

## **Provost**

Academic year 2006–2007 was marked by a number of changes among the administrative leadership positions at MIT and by new initiatives related both to the internal life of the Institute and to the advancement of our academic programs, including some with international dimensions. The Institute also began a new phase of campus development that includes the construction of major academic facilities to accommodate our core research and educational activities. This report attempts to describe some of the important events and accomplishments in these and other areas of the Institute.

## **People**

Claude Canizares, Bruno Rossi professor of physics and associate provost, began his appointment as vice president for research and associate provost. He has overall responsibility for research policy at the Institute, and oversight of several major interdepartmental laboratories and centers and of MIT Lincoln Laboratory.

Lorna Gibson, Matoula S. Salapatas professor of materials science and engineering, began her appointment as associate provost. Professor Gibson assists the provost in academic administration, with primary responsibilities for academic and space planning, and for oversight of faculty affairs, including faculty development and grievances.

Steven Lerman, Class of 1922 distinguished professor of civil and environmental engineering, served the remainder of Lorna Gibson's term as chair of the MIT Faculty in AY2007. It was also announced that Professor Lerman would become the next dean for graduate students effective July 2007, succeeding Dr. Isaac Colbert, who retired at the end of AY2007 after many years of exceptional service.

Bish Sanyal, Ford International professor of urban development and planning, was appointed chair of the MIT Faculty for a two-year term effective AY2008.

Professor Nancy Hopkins stepped down as the chair of the Faculty Diversity Council and Professor Barbara Liskov was named interim cochair (along with Provost Reif) of the council pending the appointment of an associate provost for faculty equity, a new position that will provide a central focus for faculty diversity and equity issues.

Deborah K. Fitzgerald was appointed Kenan Sahin dean of the School of Humanities, Arts, and Social Sciences in January 2007, following her brief term as interim dean. An historian of technology in the Program in Science, Technology, and Society, Professor Fitzgerald had previously served as associate dean of the school.

Three school deans stepped down from their positions at the end of AY2007, each having provided several years of outstanding leadership, inspiration, and stability. Thomas Magnanti concluded his appointment as dean of the School of Engineering, and will be succeeded by Subra Suresh, Ford Professor of engineering in the Department of Materials Science and Engineering. Richard Schmalensee stepped down as dean of the

MIT Sloan School of Management, and Steven Eppinger, General Motors Leaders for Manufacturing professor in the Sloan School and professor of engineering systems, as well as a deputy dean in Sloan, was appointed interim dean until a new dean is identified. Robert Silbey concluded his appointment as dean of the School of Science, and will be succeeded by Marc Kastner, Donner professor of science and head of the Department of Physics.

Philip Khoury, who completed his first year as associate provost, announced that Lori Gross, director of the Museum Loan Network at MIT, will become director of arts initiatives and advisor to the associate provost in July 2007. Doreen Morris continued as assistant provost, and Douglas Pfeiffer was appointed assistant provost for administration. Janet Fischer transferred from her position as special assistant in the provost's office to the Department of Electrical Engineering and Computer Science.

Theresa M. Stone, a member of the MIT Corporation for several years who has served on its executive and the development committees, has also been chair of the MIT Investment Management Company and is an alumna of MIT's Sloan School of Management, was appointed executive vice president and treasurer.

Jeffrey L. Newton, formerly dean for resource development and alumni relations at Harvard Medical School, was appointed vice president for development.

R. Gregory Morgan, formerly the comanaging partner of the Los Angeles law firm of Munger, Tolles & Olson LLP, joined MIT as vice president and general counsel.

Deborah Loeb Bohren, formerly executive vice president at the Washington, DC, public affairs firm of Powell Tate, was appointed vice president for external affairs.

Michelle D. Christy, previously director of the Office of Research and Project Administration at Princeton University, was appointed director of MIT's Office of Sponsored Programs.

There was one change in the ranks of active Institute Professors, as Mildred Dresselhaus retired at the end of AY2007 and became Institute Professor emeritus. We were greatly saddened this year by the deaths of retired senior vice president William Dickson; Professor Vernon Ingram of the Department of Biology; Institute Professor emeritus and former provost Francis Low; and Professor Stephen Meyer of the Department of Political Science.

### **Academic Programs**

Many new developments transpired in the academic areas during AY2007. Described below are some of the most prominent activities. Please refer to the separate reports of individual academic units for detailed information about these areas.

Building on nearly a decade of research and educational collaboration between MIT and Singapore through the Singapore-MIT Alliance, plans developed this year to establish a Singapore-MIT Alliance for Research and Technology (SMART) Center, which will be

based in Singapore under the auspices of its National Research Foundation. This will be MIT's first research partnership of this kind outside Cambridge, MA, and will represent the Institute's largest international research endeavor to date in terms of the numbers of faculty, researchers, and students expected to participate in the center's activities. Research at the center is expected to focus on a number of areas, including biomedical science, water resources and the environment, interactive digital media, and scientific and engineering computation. Plans call for MIT faculty, graduate students, and research staff to be in residence at the center for various lengths of time, with reciprocal visits to MIT by counterparts from Singapore. We are currently in the process of formalizing the SMART agreement.

President Hockfield announced the establishment of the MIT Energy Initiative (MITEI), following the previous year's recommendations of a faculty council that had been asked to suggest ways in which MIT could best address the world's energy challenges. Ernest J. Moniz, the Cecil and Ida Green professor of physics and engineering systems and codirector of the Laboratory for Energy and the Environment, serves as the director of MITEI; Robert C. Armstrong, the Chevron professor and head of the Department of Chemical Engineering, is the codirector. Over the next several years, MITEI is expected to coordinate the existing energy-related activities across the Institute and to develop specific plans for an eventual major center on campus devoted to energy research and education. The center is envisioned as a multidisciplinary enterprise that will include researchers and educators from all of the Institute's five schools, and will seek to develop partnerships with other universities, government agencies, and industry leaders to address global energy challenges.

A new program for Graduate Education in Medical Sciences (GEMS) was introduced this year as a result of MIT's receipt of a GEMS award from the Howard Hughes Medical Institute. This program provides PhD students in biological science departments with the opportunity to integrate medical knowledge into their training. The first class of six GEMS students was selected from the existing cohort of PhD students in the schools of Science and Engineering. The GEMS curriculum includes a clinical course of study that connects clinical medicine with basic research in biology, and the overall program is designed to fit within the normal timeframe needed to complete a PhD. The GEMS program is administered within the Harvard-MIT Division of Health Sciences and Technology.

Biological Engineering (BE) was granted department status, designated as Course 20, following supportive votes by the Committee on the Curriculum and the Faculty Policy Committee. BE began in 1998 as a division within the School of Engineering, and established an undergraduate major in 2005.

Following a report issued this year by the ad hoc committee to review the structure of the MIT neuroscience program, an Advisory Council on Neuroscience was established in order to bring greater coherence to the different units at MIT that are involved in neuroscience research and education. This council, which reports to the provost, is chaired by associate provost Lorna Gibson, and includes the dean of science as well as members of the departments of Biology and of Brain and Cognitive Sciences, the

McGovern Institute for Brain Research, and the Picower Institute for Learning and Memory. The council has responsibility for overseeing all faculty recruitment and hiring in neuroscience, and for fostering communication and collaboration among the existing and emerging groups that work in this expanding area.

Senator Edward M. Kennedy of Massachusetts delivered the 2007 Karl Taylor Compton Lecture. The Compton lecture series was established in 1957 to honor the late Karl Taylor Compton, who served as president of MIT from 1930–1948 and as chairman of the Corporation from 1948–1954. Senator Kennedy addressed a number of national issues related to science and technology from his perspective of over 40 years in public service.

In April, the first-ever Cambridge Science Festival took place over several days, involving a series of events and exhibits promoting the excitement of scientific discovery and showcasing the wide range of science and technology resources and opportunities available in Cambridge. The festival was conceived by the MIT Museum, which took a leading role in organizing the program in partnership with the City of Cambridge, Cambridge Public Schools, and other local institutions. Festival events took place on the MIT campus as well as at a variety of Cambridge locations. Based on the great popular success of this first festival, preliminary plans are already under way for a repeat performance in 2008, with a likelihood of the festival becoming a recurring MIT-Cambridge event.

## **Facilities**

The construction of a new facility for the Physics Department within the Building 6 courtyard was essentially brought to completion. The new Green Center will serve to consolidate the many activities of the department within a single location. In addition, the facility provides a prominent entrance for the Department of Materials Science and Engineering on the first floor of Building 6, as well as new lab space for the George R. Harrison Spectroscopy Laboratory.

The Institute's continuing commitment to renew its facilities was reflected by the announcement of a new phase of campus development that will include the construction of three major academic buildings. Ground preparations began in the spring for the construction of a new building that will connect with and expand the existing Media Laboratory facility in the Wiesner Building and provide a locus for improved collaboration between the lab and the School of Architecture and Planning. The new Media Lab will house the Design Lab, the Center for Advanced Visual Studies, and the Visual Arts Program, as well as the Program in Comparative Media Studies. The new Media Lab facility is scheduled to be completed in late 2009.

Groundbreaking took place in May for a new building for the MIT Sloan School of Management, which will be located adjacent to the current Sloan headquarters at 50 Memorial Drive. This new facility, which is scheduled to open in 2010, will allow the Sloan faculty and educational programs to unite within a single area and will provide significant improvements to classroom and study space in particular. The existence of the new facility will in turn relieve some of the space constraints experienced by other academic units in the east campus area. Finally, plans are under development for a new

building to house the Center for Cancer Research, coupled with related bioengineering activities, on a proposed site adjacent to the biology building near the intersection of Vassar and Main Streets. This new facility will bring together scientists and engineers for new forms of collaboration related to the advancement of cancer diagnosis and therapy. A foundational gift from MIT alumnus and trustee David H. Koch has kicked off fundraising for the building.

Construction continued on a new graduate student residence at 235 Albany Street, which is scheduled for completion in 2008. Renovations proceeded on the western section of Vassar Street, which will bring upgraded lighting, additional trees, and improved overall landscaping to this area of campus. This project will result in an enhanced urban environment for pedestrians as well as bicyclists.

### **Task Force and Committee Activities**

Following more than two years of a comprehensive review of the Institute's undergraduate core curriculum, the Task Force on the Undergraduate Educational Commons released a report that recommended several changes affecting the General Institute Requirements in mathematics, science, engineering, and the humanities. The task force pointed out that the tremendous growth in the body of scientific and technical knowledge over recent decades poses challenges to core curricular structures. The provision of a rigorous and innovative undergraduate education in science and engineering must remain balanced with a solid grounding in humanities, arts, and social sciences. The report also called for more opportunities for undergraduate students to have international educational experiences by expanding existing successful programs and by creating new strategies particularly suited to MIT's educational focus. The report is now awaiting the MIT Faculty's endorsement before the report's recommendations can be refined by the Committee on the Undergraduate Program.

A working group convened by President Hockfield to address the issues raised by the report of the Task Force on Medical Care for the MIT Community completed its work in March 2007, successfully addressing essentially all of the report's recommendations. New resources for personnel and programs were dedicated to the Medical Department, which translated into increased clinical staffing; improved services in mental health, dental, and wellness programs; and the development of new tools for quality assessment. The Institute also increased the share of health insurance costs it bears on behalf of its employees. A final report is available at <http://web.mit.edu/taskforce/medical/final-report.html>.

Plans were announced this year to establish a new committee whose charge will be to study the effects of race on minority faculty careers. This committee will look specifically at the connections that race may have to recruitment, career advancement, and general institutional quality of life experienced by minority faculty at MIT. The president and the provost are working with a variety of faculty and staff to organize this new committee.

The panel to review the Dr. Martin Luther King, Jr. Visiting Professor and Scholar Program released its report in December. The report made several important recommendations for clarifying the goals and operations of this 10-year-old program,

and for connecting it with the Institute's overall efforts to increase the diversity of its academic community. When appointed, the new associate provost for faculty equity will be asked to maximize the awareness of the MLK program's goals among faculty and administrators, and to integrate the program into other institutional strategies for strengthening the recruitment and retention of underrepresented minorities on the faculty.

A year-long investigation by the Department of Defense concluded that allegations of research misconduct involving members of the Lincoln Laboratory research staff were unsubstantiated. The research in question involved the evaluation of software associated with missile defense systems. Based on this finding, the provost informed the MIT faculty and Lincoln Laboratory staff of his conclusion that the Lincoln Laboratory researchers had not engaged in misconduct, bringing to conclusion a long and difficult process.

A new International Advisory Committee was established to evaluate and support MIT's increasing international activities in research and education and to ensure that these activities serve the Institute's core mission. International research partnerships are critical to MIT's leadership in the global environment, as are connections with the best students from all parts of the world. The committee will focus in part on increasing opportunities for MIT students to gain diverse international experiences throughout their MIT careers. The committee is cochaired by Claude Canizares and Philip Khoury, and will report regularly to the president, the provost, and the Faculty Policy Committee.

## **Faculty**

At the end of AY2007, 14 faculty members retired from MIT.

Faculty recruitment continued at a strong pace in AY2007, with 36 new untenured and three tenured appointments. Of these, 14 are women and two are members of minority groups. Also this year, 26 faculty members were awarded tenure within MIT.

The James R. Killian, Jr., Faculty Achievement Award is the highest honor bestowed by the MIT faculty on one of its own members. It was established in 1971 "to recognize extraordinary professional accomplishments by full-time members of the MIT faculty." In 2006–2007, the Killian Award was won by Professor H. Robert Horvitz of the Department of Biology. Professor Horvitz, a Nobel laureate, is the David H. Koch professor of cancer biology and a Howard Hughes Medical Institute investigator.

The Harold E. Edgerton Faculty Achievement Award is the highest honor bestowed by the MIT faculty on one of its own junior faculty members. The Edgerton Award, a tribute to the late beloved inventor and photographer "Doc" Edgerton, recognizes exceptional distinction in teaching and research. The 2007 winner of the Edgerton Award was Professor Nergis Mavalvala of the Department of Physics.

Five faculty members were appointed as Margaret MacVicar Faculty Fellows this year in recognition of their outstanding contributions to the quality of undergraduate education at MIT. These awardees were Yoel Fink, Department of Materials Science and Engineering; Jonathan Gruber, Department of Economics; Charles Leiserson, Department of Electrical Engineering and Computer Science; James Orlin, Sloan School of Management; and David Wallace, Department of Mechanical Engineering. These additions bring the total number of active fellows to 42, with 28 emeritus fellows, who together form a small academy of scholars committed to excellent teaching and innovation in education.

The Dr. Martin Luther King, Jr. Visiting Professor Program was established in 1995 to recognize the many contributions of outstanding minority scholars in the academy, to enhance their scholarship through intellectual interactions with MIT peers, and to enrich the intellectual life of MIT through their participation in MIT research and academic programs. The 2006–2007 Dr. Martin Luther King, Jr. visiting professors were: William Harris, Urban Studies and Planning; Dale Joachim, Media Arts and Sciences; Ainissa G. Ramirez, Materials Science and Engineering; Akalu Tefera, Mathematics; and Dwight Williams, Nuclear Science and Engineering. In addition, three visiting scholars were sponsored by the program: Frank Espinosa, Media Arts and Sciences and Writing and Humanistic Studies; Eugene “Gus” Newport, Urban Studies and Planning; and Wilton Virgo, Chemistry.

### **Graduate Student Fellowships**

In AY2007 the Presidential Graduate Fellowship program awarded 119 fellowships across many of MIT’s academic departments, up from 108 in AY2006. Following is a list of those fellowships which are named for individual and corporate donors, and a table showing the distribution of fellowships across the academic areas.

- Akamai Technologies, Inc. (Mathematics and EECS)
- Homer A. Burnell (Architecture and Urban Planning)
- Richard A. Denton
- Robert T. Haslam (Chemistry and Chemical Engineering)
- J. Kenneth Jamieson
- Grayce B. Kerr Fund in honor of Charles M. Vest
- The Kurtz Family Foundation in honor of Charles M. Vest
- William M. Layson (Physics)
- Edward H. Linde (Civil and Environmental Engineering)
- Curtis Marble
- Samuel H. and Luleta Maslak
- Momenta Pharmaceuticals
- The Picower Foundation in honor of Norman B. Leventhal

- 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)
- Craig and Rose Tedman for Robert M. Rose
- Edward Clark Walsh (Chemical Engineering)

#### Graduate Student Fellowships, by School/Unit

School/Unit	AY2006	AY2007
Architecture and Planning	15	15
Engineering	27	29
Humanities, Arts, and Social Sciences	20	22
MIT Sloan School of Management	3	3
Science	40	46
VP for Research	3	4
<b>Total</b>	<b>108</b>	<b>119</b>

In addition, five students (one in each school) held Provost's Women and Minority Fellowships. The School of Engineering allocated the Lemelson Foundation Fellowships to the Presidential Fellowship Program. The Lemelson Foundation provided funding for eight underrepresented minority students with interests in innovation, and these fellowships were intended for incoming students. The DuPont-MIT Alliance supported 10 fellowships, which are designated as presidentials.

The Society of Presidential Fellows hosted several events during the academic year, including beginning- and end-of-year receptions, and a lecture and dinner series cosponsored by the Sidney-Pacific Graduate Residence.

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

### Finances

While the Institute's overall financial position remains strong, we continue to face constraints in our ability to find resources to support expanded or new activities. These constraints can be traced in part to sharply increasing costs of rents and utilities that support our research operations. To partially offset these rising costs in AY2007, resources allocated for physical plant renovations were reduced this year. The Provost's Office was able to provide a total of \$3.5M for modest programmatic increases to the budgets of the academic areas. Fundraising continues to play a critical role in enabling our academic units to pursue new areas of research and education.

The market value of investments in the Institute's endowment increased from \$8.4 billion at the close of AY2006 to \$9.98 billion at the end of AY2007, an increase of 18.8%. This growth enabled the Institute to increase the endowment distribution rate to \$40.50 per investment unit, up from \$38.20 the previous year. This continued a very recent trend of increasing the endowment income distribution at a moderate and stable rate, following a brief period of declining rates in AY2004 and AY2005.

MIT tuition was increased by 4% to \$33,400 in AY2007. However, the level of self-help the Institute requires for students who receive federal Pell grants was reduced, so that the students who rely most heavily on financial aid were protected from an increased financial burden. Approximately 57% of all MIT undergraduates received some form of financial aid this year.

This year we introduced an innovation in our budgeting process to increase flexibility in the Institute's financial operations. This new methodology, called rebalancing, provides a larger than normal increase in the endowment distribution rate in exchange for an equivalent reduction in general budget allocations. This allows the Institute to realize greater access to unrestricted general funds while leaving the purchasing power of individual academic and research units essentially unchanged. The rebalancing method has been applied to the academic areas for the AY2008 budget.

### **Research**

Expenditures on sponsored research conducted on campus rose to \$598M in AY2007, an increase of nearly 2% over the 2006 volume of \$587M. The federal government continues to be the largest sponsor of campus research funding, accounting for approximately 78% of the total volume. The National Institutes of Health, part of the Department of Health and Human Services, is the single largest sponsor of campus research with an approximate 34% share, reflecting the growth in recent years of research activities in the life sciences and neuroscience, and the collaboration of these disciplines with areas of engineering.

Lincoln Laboratory research volume was \$612M in AY2007, a decrease of nearly 4% from the 2006 volume of \$636M.

This report marks the completion of my second year as provost.

**L. Rafael Reif**

**Provost**

**Fariborz Maseeh Professor of Emerging Technology**