Society for Industrial Microbiology

Christine L. Case, Ed. D.
Microbiology Professor
Skyline College/San Bruno CA
Society for Industrial Microbiology Director, 1996—1999

Robert Schwartz, Ph. D.
Abbott Laboraties/North Chicaco IL
Society for Industrial Microbiology Fellow and President, 1991—1992

Published in In M. C. Flickinger and S. W. Drew (Ed.), *Encyclopedia of Bioprocess Technology,* pp. 2120-2124. *John Wiley, 1999*..

The Society for Industrial Microbiology (SIM) is a non–profit professional association dedicated to the advancement of applied microbiological sciences, especially as they apply to industrial products, biotechnology, materials, and processes. In 1996, the Board of Directors recommended to the membership to change the Society's name to the Society for Industrial Microbiology and Biotechnology. This change reflects the careers and technologies that have developed since the 1980s and will be put to a vote by membership. A primary objective of SIM is to serve as a liaison between the various specialized fields of applied microbiology. It promotes the exchange of scientific information through meetings and publications. Industrial microbiology is the application of scientific and engineering principles to the processing of materials by microorganisms or other biological agents to create useful products for the benefit of humankind. These microorganisms may be natural isolates, laboratory selected mutants, or genetically–engineered microbes.

Members of SIM include bacteriologists, molecular biologists, mycologists, chemists, engineers, geologists, marine biologists, and plant pathologists. These scientists, technicians, administrators, and educators represent many organizations in industrial and educational as well as federal and state laboratories and are involved in research, process development, production, and quality control for a wide variety of products including antibiotics and other pharmaceuticals, vaccines, diagnostic tests, foods and beverages; agricultural biotechnology and biocides; microbial products such as enzymes, amino acids, and carbohydrates; oil recovery and mining; and bioremediation.

The common denominator of applied or industrial microbiology is microbial science in the service of humans. In fact, the science of microbiology developed from problems associated with some microbial processes which had immediate application to humans. Microorganisms have been used for the production of food, clothing, and drink for centuries but leavening bread, fermenting wine, producing vinegar, and retting flax had been practiced in ignorance. It was not until 1864 that Louis Pasteur defined the role of microorganisms in fermentations. Industrial microbiology was slow to develop after Pasteur's initial experiments, probably due to the lack of good culture methods and selective media. In the late 1800s, Jokichi Takamine brought the Koji process for producing amylase to the United States. He received the first U.S. patent on an enzyme production process and established the first fermentation company in the United States. (1) Except for a few outstanding contributions mainly involving lactic acid, acetone–butanol fermentations, and production of yeast and yeast products, industrial microbiology did not progress very rapidly until after 1900. In 1896 at the Massachusetts Institute of Technology, Samuel C. Prescott initiated the first course in industrial biology. The first textbook in industrial microbiology was not published until 1940, however. (2)

Industrial microbiologists in the 1940s worked with deterioration of military material, solvent fermentations, and penicillin production. As these scientists began to accumulate experimental results there was a natural desire to share their findings with scientific colleagues at a national society meeting and in scientific journals. However, there was no central organization in which to share their findings because these scientists came from a variety of scientific specialties including plant pathology, medical laboratories, materials engineering, and academic mycology and bacteriology. Moreover, it was difficult for a purely practical paper in microbiology to secure a place on the program of existing societies or to find an opportunity for publication in the established journals. These scientists became unhappy and a conflict developed between basic and applied microbiology practitioners. In 1951, the Society of American Bacteriologists authorized a new journal called *Applied Microbiology*. Unfortunately, the first issue was not published until January 1953.

The decision to publish *Applied Microbiology* took too long in the minds of the industrial microbiologists of the late 1940s. Walter Ezekiel, Bureau of Ordinance, Department of the Navy (Washington DC) wrote to and spoke with a number of individuals during the summer and autumn of 1949 suggesting formation of a new Society for Industrial Microbiology. Ezekiel arranged with Raymond L. Taylor, Associate Administrative Secretary of the American Association for the

Advancement of Science (AAAS), to schedule and advertise a meeting of interested persons during the AAAS meeting in New York. (3) Ezekiel published a short announcement of the meeting in *Science,* in which he stated that "A new society of industrial microbiologists is to be organized to cover the borderline work in application of microbiologic knowledge or processes to work with industrial materials. The society plans to handle…microbiologic manufacturing processes and microbiologic assay. The organization meeting will be held December 29 at 4:00 P.M. at the Hotel McAlpin Ballroom" (4). On that date, over 250 interested persons met in the ballroom of the Hotel McAlpine in New York City. There, it was decided to form a new society to affiliate with the newly formed American Institute of Biological Sciences (AIBS). Charles Thom, Northern Regional Research Laboratory (Peoria IL) was elected Acting Chair and Charles. L. Porter, Purdue University (West Lafayette IN), Acting Secretary. Ezekiel's motion to establish a scientific organization known as the Society for Industrial Microbiology with its general scope the field of microbiology as applied to industrial materials and processes was passed. It was decided at that meeting, over the objections of a few, that the group would meet the following year, again with AIBS. Thom appointed the following members of the Organizing Committee: Maynard M. Baldwin (Battelle Memorial Institute, Columbus OH), F. G. Walter Smith (University of Miami Marine Laboratory, Coral Gables FL), Earnest A. Walker (U.S. Department of Agriculture, Washington DC), William L. White (Farlow Herbarium, Harvard University), Ezekiel, and Porter. (5)

The committee met several times during the first year to prepare a program and write a constitution for the new society in preparation for the first annual meeting to be held with AIBS at Ohio State University, September 11—13, 1950. In Ohio, Thom was elected the first President and Porter, the Secretary–treasurer. In 1951, the new SIM met with AIBS at the University of Minnesota and Thom was elected president for a second term. In 1952, the meeting was at Cornell University.

The need for an interdisciplinary society first conceived by Ezekiel became apparent and membership grew at a rapid pace. In 10 years, membership in the new society had grown from 75 to 550. SIM was incorporated as a non–profit organization in 1960 in Washington, D.C. Membership reached 2000 in 1989. In 1989, Paula Myers–Keith was the first woman elected president of SIM.

For many years, the Annual Meetings were held along with AIBS on university campuses. In 1967, SIM held its first independent Annual Meeting, at the University of Western Ontario. Since 1985, all Annual Meetings have been held at commercial convention centers rather than universities. The Annual Meeting is a week-long event featuring plenary sessions, roundtables, poster sessions, workshops, and extensive technical exhibits.

Between 1960 and 1970, SIM sponsored Summer Institutes on microbiological problems of current interest with topics including "Industrial Microbial Genetics" and "Federal Regulations for Disinfectants, Drugs and Cosmetics." In 1960, SIM sponsored the initial Conference on Antimicrobial Agents. This was a mammoth undertaking for the small organization and sponsorship was subsequently released to the American Society for Microbiology (Interscience Conference on Antimicrobial Agents and Chemotherapy, ICAAC) (6). In 1978, the Alma Dietz Actinomycete roundtable discussions were included and have since become a part of all subsequent Annual Meetings.

In 1987, reaffirming its commitment of service to the microbial biotechnologist, SIM approved the organization of a Special–topic Conference Series. These conferences run two to three days and usually result in the production of a monograph. Initiated by George Somkuti (President, 1985—86), the first event in the series was the International Conference on the Biotechnology of Microbial Products: Novel Pharmacological and Agrobiological Activities (BMP), held March 13–16, 1988. BMP is held every three years. Since then, SIM has sponsored or cosponsored special conferences on a regular basis. Other conference series include: Recent Advances in Fermentation Technology (RAFT), initiated in 1995. RAFT is held biannually and is cosponsored with the Biochemical Technology Division of the American Chemical Society. The aim is the free exchange of newly developed fermentation technologies related to current highly productive, consistent, scaleable, and economical processes. Fermentation microbiology, biochemistry, biocatalysis, and biochemical engineering aspects are explored.

The sixth Genetics and Molecular Biology of Industrial Microorganisms (GMBIM) conference, cosponsored with Indiana University Institute of Molecular and Cellular Biology, was held in 1996 at Indiana University. This continuing series provides a forum for academic and industrial scientists to exchange information on the latest developments in the genetics and biochemistry of microbes of industrial interest.

The business of SIM is conducted by the Board of Directors (which is elected by the membership), twelve standing committees, and the Executive Secretary. The Board consists of the President, President Elect, Secretary, Treasurer, Past–President, and four Directors.

In 1959, as President of SIM, Porter said "There are a number of organizations including the Society of American Bacteriologists and the American Chemical Society which have grown so large that they have become unwieldy. The administration of these groups has lost personal contact with the membership. …they must enforce rules and regulations which hamper individual initiative,

incentive, and recognition. At their meetings the sessions devoted to volunteer papers are so clogged that each presentation is limited to 10 or 12 minutes. …membership beyond 1200—1500 should be discouraged, for then, we like other groups mentioned, would lose that personal contact which is one of the principal attractions" (7). At present, most of the membership is in the United States but interest in industrial microbiology is international and SIM has more than 200 members in 38 countries outside the United States. Employment opportunities in industrial microbiology and biotechnology have increased dramatically since 1959, consequently, SIM now has a membership of over 1900 in addition to 75 corporate members. However, SIM continues to foster an environment where individuals are recognized and have opportunites to participate. Modern communications including the internet enable members to talk with each other. At the Annual Meetings, speakers give 30–minute presentations of their work. Additionally, there are numerous opportunities for members to participate on committees and become officers. Local sections provide more opportunities for scientists, engineers, technicians, and students to meet and form personal contacts.

Awards

SIM has established the Committee on Awards and Honors to provide monetary and honorary awards to its members and others eminent in the field. Awards are made at the Annual Meeting. In 1967, the first Charles Thom Award was presented to Kenneth B. Raper (President, 1952—53). This award is bestowed annually to persons making outstanding contributions in the field of industrial microbiology. The second Thom award was presented to Arthur M. Kaplan (President, 1960—61) at the 1970 annual meeting held at the University of Rhode Island.

The Charles Porter Award of Merit is given in recognition of outstanding contributions to the growth and success of SIM. The first Porter Award was given to Earnest A. Walker in 1960.

A Fellowship status was approved by the SIM membership at the 1984 Annual Business Meeting. Fellowship is a membership grade of distinction in the Society acknowledging significant research and/or service contributions to the professions of applied microbiology. A sustained record of such contributions while a member of SIM is the main criterion for consideration to Fellowship. No more than 10 percent of the members are eligible for Fellowship status at any given time. The first group elected as SIM Fellows in August 1985 were: Arnold. L. Demain (President, 1990—91), Arthur. E. Humphrey, Richard P. Elander (President, 1973—74), Warren P. Iverson, Clifford W. Hesseltine (President, 1957—58), H. Boyd Woodruff (President, 1954—56), Leland. A. Underkofler (President, 1967—68), Kaplan, and Raper.

The Selman A. Waksman Teaching Award was established in 1989 and the first recipient was Douglas E. Eveleigh. The award is presented to a recipient every other year at the Annual Meeting. The nominee must be an active, full–time professor at a recognized institution of higher education for a minimum of 10 years or have attained emeritus status. The nominee must be actively involved in research in an area of industrial or applied microbiology or biotechnology.

Annually, SIM present the best Student Abstract Award for the best abstract submitted for the annual meeting.

The Panlabs Award Lecture is sponsored by Panlabs and is presented by individuals of world renown in the field of microbiology. Each Panlabs Lecturer presents an address at the Annual Meeting.

The Schering–Plough Research Institute Young Investigator Award is made to a Society member who is under 36 years of age at the time of nomination. The nominee must have made a significant contribution in industrial microbiology or biotechnology which indicates promise of a professional career of merit. This award is made on alternate years with the Waksman Teaching Award.

Local Sections

Regional groups called local sections are governed by their own constitutions and elected officers. Local sections provide an opportunity for individuals involved in biotechnology to meet, discuss topics of interest, attend talks given by noted industrial and academic speakers and to attend local symposia on important contemporary subjects. Membership includes all interested microbiologists and engineers from students to advanced industrial, academic and government professionals.

Publications

SIM News is the official publication of the Society. It was first published in 1951 entitled *SIM News Letter;* the name was changed in 1972. *SIM News* is distributed bimonthly to all members. It contains technical review articles, news of special significance in the field of applied microbiology, and reports of many activities of the Society including local sections reports, placement opportunities and meeting notices.

The first volume of *Developments in Industrial Microbiology (DIM)* was published in 1960. This peer–reviewed annual publication contained papers from the Annual Meeting. *DIM* was published annually for 30 years (31 volumes).

The *Journal of Industrial Microbiology and Biotechnology (JIMB)* is an international, peer–reviewed journal which seeks to further scientific knowledge and to disseminate information in biotechnology, fermentation and industrial microbiology, biodegradation, biodeterioration, quality control and other areas of applied microbiology. The concept for a new technical publication for the Society was presented by SIM President C. Herb Ward (1983—1984) and the first issue of *JIMB* was published in March 1986 as the

Journal of Industrial Microbiology (JIM). The first editor–in–chief was George E. Pierce. The name, *JIM,* was used continuously through 1996 when the Board of Directors adopted the new name, *JIMB*. *JIMB* will consider publication of original research papers, critical reviews, short communications, and letters to the editor. All papers submitted are subject to peer review.

Developments in Industrial Microbiology Series complement *JIMB* and *SIM News* by providing in–depth reviews of specific subject areas. The monographs are focused on topics of interest to scientists in industrial and environmental microbiology. Authors for the individual series are identified from presentations at special conferences sponsored by SIM and selected symposia at the Annual Meeting.

The address for SIM is 3929 Old Lee Highway, Suite 92A, Fairfax VA 22030–2421. Internet: <info@simhq.org> <www.simhq.org>

Bibliography

1. *"Takamine: Documentation from the Dawn of Industiral Biotechnology."* Miles, Inc., Berkeley CA, (1988).
2. G. Reed. *Prescott and Dunn's Industrial Microbiology,* 4th ed. Westport, CT, 1983.
3. W. N. Ezekiel. "Genesis of the Society for Industrial Microbiology" in *Developments in Industrial Microbiology* 8, Society for Industrial Microbiology, Washington DC, 1967, pp. 431–434.
4. Announcements. *Science* 110:674, (Dec. 16, 1949).
5. R. M. Rogers. *ASM News* 41(8):642–647, (1975).
6. L. A. Underkofler and R. D. Schwartz. *SIM News* 42(6):260–262, (1992).
7. C. L. Porter. "The Past and Future of the Society for Industrial Microbiology" in *Developments in Industrial Microbiology* 1, Society for Industrial Microbiology, Washington DC, 1960, pp. 261–267.