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MIT Facts and History

The Massachusetts Institute of Technology, in Cambridge, Mass., was founded in 1861 by William Barton Rogers and admitted its first students in 1865. The event marked the culmination of an extended effort by Rogers, a distinguished natural scientist, to establish a new kind of independent educational institution relevant to an increasingly industrialized America.

According to its charter, MIT was established as "a school of industrial science, and aiding generally, by suitable means, the advancement, development and practical application of science in connection with arts, agriculture, manufactures and commerce." Rogers stressed the pragmatic and practicable. He believed that professional competence was best fostered by coupling teaching and research and by focusing attention on real-world problems. Toward this end, he pioneered the development of the teaching laboratory.

MIT has held to Rogers' vision in the development of the Institute and today MIT is one of the world's outstanding universities. The Institute offers internationally renowned programs and its faculty and staff are called upon by leaders around the world for guidance. Education and research — with relevance to the practical world as a guiding principle — continue to be its primary purpose. MIT is the only private U.S. university that is a land grant, sea grant and space grant institution. MIT is independent, coeducational and privately endowed.

Students

The Institute's student body of 9,947 is a highly diverse group. Students come from all 50 states, the District of Columbia, three territories and 104 foreign countries — some of the best and brightest from the United States and abroad. Fewer than one-quarter of the students who apply are accepted for admission as undergraduates. Forty-five percent of the undergraduates and 14 percent of graduate students are members of U.S. minority groups. The broad international student representation of 2,144 students makes up 8% of the undergraduate and 33% of the graduate population. MIT is 31st among the nation's colleges and universities in the number of foreign students in its student population, according to the National Science Foundation (report #93-302). Countries represented at MIT include Canada, 223; China, 207; Japan, 119; Korea, 104; India, 103; Mexico, 74; Thailand, 63; Taiwan, 57; Germany, 54; Brazil, 53; France, 52; Italy, 52; Singapore, 52; Greece, 50; and Argentina, 49.

Thirty-five percent of MIT's first year students were number one in their high school class.

Student Body Profile (1996–1997)

Undergraduate	4,429	
Graduate	5,518	
Total	9,947 students	
Undergraduate	39% female	61% male
Graduate	24% female	76% male

Members of U.S. minority groups: 2,755

	Undergraduate	Graduate
African American	286	136
Asian American	1,253	437
Hispanic American	427	139
Native American	33	8
	1,999 (45%)	756 (14%)

(These figures may not precisely reflect the population because they are self-reported and not all students choose to provide this information.)

Alumni and Alumnae

MIT's 90,000 alumni and alumnae are connected to the Institute through over 96 local clubs as well as through their graduating classes and departmental organizations. It is an active group, with 4,000 graduates volunteering their services on committees and the MIT Corporation (board of trustees). MIT graduates are spread out across the world with 87% residing in the U.S.

Faculty, Staff and Trustees

MIT's faculty is renowned for its dedication to undergraduate students and teaching. Together with the staff and administration, there is a strong organization that supports the teaching and research efforts.

The Institute is headed by the president, Charles M. Vest, who reports to the board of trustees, known as the Corporation. This group includes approximately 75 leaders in education, industry, science, engineering and other professions. There are approximately 20 emeritus members.

Faculty/Staff 1996–1997

Faculty	896
Other academic and instructional staff	697
Research staff and research scientists	2,575
Administrative staff	1,239
Support staff	1,487
Service staff	781
Medical staff	150
Senior officers	9
Total Campus Faculty and Staff	7,834

Professor Mario Molina shared the 1995 Nobel Prize in chemistry for showing that chlorofluorocarbon (CFC) gases in spray cans and air conditioners can imperil the fragile ozone layer that protects the world from dangerous ultraviolet radiation of the sun.

In addition, 666 graduate students serve as teaching assistants or instructors and 2,092 graduate students serve as research assistants.

MIT Lincoln Laboratory employs about 2,050 people in its work, principally at Hanscom Air Force Base in Lexington, Massachusetts.

Faculty Profile

71 percent tenured
309 endowed professorships

Faculty Honors:
11 Nobel Prizes (4 are retired)
209 American Academy of Arts and Sciences
86 National Academy of Engineering (38 are retired)
98 National Academy of Sciences (47 are retired)
20 Institute of Medicine (6 are retired)
8 National Medals of Science (6 are retired)
1 Pulitzer Prize
4 Kyoto Prizes (3 are retired)
1 Japan Prize

Degrees

MIT awarded 2,280 degrees in 1997:
247 doctorate degrees
999 master's degrees
11 professional engineer degrees
1,023 bachelor of science degrees

Fields of Study

At MIT there is a large variety of fields of study, from science and engineering to the arts. Many interdepartmental programs, laboratories and centers cross traditional boundaries and encourage creative thought and research. There are five academic schools at MIT, organized into departments and a variety of other degree-granting programs. In addition, there are several interdisciplinary programs that offer degrees.

School of Architecture and Planning
Architecture
Program in Media Arts and Sciences
Urban Studies and Planning

School of Engineering
Aeronautics and Astronautics
Chemical Engineering
Civil and Environmental Engineering
Electrical Engineering and Computer Science
Materials Science and Engineering
Mechanical Engineering
Nuclear Engineering
Ocean Engineering

School of Humanities and Social Science
Anthropology/Archaeology
Economics
Foreign Languages and Literatures
History
Linguistics and Philosophy
Literature
Music and Theater Arts
Political Science
Program in Science, Technology, and Society
Program in Writing and Humanistic Studies

Sloan School of Management
Management

School of Science
Biology
Brain and Cognitive Sciences
Chemistry
Earth, Atmospheric and Planetary Sciences
Mathematics
Physics

Whitaker College of Health Sciences and Technology
Division of Toxicology
Harvard-MIT Division of Health Science and Technology

Interdepartmental Laboratories, Centers and Programs

MIT has more than 100 specialized labs, centers and programs representing a broad range of fields — from manufacturing and productivity to biomedical research to artificial intelligence. These labs bring together faculty, students, and staff from different departments to attack complex problems. Their interdisciplinary focus fosters new creative concepts, many of which result in practical applications.

Many of these centers have helped to establish MIT's reputation for cutting edge research in pursuit of solutions to significant problems. Research has led to developments in new drugs and medical techniques, computing innovations, and the technical basis for much of our national defense.

Aga Khan Program for Islamic Architecture
Artificial Intelligence Laboratory
Bates Linear Accelerator
Biotechnology Process Engineering Center
Center for Advanced Engineering Study
Center for Advanced Visual Studies
Center for Biological and Computational Learning
Center for Biomedical Engineering
Center for Cancer Research
Center for Competitive Product Development
Center for Computational Research in Economics and Management Science
Center for Coordination Science
Center for Energy Policy Research
Center for Entrepreneurship
Center for Environmental Health Science
Center for Industrial Performance
Center for Information Systems Research
Center for International Studies
Center for Learning and Memory
Center for Materials Science and Engineering
Center for Organizational Learning
Center for Real Estate
Center for Space Research
Center for Technology, Policy and Industrial Development
Center for Transportation Studies
Clinical Research Center
Council on Primary and Secondary Education
Decision Sciences Program
Energy Laboratory
Francis Bitter Magnet Laboratory
Haystack Observatory
Industrial Performance Center
International Center for Research on the Management of Technology
International Financial Services Research Center
Laboratory for Computer Science
Laboratory for Electromagnetic and Electronic Systems
Laboratory for Information and Decision Systems
Laboratory for Manufacturing and Productivity
Laboratory for Nuclear Science
Leaders for Manufacturing Program
Materials Processing Center
Media Laboratory
Michigan-Dartmouth-MIT Observatory, Kitts Peak, AZ

Millstone
Nuclear Reactor Laboratory
Office of Educational Opportunity Programs
Operations Research Center
Plasma Science and Fusion Center
Program in Environmental Energy Education and Research
Program on the Pharmaceutical Industry
Research Laboratory of Electronics
Sea Grant College Program
Spectroscopy Laboratory
System Design and Management Program
System Dynamics Group
Technology and Development Program
Technology and Policy Program
Technology, Management and Policy Program
Wallace Observatory
Women's Studies Program

Academic Affiliations

The Charles Stark Draper Laboratory

Formerly MIT's Instrumentation Laboratory, Draper Laboratory became an independently operated, nonprofit research and educational organization in 1973. MIT and Draper Laboratory still collaborate in research and teaching in areas such as: guidance, navigation and control; computer science; data and signal processing; material sciences; integrated circuitry; computational sciences; information systems; and underwater vehicle technologies.

Dibner Institute for the History of Science and Technology and the Burndy Library

Established at MIT in 1992 as a center for advanced research, the Dibner Institute supports the work of resident scholars and graduate students in the history of science and technology. A consortium of MIT, Boston University, Brandeis and Harvard, the Institute's resources include the Burndy library, one of the world's finest collections of historical scientific books, manuscripts, instruments and works of art.

Harvard-MIT Division of Health Sciences and Technology

A major collaboration between Harvard University and MIT, this division of MIT's Whitaker College applies science and technology to human health needs. It directs the complementary strengths of both universities to the education of physicians, medical engineers and medical physicists, and to research on important health and medical problems. A number of the division's interdisciplinary research programs collaborate with faculty at Harvard teaching hospitals. Students in the division may select a program in biomedical sciences leading to an M.D. degree from Harvard Medical School, or may pursue Ph.D. degrees in medical engineering, medical physics, or speech and hearing sciences from MIT or Harvard.

Howard Hughes Medical Institute

The Howard Hughes Medical Institute (HHMI) is a scientific and philanthropic organization that conducts biomedical research in collaboration with universities, academic medical centers, hospitals and other research institutions throughout the country. Nine HHMI investigators hold faculty appointments at MIT.

Northeast Radio Observatory Corporation
A consortium of twelve universities and institutions in the northeastern United States, this program promotes radio astronomy research. Its principal facility is MIT's Haystack Observatory, in Westford, Massachusetts. The Observatory is also engaged in geodetic research, using Very Long Baseline Interferometry, and in observations of the earth's upper atmosphere, using incoherent scatter radar.

ROTC (Reserved Officer Training Corps) Programs
Air Force, Army and Navy ROTC training programs are run at MIT, serving students from MIT, Harvard and Tufts Universities. Air Force and Army training programs also include Wellesley College students. Military training has existed at MIT since the first students arrived in 1865, and in 1917, MIT established the first Army ROTC unit in the country. Over 12,000 officers have been commissioned from MIT, with more than 150 reaching the rank of general or admiral. These programs provide students with the opportunity to become commissioned military officers upon graduation and may provide scholarship money to pay for their college education.

Whitehead Institute for Biomedical Research
An independent basic research and teaching institution affiliated with MIT, the Whitehead Institute carries out research in developmental biology and the emerging field of molecular medicine. Faculty at the Whitehead Institute teach at MIT, and MIT graduate students conduct research and receive training in Whitehead Institute laboratories.

Whitehead Institute/MIT Center for Genome Research
The Whitehead Institute/MIT Center for Genome Research is the largest genome center sponsored by the National Center for Human Genome Research of the National Institute of Health. Recent achievements include the creation of powerful new maps of the human and mouse genomes; the development of novel automation technologies; and the design of informatics strategies that make the Whitehead/MIT Genome Center's data freely available through the World Wide Web to all interested scientists.

MIT-Woods Hole Oceanographic Institution Joint Program in Oceanography and Applied Ocean Science and Engineering
MIT and the Woods Hole Oceanographic Institution jointly offer doctor of science and doctor of philosophy degrees in chemical oceanography, marine geology, marine geophysics, physical oceanography, applied ocean science and engineering, and biological oceanography. They also offer master's and professional degrees in some disciplines.

Wellesley-MIT Exchange Program
Through this program, students may cross-register for any courses at the other school, expanding the educational opportunities for participating students. Students also earn, through the Wellesley Education Department, Massachusetts certificates to teach a number of courses at the elementary and secondary level.

Cross-Registration at Other Institutions
MIT has cross-registration arrangements with several area schools, enabling qualified MIT students to take courses at Harvard University, Boston University's African Studies Program, Brandeis University's Florence Heller Graduate School for Advanced Studies in Social Welfare and Tufts University's School of Dental Medicine. MIT also has a junior year abroad program and a domestic year away program where students may study at another institution in the U.S. or abroad.

MIT Teaching Firsts

MIT has long believed that professional competence is best fostered by coupling teaching with research and by focusing attention on real-world problems. This hands-on learning approach has made MIT a consistent leader in the outside surveys of the best college programs in the nation. MIT was the first university in the nation to have a curriculum in these fields: architecture (1865), electrical engineering (1882), sanitary engineering (1889), naval architecture and marine engineering (1895), aeronautical engineering (1914), meteorology (1928), nuclear physics (1935), and artificial intelligence (1960s). More than 4,000 MIT alumni and alumnae are professors at colleges and universities around the world. MIT professors have written some of the best-selling textbooks of all time, such as *Economics* by Paul A. Samuelson. Following are notable milestones in teaching at MIT over the past three decades:

1969: The Undergraduate Research Opportunities Program (UROP), the first of its kind, is launched. The program, which enables undergraduates to work directly with faculty members in professional research, subsequently is copied in many universities throughout the world. In 1996, 2,800 MIT students participated in UROP.

1970: The Harvard-MIT Program in Health Sciences and Technology is established to focus science and technology on human health needs and to train physicians with a strong base in engineering and science.

1971: MIT holds its first Independent Activities Period, a January program that emphasizes creativity and flexibility in teaching and learning. Over 600 activities are offered including design contests, laboratory projects, workshops, field trips, and courses in practical skills.

1975: MIT's Department of Materials Science and Engineering pioneers a multidisciplinary academic program that combines the study of metallurgy, ceramics and polymers.

1977: MIT organizes the Program in Science, Technology and Society to explore and teach courses on the social context and consequences of science and technology — one of the first programs of its kind in the U.S.

1981: MIT launches Project Athena, a $70 million program to explore the use of computers in the educational process. Digital Equipment Corporation and IBM each contribute $25 million worth of computers.

1983–1990: The Athena Language Learning Project brings together language teachers and computer scientists to pioneer the development of interactive video to immerse students in the language, cities and character of other cultures. The work sets the standard for a new generation of language learning tools.

1984: The School of Architecture and Planning creates a program in real estate development, the first at the university level in the United States.

1984: MIT establishes the Media Laboratory, bringing together several pioneering educational programs in computer music, film, graphics, holography, lasers, photography, television and other media technologies.

1985: MIT, with a major grant from the National Science Foundation, establishes the Biotechnology Process Engineering Center to train professionals to develop basic concepts for commercial applications of modern biology.

1986: MIT initiates its Freshman Advisor Seminars, combining advising and mentoring with academic instruction designed to engage students in active weekly discussion and hands-on learning.

1991: MIT establishes the MacVicar Faculty Fellows Program, named in honor of the late Professor Margaret A. MacVicar, to recognize outstanding contributions to teaching. Up to eight members of the faculty are selected annually to receive a special fund for ten years to develop new ways to enrich the undergraduate learning experience.

1992: MIT establishes the Laboratory for Advanced Technology in the Humanities to extend its pioneering work in computer/video-assisted language learning to other disciplines, starting with a multi-media archive for the study of the text and performance of Shakespeare's plays.

1993: In recognition of the increasing importance of molecular and cell biology, MIT becomes the first college in the nation to add biology to its required courses of physics, mathematics, chemistry and the humanities.

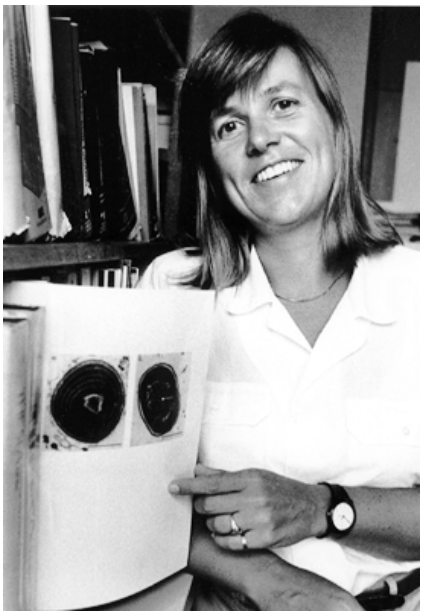
1995: MIT's Political Science Department establishes the Washington Summer Internship Program to provide undergraduates the opportunity to apply their scientific and technical training to public policy issues.

MIT Research Firsts

Following are selected research achievements of MIT faculty over the last three decades:

1969: Ioannis V. Yannas begins work on developing artificial skin — a material used successfully to treat burn victims.

1970: David Baltimore reports the discovery of reverse transcriptase, an enzyme that catalyzes the conversion of RNA to DNA. The advance, which led to a Nobel Prize in 1975 for Baltimore, provided a new means for studying the structure and function of genes.



1988: Sallie Chisholm uses new technology to find microscopic life form.

1973: Jerome Friedman and Henry Kendall, with Stanford colleague Richard Taylor, complete a series of experiments confirming the theory that protons and neutrons are made up of minute particles called quarks. The three received the Nobel Prize in 1990 for their work.

1974: Samuel C.C. Ting, Ulrich Becker and Min Chen discover the "J" particle. The discovery, which earned a Nobel Prize for Ting in 1976, points to the existence of one of the six postulated types of quarks.

1975: With the aid of NASA's space shuttles, Laurence Young begins research on the effects of weightlessness on humans. The work provided a basic understanding of motion sickness.

1975–1982: Joel Moses develops the first extensive computerized program (MACSYMA) able to manipulate algebraic quantities and perform symbolic integration and differentiation.

1976: Har Gobind Khorana and research team complete chemical synthesis of the first man-made gene fully functional in a living cell. The culmination of 12 years' work, it established the foundation for the biotechnology industry. Khorana won the Nobel Prize in 1968 for other genetics work.

1977: Phillip Sharp discovers the split gene structure of higher organisms, changing the view of how genes arose during evolution. For this work, Sharp shared the 1993 Nobel Prize.

1977: Ronald L. Rivest, Adi Shamir, and Leonard Adleman invent the first workable public key cryptographic system. The new code, which is based on the use of very large prime numbers, employs published keys, allows secret communication between any pair of users, and has so far proved unbreakable.

1979: Robert Weinberg reports isolating and identifying the first human oncogene — an altered gene that causes the uncontrolled cell growth that leads to cancer.

1981: Alan Guth publishes the first satisfactory model of the universe's development in the first 10^{-32} seconds after the "Big Bang."

1982: Alan Davison discovers a new class of technetium compounds leading to development of the first diagnostic technetium drug for imaging the human heart. Recent studies have shown that several compounds in this class can locate metastatic breast cancer and other cancers.

1985: Susumu Tonegawa describes the structure of the gene for the receptors — "anchor molecules" — on the white blood cells called T lymphocytes, the immune system's master cells. In 1987, Tonegawa received the Nobel Prize for similar work on the immune system's B cells.

1986: Stephen Benton and his students at the Media Laboratory invent the alcove hologram that projects a computer-generated 3-D image — an automobile "parked" in mid-air — into space.

1993: Rich and Zhang's protein fragment forms a visible membrane when exposed to a salt solution.

1988: Sallie Chisholm and her associates report they have found a form of ocean plankton that may be the most abundant single species on earth.

1990: Michael Cima successfully adapts the technique called metal organic deposition to use in creating ultra-thin films of superconducting materials.

1990: Julius Rebek Jr. and his associates create the first self-replicating synthetic molecule.

1991: Cleveland heart doctors begin clinical trials of a laser catheter system for microsurgery on the arteries that is largely the work of Michael Feld and his associates at MIT.

1993: Three important scientific discoveries are reported at MIT this year. H. Robert Horvitz, along with scientists at Massachusetts General Hospital, discover an association between a gene mutation and the inherited form of Lou Gehrig's disease.

David Housman joins colleagues at other institutions in announcing a successful end to the long search for the genetic defect linked with Huntington's disease.

Alexander Rich and post-doctoral fellow Shuguang Zhang report the discovery of a small protein fragment that spontaneously forms into membranes, and is expected to find uses in drug development, biomedical research and in understanding Alzheimer's and other diseases.

1994: MIT engineers develop a robot that can “learn” exercises from a physical therapist, guide a patient through them, and — for the first time — record biomedical data on the patient’s condition and progress.

1995: Scientists at the Whitehead Institute for Biomedical Research and MIT create a map of the human genome that will allow them to begin the final phase of the Human Genome Project. This powerful map contains more than 15,000 distinct markers and covers virtually all of the human genome.

1996: A group of scientists at MIT’s Center for Learning and Memory, headed by Matthew Wilson and Nobel Laureate Susumu Tonegawa, using new genetic and multiple-cell monitoring technologies, demonstrate how animals form memory about new environments.

1997: MIT physicists create the first atom laser, a device that is analogous to an optical laser but emits atoms instead of light. The resulting beam of atoms can be focused to a pinpoint or made to travel long distances with minimal spreading. The laser could have a variety of applications in fundamental research and in industry.