ROBERT M. NEREM
1937–2020
Elected in 1988

“For biomedical engineering leadership through major contributions to the understanding of dynamics of blood flow and blood vessels in health and disease.”

BY DON P. GIDDENS

ROBERT MICHAEL NEREM, an international leader in bioengineering and pioneer in developing the field of tissue engineering, died in Atlanta on March 6, 2020, after a long illness. He was 82 years old.

Bob was born in Evanston, Illinois, of Norwegian parents on July 20, 1937. He received his BS degree in aeronautical engineering from the University of Oklahoma in 1959 and pursued studies at the Ohio State University, where he earned MSc (1961) and PhD (1964) degrees in aeronautical and astronautical engineering. He then joined the OSU faculty as an assistant professor and advanced through the academic ranks, becoming full professor in 1972.

His early research was in hypersonic flow and heat transfer, but he developed an interest in applying fluid dynamics to medical problems. A stint as visiting professor in the Physiological Flow Studies Unit in the Department of Aeronautics at Imperial College London in 1970 proved to be pivotal, nurturing his newfound fascination with cardiovascular fluid dynamics. At that time, biomechanics was very much a developing field, and Bob was an early pioneer in applying engineering to medicine.

During the 1970s he completed his research transition to cardiovascular fluid dynamics, facilitated by visiting...
professorships at several leading international institutions. Seeking an environment where engineering and medicine could interface closely, he moved to the Department of Mechanical Engineering at the University of Houston in 1979 as department chair and professor with an adjunct professor appointment in the Baylor College of Medicine.

But Bob was less interested in pursuing the traditional academic administrative path of department head, dean, and provost than in building bioengineering. So in 1987 he moved to Atlanta where Georgia Tech and Emory University were forming a cross-town alliance between engineering and medicine.

He accepted what was one of the first endowed chair professorships at Georgia Tech, the Parker H. Petit Distinguished Chair for Engineering in Medicine. Through his subsequent work with Georgia Tech colleagues, the Petit Institute for Bioengineering and Bioscience was formed in 1995 and served to bridge biomedical research across multiple schools of engineering and sciences. The Petit Institute was his comfort zone, his happy place.

He was proud of the institute building and its open design fostering collaboration, including the 24-foot-high “Cell Wall” mural of paneled images that bring to life the structural makeup of the biomolecular world. During the building’s design he insisted on having a spacious atrium with a coffee shop and inviting tables and couches as “important elements of this place and who we are.” The institute was his home base for the remainder of his career, even beyond his formal “retirement” as director in 2009.

Bob Nerem was never still for long. He was a builder at heart and had the vision to work beyond his personal research interests and university environs to help promote bioengineering as a blossoming field internationally.

At the time very few departments of bioengineering or biomedical engineering existed—most programs were housed in a “traditional” engineering department, such as mechanical, electrical, or chemical engineering. In fact, with few exceptions, most universities treated bioengineering as a subset
of the traditional engineering disciplines, fearing that a bio-
engineer would be a “jack-of-all-trades but master of none.”

Bob was among a small group of academics whose research rigor was unquestioned and who saw the future of bio-
engineering as a self-standing engineering discipline. He and several colleagues worked quietly with support from
the National Science Foundation to lay the groundwork for creating the American Institute for Medical and Biological
Engineering (AIMBE), which focused on public policy issues; Bob became the founding president. He was also a key player
in the recognition of bioengineering as its own section in the National Academy of Engineering and as a unit of the National
Institutes of Health, the Institute of Biomedical Imaging and Bioengineering.

Over more than 3 decades he engaged in a variety of activi-
ties of the National Academies of Sciences, Engineering, and
Medicine, including the NAE’s Online Ethics Center Advisory
Group (2014–19; cochair, 2019–20), the Division Committee for
the Health and Medicine Division (2016–19), Committee on
Responsible Science (chair, 2011–17), Board on Life Sciences
(2009–15), Committee on Science, Engineering, Medicine, and
Public Policy (2004–10), Division Committee on Engineering
and Physical Sciences (2001–03), and Roundtable on Biomedical
Engineering Materials and Applications (chair; 2000–03).
He was also active in serving the NAE, as a member and/
or chair of the Bioengineering Peer Committee, Membership
Policy Committee, NAE Council, Russ Prize Committee, and
Nominating Committee, among others.

For his many professional accomplishments, Bob received
numerous honors and awards. Among these were election to
both the National Academy of Engineering and the Institute
of Medicine (now the National Academy of Medicine) and
selection for the H.R. Lissner Award (1989) from the American
Society of Mechanical Engineers (ASME), AIMBE Pierre Galletti
Award (2002), Award of Merit in biomedical engineering from
the International Union for Physical and Engineering Sciences
in Medicine of the International Federation for Medical and
Biological Engineering (IFMBE; 2003), Distinguished Service
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Award of the Biomedical Engineering Society (2004), NAE Founders Award (2008), and the IFMBE’s first John A. Hopps Distinguished Service Award (2015). In recognition of his commitment to young people through education and mentoring, in 2017 ASME’s Bioengineering Division established the Robert M. Nerem Education and Mentorship Medal.

Bob was not a dispassionate professional. He often said “research, like life, is a people business,” and he spent most of his 56-year academic career proving the point. He was an exemplary mentor for students and younger colleagues. Many, many people credit him with infusing guiding principles into their careers. And he never met a stranger—he would enthusiastically strike up a conversation with an undergrad or fellow bioengineer (or perhaps a restaurant waiter), asking questions and connecting on a personal level.

His deep interest in young people took a new direction in 2013 when he founded Project ENGAGES (Engaging New Generations at Georgia Tech through Engineering and Science), a high school education program for underrepresented minority students that aimed “to inspire students to aspire to careers and possibilities greater than what was around them.” It was important to Bob that Project ENGAGES students work on cutting-edge research and be offered experiences that would enable them to make an impact on the world. Students from partner schools in Atlanta are immersed year-round in university lab environments to work on research projects and participate in enrichment programs.

Of all his achievements, Bob was most proud of Project ENGAGES. “He’d get tears in his eyes. He’d say, ‘I have all these honors and awards, but I love helping these young people of diversity,’” said Marilyn Nerem (née Reed), his wife of 41 years.

In addition to Marilyn, Bob is survived by his children R. Steven Nerem and Nancy Nerem Black; Marilyn’s children (his “bonus children”), Christy Maser and Carol Wilcox; and seven grandchildren.