

AIMBE POSITION STATEMENT

Engineering Solutions for the 21st Century

Issue: Workplace Development in Medical and Biological Engineering (MBE) Innovation

The development of new health care technology has been an engine of U.S. economic growth since the end of World War II. As America's population ages, and as we transform our current healthcare system into one placing greater emphasis on prevention and wellness, the demand for innovative, cost-effective and affordable medicines and technologies designed by medical and biological engineers is increasing rapidly. In addition, the transition to renewable and alternative energies is placing an increasing demand on the technology and skills produced by biological engineers. As the world's population rises, increasing stress will be placed on agricultural stocks and food distribution which will call for better environmental and agricultural engineering strategies.

Despite these needs, the United States is falling behind in science and engineering research and technology. A larger and more diverse biomedical and biological engineering workforce is vital to securing our innovation pipeline and maintaining America's role as a world leader in this field. The nation must adequately invest in medical and biological engineering education as a means to ensure a skilled workforce – and sustain our preeminence in this field.

Rationale:

The healthcare technology industry is perhaps the last great manufacturing-based industry in the U.S., and is rich in exports of health restoring and life-sustaining products to other countries. Moreover, the growth of industrial sectors that are based on and benefit from medical and biological engineering presents an unprecedented opportunity for the future. A sustained entry of well-trained medical and biological engineers – essential front-line members of America's medical and energy innovation enterprise – is urgently needed in the U.S. workforce to ensure further sector growth and market expansion. The current MBE workforce – though the fastest growing of all engineering specialties – is a segment of a serious undersupply of U. S. engineers and lacks ethnic and gender diversity, a negative trend which must be reversed.

- Less than 11 percent of all undergraduate minority students are involved in engineering majors
- Only 9 percent of all Bachelor's degrees awarded to minorities are in the engineering fields
- Women comprise only 17 percent of engineering undergraduates, yet they represent 57 percent of all undergraduate students
- In U.S. graduate schools, women represent 37 percent and minorities 25 percent of all MBE graduate students
- Minority students earn less than 11 percent of science and engineering Master's degrees awarded

The resulting consequences of this trend will have a negative effect on the quality of the MBE workforce, which will lack input from scientists of different backgrounds with unique perspectives on health disparities, alternative energies, environmental management and agricultural systems. To this end, AIMBE would encourage private and federal funding initiatives aimed at increasing the number and quality of academic BME programs to foster greater enrollment.



AIMBE POSITION STATEMENT

Specific Recommendations:

AIMBE urges Congress to:

- Adequately invest in MBE, which will provide more opportunities for engineers and prompt an increase in available researchers in the field.
- Allocate federal appropriations to the National Institute of Health, the National Science Foundation, the National Institute for Standards and Technology and the Department of Education to strengthen educational opportunities for women and minorities in science, technology, engineering and mathematics. Further, AIMBE believes it is critical to increase the accountability of universities receiving federal support to track the progress of minority students.
- Encourage Federal agencies to use SBIR/STTR funds for awards to University Proof-of-Concept Centers to provide product prototyping, translation, entrepreneurial, and business mentoring, and an assessment of commercialization potential prior to submission of SBIR/STTR applications.

AIMBE is committed to marketing the field of MBE to a broad constituency of students and facilitating an open dialogue (between industry, government, academia and business) of the MBE workforce by:

- Hosting meetings between academia and industry
- Developing educational materials for K-12 students
- Facilitating communication between all stakeholders
- Identifying mentors
- Hosting programs for minority students at professional society meetings

The Vast Contributions of Medical and Biological Engineering:

Medical and biological engineers play a vital role in keeping our citizens and our economy healthy. Americans reap the benefits of MBE every day – from X-Rays or MRIs to pacemakers, prosthetics and new medicines to treat devastating diseases. Citizens have come to rely on the innovations that improve the quality of health care and extend and enhance our lives.

The American Institute for Medical and Biological Engineering (AIMBE) is a non-profit organization representing 50,000 individuals and the top 2% of medical and biological engineers. Also, AIMBE represents academic institutions, private industry, and other professional engineering societies. AIMBE was founded in 1991 to provide leadership and advocacy in medical and biological engineering for the benefit of society.

