

## Provost

The academic year covered by this report will long be remembered for the unprecedented challenges caused by the effects of the COVID-19 pandemic beginning in the early spring of 2020. As was the case with virtually all educational institutions across the nation, MIT was forced to react rapidly to the accelerating effects of the pandemic. All classes were canceled the week preceding spring break at the end of March, and nearly all students were required to move out of campus residences and return home (a limited number for whom returning home would have been impractical or unsafe were allowed to remain on campus) and were informed that they would not be returning to the campus for the remainder of the spring semester. In a climate of both urgency and uncertainty, plans were put in place to move all instructional activities to an online format for the remainder of the academic year. By the end of March, virtually all faculty and staff, with the exception of those deemed essential to the Institute's operations, were directed to work from home until further notice. All research labs other than those related to critical missions, including efforts to counteract the pandemic, ceased operations. All non-essential summer campus activities were canceled or, where feasible in a few cases, shifted to an online format. With campus access generally restricted, MIT held an unprecedented online version of its annual commencement exercises on May 29.

In June, a partial reopening of research labs was initiated, restricted to areas of critical importance where remote operations were not possible. In July, MIT announced a plan for the partial return of undergraduates to the campus in fall 2020, with seniors being the only class invited back, along with a limited number of other undergraduates having special circumstances. The remainder of the undergraduate community will continue to be taught remotely during the fall term.

It was decided that plans for the spring 2021 semester would be determined as the status and effects of the pandemic evolved and as the Institute gained experience with the adjustments to campus life during the fall 2020 semester. As this report is written, it is expected that a large proportion of Institute staff whose roles enable them to do so will continue to work remotely in 2020–2021, with periodic reassessments of this policy in the coming months.

AY2020 nevertheless was marked as well by numerous accomplishments and notable activities in the academic areas. Below is a description of many of them, although perhaps none were more remarkable than the rapid adaptation by our faculty, staff, and students to an almost fully distanced teaching, research, and administrative environment that began late in the academic year and that will likely define many aspects of the Institute's activities and programs going forward.

## People

In July 2019, Daron Acemoglu—the Elizabeth and James Killian Professor of Economics, and Suzanne Berger—the Raphael Dorman and Helen Starbuck Professor of Political Science, were appointed Institute Professors. This special position is a unique honor bestowed by the faculty and administration of MIT. Appointment as Institute Professor recognizes exceptional distinction in leadership, accomplishment, and service in the scholarly, educational, and general intellectual life of the Institute and wider community.

In August, Dan Huttenlocher SM '84, PhD '88, began his appointment as the first dean of the [MIT Stephen A. Schwarzman College of Computing](#). He had previously been a member of Cornell University's computer science faculty and had served as the founding dean of Cornell Tech, a graduate school in New York City that focuses on digital technology and its economic and societal impacts. Dean Huttenlocher also has a faculty appointment in the Department of Electrical Engineering and Computer Science.

Ramona Allen was appointed vice president for human resources effective in October, succeeding Lorraine Goffe, who stepped down from that role at the end of 2018. Allen had previously been the assistant dean for human resources in the School of Architecture and Planning.

In November, Joe Higgins became vice president for campus services and stewardship, overseeing the Environment, Health and Safety Office; the Office of Campus Planning; the Department of Facilities; and the Office of Sustainability. He had previously been responsible for a variety of infrastructure functions and facilities operations at MIT.

Anthony Sharon, who had served as deputy executive vice president since 2013 with responsibility for helping to oversee the operations of the Institute's central administrative units, retired in December.

John Dunbar, assistant to the provost for space planning, also retired at the end of December after many years of dedicated service, from which I benefitted enormously as associate provost, in the areas of campus planning, space renovations, and capital projects.

In February 2020, Michael Sipser announced his decision to step down as dean of science at the end of June 2020, assuming that a successor had been identified by then. Professor Sipser, who had served as dean since 2014, will return to the faculty in the Department of Mathematics, where he is the Donner Professor. A search committee was appointed to advise the provost on the selection of a successor.

Alfred Ironside began his appointment as vice president for communications in February 2020, succeeding Nathaniel Nickerson, who had stepped down from that role one year earlier. Ironside joined MIT from the Ford Foundation, where he had been vice president of global communications.

Effective March 15, John Dozier joined MIT as Institute Community and Equity Officer (ICEO). He had previously held the position of chief diversity officer and senior associate provost for inclusion at the University of South Carolina. He succeeds Alyce Johnson, who had served as interim ICEO in 2018–2019.

In spring 2020, Israel Ruiz SM '01 stepped down from his position as MIT's executive vice president and treasurer, which he had held since 2011. He previously served as the vice president for finance and, before that, director of finance, after having led the Institute's long-term financial planning effort as a member of the Office of Budget and Financial Planning.

Effective July 1, 2020, Ruth Lehmann will become the director of the Whitehead Institute, succeeding David Page. Previously, she was the Laura and Isaac Perlmutter Professor of Cell Biology and chair of the Department of Cell Biology at New York University. Professor Lehmann also holds a faculty appointment in the MIT Department of Biology.

We were deeply saddened this past year by the death of Patrick Winston, Ford Professor of Artificial Intelligence and Computer Science.

### **Academic Programs and Activities**

New activities in the academic areas continued to emerge throughout the year, serving the Institute's goals of continually improving its educational programs and fostering pathbreaking and 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 September 2019, the MIT Stephen A. Schwarzman College of Computing formally opened, following extensive planning that began with the announcement of its establishment in the previous year. The structure of the college is designed to focus on three key academic areas:

- Computing fields: supporting the rapid growth and evolution of computer science and computational areas of allied fields such as electrical engineering, as reflected notably in the rise of artificial intelligence (AI)
- Computing in other disciplines: facilitating research and teaching collaborations in computing across a broad range of fields, from the social sciences, arts, and humanities to the sciences and engineering, rather than engaging in disjoint activities or placing one field in service of another
- Social and ethical responsibilities of computing: leading change in academic research and education in the development and use of computing as well as in effectively informing practice and policy in industry and government

It was determined that the following academic and research units would be housed in the college and define its organizational structure:

- The Department of Electrical Engineering and Computer Science, MIT's largest academic department, which is jointly part of the MIT Schwarzman College of Computing and the School of Engineering
- The Operations Research Center, jointly part of the college and the Sloan School of Management
- The Institute for Data, Systems, and Society, which includes the Technology and Policy Program and Sociotechnical Systems Research Center
- The Center for Computational Science and Engineering, which focuses on the innovative application of computational methods to important problems in engineering and science

- The Computer Science and Artificial Intelligence Laboratory, MIT's largest interdepartmental lab, which develops fundamental new technologies and conducts basic research that advances the field of computing
- The Laboratory for Information and Decision Systems, a research center committed to advancing research and education in the analytical information and decision sciences
- Quest for Intelligence, which explores the mechanisms of human intelligence work in engineering terms and how our understanding of human intelligence can help build smarter machines for the benefit of society
- The MIT-IBM Watson AI Lab, a community of scientists at MIT and IBM Research conducting AI research relevant to business and society
- The Abdul Latif Jameel Clinic for Machine Learning in Health, which is dedicated to developing AI technologies that will change the landscape of health care

Several forms of faculty membership in the college are being developed, based on research, teaching, or other means of engagement as a member of one or more units of the college. The addition over time of 50 new faculty positions dedicated to computing across disciplines at MIT, an integral part of the college's charter, will serve to expand and broaden faculty scholarship in diverse areas of computing.

In terms of student involvement, the college is not expected to play a direct role in educational programs. However, the college's structure and leadership are intended to achieve important educational outcomes in existing degrees and classes and to support the creation of additional computing classes and likely also new degrees over time.

In October, the Ad Hoc Task Force on Open Access to MIT's Research, charged in 2017 with identifying ways in which our policies might be revised to enable the sharing of information resulting from MIT research and scholarship activities as widely as possible, released its final recommendations to the community, including two key policies:

- Expansion of the current open access policy, adopted by the MIT faculty in 2009, to include scholarly materials produced by students, staff, postdoctoral associates, research scientists, and other MIT community members while employed by and/or enrolled at MIT
- Adoption of an open access policy for scholarly monographs granting MIT non-exclusive permission to openly disseminate MIT-authored books, as the current policy does for scholarly articles

The report also recommended that departments, labs, and centers be asked to develop local plans designed to encourage and support open sharing of research and scholarship in ways that are appropriate for publications produced in a variety of disciplines. This continuing effort will be coordinated by the director of the MIT Libraries.

The new Master's Program in Data, Economics, and Development Policy, representing a pioneering approach to advanced education in which admission does not require college degrees or standardized test scores, was launched in spring 2020, welcoming a cohort of 22 students from 14 countries around the world. Applicants to the program demonstrate

their qualifications through their performance in online MITx MicroMasters courses, which include weekly assignments and final exams. This first group of admitted students brings a range of professional and personal experiences, including work in finance, government, technology, and journalism. The program, which incorporates both online and in-person instruction, is designed to provide students with the capability to apply data to decision making in public policy, with a focus on social policies aimed at poverty alleviation. Many students have indicated their intention to use the new skills they have gained from the program to address problems in their home countries after graduation.

### **Notable Committees**

In September 2019, the Task Force on the Work of the Future released a report on its initial findings related to, in particular, the impact of new technology on the labor market. These findings indicate that while the economic benefits from technological advancement have been substantial overall, these benefits have not been distributed evenly across the American workforce and have added to employment polarization by increasing opportunities for highly skilled workers while shrinking those for other workers. According to the report, the quantity of jobs in the future may hold steady, but the quality of jobs overall may decline, with increasing displacement of middle-skilled workers who perform routine tasks. The report contends that the effects of technology on the workplace can be beneficially shaped by enlightened public policies focused on renewed support for labor, such as strengthening of investment in postsecondary workforce education outside the traditional four-year college model. However, it also suggests that US industry must address the interests of workers as well as shareholders, recognizing workers as stakeholders in corporate decision making, in order to help ensure that all workers share in the prosperity resulting from technologies that improve productivity. The task force, which includes faculty from all five MIT schools, will continue to conduct research in these areas and plans to issue a final report in the coming year.

Two related committees were formed in October 2019 aimed at examining MIT's external engagements, reviewing its policies and processes on soliciting and accepting gifts, and recommending new guidelines for the Institute's relationships with funding sources:

- The Ad Hoc Faculty Committee on Guidelines for Outside Engagements, charged with defining a set of values and principles, consistent with MIT's mission, to guide the assessment of outside engagements. Outside engagements include grants, gifts, and any other associations and collaborations involving MIT with governments, corporations, foundations, or private individuals, domestic or foreign. The committee is advised by a student committee on outside engagements convened by the Undergraduate Association and the Graduate Student Council and is informed by focus groups and meetings with departments and various communities across the campus.
- The Ad Hoc Committee to Review MIT Gift Processes, charged with reviewing MIT's current processes for soliciting, processing, and accepting gifts to the Institute, including policies, practices, and organizational roles and responsibilities related to these activities. The committee is also charged with recommending improvements to facilitate efficient, transparent, and responsive decision making with respect to gifts.

These two committees, whose memberships include faculty and staff from all five schools and from several central administrative units, are expected to complete their reports by fall 2020.

### **Campus Renewal**

The following is a description of some of the most prominent campus renewal projects under way in the past year.

#### **Vassar Undergraduate Dormitory**

The anticipated occupancy date for a new 450-bed undergraduate residence hall on Vassar Street on the site of the former West Garage was moved from fall 2020 to January 2021.

#### **Kendall Square Initiative**

Construction continues 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, The MIT Press, and various industry research activities. Both projects are expected to be completed in October 2020.

#### **Wright Brothers Wind Tunnel**

The project to replace the iconic Wright Brothers Wind Tunnel is expected to be completed in summer 2021. With a planned test area volume of 1,600 cubic feet and the ability to test speeds up to 200 miles per hour, the new tunnel is expected to be the largest and most advanced academic wind tunnel in the nation. The new facility is being constructed on the same site as the old tunnel (Building 17).

#### **MIT Schwarzman College of Computing**

The newly established MIT Schwarzman College of Computing will be headquartered in a new building on Vassar Street, near the core of the MIT campus. The building will comprise approximately 189,000 gross square feet and will include office and research space for roughly 50 faculty groups, a classroom and lecture hall, a public cafe, an event space, and collaborative convening spaces.

The existing building on Vassar Street (Building 44) will be demolished in fall 2020 to make way for the new building. The schematic design phase of the new building was recently completed, and new building construction is expected to begin in summer 2021, with completion and occupancy in summer 2023.

### **Faculty**

Twenty faculty members retired from MIT in 2019–2020, while faculty recruitment continued at a strong pace. A total of 41 new faculty members (21 women and 20 men, including three members of underrepresented minority groups) began their MIT

appointments during 2019–2020. Also, 24 faculty members (17 men and seven women) were awarded tenure within MIT. Most of these promotions were effective July 2020.

Alex K. Shalek—the Pfizer-Laubach Career Development Associate Professor of Chemistry, a core member of the Institute for Medical Engineering and Science, and an extramural member of the Koch Institute for Integrative Cancer Research—was named the recipient of the 2019–2020 Harold E. Edgerton Faculty Achievement Award. The award’s selection committee recognized Shalek for “his leadership and pioneering spirit; his vision, inventiveness, and enthusiasm for mentorship and collaboration; and his tremendous contributions to a critical area at the intersection of science and medicine.” The award is the highest honor bestowed by the MIT faculty on one of its own junior faculty members and recognizes exceptional distinction in teaching and research. The award is a tribute to the late beloved MIT inventor and photographer “Doc” Edgerton.

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 Solomon, the Lee and Geraldine Martin Professor of Environmental Studies in the Department of Earth, Atmospheric and Planetary Sciences, with a secondary appointment in the Department of Chemistry, had been selected as the Killian Award recipient for 2020–2021. The award cited the “value of the discoveries [Professor Solomon] has contributed to atmospheric science and... the inspiring example of her engagement and leadership in working toward real-world solutions to address the global climate crisis.”

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 2020 awardees are Polina Anikeeva, associate professor of materials science and engineering and brain and cognitive sciences; Mary Fuller, professor of literature; William Tisdale, the ARCO Career Development Professor in the Department of Chemical Engineering; and Jacob White, the Cecil H. Green Professor of Electrical Engineering and Computer Science. MacVicar Faculty Fellows are appointed for 10-year terms. These awardees bring the total number of active fellows to 40, along with approximately 50 emeritus fellows remaining at MIT, who together form a cohort of scholars committed to excellent teaching and innovation in education that has thrived since the program’s inception in 1992.

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 2019–2020 MLK visiting professors were Kassa Akochayé Okoudjou (visiting professor, Mathematics) and Rhonda Williams (visiting professor, History). In addition, four MLK visiting scholars were sponsored by the program: Jamie Macbeth (Computer Science and Artificial Intelligence Laboratory), Benjamin McDonald (Chemistry), Tina Opie (Sloan School of Management), and Matthew Schumaker (Music and Theater Arts).



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 in 2020: Abhijit Banerjee, the Ford Foundation International Professor of Economics; Bonnie Berger, the Simons Professor of Mathematics, with a joint appointment in the Department of Electrical Engineering and Computer Science; and Roger Summons, the Schlumberger Professor of Geobiology in the Department of Earth, Atmospheric and Planetary Sciences.

Elected this year to the National Academy of Engineering were Joel Emer, professor of the practice in the Department of Electrical Engineering and Computer Science; Muriel Médard, the Cecil H. Green Professor of Electrical Engineering and Computer Science; Peter Shor, the Morss Professor of Applied Mathematics; and Dick K.P. Yue, the Philip J. Solondz Professor of Engineering and professor of mechanical and ocean engineering.

Six faculty members were elected to the American Academy of Arts and Sciences: Robert C. Armstrong, Chevron Professor in Chemical Engineering; Dave L. Donaldson, professor of economics; Catherine L. Drennan, professor of biology and chemistry; Ronitt Rubinfeld, professor of electrical engineering and computer science; Joshua Tenenbaum, professor of brain and cognitive sciences; and Craig Steven Wilder, Barton L. Weller Professor of History.

Sangeeta Bhatia, John J. and Dorothy Wilson Professor of Engineering in the Department of Electrical Engineering and Computer Science and the Institute for Medical Engineering and Science, and Richard Young, professor of biology, were elected to the National Academy of Medicine.

Esther Duflo, the Abdul Latif Jameel Professor of Poverty Alleviation and Development Economics, and Abhijit Banerjee were awarded the 2019 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, along with another co-winner, Harvard University economist Michael Kremer.

Joshua Tenenbaum, professor of computational cognitive science in the Department of Brain and Cognitive Sciences, was awarded a MacArthur Fellowship in 2019.

Three faculty members were awarded fellowships in 2020 from the John Simon Guggenheim Foundation: Jonathan Gruber, Ford Professor of Economics; Sabine Iatridou, professor of linguistics; and Rebecca Saxe, the John W. Jarve (1978) Professor in Brain and Cognitive Sciences.

### **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 AY2020, this program awarded a total of 109 fellowships over 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 Corporation /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
- 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)
- David S.Y. (1962) and Harold Wong

In addition, five students held Provost's Women and Minority Fellowships, which are considered to be a part of the Presidential Graduate Fellowship Program.

The Lemelson Foundation provided funding for 11 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 for the support of the Presidential Graduate Fellowship Program continues 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 earlier in this report, a new joined MIT in March, and will provide important guidance on many of the activities related to strengthening our institutional climate, some of which are described below.

In 2020–2021, each of MIT's five schools and the MIT Schwarzman College of Computing will appoint senior staff to advance diversity, equity, inclusion, and community efforts. While these new positions will be tailored to the unique needs of each school and the college, all of the individuals serving in these roles will be equipped to be a resource to community members on a range of topics. They will help advance each unit's MindHandHeart Department Support Project action plan and identify ways to address problems such as bullying and harassment and the negative power dynamics in academic and organizational working relationships. (Effective last year, the MindHandHeart initiative was relocated to the Institute Community and Equity Office within the Office of the Provost.)

The provost's office initiated funding this past year to support antiracist research at MIT, with a goal of seeding new research, amplifying existing research, creating links between related efforts across MIT, and establishing connections with research at other institutions.

Additional funds will be used to support a new research project on the history of Native Americans and MIT and share the findings with our community and the wider world. Efforts are also under way to meet the needs of Native students on our campus and establish stronger, lasting ties to Native American alumni and communities. Also, the provost will appoint an ad hoc committee of staff, students, postdocs, faculty, and alumni in 2020–2021 to recommend artistic and cultural responses designed to affirm and inspire our community in areas related to diversity and to identify ways to fund them. These efforts may amplify elements of our curriculum, in such areas as music, visual art, poetry, storytelling, and performance, that have the power to help reveal our history, deepen understanding, and sustain the momentum for progress toward a stronger community.

## Finances

MIT tuition was increased by 3.75% to \$53,450 in AY2020. The Institute remains committed to a policy of need-blind admissions and to meeting the full financial needs of all undergraduates it admits. Approximately 59% of undergraduates received need-based MIT scholarship aid this year; 31% of undergraduates attended tuition free based on family income levels. The undergraduate financial aid budget was increased by \$6.4 million, or 4.9%, in FY2020, reflecting the need to accommodate higher tuition, housing, and dining expense costs. The graduate financial aid budget was increased by \$13.8 million, or 5.9%. The Institute's undergraduate enrollment was 4,530, a decrease of 72 students from AY2019, while graduate student enrollment increased by 18 to 6,990.

A total of \$5 million was made available in fiscal year 2020 for new academic (\$3.5 million) and administrative (\$1.5 million) programs. Additional funds also were allocated to offset overhead underrecovery associated with research projects and to support other Institute priorities. There was a modest surplus at the close of FY2020 that was allocated for special projects at the discretion of the provost and the vice president for finance, including expenses related to the Institute's response to COVID-19. No funds were added to the financial flexibility reserve.

The market value of investments in the Institute's endowment as of June 30, 2020, was \$18.4 billion, representing an increase of 5.4% over the June 30, 2019, value of \$17.4 billion.

## Research

Expenditures on sponsored research conducted on campus totaled \$762.0 million in FY2020, representing a decrease of 1.5% from the 2019 volume of \$773.9 million.

The federal government continues to be the largest sponsor of campus research funding, accounting for approximately 61% of the total volume. Industrial entities continued for the fourth consecutive year to represent the single largest sponsor of campus research, with an approximate 22.9% share of total research expenditures. The National Institutes of Health and other agencies within the Department of Health and Human Services accounted for approximately 17.5% of total research expenditures, followed by the Department of Defense (17.3%), private foundations and nonprofit organizations (11.8%), the National Science Foundation (10.7%), and the Department of Energy (8.7%).

Lincoln Laboratory research volume was \$1,115.8 million in FY2020, an increase of 4.6% above the 2019 volume of \$1,066.3 million.

**Martin A. Schmidt**  
Provost