Massachusetts Institute of Technology
An Overview

Contact MIT Washington Office
http://dc.mit.edu/
Office Telephone: (202) 789-1828

Director David Goldston
dgoldsto@mit.edu
(202) 875-1265

Assistant Director Philip Lippel
phlippel@mit.edu
(617) 821-6019

Senior Policy Advisor Kate Stoll
kstoll@mit.edu
(202) 748-7489

Table of Contents

Introduction

MIT, one of the world's leading universities, is home to a wide range of experts – including 11 Nobel Laureates in everything from economics to physics. It has long had a culture that emphasizes both the creation of basic knowledge across many fields – in engineering, the natural and physical sciences, the social sciences and the humanities – and the integration and practical application of that knowledge. The Institute is also dedicated to education at both the undergraduate and graduate levels, and to disseminating MIT teaching broadly as a pioneer in on-line education. MIT has long had a commitment to public service – famously, it helped perfect RADAR for the U.S. government during World War II – and works on policy concerns ranging from competitiveness to climate change, from alleviating global poverty to improving the future for U.S. workers.

COVID-19

MIT has advanced an array of innovations to fight the coronavirus, ranging from the lipid nanoparticle technology that is used in the Moderna vaccine, to open-source inexpensive ventilator designs, cheap easily-manufactured face shields, vaccine manufacturing advances, rapid COVID diagnostics, and more. In collaboration with IBM and Lincoln Lab, MIT contributed the use of two supercomputers to the White House COVID-19 High Performance Computing Consortium, an effort to speed up the search for pharmaceutical compounds and vaccines and MIT Vice President for Research Maria Zuber has served on the Consortium's board.

MIT also helped meet the immediate needs in the local community by donating PPE, granting funds to a local homeless shelter, and providing expertise to the Massachusetts Emergency Response Team under the Massachusetts Technology Collaborative. The Broad Institute of MIT and Harvard has processed more than 10 million coronavirus tests as of January 2021, enabling, among other things, frequent testing at universities in Cambridge and Boston.

MIT has limited the number of individuals on campus since the outbreak of the coronavirus. In the fall 2020 semester, seniors and students who were unable to live elsewhere were the only undergraduates allowed to live on campus. Classes were mostly taught remotely. Access to MIT buildings to perform research and for other purposes has been strictly controlled and only those tested once or twice a week for coronavirus (depending on how often they are inside an MIT building) are able to enter. In the spring 2021 semester, freshman, sophomores and juniors are being allowed to live on campus, as well as those unable to live elsewhere and some seniors. The Institute's testing protocols will allow careful monitoring to limit the chances of any outbreaks and to respond if they occur.

MIT's Major Divisions

Schools and College

The **MIT School of Architecture and Planning** offers courses in fields including architecture, design and urban planning, and includes the Media Lab. It offered the nation's first academic program in architecture and is routinely ranked as a top architecture school. It also offers the first professional degree in real estate. *Dean Hashim Sarkis* https://sap.mit.edu/

The largest of MIT's five schools, the **School of Engineering** includes nine engineering departments, among them aerospace, biological, civil, mechanical and nuclear engineering. *Dean Anantha Chandrakasan* https://engineering.mit.edu/

The **MIT School of Humanities, Arts, and Social Sciences** has a broad portfolio, including such fields as anthropology, digital humanities, economics, history, literature, music and theater arts, philosophy, political science, security studies, and women's and gender studies. All MIT students are required to take humanities or social studies as part of their general Institute requirements. *Dean Melissa Nobles* https://shass.mit.edu/

The **MIT School of Science** includes the departments of biology; brain and cognitive sciences; chemistry; earth, atmospheric and planetary sciences; physics; and mathematics. *Dean Nergis Mavalvala* https://science.mit.edu/

The **MIT Sloan School of Management**, one of the nation's leading business schools, offers a Masters of Business Administration as well as other masters and leadership degrees. Sloan specializes in issues at the intersection of business and technology. *Dean David Schmittlein* https://mitsloan.mit.edu/

Established in 2018, MIT's newest division, the **Schwarzman College of Computing**, is designed to produce "bilingual" students – fluent in computing and computation as well as in disciplines in natural and physical science, social science and engineering. The college focuses on computer science, computational approaches, electrical engineering, and artificial intelligence as well as cross-cutting efforts with other academic disciplines across MIT, and on the social and ethical aspects of computing. *Dean Dan Huttenlocher* https://computing-dev.mit.edu/

Lincoln Laboratory

MIT Lincoln Laboratory is a Department of Defense federally funded research and development center managed by MIT under a cost-reimbursement, no-fee agreement. It was established in 1951 with a mission to apply advanced technologies in support of national security.

Lincoln Laboratory developed the nation's first air defense system and pioneered the use of computers for data analysis in the 1950s, and today its core competencies include sensors, information extraction (signal processing and embedded computing), communications, and decision support – all supported by a broad research base in advanced electronics. Other areas of work include cybersecurity, autonomous systems, bioengineering, and homeland protection. A strong emphasis is on field-testing prototype systems.

Lincoln Laboratory occupies 75 acres on the eastern perimeter of Hanscom Air Force Base and employs about 3,800 individuals. In fiscal 2020, research expenditures at Lincoln Laboratory totaled $1.1 billion.

Lincoln Laboratory is the only unit of MIT that conducts classified research.

Institute-wide, Cross-disciplinary Policy Initiatives

This is a sampling of efforts and centers at MIT focused on policy issues.

MIT Work of the Future
The MIT Task Force on the Work of the Future brings together faculty from across the university – from engineers to social scientists – to explore how technology is affecting and will affect work and workers, and to develop proposals to help ensure that workers benefit from technological change. In November 2020, the task force released its final report with policy recommendations. The report's fundamental conclusion is that technological change in recent decades has disadvantaged workers without college degrees and that policy intervention is needed if workers are to be better off in the future. Task Force members have also released papers on specific industries, technologies and aspects of the Work of the Future.
https://workofthefuture.mit.edu/

Abdul Latif Jameel Poverty Action Lab
The Abdul Latif Jameel Poverty Action Lab (J-PAL) works to reduce poverty by ensuring that policy is informed by scientific evidence. Anchored by a network of 227 affiliated professors at universities around the world, J-PAL conducts randomized impact evaluations to answer critical questions in the fight against poverty. J-PAL was launched at MIT in 2003 and now has seven regional offices at leading universities in Africa, Europe, Latin America and the Caribbean, Middle East and North Africa, North America, South Asia and Southeast Asia. The co-founders of J-PAL, Abhijit Banerjee and Esther Duflo, were co-winners of the 2019 Nobel Prize in economics, along with another co-winner. https://www.povertyactionlab.org/

MIT Energy Initiative
The MIT Energy Initiative (MITEI), formally launched in the fall of 2006, is widely recognized as a leader in energy policy. MITEI's best-known policy products are the in-depth, multidisciplinary "Future of..." studies that so far have addressed solar energy, the electric grid, natural gas, nuclear energy and mobility, among other areas. MITEI also runs eight Low-Carbon Energy Centers that are undertaking research to advance technologies that can address climate change. https://energy.mit.edu/

Fast Forward: MIT's Climate Action Plan for the Decade
MIT released its updated Climate Action Plan in May 2021. With the new plan, MIT redoubled its commitment to make climate a central focus of its research, education and policy outreach, as well as to continue to reduce its own carbon footprint.
https://climate.mit.edu/climateaction/fastforward

Center for Energy and Environmental Policy Research CEEPR
Established in 1977, the Center for Energy and Environmental Policy Research (CEEPR) brings together social scientists, scientists and engineers to produce policy papers on a wide range of policy issues related to energy supply, energy demand, and the environment. It is a joint effort of MITEI, the Department of Economics and the MIT Sloan School of Management. In 2019, CEEPR launched the Roosevelt Project, headed by former Secretary of Energy Ernest Moniz,

which aims to provide an analytical basis for charting a path to a low-carbon economy in a way that promotes high-quality job growth, minimizes worker and community dislocation, and harnesses the benefits of energy technologies for regional economic development.
http://ceepr.mit.edu/

Joint Program on the Science and Policy of Global Change
The Joint Program on the Science and Policy of Global Change combines scientific research with policy analysis to provide independent, integrative assessments of the impacts of global change and how best to respond. The team of natural and social scientists investigates how growing population and incomes increase demand for food, water, and energy, and how these increasing demands may affect available resources, climate change, ozone depletion and air pollution.
https://globalchange.mit.edu/

MIT Employees and Students

Faculty and Staff

As of October 31, 2020, **MIT employed 12,386 individuals** on campus (i.e., excluding Lincoln Laboratory), making MIT the second largest employer in Cambridge, Massachusetts. In addition to the 1,064 faculty, employees include research scientists, administrators and administrative staff, as well as 1,391 post-doctoral associates and fellows.

About 21 percent of MIT faculty are members of a U.S. minority group; 8 percent of faculty identify as a member of an underrepresented minority group (Hispanic or Latino, African American, American Indian or Alaskan Native, or Native Hawaiian or other Pacific Islander). About 45 percent of faculty were born outside the U.S., coming from more than 75 countries.

Faculty by U.S. Minority Group, 2020–2021*		
Ethnicity	**Female Count**	**Male Count**
Asian	40	115
Hispanic Or Latino	8	40
Black or African American	10	31
Native Hawaiian or other Pacific Islander	1	0
American Indian or Alaskan Native	0	1

*Ethnicity is self-identified. Faculty members may identify with more than one group

Faculty by Gender, 2020–2021

Female 261, 25%
Male 803, 75%

Number of Faculty
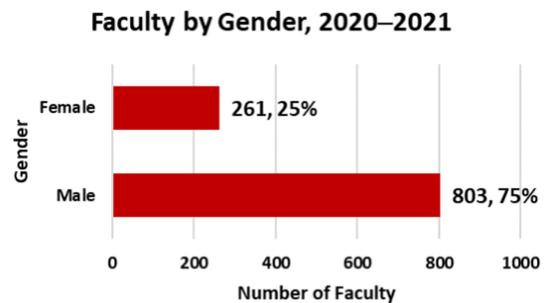
Students

In the fall 2020 semester, MIT had a **student body of 11,254.** Students come from all 50 states, the District of Columbia, two territories, and 123 foreign countries. MIT caps the number of undergraduate students from outside the U.S. at about 10 percent of the total undergraduate population of MIT. In 2020–2021, international students account for 41 percent of the MIT graduate student population.
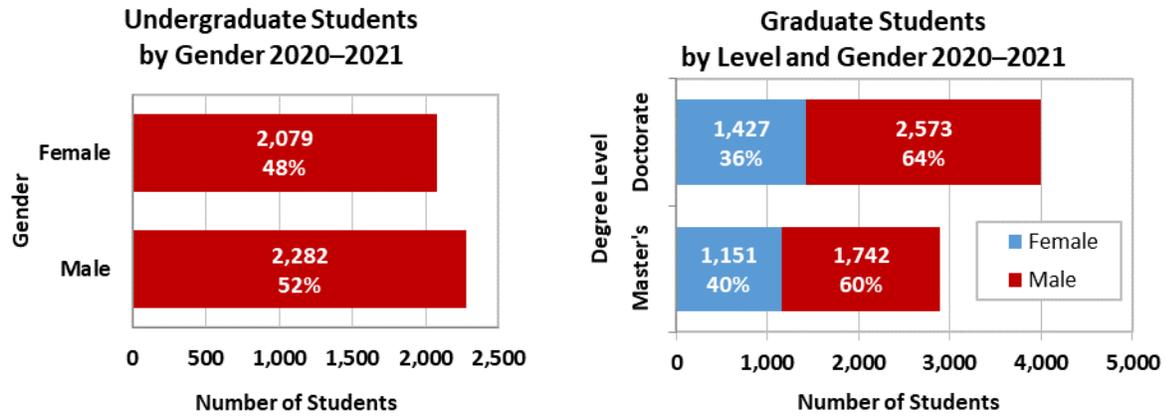
Graduate students have outnumbered undergraduate students at MIT since 1980.

Students by Level, 2020–2021

Graduate, Doctoral 35%
Undergraduate 39%
Graduate, Masters 26%
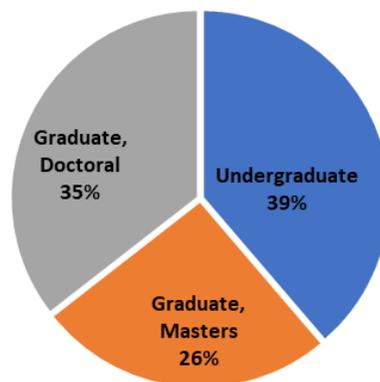
Demographics

About 48 percent of undergraduates are women, as are about 37 percent of the graduate students.

Undergraduate Students by Gender 2020–2021

Gender	Number of Students
Female	2,079 — 48%
Male	2,282 — 52%

Graduate Students by Level and Gender 2020–2021

Degree Level	Female	Male
Doctorate	1,427 — 36%	2,573 — 64%
Master's	1,151 — 40%	1,742 — 60%

Students who are the first in their families to attend college generally comprise close to 20 percent of entering undergraduates. MIT runs a First Generation Program to assist these students at MIT. About 70 percent of the 2020 entering class had a public school education.

U.S. Citizen and Permanent Resident students who identified, at least in part, as belonging to an underrepresented minority group totaled 1,805 – nearly 30 percent of undergraduate and 16 percent of graduate students.

Underrepresented Minority Faculty and Students,* 1987–2021
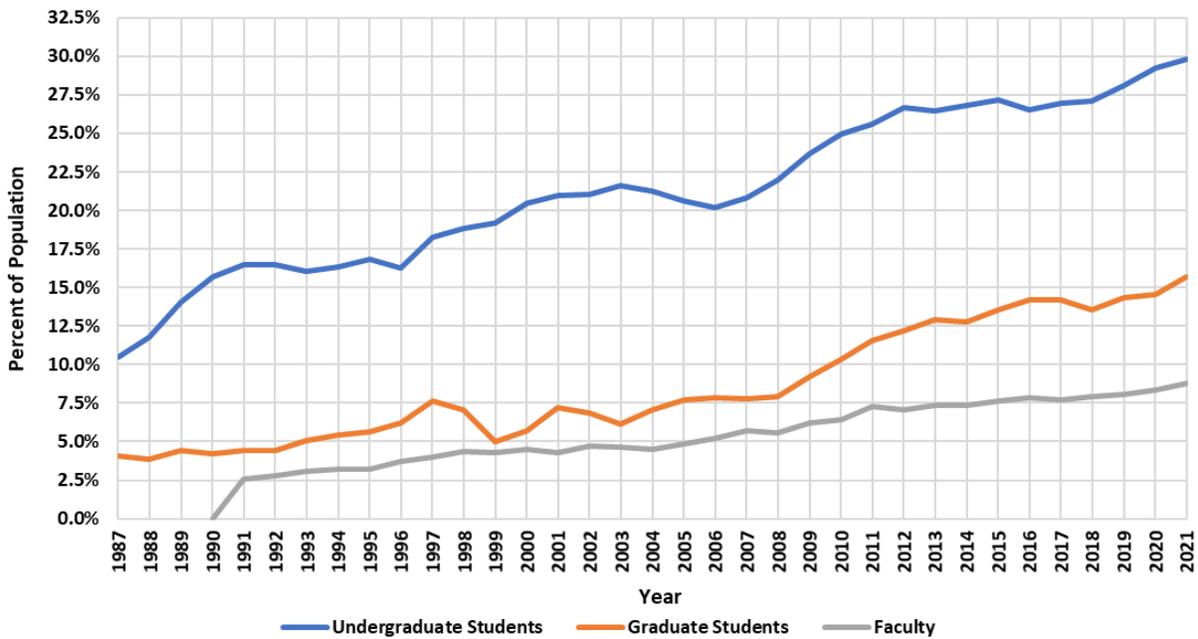
*student percentages exclude international students

In an effort to boost minority enrollment, MIT runs [a number of programs](#) for pre-college students, including the Minority Introduction to Engineering and Science (MITES), an intensive six-week residential academic enrichment program for about 80 promising high school juniors who intend to pursue careers in science, engineering, and entrepreneurship. The program is free of charge to participating students, not including transportation.
https://oeop.mit.edu/programs/mites

More information on diversity equity and inclusion efforts at MIT can be found in the Institute Community & Equity Office at https://diversity.mit.edu/.

Admissions

MIT accepts about 7 percent of the applicants for its undergraduate programs, offering admission to about 1,400 students per year, with the aim of admitting a class of approximately 1,100. Roughly 75 percent of those offered undergraduate admission choose MIT.

No legacy admissions. In admitting students, MIT does not take into consideration whether an applicant has family or other ties to MIT.
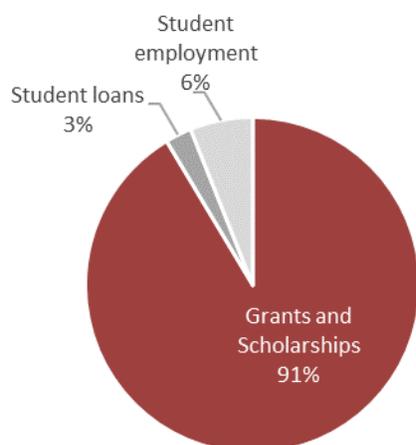
Financial Aid

Principles of MIT Undergraduate Financial Aid

MIT is one of only five U.S. higher education institutions that admit all undergraduate students without regard to their financial circumstances; that award all financial aid based on need; and that meet the full demonstrated financial need of all admitted students. In 2020, **78 percent of MIT seniors graduated with no debt**; of those who did assume debt to finance their education, the median indebtedness at graduation was $15,614.

In 2019-2020, more than **38 percent of MIT undergraduates** received enough financial aid to enable them to attend the Institute **tuition-free**. Approximately 60 percent of MIT undergraduates received an MIT scholarship, averaging $49,801 each. MIT financial aid emphasizes grants rather than loans.

Undergraduate Financial Aid

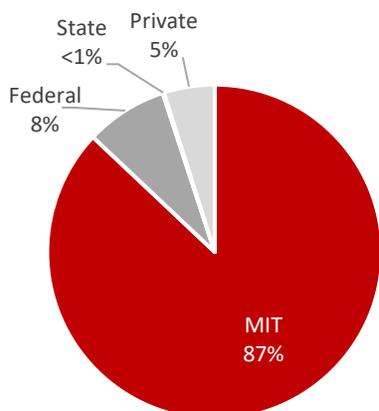### Types of Financial Aid for MIT Undergraduates: 2019-2020

Amounts of Financial Aid for MIT Undergraduates		
Aid Type	**Amount (in U.S. Dollars)**	**Percent of Total**
Grants and Scholarships	154,863,310	91.4%
Student loans	4,313,070	2.5%
Student employment	10,269,925	6.1%
Total	169,446,305	100.0%

Most financial aid received by MIT undergraduates is funded by MIT itself, largely through its endowment, rather than from federal or other governmental funds. In 2019–2020, MIT awarded $137.5M in need-based institutional grants to 2,724 undergraduates with an average family income of $112,027. The median grant was $56,974, or 81 percent of the cost of tuition, fees, room and board.

MIT does participate in the Pell Grant Program, the Federal Direct Loan Program and two campus-based programs: the Federal Supplemental Educational Opportunity Grant, and the Federal Work-Study Program. Approximately 19 percent of MIT undergraduates receive a Pell Grant.

In addition, MIT undergraduates can participate in the Air Force, Army, and Navy ROTC, which provide funding to participants. In addition to Massachusetts, three states allow their residents to receive a state grant while attending MIT: Delaware, Pennsylvania, and Vermont. Most state grants are need-based.

**Sources of Financial Aid for MIT Undergraduates: 2019–2020**

Sources of Financial Aid for MIT Undergraduates		
Aid Source	**Amount (in U.S. Dollars)**	**Percent of Total***
MIT Financial Aid	$147,496,199	87.0%
Federal Financial Aid	$13,420,134	7.9%
State Financial Aid	$206,750	0.1%
Private Financial Aid	$8,323,222	4.9%
Total	**$169,446,305**	**100.0%**

*Total may not add to 100.0% due to rounding

Graduate Financial Aid
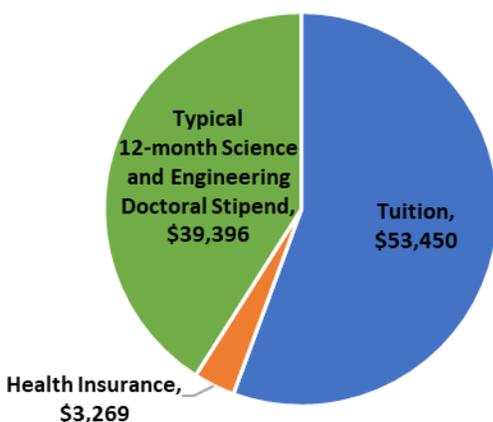
Graduate support varies by department and program. **In general, Ph.D. students at MIT do not pay their tuition out of pocket**, and they receive a stipend to help defray their cost of living. Typically, MIT also pays for their health insurance.

In 2019-2020, only 6.8 percent of graduate and professional students (465 students) took out loans for their education, borrowing an average of $64,135. All graduate student loans totaled $29.8 million, a decrease of about $4.7 million from the prior year.

Students in professional degree programs are more likely to take out loans to cover the cost of their education than are Ph.D. students. Most science and engineering Ph.D. candidates do not take out loans to attend graduate school, because their costs are fully covered by research assistantships (RAs), teaching assistantships (TAs), and/or fellowships.

Support for graduate students comes from a variety of sources. Federal agencies fund competitive fellowships for top graduate students. Fellowships cover a student's tuition at whatever school the student wishes to attend and provide a stipend. MIT also offers fellowships out of its own funds, as do some other private entities. Graduate students are also supported through federal research grants to faculty, which include funding for Research Assistantships – money to cover tuition and stipends for the students working on the faculty member's research project. The federal government also awards traineeships to MIT that support graduate students. Graduate students serving as teaching assistants are paid by MIT.

Graduate student enrollment numbers are determined at the department and program level. Students are admitted based on the availability of faculty and of financial support.

Doctoral Student Support, 2019–2020
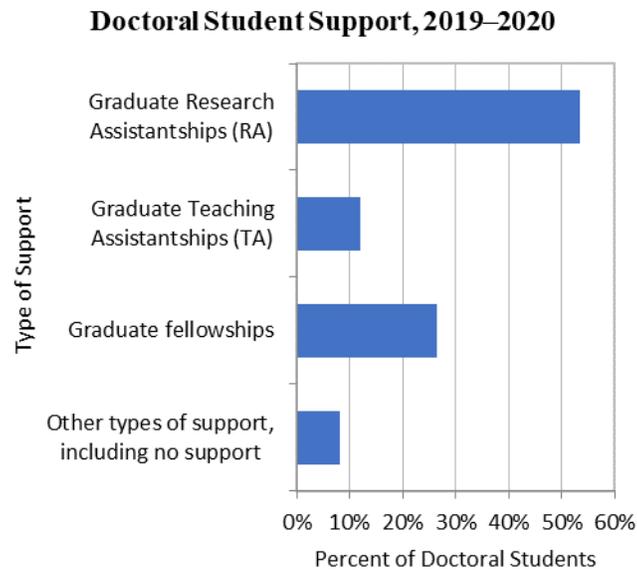
MIT graduate students are quite successful at obtaining selective fellowships, many from federal agencies.

During 2019-2020, the number of students who were supported, at least in part, by fellowships were as follows:

Sponsor	Count
Department of Defense	56
Department of Energy	3
National Institutes of Health	105
NASA	23
National Science Foundation	405
Other Federal Agencies	3
Other U.S. sources	47
Non-U.S. sources	30
MIT Internal	2,590

Note, students may receive fellowships from more than one sponsor, and may receive more than one type of support (RA, TA, fellowship) in an academic year.
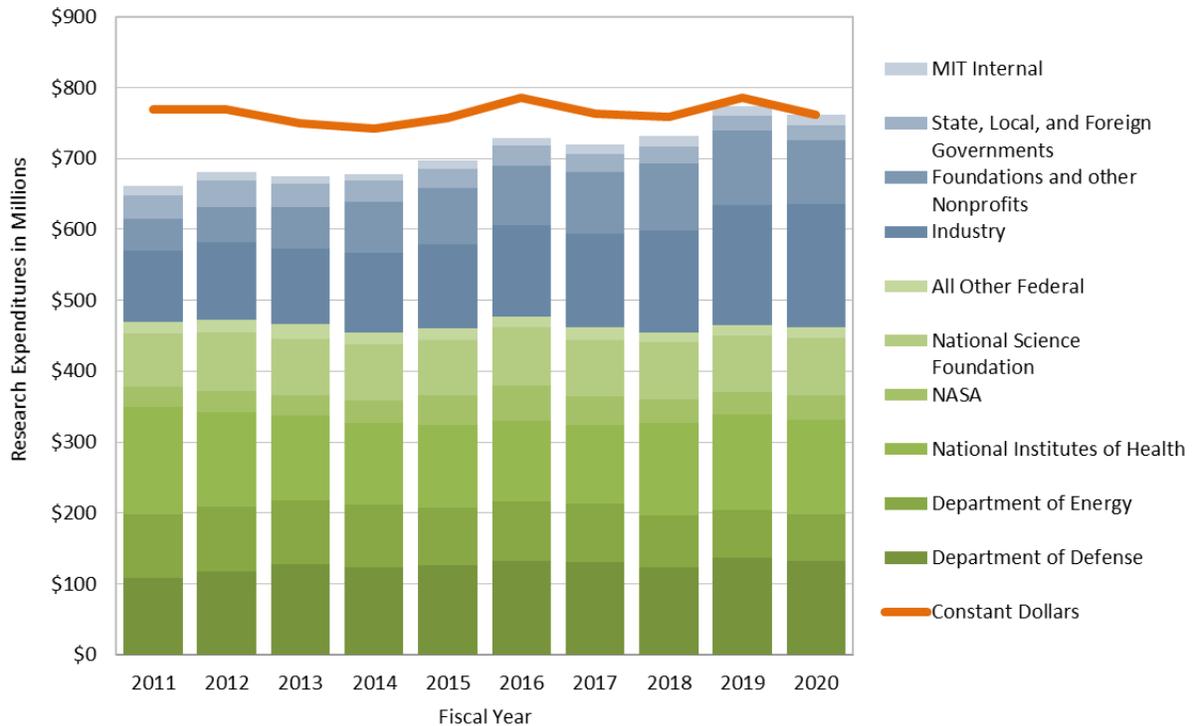
Research

MIT is one of the nation's leading research institutions, and the federal government is the largest funder of MIT research, though the percentage of MIT research financed by the federal government has been declining.

Total Research Expenditures (MIT fiscal year 2020)*

Cambridge Campus	$762.0 million
Lincoln Laboratory	$1,115.8 million

*Totals do not include research performed by campus laboratories for Lincoln Lab or by the Singapore-MIT Alliance for Research and Technology. MIT fiscal year 2020 is July 1, 2019 to June 30, 2020.

Campus Research Expenditures by Prime Sponsor (in thousands)†
MIT Fiscal Years 2011–2020

†Campus-based Broad Institute research expenditures are excluded.
Constant dollars are calculated by using the Consumer Price Index for All Urban Consumers weighted with the fiscal year 2020 equaling 100.
National Institutes of Health data includes expenditures from other Department of Health and Human Services agencies which account for less than 4 percent of expenditures per year.

Campus Research Expenditures by Prime Sponsor MIT FY2020		
Primary Sponsor	**Expenditures (in thousands of U.S. Dollars)**	**Percent of Campus Total**
Department of Defense	131,832	17%
Department of Energy	66,145	9%
National Institutes of Health*	133,015	17%
NASA	34,809	5%
National Science Foundation	81,390	11%
All Other Federal	14,239	2%
Total Federal	461,429	61%
Industry	174,383	23%
Foundations and other Nonprofits	89,969	12%
State, Local, and Foreign Governments	20,596	3%
MIT Internal	15,619	2%
Total Non-Federal	300,568	39%
Campus Total	761,997	100%

*National Institutes of Health data includes expenditures from other Department of Health and Human Services agencies which account for less than 4% of expenditures in FY2020.

MIT encourages undergraduates to engage in research with faculty. One avenue for student engagement is the Undergraduate Research Opportunities Program (UROP), established in 1969 and now widely adopted by other institutions. UROP offers students the opportunity to join a faculty-led research team or to initiate their own research project. Students can choose to participate in UROPs for academic credit, or pay, or as a volunteer. About 90 percent of undergraduates participate in at least one UROP by the time they graduate.

Lab to Market Initiatives at MIT

MIT has long been committed not only to creating knowledge but to putting it into practice. Faculty and students are encouraged to bring their ideas out of the laboratory and into the marketplace. Here is a sampling of programs designed to help them do so.

MIT Technology Licensing Office

The Bayh-Dole Act of 1980 has been critical to moving university discoveries into the marketplace. The law gives universities the patent rights to the results of federally funded research they conduct. According to the [Association of University Technology Managers](), the technology transfer to the marketplace resulting from Bayh-Dole has contributed $1.3 trillion to the economy, and has led to the creation of more than 11,000 start-up companies and 4.2 million jobs over the last four decades.

At MIT, 496 start-up companies have been launched since 1997. A [study]() released in 2015 found that MIT alumni, over their careers, had launched 30,200 active companies as of 2014, employing roughly 4.6 million people and generating roughly $1.9 trillion in annual revenues.

The mission of MIT's Technology Licensing Office (TLO) is to move innovations and discoveries from the lab to the marketplace. The Office's primary goal is not to generate revenue, but to encourage the use of MIT discoveries. In MIT fiscal year 2020 (July 1, 2019 – June 30, 2020), the TLO filed for 486 new U.S. patents, and was issued 433 U.S. patents and 549 international patents. Also in 2020, 32 new companies were launched based on MIT intellectual property (IP), 127 agreements to license MIT IP were executed, and 864 invention disclosures were reported to the TLO by MIT and Lincoln Lab researchers and students. An invention disclosure is a confidential document that is used to determine whether a patent or other IP protection should be sought for the described invention. http://tlo.mit.edu/

The Engine

Launched by MIT in 2016, The Engine offers guidance, space, equipment and financing to new companies working on disruptive technologies. While the current U.S. innovation system is highly optimized to support the success of digital (software) technologies that can typically reach market success in three to five years, it is not structured to support complex, slower-growing concepts (or "Tough Tech") that could end up being hugely significant. Supporting such efforts – the kind that might lead to solutions to challenges in sustainable energy, water and food security, and health – is The Engine's focus. While MIT envisioned and launched The Engine, it is an independent operation and any company engaging in "tough tech" can compete to take advantage of The Engine's programs, regardless of whether they have a connection to MIT. https://www.engine.xyz/

Martin Trust Center for MIT Entrepreneurship

The Martin Trust Center for MIT Entrepreneurship helps MIT students master entrepreneurship by providing them with entrepreneurial frameworks, courses, co-curricular programs, state-of-the-art facilities, and advisory services. Founded in 1990, the Martin Center serves all MIT students, across all schools and all disciplines. https://entrepreneurship.mit.edu/

MIT Deshpande Center for Technological Innovation
Established in 2002, the Deshpande Center helps MIT researchers bring breakthrough products to market and helps new companies get launched. The center awards research grants to faculty members and provides coaching on how to commercialize their inventions and launch startup companies to translate their work into benefits for society. The Deshpande Center model helped inspire the design of the NSF Innovation Corps. https://deshpande.mit.edu/

China Policy

In 2019, MIT announced an enhanced review process for any proposed research collaboration with entities from China, Russia or Saudi Arabia. Ultimate review of such proposals is conducted by the Senior Risk Group composed of the Associate Provost for International Activities, the Vice President for Research, and the General Counsel. At the same time the process was announced, MIT also announced it was no longer accepting research funding from Huawei. https://icc.mit.edu/elevated-risk-review-process

Digital Learning

MIT has been a leader in making its courses available broadly. In 2001, MIT announced the creation of Online Courseware, an online learning initiative that offers a portfolio of free MIT course material.

In 2012, MIT, Harvard University and the University of California Berkeley teamed up to create edX. Through edX, the three institutions deliver online courses that move beyond the standard model of online education that relies on watching video content, instead offering an interactive experience for students. Since the first MITx course was offered through edX in August 2012, more than 4.4 million unique learners have enrolled in MITx courses. Learners come from more than 200 countries. All MITx courses can be accessed for free, but those who wish to earn an MITx certificate must verify their identity and pay a small fee. Through edX, MITx had awarded 242,000 certificates as of July 2020.

MIT's extensive history and expertise with online learning helped smooth the transition to virtual learning when COVID-19 led MIT to cancel in-person instruction in March 2020.

The **MITx MicroMasters** is a professional and academic credential for online learners from anywhere in the world. The program both expands the number of individuals who can obtain an MIT credential and reduces the cost of an MIT graduate degree. To earn the MicroMasters credential, learners must pass an integrated set of MIT graduate-level courses through edX, and one or more proctored exams. This credential is valuable in and of itself, but also it enables credential-holders to apply for an accelerated, on-campus master's degree program at MIT or other universities to receive a traditional master's degree. MITx offers five MicroMasters programs: Supply Chain Management; Data, Economics, and Development Policy; Principles of Manufacturing; Statistics and Data Science; and Finance.

Recent Policy Pieces by MIT President Rafael Reif

Here is a sampling of recent op-eds and other writings by MIT President Rafael Reif on policy issues.

"The 'super wicked problem' of climate change is our Earthshot" L. Rafael Reif, President of MIT, *The Boston Globe* (Apr. 19, 2021), http://bit.ly/ReifClimateChange

"To Compete with China, America Needs the Endless Frontier Act" L. Rafael Reif, President of MIT, *Issues in Science & Technology* (Sept. 8, 2020), http://bit.ly/ReifEFAIssues

"I'm the President of M.I.T. America Needs Foreign Students." L. Rafael Reif, President of MIT, *New York Times* (July 14, 2020) http://bit.ly/ReifForeignStudents

Written testimony for the House Committee on Ways and Means hearing on U.S.-China Trade and Competition, L. Rafael Reif, President of MIT, (Feb. 26, 2020) http://bit.ly/ReifWaysMeans

"China's Challenge Is America's Opportunity" L. Rafael Reif, President of MIT, (Aug. 8, 2018). *New York Times* http://bit.ly/PresReifOpportunity

"A Better Way to Deliver Innovation to the World" L. Rafael Reif, President of MIT, *Washington Post* (May 22, 2015) http://bit.ly/ReifInnovation