DIPARTIMENTO DI INGEGNERIA CIVILE E AMBIENTALE

POLITECNICO MILANO 1863

Rogers Room, Building 11, ground floor
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Nanomedicine and Beyond: Stories from the Interface between Engineering and Medicine

Prof. Mauro Ferrari

Professor and Executive Vice President, University of St Thomas, Houston Texas
President-Designate, European Research Council

Abstract

Starting in the mid-1980's, a powerful wave of engineering technologies has become available for unprecedented discovery and applications in biology and medicine. They included bioMEMS, micro- and nano-fluidics, DNAchips, nanotechnology, therapeutic multistage systems, theranostic technologies, and many others. As luck would have it, I had the privilege of great opportunities to participate, admire, enable these transformations. In this talk, I will tell a few stories that pertain from our own work, in collaboration with many others, and in the context of this transformational wave. I will emphasize the great opportunities these offer within the framework of 'Science for Global Justice'.

Reference: **Prof. Giulio Maier** (giulio.maier@polimi.it); **Prof. Umberto Perego** (umberto.perego@polimi.it)

Biosketch

Mauro Ferrari, PhD, current serves as Director, Adjunct Professor of Business, and Executive Vice President at the University of St Thomas in Houston Texas. Ferrari holds Adjunct and Honorary Professorships at many universities worldwide.

His term as President of the European Research Council will start January 1, 2020.

He recently retired as the Executive Vice President of Houston Methodist and the President of the Houston Methodist Institute for Academic Medicine where he was the Ernest Cockrell Jr. Presidential Distinguished Chair. At Houston Methodist, Ferrari oversaw all research and education programs at Houston Methodist, over 2.200 research employees and credentialed clinicians executing more than 1.000 clinical protocols. He also served as the Senior Associate Dean of the Weill Cornell Medical College, the primary academic affiliate of Houston Methodist. Ferrari is the founder of biomedical nano/micro-technology, especially in their applications to drug delivery, cell transplantation, implantable bioreactors, and other innovative therapeutic modalities. Dr. Ferrari served as special expert on nanotechnology at the National Cancer Institute in 2003-2005, providing leadership for the formulation, refinement, and approval of the NCI's Alliance for Nanotechnology in Cancer, currently the world's largest program in medical nanotechnology.

He has to his credit more than 400 publications, including seven books and is the inventor of over 50 issued patents in the US and Europe. Throughout his academic career, he has supervised trainees and students who have gone on to senior faculty positions at premier universities like Oxford, Massachusetts Institute of Technology (MIT), University of California Berkeley, University of California San Francisco, Duke University, University of Washington, and Ohio State University. Dr. Ferrari's degrees are in Mathematics (Padova, Italy), and Mechanical Engineering (M.S., & Ph.D., U.C. Berkeley.

His seminal contributions to the field of biomedical nanotechnology have been recognized through numerous awards and accolades, including: Founders Award − Controlled Release Society, the Wallace H. Coulter Award for Biomedical Innovation and Entrepreneurship, the ETH Zürich Stodola Medal, Blaise Pascal Medal in Biomedical Engineering − European Academy of Sciences, and the Shannon Director's Award of the National Institutes of Health. Dr. Ferrari is a Fellow of the American Society of Mechanical Engineers, American Academy for the Advancement of Science and American Institute for Medical and Biological Engineering. He also holds honorary doctorates in Electrical Engineering and Biotechnology from the University of Palermo and the University of Naples "Federico II", respectively. In May 2019 he was awarded the Guido Carli Medal in the Senate of the Republic of Italy.

His personal career research portfolio totals over $120 million in grants, including support from the NCI, NIH, DoD, NASA, NSF, DARPA, DoE, the state of Texas, the state of Ohio, the Ohio State University, and several private enterprises. He began his academic career at the University of California, Berkeley, where he tenured in Material Science, Civil Engineering, and Bioengineering. Upon recruitment to the Ohio State University, he served as the Edgar Hendrickson Professor of Biomedical Engineering, Professor of Internal Medicine, Mechanical Engineering and Materials Science. He was also the Associate Vice President, Health Sciences Technology and Commercialization, Associate Director of the Dorothy M. Davis Heart and Lung Research Institute and Director of the Biomedical Engineering Center. Upon recruitment to Houston, he served as Professor and Founding Chair of the Department of Nanomedicine and Biomedical Engineering at the University of Texas Health Science Center and M.D. Anderson Cancer Center. Early in his career he served as Ricercatore in Structural Mechanics at the University of Udine, Department of Civil Engineering.