

## Provost

MIT's academic areas continued to develop new initiatives in research and education in 2018–2019, highlighted by the announcement of the new College of Computing scheduled to open in fall 2019. Major campus construction projects proceeded on schedule, and a key new leadership position devoted to strengthening campus diversity and workplace climate was established.

This report describes some of the prominent events and accomplishments in academic and related areas that took place across the Institute during the past year.

## People

R. Gregory Morgan retired from his position as senior vice president and secretary of the MIT Corporation in December 2018. He had previously served as MIT's first general counsel beginning in 2007.

Suzanne Glassburn, who had been an attorney in the Office of the General Counsel since 2008, succeeded Greg Morgan as senior vice president and secretary of the MIT Corporation, assuming this new responsibility in September 2018.

In December 2018, Lorraine Goffe stepped down from her position as vice president for human resources, a role she had held for four years. A search for her successor is in progress.

In February 2019, Nathaniel Nickerson stepped down from his position as vice president for communications, having served in that role since 2015. A search for his successor is in progress.

Mark Silis was appointed vice president for information systems and technology effective March 2019. He had served as associate vice president since 2015. Mark succeeds John Charles, who held the position from 2013 until he retired in 2018.

Effective July 2019, Tim Jamison, head of the Department of Chemistry and Robert R. Taylor Professor of Chemistry, was appointed to a new associate provost position focused on ensuring equitable practices related to faculty hiring, promotion, and tenure and on supporting efforts across all academic areas to foster diversity, inclusion, a positive climate, and a sense of shared community. Relatedly, it was announced that a search would begin to identify a new Institute community and equity officer to succeed Alyce Johnson, who has served in an interim role since July 2018.

Rick L. Danheiser, A.C. Cope Professor of Chemistry, will succeed Susan Silbey as chair of the MIT faculty. Rick had served as associate chair of the faculty during Susan's two-year term as chair.

We were deeply saddened this past year by the deaths of John de Monchaux, former dean of the School of Architecture and Planning, and Dana G. Mead, former chair of the MIT Corporation.

## Academic Programs and Activities

New activities in many academic areas continued to emerge throughout the year, reflecting the Institute's goals of continually improving its educational programs and engaging both nationally and globally to foster innovative research. A sample of these activities is provided below; detailed information about these and other programs is available in the separate reports of the individual academic areas.

In October 2018, MIT announced the creation of the MIT Stephen A. Schwarzman College of Computing, representing one of the Institute's most far-reaching academic initiatives in more than a half century. The college, which formally opens in September 2019, will be defined by a new, shared structure that can help all five MIT schools deliver the power of computing—and especially artificial intelligence (AI)—to all disciplines at MIT and that will lead to the formation of new disciplines that have yet to be fully imagined. A major goal will be to foster research and educational collaboration in computing that reaches all areas of the Institute. The formation of the college was anchored by a \$350 million gift from Stephen A. Schwarzman as part of MIT's \$1 billion commitment that includes a new building dedicated to computing (projected to open in 2022), support of the college's infrastructure, and 50 new faculty positions dedicated to computing across disciplines, all of which will enable a major expansion of the Institute's academic capacity in computing and AI.

A three-day celebration of the college in advance of its opening was held in February and included symposia, panel discussions, artistic displays, and student-centered events designed to explore the future of computing education and research and offer insights from leading experts in computer science, AI, teaching and learning, ethics, and related areas.

In order to prepare for the launch, five working groups charged with proposing options and ideas to help guide the creation of the college convened during the spring and summer of 2019. These working groups, which included more than 100 faculty, staff, and students from across the Institute, focused on the following topics: organizational structure, faculty appointments, curriculum and degrees, social impact and responsibilities of computing, and the college's infrastructure.

The working groups held a number of open forums and sponsored an idea bank as part of the effort to collect input from the MIT community at large. Final reports of the working groups were planned for public release in August 2019.

A set of draft recommendations from the Ad Hoc Task Force on Open Access to MIT's Research was released in March 2019, following 18 months of work that included gathering ideas from a range of MIT academic leaders and consulting outside publishing groups. The task force had been charged by the provost with considering whether MIT should strengthen its activities in support of providing open access to the research and educational contributions of the MIT community by updating its current open access policies and practices. This question was posed at a time when new methods and opportunities for sharing information and data are rapidly expanding in the digital world, accompanied by concerns related to the protection of proprietary data and issues of privacy. In addition to suggesting a set of shared principles for open scholarship, the

report offered recommendations for supporting the open dissemination of MIT research and educational output. These recommendations are related to policy, infrastructure and resources, and advocacy and awareness.

Three new degrees were approved by the faculty this past year:

- A new flexible SB program was established in Nuclear Science and Engineering that is intended to allow students to pursue an area of study within the broad realm of nuclear engineering applications that the department's regular program is not flexible enough to offer. It is expected that this new degree will attract additional students to the department as majors, particularly those students who are interested in careers outside the traditional nuclear industry, such as nuclear medicine, clean energy technologies, and fusion.
- A new SB degree was also established in computation and cognition, to be offered jointly by the Department of Electrical Engineering and Computer Science (EECS) and the Department of Brain and Cognitive Sciences. The proposed program will offer students opportunities in a new field at the intersection of computer science, engineering, neuroscience, cognitive science, artificial intelligence, and machine learning, reflecting a growing demand for individuals with computational skills as well as biological knowledge.
- An MEng degree in computation and cognition, modeled after and structured the same as existing EECS MEng programs, was established as a complement to the new SB degree.

## Campus Renewal

In November, plans were announced for a new state-of-the-art music facility to be built adjacent to Kresge Auditorium. This facility will enable the consolidation of many music program activities related to performance, practice, and instruction that currently are in different locations across the campus. A centerpiece of the new building will be a large-scale, purpose-built performance lab that will enable experimentation with unconventional music formats and employ flexible seating arrangements. The performance lab and a recording studio will provide professional-level recording facilities, a new resource for the MIT campus. Building planning and design activities began this past year, with 2022 as the target completion date for the new facility.

Construction proceeded on schedule at two adjacent sites in Kendall Square as part of the Institute's long-term, mixed-use development project in that area of the campus. The first site, incorporating substantial renovations to Buildings E38 and E39, will include a 454-unit graduate student housing facility, new homes for the MIT Admissions Office and the MIT Innovation Initiative, and ground-floor retail establishments. The second site, at 314 Main Street and central to defining a gateway to the campus in Kendall Square, will house the MIT Museum and The MIT Press, as well as various industry research activities. Both projects are expected to be completed in 2020.

Construction also proceeded on a new 450-bed undergraduate residence hall on Vassar Street on the site of the former West Garage, with an expected fall 2020 completion date.

## Faculty

Twelve faculty members retired from MIT in 2018–2019, while faculty recruitment continued at a strong pace. A total of 45 new faculty members (25 men and 20 women, including five members of underrepresented minority groups) began their MIT appointments during AY2019. Also this year, 36 faculty members (24 men and 12 women) were awarded tenure. These promotions to tenure were effective July 2019.

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. In April, the 2018–2019 Edgerton Award was presented to Vivian Sze, associate professor in the Department of Electrical Engineering and Computer Science.

The James R. Killian Jr. Faculty Achievement Award is a special 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 Susan Silbey, Leon and Anne Goldberg Professor of Humanities, Sociology, and Anthropology in the School of Humanities, Arts, and Social Sciences and professor of behavioral and policy sciences in the Sloan School of Management, had been selected as the Killian Award recipient for 2019–2020.

Four faculty members were appointed Margaret MacVicar Faculty Fellows this year in recognition of their outstanding contributions to the quality of undergraduate education at MIT. The awardees were Joshua Angrist, Ford Professor of Economics; Erik Demaine, professor of computer science; Graham Jones, associate professor of anthropology; and T.L. Taylor, professor of comparative media studies. MacVicar Faculty Fellows are appointed for 10-year terms. These awardees bring the total number of active fellows to 39, along with approximately 50 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 2018–2019 MLK visiting professors were Kassa Akochayé Okoudjou (visiting professor, mathematics), Tina Opie (visiting associate professor, management), and Rhonda Williams (visiting professor, history). In addition, three MLK visiting scholars were sponsored by the program: Jamie Macbeth (computer science), Benjamin McDonald (chemistry), and Matthew Schumaker (music).

Some of the numerous faculty members honored with outside awards or appointments are listed below.

Three faculty members were elected to the National Academy of Sciences: Edward S. Boyden, Y. Eva Tan Professor in Neurotechnology in the Department of Biological Engineering and the Department of Brain and Cognitive Sciences; Paula T. Hammond, David H. Koch Chair Professor of Engineering and head of the Department of Chemical Engineering; and Aviv Regev, professor of biology and a core member of the Broad Institute of Harvard and MIT.

Elected this year to the National Academy of Engineering were Richard D. Braatz, Edwin R. Gilliland Professor of Chemical Engineering; Gareth H. McKinley, School of Engineering Professor of Teaching Innovation in the Department of Mechanical Engineering; Robert T. Morris, professor at the Computer Science and Artificial Intelligence Laboratory; Rosalind Picard, professor of media arts and sciences and director of affective computing research in the MIT Media Laboratory; Christopher A. Schuh, department head and Danae and Vasilis Salapatas Professor in Metallurgy in the Department of Materials Science and Engineering; and Christine Wang, a senior staff scientist at MIT Lincoln Laboratory.

Three faculty members were elected to the American Academy of Arts and Sciences: Jacqueline N. Hewitt, Julius A. Stratton Professor in Electrical Engineering and Physics in the Department of Physics and director of the Kavli Institute for Astrophysics and Space Research; Kristala L.J. Prather, Arthur D. Little Professor of Chemical Engineering and co-director of the MIT Energy Initiative's Low-Carbon Energy Center for Energy Bioscience Research; and John H. Lienhard, Abdul Latif Jameel Professor of Water and Food and director of the Abdul Latif Jameel Water and Food Systems Lab.

Amy Finkelstein, John and Jennie S. MacDonald Professor of Economics, and Lisa Parks, professor of comparative media studies and science, technology, and society, were recipients of MacArthur Fellowships in 2018.

### **Graduate Student Fellowships**

The Presidential Graduate Fellowship Program provides full financial support to many of the Institute's most promising first-year graduate students. During the past year, this program awarded a total of 1,085 fellowships across a wide range of MIT's academic departments. The 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.

Edward A. Abdun-Nur '24

Agencourt Bioscience Corp./Alnylam Pharmaceuticals

Akamai Technologies Inc. (mathematics and electrical engineering and computer science)

Ashar Aziz (1981)

Homer A. Burnell (architecture and urban planning)

Richard A. Denton

Martin Deutsch

Morton E. Goulder (1942)  
 Herbert and Dorothy Grier  
 Robert T. Haslam (chemistry and chemical engineering)  
 Heising-Simons Foundation  
 Irwin Mark Jacobs and Joan Klein Jacobs  
 J. Kenneth Jamieson  
 Grayce B. Kerr Fund (in honor of Charles M. Vest)  
 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.  
 Picower Foundation (in honor of Norman B. Leventhal)  
 Charles A. Piper  
 Praecis Pharmaceuticals Inc. (biology and 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)  
 David S.Y. (1962) and Harold Wong

Five 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 eight 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 Graduate Fellowship Program continued to be a high priority of the Institute.

### **Diversity, Inclusion, and Community**

We continued in the past year to develop and encourage activities that strengthen the diversity of the Institute's community. As noted, Professor Tim Jamison filled a new associate provost position focused on working with senior Institute leaders, including deans, to ensure equitable faculty hiring, promotion, and tenure practices. Professor Jamison's office also supports the efforts of departments, schools, and the College of Computing to foster diversity, inclusion, and a sense of positive community among these units. A search is under way to identify a new Institute community and equity officer, who will work closely with the associate provost on these issues.

In September, the MIT community was invited to a presentation of a report of the National Academies of Sciences, Engineering, and Medicine on sexual harassment of women in academia. The committee that produced the report was co-chaired by Institute Professor Sheila Widnall and Wellesley College president Paula A. Johnson. A presidential advisory board of senior leaders and four working groups comprising faculty, staff, postdocs, and students were established in response to the report and in order to strengthen efforts to prevent and respond to sexual misconduct at MIT. The working groups are charged with focusing on leadership and engagement, training and prevention, policies and reporting, and academic and organizational relationships. Reports from these groups are expected in fall 2019.

In March, the provost provided his annual report on the recruitment and retention of underrepresented minority and women faculty and students. The report noted that, over the past 10 years, enrollment of underrepresented minorities has increased to approximately 28% in the undergraduate population and 14% in the graduate student population. Forty-eight underrepresented minority faculty members were hired during the past decade (10% of all faculty hires), and underrepresented minority faculty now represent approximately 8% of the total faculty population.

MIT's undergraduate population is now approximately 46% women; among graduate students, the percentage is approximately 35%. A total of 145 women faculty members were hired during the last decade (31% of all faculty hires), and women faculty now represent approximately 24% of the overall faculty population.

Over the past year, the deans of the five schools began an assessment of each school's efforts supporting diversity among faculty and students, which are correlated with the increases described above, in order to expand such efforts going forward. Each school has in place a gender equity committee to monitor and advise on these issues. The Institute's MindHandHeart program continues to offer departments support and advice on building and maintaining a positive and welcoming workplace climate at the local level. The provost's office has been working with the school deans to assess programs across MIT that aim to enhance diversity in order to determine areas where increased efforts could lead to stronger diversity outcomes. The report also described additional efforts under way to continually build a more welcoming and diverse community at

MIT. For example, MindHandHeart has worked throughout the year with academic leadership across the Institute toward promoting a healthy and welcoming academic climate within departments.

## Finances

MIT tuition was increased by 3.9% in AY2019, to \$51,520. The Institute remains committed to a policy of need-blind admissions and to meeting the full financial need of all undergraduates it admits. Approximately 59% of all undergraduates received need-based MIT scholarship aid this year; 31% of undergraduates attended tuition free. The undergraduate financial aid budget was increased by \$11.4 million, or 9.6%, in FY2018, reflecting increased tuition and a higher percentage of students qualifying for aid. The graduate financial aid budget was increased by \$22.1 million, or 10.3%. The Institute's undergraduate enrollment was 4,550, an increase of three students from 2017–2018, while graduate student enrollment increased by 53 to 6,972.

\$10 million was made available in FY2019 for new academic (\$3.5 million) and administrative (\$3 million) programs, as well as \$3.5 million to offset overhead underrecovery associated with research projects and to support other Institute priorities. There was a modest surplus at the close of FY2019 that was allocated for special projects at the discretion of the provost and the executive vice president/treasurer (e.g., campaign-related expenses). No funds were added to the financial flexibility reserve.

The market value of investments in the Institute's endowment as of June 30, 2019 was \$17.4 billion, representing an increase of 6.4% over the June 30, 2018 figure of \$16.4 billion.

## Research

Expenditures on sponsored research conducted on campus totaled \$773.9 million in FY2019, representing an increase of 5.8% over the 2018 volume of \$731.5 million.

The federal government continues to be the largest sponsor of campus research funding, accounting for approximately 60% of the total volume. Industrial entities accounted for approximately 21.9% of total research expenditures, followed by the Department of Defense (17.7%), the National Institutes of Health and other agencies within the Department of Health and Human Services (17.4%), private foundations and nonprofit organizations (13.5%), the National Science Foundation (10.3%), and the Department of Energy (8.7%).

Lincoln Laboratory research volume was \$1,066.3 million in FY2019, an increase of 9.5% above the 2018 volume of \$973.4 million.

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