Vice President for Research

The Office of the Vice President for Research (VPR) is responsible for the stewardship of MIT's research enterprise. It seeks to foster strong, mutually beneficial relationships with research sponsor groups, including federal agencies, the US Congress, industry, foundations, and foreign governments. The VPR's responsibilities also include research administration, policy, and compliance—all executed in a manner to maximize effectiveness and minimize the burden on faculty and research staff. The VPR office is also responsible for postdoctoral affairs, international scholars, and environmental health and safety at the Institute.

In fiscal year 2018, MIT's campus research volume increased by 1.7% to $732 million, compared to $720 million in FY2017. Federal funding constituted 62% of campus research expenditures, with substantial support from industry and foundations continuing to supplement federal research awards.

Individual laboratories, centers, programs, and offices that report to the VPR have each submitted separate reports that outline the past year's research accomplishments.

Highlights

MIT launched SPARC, a compact, high-field, net fusion energy experiment. SPARC is a first-of-its-kind collaboration to advance carbon-free fusion power, with Commonwealth Fusion Systems and ENI S.p.A., which is a founding member of the MIT Energy Initiative. The MIT research will take place at the Plasma Science and Fusion Center's Laboratory for Innovation in Fusion Technologies. The project aims to develop the first device to generate a fusion plasma that produces more energy than it consumes and thereby demonstrate that fusion energy could serve as a viable, commercially available, carbon-free source of power.

The MIT Materials Research Laboratory (MRL) was created by merging the Materials Processing Center and the Center for Materials Science and Engineering. The laboratory engages with approximately150 faculty members and scientists from across the Schools of Science and Engineering who are conducting materials science research. MRL's focus is on scientific discovery as well as on designing and making materials that lead to systems with improved performance or that enable new approaches to address existing problems. The Materials Research Laboratory will work hand-in-hand with MIT.nano—the central research facility at the heart of the MIT campus that is due to open in 2018.

MIT announced the creation of the MIT-IBM Watson AI Lab to carry out fundamental artificial intelligence (AI) research and propel scientific breakthroughs that unlock the potential of AI. The collaboration's goals include advancing AI hardware, software, and algorithms related to deep learning and other areas; increasing AI's impact on industries, such as health care and cybersecurity; and exploring the economic and ethical implications of AI on society.

The MIT Center for Precision Cancer Medicine (CPCM), housed within MIT's Koch Institute for Integrative Cancer Research, was launched through the generosity of an

anonymous donor. CPCM will focus on translational research to help patients who do not respond well to traditional therapies. Through concentrating on the use of drug combinations, CPCM investigators expect to significantly alter patient outcomes by determining the right combination of therapies for the individual patient. The center will also work on innovative ways to administer drugs, such as through time-staggered dosages or other methods that target the therapy directly to the tumor.

The MIT Quest for Intelligence initiative, launched in AY2018, strives to discover the foundations of human intelligence and drive the development of technological tools to positively influence society. Two linked entities within MIT Quest will advance the work. "The Core" will progress the science and engineering of both human and machine intelligence. "The Bridge" will focus on the application of MIT discoveries in natural and artificial intelligence to all disciplines, and will host state-of-the-art tools from industry and research laboratories worldwide.

MIT initiated its Task Force on the Work of the Future. This Institute-wide effort aims to understand and shape the evolution of jobs during an age of innovation. The task force plans to conduct an empirical, interdisciplinary, and global study to understand work today and its possible trajectories in the future. The task force's mandate is to address the following three questions: How are emerging technologies transforming the nature of human work and the set of skills that enable humans to thrive in the digital economy? How can we shape and catalyze technological innovation to complement and augment human potential? and How can our civic institutions ensure that the gains from these emerging innovations contribute to equality of opportunity, social inclusion, and shared prosperity?

The Commonwealth of Massachusetts announced a $3.9 million grant to support the Defense Fabric Discovery Center (DFDC) at Lincoln Laboratory. The award will promote the center's mission of innovating advanced fibers and fabrics for defense applications. This award follows a 2017 state grant of $2.2 million that helped launch the opening of the DFDC, established in collaboration with the US Army Natick Soldier Systems Center and the Advanced Functional Fabrics of America. This financial support from the state is part of the Massachusetts Manufacturing Innovation Initiative to help Massachusetts manufacturers adopt innovative new technologies and facilitate state investment in the federal Manufacturing USA program. This program developed a network of research institutes that focus on advancing innovation in manufacturing and stimulating job growth through public-private partnerships.

Finally, over the past year, the staff of the VPR office has continued to work tirelessly to address potential federal changes in immigration policy, expectations regarding international collaborations, and threats to research funding. The Vice President for Research is working together with other research institutions, professional associations, and national academies to make our voices heard. In Washington, DC, the VPR strongly advocated for the importance of supporting basic science for growth in technology and innovation. This is critical to our economy and the health and security of our nation and the globe.

Maria T. Zuber
Vice President for Research
E. A. Griswold Professor of Geophysics