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TechTalk

S E R V I N G T H E M I T C O M M U N I T Y



PHOTO / DONNA COVENEY

Lore Harp McGovern and Pat McGovern hug on the tracks that run under the brain and cognitive sciences complex, new home of the McGovern Institute for Brain Research at MIT.

Celebrating McGovern

Sen. Kerry, Jane Pauley join in festivities

Cathryn M. Delude
News Office Correspondent

The McGovern Institute has come home. Celebrating the official Nov. 4 opening of the institute they founded in 2000, Pat and Lore McGovern hosted more than 500 guests in the sun-filled atrium of the largest neuroscience complex in the world — the brain and cognitive sciences complex at MIT.

An overflow of onlookers lined the tiered balconies to hear the lineup of speakers, which included Sen. John Kerry (D-Mass), TV news host Jane Pau-

ley, Nobel laureates Eric Kandel and Phillip Sharp, and Ethernet inventor Robert Metcalfe.

MIT President Susan Hockfield said it was “an incredibly exciting day for all of us as we formally introduce the McGovern Institute into this spectacular building.” The best way to thank Pat and Lore McGovern, she said, is to “turn their aspirations into reality.”

Pat McGovern, an MIT alumnus, recounted how he and his wife, Lore Harp McGovern, came to see

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Nobelist calls for nuclear cooperation

Elizabeth A. Thomson
News Office

A multinational approach to producing nuclear energy and storing waste is key to solving many of the problems that beset this energy source, said Nobel laureate Mohamed ElBaradei, director general of the International Atomic Energy Agency (IAEA), who gave this year’s David J. Rose Lecture on Nuclear Technology at MIT on Thursday, Nov. 3.

“The benefits of nuclear energy are needed more than ever,” ElBaradei told an overflow crowd in the Stata Center’s Kirsch Auditorium. The speech was webcast live, and can still be viewed on the MIT World web site.

“Global energy consumption will be almost 60 percent higher in 2030 than it is now and will double by the middle of the century,” he said.

But troubling issues remain, including security. ElBaradei and the IAEA were awarded the 2005 Nobel Peace Prize last month “for their efforts to prevent nuclear energy from being used for military purposes and to ensure that nuclear energy for peaceful purposes is used in the safest possible way.”

ElBaradei also stressed that “no discussion of energy is complete without considering the global energy imbalance.” People in developing countries like Nigeria live with 100 times less electricity than the average citizen in the developed world, and 200 times less than a person in the United States, he said.

“One in four of our fellow human beings lacks access to modern energy services,” he said.

As a result, for reasons including the availability and comparatively low cost of uranium fuel, “the case for constructing new nuclear power plants is gaining ground in many countries,” ElBaradei said.

We cannot afford the risk of having power plants in every country, he said. Therefore, he advocates multinational approaches to the nuclear fuel cycle.

“More than one country has to have oversight [over a given plant] to ensure that no one country can control enrichment of uranium,” he said. The world must also

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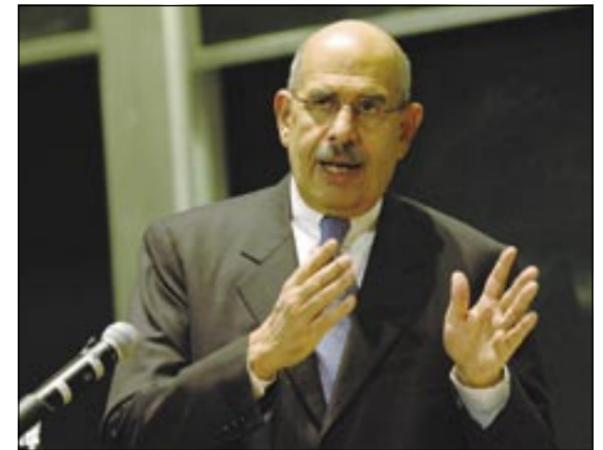


PHOTO / DONNA COVENEY

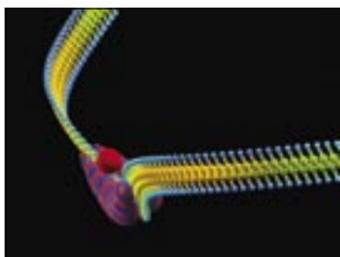
Nobel laureate Mohamed ElBaradei, director general of the International Atomic Energy Agency, delivers this year’s David J. Rose Lecture on ‘Nuclear Technology in a Changing World: Have We Reached a Turning Point?’

RESEARCH

BIONIC SPEED

MIT researchers find a theoretical way to make robotic muscles 1,000 times faster than human muscles.

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PEOPLE

HIGH FLYING

Some of the greatest names in aviation have been awarded the Daniel Guggenheim Medal. Now it’s Professor Emeritus Eugene E. Covert’s turn.

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PUNK ROOTS

Ute Meta Bauer, the new director of the Visual Arts Program at MIT, discusses her inspiration: the punk rock movement.

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ARTS

FEEL THE FORCE

The MIT Theater Guild brings “Star Wars” to the stage — with a twist.

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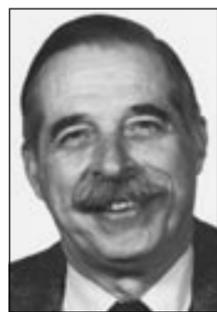
Covert to receive one of aviation's highest awards

Deshpande Center awards \$600,000

Professor Emeritus Eugene E. Covert of aeronautics and astronautics is going to receive one of the most prestigious awards in aviation: the Daniel Guggenheim Medal.

The Guggenheim Medal, established in 1929, was first awarded to aviation pioneer Orville Wright. Over the ensuing years, recipients have included some of the greatest names in aerospace. Many have been MIT alums and faculty, including Jerome Hunsaker (founder of MIT aeronautics), Donald Douglas, Charles Stark Draper and Robert Seamans.

Jointly sponsored by the American Institute for Aeronautics and Astronautics (AIAA), American Society of Mechanical Engineering, American Helicopter Society, and Society of Automotive Engineers, the medal recognizes individuals who make profound contributions to advancing aeronautics. Covert's award cites him for "exemplary leadership in aeronautics teaching and research, development of significant state-of-the-art aerodynamic testing techniques and outstanding contributions to public service."



Eugene Covert

Covert will receive the medal at the AIAA Aerospace Spotlight Awards Gala in Washington, D.C., next April.

"Gene's contributions to aerospace research, education and public service are equally profound and we're thrilled he's been honored with this highest form

of recognition," said Professor Wesley Harris, aero-astro department head. "The entire aero-astro department celebrates with him."

Covert's aeronautics career began in 1946 at the Naval Air Modification Unit's Pilotless Aircraft Division, where he worked on projects leading to the Sparrow missile. In the 1950s he conducted tests on numerous aircraft types, including the famed F-4 Phantom, at the MIT Naval Supersonic Wind Tunnel. His interest in the problems of model support led him to develop the world's first practical wind tunnel magnetic suspension system.

From 1972-73, Covert was chief scientist of the U.S. Air Force, and from 1978-79, he was technical director of the European Office of Aerospace Research and Development. Later, he was a NASA consultant on the Space Shuttle main engine, and he was a member of the commission that examined the Challenger accident.

Covert was appointed to the MIT faculty in 1963 and was aero-astro department head from 1985 until 1990. He lives in Cambridge with his wife, Mary Rutford Covert.

The Deshpande Center for Technological Innovation at MIT recently awarded \$600,000 in grants to researchers working on such projects as growing human liver cells for drug testing and creating a new material for computer displays.

"The grant winners this fall not only are among the most exciting we've seen, but also will benefit from the success of those who have come before," said Deshpande Center Executive Director Krisztina Holly. "Over the past three years, we have refined our process to provide the most effective support to innovators, starting with hands-on expertise at the very inception of a commercial idea."

The fall 2005 grants bring to \$5.5 million the total funding provided to 47 research teams at MIT since the Deshpande Center began its innovation support programs in 2002.

The Deshpande Center awards Ignition Grants to research teams that are in the early stages of determining technical feasibility of breakthrough ideas, and Innovation Grants to teams that have already made significant academic progress and are on the cusp of applying their

research to the most promising markets.

The center awarded Innovation Grants to: Associate Professor Sangeeta N. Bhatia of the Harvard-MIT Division of Health Sciences and Technology and of electrical engineering and computer science, for work developing human liver models for faster, safer drug development; Professor Clark Colton of chemical engineering for work on technology that could help pinpoint early stage tumors; and Professor Lionel Kimerling of materials sciences and engineering and the Materials Processing and Microphotonics centers — with research associate Anu Agarwal — for low-cost multispectral infrared detector arrays.

Ignition Grants went to: Professor Karen Gleason of chemical engineering for conductive material that could enable large-scale production of flexible displays and touch screens; and T. Alan Hatton, the Ralph Landau Professor of Chemical Engineering and director of the David H. Koch School of Chemical Engineering Practice, for catalytic particles for rapid decontamination in carbon filters and clothing.



PHOTO / DONNA COVENEY

A matter of honor

Members of the ROTC branches at MIT hold a vigil in honor of prisoners of war and those missing in action on Tuesday, Nov. 1. The vigil on the steps of the Student Center went on for 24 hours. Matthew Hillen is marching at right. The visible flagbearers are, from left, Giselle Andrejack, Katherine Ingle and Rodrigo Sanchez. This Friday, Nov. 11, is Veterans Day.

Benefits enrollment fairs scheduled 7 from MIT to become AAAS Fellows

The annual benefits open enrollment period at MIT will begin Monday, Nov. 14, and run through Friday, Dec. 2. Enrollment guides will be sent by e-mail only to active employees; early retirees will receive guides by regular mail.

Enrollment guides summarize each employee's current benefit coverage and include changes to benefits and rates for 2006. Guides also include instructions for making selections using Employee Self Service.

Employees who wish to maintain their current levels of coverage for next year do not need to do anything, unless they want to participate in a Flexible Spending Account, which requires re-enrollment each year.

To make changes or enroll in a Flexible Spending Account, go to Employee Self Service at web.mit.edu/sapwebss/PS1/home.shtml and click on the Open Enrollment tab. The system is a secure web service that operates best with the Internet Explorer browser.

Early retirees (under age 65) will receive their enrollment guides by regu-

lar mail in early November. They will not need to do anything to maintain current coverage for 2006.

Employees are invited to attend one of the benefits fairs scheduled between Nov. 15 and 21 to meet representatives from the health plans, dental plan and life insurance plan. Benefits Office staff also will be on hand to answer questions.

The Benefits Office asks anyone who does not receive an enrollment guide by Nov. 15 to e-mail openenroll2006@mit.edu or call the campus Benefits Office at x3-5100. Lincoln Laboratory employees should contact the Lincoln Benefits Office at (781) 981-7055. Further information on 2006 Open Enrollment changes and MIT benefit plans can be found at web.mit.edu/hr/benefits.

Open enrollment fairs will be held at the Student Center, Mezzanine Lounge on Nov. 15 from 10 a.m. to 2 p.m.; at the Haystack Observatory, Conference Room A, on Nov. 17 from 10 to 11 a.m.; at Bates Library on Nov. 17 from 2 to 3 p.m.; and Lincoln Lab Auditorium on Nov. 21 from 11 a.m. to 4 p.m.

Anne Trafton
News Office

The American Association for the Advancement of Science (AAAS) has awarded the distinction of Fellow to 376 members, including MIT President Susan Hockfield and six MIT faculty members.

Fellows are recognized for their efforts advancing science or fostering applications that are deemed scientifically or socially distinguished. New Fellows will be presented with the society's gold and blue rosette pin on Feb. 18, at the group's annual meeting in St. Louis.

Hockfield was honored for "pioneering work identifying the extracellular matrix as a critical element in activity-dependent brain maturation and in brain tumor cell motility and for university leadership."

Biology Professor Tania A. Baker was named a Fellow for "pioneering work in protein-catalyzed protein remodeling."

Chemistry Professor Keith A. Nelson was cited for "innovative ultrafast studies of and optical control over structural

change in complex materials and for creative applications in thin film photoacoustic technology."

Rafael L. Bras, Edward Abdun-Nur Professor of Civil and Environmental Engineering, was honored for "contributions to hydrologic science, most recently in the understanding of landscape evolution and land-atmosphere interaction, and for leadership in academia and the profession."

Gregory N. Stephanopoulos, Bayer Professor of Chemical Engineering, was cited for "research, technology development and educational contributions to metabolic engineering, cell culture engineering and bioinformatics, and for championing metabolic engineering in biology and biotechnology."

Miklos Porkolab, director of the Plasma Science and Fusion Center, was honored for "pioneering experimental and theoretical research in nonlinear dynamics of plasmas and for leadership in advancing controlled fusion."

Earl K. Miller, Picower Professor of Neuroscience, was cited for "work in high-level cognition, elucidating the neural bases of executive brain functions."

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Teams gather for genetic engineering competition

Deborah Halber
News Office Correspondent

More than 150 students and instructors from 13 universities across North America and Europe convened at MIT last weekend to unveil their biological designs at the 2005 International Genetically Engineered Machine (iGEM) competition.

The teams worked all summer to design and build engineered biological systems using standard interchangeable biological parts called BioBricks. BioBricks, originated at MIT, are made of biological materials that work as molecules inside living organisms.

While no one team walked away from the competition as the declared winner, all of the teams made progress in laying the foundation for the future of synthetic biology.

The new field of synthetic biology involves taking apart the stuff of life and refining it so it can be reused easily in potentially useful ways. Drew Endy, assistant professor of biological engineering, said that the successful development of foundational technologies such as BioBricks will make it much easier to engineer biological systems.

MIT senior research scientist Tom Knight, originator of the BioBricks system, likened BioBricks to standardized screw threads — a fundamental advance, now taken for granted, in mechanical systems engineering.

“The goal of iGEM is to work with students to learn how to develop biology as a technology that can be used to engineer living systems that do useful things like process information and chemicals, construct materials and produce energy,” said MIT principal research engineer Randy Rettberg, director of the MIT Registry of

”

It's still early in the process of developing the field and we're quite happy with their successes so far.

Randy Rettberg
Principal research engineer

Standard Biological Parts and lead organizer of the 2005 iGEM competition.

Each team was recognized for its individual successes. For example, Davidson College was honored for its team name, “SynthAces,” and Caltech was given “best use of transmogrified smiley faces.” MIT was noted for having the “most modest goal” and “least transportable visual aid.”

The awards panel noted that Berkeley's cell-cell signaling project, through which DNA is used to send information between cells, could one day lead to a programmable bacterial “Internet.”

“All the teams worked hard and made a lot of progress,” Rettberg said. “It's still early in the process of developing the field and we're quite happy with their success so far.”

The iGEM participants were MIT, Berkeley, Caltech, University of Cambridge (U.K.), Davidson, ETH Zurich (Swiss Federal Institute of Technology), Harvard, University of Oklahoma, Penn State, Princeton, University of Toronto, University of California at San Francisco and University of Texas at Austin.

For more information on the competition and individual awards, visit the Jamboree link at parts.mit.edu/iGEM.

The event was sponsored by Microsoft/MIT iCampus.

MCGOVERN

Continued from Page 1

misunderstanding and miscommunication as the basis for conflicts. They founded the institute to promote peace and understanding by improving communication and helping to alleviate the human suffering brought on by mental illness and brain disease, he said.

Theirs is the biggest gift in MIT history, \$350 million over 20 years. “Some universities like dead donors,” quipped Lore McGovern, “because they're easier to deal with. But we want to participate.” She said that she and her husband feel an “awesome responsibility” to make sure the research benefits humanity, and also to promote entrepreneurial research, which she calls “let's-try-it funding.”

MIT's Sharp, founding director of the institute, said, “I'm not more proud of anything than what's happened here and what will happen in the future This neuroscience complex is creating the future not only of neuroscience but of MIT,” by directing efforts into areas of science where they are most desperately needed.

That desperate need to make progress in treating brain disorders, current McGovern Institute Director Robert Desimone said, was the true, sobering reason behind Friday's celebration. He described the themes of the institute's research as perception, cognition and action. To illustrate these concepts, he showed a clip of a train roaring head on toward the camera. “Perception is what happens when you see and hear the train. Action is what happens when you jump to safety. Cognition [fear, recognition, decision] is what happens in between.” Perception, cognition and action are all vulnerable in many brain disorders, and the McGovern Institute brings a “molecules to mind” approach to their understanding, said Desimone.

Metcalf, also an MIT alumnus and the chairman of the McGovern Institute's Leadership Board, spoke about “why the Internet is like the brain ... or not.” Both have massive connectivity and many layers and are evolving, but the brain, unlike the Internet, has not yet had its “bubble.” “Join us in inflating the brain bubble so we can understand its infrastructure and move forward together,” he urged.

Kandel, of Columbia University and a member of the McGovern Institute's scientific advisory board, said the opening was a “historic event, a celebration of neuroscience not only at MIT but worldwide The next century will be for the biology of mental illness what the last century was for the biology of genes.”

Pauley shared her personal voyage with mental illness and its stigma; bipolar disease nearly devastated her life four years ago. “My goal is to yank mental illness into the realm of all the other bad things that can happen in a normal life,” she said.

Kerry called the opening “a celebration of generosity, of vision, and of possibilities in the future” that “couldn't come at a more important time.” Kerry,



PHOTOS / DONNA COVENEY

Sen. John Kerry (D-Mass.) addressed a crowd of more than 500 in the atrium of the brain and cognitive sciences complex on Friday, Nov. 4, to celebrate the opening of the McGovern Institute for Brain Research at MIT.



Some of the notables enjoying the opening of the McGovern Institute for Brain Research at MIT on Friday, Nov. 4, are, from left: TV personality Jane Pauley, who spoke about her experiences with bipolar disorder; MIT President Susan Hockfield; and Sen. John Kerry and his wife, Teresa Heinz Kerry.

who has promoted scientific research throughout his four terms in the Senate, strongly criticized the “attack on science” by ideologues. “Pat and Lore are doing what the nation should be doing for itself,” he said.

When the final ceremony concluded around 1 p.m., a train bearing a McGovern Institute banner entered the building. It was, Desimone told the delighted crowd, a welcome from Amtrak, whose train track runs beneath the third-floor lobby. No one would have known about the train if not for the live video on the huge screen in the lobby, since the building design isolates the structure from the vibrations.

Lore McGovern recalled that on May 19, 2003, she stood on a triangular dirt field with nothing but a railroad track and a vision of a future “functional but fun” building. “This beautiful, stunning, gorgeous building goes beyond my wildest expectations. It brings us closer to work together.”



A neuroscientist herself, MIT President Susan Hockfield shared her excitement about brain research at the opening of the McGovern Institute on Friday, Nov. 4.

Hockfield talks on responsibility of universities

Sasha Brown
News Office

MIT's primary responsibility is education and research in service to the nation and the world, and today the Institute continues to live up to that responsibility in the true spirit of its founder, William Barton Rogers, said President Susan Hockfield in the Miller Lecture on Science and Ethics on Nov. 7.

Rogers believed the Institute's work should be to advance and develop science and then apply that knowledge to world problems. Hockfield said the overarching responsibilities of a research university are to educate students and to advance knowledge in ways that will help humankind.

“It is through our mission of service that MIT meets its fundamental responsibilities as a university,” Hockfield told the audience in Kirsch Auditorium.

“Our mission calls us to make the world a better place through education, innovation and power of example. This is what MIT has done with extraordinary success for nearly a century and a half,” she said in the lecture titled “The University and Its Responsibilities,” sponsored by the Program in Science, Technology and Society. Part of that mission is to set an example through “integrity, independence and engagement with the world.” She underscored the critical role of faculty governance in the pursuit of that mission.

She challenged the statement of John Henry Newman, who wrote in 1854 that research and teaching are distinct gifts not usually found in the same person. “If its object were scientific and philosophical discovery, I do not see why a university should have students,” Newman wrote.

In fact, research and education are mutually reinforcing, Hockfield said. “Today, the fusion of teaching and research is best exemplified in American universities, and perhaps nowhere more fully than here at MIT,” she said. MIT faculty members teach and perform world-class research, and 85 percent of MIT students do research as undergraduates through UROP, the Undergraduate Research Opportunities Program, Hockfield said.

The responsibilities of a research university are significant. In addition to training the next generation of leaders, MIT must advance knowledge “in ways that will serve humankind,” Hockfield said. The Institute is a place that shrugs off the “ivory tower” idea of the university. “Our tradition of engagement with the world goes back to our founding 150 years ago.”

The Arthur Miller lecture honors the memory of Arthur Miller, an MIT alumnus (S.B. 1945) noted for his work in electronic measurement and instrumentation.

New visual arts chief cites Rotten model

Sarah H. Wright
News Office

Ute Meta Bauer, the new director of the Visual Arts Program at MIT, credits role models many academics would flee — Patti Smith, punk rocker Johnny Rotten and cult bands like Kraftwerk and DEVO — for inspiring her to work across disciplines and cultures as a curator of contemporary arts.

Bauer, whose solo and collaborative exhibitions of art, film and video have been held in Austria, Germany, Spain and the United States, as well as elsewhere on the globe, remembers the precise moment when she first heard the Sex Pistols on German radio.

"I was studying stage design in Hamburg. At first, I didn't understand what I heard. Then I got it: Punk was a reaction to the materialism and artificiality of the British music scene. Punk meant, 'everybody can do this!'" Bauer said.

A native of Germany who describes herself as "very much a kid of the 1980s," Bauer recalled how punk music quickly

included women performers like Siouxsie and the Banshees and just as quickly affected every other art form, from theater to film to dance, with the "do-it-yourself" spirit.

Eager to produce "cross-experimentation, using the wonderful motor of naivete," Bauer moved from stage design into collaborative projects, curating exhibitions in multiple media and across multiple cultures that have received wide critical praise.

"All art is political. Curatorial practice means focusing on the importance of context, time and place in the perception of art. Curating is a way to explore politics with a different language and to position art as a relevant voice in society," Bauer said.

Bauer has edited the international art magazine META and numerous publications on the changing role of artists and the production of art in society. Primary among these changes is the end of the "artist-prince" — the status equivalent among artists of the isolated scientist-genius, as Einstein is often portrayed — and the rise of collaborative practices and

new technologies.

"You have to be very self-determined to work as an artist. As a child I spent many hours alone, reading and drawing. But I get more information and more fuel through collaborating. As I tell my students, everything we do is influenced by the accomplishments of others. To be bright means to be open to absorbing new information and able to make your own decisions too," she said.

Her latest curatorial project is a box that's so far outside the box of any established genre that even grumpy Johnny Rotten might be forced to a leathery grin.

The project, a mobile trans-border archive, exists in "inSite05," a truck that looks like a breadbox on wheels. InSite05 travels from site to site in San Diego and in Tijuana, Mexico, offering books, photographs, films, videos, oral histories and online resources.

"InSite05 cross-introduces the diversity of existing archives to people in this highly charged border region," Bauer said.

Bauer was educated at the Academy of Fine Arts in Hamburg, receiving a diploma

with honor in visual communications/stage design in 1987.

A professor of theory, practice and transfer of contemporary art at the Academy of Fine Arts in Vienna since 1996, Bauer is also a former artistic director of Künstlerhaus (the House of Artists) in Stuttgart, Germany, and founding director of the Norwegian Office for Contemporary Art, Oslo, Norway.

Exhibitions she has recently curated include "Architectures of Discourse" (Barcelona, Spain, 2001) and "First Story—Women Building/New Narratives for the 21st Century" (Porto, Portugal 2001).

Between 1999 and 2002, she was a co-curator (with Artistic Director Okwui Enwezor) of Documenta11, an exhibition of global contemporary art that takes place every five years.



Ute Meta Bauer

Theater Guild strikes back with 'Star Wars' spoof

Sarah H. Wright
News Office

Long ago and far away in Modesto, Calif., two young musical theater fans shared a vision: "Star Wars" with tap-dancing Storm Troopers! Ewoks with chirpy voices raised in song!

The two fans, MIT Theater Guild (MTG) members Rogue Schindler and Jeff Seuss, wrote and wrote, grafting snappy Star Wars lyrics onto tunes from such Broadway hits as "Cats," "West Side Story," "Les Miserables" and "Phantom of the Opera."

The delirious result is "Star Wars Trilogy: Musical Edition," the MTG production opening Friday, Nov. 11, with shows Nov. 11-13 and 16-20 in La Sala de Puerto Rico, MIT Student Center.

The production, known as "SWT: ME," retells "Star Wars: A New Hope," "The Empire Strikes Back" and "The Return of the Jedi" in a three-act parody of science fiction, musical theater and George Lucas' famous Jedi saga.

More than 60 MIT undergraduates, graduate students and alumni are actors, musicians or production crew for "SWT: ME." The show is directed by Schindler and produced by Jacqueline Kirtley (S.B. 1996).

Matthew Ciborowski, a sophomore in urban studies and planning, plays Luke Skywalker, young hero of the trilogy.

Ciborowski, who wields a working light saber, is most enthusiastic about the choreographed fight scenes. "They rock!" he said. A veteran performer of three dozen musicals over the past 10 years, he described "SWT: ME" as "the funniest show I have ever been in."

Ciborowski first saw the Lucas films last summer. By contrast, Nikki Akrahoff, a junior in mechanical engineering who plays Lando Calrissian, said her "staple television diet was Star Wars and operas. I was preparing for a musical Star Wars since I was 3 years old."

As Calrissian, Akrahoff does "some fighting — sadly, no light saber — and my biggest solo bits are rapping in a chorus number," she said.

Akrahoff described "SWT: ME" as "a lot of fun for musical theater buffs to pick out all the tunes and references. The same is true for Star Wars buffs, with all the details we added. But above all, I cannot express how funny it is," she said.

Eleanor Pritchard, senior in biology and a "huge Star Wars fan," serves as costume designer, creating 190 costumes for the 33-member cast. She also plays the twittery droid, C3PO.

"SWT: ME" was a challenge due to the "sheer volume and range of the costumes,"



PHOTO / JAX KIRTLEY

Kenneth Kamrin, a graduate student in mathematics, works with the Yoda puppet, one of the stars of "Star Wars Trilogy: Musical Edition," a production of the MIT Theater Guild.

but research paid off, she said, in locating items such as taxidermy glass eyes for the Ewok puppets and inflatable sumo suits to achieve the chubby look needed for the Gammorrean Guards.

As C3PO, Pritchard wears a molded plastic vacuum form, painted gold. The droid mask is "modified so I can get those high notes out and be understood," she said.

Pritchard's costume and character have already received one rave review — from Anthony Daniels, who played C3PO in the Lucas films. Daniels and Lucas attended a gala to open the Boston Museum of Science's Star Wars exhibit at which the "SWT: ME" cast performed.

Daniels "shook my hand and told me it was a 'masterful performance.' It was a tremendous honor," said Pritchard.

Schindler and Seuss describe computer science doctoral student Stephen Peters (S.B., S.M. 1992) as "SWT: ME"'s "musical orchestration guru."

"Composing this work has been a real delight," said Peters, who said he was most inspired by "The Empire Strikes Back."

For reservations, visit web.mit.edu/mtg.

Faculty help bring films to life

Sarah H. Wright
News Office

MIT faculty are now starring in "Star Wars: Where Science Meets Imagination," a new exhibit at the Boston Museum of Science that combines objects from "Star Wars" films with real-world technologies.

The exhibit opened with a gala on Saturday, Oct. 29.

Joseph Sussman, JR East Professor of Civil and Environmental Engineering and Engineering Systems, described the exhibit as linking the "imagery of the various Star Wars movies to real contemporary questions and technologies. It has a fine mix of 'pop' and educational material."

Sussman is included in the exhibition segment, "Living on Coruscant." (Coruscant is an imaginary city, seat of the Jedi government.)

Sussman, whose specialty is transportation issues in real cities, can be seen on video discussing intelligent transportation

systems, high-speed rail, congestion, environmental issues and challenges facing megacities in developing countries.

"They gave my interview seven minutes of air time — not as high exposure as Luke Skywalker or Han Solo, but not bad!" Sussman said.

Other MIT faculty who contributed to the museum's "Star Wars" exhibit include Cynthia Breazeal, associate professor in media arts and sciences; Rodney Brooks, director of the Computer Science & Artificial Intelligence Lab and Matsushita Professor of Robotics; and Peter Dilworth, technical instructor in the MIT Media Lab.

Breazeal is director of the Robotic Life Group at the MIT Media Lab. In a video in the exhibit's Robot Object Theater segment, she discusses the merits of R2-D2 and how researchers try to duplicate traits such as mobility, perception and cognition in robots.

Dilworth's robotic dinosaur "Troody" is on display and featured in a video.

'Star Wars Trilogy' — with catchy tunes

Death Star Assault Medley

A squadron of six X-wings leads the big assault
With a dozen to nine Y-wings close behind
When you drive them back attack,
there will be a lot of action,
The best the Empire can find

Tune: "76 Trombones"
From: "Music Man"

Get Me to the Trench

I'm getting martyred in the battle
Big bang! They'll all pay for their crime!
They aim to drop us
But no one will stop us
Just get me to the trench on time

Tune: "I'm Getting Married in the Morning"
From: "My Fair Lady"

Nothin' Like a Name (Storm Troopers Song)

We got sidearms at our hips
We got rifles in our hands
We got ammo clips to fire lasers at the rebel band
We got body armor, gleaming white, of universal fame
What ain't we got? We ain't got names!

Tune: "Nothin' Like a Dame"
From: "South Pacific"

Researchers explain why old habits die hard

Cathryn M. Delude
News Office Correspondent

Habits help us through the day, eliminating the need to strategize about each tiny step involved in making a frothy latte, driving to work and other complex routines. Bad habits, though, can have a viselike grip on both mind and behavior. Notoriously hard to break, they are devilishly easy to resume, as many reformed smokers discover.

A new study in the Oct. 20 issue of *Nature*, led by Ann Graybiel of MIT's McGovern Institute, now shows why. Important neural activity patterns in a specific region of the brain change when habits are formed, change again when habits are broken, but quickly re-emerge when something rekindles an extinguished habit — routines that originally took great effort to learn.

"We knew that neurons can change their firing patterns when habits are learned, but it is startling to find that these patterns reverse when the habit is lost, only to recur again as soon as something kicks off the habit again," said Graybiel, who is also the Walter A. Rosenblith Professor of Neuroscience in MIT's Department of Brain and Cognitive Sciences (BCS).

The patterns in question occur in the basal ganglia, a brain region that is critical to habits, addiction and procedural learning. Malfunctions in the basal ganglia occur in Parkinson's disease, obsessive-compulsive disorder (OCD) and many neuropsychiatric disorders.

In the Graybiel experiments, rats learned that there was a chocolate reward at one end of a T-maze. When the rats were learning, the neurons were active throughout the maze run, as if everything might be important. As the rats learned which cues (audible tones) indicated which arm of the maze led to the chocolate, the neurons in the basal ganglia learned, too.

After the rats had thoroughly learned the cues, the neurons interested in the task fired intensely at the most salient parts of the task — the beginning and the end. But these neurons became quiet as the rats ran through the familiar maze, as if exploiting their knowledge to focus on efficiently finding the reward. Other "disinterested" neurons became quiet during the maze run, perhaps so as not to bother the critical neural signals.

Then the researchers removed the reward, making the cues meaningless. This change in training made everything in the maze become relevant again, and the neurons reverted to chattering throughout the run. The rats eventually stopped running (gave up the habit), and the new habit pattern of the brain cells disappeared. But as soon as the researchers returned the reward, the learned neural pattern, with the beginning and ending spikes, appeared again.

First author Terra Barnes, a BCS graduate student, and BCS research scientist Dan Hu led the animal training. Dezhe Jin, an MIT affiliate and an assistant professor of physics at Pennsylvania State University, led the data analysis along with Graybiel and Yasuo Kubota, a research scientist in Graybiel's lab.

"We tried to simulate the learning and forgetting of a habit," Kubota said. "If a learned pattern remains in the brain after the behavior is extinguished, maybe that's why it's so difficult to change a habit."

"It is as though somehow, the brain retains a memory of the habit context, and this pattern can be triggered if the right habit cues come back," Graybiel said. "This situation is familiar to anyone who is trying to lose weight or to control a well-engrained habit. Just the sight of a piece of chocolate cake can reset all those good intentions."

The National Institutes of Health and the Office of Naval Research supported this research.

MIT closes in on bionic speed

Cathryn M. Delude
News Office Correspondent

Robots, both large and micro, can potentially go wherever it's too hot, cold, dangerous, small or remote for people to perform any number of important tasks, from repairing leaking water mains to stitching blood vessels together.

Now MIT researchers, led by Professor Sidney Yip, have proposed a new theory that might eliminate one obstacle to those goals — the limited speed and control of the "artificial muscles" that perform such tasks. Currently, robotic muscles move 100 times more slowly than ours. But engineers using the Yip lab's new theory could boost those speeds — making robotic muscles 1,000 times faster than human muscles — with virtually no extra energy demands and the added bonus of a simpler design. This study appears in the Nov. 4 issue of the journal *Physical Review Letters*.

In this case, a robotic muscle refers to a device that can be activated to perform a task, like a sprinkler activated by pulling a fire alarm lever, explains Yip, a professor of nuclear engineering and materials sci-

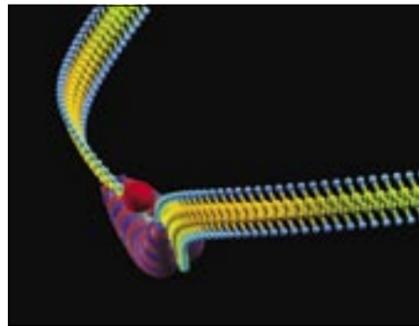


ILLUSTRATION / COURTESY YIP LAB

A soliton (blob with red and blue stripes) moves along a conducting polymer chain (aqua and yellow for hydrogen and carbon). The soliton blob causes a localized bend in the chain. The traditional way to make polymer actuate is to dope the material with an ion such as sodium, represented by the red dot.

ence and engineering.

In the past few years, engineers have made the artificial muscles that actuate, or drive, robotic devices from conjugated polymers. "Conjugated polymers are also called conducting polymers because they

can carry an electric current, just like a metal wire," says Xi Lin, a postdoctoral associate in Yip's lab. (Conventional polymers like rubber and plastic are insulators and do not conduct electricity.)

Conjugated polymers can actuate on command if charges can be sent to specific locations in the polymer chain in the form of "solitons" (charge density waves). A soliton, short for solitary wave, is "like an ocean wave that can travel long distances without breaking up," Yip adds. (See figures.) Solitons are highly mobile charge carriers that exist because of the special nature (the one-dimensional chain character) of the polymer.

Scientists already knew that solitons enabled the conducting polymers to conduct electricity. Lin's work attempts to explain how these materials can activate devices. This study is useful because until now, scientists, hampered by not knowing the mechanism, have been making conducting polymers in a roundabout way, by bathing (doping) the materials with ions that expand the volume of the polymer. That expansion was thought to give the

See **MUSCLES**

Page 6



PHOTO / DONNA COVENEY

A light moment

Usually a scene of hustle and bustle, Lobby 10 falls quiet one afternoon late last month, drawing attention to the play of light through the windows to Killian Court.

Hurricane horror mostly bad luck — for now

Sasha Brown
News Office

The high-impact hurricanes that have hit the United States over the past couple years are, at least for now, more a function of bad luck than of climate change, said MIT Professor Kerry Emanuel during an Oct. 31 symposium.

Through his research, Emanuel has found a way to help improve hurricane risk assessment over time. "There is some really interesting physics that can be brought to bear," he said.

Emanuel, a professor of meteorology in the Department of Earth, Atmospheric, and Planetary Sciences, is the author of the recently published "Divine Wind: The History and Science of Hurricanes." He spoke as part of a series of symposia on "Big Questions After Big Hurricanes."

Emanuel's talk, titled "What Does Current Scientific Research Have to Say About the Present and Future Risks Associated With Hurricanes?" was the fourth in the series.

Assessing the risks posed by future hurricanes is an important exercise, said Emanuel. For insurers, it is important to understand the implications of providing coverage for homes in hurricane zones.

"Katrina is the most expensive natural disaster in U.S. history," Emanuel said, referring to the Aug. 29 hurricane that destroyed parts of the Gulf Coast, killed at least 1,200 people and left \$125 billion of damage in its wake.

Since 1870, 223 hurricanes have hit the United States. Only 13 of those storms reached the Category 4 level of Hurricane Katrina. "More than one half of the damage is done by the top five events," said Emanuel. In fact, 90 percent of all hurricane damage in the past 135 years has been caused by storms that are Category 3 and higher.

In recent years, many have speculated about the increasing number of Category 4 and 5 hurricanes. After Katrina came Rita and Wilma, both Category 3 hurricanes that hit the southern United States in September and October.

Emanuel and his team created models

of potential future hurricane behavior by examining historical hurricane records and examining the energy level a hurricane generates over its life.

The results were concerning, said Emanuel, but not immediately. "On a 50-year time scale from a U.S. point of view, it probably doesn't mean anything at all," he said. Only about one third of the storms over the Atlantic even make landfall. "The last two years have been more or less bad luck," he said.

However, those who are interested in a time period longer than 50 years or the global effect do need to worry, he said. "Although there are little implications for the U.S. in the next 50 years, there are more global implications."

The fifth symposium in the series will be held Nov. 15 from 5 to 7 p.m. in Kirsch Auditorium.

Professor David Jones of the Program in Science, Technology and Society (STS) and Meg Jacobs, Class of 1947 Associate Professor of History, will address the question: "What's so Natural About Natural Disasters?"

MIT gets Blue Gene supercomputer

Anne Trafton
News Office

"Blue Gene," a new computer that will be MIT's most powerful, will be dedicated on Thursday, Nov. 10.

The computer will be used to explore lattice quantum chromodynamics (QCD) and other extremely demanding computational physics problems. John Negele, the William A. Coolidge Professor of Physics, is the principal investigator for the Blue Gene project.

"The MIT Blue Gene computer will have tremendous impact on our research in QCD," Negele said. "For the first time, our resources will be of the same magnitude as dedicated facilities in Japan, Germany, the U.K. and the RIKEN Center at Brookhaven National Lab."

The new computer will be used by many MIT physicists, including faculty, postdocs, graduate students and senior thesis stu-

dents. It will help scientists build on work done by MIT Professor Frank Wilczek, who won the 2004 Nobel Prize in physics for his work on asymptotic freedom.

Extremely fast, Blue Gene is also efficient. "A unique feature is its compactness and low energy consumption," Negele said. "The single rack at MIT has the same power as a conventional cluster filling a large room and uses an order of magnitude less electrical power and air conditioning, heralding a new era of energy efficient computing."

The project is funded by the U.S. Department of Energy (DOE).

Thursday's dedication will take place at 2 p.m. in Building W91. Attendees will include Michael Strayer (Ph.D. 1971), director of the DOE Office of Advanced Scientific Computing Research; Dmitri Kuznezov, director of advanced simulation and computing at the National Nuclear Security Administration at DOE; and officials from MIT and IBM.

MIT Museum launches 'Soap Box' series

The MIT Museum, with support from the Boston Globe, is launching a monthly series of evening presentations on critical research. Each presentation will be followed by a participatory, salon-style conversation with the audience.

The "Soap Box" series will begin on Tuesday, Nov. 15, with a discussion on the societal implications of new genetic research.

Dr. David Altshuler, director of the program in medical and population genetics at the Broad Institute of MIT and Harvard, will lead the discussion, to be held in the MIT Museum's Robotics Gallery at 6 p.m.

Altshuler is a lead investigator in the international HapMap project, an effort to develop a comprehensive catalog of the genetic diversity in the human genome sequence across

human populations.

Topics likely to be discussed are:

- What would it mean for society's perceptions of diseases such as schizophrenia, depression or obesity, if we were to discover specific genes predispose individuals to these conditions?

- What would it mean for our understanding of free will if we were to discover genes that predispose individuals to particular types of behavior, such as criminality or gambling?

- What will it mean for health-care delivery if it becomes possible to tailor drugs to the genetic characteristics of individual patients?

A profile of Altshuler's work is slated to appear in the Boston Globe on Nov. 14.

Soap Box is hosted by MIT Museum Director John Durant.

NEWS YOU CAN USE

Anti-theft aid

The MIT Police is offering to tag laptops, PDAs and other small electronic devices with STOP tags, visible deterrents to would-be thieves. It takes up to 800 pounds of pressure to remove these tags. And, if removed, the STOP tag leaves a tattoo reading "stolen property."

The MIT Police will be tagging items at a cost of \$10 each on the following days: Nov. 15 from 1 to 3 p.m. in the Student Center lobby; Nov. 21 from 11:30 a.m. to 1:30 p.m. in Lobby 10; Nov. 22 from 11:30 a.m. to 1:30 p.m. in Lobby 10; and Dec. 8 from 11:30 a.m. to 1:30 p.m. in the Student Center lobby.

Bicycle auction

The MIT Police plans to auction off abandoned bicycles on Nov. 16, with a rain date of Nov. 17. A preview will begin at 12:30 p.m. and the auction will begin at 1 p.m. in the small lot between the pay parking lot at Massachusetts Avenue and Vassar Street and the N10 parking lot, next to the railroad tracks. Participants must be members of the MIT community and have a valid and current MIT ID. Buyers must pay cash or local check, with proper ID.

America recycles

The annual America Recycles Day event will be held Nov. 15 from 11 a.m. to 2 p.m. in the TSMC Lobby of the Stata Center (facing the corner of Main and Vassar streets). There will be information on Techno Trash and campus recycling, free samples of e-office supplies from Office Depot, a mini waste audit exhibit from the Stata offices, information on recycling in Cambridge, refreshments, music and more.

Correction

Esther Duflo was incorrectly referred to as an associate professor in an article in last week's Tech Talk. She is a full professor. Tech Talk regrets the error.

DARPA names Prof. Ippen to lead \$9.5 million project

The Defense Advanced Research Projects Agency (DARPA) has awarded a 3½-year, \$9.5 million program to Professor Erich P. Ippen of MIT's Research Laboratory of Electronics (RLE).

The project, titled "Optical Arbitrary Waveform Generation for Ultrahigh Resolution Sensing and Imaging," seeks to achieve unprecedented levels of performance for ultra-broadband coherent optical systems and enable dramatic advances in such applications as high-resolution 3-D imaging, novel chemical sensing and ultra-broadband optical communications.

"This is challenging but very exciting," said Ippen, who is the Elihu Thomson Professor of Electrical Engineering and professor of physics. "We have an opportunity to achieve an entirely new level of control over the optical spectrum." Ippen's RLE co-principal investigators are Franz X. Kaertner and Leslie A. Kolodziejski, both professors in MIT's Department of Electrical Engineering and Computer Science.

Ippen leads a multi-institutional team



Erich P. Ippen

that includes collaborators at the University of California at Davis, where the lead co-principal investigator is Professor S. J. Ben Yoo, as well as industry partners Inphi Inc. of Westlake Village, Calif., and Multiplex Inc. and Inplane Photonics Inc., both of South Plainfield, N. J.

Jeffrey H. Shapiro, director of RLE and the Julius A. Stratton Professor of Electrical Engineering, said, "This new DARPA project — which is the largest Department of Defense program ever awarded to RLE, and the second-largest ever from any sponsor — builds on the laboratory's strengths in photonics, particularly our world-leading efforts in femto-second-laser frequency-comb technology and nanoscale device fabrication. It also reflects the success of our researchers in bringing together multidisciplinary teams that span diverse research capabilities and organizations."

The work is funded by the Defense Sciences Office and the Microsystems Technology Office of DARPA.

MUSCLES

Continued from Page 5

polymers their strength, but it also makes them heavy and slow.

Lin discovered that adding the ions is unnecessary, because theoretically, shining a light of a particular frequency on the conducting polymer can activate the soliton. Without the extra weight of the added ions, the polymers could bend and flex much more quickly. And that rapid-fire motion gives rise to the high-speed actuation, that is, the ability to activate a device.

To arrive at these conclusions, Lin worked from fundamental principles to understand the physical mechanisms governing conjugated polymers, rather than using experimental data to develop hypotheses about how they worked. He started with Schrödinger's equation, a hallmark of quantum mechanics that describes how a single electron behaves (its wave function). But solving the problem of how a

long chain of electrons behaves was another matter, requiring long and complex analyses.

This research was funded by Honda R&D Co. and the Defense Advanced

CLASSIFIED ADS

Members of the MIT community may submit one classified ad each issue. Ads can be resubmitted, but not 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 11-400. Deadline is noon Wednesday the week before publication.

FOR SALE

Men's jacket. Size large, medium brown leather-look, below hip length, dressy w/ fleece collar, cuffs & lining, made in Italy by T. Shearling Sportswear, new. \$55. Call Rosalie at 781-391-1307.

Four black ladder-back chairs w/ natural woven seats from Sturbridge Yankee Workshop in Maine. Excellent condition, \$100/bst. Call Carol at 781-981-7750.

VEHICLES

1995 Eagle Talon TSI Turbo, 48K, good cond., 5 speed, pwr locks/windows, AC, Inf spkrs, Kenwood mp3 deck, band pass box w/ two 12" Hi-Phonics, sub-woofers & 640W Blaupunkt amp, 10CD changer, \$3,900/bst. 617-201-4732.

2002 Honda A.C.E. Shadow 750 motorcycle. Well maintained, 7.1K, detachable windshield, saddlebags & luggage rack. \$4,800. Contact allard@mit.edu or 253-3382.

1977 Porsche Targa Carrera 3.0. Rare, Euro specs, 5-speed transmission recently rebuilt, 200hp, newly painted, new brakes, whale tail, Fuch wheels. Garaged, never raced, excellent

NUCLEAR

Continued from Page 1

work out a way to share the resulting energy to "provide assurance of supply for all countries. If we can do so, that will address 80 percent of the problems we are facing. If a country can receive all of its energy needs, it is very difficult to justify why they need their own reactor."

Next, he said, we need a multinational approach to the reprocessing and management of spent fuel, including multinational repositories for the waste. Russia has proposed developing such a facility, "but we need one or two other major repositories" as well.

Finally, he recommended that we "go after those who already have enrichment or reprocessing facilities [such as the United States and Japan] and try to multinationalize those systems."

"Unless the nuclear weapon states provide the leadership, unless they show and create the environment that nuclear weapons [are] an historical accident that we are trying to extract ourselves from as quickly as possible, we will have that cynical view around that world that you are creating the haves and the have-nots," said ElBaradei later in response to a question from Renata Rose, wife of the late David J. Rose, for whom the lecture series was named.

"You cannot just say, 'we are the good guys, trust us.'"

Research Projects Agency/Office of Naval Research. Yip and Lin's collaborators on the work are Professor Ju Li at Ohio State University and Professor Elisabeth Smela at the University of Maryland.

condition. \$10,000/bst. 339-237-0960 or bwyong@mit.edu.

HOUSING

Furnished private BR & bath, quiet, clean, entire 3rd floor owner-occupied SF Victorian rowhouse nr Symphony Hall. No smoking, weekly house-cleaning. Nr MIT, subways, buses, shops, cultural attractions. Short/long term, \$350/wk or \$1,200/mo. 617-262-2620 or rombult@media.mit.edu.

Lincoln, NH. 3 BR, 2 bath, townhouse. Fully equipped kitchen, linens provided. Recreation center. Across Loon Mt. Ski Resort. Shuttle to resort. Leave message at 781-862-3856.

Pinehills in Plymouth. Live in this super active adult community, 2 BR, 3 bath, 2 car garage SF home, less than 2 yrs old, \$499,900. Call 508-209-0257 or e-mail krj@pinehills.net.

Minutes to Harvard & Central Squares. Sunny top-floor 2 BR condo w/ tree-top views. High ceilings, hardwood, ample closets, x-storage, parking, \$359,000. Call Adam, 781-583-2841.

WANTED

AirPort card for older iBook (dual USB iBook G3). AirPort Extreme won't work. brehm@mit.edu.

Physicist/2-D artist invited to collaborate in a 3-physicist art exhibit at Cambridge Art Assoc. Join photographer (Ph.D. Yale) and sculptor (Ph.D. Princeton). Contact F. Brown at 781-326-9583 or fbrown@tiac.net.

Health task force completes report

President Susan Hockfield announced yesterday that the Task Force on Medical Care for the MIT Community, appointed in September 2004, has completed its work.

The task force was charged with providing a comprehensive review of MIT's health-care and medical-insurance programs and evaluating access, quality and cost.

In an e-mail to the MIT community, Hockfield noted that the report "makes clear that high quality, accessible and affordable health care is a matter of great importance to the members of our community. While the task force makes a number

of recommendations, it concludes that the basic model of health care and insurance that has been in place for several decades has served MIT very well."

Hockfield went on to say that she has asked interim Executive Vice President Sherwin Greenblat to look into the financial and operational implications of the report's recommendations.

She also thanked Professor Paul Joskow and the members of the task force for their work.

The report can be viewed online at web.mit.edu/task-force/medical/index.html.

Arts council reflects on past, looks forward



PHOTO / DONNA COVENY

Catherine 'Kay' Stratton, 91, center, joins Tim the Beaver and two members of New Orleans jazz band the Wild Magnolias on Oct. 28. The band played for members of the Council for the Arts at MIT, which was holding its 33rd annual meeting.

Lauren Maurand
Office of the Arts

MIT does art the way it does science: with an eye toward excellence and making an impact on history. Last week, 57 members of the Council for the Arts at MIT (CAMIT) convened for the organization's 33rd annual meeting in a two-day event (Oct. 27-28) that underlined the progress the organization has made over the last three decades in creating an artistic atmosphere that bolsters MIT's scientific community.

A volunteer group of alumni and friends founded in 1972, CAMIT has funded more than 1,500 programs and awarded more than \$1.5 million in grants for art projects to students, faculty, alumni and staff over the years. The council also supports numerous campus activities, including Artists Behind the Desk and the Student Art Association, and funds free tickets for MIT students to the Boston Symphony Orchestra, Harvard Art Museums and the Museum of Fine Arts, among others.

The business meeting Oct. 28 included addresses by President

Susan Hockfield and Provost L. Rafael Reif, reminiscences by Catherine "Kay" Stratton, first lady of the Institute from 1959-66, and a "state of the arts" address by Associate Provost for the Arts Alan Brody.

Hockfield, calling council members the "gardeners" of art at MIT, noted that she has been "surprised by the intensity, brilliance and magnitude of the arts at MIT." She praised the arts faculty for their "attention and cleverness" and called on MIT to "serve the nation more fully" by raising the public profile of its programs.

The council meeting paid homage to its roots with the presence of founding members Stratton and former MIT Professor Leo Beranek, both nonagenarians, who described the series of conversations and meetings that led to the council's formation more than 30 years ago. Stratton, a beloved figure in the MIT community, started the MIT Art Committee in 1961 when her husband, Julius A. Stratton, was president of MIT. Planning for what is now the council began in 1971 in talks between the committee and then-president Jerome

Wiesner.

Brody observed that the strength of the arts and humanities at MIT has altered the student body because students no longer have to choose between rigorous scientific study and rigorous exploration of creative work.

Brody also told council members about two initiatives in the works that would put MIT at the forefront of supporting the development of plays about science: the Catalyst Collaborative, a local initiative between MIT and the Underground Railway Theater, and a new national consortium that would act as a floating center for the study of science, theater and narrative.

CAMIT Director Susan Cohen cited the need for facilities to support a strong arts program. In that light, Brody reiterated the need for funding for a proposed "Laboratory for the Performing Arts" with practice rooms and a black-box theater.

Administrators hope to use the council's success to bring its scope to a national level. As Hockfield said, "The arts don't stand still anywhere, and certainly not at MIT."

Prof. Ellen T. Harris wins 2005 Kepes Prize

Ellen T. Harris, Class of 1949 Professor of Music, recently received the 2005 Kepes Prize from the Council for the Arts at MIT. The award, named for Gyorgy Kepes (1906-2002), founder of the Center for Advanced Visual Studies, is given annually to a member of the MIT community whose creative work reflects the vision and values of Kepes, who was celebrated for his work exploring the relationships between art and science, and art and the environment.

Harris, who served as the Institute's first associate provost for the arts from 1989 to 1996, is a musicologist working in the area of Baroque opera and vocal performance practice with a special emphasis on the music of Handel.



Ellen T. Harris

The award was presented by Juliet Kepes Stone, Gyorgy Kepes' daughter, and Professor Alan Brody, MIT's current associate provost for the arts, at the council's 33rd annual meeting, held Thursday, Oct. 27, at Boston's Ritz-Carlton Hotel.

The award citation commends Harris "for her extraordinary contributions to the arts at MIT as the first associate provost for the arts, during which time she shaped the integrated

landscape of all the arts on campus, advocated fiercely for them and encouraged their growth." She was also honored "for her remarkable scholarship as a musicologist bringing new dimensions to our understanding of the genius of Handel" and "for her own musicianship as a vocal artist with a repertoire that extends from before Mozart to the American popular song book." In addition, the citation commended "her personal encouragement of all her colleagues, students and staff in all their creative endeavors."

The Council for the Arts at MIT is a volunteer organization of MIT alumni and friends founded in 1972 to foster and support the visual, literary and performing arts at the Institute.

ARTS NEWS

Jazz magazine quotes Harris

MIT and its jazz ensembles are featured in an article on jazz on four American college campuses in the October issue of *Jazziz* magazine. The story, which delineates the history of jazz at MIT since students formed the MIT Jazz Society in 1950, quotes **Frederick Harris**, director of wind ensembles since 1990: "At MIT everything is taught through a hands-on approach ... These students are building robots, doing internships at NASA, and so on. When they take on a subject like jazz, they want to get their hands dirty right away. And they want to work at the highest level possible."

Hughes sets 'National Insecurity' to music

Curtis K. Hughes, lecturer in music theory at MIT, and New Jersey composer David T. Little return to Killian Hall on Sunday, Nov. 13, as the curators of the second annual "National Insecurity" concert.

Their theme, once again, is contemporary political music. "This time we have a marathon lineup with about 20 musicians coming from out of town and about three hours of music," Hughes says.

The program features socially relevant music by young composers, including Dennis DeSantis, Sophocles Papavasiliopoulos, Judd Greenstein, Missy Mazzoli and Keeril Makan, as well as by political music veterans John Halle and Frederic Rzewski. The show will also include

music by Little and Hughes.

Joining in this year's concert is Free Speech Zone, a composers collective from New York City. Their "Night of Politically Charged Music" will include the Cambridge debut of Newspeak, an ensemble that fuses art music with political thought, as well as a return of the NOW Ensemble, which presents works by emerging composers.

A special performance by the Boston/Tucson-based saxophone and percussion duo Non Zero will open the concert.

The free concert is at 3 p.m. For more information, call (617) 899-8238 or visit www.nationalinsecurity.net.



IMAGE / CHRISTINE CAINE/BETH COLEMAN

Awakenings

"Waken," an installation of speakers and tendon-like materials created by artists Beth Coleman, assistant professor of writing and new media in the Program in Writing and Humanistic Studies and Comparative Media Studies, and Howard Goldkrand, will be presented as part of the "Fresh Projects: Shimmer" exhibition at the New Museum of Contemporary Art in New York from Nov. 10 to Dec. 31. Built across a network of signals to produce a gentle cacophony of sound, "Waken" uses a generative code that emulates the movement of bees in nature, creating what the artists call a sonic prairie, characterized by diversity, accident and spontaneous growth.

MIT EVENT HIGHLIGHTS NOVEMBER 9-13

 Science/ Technology	 Performance	 Architecture/ Planning	 Humanities
 Music	 Exhibit	 Reading	 Special Interest
 Business/ Money	 Film	 Sports	 Featured Event



FILE PHOTO / DONNA COVENEY

Slide rules rule

MIT Museum science and technology curator Deborah Douglas is surrounded by slide rules, which will be the subject of a gallery talk at the museum at noon on Wednesday, Nov. 16.

WEDNESDAY
November 9

 **"Where You Stand Depends on Where You Get Hit: U.S. and European Counterterrorism Strategies"**
Talk by Jeremy Shapiro of the Brookings Institution. Noon. Room E38-615. 253-7529.

 **Goldman Sachs Asia Panel**
Panel of representatives from Goldman Sachs in Asia. 7-8:30 p.m. Room 5-234.

 **Israeli Dancing**
8-11 p.m. Lobby 13. 484-3267.

 **Sushi Night**
Learn to make sushi rolls. 9-10 p.m. Building W84, 24th floor lounge.

THURSDAY
November 10

 **MIT Chapel Concert**
Alexey Shabalin on the violin. Noon. MIT Chapel. 253-2826.

 **"The Power and Weakness of Randomness in Computation"**
Talk by Professor Avi Wigderson of the Institute for Advanced Study. 4-5:30 p.m. Room 32-123. 253-8924.

 **"Return to Flight - Discovery's Mission to the International Space Station"**
Talk by astronaut Stephen K. Robinson. 4-5 p.m. Room 37-252. 273-7805.

 **"Beaver Trilogy"**
List Visual Arts Center Film Night, presented in conjunction with "Christian Jankowski: Everything Fell Together." 7 p.m. Bartos Theater. 253-4680.

FRIDAY
November 11

Veterans Day MIT holiday
 **"Chungking Express (Chongqing Senlin)"**
Part of the Suburbia Goes Global film series. Shown in Cantonese and Mandarin with English subtitles. 6 p.m. Room 3-133. 258-8438.

 **LIVEmusic @theEAR: Big Rocks**
9 p.m.-1 a.m. The Thirsty Ear Pub. 258-9754.

SATURDAY
November 12

 **"Deep Frontiers: Ocean Engineering at MIT"**
Latest advances in underwater research. 9 a.m.-8 p.m. Hart Nautical Gallery. 253-5942.

 **"iSPOTS: Living and Working in MIT's Wireless Campus"**
The iSPOTS installation at the MIT Museum, produced by MIT's SENSEable City Lab, documents the MIT wireless network. Noon-5 p.m. \$5 adults, \$2 students and seniors, free w/ MIT ID. 253-4444.

 **Anime Club DDR Marathon Party**
Dance-Dance-Revolution marathon. Noon-5 p.m. Room 1-135.

SUNDAY
November 13

 **Classical Dances of India by Triveni School of Dance**
Introduction by Professor Bish Sanyal. 1-4 p.m. Kresge Auditorium. 253-5724.

 **"Charlie and the Chocolate Factory"**
LSC Fall 2005 Film Series. \$3. 7 p.m. Room 26-100. 253-3791.

 **International Folk Dancing**
8-11 p.m. Lobdell Dining Hall. 253-FOLK.

Go Online! For complete events listings, see the MIT Events Calendar at: <http://events.mit.edu>.
Go Online! Office of the Arts website at: <http://web.mit.edu/arts/office>.

EDITOR'S CHOICE

"LEOCADIA"

Drama shop production of play by Jean Anouilh. Nov. 10-12 and 17-18. \$8, \$6 students.

Nov. 10

Kresge Little Theater
8 p.m.

"STAR WARS TRILOGY" MUSICAL

Nov. 11-13 and 16-20. \$12, \$9 students, seniors, MIT faculty/staff, \$6 MIT students. Most performances at 8 p.m., 2 p.m. on Nov. 13 and 20.

Nov. 11

Sala de Puerto Rico
2 p.m., 8 p.m.

"NATIONAL INSECURITY II"

The second annual marathon concert of political music.

Nov. 13

Killian Hall
3 p.m.

MIT EVENT HIGHLIGHTS NOVEMBER 14-20

MONDAY
November 14

 **"Designing with New Materials"**
Talk by Timothy D. Tonyan. 12:30-2 p.m. Room 7-431. 253-0463.

 **"Rethinking the Pleasure Garden in the Munyas of Cordoba"**
AKPIA Lecture by Glaire Anderson. 5:30-7:30 p.m. Room 5-216. 253-1400.

 **Trivia Night at the Thirsty Ear Pub**
Must be 21+. Every Monday night. Proper ID required. 8-11:30 p.m. 258-9754.

TUESDAY
November 15

 **America Recycles Day at MIT**
Special displays, free recycled products from Office Depot, tote bags, recycled notebooks and entertainment. 11-2 p.m. Stata Lobby and Lobby 10. 452-2545.

 **"From Mathematics to Philosophy: Some Observations on Kant's Use of Euler"**
Talk by Carl Posy of Hebrew University. Dibner Institute Lunchtime Colloquium. Noon. Room E56-100. 253-6989.

 **"Tales of a Molecular Motor: How Kinesin Keeps its Grip"**
Seminar with Jeff Gelles of Brandeis University. 4 p.m. Room 56-114. 253-1803.

 **"What's So Natural About Natural Disasters?"**
Talk by David Jones and Meg Jacobs. 5-7 p.m. Room 32-123. 452-2390.

WEDNESDAY
November 16

 **Object Lesson: "Slide Rules"**
One of a series of gallery talks by MIT Museum curators that focus on items from the museum's collections. Noon. MIT Museum. 253-4444.

 **"Big Picture Strategy - Reflections on Uncertainties Attendant to an Emerging China"**
Talk by David Finkelstein. Noon. Room E38-615. 253-7529

 **Cambridge-MIT Exchange (CME) Information Session**
4-6 p.m. Building W20. 253-6057.

 **WMBR Hip Hop DJ Nite at Massive Records**
DJs Jimizz, EmmDee and Nomadik spin a blend of hip-hop and R&B. Third Wednesday of every month. 7-10 p.m. 1105 Mass Ave. 253-4000.

THURSDAY
November 17

 **MIT Chapel Concert**
Jean Rife plays the works of Froberger and Bach on the harpsichord. Noon. MIT Chapel. 253-2826.

 **"The Gender of Citizenship: Bodies, Subjects, and Publics in Weimar Germany"**
Talk by Kathleen Canning of the University of Michigan. 4:30-6 p.m. Room E51-275. 253-4965.

 **Communications Forum: Cell Phone Culture**
Talk by James Katz of Rutgers and Jing Wang of MIT. 5-7 p.m. Bartos Theater, Media Lab. 253-3521

 **Autism and Developmental Disorders Colloquium Series**
Talk by Professor Helen Tager-Flusberg, B.U. 6-7:15 p.m. Room 46-3002. 253-7626.

FRIDAY
November 18

 **Organization Studies Group Seminar Series**
Talk by Devah Pager of Princeton University, "Discrimination in Low Wage Labor Markets." 1-2:30 p.m. Room E52-598.

 **"City of God (Cidade de Deus)"**
2002 Brazilian movie about growing up in Rio's notorious housing project. 6 p.m. Room 3-133. 258-8438.

 **"Ong-Bak (The Thai Warrior)"**
LSC Fall 2005 Film Series. \$3. 7 p.m. Room 26-100. 253-3791.

 **Festival Jazz Ensemble: "Flexology"**
Evening of diverse music for small and large jazz ensembles featuring "Flex" by Mark Harvey. \$5. 8 p.m. Kresge Auditorium. 253-2826.

SATURDAY
November 19

 **Interactive Storytelling for Children**
9:15-10:15 a.m. Mother Goose for ages 1-3. 10:15-11:15 a.m. Cinderella for ages 3-6. \$2. Room E55-PH.

 **Tech Model Railroad Club Open House**
Annual fall open house. 7-10 p.m. Room N52-118. 253-3269.

 **MIT Chamber Chorus**
Seasonal music featuring Schuetz's "Deutsches Magnificat, 1671," Pinkham's "Christmas Cantata (Sinfonia Sacra)," Harbison's "O Magnum Mysterium," premiere of a carol by MIT graduate student David Foxe. 8 p.m. Kresge Auditorium. 253-2826.

SUNDAY
November 20

 **Chantey Sing**
Come sing sea music and chanteys with a room full of maritime enthusiasts, professional and amateur singers. 1-4 p.m. MIT Museum.

 **Gallery Talk**
Talk by Hiroko Kikuchi in conjunction with "Christian Jankowski: Everything Fell Together." 2 p.m. List Visual Arts Center. 253-4680.

 **Emerson Affiliate Recital**
Works by Beethoven, Brahms and Strauss. 4 p.m. Killian Hall. 253-2826.

 **MITHAS Concert**
Ganesh-Kumaresh, Carnatic violin duo. Presented by MIT Heritage of South Asia (MITHAS) in cooperation with Sangam. \$18, \$14 MITHAS members, \$10 students, MIT students free. 4 p.m. Wong Auditorium. 258-7971.