, 38 protocols have been reviewed by the community. The protocols are comprehensive and include purpose, theory, history, recipes, and best practices. Protocols are revised after the conference and then are published in MicrobeLibrary (www.microbelibrary.org) where participants are listed as contributors (American Society for Microbiology, 2012).

In the last several years, attendees have also contributed to the reform of microbiology education and laboratory practices. In 2011, ASM Undergraduate Microbiology Curriculum Guidelines were vetted by the ASMCUE community. The guidelines were aligned with the Vision and Change core concepts and competencies found in *Vision and Change in Undergraduate Biology: A Call to Action* (AAAS, 2011). After several opportunities for the community to comment on and review the guidelines, the vetted guidelines and the process for consensus were published in 2012 (Chang, 2011).

In 2012, attendees were asked to comment on newly written Guidelines for Laboratory Safety in Teaching Laboratories. The effort, led by ASM and in conjunction with the Centers for Disease Control (CDC), was initiated after the 2010-11 salmonella outbreak. The ASM Laboratory Biosafety Committee developed a draft set of biosafety guidelines for instructors using microorganisms in undergraduate or K-12 laboratories and presented them to ASMCUE 2012 attendees for comment and discussion. The guidelines are expected to be published in 2013.

ASMCUE and professional development

Post-conference surveys suggest that 80% of the attendees indicate ASMCUE as their primary source for professional development. Attendees have the opportunity to contribute to an onsite conference wrap-up session in which they can offer feedback on the current conference and ideas for the future. In addition, each year conference participants receive a post-conference survey. Results and comments are considered by conference planning committee and enhancements are made to future conferences, if possible.

In 2004, a comprehensive survey was sent to 759 participants who had attended at least one conference in the preceding 10 years. The response rate was 25% and respondents reported that they developed professionally in the following ways:

- 82% changed their courses or programs on the basis of information gained at the conference.
- 61% shared information learning with colleagues.
- 57% attended to safety issues more regularly.
- 51% introduced more group learning and writing assignments.
- 49% added new course materials from MicrobeLibrary.
- 48% conducted more extensive research about ASM curriculum guidelines.
- 41% contacted or visited another participant after the conference.
- 35% introduced case-based assignments.
- 30% revamped entire courses.
- 25% served on a national committee (including ASM) as a reviewer, advisor, planner, or consultant.
- 16% published peer-review article(s) for publication in undergraduate education.
- 14% established collaborations with other participants.

- 14% submitted an educational improvement or faculty development proposal (e.g. NSF, FISPE, HHMI, ASM, Carnegie, etc.).
- 10% invited someone to their campus to speak.

Results of the survey and the success of ASMCUE were highlighted in *Vision and Change* (AAAS, 2011). The report acknowledges ASM's contributions to undergraduate education, particularly citing on pp. 60-61 the Annual ASM Conference for Undergraduate Educators as a venue that advances the scholarship of teaching and learning in biology. The report also notes the 2010 decision to publish ASMCUE abstracts in ASM's *Journal of Microbiology & Biology Education* in order to provide authors a citation for their work in the field. Finally, this "In Practice" highlight section of the report concludes with "It is expected that ASMCUE participants will contribute new knowledge and understanding in biology education as they develop professionally and that they will be recognized and rewarded for these efforts, leading to genuine reform in undergraduate biology education (AAAS, 2011)."

The ripple effect of ASMCUE

Several additional ASM-sponsored professional development programs have their origins in ASMCUE and the needs voiced by educators at the conference. ASM developed a series of faculty institutes focusing on training educators in specific areas such as education research or scientific areas such as bioinformatics and functional genomics.

The ASMCUE has adopted a "residency" model for these institutes where attendees meet face-to-face for several days of intensive training and then work online "virtually" as a cohort throughout their year in residency. All educators must apply to attend a faculty institute and are vetted by the organizers of each training institute. Once accepted to a residency, attendees begin a series of pre-assignments before arriving face-to-face. The assignments are primers and meant to level the knowledge field and allow attendees to reflect before coming together onsite. Once they have completed an institute, attendees continue to receive post-institute assignments throughout the year until they meet again for a capstone experience. ASM has found this model to be very effective in building long-lasting faculty communities in which attendees also become leaders in education reform.

One example of these programs is the ASM/NSF Biology Scholars Program. In 2005, in response to educators who were interested in determining the effects of their teaching on student learning, the ASM began a "Scholars" program in which microbiologists were trained in the development of classroom research projects. In 2007, the ASM received funding from the National Science Foundation (NSF) to expand the program into all areas of biological sciences. To date, the Biology Scholars Program (www.biologyscholars.org) has trained over 150 educators and the network continues to grow (NSF Biology Scholars, 2011). The program's goals are to:

- **Empower biologists** to be leaders in science education reform.
- **Expand and support a highly interactive community of biology scholars** committed to scholarly teaching.
- **Catalyze deep networks** among life science professional societies to collectively engage in sustained undergraduate education reform.

Biologists in the program move from individual investigations to participation in a collaborative community where work is grounded in a collective understanding about undergraduate education in the life sciences. They move from individual scholarship in student learning to serving as role models and mentors in their departments, institutions, and professional societies. Life science professional societies are provided with models that advance scholarly teaching in the discipline.

Since its establishment, the program has evolved from a small-scale faculty development program to one that has developed a core group of biologists committed to improving student learning through ongoing self-evaluation of their teaching practices.

19th Annual ASM Conference for Undergraduate Educators

June 14-17, 2012

San Mateo Marriott – San Mateo, California

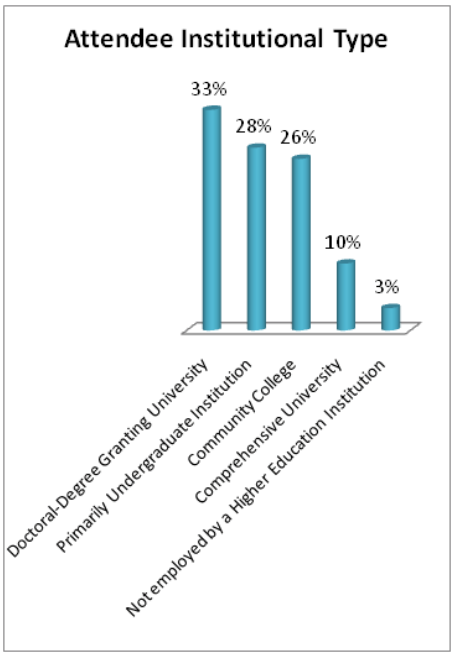
2012 Attendee Demographics – 337 registered participants)

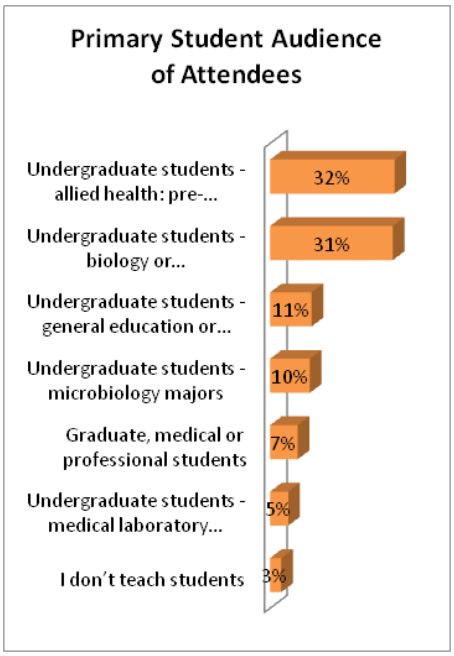
Of those registered, there are:

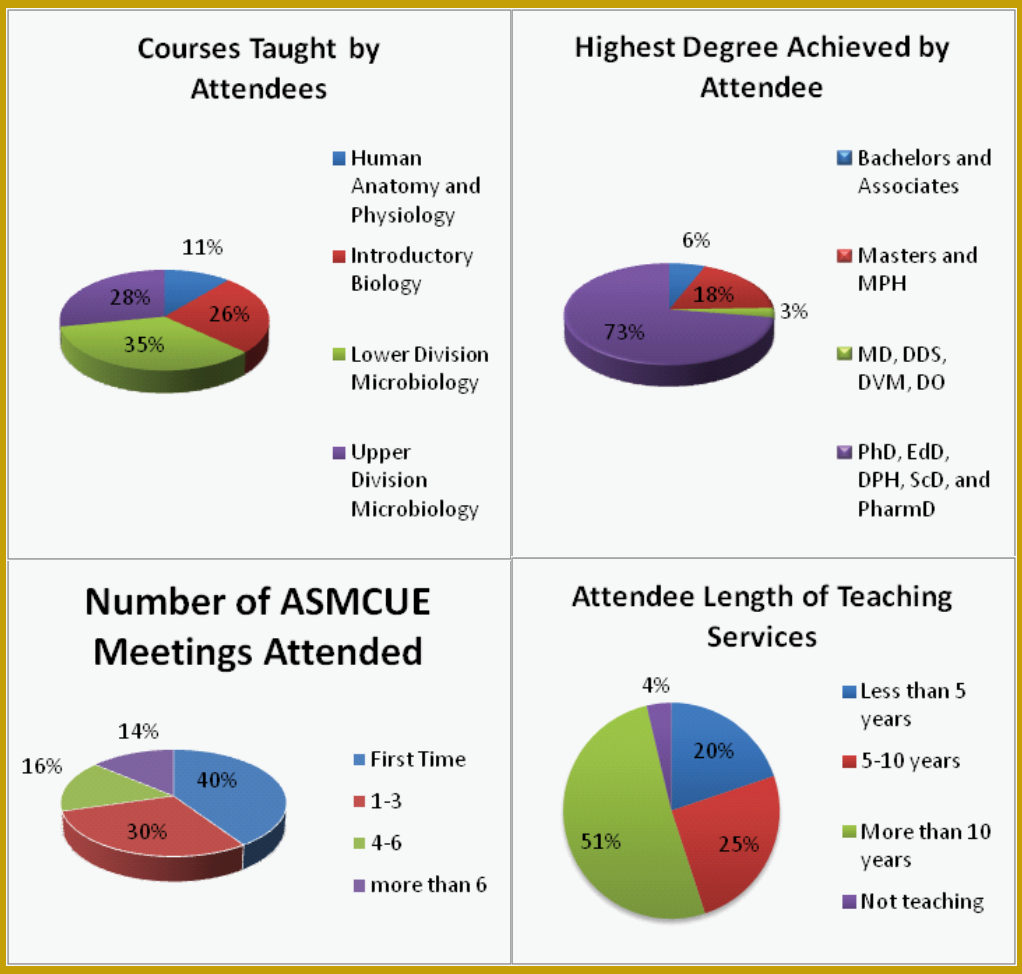
- 297 conference attendees and 40 exhibitors
- 252 ASM Members and 45 nonmembers (among the faculty participants)
- 16 international attendees representing 9 countries

Conclusion

ASM continues to build and enhance faculty development programs for its members and beyond. The Society has been a leader in the field and collaborates effectively with other life science societies to build a community of educators who are effective and continue to find ways to improve student learning.







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