Features of the Electronic Edition include:
✓ Foremost access to McCormick Society news
✓ Embedded links to related content online
✓ Table of contents navigation (click to go)
✓ High-resolution color images

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Each year brings new reasons to take pride in what members of our community are accomplishing to make the world a better place. This is my 45th year at MIT, and during almost any given week of any given year, just a glance at MIT news reveals the amazing achievements of our faculty and students. It is a privilege to be part of this community. In his inaugural speech just over a year ago, President Reif emphasized “One Community, Together in Service,” and he continues to work to find ways in which MIT can best serve the world.

I am excited to share news of official recognition of MIT’s excellence. Once again, MIT is ranked #1 in the world for the second year in a row by Quacquarelli Symonds (QS) World University Rankings, generally regarded as one of the three most influential and widely observed international university rankings. I am so very proud of the many ways in which MIT community members use their knowledge and expertise to address the world’s problems and improve the quality of life for so many.

The Katharine Dexter McCormick (1904) Society (KDMS) was founded in 1994 to recognize those donors who provided for MIT’s future through legacy gifts—gifts through estates or life income funds, to be utilized after the donor’s lifetime. MIT is extraordinarily grateful to members of the McCormick Society for providing for MIT’s future excellence.

A Personal Message
From Bonny Kellermann ’72

Director
MIT Katharine Dexter McCormick Society (KDMS)
Chancellor W. Eric Grimson, PhD ’80 has assumed a key role in MIT’s upcoming fundraising campaign, working closely with the Institute’s faculty and students to ensure that their needs and priorities are reflected in what is expected to be a multiyear, multibillion-dollar capital campaign. This new, ad hoc position of Chancellor for Academic Advancement will exist for the duration of the campaign. For more information:


Martin Schmidt, associate provost and professor of electrical engineering, has been named Acting Provost. Chris Kaiser PhD ’87 has stepped down as provost and returned to his role as professor of biology to pursue his passion for research and teaching. For more information:

web.mit.edu/newsoffice/2013/provost-chris-kaiser-0916.html
MIT’s increased emphasis on global programs and engagements has led to the establishment of a new position, Director of International Affairs, held by Bernd Widdig. A native of Germany and former faculty member at MIT who established the MIT-Germany (MISTI) program, Widdig is responsible for expanding MIT’s global programs and engagements. To further advance knowledge and educate students, Widdig will develop partnerships with overseas universities, governments, and industry. For more information:

web.mit.edu/newsoffice/2013/profile-bernd-widdig-1010.html

Edmund Bertschinger HM, former head of the MIT’s Department of Physics, fills the new position of Institute Community and Equity Officer, where he focuses on matters of community, equity, inclusion, and diversity on campus. Bertschinger has a significant track record promoting diversity and inclusion, and has won numerous honors, including the Dr. Martin Luther King Jr. Leadership Award; the Outstanding Advocacy Award, presented by the Council for the Advancement of Black Students; and the Outstanding MAEStro Award, presented by MAES—Latinos in Science and Engineering. In 2012, he was made an honorary member of the MIT Alumni/ae Association. For more information:

With the departure of Professor Ernest Moniz to head the US Department of Energy, Professor Robert C. Armstrong has been named as the new Director of MITEI. Armstrong had served as deputy director of MITEI since its inception six years ago and was co-chair (along with Moniz) of the Energy Research Council, which laid the groundwork for MITEI.

For more information:

web.mit.edu/newsoffice/2013/armstrong-named-mitei-director-0516.html

**Moving On**

Jeffrey C. Newton, who has served as vice president for Resource Development since 2007, is retiring. He will continue as Vice President in an advisory role through January. Kirk Kolenbrander, Vice President and Secretary of the Corporation, will lead the search for Newton’s successor and will oversee day-to-day management and strategic direction of MIT’s fundraising operations on an interim basis. For more information:

web.mit.edu/newsoffice/2013/jeffrey-newton-retirement-0919.html

Alison Alden, Vice President for Human Resources since 2007, plans to retire early next spring. For more information:

web.mit.edu/newsoffice/2013/alison-alden-retirement.html

**On Campus with MITx**

President Reif convenes Institute-wide Task Force on the Future of MIT Education

With broad implications for how MITx might be deployed on campus, the task force has three working groups and an online forum to solicit ideas from the MIT community. More at the Task Force site: future.mit.edu/
MITx Director of Digital Learning wants online tools to enhance on-campus education
“Online tools may be just the cure that saves residential education by increasing the value it provides, not the disruption that kills it,” says Sanjay Sarma.

More in the MIT Faculty Newsletter: bit.ly/1eWfZGT

New Dean for Undergraduate Education will focus on deploying MITx on campus
“The potential of MITx is not only improved access to content,” says Dennis Freeman, “but also the development of entirely new modes of interaction for members of the MIT community.”

See more at MIT News: bit.ly/1aO3Kgh

MITx will offer certificates for completion for sequences of courses on edX
Each “XSeries” of modules will cover content equivalent to two to four traditional residential courses. Users may audit for free or pay a modest fee for a certificate of achievement.

More at MIT News: bit.ly/1eMDPay

Five new MITx courses announced for Fall 2013
MITx lineup now includes: 3.091x, Intro to Solid State Chemistry; 4.605x, Global History of Architecture; 16.101x, Intro to Aerodynamics; 24.00x, Intro to Philosophy; and 2.03x, Dynamics.

See the courses at edX: www.edx.org/school/mitx/new

To follow up with questions or requests for additional information, contact: Bonny Kellermann
P: 617-253-9722  |  E-MAIL: BONNYK@MIT.EDU
Milestone anniversaries

Making Everything Possible

On Friday, October 11, more than 100 students, faculty, staff, and alumni celebrated the 75th anniversary of the MIT Hobby Shop and its just-completed renovation in DuPont gymnasium. Today, the Hobby Shop is a fully equipped “maker space,” where members work on a wide range of projects, including furniture, musical instruments, product prototypes—and even an airplane.

The shop began in 1938 when a group of 16 MIT students were given permission to set up a wood and metal shop in a small room in the basement of Building 2. Using equipment they found around the Institute, they chose the name “Hobby Shop” based on the philosophy that the well-rounded individual pursued interests outside of their profession: their hobby.
For MIT students, hobbies mean making things, and with their imaginations and talents, a well-equipped shop opened up limitless possibilities. The original Hobby Shop constitution stated that the shop was to be used for non-academic work only. The shop operated as a club with a student foreman, and members started as apprentices, progressed to journeymen, and finally, to master craftsmen.

In the 1940s, a shop master was hired and in subsequent years other hobbies were added, including electronics, photography, printing, and ceramics. Some of these became individual clubs and were spun off so that today the Hobby Shop is once again a well-equipped wood-and-metal working facility.

Today’s Hobby Shop is a place for MIT students, faculty, staff, alumni, and their spouses to work with a wide range of well-maintained machines and tools along with any needed instruction and design advice. Projects can be academic or personal, serious or just for fun. The Hobby Shop also offers its own classes and collaborates with the faculty in many departments to provide their students with shop facilities and instruction for building projects. Ken Stone ’72, director since 1991, oversees the Hobby Shop with the help of staff members Hayami Arakawa and Brian Chan ’02, SM ’04, PhD ’09.

For more information about the Hobby Shop, see: studentlife.mit.edu/hobbyshop
A place for women at MIT

Of personal interest to me is the 50th anniversary of the opening of McCormick Hall, the all-women’s dormitory where I lived during my freshman, sophomore, and junior years. Katharine Dexter McCormick (for whom the McCormick Society is named because of the significant bequest she left to MIT) made gifts that were transformational to the MIT community. Stanley A. McCormick Hall, named in memory of her husband, was the first dormitory on the MIT campus for women. Prior to Mrs. McCormick’s gift to establish the dorm, only a small number of undergraduate women could be admitted to MIT each year. Because of McCormick Hall, MIT was able to increase the number of undergraduate women, providing both a home and support network for women students. Accepting the gift to build McCormick Hall was a commitment to making a place for women at MIT.

Read about the history of McCormick Hall at mccormick.scripts.mit.edu/www/mcc-people/history

and find a summary of the anniversary celebration here: studentlife.mit.edu/hundreds-turn-out-mccormick-hall-celebrates-50th-anniversary
THE CALL TO PUBLIC SERVICE

MIT’s mission statement emphasizes service to the nation and the world with the goal of improving life for all. The Public Service Center (PSC) is celebrating 25 years of service, helping thousands of students answer the call to service here in Cambridge and around the world.

Over the years, the PSC has grown into an organization that models and encourages entrepreneurship and innovation, facilitates partnerships, integrates service with education, celebrates excellence, and cultivates confidence and imagination. Today, the PSC continues to evolve to support MIT students with advising, programmatic, and funding resources as they tackle local, national, and international quality-of-life issues with their minds, hands, and hearts. In doing so, the PSC believes that it can build a culture of service in students that will last well beyond their time at MIT.

To see what MIT students are doing to change the world, visit the PSC’s anniversary website, psc25.mit.edu, which highlights stories from its history and provides a forum where members of the MIT community can share their own experiences. I think you’ll be astounded—and very proud of MIT.
This year’s appreciation brunch was held at the Koch Institute for Integrative Cancer Research, which brings together scientists and engineers to revolutionize the diagnosis, monitoring, and treatment of cancer. Guests were welcomed by Director Tyler Jacks.

After Bonny Kellermann thanked everyone for coming, Judy Sager, director of gift planning and major gifts at MIT, shared the news about the MIT Endowment performance. The Endowment generated an investment return of 11.1% in FY13, and an average annualized return of 10.7% over the 10-year period ended June 30, 2013. These returns have contributed to the endowment’s growth from $5.1 billion in 2003 to $10.9 billion today. For those who have CRUTs invested in MIT’s Endowment, this was, indeed, good news.
KDMS Chair Sherwin Greenblatt ’62 shared that his planned gifts to MIT have been his best retirement investment vehicle. His CRUT provides the security of a regular income stream. MIT is an excellent steward of the money he has given. Greenblatt pointed out that making a planned gift helped him to clarify his philanthropic intentions. His gifts make a difference and help to build the future. Though not the primary reason for making a planned gift, Greenblatt appreciates the recognition he receives. Greenblatt encouraged members of KDMS to reach out to friends and classmates and propose that they think about making a planned gift to MIT. For those who have already made such provisions, he suggested that they share this information with MIT.

Grimson

Next, Chancellor Eric Grimson PhD ’80 and Bernard Gordon Professor of Medical Engineering, the host for the event, discussed his role of “all things students.” He described the Class of 2017, which had an admissions rate of 8.2%—the lowest ever—and the yield (percentage of those admitted who chose to attend MIT) of 72.7%—the highest ever. The class is 45% women, 22% underrepresented minorities, and includes 16% who are the first generation in their family to attend college. Students today are focused on making an impact. Their interests are interdisciplinary, and the curriculum has changed to accommodate these. Three years ago, MIT introduced a joint degree in Course 6-7 by combining two-thirds of the curriculum of a computer science degree and two-thirds of the curriculum in biology for a new joint major (“It wasn’t a math class,” joked Grimson).
Chancellor Grimson discussed how the Public Service Center (PSC) helped students to organize 2,200 projects around the world this past year. Students want to learn in context, and the PSC gives them a way to learn by doing, as does UROP (Undergraduate Research Opportunities Program) and UPOP (Undergraduate Practice Opportunity Program). UPOP is part of the Gordon Engineering Leadership program (GEL), which develops next-generation technical leaders equipped to understand and address significant engineering problems in real-world situations. Our students are very interested in a global experience. This past summer, MISTI (MIT International Science and Technology Initiatives) sent 800 students abroad.

Students today are very entrepreneurial. Whereas the typical age for a ’60s graduate to start up a company was 40, and for a ’90s graduate, 28, today our students are starting companies. To meet this demand for entrepreneurial experiences, MIT is exploring an innovation and entrepreneurship minor and is creating “maker spaces” where students can invent, explore, and build networks.

Chancellor Grimson also described the impact of MITx and rethinking the future of the residential learning experience. While MITx is a way for people around the world to access valuable learning tools, it also provides MIT students with new ways of learning. Last spring, 1,500 students used some component of MITx in an on-campus class.
Chancellor Grimson’s priorities for students include:

- Scholarship support, to guarantee that the very best students in the world can afford to come to MIT

- Graduate fellowship support: would like every incoming doctoral student to receive a fellowship in their first year, to give them the freedom and flexibility to explore where their interests are the best fit

- More support for global experiences for more students: cannot meet the current demand

- Innovative spaces: what do we want the classrooms of the future to look like?

Chancellor Grimson concluded by stating that MIT remains a remarkable collection of students and faculty. These students are going to change the world for the better. MIT’s job is to give them the pathway that launches them to be able to do that.

For audio recordings of remarks by Jacks, Kellermann, Sager, Greenblatt, and Grimson, contact Bonny Kellermann.
Langer: A Journey from Discovery to the Future

Robert “Bob” Langer PhD ’74, David Koch Institute Professor and a Koch Institute faculty member, regaled the audience with a fascinating, often hilarious, keynote address.

In 1974, when Langer earned his PhD in chemical engineering from MIT, most of his classmates were going to work in the oil industry. He loved the idea of putting his chemical engineering degree to work; he received more than 20 job offers (four from Exxon alone), but was not inspired to do the work they wanted him to do. He went back to the drawing board and thought about chemistry education and helping people. He wrote to 40 different colleges and universities about working for them in chemistry education; none responded.
Finally, someone in his lab knew (the late) Dr. Judah Folkman, at Harvard Medical School and Children’s Hospital. It was said that Dr. Folkman hired unusual people—and he hired Langer. At the time, the Folkman lab was focused on tumor angiogenesis factor (blood vessels that feed a tumor and help it to grow). Folkman asked Langer to help him isolate an anti-angiogenic substance.

Langer started with cartilage, which in its embryonic state has blood vessels, yet once formed, has none. His thinking was that cartilage cells make something that causes the blood vessels to disappear. Langer used chemicals to break down the cartilage, releasing protein molecules.

The search began for a molecule within this resulting fluid that could block blood vessels and stop tumors from growing. He found an extract that stopped blood vessels from growing. Langer found they could put certain tumors in corneas of rabbits (no blood vessels) that would mimic angiogenesis. He needed a little polymer that would be inert in the eye and release molecules of any size for at least a month or two. He experimented with more than 2,000 rabbit eyes—most fractions he tested did not work. But one fraction worked quite dramatically. It was previously thought that large molecules could not get through a solid polymer, but Langer figured out an engineering approach around this problem.

Initially, people did not believe that Langer and Folkman had found a solution to this problem. Then, scientists began to recreate the results. This engineering solution put them in a position to address the angiogenesis problem.

Langer and Folkman first published their results in the journal *Science* in 1976. It took another 28 years for the FDA to approve the first angiogenesis inhibitor for clinical use. Folkman told Langer to file a patent on this polymer; the US Patent Office refused his application six years in a row. Not being one to give up, Langer thought about how they could convince the patent examiner that this polymer was novel.
They then looked back at all the citations on the earliest paper—while most were negative, a handful were positive and pointed to “surprising results.” When the patent examiner heard this, he said if Langer and Folkman could get affidavits from the five people who said the results were surprising, he would give them the patent—which they did.

This discovery has led to numerous drugs still in use today in many diseases and conditions, such as advanced prostate cancer, Type I diabetes, alcoholism, schizophrenia, and endometriosis.

Langer has also worked to design a nanoparticle that can avoid or target certain molecules—he disguised the particle as a water molecule to fool immune systems and tumor cells. In February 2011, this research was the subject of a PBS NOVA episode (*Making Stuff Smarter*). Amgen, Pfizer, and AstraZeneca have put their drugs in these nanoparticles and initial results are very promising. Langer sees this as the tip of the iceberg for nanotechnology.

In the 1990s, after watching a TV program on computer chips, Langer thought about them as an interesting possibility for a drug delivery system. A chemistry chip could trigger on demand, and remotely release drugs into the body, which he thought could lead to a pharmacy on a chip.
He utilized the Medical Implant Communication Service (MICS), which allows for bidirectional radio communication with pacemakers and other medical implants. In this case, MICS communicates with the implanted chip to release drugs.

Langer highlighted the importance of engineering approaches—taking existing materials to do things one could not do before. As he reflected, these approaches did not come from engineers—rather, they came from medical doctors who wanted to solve pressing problems. For example, the first materials used in the artificial heart first came from a lady’s girdle. The first dialysis tubing came from sausage casing. Langer learned design in chemical engineering: figure out what you want in a biomedical material from a chemistry, engineering, and biology standpoint, and then synthesize the material that you need based on a combination of these principles.

For example, to create localized chemotherapy delivery, Langer lined the surgical cavity with a chemical polymer and was able to deliver high concentrations of chemotherapy, specifically targeted to the tumor. This type of localized delivery avoids the toxic side effects of chemotherapy.

When scientists want to create new materials, or try new approaches, they need funding. Langer and his colleagues typically wrote NIH grants to get support for new initiatives. At the NIH, Study Sections review grants. Unfortunately, Langer’s grants did not do very well. More often than not, he heard: “This approach will not work because....” The Study Section found reason after reason for this. Langer and his colleagues answered every question and refuted the doubters, starting in 1981, when they first submitted, until the FDA finally granted approval in 1996.
Recently, Langer has worked with Jay Vacanti, MD, at the Massachusetts General Hospital on tissue engineering. Together, they have grown new cartilage to make ears and noses for use in burn victims. Langer is also working with neuronal stem cells to make scaffolding for spinal repair. The FDA has recently approved human trials, which will begin in 2014.

Langer talked about the tremendous excitement around health research at MIT, underscoring that collaboration is the heart of the Institute. Two hundred and forty of Langer’s former students are now professors, company founders, and pharmaceutical and biotech executives around the world; this group has a tremendously broad reach. Langer also emphasized the importance of philanthropic funding in helping scientists to take risks, especially during challenging financial times. Federal grants rarely fund such proof-of-concept research. Taking risks—and often failing—is essential to moving science forward.

When asked about the role of chance versus selection in his career, Langer responded that chance always happens but you have to be looking in the right place. He simply wanted to do work that would help people.

An audio recording of Professor Langer’s presentation can be found at: development.mit.edu/files/Langer_2013-09-29.mp3

For a copy of Professor Langer’s PowerPoint presentation, contact Bonny Kellermann.
Recognition societies

With appreciation to those who give in many ways

The Katharine Dexter McCormick Society is one of several donor recognition societies at MIT. Others honor donors who make annual contributions to the Institute. The William Barton Rogers Society recognizes those who make gifts of $1,000 or more a year, and the 1861 Circle recognizes loyalty donors who have made gifts in each of the last five years. I am pleased to note that we now have 333 “triple crown winners” (an increase over 318 last year), those members of KDMS who are also members of WBRS and the 1861 Circle. Once again the Class of 1968 wins accolades as the class with the largest number of people (17) in all three recognition societies.

Our KDMS/WBRS/1861 Circle members not only have made provisions for future gifts, but also make generous gifts in their lifetimes, and give regularly. They have the benefit of seeing the impact of their gifts. As the end of the calendar year approaches, I hope that you will consider including MIT with your annual philanthropic priorities, this and every year. To those who are already doing this, a hearty thank you.

Do you have a personal story you would like to share with others in the KDMS Newsletter? If so, please contact Bonny Kellermann.
Remarks
From Sherwin Greenblatt ’62
KDMS Chair

MIT is well known for the creative and innovative work done by its graduates and faculty. Out of this work, a significant number of companies have been created. In a 2009 study, Professor Ed Roberts estimated there are currently 25,800 active companies founded by MIT alumni, employing about 3.3 million people and generating annual world revenues of two trillion dollars, producing the equivalent of the 11th-largest economy in the world. Eye-popping numbers indeed!

National recognition of entrepreneurship’s importance in the growth of our economy has spurred MIT, always a leader in this area, to develop its own style of entrepreneurship based on research and invention as a backbone for innovation. This MIT model is spreading through all of the schools and departments and across the campus. Starting a venture with one’s ideas is becoming a norm.

I’m fortunate to participate in this stepped-up activity as volunteer director of the MIT Venture Mentoring Service (VMS). We are a group of experienced volunteer mentors. We share our expertise and networks with those members of the MIT community who aspire to be entrepreneurs. It’s engaging work that has grown to be larger than we ever anticipated. We are working with over 200 startups.
This spring, during Campus Preview Weekend, an event where prospective admitted high school students and their parents can learn more about MIT before they make their college decision, we held several sessions where we introduced the “MIT entrepreneurial ecosystem.” We were surprised by the large attendance and the keen interest of the students and their parents. The kids wanted to learn about starting companies as soon as they came. MIT is changing.

KDMS presented Professor Bob Langer as the featured speaker at our annual brunch on September 29. Those of you who were able to attend this event were probably as enthralled as I was with the talk that Bob gave about his work and his life. It was the best-attended brunch KDMS has ever had. As we heard, Bob runs the most prolific lab on campus. Bob has helped start 25 ventures based on the work done in his lab, many involving the students who did the work. Last month I spoke to a group of grad and postdoctoral students about the entrepreneurial process at MIT and how they could take advantage of VMS services. Interest was strong and a number of the attendees have already enrolled with us.

I am so proud to be a part of activities that are transforming the MIT experience. MIT grows in strength by responding to societal needs and effectively addressing the world’s greatest problems. As those change, MIT changes. It is a privilege for me to be close enough to see these changes take place and to even be a part of them.
In memoriam
Ann Wolpert

We mourn the passing of Ann Wolpert, Director of the MIT Libraries. During her 17-year tenure, she brought about great changes as a pioneer in digital stewardship, bringing to the MIT community a deep understanding of scholarship and research, and of the library’s broader mission to preserve and disseminate knowledge. In memory of her dedicated leadership, the Ann J. Wolpert Strategic Initiatives Fund has been established.

For more information:
web.mit.edu/newsoffice/2013/ann-wolpert-obituary.html