

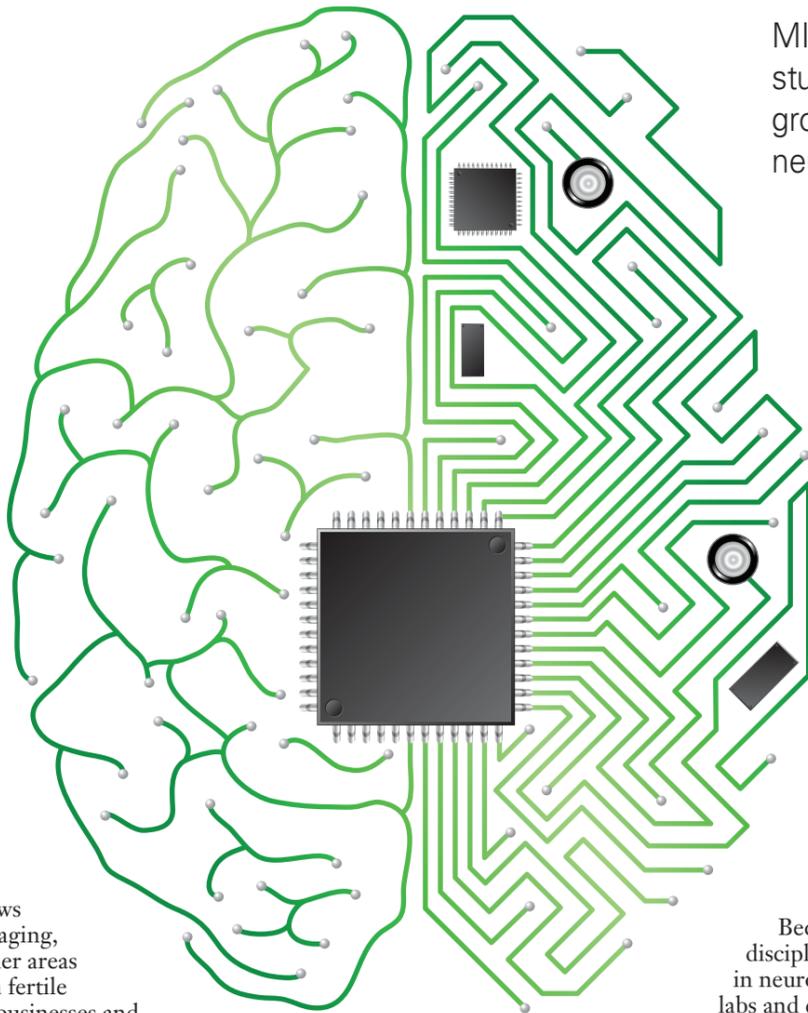


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# TechTalk

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

## BRAINY BUSINESS



MIT positioning students for growing field of neurotechnology

David Chandler  
News Office

**N**eurotechnology, a rapidly growing field that draws upon biology, medical imaging, computer science and other areas of research, is providing a fertile ground for both existing businesses and startups. With the aim of grooming the sector's future leaders, MIT has created a new research program and is offering numerous classes — including one on how to launch businesses in the industry.

The multidisciplinary, interdepartmental work in neurotechnology now being done across MIT has been spurred on in part by the creation in 2006 of the McGovern Institute Neurotechnology (MINT) program. That program, says its director Charles Jennings, was created to take advantage of the fact that “MIT is almost in a uniquely good position to develop new technologies” in this field, thanks to its confluence of expertise in neurosciences, engineering and computation. “We have an extraordinary set of advantages.”

Neurotechnology is an umbrella term used to describe a wide range of technologies: diagnostic imaging of the brain through methods such as functional Magnetic Resonance Imaging (fMRI); neuropharmacology (drugs, including painkillers and antidepressants, that affect brain and nervous system functioning); enhancements or replacements for sensory or motor systems (cochlear or retinal implants, “smart” prosthetics) and neurostimulation through implanted electrodes to treat diseases such as Parkinson's or to restore mobility to paralyzed patients.

IMAGE: ISTOCKPHOTO

Because of its inherently cross-disciplinary nature, MIT's work in neurotechnology spans many labs and departments. The Harvard-MIT Division of Health Science & Technology helped to incubate the field of neuroengineering for years (and one of its alums, Shai Gozani, was the founder of NeuroMetrix, a leading company in the field). Other important related work has come from the Department of Brain and Cognitive Sciences, the Research Lab for Electronics, the Department of Electrical Engineering and Computer Science, the Computer Science and Artificial Intelligence Laboratory, and the Media Lab, which hired neuroengineer Ed Boyden as a faculty member.

### Business minded

The new classes helping to put MIT at the forefront of this field include “Principles of Neuroengineering,” “Applications of Neuroengineering” and “Neurotechnology Ventures,” which were spawned by student-led seminars on the subject that were taught in the late 1990s. The series of three courses was supported by the largest-ever grant in the history of MIT alumni class funds.

In “Neurotechnology Ventures,” which was taught in the spring 2007 and fall 2008 semesters, representatives of a variety of neuro-

► Please see NEUROTECHNOLOGY, PAGE 7



## Deval Patrick to deliver graduation address

R.J. Tyler  
Institute Events

Deval Patrick, governor of the Commonwealth of Massachusetts, will deliver the MIT Commencement address on June 5, 2009.

Patrick was elected to office in November 2006. The first in his family to attend college, he studied English and American literature at Harvard and graduated with honors in 1978. He then spent a year in a United Nations youth training project in Darfur, Sudan, before entering Harvard Law School in 1979.

As governor, Patrick is a member of the MIT Corporation. Recently, he joined other members of the National Governors Association in petitioning the Obama administration for federal funding to support clean energy, education, public works and health care projects in Massachusetts. The governor has a particular interest in improving statewide energy efficiency, infrastructure and transportation, and he is recognized for his desire to lever-

► Please see PATRICK, PAGE 2



## Take part in the Sustainability at MIT Photo Contest

What does sustainability at MIT look like to you? The MIT News Office invites the MIT community to participate in its first Sustainability at MIT Photo Contest to explore what a sustainable MIT campus means. Show us what you see and what your aspirations are as MIT launches its greeningMIT campaign to help the Institute walk the talk on energy and the environment.

The grand-prize winner will receive an iPhone and have his or her winning entry published on the MIT home page and in MIT's official newspaper, Tech Talk. Prizes will also be awarded to the first- and second-place finishers.

The contest is open to all current MIT staff, students and faculty, and entries will be judged by a diverse panel of MIT community members on originality, aesthetics and relevance to the topic. The contest is sponsored by the MIT News Office and the Campus Energy Task Force of the MIT Energy Initiative. The contest runs through March 31; winners will be announced in mid-April.

For complete rules, including how to enter, please visit <http://web.mit.edu/newsoffice/2009/photo-contest-rules.html>. For more information on greeningMIT, please visit [web.mit.edu/mitei/campus](http://web.mit.edu/mitei/campus).

### PEOPLE

#### Cole addresses MLK breakfast

Johnnetta Cole delivers an emphatic address at the 35th annual celebration of Dr. Martin Luther King Jr.

PAGE 3

### RESEARCH

#### Bumps in the road

MIT students' research, company find a way to produce energy through vehicles' shock absorbers.

PAGE 4

### NEWS

#### Burchard scholars selected

27 sophomores and juniors have been named 2009 Burchard scholars in SHASS.

PAGE 7

Events  
at MIT

## Today

• **“Foreign Policy Challenges for the Obama Administration.”** Speaker: Nicholas Burns, Harvard University. Noon-1:30 p.m. in E38-615.

• **Hibur Lecture Series — “Future Cities.”** 12:30-1:30 p.m. in 9-152. Carlo Ratti and Assaf Biderman, the director and associate director, respectively, of SENSEable City Lab at MIT, will discuss the increasing deployment of sensors and hand-held electronics in recent years, which is allowing a new approach to the study of the built environment.

• **“The Impact of Potatoes on World Population and Urbanization: A Historic Natural Experiment.”** Speaker: Nancy Qian, Brown University. 2:30-4 p.m. in E51-395.

• **MIT BLUES Research Colloquium.** 5-6:30 p.m. The MIT BLUES (Black Undergraduates in Engineering & Science) Research Colloquium is a showcase of student research. One undergraduate student is partnered with an MIT faculty member or graduate student who is researching a similar field. The colloquium exemplifies the BSU's effort to form a continuum within the stratified MIT Black community of undergraduates, graduates, alumni and faculty.

• **The MIT Center for International Studies — “Challenges to the Global Economy.”** Martin Feldstein (speaker) and Simon Johnson (discussant). 5:30-7 p.m. in Wong Auditorium, E51.

• **MIT Energy Club Lecture Series: Future of Energy Panel.** 6-7 p.m. in E51-335. Discussion on America's Energy Future with American Electric Power (AEP) Chairman & CEO, Michael G. Morris; Former New York Governor, George Pataki; President of Ceres, Mindy Lubber.

## Thursday, Feb. 12

• **“Making Globalization Work for All? Reflections on Improving Labor Standards in Global Supply Chains.”** Speaker: Rick Locke, MIT. Noon-1:30 p.m. in E53-482.

• **The Center for 21st Century Energy Spring 2009 Seminar Series.** Speaker: Jeff McAulay 4:15-5:30 p.m. in 37-212. Topic: “Balancing the use of biofuels: technology, policy and strategy in the U.S. LDV fleet.”

• **MIT Energy Club Lecture Series: Panel on Integrating Electric Vehicles into the Grid and Electricity Markets.** 6-7:30 p.m. in 4-163.

## Submit your events!

Log on to [events.mit.edu](http://events.mit.edu) to add your events to MIT's online calendar. Certain events will be selected from the online calendar to be published in Tech Talk each Wednesday.

## Four MIT engineers named to the NAE

Patrick Gillooly  
News Office

The National Academy of Engineering (NAE) announced the names of 65 new members and nine foreign associates on Feb. 6, which included three current MIT researchers and one professor emeritus — Yet-Ming Chiang, Jack B. Dennis, Mark Drela and Edwin L. Thomas.

The announcement, from Charles Vest, MIT's 15th president and NAE president since 2007, brings the NAE's total U.S. membership to 2,246 and the number of foreign associates to 197.

Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to “engineering research, practice or

education, including, where appropriate, significant contributions to the engineering literature.”

Chiang, the Kyocera Professor of Ceramics in the Department of Materials Science and Engineering (DMSE), was named to the NAE for his contributions to the understanding of new energy storage materials and their commercialization.

Dennis, professor emeritus in the Computer Science and Artificial Intelligence Laboratory, was honored for contributions to sharing and protection in computer systems and parallel architectures based on data flow principles.

Drela, the Terry J. Kohler Professor of Fluid Dynamics in the Department of Aeronautics and Astronautics, was cited for the creation of breakthrough aircraft designs and design software that enabled operation in new flight regimes.

Thomas, department head and Morris Cohen Professor of Materials Science and Engineering, was honored for his development of novel photonic materials and work on the morphology of block copolymers.

In addition to the active MIT inductees, several MIT-affiliated researchers were also named to the NAE on Friday, including Kristi Anseth, a former postdoctoral student in the Department of Chemical Engineering; Diran Apelian, a former student and former visiting committee member, DMSE; William Dally, former faculty member in the Department of Electrical Engineering and Computer Science (EECS); Sanjay Gheawat, former EECS student; Steve Umans, longtime EECS staff member; and Larry Wein, former MIT Sloan School of Management faculty member.



PHOTO / DONNA COVENEY

Shafts of sunlight falling across Lobby 10 lend an air of mystery on a midwinter's day.

## PATRICK: Massachusetts governor to deliver Commencement address

Continued from Page 1

age Massachusetts's strengths in education and scientific research as New England seeks economic stability.

“For MIT, an institution deeply committed to producing world-changing innovators and innovations, Governor Patrick's vision of Massachusetts as a global hub of transformational technologies is an inspiration and a call to arms,” President Susan Hockfield said. “A champion of biotechnology, alternative energy and educational rigor, he makes an eloquent case that the Commonwealth's intellectual and entrepreneurial resources offer immense creative potential and economic value, even and especially in these difficult times. We could not ask for a more apt or inspiring speaker for our graduates this year.”

W. Eric Grimson, head of the Department of Electrical Engineering and Computer Science and chair of the Commencement Committee, shares the president's enthusiasm. “I am delighted that Governor Patrick has accepted MIT's invitation to speak at Commencement,” he said. “[He] has been one of the most innovative political leaders in forging ties between research and educational institutions and state government. His Massachusetts Life Sciences Initiative and his Clean Energy Initiative are great examples of cooperation between government and academia in finding solutions to challenging problems that affect all members of our community.”

Oaz Nir, president of the Graduate Student Council, said the choice “highlights the way in which MIT research, particularly on

energy, is in dialogue with policy decisions.”

The governor's career includes service on the NAACP Legal Defense and Education Fund and private practice with two Boston law firms.

President Bill Clinton appointed Patrick assistant attorney general for civil rights in 1994, a role in which he pursued prosecution of hate crimes and abortion clinic violence, employment discrimination, and enforcement of fair lending laws and the Americans with Disabilities Act. Before election as the first African-American governor of Massachusetts, Patrick campaigned with the goals of increasing accessibility to government and encouraging civic engagement.

“It is exciting to have Governor Patrick as this year's guest speaker,” said Undergraduate Association president Noah Jessop. “The governor and President Obama are both transformational figures within this state and nation, respectively. They are men who have embraced challenges that stood between them and the era of freedom and promise as we know it today. MIT is an institution rooted in the future: Governor Patrick's words should resound with many of the graduates who will go forth to be leaders in their fields and communities.”

Guest speakers at recent MIT Commencements have included Nobel Peace Prize winner Muhammad Yunus (2008), President Emeritus Charles M. Vest (2007) and alumnus and Federal Reserve Bank Chairman Ben Bernanke (2006).

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# Speakers pledge to carry on King's dream

Stephanie Schorow  
News Office

In an emphatic keynote address at MIT's 35th Annual Dr. Martin Luther King Jr. Breakfast Celebration on Feb. 5, educator and humanitarian Johnnetta Cole urged all members of the MIT community to take responsibility for achieving a diverse and inclusive campus.

"It's in your hands," Cole, the first African-American woman to serve as president of Spelman College, told a packed Morss Hall.

Cole and other speakers at the breakfast, titled "Yes, We Must: Achieve diversity through leadership," cited President Barack Obama's election as a major step toward fulfilling King's dream. After Obama's election, "Many of us would greet each other and we would say, 'I never thought it would happen...'" and here Cole interrupted herself to ask the audience, "What's the rest of it?"

"In our lifetime," the audience responded in unison.

"Oh, but my brothers and my sisters, it has happened!" Cole exclaimed.

The 2008 election proved that race is no longer a barrier to the highest office in America, she said, but did not mean racism had ceased to exist. Indeed, racial incidents following Obama's election underscore the persistence of bigotry across color, class and race lines, she said.

"Bigotry is not just human nature. It's learned. And if it is learned, guess what? It can be unlearned," she said, before challenging her audience to take a long, hard look at themselves.

"Learn how you learned your prejudices," she said.

Cole and others cautioned that much more work lay ahead for the nation. As one speaker put it, "The theme for this celebration is 'Yes, We Must.' But what must we do?"

Cole called for expanding King's dream of inclusion to encompass gender, sexual orientation, age, class and mental and physical disabilities. "I believe that if Dr. King had lived beyond the 38 years that he gave us that he would have described and worked for an even larger dream."

In her remarks, MIT President Susan Hockfield underscored the Institute's ongoing commitment to achieving King's dream of a diverse and inclusive community.

"This time, we are asking everyone to help shift the great stone of change.



PHOTO / DONNA COVENEY

Keynote speaker Johnnetta Cole delivers her address at the 35th annual MLK Breakfast Celebration.

It's another lesson we can learn from the election of President Obama: When many, many people feel empowered, and seize opportunities for progress, together they can create unprecedented change," Hockfield said.

"Let me be clear: A culture of inclusion is not something we want to pursue because it is a warm, fuzzy, feel-good idea," she said. "We must create a culture of inclusion, so that we can actively capitalize on our diverse skills and perspectives, so that we can better advance the fundamental mission of MIT."

Nor can tight budgets be "an excuse for inertia and inaction," she said. While reassuring the audience that "budget pressures will not deflect us from this work," Hockfield also pointed out that some important steps do not require funding.

"It costs nothing to ask, in an annual review, what steps an individual has taken to build a culture of inclusion — or to educate your colleagues about the difference between a 'search' and a 'sort,'" she said, referring to efforts to actively search for qualified minority and female faculty and not to simply sort through already familiar candidates.

The breakfast also featured remarks by two students, who each received standing ovations for their frank descriptions of the role race played in their lives.

Joy Johnson, a graduate student in elec-

trical engineering and computer science, stressed that inclusion does not stop at the campus edge.

"It requires we have interaction with one another, not only in the lab, in the classroom, and in the corridors, infinite or otherwise," she said. "We must give credit where credit is due, not only in our academic work but in our everyday lives. And this must begin with acknowledgment — of our janitors, our lab technicians or bus drivers as easily as we speak to our Institute professors."

Matthew L. Gethers, a biological engineering senior recently named a Rhodes scholar, warned that despite Obama's election, stereotypes still circulate. "Most importantly and most dangerously, stereotyping can cause us to doubt ourselves," said Gethers, who has taught engineering in Boston's public schools.

For the students he worked with, Gethers said, stereotyping is a far greater tragedy than low test scores. "These students honestly don't believe they can grow up to become astronauts or physicists or mathematicians or even president."

Yet the overall spirit of the breakfast was upbeat, as speakers reflected on change that they had not dreamed they would live to see. "The first family of America, a black family, moved into the White House — the very White House that slaves helped to build," Cole noted in ringing tones.



PHOTO / JUSTIN KNIGHT

## MIT hosts visit by Chinese ambassador

Zhou Wenzhong, the Chinese ambassador to the United States, meets with MIT President Susan Hockfield during a visit to MIT on Feb. 10. The ambassador later spoke to the MIT China Forum about China's development and China-U.S. Relations.

Founded in May 2008, the MIT China Forum is a quarterly event organized by the MIT-China Strategy Group, which identifies areas for exploration and collaboration between the Institute and China. Previous forums have examined China's economic transformation, R&D manufacturing in China and the competitiveness of Chinese enterprises.

## Who is the best recycler on campus?

The entire MIT community has a chance to compete this year as the campus squares off against others around the country for a national recycling competition.

This is the fourth year that MIT will participate in the national RecycleMania contest, but this year the rules were changed to include the entire campus and not just campus housing.

MIT's recycling rate — the amount of recycled material collected as a percentage of total waste collected — has hovered around 40 percent for the past few years, a great improvement from 11 percent back in 2000. The contest aims to drive the rate even higher. It was created as a friendly competition and benchmarking tool for college and university recycling programs, to promote waste reduction activities on campus.

The contest runs for 10 weeks, Jan. 18-March 28, and is supported by the EPA and the National Recycling Coalition. Additional information about recycling at MIT is available at <http://web.mit.edu/facilities/environmental/recycling.html> and at <http://web.mit.edu/workinggreen/>.

## Awards & Honors



### Remillard wins astrophysics division's Rossi Prize

Ronald A. Remillard, a principal research scientist at the Kavli Institute for Astrophysics and Space Research, and two colleagues have won the 2009 Rossi Prize, awarded by the AAS High Energy Astrophysics Division. The Rossi Prize is given out in recognition of significant contributions, as well as recent and original work, in high-energy astrophysics. Remillard was honored for his work on the measurements of masses of black holes in the Milky Way.

### CEE professor wins Ground Water Association award

Charles Harvey, the Doherty Associate Professor in the Department of Civil and Environmental Engineering, received the 2008 M. King Hubbert Award from the National Ground Water Association at its annual meeting in December. The award acknowledges major science or engineering contributions to the knowledge of groundwater research, technical papers, teaching and practical applications.

## News in brief



### Choose the artifacts that tell the MIT story

To create an innovative exhibit that will help mark MIT's 150th anniversary in 2011, the MIT Museum is asking the greater MIT community to decide what best illustrates the Institute's 150 years of history, culture and contributions to society.

At a new site, <http://museum.mit.edu/150>, visitors can nominate historical or current artifacts or propose people, places, things or ideas that tell MIT's story. Participants can also act as do-it-yourself museum curators by commenting on and rating other objects nominated.

Early nominations for the MIT 150 exhibit, scheduled to open in January 2011, include the first turtle robot used with the LOGO programming language; Electrical Engineering Professor Ernst Guillemin; Solar I, one of the earliest solar homes, which was built at MIT; and lecture hall 10-250.

This summer, web site visitors can begin to vote on their favorite objects to narrow the field to the final 150 objects.

### New staff site gathers wealth of resources

Want to find MIT information more quickly and intuitively? Want a one-stop web site? Visit MIT Stafflinks <http://web.mit.edu/staff/>, a new web site designed specifically for staff. You can also find it through a new staff link on the MIT homepage, under "community."

Using the framework of a web site first created by Anne Deveau, a member of the Working Group on Support Staff issues, the site was developed by a project team that included Deveau, Human Resources, the News Office, and Publishing Services Bureau. The intention was to build a dynamic site, and one that all staff members feel is their own.

All comments and suggestions are welcome. Just click "Contact and Feedback" at the bottom of every page on the web site.

For more campus news, visit the News Office's web site at [web.mit.edu/newsoffice](http://web.mit.edu/newsoffice).

## RNA interference can suppress ovarian tumor growth

Small RNA molecules can effectively keep ovarian tumors from growing and spreading in mice, according to a team of researchers from MIT, the Lankenau Institute for Medical Research and Alnylam Pharmaceuticals.

The findings, reported in the Feb. 9 online edition of the Proceedings of the National Academy of Sciences (PNAS), represent a promising new approach to the treatment of ovarian cancer, a disease that affects more than 20,000 women and results in more than 15,000 deaths each year in the United States alone. The work may also hold potential for treating other types of cancer.

The researchers used a new approach known as RNA interference (RNAi). RNAi therapeutics target disease by potently silencing specific messenger RNAs (mRNAs), thereby preventing disease-causing proteins from being made. They delivered the RNA therapeutics using lipidoids, a new class of lipid-based molecules.

The new results demonstrate that RNAi silencing of the claudin-3 protein using lipidoid formulations results in the suppression of ovarian tumor growth and metastases. Claudin-3 is a protein that is highly over-expressed in approximately 90 percent of ovarian tumors.

"These data further illustrate the broad potential of RNAi therapeutics in medicine," said Daniel Anderson, research associate at the David H. Koch Institute for Integrative Cancer Research at MIT. "We are excited by the preclinical efficacy of these siRNA formulations, as demonstrated in multiple animal models of ovarian cancer, and I am optimistic that the delivery systems described here will provide new avenues for the treatment of cancer and other diseases."

First author of the PNAS paper is Yu-Huang of the Lankenau Institute in Wynnewood, Pa. Other MIT authors are Michael Goldberg, postdoctoral associate in the Koch Institute; Kevin Love, technical assistant in the Department of Chemical Engineering; and Institute Professor Robert Langer.

The research was funded by the National Institutes of Health, Alnylam Pharmaceuticals, the Wawa Corporate Charities Program and the Sandy Rollman Ovarian Cancer Foundation.

*This story was adapted from a press release issued by Alnylam Pharmaceuticals. For more on this story, visit [web.mit.edu/newsoffice](http://web.mit.edu/newsoffice).*

## MORE POWER FROM BUMPS IN THE ROAD



### MIT students develop energy-harvesting shock absorbers

David Chandler  
News Office

A team of MIT undergraduate students has invented a shock absorber that harnesses energy from small bumps in the road, generating electricity while it smooths the ride more effectively than conventional shocks. The students hope to initially find customers among companies that operate large fleets of heavy vehicles. They have already drawn interest from the U.S. military and several truck manufacturers.

Senior Shakeel Avadhany and his teammates say they can produce up to a 10 percent improvement in overall vehicle fuel efficiency by using the regenerative shock absorbers. The company that produces Humvees for the army, and is currently working on development of the next-generation version of the all-purpose vehicle, is interested enough to have loaned them a vehicle for testing purposes.

The project came about because "we wanted to figure out where energy is being wasted in a vehicle," senior Zack Anderson explains. Some hybrid cars already do a good job of recovering the energy from braking, so the team looked elsewhere, and quickly homed in on the suspension.

They began by renting a variety of different car models, outfitting the suspension with sensors to determine the energy potential, and driving around with a laptop computer recording the sensor data. Their tests showed "a significant amount of energy" was being wasted in conventional suspension systems, Anderson says, "especially for heavy vehicles."

Once they realized the possibilities, the students set about building a prototype system to harness the wasted power. Their prototype shock absorbers use a hydraulic system that forces fluid through a turbine attached to a generator. The system is controlled by an active electronic system that optimizes the damping, providing a smoother ride than conventional shocks while generating electricity to recharge the batteries or operate electrical equipment.

In their testing so far, the students found that in a 6-shock heavy truck, each shock absorber could generate up to an average of 1 kW on a standard road — enough power to completely displace the large alternator load in heavy trucks and military vehicles, and in some cases even run accessory devices such as hybrid trailer refrigeration units.

They filed for a patent last year and formed a company, called Levant Power Corp., to develop and commercialize the product. They are currently doing a series of tests with their converted Humvee to optimize the system's efficiency. They hope their technology will help give an edge to the military vehicle company in securing the expected \$40 billion contract for the new army vehicle called the Joint Light Tactical Vehicle, or JLTV.

"They see it as something that's going to be a differentiator" in the quest for that lucrative contract, says Avadhany. He adds, "it is a completely new paradigm of damping."

"This is a disruptive technology," Anderson says. "It's a game-changer."

"Simply put — we want this technology on every heavy-truck, military vehicle, and consumer hybrid on the road," Avadhany says.

The team has received help from MIT's Venture Mentoring Service, and has been advised by Yet-Ming Chiang, the Kyocera Professor of Ceramics in the Department of Materials Science and Engineering and founder of A123 Systems, a supplier of high-power lithium-ion batteries.

Not only would improved fuel efficiency be a big plus for the army by requiring less stockpiling and transportation of fuel into the war zone, but the better ride produced by the actively controlled shock absorbers make for safer handling, the students say. "If it's a smoother ride, you can go over the terrain faster," says Anderson.

The new shocks also have a fail-safe feature: If the electronics fail for any reason, the system simply acts like a regular shock absorber.

The group, which also includes senior Zachary Jackowski and alumni Paul Abel '08, Ryan Bavetta '07 and Vladimir Tarasov '08, plans to have a

final, fine-tuned version of the device ready this summer. They will then start talking to potential big customers. For example, they have calculated that a company such as Wal-Mart could save \$13 million a year in fuel costs by converting its fleet of trucks.



PHOTOS / (T) ZACK ANDERSON, (B) DONNA COVENEY

The shock absorber, top, which was designed by a team of MIT students including (on bottom) Ryan Bavetta, left; Zack Anderson, right; and Shakeel Avadhany, sitting on the Humvee.

## MIT research digest



### MIT study shows possible treatment for Rett syndrome

A molecule that promotes brain development could serve as a possible treatment for Rett syndrome, the most common form of autism in girls, according to researchers at MIT's Picower Institute for Learning and Memory and the Whitehead Institute for Biomedical Research.

The researchers found that injecting the molecule into mice that have an equivalent of Rett syndrome helped the animals' faulty brain cells develop normally and reversed some of the disorder's symptoms.

The work, reported in the Feb. 9 advance online edition of the Proceedings of the National Academy of Sciences (PNAS), is expected to lead to new human clinical trials for a derivative of growth factor-1 (IGF-1), currently used to treat growth disorders and control blood glucose. The MIT study indicates that IGF-1 could potentially lessen the severity of symptoms of Rett syndrome.

"We demonstrate that a major underlying mechanism behind Rett syndrome in mice is that synapses in the brain remain immature and show persistent, abnormal plasticity into adulthood," said Daniela Tropea, a postdoctoral fellow at the Picower Institute and lead author of the study. "We also propose that a therapeutic based on this mechanism would be directly applicable to humans."

Injecting mice with a peptide fragment of IGF-1, used by the brain for neuronal and synaptic development, reverses a large number of symptoms of mice genetically engineered to display Rett syndrome-like symptoms.

### Multiple genes implicated in autism

By pinpointing two genes that cause autism-like symptoms in mice, researchers at MIT's Picower Institute for Learning and Memory have shown for the first time that multiple, interacting genetic risk factors may influence the severity of autistic symptoms.

The study, reported in the Feb. 9 advance online edition of the Proceedings of the National Academy of

Sciences (PNAS), lends support to researchers' long-suspected belief that in individuals whose autism is genetic in origin, more than one gene is implicated.

The work could lead to drugs targeting signaling mechanisms between the two interacting genes responsible for some autism spectrum disorders (ASDs) symptoms. The molecular intersection of the two genes' pathways in the brain may also serve as a diagnostic target or biomarker for a subset of individuals with ASDs.

"We found that two genetic risk factors for ASDs act cooperatively in mice to influence brain size and social behavior, both of which are altered in ASDs," said Damon T. Page, a Picower Institute postdoctoral fellow and lead investigator of the study.



See more on each of these breakthroughs at [web.mit.edu/newsoffice](http://web.mit.edu/newsoffice)

MIT in the world



# Not just for checking e-mail

Researchers use handheld devices to monitor tuberculosis patients in Peru

Anne Trafton  
News Office

For patients who have drug-resistant forms of tuberculosis, it's critical to monitor the disease as closely as possible. That means monthly testing throughout a two-year course of powerful antibiotics, with injections six days a week for the first six months.

Keeping track of all those test results can be very time consuming, especially in developing countries where health workers rely on paper copies. That's why graduate student Joaquin Blaya decided to try out a new tracking method: personal digital assistants.

In a project launched in Lima, Peru, the researchers found that equipping health care workers with PDAs to record data dropped the average time for patients' test results to reach their doctors from 23 days to eight days.

"You can monitor patients in a more timely way. It also prevents results from getting lost," says Blaya, a PhD student in the Harvard-MIT Division of Health Sciences and Technology (HST).

Their work was reported in December in the online edition of the *International Journal of Infectious Diseases*.

Blaya started the project after taking a year off during his graduate studies to return to Chile, where he was born.

"I went back to Chile and realized ... the key was to focus on the population I wanted to help," he says. "Instead of saying, 'I'm a mechanical engineer, what kind of device can I build,' I should be saying, 'Who are the people working in the settings I want to work in?'"

When Blaya returned to MIT, he took lecturer Amy Smith's D-Lab course and got connected with Partners in Health, a nonprofit whose mission is to promote health care in resource-poor areas.

Working with faculty members from HST and the Brigham and Women's Hospital, Blaya launched the PDA project in Lima. He also worked closely with the Peruvian sister organization of Partners in Health, *Socios en Salud*. "The way to solve health care problems is by involving the community," he says.

Under the old patient-tracking system, a team of four health care workers would visit more than 100 health care centers and labs twice a week to record patient test



OpenMRS is a new software system that allows patient medical records to be easily tracked with handheld devices. Graduate student Joaquin Blaya used an earlier version of the software to monitor TB patients in Peru.

results on paper sheets. A couple of times a week, they returned to their main office to transcribe those results onto two sets of forms per patient — one for the doctors and one for the health care administrators.

From start to finish, that process took an average of more than three weeks per patient. In some extreme cases, results were temporarily misplaced and could take up to three months to be recorded. There was also greater potential for error because information was copied by hand so many times.

With the new system, health care workers enter all of the lab data into their handheld devices, using medical software designed for this purpose. When the workers return to their office, they sync up the PDAs with their computers.

"The doctors get what they want, the administrators get what they want, and the team only has to enter the data once," says Blaya.

The new system dramatically dropped the average time to record results to eight days and eliminated the few cases where results went missing for several weeks or months. "You can really prevent patients from falling through the cracks," says Blaya.

Getting timely and accurate lab results "is essential to determine if a patient is responding to treatment and, if not, to alert physicians to the possible need for medication changes," the researchers wrote.

Peruvian health care workers enthusiastically embraced the program, which started in two of Lima's districts and has now been expanded to all five. In addition to saving time, the handheld devices are also more cost effective than the paper-based system, the researchers reported recently in the *International Journal of Tuberculosis and Lung Disease*.

The current version of the tracking software, OpenMRS, can be found at <http://openmrs.org/wiki/OpenMRS>. Blaya used an earlier version of the software for his Peru study.

Other authors of the *International Journal of Infectious Diseases* paper are Ted Cohen, assistant professor at Harvard Medical School; Pablo Rodriguez, engineer at *Socios en Salud*; Jihoon Kim, statistician at the Brigham and Women's Hospital; and Hamish Fraser, assistant professor at Harvard Medical School.

*In The World* is a series that explores how people from MIT are using technology — from the simple to the cutting-edge — to help meet the needs of local populations around the planet. If you know of a good example and would like the News Office to write about it, please e-mail [dlc1@mit.edu](mailto:dlc1@mit.edu).

## Signs point to sponges as earliest animal life

'Chemical fossils' provide evidence for first multicelled creatures

David Chandler  
News Office

Even Charles Darwin was puzzled by the apparently sudden appearance in the fossil record of a great variety of multicellular creatures — a rapid blossoming known as the Cambrian explosion. Since then, the origin of animals was found to extend back earlier, through a period known as the Ediacarian. Now, evidence found by researchers at MIT, the University of California, Riverside, and other institutions shows that the first complex life forms may in fact have appeared much earlier still.

Our earliest animal ancestors, it appears, were sponges — multicellular animals that feed by passing seawater through a complex system of internal channels. And these earliest sponges may predate the Ediacarian period by as much as 80 million years, this new evidence shows.

Soft-bodied animals such as sponges are very rarely preserved as fossils, so finding evidence of their early appearance required some clever detective work. The key turned out to be an examination of unusual chemicals: steroids of a particular type produced abundantly by sponges but virtually never by simpler organisms.

Studying an unusually well preserved

long sequence of strata found in Oman, the research team was able to extract these "chemical fossils" from a large number of samples spanning a range of tens of millions of years — before, during and after the Ediacarian period. This provided clear evidence that sponges must have evolved long before the great variety of multicellular organisms that proliferated at the dawn of that period.

The new research, which appeared last week in the journal *Nature*, was conducted in MIT's Department of Earth, Atmospheric and Planetary Sciences, under the direction of Professor of Geobiology Roger Summons. He says that the study began when he was asked to examine samples of oil from wells in Oman that tap into the oldest oil-producing fields in the world. The oil samples from these wells "are unique in geological history for their great age and geochemical composition, so we were looking for unusual molecular fossils." At the same time, another MIT professor, Samuel Bowring, and his postdoc, Daniel Condon, were able to assign precise ages to a number of volcanic ash layers in the same wells using uranium-lead geochronology techniques developed in his laboratory. The combination of the precise ages and diagnostic chemical fossils is a particularly compelling aspect of the research.

After painstaking chemical analysis, they found sponge-derived steroids in abundance — and with them, strong new evidence that sponges, among the simplest forms of multicellular life, were indeed the first such organisms on Earth. In short, they had found clear signs of the very base of the evolutionary tree of animal life.

"I'm not surprised by any of this," Summons says, because others had already hypothesized, based on genomic evidence, that sponges were the earliest form of animal life. But that evidence had

remained somewhat controversial, and with the new findings, "we nailed it by removing all sorts of ambiguities."

"This might also represent the advent of the earliest reef systems made by animals rather than microbes," Summons says. The establishment of that new ecological niche may have helped pave the way for the later explosion of complex organisms, around 580 million years ago.

At that time in geological history, the planet was just coming out of the last of its "snowball Earth" phases, when the entire planet was shrouded in ice. Since the new findings show that complex life seems to have begun tens of millions of years before that, it means these organisms were able

to survive through that extreme episode of glaciation, something that many scientists had thought was impossible. This provides new evidence that the freezing was not absolute but instead left some open patches of water.

"There's plenty of evidence in these rocks that there were places on Earth where life was flourishing" during this snowball episode, known as the Cryogenian, Summons says. "There must have been some refugia. Life certainly didn't shut down."

The lead author of the *Nature* paper is Gordon D. Love, who was a postdoc at MIT when the research was done and is now a professor at the University of California, Riverside. Other authors include Emmanuelle Grosjean, another former postdoc, now at Geoscience Australia; Charlotte Stalvies of the University of Newcastle upon Tyne, U.K.; postdoc David A. Fike and former MIT professor John Grotzinger of Caltech; graduate students Alexander Bradley, Amy Kelly, Maya Bhatia; Bowring and Condon; and William Meredith and Colin Snape of the University of Nottingham, U.K.

The work was funded by Petroleum Development Oman, the NASA Exobiology Program, the NSF EAR program, the Agouron Institute and the NASA Astrobiology Institute.

PHOTO / DAVID FIK

Evidence of early sponges was found in these sediments in Oman, from the Marinoan age (about 635 million years old). The oldest sponge steroids detected in sedimentary rocks underlie this cap of calcium carbonate, and thus pre-date the end of the global Marinoan glaciations.



# Surviving without growing

Jay Forrester, the father of system dynamics, talks about sustainability and organizational decision making

Jay Forrester famously invented random-access magnetic core memory, or what we know as RAM. Forrester, now 90 and a professor emeritus of the MIT Sloan School of Management, also originated system dynamics, which deals with how a system's structure and information flow determine behavior. Forrester took the time recently to speak about the intersection of sustainability and management

**Q.** Do you think the rising attention to sustainability is presenting opportunities for company builders?

**A.** The opportunities that grow out of what is now going on in the name of sustainability are not particularly noteworthy.

**Q.** Which opportunities are you thinking of?

**A.** Well, there will be new businesses in wind power. There will be new businesses in trying to move away from fossil fuels. How fast those new businesses come along will depend on the course run by the present economic circumstances. The worst circumstances — depressions like in the 1930s — are the windows of opportunity for technological change and would be an ideal time to shift from oil to other things. It takes pressures to do that, and if the old technologies have gone as far as they can, then it's in the great economic downturns that the new things that have been talked about for a long time can begin to spring up. So it will be interesting to see whether 15 years from now we will recognize that the present economic crisis in fact was a motivator for moving forward in other areas.

**Q.** What are some of the noteworthy opportunities?

**A.** I think they're the opportunities to begin to operate at the no-growth, no-population rise, no increase-in-industrialization areas — but those are more noteworthy intellectually than in the ways I think you mean. They aren't probably the sort of thing that represents great economic return to the stock-holders, if you are meaning that kind of noteworthy.

**Q.** That's an opportunity? Might not sound like one to some.

**A.** I think it is. But either way, it may be the way that businesses will be most affected. I think one of the biggest management problems is going to be to understand

how to manage a successful non-growing company — and how to get out of the frame of mind that success is measured only by growth.

**Q.** Because we think growth is required if a company is to stay viable?

**A.** It's very common to say, "If you stagnate, if you don't grow, you will fail." Well, that's possible if you don't maintain a system with proper management policies. You've still got to have some way to maintain vitality, to maintain some product progress, but to do it within a fixed demand on the environment. I don't think I've heard of that being taught in management schools.

**Q.** What keeps managers and leaders from addressing that challenge?

**A.** The nature of our culture — the culture that has evolved for the last 100 or 150 years or more, the culture that says technology can solve all problems, the culture that says growth is good and can go on forever, the culture that says you don't get into things like population control because it's too treacherous a debating area. It's a feeling that somehow we can muddle through dealing with symptoms instead of with causes.

**Q.** Will any of those convictions get questioned as the economy falters? Maybe managing a no-growth company viably will become attractive.

**A.** I think you're right that it's more likely those questions will be asked now than they were 20 years ago, but I think that survival in the present downturn is very different from sustainability in the long run. Survival in the long run requires a long-run set of [management and strategic practices]. You've got to train people for it. You have to have an internal structure that produces rotation, [flows of people and resources into and out of the organization], without too high an overhead.

**Q.** So you don't think the new awareness of sustainability plus the changing economic pressures will offer companies a chance to make internal cultural changes? To operate in fresh ways without undermining their appeal to shareholders or their existence?

**A.** It's possible. But likely? We'd be hard pressed to separate sustainability from the present economic pressures, which are perhaps only beginning to be seen — and which in the short run, like five to eight years, may dominate any worry about sustainability. Companies will be talking about survival, not sustainability. So sustainability in a corporation probably is an idea that will take root 15 years from now when the present discussions about sustainability mature, when the present discussions strip away the idea that we'll solve sustainability by treating symptoms. For now, the trauma of the present economic changes will probably dominate.

*This article is adapted from "The Loop You Can't Get Out Of" by Michael S. Hopkins, which appeared in the Winter 2009 issue of MIT Sloan Management Review. The complete article is available at <http://sloanreview.mit.edu/smr/>.*



PHOTOS / DONNA COVENEY

## Forging new skills

ABOVE: Freshman Elaina Chai tries her skills at blacksmithing in an introductory course offered during MIT's Independent Activities Period. BELOW: Steel formed into a scroll is held in the fire at the blacksmithing class offered during IAP. For more photos from IAP, visit [web.mit.edu/newsoffice/2009/iap-roundup-0206.html](http://web.mit.edu/newsoffice/2009/iap-roundup-0206.html).

## CLASSIFIED ADS

Members of the MIT community may submit one ad each issue. Ads should be 30 words maximum; they will be edited. Submit by e-mail to [ttads@mit.edu](mailto:ttads@mit.edu) or mail to Classifieds, Rm 11-400. Deadline is noon Wednesday the week before publication.

### FOR SALE

2007 Toyota Prius - Package #2/Black - 43K miles - excellent condition. \$16500 OBO. [jmmoran@mit.edu](mailto:jmmoran@mit.edu).

Living Room Set - Blue Sofa, Two Rose High Back Chairs - Excellent Condition - Pictures Available \$500.00. Women's Cleveland XL Hi-Bore Driver, used one Round - \$150.00 contact: Pat 617-258-3513 (Draper)

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### HOUSING

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## Resource Development, Alumni Association win awards

MIT's Office of Resource Development and the MIT Alumni Association recently won top prizes in the 2009 District 1 awards competition sponsored by the Council for the Advancement and Support of Education (CASE).

SPECTRVM, MIT's development newsletter, submitted by Liz Karagianis, Richard Anthony, and Jason Ruback, won a first-place gold medal for best newsletter. It is the third consecutive year that SPECTRVM has won the top award, and it is the 10th CASE award SPECTRVM has won since 2001.

Jenn Wilinsky of the alumni association submitted a flash presentation, detailing how students are affected by alumni support, which landed a silver medal in the competition. It was the second CASE award for Wilinsky since 2006.

In the category of campaign materials, Noah Kuhn and Eric Keizer of resource development won an honorable mention for the design of the Campaign for Students Launch Event invitation.

The annual publication awards recognize outstanding achievement in higher education, independent schools, and non-profit organization communications across the northeast and in parts of eastern Canada. Judges assess overall design, content and writing, use of photography, graphics, and technology. The awards will be distributed in March at the annual CASE Conference in Boston.



## Road-worthy plane? Or sky-worthy car?

Alums to begin test flights of 'roadable plane'

What began as an MIT student project has evolved into a working prototype of a two-seater airplane that can be quickly converted into a road-worthy car. The car-plane will soon begin test flights and is expected to go on sale next year. But at a price similar to that of a new Lamborghini, this is one car that you really don't want to get dinged in traffic.

"Flying cars" have been a science-fiction staple for decades, but have never made for a practical commercial product. The graduates of MIT's Department of Aeronautics and Astronautics think their plane, called the Transition, could change that. Featuring wings that fold out of the way at the touch of a button, it offers a solution for aviators flying to places where finding ground transportation may be difficult. The craft could also allow a pilot who encounters bad weather to simply

land at a small airport and continue the trip by road.

The plane is made from modern composite materials, uses an advanced airplane engine, but runs on ordinary unleaded automotive gasoline. With its wings folded, it can fit in an ordinary garage or parking space.

The alumni formed a new company, Terrafugia, to produce and market the vehicle — which they prefer to call a "roadable plane" because it is primarily an airplane but can be converted into a roadworthy car. The company is taking advantage of a new licensing classification offered by the Federal Aviation Administration — light sport aircraft — to make the new plane possible.

The Woburn-based company was founded by CEO Carl Dietrich '99, SM '03, PhD '07, COO Anna Mracek Dietrich '04, SM '06, and VP of Engineering Samuel Schweighart SM '01, PhD '05. The group began working on the project while they were still at MIT, and won a prize for their plans in the 2006 \$100K Entrepreneurship Competition.



PHOTO COURTESY OF TERRAFUGIA

A working prototype of the Transition Roadable Light Sport Aircraft, with wings extended, at Lawrence Municipal Airport.

## Simons gift to fund autism research at MIT

Jim '58 and Marilyn Simons, along with the Simons Foundation, recently made a gift of \$4.5 million to establish the Simons Initiative on Autism and the Brain at MIT. The new initiative will attract postdoctoral fellows, increase interest in autism research, and enhance collaboration among existing investigators. In addition, the funds will be used to purchase equipment to be shared by autism researchers at the Institute, support a colloquium series to raise awareness in the community, and fund pilot projects on innovative approaches for autism research.

The Simonses have made gifts totaling more than \$10 million to MIT in the last four years in support of this work. The current gift will enhance the Simons Investigators program, which has increased the number of faculty working in the field.

"Through the Simons Foundation, Jim and Marilyn Simons have made vital progress in accelerating autism research. Their vision and determination have attracted an exceptional team of interdisciplinary researchers, and this latest gift will continue to support and inspire new approaches to understanding and treating Autism Spectrum Disorder (ASD)," said MIT President Susan Hockfield.

"The complex nature of autism necessitates an approach that transcends academic disciplines and will draw heavily on the basic sciences, engineering and genomics — disciplines that are among the core strengths of MIT," said Mriganka Sur, the Paul E. Newton Professor of Neuroscience and head of the Department of Brain and Cognitive Sciences, who will lead the effort.

Current Simons Investigators include Sur, along with Mark Bear, John Gabrieli, Ann Graybiel, Rebecca Saxe, Morgan Sheng, Pawan Sinha, Hazel Sive, Li-Huei Tsai and Susumu Tonegawa.

## 2009 Burchard scholars selected

Twenty-seven sophomores and juniors have been selected as Burchard scholars in the School of Humanities, Arts, and Social Sciences for 2009.

The awards, named after the school's first dean, John Ely Burchard, are given to students who demonstrate unusual abilities and academic excellence in the areas embraced by SHASS. Dean Deborah Fitzgerald, overseer of the Burchard Program, said the students selected in the interdisciplinary program's 23rd year "are from exciting and diverse backgrounds and are a remarkable group of gifted young scholars."

The Burchard scholars and a rotating group of faculty will be invited to a series of dinners, beginning in February, at which an MIT faculty member or visiting scholar will present work in progress. The discussions that will follow will encourage students and faculty members to mix, giving students a chance to engage in the kind of intellectual exchange that characterizes scholarship in the humanities, arts and social sciences.

The selection committee, chaired by Fitzgerald, consisted of Margery Resnick, associate professor of foreign languages and literatures; Jane Dunphy, director of ELS, foreign languages and literatures; Sara Ellison, senior lecturer of economics; Lowell Lindgren, professor of music and theater arts; Norvin Richards, associate professor of linguistics and philosophy; and Brad Skow, assistant professor of linguistics and philosophy.

### The 2009 Burchard Scholars:

Ugwechi Amadi (junior, brain and cognitive sciences)  
 Paul Baranay (sophomore, biological engineering)  
 Peter Bojo (sophomore, biological engineering)  
 Warren Chan (junior, economics, mathematics)  
 Kristina Cibor (sophomore, economics, mathematics)  
 Dorian Dargan (sophomore, urban studies and planning)  
 Vasudha Gupta (sophomore, management, urban studies and planning)  
 Yuri Hanada (junior, biology)  
 Janice Jang (junior, mathematics)  
 Long Lam (junior, mechanical engineering, theater arts)  
 Cyril Lan (sophomore, electrical engineering and computer science)  
 Richard Manfredy (sophomore, biology)  
 Srinivasan Mani (junior, civil and environmental engineering)  
 Christina Margiotta (sophomore, management science)  
 Steven Mo (junior, biology)  
 Manisha Padi (junior, economics, mathematics)  
 Lan Qin (junior, biology)  
 Diane Rak (junior, linguistics and philosophy)  
 Sukrit Ranjan (junior, physics)  
 Rebecca Rich (junior, electrical engineering)  
 Jared Sadoian (junior, computer science and engineering)  
 Pablo Spivakovsky-Gonzalez (junior, mathematics)  
 Dan Sturca (junior, electrical engineering and computer science)  
 Christopher Su (sophomore, biology)  
 Liz Theurer (junior, mathematics, mechanical engineering)  
 Jesse Thornburg (sophomore, mechanical engineering)  
 Mahesh Vidula (sophomore, biological engineering)

## NEUROTECHNOLOGY: MIT preparing its students

Continued from Page 1

tech companies presented stories of how their technical innovations came about and were developed (or are now developing) into functioning businesses. Then, students formed teams to produce business plans for new neurotech ventures of their own.

The neurotech industry is already substantial and growing rapidly, accounting for more than \$130 billion in revenues in 2007, according to a November report in the journal *Nature* that cited the MIT class. In the same year, the report said, venture capitalists invested more than \$1.7 billion in new businesses in the sector. In this climate, which has been compared to the biotechnology boom of the 1980s, MIT's class seeks to give its students guidance in how to turn their new ideas and insights into profitable companies.

The plans students develop in the class are ready to be presented in competitions such as MIT's \$100K business plan contest, says Ed Boyden '99, the Benesse Career Development Assistant Professor of Biomedical Engineering at the Media Lab, who co-teaches the course with Media Lab researcher Joost Bensen '90, SM '06 and Rutledge Ellis-Behnke PhD '03, a research scientist in BCS. "Several of the students wrote up \$100K pitches," Boyden says, "and some are looking now at getting funding" for the launch of their proposed businesses.

The guest speakers in each class described the details of their ventures to offer students a clear sense of the nitty-gritty of turning ideas into practice. "They shared both the core concept and what it was like to execute the plan," says Bensen. "The false starts, what to watch out for, how to deal with the venture capitalists — practical, useful advice."

### 'Shaping the field'

Because neurotechnology is a hot topic around the world, the class was structured as a globe-spanning collaboration. Each class was co-taught via teleconferencing with the University of Hong Kong, where Ellis-Behnke is based, and China Medical University Hospital in Taiwan, and the hope is that it will grow to other locations. "It has now started to spread to places where we have no formal ties," Boyden says. "We want students to think globally about this field."

Ellis-Behnke adds that the remote locations are especially relevant to this class because "Asia is where most of these new technologies will be tested, because of the population and the ability to run clinical trials with very narrow criteria in a short amount of time. For a spinal cord trial, it may take six years to get 500 patients in a clinical trial in the U.S. In Asia, we can get 500 patients into a clinical trial in six months."

By taking part in this class and developing their own ideas, the students are "helping to define a nascent field," Boyden says. If a dozen or so students develop new plans each time the class is given, "after a decade, these could be the people shaping the field."

Helping students get a business started is just the short-term goal, however, and the three instructors are hoping for more. "Three or four of the ventures are going to have a real chance of impacting the world," Boyden says. And that's one of the reasons he chose to come to MIT in the first place, and to teach this class here: "I wanted to be in a place where moving technologies from the lab out into the world is not only tolerated, but celebrated," he says.

Thanks to that approach, MIT may be well positioned to nurture the future leaders of this field. "The therapeutic market for brain disorders is enormous," says the McGovern Institute's Jennings. "I hope we'll be a significant center for innovation and the development of new technologies. Where better than MIT to come up with the next generation of systems?"



PHOTO / DONNA COVENEY

Assistant professor Ed Boyden, seated, research affiliate Rutledge Ellis-Behnke, center, and Joost Bensen, sponsored research administrative staff, meet in Boyden's lab to discuss the class they teach together on neurotechnology as a discipline.

# REWARDING *excellence*

Annual MIT honors go to 15 individuals and three teams

**Sarah H. Wright**

Human Resources correspondent

The 15 individuals and three teams who won MIT Excellence Awards this year went to extraordinary lengths to improve the lives of others, whether those were colleagues deployed in distant lands or working right on campus.

JoAnne Knoll, technical assistant at Lincoln Laboratory, has received an MIT Excellence Award in the Creating Connections category.

Knoll has been the driving force behind the Laboratory's "Support Our Troops" program since 2006, according to Gerald Augeri, assistant division head, Ballistic Missile Defense Technology, who nominated Knoll for the honor.

Knoll, who served four years in the U.S. Air Force, manages the laboratory's weekly campaign to ship care packages to soldiers and reservists, affiliated with Lincoln, who are serving in Iraq or Afghanistan.

"I care very much about our troops. I remember what it was like to be stationed far from home," she said. "Those packages reminded me that someone cared."

You'll know Knoll by her office, Augeri said: "You'll see boxes of coffee, microwave popcorn, oatmeal, books, magazines, games, CDs, DVDs, personal care items — all waiting to go to our troops."

Prepaid international phone cards and coffee remain the troops' most-appreciated items, Knoll said. The only special request she has received was for laundry detergent for a base in Afghanistan.

Closer to home, MIT Medical's Diversity Steering Committee concentrated on improving workplace awareness of bias and its effects. Their group has received the Fostering Diversity and Inclusion team award.

Winnie Dansby, director of human resources; Debbie Friscino, director of operations; Rosie Huntress, senior administrative assistant; Annette Jacobs, executive director; Diane Magnuson, diversity and inclusion manager; Lisa Owens, chief radiologic technologist; and Leslie Patton, claims and members services administrator, comprise the award-winning team from MIT Medical.

Margaret Ann Gray, director of organization and employee development, nominated the Diversity Steering Committee for the Excellence Award. She described the women as "seven people



PHOTO / DONNA COVENEY

MIT Medical's Diversity Steering Committee, which has looked at improving workplace awareness of bias and its effects, has won an MIT Excellence Award for its efforts. The committee includes, from left to right, Debbie Friscino, Lisa Owens, Winnie Dansby, Diane Magnuson, Leslie Patton and Annette Jacobs. Committee member Rosie Huntress is not pictured.

caring enough to make it their business to change the environment in which they and their colleagues worked."

Owens, speaking for the Diversity Steering Committee, said of the team, "We think of our workplace population as a constantly growing quilt made up of different colors, fabrics and textures. To maintain the quilt's strength, MIT Medical needs to be a workplace where everyone feels valued, respected and safe."

The catalyst for their work was the group's discovery, two years ago, that clinical and support staff members were often subject to racial epithets and other signs of bias, Gray said.

Among other achievements, the steering committee publishes a department diversity newsletter and has set up programs for diversity training and monthly discussions of issues related to inclusiveness. Perhaps most important, Magnuson said,



PHOTO COURTESY OF JOANNE KNOLL

JoAnne Knoll

"We are having open dialogue on subjects we would never have been able to discuss a few years ago. Our greatest success became clear when people began to ask for more."

Service, support, administrative, sponsored research staff and, where their work meets program criteria, faculty, are eligible, through nominations, to win Excellence Awards. Individual award recipients receive \$2,000; teams receive up to \$10,000.

A ceremony to honor the 2009 MIT Excellence Awards winners will be held from 11:30 a.m.-2 p.m. on Wednesday, March 4, at Kresge Auditorium. All members of the MIT community are invited to attend.

Go to <http://hrweb.mit.edu/rewards/excellence> for a complete listing of the 2009 award recipients and a schedule of ceremony events.

## AWARD RECIPIENTS

### Fostering Diversity and Inclusion

- **Arnold R. Henderson Jr.**, Associate Dean & Co-Director, Student Support Services, Division of Student Life
- **Eric Hudson**, Associate Professor, Department of Physics, School of Science
- *MIT Medical Department Diversity Steering Committee*: **Winnie Dansby**, Director of Human Resources; **Debbie Friscino**, Director of Operations; **Rosanna Huntress**, Senior Administrative Assistant; **Annette Jacobs**, Executive Director; **Diane Magnuson**, Diversity and Inclusion Manager; **Lisa M. Owens**, Chief Radiologic Technologist; **Leslie A. Patton**, Claims & Member Services Administrator

### Bringing Out the Best

- **Diane McLaughlin**, Assistant Dean for Finance & Administration, School of Architecture & Planning
- **Jed W. Wartman**, Assistant Dean for Student Activities, Division of Student Life

### Serving the Client

- **Michael Tarkanian**, Technical Instructor, Materials Science & Engineering, School of Engineering
- **Andréa E. Lamberti**, Senior Secretary IV, Air & Missile Defense Technology, Lincoln Laboratory

### Creating Connections

- **JoAnne Knoll**, Technical Assistant V, Air & Missile Defense Technology, Lincoln Laboratory
- *Parents Forum Team*: **Christine Bates**, Senior Administrative Assistant, System Design & Management Program, School of Engineering; **Eve Odiorno Sullivan**, Senior Editorial Assistant, Laboratory for Nuclear Science, School of Science

### Innovative Solutions

- **David DeCaprio**, Associate Director, Chemical Biology Platform, The Broad Institute
- **Carl H. Fischer IV**, Technical Staff,

- Aerospace, Lincoln Laboratory
- *Resource Development and Alumni Association W'98 Core Move Team*: **Jose Acosta**, Professional Development & Administration Associate; **Tasha Clark**, Finance & Administration Associate; **Nicole Balkissoon**, Senior Finance & Administration Assistant; **Bill Fitzgerald**, Director of Finance & Administration; **Jacqueline A.C. Granville**, Personnel & Operations Administrator; **David F. Hegarty**, IT Consultant II; **Rebecca E. Heiser**, Systems Analyst III, Development Research & Systems; **Scott C. Jensen**, Assistant Director of Information Services, Corporate Relations/Industrial Liaison Program; **Lorraine Ng**, Director of Finance & Administration; **Beth Ogar**, Recording Secretary & Executive Director of Administration; **Judy Patterson**, Director, Human Resources, Corporate Relations/Industrial Liaison Program; **Nicholas A. Ralton**, Technology Support Assistant, Development Research & Systems; **Timothy**

- Recher**, IT Consultant III, Hardware & Network Support; **Helen Rose**, Senior Associate Director, Development Research & Systems

### Unsung Hero

- **Shirley A. Entzinger**, Administrative Assistant II, Department of Mathematics, School of Science
- **Michael J. Person**, Research Scientist, Earth, Atmospheric & Planetary Sciences, School of Science
- **Antonio Ruscitti**, Associate Staff, Aerospace, Lincoln Laboratory
- **Thomas C. Willard**, Groundskeeper, Endicott House, Division of Student Life

### Fostering Community

- **Ryan Gray**, Administrative Assistant & Public Service Support Associate, Engineering & Science Libraries, MIT Libraries
- **Jarek Koniusz**, Associate Professor/Coach, DAPER Intercollegiate Sports, Division of Student Life