

Provost

MIT's activities in academic areas continued to diversify in 2014–2015, with several new initiatives in research and education. The year also included a number of key academic and administrative leadership appointments. This report describes some of the prominent events and accomplishments that took place across the Institute during the past year.

People

In September 2014, Mary Rowe retired from her position as ombudsperson after 41 years of service to the Institute.

Robert B. Millard '73 was elected chair of the MIT Corporation, effective October 2014. Mr. Millard succeeded John Reed '61, SM '65, who had served as chair since June 2010.

In November 2014, Julie Lucas joined MIT as vice president for resource development. Ms. Lucas, who had been associate senior vice president at the University of Southern California, succeeded Jeffrey Newton, who retired in early 2014.

In January 2015, Hashim Sarkis was appointed dean of the School of Architecture and Planning, succeeding Adèle Naudé Santos, who stepped down in June 2014. Professor Sarkis came to MIT from Harvard University's Graduate School of Design, where he had been the Aga Khan professor of landscape architecture and urbanism in Muslim societies.

Also in January, Glen Shor joined MIT as vice president for finance. Mr. Shor previously served as secretary of administration and finance for the Commonwealth of Massachusetts.

In February 2015, Lorraine Goffe-Rush began her appointment as vice president for human resources, succeeding Alison Alden, who retired in spring 2014. Ms. Goffe-Rush previously was vice chancellor for human resources at Washington University in St. Louis.

Chris Bourg was appointed director of MIT Libraries, effective also in February. Dr. Bourg had been associate university librarian for public services at Stanford University. She succeeded Ann Wolpert, who passed away in 2013.

Associate Vice President for Communications Nate Nickerson was promoted in February to vice president for communications, reflecting his broader responsibilities in this area. Also in the president's office, Greg Morgan, who had been vice president and general counsel, assumed new responsibilities as senior vice president and secretary of the Corporation in March 2015. Mark DiVincenzo, previously deputy general counsel, stepped into the role of vice president and general counsel.

In June 2015, Deborah Fitzgerald stepped down as Kenan Sahin Dean of the School of Humanities, Arts, and Social Sciences, having served in this capacity since 2007. She

returned to her MIT faculty position as professor of the history of technology in the Program in Science, Technology, and Society.

Melissa Nobles, the Arthur and Ruth Sloan Professor of Political Science, was named Kenan Sahin Dean of the School of Humanities, Arts, and Social Sciences, effective July 1, 2015. Prior to her appointment as dean, Professor Nobles served as head of the Department of Political Science.

Effective June 30, Claude Canizares stepped down from his position, since 2013, as vice president with responsibility for global engagements. Professor Canizares, who previously held positions of vice president for research and associate provost, returned to his home department of Physics.

Richard Lester, the Japan Steel Industry Professor and head of the Department of Nuclear Science and Engineering, was named associate provost for international activities, effective July 1, 2015, effectively assuming the responsibilities formerly held by Claude Canizares. Professor Lester will continue as acting head of Nuclear Science and Engineering until September 1, 2015, when a new head is expected to be named.

Krishna Rajagopal, professor of physics, became Chair of the Faculty effective July 1, 2015, after serving as chair-elect this past year. He succeeds Steven Hall in this capacity.

We were deeply saddened by the deaths this past year of JoAnn Carmin, professor of urban studies and planning; Mujid Kazimi, professor of nuclear science and engineering and of mechanical engineering; Judith Layzer, professor of urban studies and planning; Alexander Rich, professor of biology; and John Waugh, Institute Professor and professor of chemistry emeritus. These individuals will be greatly missed by the MIT community.

Academic Programs and Activities

A diversity of new programs arose in AY2015, several made possible by generous gifts to the Institute in support of research aimed at improving society, and many characterized by a collaborative and cross-disciplinary nature. A small sample of these activities is described below. Please refer to the separate reports of individual academic areas for more detailed information.

Biomedical research has shown that trillions of microorganisms living in the human body, collectively known as the microbiome, directly affect the functioning of the digestive tract, immune system, skin, and other body systems. In November 2014, the interdisciplinary Center for Microbiome Informatics and Therapeutics was launched in partnership with Massachusetts General Hospital, dedicated to understanding of the microbiome's role in human biology and harnessing this knowledge to develop treatments for related illnesses. Major initial funding was provided by the Neil and Anna Rasmussen Foundation. The new center, a key component of the MIT Institute of Medical Engineering and Science (IMES), will foster collaboration between academic investigators and clinicians.

In January 2015, alumnus Samuel Tak Lee '62, SM '64 provided one of the largest gifts in MIT's history to establish a real estate entrepreneurship laboratory to promote social responsibility in the real estate profession worldwide, particularly in China. The new Samuel Tak Lee MIT Real Estate Entrepreneurship Lab, based in the Department of Urban Studies and Planning and the Center for Real Estate, will encourage an interdisciplinary approach to the study of real estate development, with research partners sought from the Sloan School of Management and departments such as Economics, Anthropology, and Civil and Environmental Engineering. The Lee gift will support fellowships for both US and international students engaging in research on sustainable real estate development and global urbanization, and will support the lab's curriculum being made available online via MITx.

In March 2015, MIT announced a plan to initiate three interconnected academic efforts on cybersecurity, focused on technology, public policy, and organizational management. The programs fall under the heading of the MIT Cybersecurity Policy Initiative (CPI), established with support from the Hewlett Foundation's Cyber Initiative. Simultaneous funding was also provided to Stanford University and to UC Berkeley, with an understanding that the three universities will take complementary approaches to studying cybersecurity issues. At MIT, the CPI will be based in the Computer Science and Artificial Intelligence Laboratory (CSAIL), but it is expected to bring together scholars from engineering, social science, and management, with a goal of improving understanding of the security dynamics of large-scale computer systems as a basis for guiding organizational policy.

In April 2015, MIT and the deans of all five of its schools announced the establishment of the Institute for Data, Systems, and Society (IDSS), which will offer a range of cross-disciplinary academic programs aimed at finding solutions for complex societal problems. The IDSS, with a formal launch date of July 1, 2015, will house faculty from the Engineering Systems Division and other existing units, including the Laboratory for Information and Decision Systems and the Sociotechnical Systems Research Center. It will also bring a social science dimension together with science and engineering to address issues such as energy, transportation, health care, social networks, and financial systems. Academic activities in the IDSS will include a new undergraduate minor in statistics and a new PhD program grounded in the use of analytical tools and social science research. IDSS is directed by Munther Dahleh, the William A. Coolidge Professor in the Department of Electrical Engineering and Computer Science.

Also in April, the faculty approved the establishment of an SB degree in Theater Arts, which previously had been available only as a "major departure." The formal Theater Arts major is designed to help students acquire the necessary artistic, technical, and intellectual skills to create theater of quality and imagination. Along with such basic courses as acting, script analysis, stagecraft, movement, and directing, the curriculum offers instruction related to the integration of digital technologies in live performance. Theater Arts at MIT is taught as an art form and as an intellectual discipline that encourages students to examine themselves and society in ways that could lead to transformation of either or both.

In May 2015, the Institute formed an alliance with Philips, headquartered in the Netherlands, to support research on campus focused on Philips's core areas of health care and lighting solutions technology. The research will be conducted in collaboration with Philips Research, whose North American operations will be moving to the Kendall Square area. The research is expected to encompass lighting for green buildings and cities, clinical informatics, and medical ultrasound and other noninvasive diagnostics. It is also expected that the alliance will strengthen the pathways by which innovations in these areas of research can be translated to real-world use.

Campus Renewal

Three physically adjacent projects took place this past year in the West Campus area as part of MIT's campus renewal program. In February 2015, a substantial restoration of Kresge Auditorium commenced, to replace aging equipment and systems, renew and upgrade key building elements, and improve visitor comfort. The target completion date for the restoration is April 2016, and the building will remain open during nearly all of the work. Nearby, renovations to the interior and exterior of the MIT Chapel, including upgrades to such systems as HVAC, plumbing, and fire protection, were undertaken in spring and summer 2015. Finally, the demolition of Bexley Hall was undertaken in summer 2015, following a decision that the major repairs necessary to sustain this residence hall would not be practical. The area will be landscaped for use as an outdoor open space while long-term plans for the site are under consideration.

The demolition of Building 12 took place in 2015 in order to prepare the site for the new "MIT.nano" building dedicated to research in nanoscale materials and processes. Construction is slated to begin in late summer 2015, with the new building's completion expected in 2018.

Major renovations to Building E52 (the Sloan Building) and to Building 2 continued during the past year, both on track to reach completion in 2016. The Sloan Building will provide renovated space for the Department of Economics and for portions of the Sloan School of Management, and Building 2 will be reoccupied by the Department of Mathematics.

Planning continued throughout the past year regarding the Kendall Square Initiative, including proposed designs for six buildings to be developed on MIT-owned property in the East Cambridge/Kendall Square area. During summer 2014, architectural firms were selected by the MIT Building Committee for the design of each building site, which resulted in a proposed site plan for submission in summer 2015 to the Cambridge Planning Board for review and public commentary. The site plan conforms to a zoning plan previously approved by the City of Cambridge. The Kendall Square development is designed to promote a mixed-use environment by adding research and innovation space, housing for MIT graduate students, residential housing designed for a range of affordability, child care facilities, and retail space while also preserving capacity for future academic-related use. The plan also includes a prominent location for the MIT Museum, which is expected to enhance the identity of this area as a gateway to the campus.

In April 2015, the MIT community dedicated a permanent campus memorial to MIT police officer Sean Collier, who was killed in the line of duty two years earlier. The solid granite structure, conceived and designed by MIT professor and head of the Department of Architecture J. Meejin Yoon with the assistance of Professor John Ochsendorf on design and construction, stands as a space for reflection at the intersection of Vassar and Main Streets.

Committee Activities

The final report of the Institute-wide Task Force on the Future of MIT Education, which had been convened in early 2013 by President Reif, was released in August 2014. The group had been asked to assess MIT's educational model and facilities for the future, consider the global opportunities presented by edX, and examine possible new financial models to support education. In its report, the task force, which included 52 members from across the Institute, responded to this charge by making a number of specific recommendations centered on four themes:

- Laying a foundation for the future by creating a proposed Initiative for Educational Innovation
- Transforming pedagogy, largely through “bold experiments” sponsored by the proposed new initiative
- Extending MIT's educational impact to teachers and learners well beyond its own campus
- Enabling the future of MIT education by cultivating new revenue streams and envisioning new spaces to support learning at MIT

Community discussions are continuing with regard to prioritizing and implementing the recommendations included in the task force's report.

A 19-member faculty advisory committee that included representatives from all five schools submitted a report in December 2014 that identified strategies for strengthening MIT's culture of innovation. The recommendations in this report will help to launch the MIT Innovation Initiative, an effort announced by President Reif in late 2013, led by Fiona Murray, the William Porter Professor of Entrepreneurship, and Vladimir Bulović, the Fariborz Maseeh Professor of Emerging Technology. The report's recommendations focus on four broad priorities:

- Strengthening and expanding MIT's innovation capabilities
- Cultivating communities that connect across campus and engage MIT with broader worldwide innovation needs
- Developing additional, transformative hands-on infrastructure
- Formalizing, studying, and promoting the science of innovation through a new Laboratory for Innovation Science and Policy

Several community briefings were held following the release of the report to share feedback on its content and to discuss details of implementing its recommendations.

The MIT Climate Change Conversation Committee, which was tasked to launch an open, campus-wide conversation about how MIT can lead in confronting climate change, submitted its report in June 2015. In developing its report, the committee sought broad input from all members of the MIT community on how the Institute could most effectively aid the US and the world to address climate change. Its process included an idea bank, a community-wide survey and a series of public events guided by the survey responses, a listening tour, and a wide range of personal interactions. The committee report recommended actions organized around three general themes: standing up for science and truth; transforming the campus into a living laboratory for climate change; and accelerating solutions to the climate threat. During the summer of 2015, the Climate Conversation leadership—Provost Martin Schmidt, Vice President for Research Maria Zuber, MITEI Director Bob Armstrong, and Environmental Solutions Initiative Director Susan Solomon—will carefully review the report and other community input and present recommendations to President Reif.

Faculty

Twenty-one faculty members retired from MIT in 2014–2015, while faculty recruitment continued at a strong pace. A total of 47 new faculty members (32 men and 15 women, including three members of underrepresented minority groups) began their MIT appointments during 2014–2015. Also this year, 20 faculty members, including six women and four members of minority groups, were awarded tenure within MIT. These promotions to tenure were effective July 2015.

The James R. Killian, Jr. Faculty Achievement Award is the highest honor bestowed by the MIT faculty on one of its own members. The award was established in 1971 “to recognize extraordinary professional accomplishments by full-time members of the MIT faculty.” In May, it was announced that Tyler Jacks, the David H. Koch Professor of Biology and director of MIT’s Koch Institute for Integrative Cancer Research, was selected as the Killian Award recipient for 2015.

The Harold E. Edgerton Faculty Achievement Award is the highest honor bestowed by the MIT faculty on one of its own junior faculty members. The Edgerton Award, a tribute to the late beloved inventor and photographer “Doc” Edgerton, recognizes exceptional distinction in teaching and research. The 2015 Edgerton Award was presented to Kay Tye, assistant professor of neuroscience in the Department of Brain and Cognitive Sciences.

Three faculty members were named Institute Professors, effective July 1, 2015: Sallie “Penny” Chisholm, the Lee and Geraldine Martin Professor of Environmental Studies in the Departments of Civil and Environmental Engineering and Biology; Ronald Rivest, the Vannevar Bush Professor in the Department of Electrical Engineering and Computer Science; and Marcus Thompson, the Robert R. Taylor Professor of Music in the Music and Theater Arts section. Appointment as Institute Professor, a unique honor bestowed by the faculty and administration of MIT, recognizes exceptional distinction by a combination of leadership, accomplishment, and service in the intellectual life of the

Institute and wider community. There are usually no more than 12 Institute Professors at one time.

Four faculty members were appointed as Margaret MacVicar Faculty Fellows this year in recognition of their outstanding contributions to the quality of undergraduate education at MIT. The awardees are: Arthur Bahr, the Alfred Henry and Jean Morrison Hayes Career Development Associate Professor of Literature; Catherine L. Drennan, professor of chemistry and biology and a Howard Hughes Medical Institute professor and investigator; Lorna J. Gibson, the Matoula S. Salapatas Professor of Materials Science and Engineering and a professor of civil and environmental engineering and mechanical engineering; and Hazel L. Sive, professor of biology. MacVicar Faculty Fellows are appointed for 10-year terms. These additions bring the total number of active fellows to 42, along with 55 emeritus fellows remaining at MIT, who together form a cohort of scholars committed to excellent teaching and innovation in education.

The Dr. Martin Luther King, Jr. Visiting Professors and Scholars Program was established in 1995 to recognize the many contributions of outstanding minority scholars in the academy, as well as to enhance their scholarship through intellectual interactions with MIT peers and enrich the intellectual life of the Institute through their participation in MIT research and academic programs. The 2014–2015 MLK visiting professors were: [Coco Fusco](#), visiting associate professor, Comparative Media Studies/Writing; [Malika Jeffries-EL](#), visiting associate professor, Chemistry; [Calestous Juma](#), visiting professor, Urban Studies and Planning; [Hakeem Oluseyi](#), visiting professor, Physics; [André D. Taylor](#), visiting associate professor, Mechanical Engineering; [Kimani C. Toussaint](#), visiting associate professor, Mechanical Engineering. In addition, one MLK visiting scholar was sponsored by the program: [James Mickens](#), Electrical Engineering and Computer Science.

The following represent a sample of the numerous faculty who were honored with outside awards or appointments this past year:

Four faculty members were elected to the National Academy of Sciences: Samuel Bowring, professor of geology; Thomasz Mrowka, professor of mathematics and head of the Department of Mathematics; James Poterba, professor of economics; Sara Seager, professor of physics and planetary science.

Elected this year to the National Academy of Engineering were: Hari Balakrishnan, professor of electrical engineering and computer science; Sangeeta Bhatia, professor of health sciences and technology, and of electrical engineering and computer science; Emery Brown, professor of medical engineering and computational neuroscience; Anantha Chandrakasan, professor of electrical engineering and head of the Department of Electrical Engineering and Computer Science; Eric Evans, director of MIT Lincoln Laboratory; Karen Gleason, professor of chemical engineering and associate provost; L. Rafael Reif, professor of electrical engineering and president; Daniela Rus, professor of electrical engineering and computer science and director of the Computer Science and Artificial Intelligence Laboratory.

Institute Professors Mildred Dresselhaus and Robert Solow were awarded the Presidential Medal of Freedom, the nation's highest civilian honor.

Institute Professor Robert Langer was awarded the Queen Elizabeth Prize for Engineering, recognizing his research's global impact on human health.

Dava Newman, professor of aeronautics and astronautics and of engineering systems, was appointed deputy administrator of NASA.

Graduate Student Fellowships

The Presidential Graduate Fellowship Program provides full financial support to many of the Institute's most promising first-year graduate students. In AY2015, this program awarded a total of 104 fellowships over a wide range of MIT's academic departments. Following is a list of existing fellowships that are named for individual and corporate donors, some indicating specific areas of support that have been designated by the donor.

Akamai Technologies, Inc. (Mathematics and Electrical Engineering and Computer Science)

Agencourt Bioscience Corp./Alnylam Pharmaceuticals

Homer A. Burnell (Architecture and Urban Planning)

Richard A. Denton

Morton E. Goulder (1942)

Herbert and Dorothy Grier

Robert T. Haslam (Chemistry and Chemical Engineering)

Irwin Mark Jacobs and Joan Klein Jacobs

J. Kenneth Jamieson

Grayce B. Kerr Fund in honor of Charles M. Vest

The Kurtz Family Foundation in honor of Charles M. Vest

James A. Lash

William M. Layson (Physics)

Liberty Mutual Foundation

Edward H. Linde (Civil and Environmental Engineering)

Curtis Marble

Samuel H. and Luleta Maslak

Momenta Pharmaceuticals

Neurometrix, Inc.

The Picower Foundation in honor of Norman B. Leventhal

Charles A. Piper

Praecis Pharmaceuticals, Inc. (Biology and the School of Science)

Walter A. Rosenblith

Kenan Sahin (Humanities, Arts, and Social Sciences)

Henry E. Singleton (Brain and Cognitive Sciences)

Stata Family Presidential Fellowship Fund
Craig and Rose Tedman for Robert M. Rose
Edward Clark Walsh (Chemical Engineering)

Four students held Provost's Women and Minority Fellowships, which are considered a part of the Presidential Graduate Fellowship Program.

The Lemelson Foundation provided funding for seven underrepresented minority students with interests in engineering innovation; these fellowships were intended for incoming students. The School of Engineering designates the Lemelson Foundation Fellowships as part of the Presidential Graduate Fellowship Program.

In order to build community among the fellows, the Society of Presidential Fellows hosted a lecture and dinner series co-sponsored by the Sidney-Pacific Graduate Residence.

Fundraising in support of the Presidential Fellowship Program continued to be a high priority of the Institute.

Finances

MIT tuition was increased by 3.5% to \$44,720 in AY2015. Approximately 56% of all undergraduates received need-based MIT scholarships this year. MIT remains committed to a policy of need-blind admissions and to meeting the full financial need of all undergraduates it admits. The Institute's undergraduate enrollment was 4,512 in 2014–2015, a decrease of 16 students from 2013–2014, while graduate student enrollment increased by 34 to 6,807.

\$10 million was made available in fiscal year 2015 for new academic and administrative programs, double the amount that had been made available in previous years. Because of an operating surplus at the end of the fiscal year, the Institute also was able to add funds to a reserve that is used for infrastructure renewal such as capital projects, building repair and maintenance, and information technology modernization, and for the support of budget flexibility and strategic initiatives in future years.

The market value of investments in the Institute's endowment was \$13.4 billion as of June 30, 2015, representing an increase of 8.1% above the value of \$12.4 billion of June 30, 2014.

Research

Expenditures on sponsored research conducted on campus totaled \$696.9 million in AY2015, representing an increase of 3% above the 2014 volume of \$678.4 million.

The federal government continues to be the largest sponsor of campus research funding, accounting for approximately 66% of the total volume. The Department of Defense is the single largest sponsor of campus research, with an approximate 18% share of total research expenditures. Industrial sponsors accounted for approximately

17% of total research expenditures, followed by the National Institutes of Health, part of the Department of Health and Human Services (17%), the Department of Energy (12%), the National Science Foundation (11%), and private foundations and nonprofit organizations (11%).

Lincoln Laboratory research volume was \$890 million in AY2015, an increase of 9.7% above the 2014 volume of \$811 million.

Martin A. Schmidt
Provost