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International activities of the American Society for Microbiology (ASM)

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The American Society for Microbiology

The American Society for Microbiology (ASM) is the oldest and largest single life science membership organization in the world. Membership has grown from 59 scientists in 1899 to nearly 42,000 members in 2002, including 13,000 international members [1]. These figures show that, in spite of being a United States-based society, 30% of ASM members are located outside that community. Eligibility to become a full member of the Society is open to any person who is interested in microbiology and holds at least a bachelor's degree or equivalent experience in microbiology or a related field. Many members hold advanced degrees, including a large number at the Masters, PhD, ScD, DrPH, and MD level. A regularly registered student of microbiology or a related field is eligible to become a student member. The ASM represents 25 disciplines of microbiological specialization, plus a division for microbiology educators. All major fields of microbiology are represented in the ASM, including infectious diseases, recombinant DNA technology, alternative methods of energy production and waste recycling, new sources of food, new drug development, environmental bioremediation, and industrial processes. These fields involve all forms of microbiological life, including bacteria, viruses, rickettsiae, mycoplasma, fungi, algae, and

protozoa. The ASM headquarters are located in Washington D.C. (Fig. 1).

Mission

The mission of the ASM is to promote the microbiological sciences and their applications for the common good. To meet the needs of its members, ASM activities include: (1) publishing journals and books, convening meetings, workshops, and colloquia, (2) conducting and supporting education, training, and public information programs to facilitate the dissemination and application of new microbiological knowledge addressing scientific matters affecting the public interest, (3) promoting the microbiological sciences with actions that both preserve the heritage, tradition, and credibility of the microbiology profession and recognize promise, achievement, and distinction among its practitioners, and (4) setting an example of ethical and professional behavior for all students and practitioners of microbiology. The society strives to ensure that all ASM programs, products, and services are of the highest possible quality provided at the lowest possible cost and serve not only ASM members but other constituencies as well.

Governance

The ASM is governed by a Council comprising elected officers, chairpersons of its permanent boards and representatives from 26 scientific divisions and 36 local branches. A Council Policy Committee (CPC) serves as Executive Committee for the Society. The ASM is comprised of five boards: Education, Meetings, Membership, Public and Scientific Affairs, and Publications, plus the American Academy of Microbiology. Boards guide the major ASM programs. In addition, there are two standing committees of the CPC: International and Communications.

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Fig. 1a, b The American Society for Microbiology has grown not only in membership and quality of service to its members, but also in the size of its headquarter facilities. **a** From 1959 to 1962, the ASM was homed in Detroit, Michigan, above Porky's Pizza. **b** Today, the ASM guides its activities from this elegant building located in 1752 N Street, Washington DC 20036



Publications

The ASM publishes 11 professional journals. Most ASM journals are available free from the ASM website 6 months after publication. The monthly journal *ASM News* keeps members informed of Society activities, meetings, educational, and employment opportunities, new publications, and national political developments of interest to the microbiological community. In addition, the ASM Press offers very well known and welcomed titles in the microbiological sciences.

The ASM webpage

Besides its welcomed publications, the ASM has a powerful webpage [1] that provides a vast amount of updated information to the general community and provides subscribing members with access to ASM publications. The ASM webpage also offers links to other microbiology societies worldwide. The international site at the ASM webpage is offered in English and Spanish. Portuguese and French versions of this site are under construction. The ASM webpage can be visited at <http://www.asmta.org>.

Meetings

The ASM holds a General Meeting each year, at which new developments in microbiology are exposed. Approximately 2,200 papers are presented at each meeting. The Society sponsors the Intersciences Conference on Antimicrobial Agents and Chemotherapy (ICAAC), which is considered the world's foremost meeting on infectious diseases; and it also sponsors other national and regional conferences for interdisciplinary scientists in the United States.

Education

Through its Education Board, ASM's mission in the field of education is: (1) to promote access, excellence,

professional development, and advancement in microbiology education, (2) to promote the community of microbiology students and educators, and (3) to lead in microbiology education worldwide. This mission is based upon ASM's core values, which provide its ethical and professional framework. These core values include service, leadership, quality, and diversity. The ASM has identified one guiding principle that is unique to education and provides direction throughout the twenty-first century. The guiding principle states: "We believe that continued development of a microbiologist's intellectual, technical, and creative capabilities is essential due to rapid changes in the microbiological sciences. For this reason, we are committed to life-long learning." The ASM develops multiple education activities. In this article, those relevant for ASM's international members are highlighted.

The MicrobeLibrary

Since this program is available to all members and non-members through the web, it has international outreach. The MicrobeLibrary is a searchable portal providing a peer-reviewed, web-based collection of resources about the microbial world. The MicrobeLibrary builds upon the scientific expertise, intellectual creativity, and private collections of ASM members and other microbial researchers from around the world. Its contents include visual images and animations, curriculum activities for both classroom and laboratory, an articles section containing the tri-annual educational newsletter and annual educational journal, in addition to feature articles from *ASM News*, and educational reviews and resources. The MicrobeLibrary is the first collection that is linked directly to a recommended core curriculum for introductory microbiology education and is disseminated solely via the World Wide Web.

As of February 2002, the MicrobeLibrary contained: (1) 324 visual images in 223 entries, including 33 animations and 16 videos, all with legends and annotations, (2) 38 classroom and laboratory activities, (3) 20 issues of the *Focus on Microbiology Education* newsletter,

containing over 120 articles, (4) two issues of the *Microbiology Education* journal, with 11 papers on microbiology pedagogy and 28 articles from *ASM News*, and (5) 193 reviews of educational materials. MicrobeLibrary is dynamic and ever-expanding. New submissions are received, reviewed, and accepted for inclusion into the Library three times a year both through the Visual and Curriculum Resources and via the newsletter. A new set of reviews and a new issue of the journal are added each year, as are articles from *ASM News* determined to be of value to microbiology educators. New plans continue to be developed and implemented to meet the professional needs of the undergraduate educator community.

The ASM International Committee

The International Committee (IC) is a standing committee of the ASM CPC. The mission of the IC is to ensure that the ASM continues to expand its global activities in the field of microbiological sciences. The IC accomplishes this mission by: ensuring that ASM products and services effectively serve its international membership and the broader international microbiological community, establishing collaborative relationships with international societies and organizations, fostering access to microbiological knowledge worldwide, and developing programs that address issues of global concern. The goals of the IC are: (1) to promote the microbiological sciences worldwide by providing a diverse array of educational programs and services, (2) to develop collaborative relationships with national, international, and umbrella scientific organizations worldwide, (3) to ensure that ASM products and services continue to meet the needs of a growing international membership, (4) to enhance the ability of the ASM to develop partnerships with international public health organizations in response to emergencies in developing countries, and (5) to enhance the ASM's ability to communicate on international microbiological issues.

The ASM has long been active in supporting microbiology education and research internationally. Since the 1970s, the ASM has created opportunities for international scientists and students to build partnerships with North American colleagues. Working through the IC and in collaboration with universities and other organizations worldwide, the ASM provides training in public health, clinical laboratory procedures, food and water safety, and the environment. The ASM also collaborates with international organizations, such as the Pan American Health Organization (PAHO), the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the International Union of Microbiological Societies (IUMS), and microbiological societies from all over the world.

The IC has focused in recent years on developing pilot programs for testing and revision in Latin America. With these initiatives approaching maturity, the IC is

currently seeking support to broaden and sustain its successes in Latin America and to replicate these programs in other regions. Eastern Europe has been selected as the next target region, although activities will also be conducted in Africa and Asia, to prepare for future expansion.

The IC has two standing committees. The International Microbiology Education Committee (IMEC) was created in 1995 to facilitate the exchange of microbiological knowledge and skills internationally. Its current goals are: (1) to provide high-quality education and training programs to microbiologists and institutions at all levels, (2) to promote the professional development of international microbiologists through scholarly exchange, and (3) to ensure the sustainability of ASM educational programs worldwide. The International Membership Committee (IMC) was created to bring potential members closer to the ASM. Its goals are: (1) to increase and strengthen ASM membership within the international community, (2) to develop a thorough understanding of international member needs by region, (3) to improve communication, and (4) to work with the Membership Committee to promote, recruit, and retain international members in the ASM.

ASM International Education Programs

International Fellowship Programs

The International Fellowship Programs (IFP) encourages international research and training collaborations in the microbiological sciences. Through the program, a scientist in a developing country can visit a North American laboratory for a specific research objective. Priority is given to young scientists who have obtained or are in the process of obtaining his/her Masters, PhD or other equivalent academic degree. The IFP provides up to U.S. \$ 4,000 towards airfares and living expenses for a short period to achieve the objective. A minimum of 6 weeks is required for participation in the fellowship program. The applicant is allowed to extend his/her stay with the host scientist for up to a maximum of 6 months, provided other sources of support are available. Applicants are encouraged to have additional sources of funding to enable them to maximize their collaborations with the scientist at the host institution. The ASM maintains contact with former fellows, conducting annual surveys to assess the impact of the fellowship on their career development and to enlist them as resources for other young investigators. Presently active in Latin America only, the IFP has made 20 awards to scientists from seven countries since 1998.

There are two additional components of the IFP. These are the ASM-Antorchas and the ASM-Alfredo Sordelli Fellowships, which enable applicants from Argentina to obtain support to visit a laboratory in the United States under conditions similar to those specified for the IFP. (For a short biography of Alfredo Sordelli,

see [3].) The ASM-Antorchas Fellowship was established through an agreement between the ASM and the Antorchas Foundation, Buenos Aires, Argentina. This non-profit organization provides matching funds for up to five outstanding applicants per year. The ASM-Antorchas Fellowship does not support clinically oriented proposals. Similarly, the ASM's equivalent institution, the Argentine Association for Microbiology, provides matching funds to support one applicant per year with the ASM-Alfredo Sordelli Fellowship, with no theme limitations.

International Professorship Program for Latin America

The International Professorship Program is intended to transfer microbiological expertise and resources to faculty and students throughout the world. Intended as a program of global reach, at this first stage the program is currently focusing on Latin American partnerships, resembling the previous – and successful – ASM Latin American Professorship Program. The program enables a Latin American institution of higher learning (LAI) the resources to bring an ASM member who is scientifically recognized for his/her area to teach a hands-on, highly interactive short course on a single topic in the microbiological sciences. The program facilitates international collaborations between an LAI and a member of the ASM who resides in the United States. Finally, the program encourages international collaborations between a LAI and the ASM.

The program provides up to U.S. \$ 4,000 for a 1–4 week, hands-on short course in the microbiological sciences at one LAI. Up to 65% of the funding from the ASM may be utilized to defray travel expenses for the professor and co-professor, if required. Up to 35% of the U.S. \$ 4,000 may be for supplies and equipment not available at the host institution, or a local assistant, if required. No amount of the award may be used for housing and board by either the visiting professor or the co-professor at the host institution. Funds from the ASM must be matched by a contribution from the hosting institution. Matching funds provided by the host institution may be used for housing and board for the visiting professor or co-professor. Preference is given to applicants who demonstrate the ability to make maximal use of the course, as indicated by the applicability of the course's contents to existing programs at the LAI.

ASM workshops

The ASM develops scores of intensive, 1-day workshops prior to the annual ASM General Meeting and the ICAAC. The IC has taken many of these existing workshops to international meetings and conferences, such as the Western Pacific Congress of Chemotherapy and Infectious Diseases (held biennially in the region) and meetings of the Interregional Association for

Clinical Microbiology and Antimicrobial Chemotherapy (held annually in Russia, and, later this year, in three cities in Siberia). Typically, two to four ASM scientists are involved in presenting these workshops.

UNESCO–ASM travel awards

The UNESCO–ASM travel awards are given to provide the opportunity for promising young investigators throughout the world to travel to another country or a distant site to obtain expertise in a method, procedure or specific topic. Such knowledge should not be available in their own laboratories and should be needed for application to work in their own laboratories and countries. The award is not intended to provide travel to obtain a degree at the host institution. The nominee must be a student or fellow at the predoctoral or postdoctoral level, or a young scientist who has completed postdoctoral training within the previous 5 years in any of the microbiological sciences (broadly defined). Preference is given to nominees from developing countries traveling to visit a Microbial Resources Center (MIRCEN) laboratory. Both the home country and host country must be UN/UNESCO members. Travel and study must be completed in the year in which the award is given. The award will be up to U.S. \$ 4,000 for travel and subsistence (room and board) to support the awardee during the training period, usually not exceeding 3 months. Funds for salary and medical insurance are not provided. Funds are paid to and administered by the host institution. Up to eight awards are presented each year.

Minicourses

At the request of international partners, the IC organizes 1- to 2-week minicourses to address specific technical or educational needs. Minicourses have been conducted by ASM-member North American scientists, usually in conjunction with local host institutions, although we plan to recruit instructors from the ASM membership in other developed regions as well. Enrolment is limited to 30 participants, to ensure close interaction, ranging from advanced students to established professionals. Previous minicourses have included the Molecular Aspects of Microbial Pathogenesis minicourse held in Santiago, Chile, in 1999, and the Antimicrobial Susceptibility Testing minicourse held in Moscow, Russia, in 2001, and scheduled to be held in three cities in Siberia in September 2002. The ASM has also planned a laboratory course in Microbial Diversity and Ecology to be held in Concepción, Chile. Minicourses promote the establishment of close ties between scientists from developed and developing countries that often flourish into long-term research collaborations, and, occasionally, contribute to the forming of official sister-institution relationships.

ASM–PAHO partnership on infectious diseases

The ASM was accepted as an official non-governmental organization (NGO) partner of the PAHO in June, 2001. At that time, the ASM and PAHO agreed upon a collaborative 4-year plan of action entitled *Strengthening Epidemiological Prevention and Surveillance Systems in Latin America*. Implementation has already begun, with the development of distance-learning programs for Latin American universities and clinical laboratories. The first, addressing antimicrobial resistance, is in progress. Later programs will include *Leptospira* and Hantavirus. In conjunction with the development of educational materials, the ASM and PAHO will launch an intensive capacity-building effort to assist Latin American laboratories to define and disseminate testing standards and techniques that will ensure high levels of accuracy and consistency in the identification of emerging and re-emerging diseases and the determination of antimicrobial resistance. Once national laboratories have begun applying these new practices internally, the ASM will organize hands-on workshops in the United States, during which national public health laboratory leaders from Latin America will visit key institutions (such as the Centers for Disease Control and Prevention, or leading universities), to consult on methods for creating surveillance systems within their own countries.

Microbiology Education and Research Initiative for the Americas: Mexico pilot program

The IC's proposed Microbiology Education and Research Initiative for the Americas (MERIA) program is intended to provide long-term, systemic support to the teaching and practice of the microbiological sciences in Latin America. The core of the MERIA approach is the creation of Regional Centers of Learning (RCLs) to focus and multiply the benefits of program interventions. The RCLs – one serving Mexico, Central America, and the Caribbean, and two serving South America – will consist of networks of leading research and educational institutions, national microbiological societies, and professional associations in each region. The MERIA approach will be tested and refined through an intensive pilot phase in Cuernavaca, Mexico.

UNESCO–ASM visiting resource person program

Members of the ASM who plan to visit developing nations on academic or other business can arrange to spend a day with colleagues at a university or research institute in a major city. UNESCO has provided ASM with funds to cover the cost of the extra day's stay in that nation. The ASM member is expected to present a seminar to faculty and students in the institution and to spend the rest of the visit as a resource person,

discussing novel ideas for scientific research, curriculum development, and international co-operation with local faculty and students. It is requested that a joint application from both host and visiting scientists is submitted to the ASM International Activities Office by e-mail or fax.

The ASM–National Academy of Sciences MIRCEN program

The MIRCENs are academic/research institutes in developed and developing countries, which network in a global collaborative effort to harness, through the vehicle of international scientific co-operation, microbiological research and biotechnological applications for the benefit of humankind. In the early 1970s, the UN called for the establishment of centers in developing regions of the world to conduct an integrated program for the preservation and use of microbial resources. In 1984, UNESCO and the UN Environmental Program funded the first pilot MIRCENs in Australia, Brazil, Egypt, Guatemala, Kenya, Senegal, and Sweden. The project was an outstanding success and the MIRCEN network currently consists of 34 MIRCENs in 26 countries around the globe. The global MIRCEN network conducts activities in collaboration with the international scientific community. The MIRCENs are associated with academic and governmental institutions and, in cooperation with other national, regional, and international organizations, these associations encourage and develop novel ways of approaching problems concerned with technological development and natural resource management. The MIRCEN network engenders partnerships amongst all countries, regardless of cultural, social, or economic development, and provides training in microbiology, molecular biology, fermentation technology, and bioengineering.

The ASM–National Academy of Sciences (NAS) MIRCEN grant program was established in 1987, funded by the NAS from the International Contribution for Scientific, Education, and Cultural Activities (IC-SEA) appropriation by the United States Congress. Research projects that have been funded by this program over the years include research/training in ethyl alcohol production from food-plant fluid wastes, food microbiology and biotechnology, marine biotechnology, biological nitrogen-fixation, bioconversions of organic waste materials into edible protein in north and central Asia, screening and characterization of petroleum hydrocarbon degrading bacteria for the degradation of oil wastes, culture collections, and toxic waste management and the development of cleaner processes and products.

Volunteer translators network

The IMEC has recently launched a new program designed to make ASM web-based materials more

accessible to international members. Through the Volunteer Translators Network, members can assist in translating important resources, such as the MicrobeLibrary, into other languages. Currently, the IMEC is working with Spanish-speaking members. Other languages will be added in the near future.

Other ASM international membership programs

Global outreach membership program

The new ASM global outreach program offers free ASM membership and full online journal access to qualified candidates in developing countries without regard to financial need. Currently, scientists from the following countries are eligible for the program: Angola, Bangladesh, Benin, Bhutan, Burundi, Central African Republic, Chad, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Lao PDR, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nepal, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, Tanzania, Togo, Uganda, Yemen, and Zambia.

E-mail discussion groups

The IMEC has created an e-mail discussion group for Spanish-speaking microbiologists. Entitled *Red Mundial de los Microbiólogos de Habla Hispana*, the group is intended to serve as a place to discuss scientific issues, practical concerns, or any other issues related to microbiology in an international context. Join the group through the *Hear From ASM* link on the ASM homepage [1].

The International Ambassador Program

The purpose of this program is to identify ASM international members, knowledgeable of the governance programs and services of the Society, who would be willing to represent the Society's interests in and around their region of domicile. These individuals will be identified as Ambassadors of ASM and will report annually to the Chair of the IMC of the IC. The responsibilities of International Ambassadors are: (1) to promote and explain the benefit of membership in ASM, (2) to serve as liaison between ASM and the international members in the region of appointment and to represent ASM in that region, (3) to identify interests of international scientific populations who might be either prospective or active members of the Society, (4) to identify needs which, if reflected in ASM member services, could further enrich ASM membership for individuals in the international sector, and (5) to inform the IMC and the Minority and International Activities staff about activities and events of potential interest for ASM action.

The future

Science recognizes no frontiers. It never did, it is hoped that it never will. Scientists have been in touch through different communication means, have gathered in many places, and have collaborated in scientific endeavors for many years. They have even fought fierce academic battles, such as those held by Koch and Pasteur in search for the truth. Behind common research interests, scientists founded societies which organized those many individual efforts into a cohesive drive towards communication and education. Today's world is globalized: whether it is for bad or for good, it is. We have to adjust to it. And so scientific societies – the ASM is no exception – have expanded their interests to reach the entire world. This expansion does not mean invasion, it means collaboration. It means societies united to find issues of common interest for members of each society and working together to achieve common goals. Perhaps an example of this is expressed by the interest of microbiologists to bring the ASM and Spanish microbiologists closer together.

In December 2001, the international symposium on *New Frontiers in Microbial Ecology* was held in Barcelona, Spain. The symposium included the *Meeting on the International Activities of ASM*, where ASM staff and volunteers were honored as starring guests. The symposium was organized and convened by Professor Ricardo Guerrero, from the Department of Microbiology, School of Biology, Universidad de Barcelona, and was sponsored by the Fundación Ramón Areces, Madrid, Spain. The spontaneous interest of Spanish microbiologists to be part of an educational program involving the ASM, Spanish societies for microbiology, and other related sciences and Spanish non-profit organizations became apparent during these informal talks. What started as informal exchanges between ASM representatives and Spanish microbiologists during breaks ended as an enthusiastic brainstorming that led to the blueprint of a proposal for a fellowship program. In brief, the ASM provided the expertise to transform words into facts. This promising start in Barcelona describes how the ASM can help the international microbiological community further, by closing the gap between microbiologists from across the Atlantic Ocean [2]. Perhaps we are witnessing the birth of a new international education activity. This is, hopefully, an example likely to be followed by ingenious microbiologists from other regions of the world working together with the ASM.

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