MIT readsies for 159th Commencement

Sasha Brown
News Office

MIT’s 159th Commencement exercises will be held on Friday, June 3, at 10 a.m. in Killian Court. During the ceremony, 2,177 undergraduates and graduate students are scheduled to receive 1,094 bachelor’s degrees, 1,078 master’s degrees, 257 doctorates and 12 engineer degrees.

Admission for ticketed guests begins at 7:30 a.m. Graduates will robe and assemble in the Johnson Athletics Center, on the second floor, at 7:30 a.m.

Irwin M. Jacobs, co-founder, chairman and CEO of Qualcomm Inc. and an MIT alumnus (S.M. 1957 and Sc.D. 1959), will deliver the principal address. President Susan Hockfield will charge the graduates. Other speakers will include Barun Singh, president of the Graduate Student Council, and Rohit Gupta, president of the Class of 2006, who will present the class gift. Hindu Chaplain Swami Tyagananda will deliver the invocation.

Jacobs is known as an innovative entrepreneur and engineer who greatly values research. He advocates improving U.S. math and science education.

“The extraordinary technological contributions of Irwin Jacobs have transformed global telecommunications. Dr. Jacobs’ career, which began with graduate study and a first faculty position at MIT, has changed countless lives, not only through invention and entrepreneurship, but also through remarkable support of secondary math and science education, and of the arts,” said Hockfield. “We are honored and delighted that he is returning to MIT to inspire our graduates and their families, and to share his unique perspective on technology and education.”

San Diego-based Qualcomm holds nearly 1,400 patents and has more than 2,000 patents pending. The company has been compared to a think tank with thousands of employees.

Hockfield will present the following degrees: bachelor of science; bachelor of science/master of science; bachelor of science/master of engineering; and advanced degrees in the School of Science, the Woods Hole Oceanographic Institution and the Whitaker College of Health Sciences and Technology. Provost Robert A. Brown will deliver advanced degrees in the Schools of Architecture and Planning; Engineering; Humanities, Arts, and Social Sciences; and in the Sloan School of Management.

Following the exercises, a reception will be held for graduates and their guests on the West Campus Plaza.

A special hooding ceremony for Ph.D.

See CEREMONY

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Institute Professor Cohen dies

Sarah H. Wright
News Office

Morris Cohen, a world-renowned metallurgist and MIT institute professor who received both the National Medal of Science and the Kyoto Prize for Advanced Technology, died May 27 at his home in Swampscott, Mass. He was 90.

Cohen made major contributions to the understanding of the structure of matter and the ways in which materials such as iron and steel can be processed. His work has been central to the development of modern high-strength steels.

“This gracious gentleman transformed the discipline of metallurgy via his intellect, dedication, and personal effort into modern materials science and engineering.

“Morris Cohen died at his home in Swampscott on May 27. He was a true giant within the field of materials science, and we have lost a member of our community,” said William D. Luedtke, director of the Institute for Soldier Nanotechnologies.

A native of Chelsea, Mass., Cohen became interested in metals as an outgrowth of his family’s business in producing and refining the lead-based alloys used in type and solder.

Cohen received the S.B. and Sc.D. degrees in metallurgy from MIT in 1933 and 1936, respectively.

He joined the MIT faculty in 1936, becoming a full professor of physical metallurgy in 1946. He retired in 1987.

“MIT is favored with many great intellects, and Morris Cohen was one of them,” said John H. Ashworth, director of the Center for Materials Science and Engineering and director of the Institute for Soldier Nanotechnologies.

In 1966, Cohen was named to the MIT Materials Directorate, which he led until 1973. He served as director of the Materials Research Laboratory from 1973 to 1981, and was one of the directors of the Materials Sciences and Applications Center.

Cohen was the recipient of many awards, including the National Medal of Science, the M. R. Beadle Award, the William D. Coolidge Award, the American Institute of Mining and Metallurgical Engineers ASM Award, the Franklin Institute Award, and the Royal Swedish Academy of Engineering Sciences Membership Award.

Cohen received 19 honorary degrees, including the honorary degree of Doctor of Science from Harvard University in 1981.

He was elected to the National Academy of Sciences, the National Academy of Engineering, and to the American Academy of Arts and Sciences.

Cohen was a faculty member at the Massachusetts Institute of Technology, where he taught for nearly 50 years.

He was a member of the American Society for Metals, the Materials Research Society, the American Physical Society, and the American Institute of Mining and Metallurgical Engineers.

In 1995, Cohen was named to the National Academy of Engineering’s committee on the Future of Materials Science.

Cohen was also a member of the National Academy of Sciences’ committee on the Future of Materials Science.

“The death of Morris Cohen is a loss for MIT, for science, and for the world,” said John H. Ashworth, director of the Center for Materials Science and Engineering and director of the Institute for Soldier Nanotechnologies.

When Vitaliy Pereverzev dons his cap and gown on Friday, June 3, he will be fulfilling a dream that began seven years ago when he first arrived in Kazakhstan to play tennis and study in the United States.

“Growing up I looked up to my father,” said Pereverzev whose father holds a Ph.D. in physics. “My dream became to go to MIT.”

Born in St. Petersburg, Russia, in 1981, Pereverzev spent most of his childhood either playing tennis or studying. By the time he graduated from high school at 16, he was both the valedictorian and a junior champion tennis player.

In the spring of 1998, Pereverzev decided to pack up, leave his family behind in Kazakhstan and go to the Palmer Tennis Academy in Florida.

With very little English, Pereverzev struggled during his first months in the United States. After spending the summer back home, Pereverzev returned to Florida even more determined. Eventually, he became one of the top 10 juniors in Florida.

While playing at Palmer, Pereverzev was living with a host family and enrolled in a local high school. He quickly rose to the top there as well, graduating as valedictorian for the second time. When he started to think about schools, his host family encouraged him to look at MIT.

“They told me MIT was the best,” said Pereverzev. “I knew it was for me. I thought one day God would give me a chance, and I would be able to get in.”

In the meantime, Pereverzev focused his search on state schools with strong tennis programs. He was accepted at the University of Florida.

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Math optimizes kidney matches

Elizabeth Thomson

Many more people could get kidney transplants than do now, including patients with allergies.

Joseph Coughlin

Many more people could get kidney transplants than do now, including patients with allergies.

With more than 76 million baby boomers turning 50 at a rate of one every seven seconds, the stakes are high. “We may not have all the new mathematical techniques designed to optimize a novel matching program at the national level, according to MIT student Sommer Gentry and her husband, surgeon Dorry Segev, are working to improve the system of matching kidney donors with recipients.

national KPD program, the health-care system continues to allocate organs in a surgical and uncertain way for patients, and ensure that transplanted kidneys have the best chance of success,” said Segev, lead author of the paper. “Even if only 7 percent of patients awaiting kidney transplantation participated in an optimized matching system, national KPD program, the health-care system continues to allocate organs in a surgical and uncertain way for patients, and ensure that transplanted kidneys have the best chance of success,” said Segev, lead author of the paper.

“Even if only 7 percent of patients awaiting kidney transplantation participated in an optimized matching system, national KPD program, the health-care system continues to allocate organs in a surgical and uncertain way for patients, and ensure that transplanted kidneys have the best chance of success,” said Segev, lead author of the paper.

Chemical spill spurs brief evacuation

MIT Campus Police, the MIT Environment, Technology and Logistics and Engineering Systems Division in 1997, is also director of the U.S. Department of Transportation’s New England Transportation Center. The research facility of its kind, the Age Lab has a number of private sectors to craft solutions for an aging population.

AgeLab chief gets Bush post

President George W. Bush has selected Joseph F. Coughlin, director of MIT’s AgeLab, to serve as a member of the Administration’s Science and Technology Council to the 2005 White House Conference on Aging. The conference, which only occurs once every 10 years, provides recommendations to the president and Congress to help shape aging policy for the next 10 years. Past conferences have led to the passage of Medicare and the Medicare, the Supplemental Security Income program and the Older Americans Act. The 22-member Advisory Committee will advise the president and Congress on a variety of issues, including technology, economic security, transportation, housing, health care and other issues of concern to the nation’s aging population. Committee members were appointed on May 13.

AgeLab chief gets Bush post

Joseph Coughlin

More people could get kidney transplants than do now, including patients with allergies.

The team then tested the new algorithm against a national KPD program, the health-care system continues to allocate organs in a surgical and uncertain way for patients, and ensure that transplanted kidneys have the best chance of success,” said Segev, lead author of the paper. “Even if only 7 percent of patients awaiting kidney transplantation participated in an optimized matching system, national KPD program, the health-care system continues to allocate organs in a surgical and uncertain way for patients, and ensure that transplanted kidneys have the best chance of success,” said Segev, lead author of the paper.

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Isadore Singer wins faculty Killian Award

Sasha Brown
News Office

Institute Professor Isadore Singer, a world-renowned mathematician known for his work covering a broad spectrum of geometry, analysis, and algebra, is MIT’s James G. Killian Jr. Faculty Achievement Award winner for 2005-2006. His work is fundamental in differential geometry, functional analysis, and operator algebras and in partial differential equations and the broad area of Modern Music and Theater Arts Professor Marcus Thompson, chair of the Killian Award Committee, Thompson noted that “Isadore is one of the most extraordinary people I have ever had the pleasure of working with in genuine collaborations.”

Smiling, Singer thanked his fellow faculty. “MIT is an amazing institution for faculty as well as for students,” he said. During his time at MIT, he said he has been grateful “for the support and enthusiasm from both his colleagues and the institution, and I am sure that will continue.”

Born in Detroit in 1924, Singer received his undergraduate degree from the University of Michigan in 1943. After obtaining his Ph.D. from the University of Chicago in 1950, he joined the faculty at MIT. In 1987, he was named Institute Professor, the highest honor awarded by MIT for faculty and administration at MIT.

A member of the American Academy of Art and Sciences, the American Philosophical Society and the National Academy of Sciences (NAS), Singer was named a member of the NAS, the Governing Board of the National Research Council and the White House Science Council. In 1992 he received the AMS’s Award for Distinguished Public Service. The citation recognized his “outstanding contribution to his profession, to science more broadly and to the public good.”

Last year, Singer was awarded the Abel Prize, a mathematics award often likened to the Nobel Prize, for a series of papers he co-authored with Michael Atiyah. The Atiyah-Singer index theorem was a crowning achievement built on more than 100 years of ideas. The papers also earned the

DuPont funds MIT alliance with $25 million

MIT President Susan Hockfield and Provost Robert A. Brown joined DuPont Chief Technology Officer Peter M. Connelly Jr. on May 18 to announce continued funding of the DuPont MIT Alliance (DMA), a research program focused on creating innovative, next-generation materials.

Originally funded in 2000 with a five-year, $35 million investment, the alliance will receive another $25 million from DuPont to continue funding through 2010, Connolly said. The $300 million commitment makes the DMA the largest corporate R&D investment at MIT.

“The successes and experiences of the alliance warrant our continued funding,” Connelly said. “In 2000, we asked MIT scientists to give us their best ideas on science that could enhance our everyday lives. The response and resulting research has led to significant scientific achievements. These first five years focused on investing new materials using science and biology as the design roadmap. In this second stage, the alliance will expand beyond bio-based science to work with nano-composites, nanomaterials, advanced electronics, new-generation safety and protection materials, he said.

Research showcase

Four top DMA research programs were showcased on May 18 to demonstrate the goals of the alliance: to make some tough choices, Hockfield said, and to continue to evolve, the campus itself must evolve to meet new needs. There are several other projects on the horizon as well,” Curry said.

The Institute is undergoing historic academic development and extraordinary change in campus life in its remarks at the State of the Institute Forum, held May 23 in Kresge.

Forum celebrates Institute’s strengths

Sasha Brown
News Office

The Institute is enjoying a period of renewed strength in many different areas. MIT’s administrative team told hundreds of people who gathered in Kresge Auditorsum for the State of the Institute Forum on May 23.

Sponsorship by the Administrative Advisory Committee, the forum consisted of an hour-long talk—roughly 20 minutes each for President Susan Hockfield, Provost Robert Brown and Executive Vice President John Curry—followed by an hour of questions and answers.

In his first five months into the job, Hockfield spoke of the future of academe at the Institute. “I feel fortunate to have arrived at MIT at a time when there is great Institute-wide strength, and so much promise in so many areas that cut across disciplines,” she said.

During the economic downturn of the past two years, administrators had to make some tough choices, Hockfield said. Now that the economy is stronger, MIT “is positioned very well going forward,” she said. She noted that she sees several challenges ahead for MIT, including declining federal support, a new represent surface and greater competition from peer institutions. “We do face competition for the very best faculty and students,” said Hockfield.

A file scientist herself, Hockfield said she is intrigued by the new areas of study and research involving a convergence of engineering and the life sciences. She predicted that this convergence will have the same kind of transformational effect as occurred with the incorporation of physical science into engineering 50 years ago.

The president also noted that MIT has a unique role to play in energy research—a critical issue for the nation and the world—by bringing together expertise across the whole spectrum from science and engineering to public policy, international relations and urban planning. She and the provost are working with faculty to launch a new Institute-wide initiative in this area.

“I feel enormously optimistic,” she said.

The provost commented on three new areas of study that are indicative of the cross-cutting initiatives in the educational realm: the chemical-biological engineering major offered by the Department of Chemical Engineering, the biological engineering major offered by the Biological Engineering Division slated to start this fall and the undergraduate minor in management also starting this fall. These are all indicators that show the Institute is undergoing historic academic development and extraordinary change in campus life in its remarks at the State of the Institute Forum, held May 23 in Kresge.

“From a seed to an adult, the project itself must evolve to meet new needs,” Brown noted the importance of common space, citing the opening of the Stata Center as a perfect example and the "extraordinary change that has occurred by building truly common space in our midst.”

One of the most exciting projects on the horizon is the new Green Center for Physics, which will be anchored by an "innel" structure in the Building 6 courtyard. The four-story building will have 50,000 square feet connected to Buildings 4 and 6 in the third and fourth floors by walkways and by a two-story-high research lab on the ground floor. Currently, the physics department is spread across 13 different buildings, including Building 6.

Curry spoke of the budget woes that MIT had weathered over the past couple years and the promise of the future. “We made some hard choices, but are now better positioned to move forward and we can, therefore, steer a more normal course,” he said.

The Institute is moving upscale toward electronic transaction processing and eliminating paper as "we continue to aggressively upgrade IT," said Curry. "For example, the web-based Employee Self Service system, which allows MIT employees to input demographic data as well as track their employment history, is now used by nearly all employees. A new payroll system will go live in January of 2006. There are several other projects on the horizon as well," Curry said.
Alumnae, grads look back at MIT
Sarah H. Wright

Alumnae celebrating their 25th reunion on Friday did problem sets in a different world from those graduating today. The Class of 1980 was 16 percent women; in 2005, the graduating class is 42.3 percent women, and Susan Hockfield is MIT’s president. The Class of 2009 is expected to be 49 percent women. As this new generation of MIT women prepares to walk the Infinite Corridor on May 6, they are looking back on the MIT experience, both positive and negative. "Joining the pistol team was the best thing I did at MIT. A sport that I had never previously tried became a passion," said Jenny Jay, her supervisor in the Ralph M. Parsons Laboratory, who was both the ‘listening ear I really needed’ and the scientific guide who helped her see how "what I studied in the classroom and the laboratory could be relevant to the world outside," she said.

Joan Griffin (S.B. 1980) majored in civil engineering and is now a senior vice president at the Royal Bank of Scotland in New York City. She credits her advisor, the late Professor Frank Perkins, with being "the greatest influence on me while at MIT and afterward, he suggested I think about business school."

"One of the first things I taught my 10-year-old daughter to say was, 'Girls are good in math!'" Like Griffin, Catherine White (S.B. 1980) recalls her mentor, Pat Melaragno, who was coach of the MIT Varsity Pistol Team, as especially helpful. She has also stayed in contact with her teammate and mentor, "Joening the pistol team was the best thing I did at MIT. A sport that I had never previously tried became a passion," said Jenny Jay, her supervisor in the Ralph M. Parsons Laboratory, who was both the ‘listening ear I really needed’ and the scientific guide who helped her see how "what I studied in the classroom and the laboratory could be relevant to the world outside," she said.

The Campus Police Honor Guard will lead the procession through Killian Court on Commencement morning, exhibiting one of MIT’s newer traditions for the second time this spring. Five of the 11 drill team members will guide members of the Class of 2005 to their seats. Two will carry M1 rifles as the other three carry flags of the United States and Massachusetts, and will lead the team as especially helpful. She has also stayed in contact with her teammate and mentor, "Joening the pistol team was the best thing I did at MIT. A sport that I had never previously tried became a passion," said Jenny Jay, her supervisor in the Ralph M. Parsons Laboratory, who was both the ‘listening ear I really needed’ and the scientific guide who helped her see how "what I studied in the classroom and the laboratory could be relevant to the world outside," she said.

The team's off-campus appearances have included Memorial Day parades in South Boston. With experience, they "have 'determination and enthusiasm.'" The team "looked sharp" and "were in formation throughout the state and have been very well received," said Smith. When the team was a lifelong aviation student and instructor, "we had 'determination and enthusiasm.'" The team "looked sharp" and "were in formation throughout the state and have been very well received," said Smith. When the team was a lifelong aviation student and instructor, "we had 'determination and enthusiasm.'"

"I would encourage women who work hard and take the flag for the 1999 report on the status of women in science. Their work "caused a ripple effect in the science world and tangibly improved things for women," she said.

Sarah H. Wright
Managing Editor

Honor guard marches with pride

"We take great pride in representing not only the men and women of the department but MIT as a whole. We have been very fortunate to march in various events throughout the state and have been very well received," said Smith. When the team was a lifelong aviation student and instructor, "we had 'determination and enthusiasm.'" The team "looked sharp" and "were in formation throughout the state and have been very well received," said Smith. When the team was a lifelong aviation student and instructor, "we had 'determination and enthusiasm.'"

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Tech Day spotlight is on bioengineering

Nancy Dolginove Smith
MIT Alumni Association

MIT’s expertise in measuring, designing and designing biological systems at the molecular level has ushered in a new era for engineering the building blocks of life. At Technology Day this Saturday, June 4, leading bioengineering faculty will explain the Institute’s role in developing breakthroughs from creating liver tissue to challenging the drug resistance of cancer cells.

The audience for Technology Day, the intellectual core of Tech Reunions, includes MIT graduates and guests from the classes of 1950 to 2000 on campus June 2-5 to reconnect with friends and learn about MIT advances.

Discussions on this year’s Technol-
ogy Day topic, “Bioengineering at MIT: Building Bridges Between the Sciences, Engineering and Medicine,” will begin 9 a.m. in Kresge Auditorium with an overview by Douglas Laufferbenger, director of MIT’s Bioengineering (BE) Division. Three division faculty will introduce their work: Linda Griffith, a mechanical and biological engineering specialist who works on tissue engineering; Angela Belcher, a materials chemist who focuses on the interfaces of materials; and Ram Sivasankaran, who studies the role of sugars in cell functions. Martha Gray (Ph.D. ’86), director of the Division of Health Sciences and Technology, will describe how emerging biomedical technologies are changing medicine.

The moment is ripe for exploring bioengineering since MIT is launching the nation’s first biological engineering field of study that fuses molecular and cellular biology with engineering. “MIT has built a new curriculum based on modern molecular life sciences with applications to a range of problems in pharmaceuticals, health care, environment and biological-based systems,” said Richard Zare, chair of the undergraduate BE committee.

Thomas Magnanti, dean of the School of Engineering, noted that the molecular and genomic revolutions have placed biology as a new foundational approach for engineering, joining physics, chemistry and math. “At MIT, engineers are working with their counterparts in MIT’s renowned biology department to meld biology with mechanical, chemical and electronic engineering,” Magnanti said. “The new bioengineering looks at the problem and asks: What if we could regenerate living tissue itself? Or develop innovative gene therapies? Or build new devices using biological components?”

This research is improving the practice of medicine, according to a medical and electrical engineering specialist who focuses on diagnosis and treatment of arthritis.

“In an idealized world, medical strategies could regenerate living tissue itself or develop innovative gene therapies. Or build new devices using biological components?”

MIT has a fourth winner of a U.S. Fulbright Fellowship, Marc Schwartz, a second-year graduate student in media arts and sciences. As a Fulbright Fellow, Schwartz will do research next year at the Keio University Center for Foreign Language Education in Japan, on ways to provide an Internet-based, peer-to-peer element in English language acquisition programs. The other three winners were announced in a story in the May 19 issue of Tech Talk.

Faculty members awarded tenure

The Corporation’s Executive Committee approved 25 faculty members for promotion to tenure on May 16.

Those who received tenure, all associate professors unless otherwise noted, are Eran Ben-Joseph of urban studies and planning; David L. Darmofal of aeronautics and astronautics; Scott R. Manalis and John F. Enama of mechanical engineering; Michael B. Yaffe of biology; Jianshu Cao, Catherine L. Macaluso and Andrii Tokmakoff of chemistry; András Vasy of mathematics; and Max Tegmark of physics.

Individual photos and profiles, including any additional members of the faculty who receive tenure before the end of the academic year, will appear in a full issue of MIT Tech Talk.

Additionally, the following 22 have been promoted from associate professor with tenure to full professor. Mark Jaronzhek and Terry W. Knight (effective Sept. 1, 2004) of architecture; Rosalind White of media arts and sciences; David Ben-Schauer of biological engineering; Bruce Tidor of biological engineering and electrical engineering and computer science; Paul I. Barton of chemical engineering; Heidi M. Nept of civil and environmental engineering; William T. Freeman of mechanical engineering; Karan A. Kaertner and Steven B. Leeb of electrical engineering and computer science; Angela Belcher of materials science and engineering; Angela Belcher of materials science and engineering; Maria Yang of mechanical engineering; Ronald G. Ballinger of nuclear engineering; James E. Davis of literature; Douglass A. Robertson of technology and society; Dan Ariely of Sloan School of Management; Edward Gibson of brain and cognitive sciences; Pavel I. Etingof of mathematics; and Kristin Donaldson of physics.

Sixty-four faculty members were promoted from assistant professor to associate professor without tenure: John E. Fernandez, Wendy Jacob, Haghfarin Watenpaugh and J. Meenin Yoav of architecture; Cyntia Breuza of media arts and sciences; Balakrishnan Rajagopal of urban studies and planning; Zoltan S. Szabo-Kovary and Karen E. Wilcox of aeronautics and astronautics; Michael J. Collins, Erik D. Demaine, Michael D. Ernst and Pablo A. Parrilo of electrical engineering and computer science; Leonard A. Mirsky of health sciences and technology; Noel Flink, Nicko Manciotti and Christopher A. Sotlar of materials science and engineering; George Barbarastathis and Samir Nayfeh of mechanical engineering; Xavier Gabarek of economics; Noel B. Jackson of literature; Patricia Tang of music and environmental engineering; Krste Asanovic, Isaac L. Chuang and Muriel Medard of electrical engineering and computer science; Frank Kaufman and Muriel Medard of electrical engineering and computer science; George Barbarastathis and Samir Nayfeh of mechanical engineering; Ronald G. Ballinger of nuclear engineering; James E. Davis of literature; Douglass A. Robertson of technology and society; Dan Ariely of Sloan School of Management; Edward Gibson of brain and cognitive sciences; Pavel I. Etingof of mathematics; and Kristin Donaldson of physics.

All promotions will take effect on July 1, 2005, unless otherwise noted.

Fourth wins Fulbright

MIT has a fourth winner of a U.S. Fulbright Fellowship, Marc Schwartz, a second-year graduate student in media arts and sciences. As a Fulbright Fellow, Schwartz will do research next year at the Keio University Center for Foreign Language Education in Japan, on ways to provide an Internet-based, peer-to-peer element in English language acquisition programs. The other three winners were announced in a story in the May 19 issue of Tech Talk.
Healing cells aid cancer's growth

David Cameron
Wharton Financial

Scientists have known for the last decade that a link exists between wound healing and cancer. It appears that scientists led by MIT Professor Robert Weinberg, a member of the Whitehead Institute, have discovered the process by which tumors hijack normal wound-healing processes for their own purposes.

The research, reported in the May 6 issue of the journal Cell, began when Aika Tamada and students at Weinberg's lab, investigated the nature of stromal cells:>

Stromal cells form the connective tissue in a mammal's organs and glands. They also form the connective tissue inside tumors, which are composed mostly of cancer cells and stromal cells. Researchers found that if stromal cells simply held the tumor together or if they work with cancer cells to promote the tumor's growth:

"It turns out these cells are not actually helping the cancer," said Weinberg. "Instead, these cells play an important role in helping these cells, and therefore tumors, to grow."

Orimo found that a particular protein expressed by the stromal cells, Ccl2, is a key player in helping tumors grow. SDF-1 interacts with a class of cells called endothelial precursor cells. Found primarily in the blood, endothelial cells travel throughout the body and contribute to the formation of new blood vessels, to form a process called angiogenesis.

The stromal cells in the breast cancer tumor produce SDF-1, which in turn pushes these endothelial precursor cells to enter the tumor. Once they do, they help the tumor to form networks of blood vessels, providing a circulatory system throughout the tumor mass. The tumor can now access the nutrients present in the host's circulating blood and thus grow unchecked.

"Initially, these stromal cells opportunistically exploit the normal wound-healing process to benefit the tumor," said Weinberg.

Orimo plans to further investigate this pathway by disturbing the communication between the stromal cells and the cancer cells, work that may yield new therapeutic insights.

Additional co-authors of the Cell paper are from the Brigham and Women's Hospital, Harvard Medical School, Massachusetts General Hospital, Baylor College of Medicine, and the Institute Pasteur.

This work was funded by Merck/MIT, the National Institutes of Health, the Ludwig Trust, the Breast Cancer Research Foundation, Uchida Memorial Foundation, Sankyo Foundation of Life Science and a U.S. Army Predoctoral Breast Cancer Fellowship.

COHEN

Continued from Page 1 plets and people who impact the world. More than anything else, he was a very modest person, and one who has had enor- mous impact on the field," Thomas said.

Cohen's research provided the scientific and engineering evidence to emerge from its roots in metallurgy thanks to the influen- tial report, "Materials and Man's Needs," which he wrote for the National Acade- my of Sciences.

Faculty colleagues recognized his achievements by awarding him a Ford Pro- fessorship in 1962, an Institute professor- ship, the faculty's highest honor, in 1974; and the James R. Killian Faculty Achieve- ment Award in 1977.

The Killian selection committee described Cohen as a "major force" whose influence lasted a lifelong honor, in 1974; and the James R. Killian Faculty Achieve- ment Award in 1977.

Cohen was an inspiring figure to all who knew and worked with him. In cel- ebration of his 90th birthday, individual and corporate donors established the

Morrin Cohen Professorship in Materials Science and Engineering, announced the department's centennial celebration in June 1991.

An oil portrait of Cohen, which hangs in the Chipman Room (8-314), also reminds him of Cohen's contributions to science and education. Commissioned in 2000, it portrays Cohen and a department and painted by Marblehead artist Anthony Larnachillo, the portrait is a reminder of the importance of per- sistence in the background—a bust of Moses Hillel and Benjamin Franklin, the 12th-century Hebrew scholar; a crystal structure of cementite; and a text on martensite, a hardening process in steel.

Cohen's wife, Ruth (Krentzman) Cohen, and a daughter, Barbara (Cohen) Nordwind, predeceased him.

He is survived by a son and daughter- in-law, John and Diane Cohen of San Rafael, Calif.; two sisters, Louise Plamsky of Los Angeles and Charlotte Freed of Chestnut Hill, Mass.; three grandchildren and five great-grandchildren.

Cohen was a founder and past president of Temple Sinai in Marblehead, Mass. Memorial services will be held at his late residence through Sunday. Donations in Cohen's memory may be made to the Jewish Federation of the North Shore, 21 Front St., Salem, MA 01970.

Graffiti

Andrew Nichols, shutdown coordina- tor in facilities, died May 20 after colap- sing at work. She was 64. Nichols started at MIT in her mid 1970s as a sten-o- grapher. She joined the repair and maintenance staff in 1987. She is sur- vived by her mother, of Arizona, and her father, Marsha Breitensteiner of East Barre, Massachusetts.

Donation memorials may be made to Animal Hospital, 300 Broad- way, Newton, MA 02158, or to the Humane Society of New York, 100 Broadway, North York, 851-525.

EDWARD E. HUNT

Edward E. Hunt, an engineer at MIT's Lincoln Laboratory for 18 years, died May 13 at his home in Northbor- ough, Mass., after a long illness. He was 69.

He retired in 1984. He leaves his wife of 59 years, Esther M. (Ivyu) Hunt; three sons, John of Cambridge, David; a sister, Louise Waldron; seven grandchildren; and one great-grandson.

He was predeceased by his son Geoff-

THOMAS E. SHEPHERD JR.

Thomas E. Shepherd Jr., former associate director of the Physical Plant (now called the Department of Facili- ties), died May 1 in wayland from complications of Parkinson's disease. The Parkin- son's Disease Society of America named him its Parkinson's disease employee of the year in 2005, retiring in 1995. He leaves his wife of 55 years, Bever- ree (Hastings) Shepherd; a daughter, Debo- ra; a son, David; four grandchildren; and three great-grandchildren.

A memorial service will be held at the Independent Congregational Church in the copal Parish of the Messiah, 1000 Com- monwealth Ave., Auburndale, Mass. Memorial donations may be made to the Parkin- son's Research Fun, Massachusetts General Hospital, Department of Neurolog- ogy, c/o Dr. John Goodwin, 15 Parkman St. Suite 830, Boston, MA 02114.

WALTER VECCHIA

Walter Vecchia, 69, a retired project man- ager at Lincoln Laboratory, died April 15 after a long battle with pancre- atic cancer. He began working for the lab in 1952 and retired 46 years later. He is survived by his wife of 43 years, Maria (DeMartino) Vecchia, of Saugus, and three daughters: Marie-Elena DeLucia, of Lincoln; Janine Leach and Cynthia Doucette. Memori- al donations may be made to Massa- chusetts General Hospital Cancer Fund Development Office, 165 Cambridge St., Cambridge, MA 02114.

OBITUARIES

Members of the MIT community may submit one classified ad each issue. Ads can be resub- mitted without charge for material chang- es. No more than two weeks in a row. Ads should be 30 words maximum; they will be edited. Submit by e-mail to ttads@mit.edu or mail to Classifieds, Rm 2-460. Deadline is noon Wednesday the week before publication.

WANTED

Want ad to get out of the office a bit this June, July and August? Need a full-time, or part-time, housekeeper or laundry woman, experienced, non-smoking, references available. 914-271-0695 or 914-271-5723.

North Shore Live-in: Couple, ages 75-85, a couple of years. Happy, hardworking, non-smoking, references. 781-747-2013.

Summer sublet wanted: Studio or 1 BR wanted for August, 2005. Dorm, apt, room, or space near campus. Experience helpful, Spanish or Haitian useful. 617-879-0693.

College professor seeks house-sit w/ family for part of summer. Responsible, non-smoking, references available. 914-271-0695 or 914-271-5723.


Popular Student Positions: Positions for students with work study eligibility.

Media and Technology Charter High School seeks English teacher. 7-12 teaching, 7-12 middle school, 10-11 teaching. 781-597-5038.

"College prep" program seeks Residential Assistants for male floor and Science Teacher. Must be U.S. citizen, F-1, 2-4 years of experience helpful, Spanish or Haitian useful. 866-671-5075 or 866-671-5076.

"College prep" program seeks Residential Assistants for female floor and Science Teacher. Must be U.S. citizen, F-1, 2-4 years of experience helpful, Spanish or Haitian useful. 866-671-5075 or 866-671-5076.

Classifieds

FOR SALE

2 window A/C units, 6000 BTU each. Used, one in box, $75 each. jkajati@mit.edu.

Tech Night to premiere Machover work

The Boston Pops Orchestra will perform "Jeux Deux," a new concerto for HyperPiano and orchestra composed by Media Lab Professor Tod Machover, at Tech Night 2005 on Thursday, June 2, at 8 p.m. in Symphony Hall. Keith Lockhart will conduct.

Machover is a world-renowned composer of innovative music that synthesizes acoustic and electronic sound. "Jeux Deux" was commissioned by the Pops to celebrate MIT's 100th Tech Night with the Pops this year. The title is a playful translation from the French for "two per person game."

Machover's concerto will feature pianist Michael Chertock, who will play a Yamaha Disklavier grand instead of a traditional piano, and it will include live images projected onto a large screen above the Pops orchestra.

Media Lab graduate student Marc Downie produced the images using video close-ups of Chertock's fingers and hands that morph into colorful, abstract forms or recognizable human shapes depending on changes in the music. The result is a real-time illustration of the dialogue between piano and orchestra and between soloist and "hyperized" piano.

Lynda Heinemann of the Office of the Arts talked to Machover about his latest composition.

Q. How did the Pops commission come about?

A. The Pops contacted me out of the blue for this commission. They were interested in having something exciting and fun, that used interesting new technology, that was about 15 minutes long and that would not be too hard to rehearse. I decided on a concerto because this allows for extra rehearsal with a soloist, who can then easily fit into the orchestra. I decided on piano so I could use one of Yamaha's new generation Disklavier 9-foot concert grands, which are magnificent instruments with computer playback and recording built in. I wanted the piece to be purely acoustic—but also wanted to use next generation hyperinstrument technology to add to the soloist's virtuosity.

Q. How will the Disklavier become a 'hyperpiano'?

A. Yamaha—a longtime sponsor and collaborator—is providing the Disklavier piano from their New York studio. The "hyper" part is ours. Mike Fahlsis (SB '04, and poised to become a Media Arts and Sciences master's student) has designed a hyperinstrument software system that analyzes what the pianist is doing with computer playback and recording and turns this into a reper.

Q. Describe the visual component of the piece.

A. The piece is notated a fairly traditionally, which is essential if one wants to have efficient orchestral rehearsals. There are several "Mini Cadenzas," and "Textures" where the piano soloist has a certain amount of latitude and where I use freer notation. Besides the Disklavier, there is a second small two-octave keyboard on the piano, easily accessible to the pianist's left hand. The pianist plays silent notes on this keyboard at specific moments of the piece in order to change the state of the hyperinstrument software. This allows the whole technical aspect of the piece to be completely controlled by the soloist, using music keyboards instead of alphameric ones.

Q. Does the music have regular notation?

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Q. Will "Jeux Deux" have a life after its Pops performances?

Just as I wanted "Jeux Deux" to be relatively easy to rehearse and to work equally well on Pops and non-Pops concerts, I also wanted it to be as simple as possible technically while still pushing the sophistication of our hyperinstruments to the next level. This should make it extremely easy to bring the piece to other venues, and there is already significant interest in performing the piece both here and abroad.

Tech Night at Pops is sold out, as tickets were purchased by this year's graduates and alumni returning to campus for reunions and Tech Week. Machover's "Jeux Deux" will also be performed at Boston Pops concerts on Wednesday, June 22, and Thursday, June 23.
MISTI experiences span the globe

In Asia, MISTI-China's pilot OpenCourseWare project, launched last summer at Qinghai University, has been expanded to include four teams introducing OCW and MISTI courses. In addition, virtual interaction and partnerships with China, India, Japan, Mexico and Singapore. The MISTI-Italy Program will be sending a dozen interns to a variety of research centers and companies. As an intern in the MISTI-Japan Program, Danish S. Khati, a graduate student in electrical engineering and computer science, worked on the 'Robovie' project at the Advanced Telecommunications Research Institute in Kehana, Japan, in 2003, and participated in various cross-cultural retreats before their departure. MISTI has country programs in China, France, Germany, India, Italy, Japan, Mexico and Singapore. The MISTI-Italy Program will be sending a dozen interns to a variety of research centers and companies. As an intern in the MISTI-Japan Program, Danish S. Khati, a graduate student in electrical engineering and computer science, worked on the ‘Robovie’ project at the Advanced Telecommunications Research Institute in Kehana, Japan, in 2003, and participated in various cross-cultural retreats before their departure. MISTI has country programs in China, France, Germany, India, Italy, Japan, Mexico and Singapore. The MISTI-Italy Program will be sending a dozen interns to a variety of research centers and companies.

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