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TechTalk

SERVING THE MIT COMMUNITY

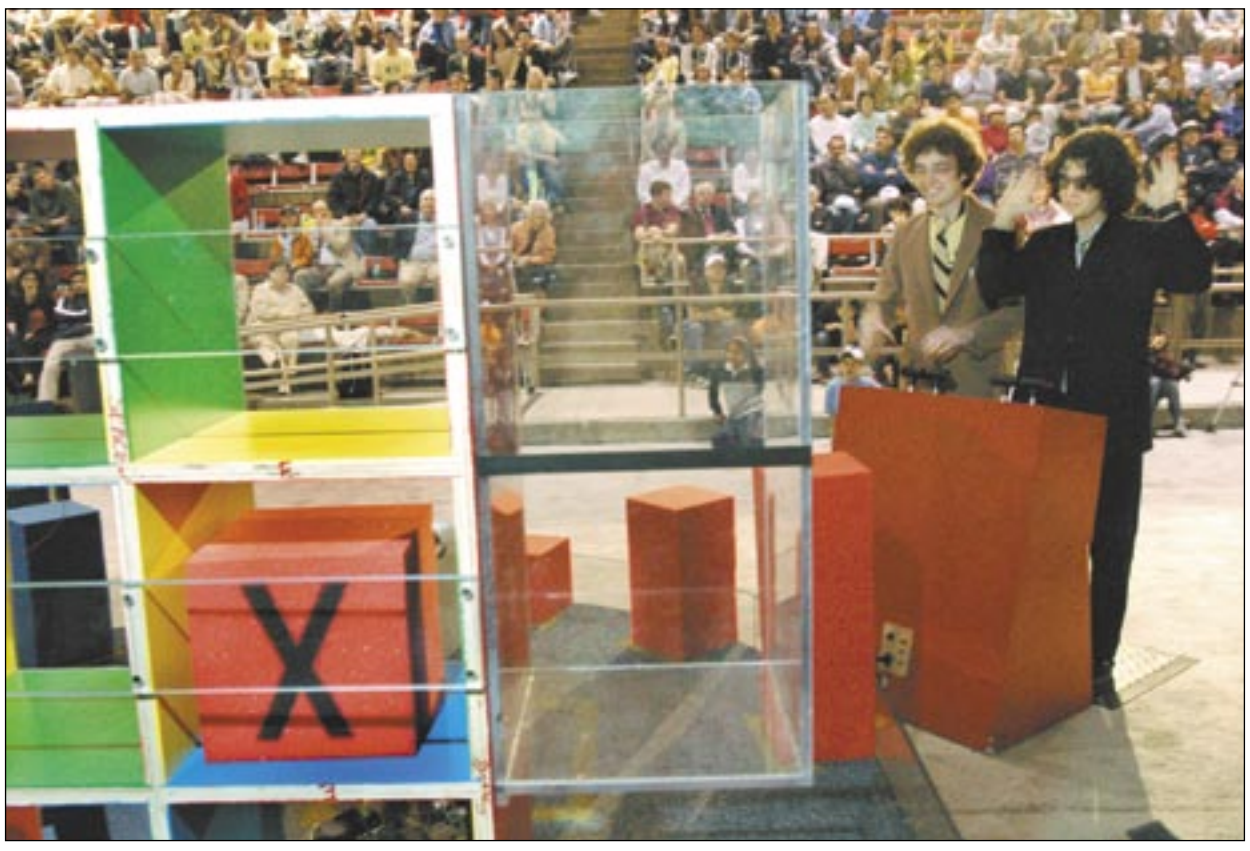

PHOTO / **L. BARRY HETHERINGTON**

Jesse Marsh, left, and Aron Zingman, right, drive into the final rounds of 2.007 on Friday night in Johnson Athletic Center. Marsh won seventh place.

Robots go for Tic-Tech-Toe

Sarah H. Wright
News Office

Mark Cote's squeezer-grabber-thingy-bopper ruled over Robert Panas' flipper-upper-doo-hoppy in the final tie-breaking rounds of Tic-Tech-Toe, the robot competition for mechanical engineering students in course 2.007, held on Friday, May 13, in the Johnson Athletic Center.

Cote and Panas, the first- and second-place winners, are sophomores in mechanical engineering. To ordinary eyes, their 10-pound machines suggested forklifts and catapults. But 2.007 is a transformative experience. Even language lightens up for it.

Thus third-place winner Philip Dawson, a sophomore in mechanical engineering, used a "gripper-attacker" design, while Sang Nguyen, a junior in mechanical engineering, employed speed and an innovative "windshield wiper of doom" to block his opponents' blocks.

Alexander Slocum, professor of mechanical engineering and MacVicar Faculty Fellow, emceed the three-hour event, providing free-form commentary on each machine as the competition intensified.

"Repeatability! Infinite cosmic power! This is where physics meets the carpet!" he called out to the students, parents, fans and friends who packed the stands for the annual competition.

Many other items met the carpet during the evening, including the hands of students randomly asked to do push-ups and the contents of the kit from which all 130 machines were built during the spring term. Slocum likened the kit to an engineering student's brain.

"We start with real materials, raw materials. We want to get your brains to dump out all your knowledge and mix it up," he announced, piling objects at his feet to demonstrate what "thinking outside the box" means.

Tic-Tech-Toe, composed of elimination rounds of 45 seconds each, required each student, using items from the kit, to build a machine to gather 8-inch foam-rubber blocks and place them inside 16 vertically stacked bins before frustrating its opponent machine.

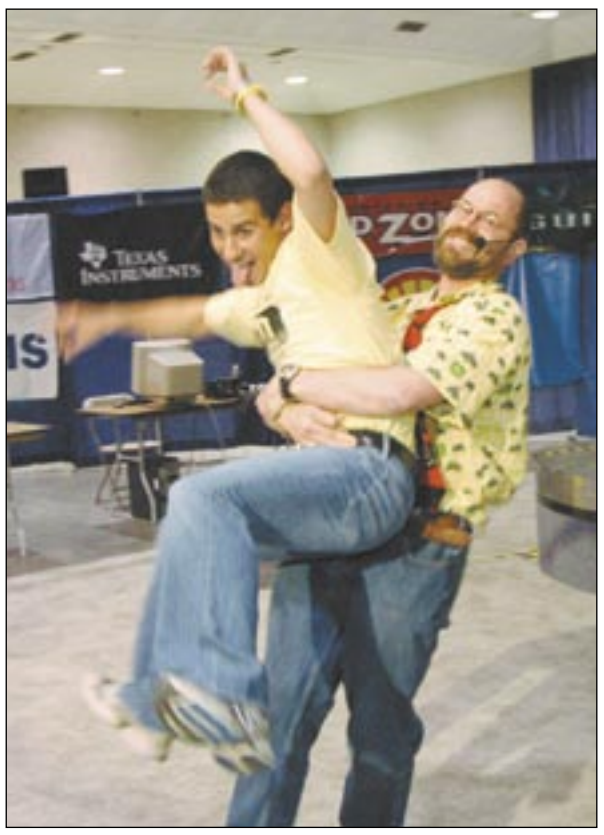

PHOTO / **L. BARRY HETHERINGTON**

Mark Cote, winner of this year's 2.007 robot competition, gets a congratulatory hug from Professor Alexander Slocum on Friday night.

The bins were arranged and painted like Simmons Hall, the award-winning new dorm on Vassar Street. A block in a floor-level bin yielded 10 points; the point-

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MIT students recognized for scholarship

Denise Brehm and **Sasha Brown**
News Office

In recognition of their outstanding scholarship and their capacity for original, creative work, four MIT students have been chosen to participate in two highly selective awards programs—the Churchill Scholarships, one of the three most competitive scholarship programs in the United States (along with the Rhodes and Marshall scholars), and the U.S. Fulbright Fellowships. Both the Churchill and Fulbright awards pay for the winners to live abroad for a year to participate in educational or research programs and to help them gain a better understanding of people from other nations and cultures.

Churchill Scholar

Emily Schwartz, a senior aeronautics and astronautics major from Lawrenceville, Kan., will spend the 2005-2006 school year in Cambridge, England, studying for an M.Phil. degree in sustainable development. She is one of only 12 Americans to be awarded the Winston Churchill Scholarship this year, from a pool of 150 candidates nominated by their college or university.

Emily Schwartz

"I wanted to do something completely different," said Schwartz, who said the program at Cambridge University drew her interest. She believes that scientists and engineers have a social responsibility to help others in the world.

While she has enjoyed her studies in aeronautical and astronautical engineering and intends to return to them someday, she is looking forward to the new challenge. "I am really looking forward to meeting a lot of new people and gaining a different perspective," said Schwartz.

Schwartz earned a 5.0 GPA at MIT and won both her department achievement award and the junior year project award with her lab partner. Additionally, she set the

See **SCHOLARS**
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'Seamless' show wired for success

Sarah H. Wright
News Office

"Seamless," a fashion show organized by students, inspired by reality television and intended as a chic yet provocative collision of bodies, clothing and technology will erupt at the MIT Media Lab on Friday, May 20, at 8 p.m.

Seamless styles on view will include an inflatable dress, a shirt with sensors that provide a massage; resistor-studded pajamas; a wearable "human-interest meter"; and a skirt that doubles as a "playful exploration of femininity, domestication, and the predator/prey relationship," thanks

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Page 4

Balance aid wins $50K

For the fourth year in a row, a medical device company has won the Robert P. Goldberg Grand Prize in the MIT $50K Entrepreneurship Competition held Monday, May 9, at MIT. Balico, which has designed a wearable balance aid that will benefit aging adults and individuals whose primary sensing systems are affected by disease, was awarded $30,000 in startup money.

First runner-up was Nanocell Power, whose patented technology will enable the viability of fuel cells for portable electronics. Vacuum Excavation Technology, which has created a new, patented excavation device, was named second runner-up. Each runner-up team received $10,000.

The oldest and best known among university business plan competitions, the MIT $50K has launched more than 80 companies from teams that have competed. These companies—which include Akamai Technologies and others acquired by Microsoft, Motorola and Broadcom—have, in turn, employed more than 1,600 people and have a valuation of over $4 billion.

Seven finalists were chosen from 86 entrants with 250 team members participating. Judges, including noted venture capitalists, entrepreneurs and patent lawyers, selected the winning teams based on their potential of becoming leading firms. This year's other finalists were HealRight, Previva Inc., Renal Diagnostics and TissueVision.

"As a founding judge of the $50K, I have witnessed firsthand the development of a powerful entrepreneurial ecosystem," said Joe Hadzima, a senior lecturer at MIT Sloan School of Management and managing director of Main Street Partners, a venture development and technology commercialization firm. "Now, as the new chairman of the MIT Enterprise Forum Global organization, I am working to translate the lessons learned from the $50K and its MIT entrepreneurial ecosystem to help the 23 MIT Enterprise Forums in the U.S. and the around the world to grow and enhance their own unique entrepreneurial ecosystems to enable innovation and entrepreneurship—this is the important and lasting legacy of the $50K."

Each finalist team presented its plan at the final awards ceremony in MIT's Kresge Auditorium. Newly inaugurated MIT President Susan Hockfield offered opening remarks. The keynote speaker was David Edwards, the scientific founder of Advanced Inhalation Research, and co-founder of AIR/Alkermes, Pulmatrix and MEND. The event reached a global audience through a live Internet broadcast.

"The MIT $50K's value is in the learning how to become an entrepreneur," said Lawrence Walmsley, a co-lead organizer and student at MIT Sloan. "Participants take a new business idea, build a team around it, formulate a strategic mission, and develop and articulate it into a business plan. With mentoring available through the $50K, they hone their pitching skills and have an opportunity to present to industry specialists, which often results in the launch of a real business." Along with the winners, the majority of the finalists and other entrants report that they are planning to launch businesses built around their business plans.

PHOTO / **L. BARRY HETHERINGTON**

Samuelson celebrates 90th

Friends and former students gathered to honor economist Paul A. Samuelson, Institute Professor emeritus and 1970 Nobel laureate, on his 90th birthday May 15 at Boston's Fairmont Copley Plaza Hotel.

The occasion was marked with a conference on economics and a formal dinner. The author of Economics, a textbook published in 1948 that has been translated into 40 languages, Samuelson came to MIT in 1940.

"Samuelsonian Economics and the 21st Century" presented the depth and impact of Samuelson's work. Panel discussions explored Samuelson's favorite topics, including "The Stock Market: Micro Efficient, Macro Inefficient," "What Should Be Done About the U.S. Current Account Deficit?" and "Have Macroeconomic Research and Policy Drifted Too Far Apart?"

Hundreds attended the daylong event, where Samuelson was hailed as a teacher, author and leader in his field. Fellow MIT professor and 1987 Nobel laureate Robert M. Solow gave the main address. James Poterba, associate chair of the Economics Department, served as emcee.

DIGITALK: WHERE IT'S AT

SAP update slated

An SAP Production system update is scheduled to take place starting at 6 p.m. on Friday, May 20, and ending by 6 a.m. on Monday, May 23. SAP, ECAT and all SAPweb activity—including employee self-service, requisitioning, journal vouchers, credit card verification and work orders–will be inaccessible during this period. The Data Warehouse will be available with data current as of the close of business on Thursday, May 19. For details, visit web.mit.edu/ist/news/headlines/sapupdate.html.

Recommended systems

Members of IS&T have been working with MIT's preferred hardware vendors—Apple, Dell, Hewlett-Packard and IBM/Lenovo—to identify recommended systems for administrative and general computing on campus. IS&T has set minimum thresholds to help you in deciding when to retire existing systems and to provide guidance on new purchases. Computing Help Desk staff are also available to assist you. For presales advice, stop by the Service Center in N42 during business hours to look at demo systems, send mail to computing-help@mit.edu, or call 253-1101. For more information, visit web.mit.edu/ist/topics/hardware/.

E-mail warning

An e-mail now making the rounds urges wireless customers to sign up their cell phones in the National Do Not Call Registry to avoid calls from telemarketers.

According to MIT's carriers (Verizon Wireless, Nextel, Cingular, T-mobile and Sprint), this e-mail is misleading. No vendor sells or gives phone numbers to telemarketers, or provides any information to the national Wireless 411 directory unless the customer asks to be included. Further, customers who request to be included in the Wireless 411 directory would only have their phone number made available to people who call Wireless 411 and request their listing. The database will not be sold to third parties, and there are no plans for a printed directory.

Even if your cell phone number is not in the Wireless 411 directory, auto-dialers (the automatic dialing systems often used by telephone solicitors) may still randomly dial it. You may want to wait until you actually get telemarketing calls before adding your cell phone number to the Do Not Call Registry at www.donotcall.gov/.

New web service

IS&T has launched a service that enables web publishers to include Really Simple Syndication (RSS) feeds in web pages hosted on web.mit.edu. It provides an easy way for MIT web publishers to add news to their pages that updates dynamically.

The RSS service lets web publishers designate a news feed and configure various display options via a web form. The RSS output can be customized to blend in with the look and feel of a web site.

To learn more about RSS, attend a free IS&T Quick Start class. The next sessions on RSS will be held on May 19 and June 16 from noon to 1 p.m. in the N42 Demo Center. For more information, visit web.mit.edu/ist/news/spotlight/archive/rss.html.

Digitalk is compiled by Information Services and Technology.

Clean energy competition rewards teams for best investor pitches

Linda Plano
Laboratory for Energy and the Environment

Old water pipes and bacteria ruled the day at the $125,000 Igniting Massachusetts' Clean Energy Technology Future Business Presentation Competition held at MIT on April 27. The competition is designed to reward the best investor pitches, i.e., the 10-minute spiel every startup company needs to master in order to obtain venture capital or angel funding. Relatively few first-time entrepreneurs are able to give high-quality pitches, so the competition was geared toward helping teams develop their pitches as well as introduce them to investors, fellow entrepreneurs, service providers and other energy industry providers in Massachusetts.

Teams could be formed of Massachusetts residents or students (teams from several schools participated), but they could not be funded by investors at the time of the presentation competition.

The winning team out of an original field of 35 was Microbial Scale Solutions, which has developed bacteria that dissolve away the scale that builds up an insulating layer inside hot water pipes. a in wasted energy each year. The team won prizes worth $35,000.

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Class plans fact-finding trip to Mozambique

Sasha Brown
News Office

Many people in Mozambique lack access to clean water and basic sanitation, but a group of MIT students is working hard to change all that.

Department of Urban Studies and Planning Assistant Professor Jennifer Davis and a team of 10 MIT planning and engineering graduate students are going to Mozambique this summer to try to assess what communities there need most. Working with a Mozambican nonprofit called Estamos-Organizacao Comunitaria and with the London-based international nongovernmental organization WaterAid, the group hopes to help low-income communities plan improvements.

The idea is to find solutions that work within the culture, Davis said. "We have to think about options outside our comfort zone," she said. "Of course everyone aspires to having a water supply and sewer connection in the home, but for many households in Maputo [the capital of Mozambique] this won't happen in the foreseeable future. Our challenge is to identify other types of service that will still represent a vast improvement for households that rely on crowded public taps, or that have no sanitation option other than open defecation."

The team is embracing this challenge through a series of participatory assessment and planning exercises that Davis' students designed during her full-credit project course this semester.

One exercise developed in class could be used to assess the community understanding of the links between water, sanitation, hygiene and health by inviting community members—many of whom cannot read—to draw pictures about recent illnesses. A facilitator would ask what people believe caused the illnesses and, through the drawings, assess whether community members understand the link between hand washing and health, for example.

This sort of exercise will have a double effect, educating both the community about sanitation and the MIT students and their partners about community beliefs and perceptions, which will be important to future discussions.

Students have taken intensive Portuguese in order to reduce the language barrier during their four-week trip to Mozambique. Students will assess water supply, sanitation and hand washing facilities. They will also test water quality of both household taps and community water sources.

Davis said that the students' dedication and hard work has far exceeded her expectations. "They are just amazing," she said. "Every one of them has been working incredibly hard to make this project a success." In fact, Davis has been so impressed by the students' dedication that she decided to run a half-marathon in California in late April in order to raise money for the project, which is still several thousand dollars short of its projected costs.

Davis hopes that this year's efforts are only the beginning. "One month of fieldwork really is too little when we are trying to do so much," she explained. She hopes that the work will continue and that MIT and Estamos/WaterAid will be able to form a long-term partnership. "We would like to follow up and build on what we learn this year," she said.

PHOTO / **DONNA COVENEY**

Freshman Lissa Riley, who traveled to the Galapagos Islands as part of the Terrascope program, works on a knot displayed in the lobby of Building 13. The tangled ropes symbolize the interdependent and complex needs of the stakeholders in the Galapagos: residents, tourists, the government and the ecosystem.

Freshmen exhibit Galapagos lessons

Sarah H. Wright
News Office

A cluster of interactive exhibits on the ecology, history and cultural life of the Galapagos Islands, 600 miles west of Ecuador, has transformed the lobby of Building 13 into a vivid portrait of the land Charles Darwin never forgot.

Designed and developed by freshmen in the Terrascope course called Communicating Complex Environmental issues: Designing and Building Interactive Exhibits (1.016), the interactive exhibits collectively offer visitors a sense of immersion in the students' March trip to the Galapagos, a part of their yearlong project developing a conservation strategy for the islands.

Freshman Garrett Marino described the students' trip to the Galapagos as an "amazing and rewarding experience because we were able to see the place that has been the focus of our studies since September, to speak to scientists from the Charles Darwin Research Station and see the absolute beauty of [places like] Tortuga Bay."

Individual exhibits in Lobby 13 include a simulated lava tunnel, appropriately dark, twisty and suggestive of volcanic power; a try-it-on model of a giant tortoise shell; a wooden playground slide that illustrates precipitous species population decline; an artistic and thorough timeline of the archipelago's life from the days of pirates through Darwin's visit to the present; and a giant interactive sea cucumber, which you really have to see for yourself.

The exhibit will be open 10 a.m. to 6 p.m. until May 24.

A second event related to this year's Terrascope trip to the islands Darwin made famous was the first-ever broadcast of a radio program written and produced entirely by freshmen. The students recorded ambient sounds and interviews on location in the Galapagos. The program in Comparative Media Studies (CMS) collaborated on the development of the subject, Terrascope Radio (SP 360), which led to the radio documentary.

Marino, one of four students who participated in the radio subject, came home with sound clips from a "close encounter with a sea lion," he said. Listen for the grunts.

The 20-minute radio program on the Galapagos aired on Wednesday, May 11, on WMBR-FM. There is an mp3 of the program now on the Terrascope main site: web.mit.edu/terrascope/www.

Terrascope faculty include Rafael Bras, the Edward A. Abdun-Nur Professor in the Schools of Engineering and Science; Kip Hodges, professor of earth, atmospheric and planetary sciences; and Ari Epstein, lecturer, Earth Systems Initiative. Terrascope is a component of the Earth System Initiative.

Students tackle flooding in Honduras

Sarah H. Wright
News Office

Eight MIT students—five graduate students and three undergraduates—spent spring break 2005 in Tocoa, Honduras, working on an automated flood early warning system and visiting towns that had been badly damaged by flash flooding in the wake of Hurricane Mitch in October 1998.

The group tested software and radio equipment and installed a river level sensor in the Aguan River in northeastern Honduras. They went as part of the MIT FloodSafe Honduras project, a student-led, mainly volunteer effort sponsored by the Lutheran Episcopal Ministry at MIT and the Edgerton Center.

Centro Tecnico San Alonso Rodriguez, a nonprofit technology and education center in Tocoa, hosted graduate students Alex Bahr, ocean engineering; Elizabeth Basha, electrical engineering and computer science (EECS); Kristen Bethke, aeronautics and astronautics; Karla Solheim, urban studies and planning; and Emily Van Ark, marine geology and geophysics. The MIT undergraduates were Kathleen Connolly, a senior in EECS; Nina DeBenedictis, a junior in chemical engineering; and Edgar Terrero, a senior in EECS.

For Bethke, the "greatest part was witnessing and being inspired by the transformational grass-roots work of the Centro Tecnico. They educate Hondurans about natural resource management, building houses with local materials, community organization and water sanitation," she said.

Centro's director, Gines Suarez, "affirms that it really is possible to put big ideas into action, but he shows that humility, patience and good listening skills are essential. His work educates and empowers people all over their region," Bethke said.

"It was really interesting to try to figure out how our MIT-based technological knowledge could work with the Centro's efforts in a useful and productive and sustainable way," said Van Ark.

Once it is installed, the early warning system, or SAT, for Sistema de Alerta Temprana, will consist of five major subsystems: 1) upstream river level sensors, 2) a radio communication system to transmit river data, 3) a central processing center to crunch the numbers and predict flooding based on aggregate river data, 4) alert receiving stations in downstream communities and 5) power systems for everything.

The FloodSafe mechanism for warning people is then: A) river level sensors measure the height of the river, B) a mathematical model at the central processing center determines when the flood danger threshold has been crossed, C) an automatic radio signal is sent to a community's emergency committee and D) the committee warns its community by sounding an alarm.

Work on the FloodSafe early warning system began as part of the 2003-2004 D-lab class taught by Amy Smith (1984, S.M. 1995), instructor in the Edgerton Center and 2004 MacArthur Fellow.

The FloodSafe trip was funded by MIT IDEAS, the Public Service Center, the Carroll Wilson award, and Thrivent Financial Services for Lutherans.

For more information, visit web.mit.edu/lem/honduras.

PHOTO / **ALEX BAHR (G)**

MIT senior Edgar Terrero helps Pilo of Centro Tecnico in Honduras hold up a directional antenna for a test of the radio component of a flood early warning system.

Disco's staying alive on E. Campus

Sasha Brown
News Office

Saturday night fever runs high all week long at MIT's East Campus dormitory, thanks to the 128-square-foot dance floor students built in the lounge.

Made of wooden planks covered by a sheet of quarter-inch clear plastic, the raised 50-person disco floor features more than 500 computer-controlled light-up tiles.

Inspired by the annual East Campus-sponsored Bad Ideas Competition, students came up with the idea for the floor at the beginning of the school year. The competition culminates in a Bad Ideas Ball, held in January, which this year featured a disco theme.

"What is a worse idea than disco?" asked junior physics major Grant Elliott, one of the floor's creators.

Elliott, Schuyler Senft-Grupp, Scott Torborg and Mike Anderson wanted to build a disco floor for the ball that could be controlled by computer, offering more variety of color mixes than a standard disco floor made using light bulbs and colored gels.

Constructing the floor from scratch proved no small feat. All of the wiring and coding had to be done both inexpensively and efficiently. Anderson spent countless hours hand-soldering thousands of tiny connections to secure the wiring. And the wooden frame needed to be built. Many in the dorm pitched in to see the project through.

Several sleepless nights and $2,500 later, the core group, affectionately known as "the disco guys," had created a high-tech dance floor on which even Tony Manero would do the hustle. Total construction time? About three weeks.

With the lights out, the floor looks alive, swirling and pulsating to the beat of the music. Dancers can enjoy a psychedelic 4,100 color possibilities. The floor is USB controlled and operated through a plug-in for the music player XMMS, Elliott said. "In the near future, we hope to have it run through parties by itself. For now, one of us sits next to the floor with a laptop. We have a large set of animations we can play back, as well as a few music-generated patterns," he said.

And the floor can be used for more than dancing, Torborg said. With touch-sensor capability, the floor can also act as a giant playing board for games like Dance Dance Revolution (an interactive video game in which lighted floor tiles indicate dance moves to the players), Twister and Tetris.

"The floor can pretty much do anything we want," said Elliott.

There is no current plan to move the floor from East Campus, but the group has received calls from a few people who want help constructing their own. The floor is such an attraction, it has its own web site: http://web.mit.edu/storborg/ddf/.

The floor may be popular, but none of the "disco guys" are in any hurry to bring the '70s dance craze back. "We would all feel pretty guilty if we were responsible for a disco revival," Torborg said.

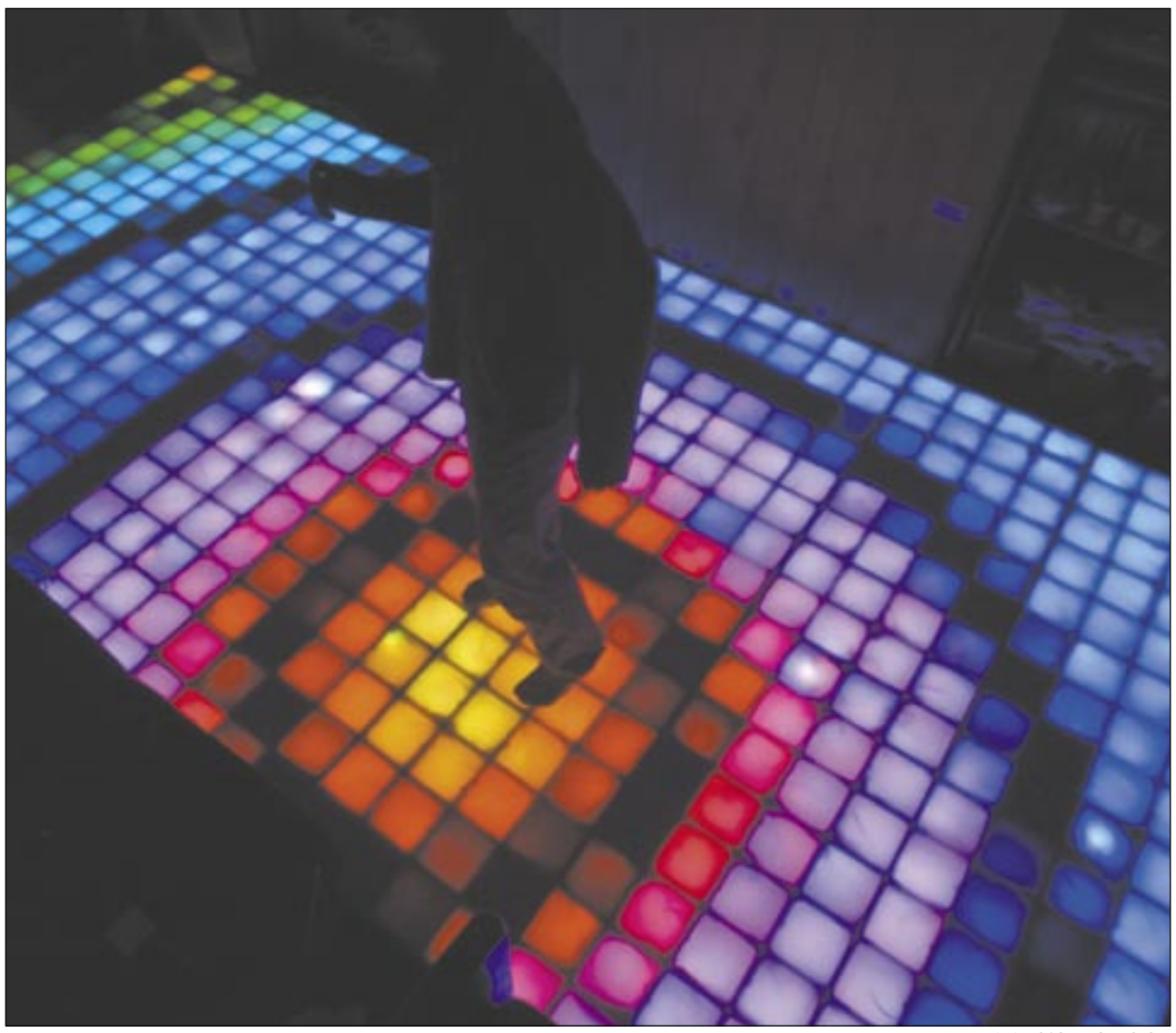

PHOTO / **SCOTT JOHNSTON**

More than 500 lighted tiles give the floor of MIT's East Campus lounge its disco groove. Controlled by computer, the student-built dance floor is capable of an eye-popping 4,100 color combinations.

PHOTO COURTESY / **THE ARTISTS**

Now on view in the stairwell of the Student Street at the Stata Center, 'The Kiss' won MIT's Student Mural Competition. Jessica Banks and Daniel Paluska, both MIT graduate students, created the artwork using 'a robotic portrait artist that paints with light.'

Robot-made 'Kiss' wins mural contest

Sarah H. Wright
News Office

A portrait that explores the ability of a robot arm and a computer to create art was selected the winner of MIT's second annual Student Mural Competition.

"The Kiss" was created by Jessica Banks, a graduate student in CSAIL, and Daniel Paluska, a graduate student in mechanical engineering, using a robotic camera that they designed with CSAIL researcher Jonathon Bachrach. Unveiled May 3, "The Kiss" is now on view in the stairwell off the Student Street in the Stata Center.

"This new mural really speaks to the combination of arts and technology," said Michèle Oshima, director of student and artist-in-residence programs.

The artists, who refer to themselves collectively as "contributors," describe "The Kiss" as a "self-portrait that demonstrates some of the subtleties of the Fotron2000, a photo booth housing a robotic portrait artist that paints with light."

They explain their portraiture processthis way: "The robot shoulder and elbow inside the booth holds LEDS in its 'hand.' The arm sits about three feet away from a Polaroid camera that was modified so its shutter can remain open for an arbitrary amount of time. When the robot 'draws' in the air in front of the camera, light traces are recorded on the long-exposure film. This gives a sense of motion reminiscent of classic time-lapse nighttime highway photography."

The team created Fotron2000 because the robot provided them with "capabilities beyond our own, allowing us to create in ways not possible without technological assistance," they said.

The 2004-2005 Student Mural Competition was sponsored by the MIT Office of the Arts. Judges were selected from each of the following departments: CSAIL, LIDS, linguistics and philosophy, and the Writing and Communications Center. There were 10 entrants this year.

The Polaroid photograph was created with the Fotron2000 in 2004.

Task force sends out medical survey

The Task Force on Medical Care for the MIT Community has released a web-based survey for all employees. Community members are asked to convey their thoughts on medical care and medical insurance via the voluntary, confidential survey.

Created last fall by then-President Charles M. Vest, the task force was asked to "review and articulate the appropriate goals for MIT's programs to provide health care and health insurance to our undergraduate and graduate students, employees and retirees in terms of access to care, quality of care and the costs of providing care." The task force has been reviewing and assessing how well current arrangements are achieving these goals.

Professor Paul L. Joskow, the Elizabeth and James Killian Professor of Economics and Management, chairs the task force, which includes faculty, students and administrators.

The survey authentication requires a current MIT certificate. Responses will be treated as confidential, and data will be reported in summary format only.

For more information, visit web.mit.edu/committees/medical/ or e-mail med-survey@mit.edu.

SEAMLESS

Continued from Page 1

to attached mechanical cat toys.

Media Lab graduate student Christine Liu and Nick Knouf organized Seamless, a.k.a. Computational Couture, with help from the MIT Council of the Arts and the MIT Media Lab.

"We were partly inspired by 'Project Runway,' the show on Bravo in which designers compete to create a collection and meet a deadline. We also wanted to give students an opportunity to be creative, a place to showcase and experiment with their ideas," Liu said.

The 18 designers were recruited through word of mouth and include students from MIT, Harvard, Rhode Island School of Design in Providence and Parsons School of Design in New York City. The entire effort was "completely grass roots," said Liu.

Liu and Knouf view the Seamless show as a comment on personal chic as well as social space, Liu said. In contrast to the Media Lab's 1997 Wearables fashion show, which was "all about augmentation of the self, this collection is more socially based, and the styles have more social implications," Liu said.

"Some fashions are designed to cause people to examine the disconnect that many feel in the electronically augmented society," Knouf said.

Clothing will be shown on runway models. Some Seamless projects will be displayed as artwork. Chris Csikszentmihalyi, the Benesse Career Development Professor of the Research in Education at the Media Lab, will serve as master of ceremonies.

Lars Blackmore, DJ, MIT Dance Mix Coalition, will provide the evening's mash-up music, and Alex French, E33 Productions, will provide lighting. Models are from John Casablancas and Ariana Paoletti and friends.

PHOTO / **AMANDA PARKES**

These bellow-heeled boots by graduate student Amanda Parkes are designed to pump out air as you walk.

New technique may speed DNA analysis

Lauren Clark
School of Engineering

Just as the printing press revolutionized the creation of reading matter, a "nano-printing" technique developed at MIT could enable the mass production of nano-devices currently built one at a time.

The most immediate candidate for this innovation is the DNA microarray, a nano-device used to diagnose and understand genetic illnesses such as Alzheimer's, viral illnesses such as AIDS, and certain types of cancer. The ability to mass produce these complex devices would make DNA analysis as common and inexpensive as blood testing, and thus greatly accelerate efforts to discover the origins of disease.

The demand for ever-shrinking devices of ever-increasing complexity in areas from biomedicine to information technology has spurred several research efforts toward high-resolution, high-throughput nano-printing techniques. Professor Francesco Stellacci and graduate student Arum Amy Yu, both in the Department of Materials Science and Engineering, have developed a printing method that is unmatched in both information content per printing cycle and resolution. They achieved the latter using what Yu calls "nature's most efficient printing technique: the DNA/RNA information transfer."

In the new printing method, called Supramolecular Nano-Stamping (SuNS), single strands of DNA essentially self-assemble upon a surface to duplicate a nano-scale pattern made of their complementary DNA strands. The duplicates are identical to the master and can thus be used as masters themselves. This increases print output exponentially while enabling the reproduction of very complex nano-scale patterns.

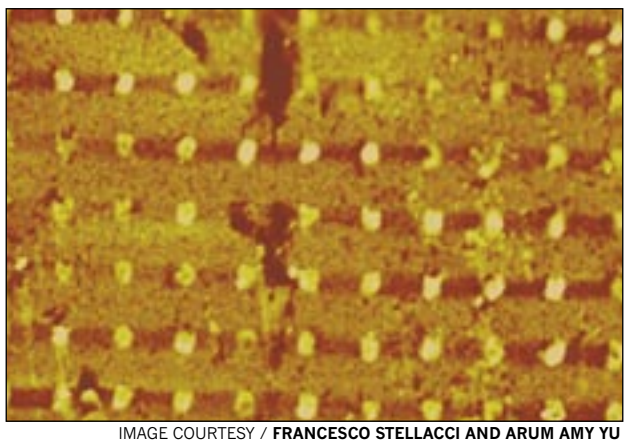

IMAGE COURTESY / **FRANCESCO STELLACCI AND ARUM AMY YU**

These DNA dots, each only about 200 nanometers in diameter, were printed using a new 'nano-printing' technique developed at MIT.

One such pattern is found on a DNA microarray, a silicon or glass chip printed with up to 500,000 tiny dots. Each dot comprises multiple DNA molecules of known sequence, i.e. a piece of an individual's genetic code. Scientists use DNA microarrays to discover and analyze a person's DNA or messenger-RNA genetic code. This allows for, say, the early diagnosis of liver cancer, or the prediction of the chances that a couple will produce a child with a genetic disease.

Frequent, widespread use of these devices is hindered by the fact that producing them is a painstaking process that involves at least 400 printing steps and costs approximately $500 per microarray.

MIT's nano-printing method requires only three steps and could reduce the cost of each microarray to under $50. "This would completely revolutionize diagnostics," said Stellacci. With the ability to mass produce these devices and thus make DNA analysis routine, "we could know years in advance of cancer, hepatitis, or Alzheimer's."

Another benefit would be large-scale diagnostics that could provide useful information about disease. Take diabetes. "We don't know if it's genetic. The only way to find out is to test a lot of people," said Stellacci. "The more we test with microarrays, the more we know about illnesses, and the more we can detect them."

SuNS has applications beyond DNA microarrays. Materials both organic and inorganic (metal nanoparticles, for example) can be made to assemble along a pattern composed of DNA strands. This makes SuNS a versatile technology that could be used to produce other complex nano-devices currently manufactured slowly and expensively: micro- and nano-fluidics channels, single-electron transistors, optical biosensors and metallic wires, to name a few.

Stellacci recently received renewed funding from the Deshpande Center for Technological Innovation to continue work on SuNS. The work is also funded by the National Science Foundation.

Finding beauty in the roundworm

Richard Saltus
HHMI Bulletin

Can the insides of a tiny blind worm that lives in rotting vegetation and carrion be beautiful?

In the hands of Erika Hartwieg, who "paints" with an electron microscope on black-and-white film, the anatomy of the roundworm does indeed yield a finely detailed, luminous image with an appeal beyond the purely scientific. Hang one of her photographs on a wall, and it could pass for abstract art.

Hartwieg prepares and studies unimaginably thin slices of Caenorhabditis elegans, the workhorse worm of geneticists, in the laboratory of Professor H. Robert Horvitz at MIT. Horvitz, an HHMI investigator, received the Nobel Prize in physiology or medicine in 2002 for discovering genes in C. elegans that control apoptosis—naturally occurring, or programmed, cell death.

"Erika is indispensable," says Horvitz. "Few people in the world can match her ability at serial-section electron microscopy." Serial-section refers to making a series of thin cross-sections, each of which must be kept intact and unwrinkled to form an unbroken chain of slices.

When Hartwieg photographs these worm sections with the electron microscope (EM), they appear as highly magnified ovals filled with cells and organelles, membranes and cytoplasm, voids and channels and fibers. The textures range from lumpy to faintly stippled, the tones from darkest black to the most feathery of grays.

For the past 14 years, she has been the electron microscopist in the Horvitz lab. After earning a master's degree in biological research, she "fell into electron microscopy in the 1960s when it was the new thing," says Hartwieg. In today's biology lab, the EM seems almost passé beside newer glamour technologies—gene microarrays and high-throughput sequencing machines—but electron microscopy is still a key player in research that probes the fundamentals of animal development and behavior.

PHOTO COURTESY / **HHMI BULLETIN**

At MIT, Erika Hartwieg prepares images of roundworms for biology Professor H. Robert Horvitz. Outside the lab, Hartwieg applies her artistry to etchings and pottery.

For example, a mutation may result in a worm that can't wiggle in its usual S-shaped pattern. Searching for the responsible anatomical defect within the nerve and muscle cells requires powerful magnification. Hartwieg can locate a particular cell of interest, enabling the scientists to precisely characterize the mutation-caused abnormality.

Hartwieg says the process of the specimen's preparation takes four or five days, working on five worms at a time. The average adult worm is 1 millimeter long, and lining up five of them in parallel within a drop of quick-jelling agar "is the most difficult step of all," she says.

After infusing the agar with a plastic resin to create a hard block, Hartwieg uses a microtome to cut a portion of each worm into cross-sections, which she likens to "pieces of salami." But these worm cold cuts are sliced by the microtome's diamond knife to a thickness of only 50 nanometers, as much as 2,000 times thinner than the width of a human hair.

Hartwieg uses a small tool tipped with an eyelash (of her own) to hold the ribbons of sections steady on a water surface for placement in a tiny copper grid. Then she washes the grid in succession with three types of stains, each containing different heavy metals that interact directly with the beam of electrons in the EM, resulting in scattering of the electrons with different energies, which form the image on the fluorescent screen.

Hartwieg also makes longitudinal slices: The finished photographs can be assembled in a mosaic to create a tabletop-sized portrait of, say, the worm's nose.

Reprinted with permission. A longer version of this article first appeared in the winter 2005 issue of the Howard Hughes Medical Institute Bulletin.

ROBOTS

Continued from Page 1

value rose with the bins' "floor" in the grid, and also if a block's single "X" or "O" marking was visible to the audience. Clear four-story bins at either side of the grid—worth 80 points each—lured major forklift-and-drop action.

Fifth-place winner Derrick Tan, a junior in electrical engineering and computer science, ignored the four-story "infinite airspace option" and built a double-blocker-fighting machine whose motors lived purely for "raw pushing power and speed. Overall, the night was a blast," he said.

Graduate student judges and undergraduate teaching assistants kept careful track of scoring and general machine conduct.

On a fashion note, several male contestants wore suits over their street gear this year, and two women wore intricate balloon hats. MIT President Susan Hockfield and her husband, Thomas Byrne, took it all in wearing Hawaiian print shirts and baseball caps.

Sixth-, seventh- and eighth-place winners were, respectively, Mark Eagan, Jesse Marsh and William Etheridge, all sophomores in mechanical engineering.

The top five winners of Tic-Tech-Toe will go to the International Design Contest (IDC), held this year in Japan. The IDC is like 2.007, only the teams are composed of students from different countries, which means drawings and physics, rather than words, are used to communicate machine design.

James Levitan, of Corporation, dies at 80

Sarah H. Wright
News Office

James A. Levitan, Life Member Emeritus of the MIT Corporation, loyal alumnus and tax attorney whose many contributions to MIT include the Levitan Prize in the Humanities for innovative scholarship by junior faculty, died after suffering a heart attack on May 14 in Bridgeport, Conn. He was 80.

"Jim was a giant among men—in physical stature as well as in generosity of spirit, kindness and wisdom. We benefited greatly from his untiring attention to the Institute's well-being. Jim was a devoted and trusted citizen of MIT. His absence will be sorely felt by the many friends and colleagues who were lucky enough to work and interact with him," said Dana Mead, chairman of the Corporation.

Levitan was elected to the Corporation in 1990 and became a Life Member in 1995. He served on the Corporation's Auditing Committee from 1991 to 2000, chairing it from 1994 to 1999. He also chaired the Ocean Engineering Visiting Committee from 1992 to 1999 and served for many years on the visiting committees for Humanities; Earth, Atmospheric and Planetary Sciences, and Nuclear Engineering. He was a member of the Investment Committee from 1997-2000 and served on the Corporation Development Committee from 1988 to 1994.

"Jim Levitan was a wonderful supporter of the humanities at MIT. He endowed our most important prize, the Ruth and James Levitan Prize in the Humanities, which we award annually. He understood our culture and supported it in every sense," said Philip Khoury, Kenan Sahin Dean of the School of Humanities, Arts, and Social Sciences and professor of history.

James A. Levitan

In 1988 he received the George B. Morgan Award for sustained excellence in Educational Council Activities, and in 1991, he received the Bronze Beaver, the highest award bestowed by the Alumni Association for distinguished service.

A lifelong horticulturist, Levitan believed all work—and life itself—required the same commitment and patience as nurturing a garden, he told Soundings in 1998. "There's a great satisfaction in completing a hard job, whether the problem is solving a complicated tax problem or preparing the rocky Connecticut soil for new hybrid rhododendrons," he said.

Levitan, who received the S.B. degree in chemical engineering from MIT, is associated with the Class of 1945; like many of his generation, his education was interrupted by military service. He completed his degree in 1948, after serving two years in the U.S. Navy (1944-1946).

He earned the L.L.B. degree from Columbia Law School in 1951, the same year he married Ruth White. He worked for the firm of Debevoise, Plimpton until 1965 and became tax partner and later, head of the Tax Department at Skadden, Arps, Slate, Meagher and Flom.

He is survived by his wife, their three daughters, Deborah, Judith, and Susan, and seven grandchildren.

A memorial service will be held on Friday, May 20, at Leo Gallagher & Sons Funeral Home, 2900 Summer St., Stamford, Conn. A reception will follow. For more information, please call 203-327-1313.

SCHOLARS

Continued from Page 1

MIT record in the high jump and won the Coach Award for her success in track and field.

The Churchill Scholarships were started in 1959 to honor the memory of former British Prime Minister Winston Churchill. The award brings exceptional young American students to his namesake college at Cambridge University to pursue graduate studies in engineering, mathematics or the sciences.

U.S. Fulbright Fellows

Fulbright fellowships were established in 1946 to increase mutual understanding between people of the United States and other countries. Three MIT students have been awarded fellowships for the academic year 2005-2006.

Edward Cunningham, a third-year Ph.D. student in political science, is also a research fellow at the MIT Industrial Performance Center and at Harvard's Asia Pacific Policy Program. During his Fulbright year, he will be a visiting scholar at Tsinghua University's School of Public Policy and Management studying China's energy challenge.

"The global importance of China's ability to negotiate successfully national energy demands is considerable," said Cunningham. "Within 15 years, China will likely account for two-thirds of global coal consumption, one-tenth of global oil consumption, one-seventh of global electric power consumption, and, more importantly, one-fifth of total global carbon emissions."

Cunningham majored in Chinese at Georgetown University and earned the master's degree in East Asian Studies from Harvard. He wrote a chapter for the first "Let's Go" travel book for China and has worked in Beijing for The Economist. He is fluent in Mandarin.

Janine Waliszewski, a graduate student who studies transportation in the Department of Civil and Environmental Engineering, will study the use in Sao Paolo, Brazil, of an integrated fare card that allows riders unlimited transfers between buses and subways during a normal commuting period (two hours). "Unlike the U.S., all the poor people live in the suburbs and the normal or rich people live closer to downtown," said Waliszewski. "So if you live in the suburbs and don't have a car, you have to make multiple transfers on your trip to work downtown."

Edward Cunningham

Janine Waliszewski

Daniel Stein

Waliszewski received her B.S. from the University of California, Berkeley, in industrial engineering and operations research. She spent five months in a Nepali village teaching English to grades 1 to 8. And she has competed in the Chicago, New York City and San Francisco marathons.

Daniel Stein, a senior with a double major in music and electrical engineering and computer science, will study in Switzerland at the Conservatoire de Genève with Jacques Zoon, former principal flutist with the Boston Symphony and the Concertgebouw Orchestra in Amsterdam.

"At this stage in my playing, I want to develop a personal artistic style, and Mr. Zoon is the person to help me do that," said Stein. "I admired his playing for years during the four summers I spent at Tanglewood while I was in high school. You aren't even aware that he is playing an instrument, only of the music that he creates." Stein said he hopes to study at a music conservatory when he returns to the United States and to become a professional performer. He is president of the MIT Symphony Orchestra, plays in MIT's Chamber Music Society, and has won the MITSO Concerto Competition and a Burchard Scholarship.

AWARDS & HONORS

Tim Berners-Lee, senior research scientist in the Computer Science and Artificial Intelligence lab was honored along with four other renowned achievers for lifetime achievement. The inventor of the World Wide Web, Berners-Lee received the 2005 Common Wealth Award for Mass Communications at an April 23 gala in Delaware along with former Secretary of State Colin Powell, who received the award for government; playwright David Mamet, honored for dramatic arts; novelist Amy Tan, honored for literature; and Kip Thorne, researcher of black holes, who was honored for science and invention. The honorees each received a share of $250,000 in prize money from the Common Wealth Trust.

Michael Stonebraker, adjunct professor of electrical engineering and computer science, has been chosen to receive the 2005 IEEE John von Neumann Medal "for contributions to the design, implementation and commercialization of relational and object-relational database systems." The Institute of Electrical and Electronics Engineers will present the award at a ceremony in Virginia on June 18. The award recognizes outstanding achievements in computer-related science and technology.

Ann Graybiel, a principal investigator at the McGovern Institute and Walter A. Rosenblith Professor for Neuroscience at MIT, is receiving the 2005 Ibsen Neuronal Plasticity prize for "outstanding work...in the domain of Motivation and Associative Learning." Awarded by the French Fondation IPSEN pour la Recherché Therapeutique, the prize recognizes researchers who shed light on the brain's plasticity, which refers to its physical remodeling in response to experiences, learning, and behavior. Graybiel will share the 40,000 euro prize (approximately $50,500) with Trevor Robbins and Wolfram Schultz, both at the University of Cambridge, United Kingdom.

AAAS elects Guttag

In a story last week about MIT professors elected to the American Academy of Arts and Sciences, the name of John Guttag was inadvertently omitted.

Guttag, a professor in the Department of Electrical Engineering and Computer Science, was among five MIT faculty members elected to the academy.

John Guttag

Fellows are selected through a highly competitive process that recognizes individuals who have made preeminent contributions to their disciplines and to society at large. They are nominated and elected to the academy by current members. The academy elected 196 new members this year.

10 journalists are named Knight Fellows

The Knight Science Journalism Fellowship program at MIT has selected its 23rd class of Knight Fellows, a group of six American journalists plus one each from Australia, Canada, China and Poland. The 10 will study science and technology at MIT for one academic year starting in September.

The Knight Fellowship is a mid-career program for working journalists who specialize in science, technology, medicine or the environment.

The new Knight Fellows are:

- Piotr Cieslinski, science editor of Gazeta Wyborcza, Poland's largest daily newspaper.
- Mary Engel, editorial writer for the Los Angeles Times.
- Joseph McMaster, producer at "Nova," WGBH-TV, Boston.
- Natasha Mitchell, presenter and producer for the Australian Broadcasting Corp., Sydney.
- Rachel Ross, technology reporter at the Toronto Star.
- Michael Stroh, science reporter at The Baltimore Sun.
- Luke Timmerman, biotechnology reporter at The Seattle Times.
- Corinna Wu, producer at "Science Update," a syndicated radio program in Washington, D.C.
- Rebecca Zacks, senior editor at Technology Review, Cambridge, Mass.
- Yan Zhao, science editor at Science Times, a weekly newspaper in Beijing.

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

Panasonic color TV w/built-in VCR plus modulator for external DVD/VCR. 8yrs. old, v. good condition. $50. Turntable, needs repair, $25. Malden. Karen at 253-2708 or boiko@mit.edu.

15 cubic ft. refrigerator. 2-door, top freezer. 9 months old. $250. 671-389-8174 or masmith@mit.edu.

VEHICLES

1977 Porsche Targa Carrera 3.0. Rare, Euro specs, 5-speed transmission (rebuilt), 200hp, whale tail, recent paint, new brakes. Ex. cond. Pampered, never raced. Motivated seller. $12,000/bst. 339-237-0960 or bwyoung@mit.edu.

1998 BMW 328i. 4-door sedan, 84K. Ex cond. Ascot green. Beige leather w/heated seats. 5-speed transmission. Premium Harmon-Kardon sound system. Power everything. $10,500. 617-489-5417.

HOUSING

Cabin, 4.5 BR, 1.5 b, lg kit & liv rm, deck. Prvt 30-ft beach, dock on quiet st. Avail wk of 7/2/05, $750. Fran at 781-205-5000.

Martha's Vineyard cottage: 2 BR/1.5 b outside of Oak Bluffs w/wraparound deck, outdoor shower, barbecue, open interior, DW & W/D. Near lagoon, tennis & bike trails. $600–$900/week. ninad@mit.edu.

Melrose: 3 BR apt, hrdwd flrs. Close to bus, T, comm. rail. EIK, off-street prkng, W/D hookup. $1,250 plus utilities. thakkar@ccnmr.mit.edu.

WANTED

Swap two MITAC tickets to June 13th, Monday night game vs. Cincinnati for different game. Mark at 3-2213 or mdbelang@mit.edu.

College senior seeking part-time babysitting job for the summer. Available wknds. Worked at summer day camp past three summers. Prior babysitting experience. Meghan at 508-877-9518 or mwhealan@nd.edu.

STUDENT POSITIONS

Positions for students with work study eligibility.

Media and Technology Charter High School seeks English/math tutors for summer academy, 7/18–8/19, M–Th, 7:45 a.m.–1 p.m. Trainings: 6/7 and 6/21. $17/hr. www.matchschool.org.

New England Aquarium seeks Office Assistant. Resume w/cover letter (title of position, university/college currently attending, federal work-study verification, hours/work avail. during week/weekend) to vols@neaq.org (MS Word files).

World music groups plan to travel globe

Lynn Heinemann
News Office

Many MIT students will head home this summer, but two of MIT's performing ensembles are planning a different kind of homecoming.

The student musicians in MIT's Rambax, which plays Senegalese music, and in MIT's Gamelan Galak Tika, which has its roots in Bali, are preparing to play, for the first time, in the home countries that inspired their music.

On May 23, Rambax will embark on a two-week study tour of Senegal, West Africa. The group will attend classes taught by world-class Senegalese musicians and dancers and experience sabar drumming within the context of daily life in Senegal.

The 11 members of Rambax, along with co-directors Assistant Professor Patricia Tang and resident artist and master Senegalese drummer Lamine Touré, will present two performances in Senegal, one at a Dakar nightclub, sponsored by the prestigious Africa Fête organization, and the other at a "tannibeer," a neighborhood drum and dance party, organized by Touré's family of prominent griot percussionists.

In addition to sharing their music, Tang says that the traveling MIT student-musicians will also offer the youth of Senegal "their love and expertise of science." Rambax members are organizing a "poster session" in which they'll present their scientific interests to students at the University Cheikh Anta Diop in Dakar. "We hope the trip will bridge the gap in our musical understanding as well as help bridge a cultural gap," said Tang.

The group will live in a rented house in Dakar, arranged by Touré and his family, who will serve as tour guides and organizers, said Tang. She reports that the co-directors have divided the duties so that Touré is in charge of practical logistics such a housing, food, workshops and performances and Tang, who has traveled to Senegal frequently in the past nine years and lived there from 1997-98, is handling the managerial aspects.

"We hope that our joint leadership will make this trip a unique opportunity for the students," said Tang, who founded Rambax in 2001. "Lamine is very excited about bringing his MIT students to Senegal to show them his culture and introduce everyone to his family, and to study sabar in its original context," she added.

PHOTO / **ED PLATT**

MIT resident artist and master Senegalese drummer Lamine Touré will help lead 11 members of the musical group Rambax on a study tour of Senegal starting May 23. He is shown playing with Rambax, which performs Senegalese music.

Rambax members are enthusiastic about the trip as well. "I'm excited to have this opportunity to experience the culture that bears such an intense form of music and expression," said Sasha Devore, graduate student in the Whitaker College of Health Sciences and Technology, who has been playing in Rambax for three years.

The trip has been funded in part by a grant from the Council for the Arts at MIT, Dean of Student Life Larry Benedict and Dean of Undergraduates Robert Redwine.

In a similar vein, 31 members of Gamelan Galak Tika will travel to Bali, Indonesia, on June 18 for a two-week tour. The group will perform at the acclaimed Bali Arts Festival.

With a rented gamelan, similar in size and tuning to their own, the ensemble, consisting of gamelan players and other instrumental soloists (guitar, cello, bass, percussion, keyboard) and dancers, will perform at the annual monthlong festival of music, dance, theater and other cultural and commercial activities.

"I've always had it in my mind to bring Galak Tika to Bali," said the group's director, Evan Ziporyn, who founded Galak Tika in 1993 and was once a member of Gamelan Sekar Jaya, the first American group to perform at the Bali Arts Festival 20 years ago.

This year, Ziporyn said he felt the MIT ensemble was ready, "musically, artistically and psychologically." Yet he says it was the intense motivation and effort by the members that is actually making this trip possible. "I'm simply responding to their energy," said Ziporyn, who is the Kenan Sahin Distinguished Professor of Music at MIT.

Most Western or Japanese groups go to Bali with almost all traditional pieces, Ziporyn said. But Galak Tika will be performing only new, experimental works in Bali. "I feel the Balinese don't need to hear our versions of their traditional music," he said. "The artistic challenge is to do this while still conveying our respect for the traditional culture."

Among the works to be performed will be "Gringsing," the latest composition by Galak Tika artist-in-residence Dewa Ketut Alit, considered one of the most innovative young composers in Bali today.

Miranda Fan (S.B. 1995) marvels at the idea of an American ensemble visiting Bali to premiere the works of a Balinese composer that had been commissioned by Galak Tika. "We're presenting a great program of new works," she said, calling it, "one that truly represents our group's identity and spirit."

Galak Tika will also perform with Alit's Gamelan Çudamani, a professional ensemble based in the village of Pengsekan, Ubud, Bali, with whom they will present a "mabarang," a performance in which two gamelans face each other and trade off pieces.

While in Bali, Galak Tika will reunite for a number of performances with Balinese dancer I Nyoman Catra and composer/singer Desak Made Suarti Laksmi, with whom the ensemble frequently worked during the duo's extended residence in the United States.

Aaron Woolsey (S.B. 1995) has been with Galak Tika since the ensemble was formed in 1993, but has never been to Bali. "Going on this trip is like finally reaching the promised land, for me," he said.

Woolsey added that he thinks the tour will also inspire their audiences in Bali. "They'll get to see how serious people outside of their community are about Balinese music, and how their culture and arts have brought so much joy to the lives of people living half a world away," he said. "We will get to play our style of Balinese music and share our music with people that have a deep appreciation and knowledge of it."

For Blair Schoene, a graduate student in earth, atmospheric and planetary sciences, the trip will be a return visit to the country and to a culture he called "so foreign and yet so functional and fascinating that I was forced to redefine how I perceived our role as humans on this planet."

Schoene notes that though world statistics define Bali as overpopulated and impoverished, he finds it "rich in identity, community and family values, and it has a deep appreciation for the integration of religion and the arts into a sustainable and happy way of life." Schoene credits playing Balinese music with helping him remain connected with the things he learned from the people and culture there.

PHOTO / **SUSAN WILSON**

Thirty-one members of Gamelan Galak Tika, shown here in 2003, will travel to Bali this June to perform at the Bali Arts Festival.

Galak Tika presents pre-tour concert

To tune up for its upcoming tour to Bali, MIT's Gamelan Galak Tika will close its 12th season with a program combining new and traditional works for Balinese gamelan and dancers on Thursday, May 19, at 8 p.m. in Kresge Auditorium.

The concert will feature the final U.S. appearance of two of the foremost figures in Balinese music and dance—I Nyoman Catra and Desak Made Suarti Laksmi—and will include new works by composer Dewa Ketut Alit as well as new American works for Balinese gamelan by current Galak Tika members.

The concert features the Boston premiere of "Gringsing," the latest composition by artist-in-residence Alit, co-founder and music director of Gamelan Çudamani, a professional ensemble based in the village of Pengsekan, Ubud, Bali. Alit's work "Semara Wisaya," choreographed by Nyoman Catra, will be performed by Suarti Laksmi and Cynthia Laksawana.

The concert marks the final U.S. performances by Catra and Laksmi, who return to Bali after a four-year residence at the College of the Holy Cross in Worcester.

Galak Tika will also present four innovative pieces by current company members Sean Mannion, Dan Schmidt, Christine Southworth (S.M. 2002) and Rebecca Zook. And, to showcase the crosscultural spirit that has been the ensemble's hallmark, the concert will feature "Sabar Gong," a new work composed by Artistic Director Evan Ziporyn and Wolof master drummer Lamine Touré for the inauguration of President Susan Hockfield.

Admission to the concert is $10; $5 for non-MIT students and seniors; free for MIT students, faculty and children under 12.

MIT harpsichordist wins Prague competition

Mary Farbood, graduate student in media arts and sciences, was awarded top honors for her harpsichord performance at the 57th Prague Spring International Music Competition, earning cash prizes, professional engagements and the chance to make a studio recording. Farbood outperformed 37 young artists from Korea, Japan, China, the United States and every country in Europe.

In addition to winning first prize in the overall harpsichord competition, Farbood also won the Bohuslav Martin Foundation Prize for the best performance of Bohuslav Martinu's Concerto for Harpsichord and Small Orchestra, which all finalists had to perform in the final of three rounds of competition.

Formerly affiliated with the MIT Music and Theater Arts Section, Boston-area harpsichordist, fortepianist, conductor and author Mark Kroll has taught Farbood for more than two years. As one of the international panel of judges at the competition, Krull recused himself during Farbood's performances, but admitted, "my enthusiasm for Mary's playing was probably obvious—and I hope contagious."

Kroll, who had been working to arrange concerts for Farbood, says the victory will open a lot of doors of her. "She already has an offer to play a concerto this August in the Czech Republic, and she will play for the Prague Spring Festival in June of 2006," he said.

The prize was presented in a ceremony on Sunday, May 15.

Erratum: The April 6 story on Farbood mistakenly credited Professor Tod Machover with the development of Hyperscore. Hyperscore was developed by Farbood.

ARTNEWS

Albert Chan (S.M. 1999, Ph.D. 2004) is featured in "#2 Pencil," a 35-minute film premiering at Paradise Rock Club (967-969 Commonwealth Ave., Boston) on Tuesday, May 24, at 8 p.m. According to Chan, he plays a dorky high school kid, which he admits might not be considered acting. "I assure you," he wrote, "I perform all my own stunts."

The Paradise show includes performances by the band Cherry S/T, which contributed original music to the film. Tickets are $15, available at Ticketmaster.

MIT EVENT HIGHLIGHTS MAY 18–22

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

PHOTO / **MURRAY ROBINSON**

Contours in context

Landscape sculptor Richard Serra found himself at odds with his patron, his materials, his environment and the harsh realities of physics when creating 'Tuhirangi Contour,' in New Zealand, above. The List Visual Arts Center will present a documentary film this evening on the creative process behind the sculpture. 'Seeing the Landscape: Richard Serra: Tuhirangi Contour,' will be screened at 7 p.m. in Bartos Theater.

WEDNESDAY May 18

Artist Behind the Desk
Debussy performed by soprano Alecia Batson of the Office of the President with David McGrory on piano. Noon. Killian Hall. 253-9821.

Gallery Talk: "A Walk Through the Muse"
Deborah Douglas, MIT Musuem curator of science and technology, conducts a tour of main gallery exhibitions. Noon. MIT Museum. 253-5297.

"Seeing the Landscape: Richard Serra: Tuhirangi Contour"
Documentary about the sculptor's massive earthworks by Alberta Chu. 7 p.m. Bartos Theater. 253-4400.

American Jiu-Jitsu
Practical self-defense. Beginners welcome, especially on Mondays and Wednesdays. DuPont (W32) Wrestling Room. 9–11 p.m.

THURSDAY May 19

CAVS "Read-In"
Time out for group reading of arts publications collected for Travelling Magazine Table. 6:30–9 p.m. Room N52-390. 452-2484.

MIT Gamelan Galak Tika
World premiere of 'Gringsing' by renowned Balinese composer Dewa Ketut Alit. 8 p.m. Kresge Auditorium. 253-9800.

MIT Tea Time
Jack Derby (founder of Derby Management) will talk about writing a business plan and incorporating your company. 5:30–8:30 p.m. Room 66-168.

Karaoke Night at the Thirsty Ear
Must be 21+. I.D. required. 8 p.m. The Thirsty Ear Pub, Ashdown House.

FRIDAY May 20

Spring Book Buyback
10:30 a.m.–5 p.m. Lobby 10. 499-3201.

MIT Anime Club Weekly Showing
The MIT Anime Club shows the best of both recent and classic Japanese animation. Room 6-120. 7 p.m.

Vesak Day Celebration
Singaporeans and non-Singaporeans celebrate Vesak Day, a Singapore holiday. 7–10 p.m. Student Center PDR 1.

LiveMusic-@theEAR
Must be 21+. I.D. required. Doors: 8 p.m., show: 9p.m.–1 a.m. The Thirsty Ear Pub, Ashdown House.

SATURDAY May 21

Asado
Barbecued lunch of meat cooked the Argentinean way.1–4 p.m. Kresge barbeque pits.

"Sturtevant: The Brutal Truth"
List Curator Bill Arning discusses this Paris-based American artist known for her replications of famous works in a gallery talk. 2 p.m. List Visual Arts Center.

MITHAS Celebration of Indian Music
Presented by MITHAS (MIT Heritage of South Asia). $20, MIT students free. Deepak Ram, flute, Jerry Leahe, tabla, at 1 p.m. and Padma Talwalkar, khyal; Sudhanshu Kulkarni, harmonium; Satyajit Talwalkar, tabla at 4 p.m. Wong Auditorium. 258-7971.

SUNDAY May 22

MITHAS Celebration of Indian Music
Presented by MITHAS (MIT Heritage of South Asia). Tara Anand, vocal; K.V.S. Vinay, mridangam. $20, MIT students free. 1 p.m. Wong Auditorium. 258-7971.

MITHAS Celebration of Indian Music
Presented by MITHAS (MIT Heritage of South Asia). T.M. Krishna, vocal; R.K. Sriram Kumar, violin; K. Arunprakash, mridangam; B. Purushottam, ghatam. $20, MIT students free. 4 p.m. Wong Auditorium. 258-7971.

International Folk Dancing with live music (participatory)
8 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

RECOMB 2005 — *May 18*
Multidisciplinary conference on the latest research in bioinformatics, computational biology. Last day.
Kresge Auditorium
9 a.m.–5 p.m.

"COMPUTATIONAL COUTURE" — *May 20*
Large-scale multimedia runway show of innovative clothing designed by students and alums of MIT, Harvard and RISD. 452-5308.
Media Lab
8 p.m.

CELEBRATION OF INDIAN MUSIC — *May 21*
Presented by MIT Heritage of South Asia. Performances on May 21 and 22. $20, MIT students free. 258-7971.
Wong Auditorium
1 and 4 p.m.

MIT EVENT HIGHLIGHTS MAY 23–27

MONDAY May 23

"The Traveling Magazine Table"
Collection of magazines published by nonprofit and alternative spaces, groups and artists' collectives. Noon–6 p.m. Room N52-390. 452-2484.

A Visit to the Galapagos
Exhibits built by students in 1.016. 10 a.m.–6 p.m. Lobby 13. 253-4074.

State of the Institute Forum
"Looking Forward" forum with President Susan Hockfield, Provost Robert Brown and Executive Vice President John Curry. 1–3 p.m. Kresge Auditorium.

Kokikai Aikido
Kokikai is a modern Japanese martial art that teaches coordination of mind and body. Beginners welcome. 7:15–9 p.m. DuPont (W32) Wrestling Room. 253-0772.

TUESDAY May 24

"Sturtevant: The Brutal Truth"
Paris-based American artist known for her replications of works. Noon–6 p.m. List Visual Arts Center. 253-4680.

Screening of Robert Breer's animated films
Three playful and humorous cartoons explore the simple delights of life. 24 hours. Media Test Wall, Whitaker Building 56. 253-4400.

Astrophysics Colloquium
4 p.m. Room 37-252.

Tuesday Night Sports With the Red Sox
21+. Proper ID required. 7 p.m. Thirsty Ear Pub, Ashdown House.

WEDNESDAY May 25

"COLLISION-box"
Exhibit mixing art and technology with a duo of interactive video-based displays. $5, free with an MIT ID. 10 a.m.–5 p.m. 253-4444.

"Sturtevant: The Brutal Truth"
List curator Bill Arning discusses this Paris-based American artist known for her replications of famous works. Noon. List Visual Arts Center.

"Romance & Reality in the Clipper Ship Era"
Hart Nautical Collections curatorial assistant Jenny O'Neill discusses the reality behind the romantic representation of the clipper ship era. Free with museum admission. 2 p.m. MIT Museum. 253-5297.

THURSDAY May 26

"Constructing Stata: Photographs of Richard Sobol"
A collection of unpublished photographs captures the construction process that brought MIT and the world the Frank Gehry-designed Stata Center. 9:30 a.m.–5 p.m. Room 10-150. 253-4444.

Meditation and Discussion on Enlightened Mind: Bodhicitta
Study of "Vast as Heavens, Deep as the Sea: Verses on Bodhicitta." Sponsored by Buddhist Community at MIT. 7–8 p.m. MIT Chapel. 324-6030.

Karaoke Night at the Thirsty Ear
Must be 21+. I.D. required. 8 p.m. The Thirsty Ear Pub, Ashdown House.

FRIDAY May 27

Artifacts Related to MIT Presidents and Inaugurations
Exhibition marking the inauguration of MIT's 16th president, Susan Hockfield. 10 a.m.–5 p.m. MIT Museum. $5, free with an MIT I.D. 253-4444.

MIT Anime Club Weekly Showing
The MIT Anime Club shows the best of both recent and classic Japanese animation. Room 6-120. 7 p.m.

Whirling Dervishes and Suti Music
Performance by Konya Suti Music Group. Sponsored by Turkish Students Assn. $25. 7:30–9 p.m. Kresge Auditorium. 628-4578.

LIVEmusic-@theEAR: Laura Azzarello
Must be 21+. I.D. required. 9 p.m. The Thirsty Ear Pub, Ashdown House.

PHOTO / **LARISSA HARRIS**

Ready, set, read

The MIT Center for Advanced Visual Studies is hosting a 'read-in' from 6:30 to 9 p.m. on Thursday, May 19, to encourage people to enjoy the 'Traveling Magazine Table,' a collection of independent publications, before the material moves on. 'There's stuff here you won't find anywhere else,' said Larissa Harris, associate director of CAVS. 'Cutting-edge artists from Lithuania, Finland, Venezuela, you name it, have contributed to the collection. Bring your dictionary and come on over.' Meg Rotzel and Joe Zane, above, look over some of the offerings.