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TechTalk
SERVING THE MIT COMMUNITY

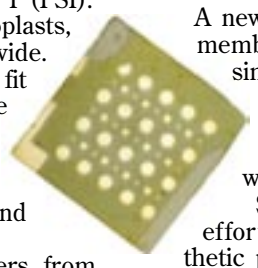
Plants' potency revealed by MIT research

Green, leafy spinach may soon power more than Popeye's biceps

Deborah Halber
News Office Correspondent

For the first time, MIT researchers have incorporated a plant's ability to convert sunlight to energy into a solid-state electronic "spinach sandwich" device that may one day power laptops and cell phones.

At the heart of the device is a protein complex dubbed Photosystem I (PSI). Derived from spinach chloroplasts, PSI is 10 to 20 nanometers wide. Around 100,000 of them would fit on the head of a pin. "They are the smallest electronic circuits I know of," said researcher Marc A. Baldo, assistant professor of electronic engineering and computer science at MIT.



Baldo and other researchers from MIT, the University of Tennessee and the U.S. Naval Research Laboratory, including electrical and biomedical engineers, nanotechnology experts and biologists, collaborated on the world's first solid-state photosynthetic solar cell. The work was reported in NanoLetters, a publication of the American Chemical Society.

"We have crossed the first hurdle of successfully integrating a photosynthetic protein molecular complex with a solid-state electronic device," Baldo said.

Plants' ability to generate energy has been optimized by evolution, so a spinach plant is extremely efficient, churning out a lot of energy relative to its size and weight. But combining biological and non-biological materials in one device has stymied researchers in the past. Biological materials need water and salt to survive—both are deadly for electronics.

From wet to dry

A new twist in the current work is a membrane of peptide surfactants—similar to the main ingredient in soap—that helped the photosynthetic complexes self-assemble and stabilize while the circuit was fabricated.

So far, scientists and engineers' efforts to harness the photosynthetic properties of green plants have been most successful with naturally soft organic materials in liquid solutions. But if organic solar cells are to be practical for commercial devices, they need to be integrated with solid-state electronics.

The researchers ground up ordinary spinach and purified it with a centrifuge to isolate a protein deep within the cell.

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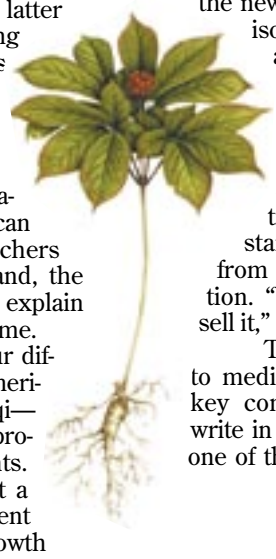
Team explains yin and yang of ginseng

Elizabeth Thomson
News Office

In work that emphasizes the need for stronger regulation of herbal drugs, an international team of MIT scientists and colleagues has unraveled the yin and the yang of ginseng, or why the popular alternative medicine can have two entirely different, opposing effects on the body.

Conflicting scientific articles report that ginseng can both promote the growth of blood vessels (key to wound healing) and thwart that process. The latter is important because preventing the formation of blood vessels can be enlisted against cancer. Tumors are fed by blood vessels; cutting off their supply can kill them.



In the Sept. 7 issue of Circulation: the Journal of the American Heart Association, the researchers from the United States, England, the Netherlands and Hong Kong explain these dual effects for the first time.

Chemical fingerprints of four different varieties of ginseng—American, Chinese, Korean and Sanqi—show that each has different proportions of two key ingredients. Additional studies showed that a preponderance of one ingredient has positive effects on the growth of blood vessels; more of the other component tips the scale the other way.

"We found that this composition really matters for the ultimate outcome," said Shiladitya Sengupta, a postdoctoral associate in the Biological Engineering Division (BED).

Further, the team found that the way ginseng extracts are processed can also alter the compositional ratio. "This is a very clear-cut example of why we need regulations standardizing herbal therapies through compositional analysis," said Professor Ram Sasisekharan of BED. With the new results, "we can now rationally isolate the components to focus on a specific effect, such as promoting blood-vessel formation."

In the United States, herbal medicines are currently regulated under the 1994 Dietary Supplement and Health Education Act, which does not require standardization or prior approval from the Food and Drug Administration. "You can basically crush it and sell it," Sasisekharan said.

The new results could also lead to medicines patterned after ginseng's key components. As the researchers write in Circulation, the identification of one of these in particular "opens up the

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Two MIT students make Glamour magazine's Top 10 College Women list

Denise Brehm
News Office

Two seniors at MIT were named to Glamour magazine's Top 10 College Women list and are profiled in the magazine's October issue, which hit newsstands Sept. 14.

Swati Maria Saini, a senior in management and brain and cognitive sciences from Tracy, Calif., was recognized for her work helping people with diabetes and for her achievements as a Truman scholar, vice president of the Society for Women Engineers, a cheerleader, and a campus emergency medical technician (EMT).

Laurel Yong-Hwa Lee, a senior in brain and cognitive sciences from Bothell, Wash., received the honor for her groundbreaking research on the immune response and for coordinating medical care for 11 women's shelters and orphanages in Honduras.

The awards recognize women who have demonstrated

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PHOTO / **DONNA COVENEY**

Freshmen clipped weeds and cleaned along the banks of the Charles River near the Hatch Shell in Boston on Sept. 3 as part of CityDays, the annual community service event sponsored by MIT's Public Service Center.

DIGITALK: WHERE IT'S AT

Services relocated from W20 to N42

As part of a strategic effort to provide a combined walk-in center for clients, all Information Services and Technology (IS&T) services previously available in the basement of the Student Center have been relocated to the front area of Building N42 at 211 Massachusetts Ave. In this combined service center, clients will be able to meet with consultants for hardware and software repair; look at demonstration models and discuss new computer purchases with consultants; take care of computing account activities such as password resets; pick up requested copies of volume-licensed software and receive directions and contacts for other IS&T activities, meetings and consultations.

Other IS&T activities are also being relocated from W20 to N42, including the Athena consultants and Athena Cluster Services. Contact information (including e-mail addresses) for the groups that have relocated to N42 remain the same, and directory and service information on the IS&T web pages have been updated.

Support for Red Hat Linux

IS&T now offers full support for Red Hat Enterprise Linux 3.0 and Red Hat Network. This marks the first IS&T release for Red Hat's premier Linux operating system and update service.

Red Hat Enterprise Linux 3.0 is the successor of Red Hat Linux 9, which the vendor stopped supporting on April 30. Red Hat Network is a locally hosted update service that enables machines owned by MIT or by MIT students, faculty, or staff to automatically download the latest updates and patches for Red Hat Enterprise Linux 3.0.

For information about Linux support go to the IS&T web site at http://web.mit.edu/ist/topics/linux.

Dealing with malware

"Malware" is a term for any software that gets installed on your computer and performs unwanted tasks, often for some third party's benefit. These programs can cause anything from simple annoyances (pop-up advertising) to serious computer invasion and damage (stealing passwords or introducing worms and viruses). Additionally, some malware is designed to transmit information about your web-browsing habits to advertisers or other third parties.

Currently, only Windows machines are susceptible to most adware or spyware products (two types of malware). VirusScan Enterprise 8.0i for Windows (available at http://web.mit.edu/software) contains integrated anti-spyware functionality. However, your computer may still be at risk, since no one product can catch all malware. To find out more about malware and how to deal with it, go to the IS&T web site.

Apple catalog available on ECAT

With support from the MIT Procurement Department and IS&T, Apple Computer's ECAT catalog is now available to the community for Institute and personal purchases. Through this catalog, community members have access to MIT-recommended Apple desktop computers and laptops, as well as the entire line of Apple products. The new catalog lets purchasers custom configure systems; Institute orders can be submitted to Apple through SAP.

Having this direct relationship with Apple will improve order accuracy, reduce delivery time and provide better pricing for institutional orders. For questions or comments about this partnership, contact Mary Bacci at mamato@mit.edu or Laura Simmons at simmons@mit.edu. For assistance with selecting and configuring an Apple system, contact an MIT presales consultant at 253-7686.

Countdown to retiring support for Windows 2000

Microsoft will end mainstream support for Windows 2000 on March 31, 2005. In anticipation of this, IS&T will stop providing full support for Windows 2000 as of December 31. Windows 2000 users should plan to make the transition to Windows XP Professional this fall. For details, go to http://itinfo.mit.edu/product?name=windows.

Digitalk is compiled by Information Services and Technology.

Wireless network service expanded

Information Services and Technology IS&T initiated a new program in May to increase the coverage and speed of the campus wireless network. The program provided about 500 new wireless access points and upgraded the existing 700 access points to make them faster.

The main group of buildings along the Infinite Corridor will have complete high-speed wireless network coverage this fall; other parts of the campus will have partial coverage. Since this is basically radio technology, there may be some "cold" spots where access doesn't work. These can be reported to IS&T by sending mail to unwired@mit.edu. Three residence halls—East Campus, Bexley and Baker House—were recently renovated and now have complete wireless coverage. Wireless access points were installed in lounges and common areas this summer in five other dormitories—Burton House, MacGregor, Next House, New House and Random Hall.

MIT's wireless deployment began about four years ago and focused primarily on classrooms, libraries and popular common spaces. IS&T started the new program last spring in response to requests from the community for wider coverage and faster connectivity. Working with the Office of Housing, the Dean for Student Life, and many departments, labs and centers, IS&T plans to provide a nearly complete wireless campus by the end of 2005.

For information on how to connect to MITnet using wired or wireless systems, go to http://web.mit.edu/ist/start/mitnet/get-connected.html. To view precise coverage locations, go to http://web.mit.edu/network/wireless-map.html.

Input sought on decision-making process on merger of ocean engineering with mechanical engineering

A committee chaired by Professor Steven Tannenbaum, Underwood-Prescott Professor of Toxicology and Professor of Chemistry, is seeking input on a possible merger of Ocean Engineering with Mechanical Engineering.

The committee was formed to review the process and procedures leading up to the merger, in keeping with Section 1.4 of Policies and Procedures. The goal of the committee is to determine whether the process followed in arriving at the proposed reorganization was adequately consultative and appropriately considered, whether it addressed the interests of affected faculty, students, and staff, and whether the individuals affected have had adequate opportunities to make their views known to the decision-makers.

President Vest appointed the committee in consultation with Rafael Bras, Chair of the Faculty, and has asked the committee to report to him by October 15. Anyone affected by the proposed merger who has not yet been contacted and who would like to comment on the fairness of the process may call or write Professor Tannenbaum (253-3729, srt@mit.edu), or one of the other panel members: Professor Edward Boyle of EAPS (x3-3388, eaboyle@mit.edu) or Professor Ian Hutchinson of Nuclear Engineering (253-8760, ihutch@mit.edu).

Nominations open for Doherty Professorship

The selection committee for the Doherty Professorship in Ocean Utilization is accepting nominations from department heads for non-tenured faculty members from any department.

Endowed by the Henry L. and Grace Doherty Charitable Foundation, the two-year chair provides funding for non-tenured faculty to undertake marine-related research that advances innovative uses of the ocean's resources. There are no restrictions on the area of research, and any aspect of marine use and/or management may be addressed, whether social, political, environmental, economic or technical.

Those appointed to the chair receive $25,000 per year for two years, beginning July 1. The recipient cannot hold another MIT-funded chair at the same time.

Anette Hosoi, an assistant professor of mechanical engineering, was awarded the Doherty in 2004 to study particle-laden flows in the ocean. Her findings are expected to increase understanding of the risks in offshore construction and ocean exploration.

Department heads may submit one nomination every year. The deadline is Oct. 28. Anyone wishing to be nominated should contact his or her department head. For more information, please contact Kathy de Zengotita at 253-9305 or kdez@mit.edu.

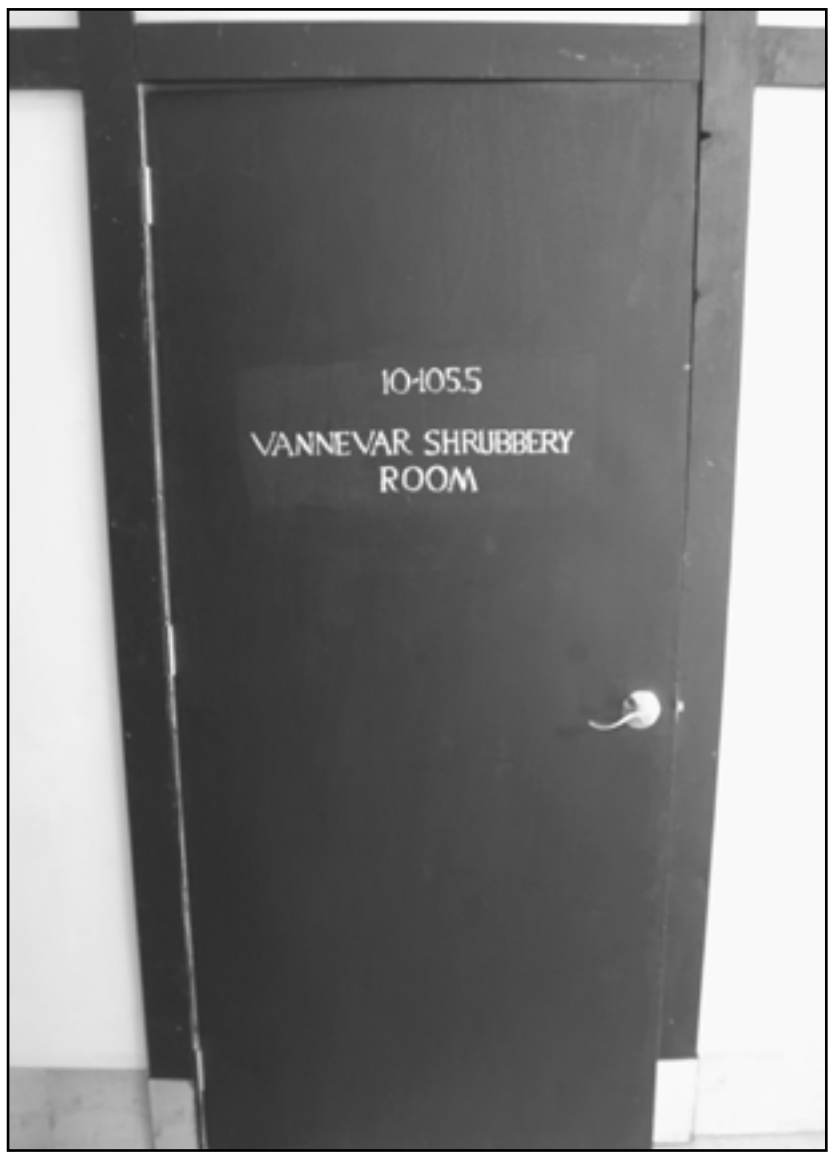

PHOTO / **DONNA COVENEY**

This hack sprouted on a wall in the Infinite Corridor where the former Bush Room (10-105) entrance once stood. The door opened to reveal a small shrub.

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Frosh urged to solve the world's problems

Denise Brehm
News Office

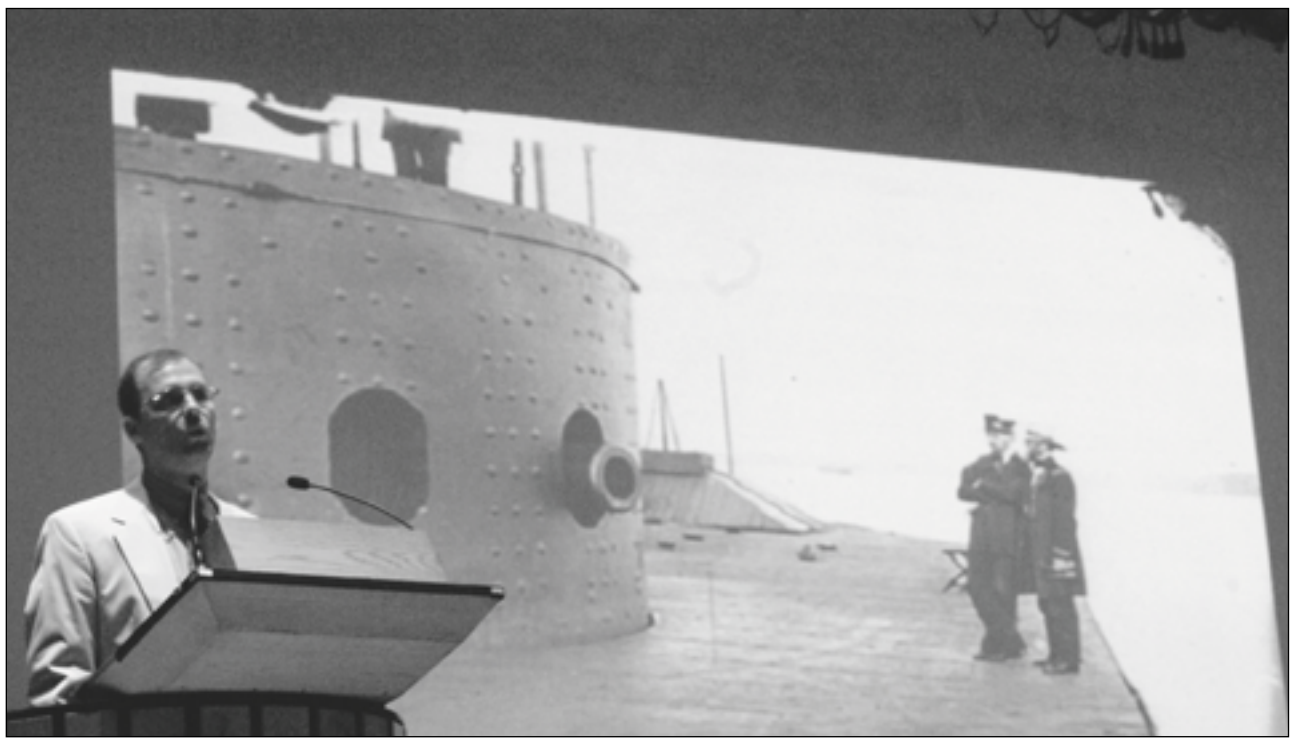


PHOTO / **DONNA COVENEY**

Professor David Mindell encouraged students to break out of traditional educational paradigms in pursuit of their goals, at the freshman convocation. He talked about his own research, which combines the humanities and engineering, and illustrated the talk with slides. The one above shows the turret of the U.S.S. Terror, a Civil War battleship.

MIT faculty advised freshmen to pursue their personal educational interests, then use what they learn to help the world at the freshman convocation on Sept. 1.

President Charles M. Vest welcomed his 15th freshman class to MIT during the annual gathering in Kresge Auditorium by encouraging the students to use their knowledge of science and engineering to tackle society's biggest problems.

"Develop your individual talents but also please look beyond yourselves," Vest said. "Master your disciplines, but think creatively about their applications."

"We live in a world that is dangerous but full of hope, a world that is increasingly dependent on science and technology and defined by advances in science and technology. Foremost in our minds these days is peace and security. But it is a time for optimism, not a time to get mired down in problems and fears. It is a time to take on the challenges," Vest said.

Striking a more personal note was Professor David Mindell, who showed slides from some of his deep sea archaeological voyages and encouraged the frosh to make their education conform to their real interests. "Doing what you love is the essence of a great education," said Mindell, the Dibner Associate Professor of the History of Engineering and Manufacturing in MIT's Science, Technology and Society Program, and an associate professor in the Systems Engineering Division. "Don't feel constrained by how people have done things in the past."

Mindell entered Yale as a freshman 21 years ago with the intention of majoring in electrical engineering. And he did. But during his freshman year one of his mentors helped him to realize that a focus on engineering didn't preclude learning more about his other passion—literature. So Mindell took a double major ("the single most important decision of my career") and wrote his senior thesis on Thomas Pynchon's "Gravity's Rainbow." A key metaphor of that post-modern novel is based in engineering, said Mindell, who just happened to have the education to recognize it.

Now he looks at the ways that technology affects our world. And he uses his electrical engineering background to develop underwater robots and sonar technologies to map out ancient shipwrecks at the bottom of the ocean floor.

His second piece of advice was to develop relationships

CLASS OF 2008 BY THE NUMBERS

Class Year	2008	2007
Applications	10,466	10,549
Accepted	1,665	1,735
Enrolled	1,081	1,021
Yield	65%	59%
Male	622	560
Female	459	461
Percentage of Women	42%	45%
# States and D.C.	51	50
Territories and Countries	60	48

Shape-shifting cell protein helps us remember and forget

Deborah Halber
News Office Correspondent

Researchers at the Picower Center for Learning and Memory are one step closer to understanding how brain synapses make chameleon-like changes in their structure and composition depending on the input they receive.

Yasunori Hayashi, assistant professor of brain and cognitive sciences, seeks to understand how brain cells accomplish their remarkable plasticity. His work on the shape-shifting cell protein called actin appeared in Nature Neuroscience online on Sept. 5. This knowledge may one day make it possible to enhance learning and memory by manipulating neurons at a molecular level.

In the fraction of a second it takes one brain cell to communicate with another, a lot happens. Chemical neurotransmitters are released from the signaling side of the synapse and bind to the receiving side, which triggers certain proteins to be assembled or disassembled. Long-term changes in the structure of brain cells create long-term memories and lifetime learning, while other changes destroy unneeded connections to eliminate unneeded information.

A cellular protein called actin is responsible for helping synapses keep their shape. Hayashi and colleagues speculate that actin works with other mechanisms to help synapses assemble proteins on the postsynaptic, receiving end of a transmission.

Actin itself is transformed from ball-like globular to stringy filament forms (G-actin and F-actin), which do radically different things during key brain processes. How actin behaves and what it does is not well understood because no one has been able to see this conversion in synapses in living neurons.

Using a method called fluorescent resonance energy transfer (FRET) in combination with a state-of-art microscopic technique called two-photon laser scanning microscope, Hayashi was able for the first time to observe the change in equilibrium between G-actin and F-actin. By attaching a protein derived from jellyfish, he modified actin so that G-actin glows blue and F-actin in yellow. Change in color from blue to yellow means a conversion from G-actin to F-actin.

"Without FRET, we couldn't see this kind of change," Hayashi said.

Hayashi's laboratory zapped the fibers of a pre-synaptic cell in the rat hippocampus, the brain region associated with formation of new memory, with intense electrical stimulation. This initiates a biochemical process creating a physical change that can last for hours or even days in the post-synaptic receiving cell, either potentiation or depotentiation. These two key brain processes are long-term potentiation (LTP) and long-term depression (LTD), which many believe are the basis for learning and memory. LTP causes long-lasting changes by helping build new connections among brain cells and LTD helps destroy unneeded connections. The low-frequency stimulation created a reaction like LTD, while the intense electrical stimulation mimicked LTP.

Hayashi and colleagues Ken-Ichi Okamoto, postdoctoral associate in the Picower Center for Learning and Memory, and Takeharu Nagai and Atsushi Miyawaki of the RIKEN Brain Sciences Institute in Japan, found that LTP induction induces F-actin, which in turn enlarges synaptic spines and increases their ability to transmit information. In contrast, LTD induction shifts the equilibrium toward G-actin, resulting in a loss of actin the post-synaptic cell, the one receiving the message from the pre-synaptic cell.

"If we could manipulate actin equilibrium, we may some day be able to manipulate synaptic plasticity, affording significant control over the learning power of the brain," Hayashi said.

The Picower Center for Learning and Memory at MIT is a research entity within MIT's School of Science, with faculty members holding academic appointments in the Department of Brain and Cognitive Sciences, the Department of Biology, or both. It focuses the talents of a diverse array of brain scientists on a single mission: unraveling the mechanisms that drive the quintessentially human capacity to remember and to learn, as well as related functions like perception, attention and consciousness.

This work is supported by RIKEN and the Ellison Medical Foundation.

PHOTO / **DONNA COVENEY**

A rolling start to the school year

East Campus built a play area including a rollercoaster and trampoline to make the first week of school more fun.

MIT students write voter's guide to science and technology issues

An MIT graduate student is the creative force behind a new voter's guide to the science and technology issues in the upcoming presidential election.

Daniel Collins, a Ph.D. student in civil and environmental engineering, created the project for Student Pugwash USA, which produced the online guide to highlight the importance of science and technology in the political decisions voters will face in November. The MIT Student Pugwash team, including the group's president Chris Sequeira, wrote the guide this summer.

Drawing from government records, campaign statements and media reports, the guide provides background on the candidates' positions on a variety of issues, including bioterrorism, stem cell research and renewable energy. It will be expanded and updated as the elections near.

Collins sees the guide as an opportunity to get voters, particularly students, to talk about the issues and become active in the democratic process. He sees Student Pugwash USA as the ideal group to offer the resource, being a non-partisan group that has raised ethical and political awareness of science and technology for 25 years.

"We advocate neither a party nor a platform," said Collins, a New Zealand citizen who cannot vote for the American president. "We hope people will become better informed on the issues important to them. We also hope that people will take more of an interest in issues they don't usually think about and make their decisions based on the best available information. It's an investment well beyond these elections."

The University of Virginia Student Pugwash chapter will host a conference on the guide this fall.

For more information, contact electionguide2004@mit.edu or visit http://web.mit.edu/pugwash/electionguide2004.

GLAMOUR

Continued from Page 1

campus leadership, community involvement and academic excellence. Each winner receives $1,500 and a trip to New York in addition to the national recognition in the magazine. Past awardees include the first woman accepted on the Harvard Crimson editorial staff, the first Hispanic woman to win a Rhodes scholarship, and the first female brigade commander at the U.S. Naval Academy.

"It definitely is a very nice complement to my final year at MIT," said Lee, who said she is not a regular Glamour reader. "I found the application process itself very rewarding as it gave me an opportunity to really reflect on everything I had been working on since my arrival at MIT. It encouraged me to sit down and put everything together and evaluate my college life."

Saini, who has worked as a model, won a Miss Jr. Teen California pageant in high school and competed as a gymnast and dancer in national competitions for many years, said that she frequently refers to Glamour magazine for "styles, trends and seasonal makeup ideas.

"It's great to be recognized. I remember getting the call when I was in New York City and I was on a busy intersection and I was pretty much telling the lady that called me that she made a mistake," said Saini, who plans to donate her prize-winnings to a tutoring center for dyslexic students in her hometown.

"In my town I work with a lot of the younger students, either by being their basketball coach, cheerleading coach and choreographer, pageant consultant, tutor or mentor," she said. "I know a lot of the girls I work with look up to me and have told me that they see me as their role model. Most of them don't understand how someone like myself can be girly and ambitious at the same time, so I spend most of my time teaching them that they don't need to fit a certain stereotype. I try to show them that it's possible to do it all."

Both women are Burchard Scholars at MIT, earning the award for their contributions in the humanities. They were guests on Boston's Kiss 108 "Matty in the Morning" show on Sept. 7, registration day at MIT.

PHOTO COURTESY / **JOHANSEN KRAUSE**

Swati Maria Saini

PHOTO COURTESY / **JOHANSEN KRAUSE**

Laurel Yong-Hwa Lee

PHOTO / **DONNA COVENEY**

The waterfall was a big draw at the grand opening of the Technology Children's Center at the Stata Center earlier this month.

Grinning tots populate Stata lot

Kristen Collins
News Office

The return of students brings fresh energy to campus every September, but a small lot just off Vassar Street was abuzz with activity a little early this year.

The fresh-faced students on this 5,000-square-foot campus do not carry backpacks or chat with friends on cell phones. Their average height is about three feet and they share a keen interest in tricycles.

These students are not here to study at MIT, but they nevertheless "will define our campus in the future," said Provost Robert A. Brown at the Aug. 24 dedication ceremonies for the "Young Builders Work Site," a playground for the children who attend day care in the new Technology Children's Center at the Stata Center.

The playground was donated and built by Skanska USA, the Boston-based general contracting and construction management company that managed construction of the Stata Center.

The new day care center and playground stemmed from a 1998 report that identified the need for more day-care facilities, particularly infant care, on campus. It was designed to be "the best backyard ever," according to Kathy Simons, co-manager of the MIT Center for Work, Family and Personal Life. Simons, along with David Silverman and Susan Skrupa, led the MIT project management team.

"We gave Skanska a cartoon and they made it work for us. We cannot thank them enough for their time, dedication and generosity," said Simons.

Darcy and Kristala Prather, MIT alumni and the parents of 10-week-old Kathryn, were ecstatic about the day-care center and playground and the opportunity to be near their daughter during the work day.

"Coming from industry, we did not have this opportunity to be so close to our daughter every day, plus the flexibility and convenience to be with her at any hour," said Kristala Prather, an assistant professor in the Department of Chemical Engineering. "This playground is fantastic. We're sure this time next year she'll be rolling down these hills."

Gina Grattarola-Tzizik, executive director of the Technology Children's Centers, welcomed guests to the dedication. In addition to Brown, Ray Stata (S.B. 1957), Paul Hewins of Skanska, and Simons spoke.

"The magic of this space will be here for years and generations to come," said Simons.

The Technology Children's Center at the Stata Center is the fourth TCC day care center. The other three are at Eastgate,Westgate and Lincoln Laboratory. All four offer developmentally based, culturally respectful, on-site child care to the families of MIT faculty, staff and students.

The MIT Center for Work, Family & Personal Life offers direct services and individualized referrals to students, faculty, staff, and their families, providing assistance with work or family-related matters, or other issues pertaining to life at MIT.

AWARDS AND HONORS

Greg Anderson, director of client support services for Information Services and Technology, is one of three authors jointly to receive the 2004 EDUCAUSE Quarterly Contribution of the Year Award for the article, "Management by Fact: Benchmarking University IT Services," describing the cross-institutional initiative between MIT and Stanford. Sponsored by SunGard SCT, the award acknowledges the trio's article for being "well-written and articulate, and a significant contribution." Anderson will share a $1,000 cash prize with his co-authors from Harvard Business School and Stanford University.

Richard J. Samuels, director of the MIT Center for International Studies and the Ford International Professor of Political Science, has been awarded the Jervis-Schroder Prize for his 2003 book, "Machiavelli's Children: Leaders and their Legacies in Italy and Japan." The book compares the two nations' history of political and economic leadership. The American Political Science association called "Machiavelli's Children" both "probing and provocative." The same book—Samuels' third—won the 2004 Marraro Prize for Italian Historical Studies.

Evelyn Fox Keller, professor of history and philosophy of science, has been selected as a 2004-2005 Radcliffe Institute Fellow. Regarded as America's foremost scholar on issues of science and gender, Keller is the author of "Refiguring Life: Metaphors of Twentieth Century Biology" (1995), "The Century of the Gene" (2000) and "Making Sense of Life: Explaining Biological Development with Models, Metaphors and Machines" (2002). Her Radcliffe project is titled, "Development, Intersubjectivity and Dynamical Systems."

Susan S. Silbey, professor of sociology and anthropology, has received a fellowship from the American Council of Learned Societies 2003-2004 program. Silbey's research project, "Governing Green Laboratories: Trust and Surveillance in the Cultures of Science," follows the development of a model for how government can regulate in the public interest innovative and flexible organizations.

The Optical Society of America has named **Erich Ippen**, the Elihu Thomson Professor of Electrical Engineering and a professor of physics, recipient of the 2004 Charles Hard Townes Award in recognition of outstanding contributions to the field of quantum electronics. Ippen is being honored for his many pioneering contributions to ultrafast science, ultrafast technology, and fundamental nonlinear optics. The award will be presented in October at a ceremony in Rochester, N.Y.

Professor **Harry L. Tuller** of the Department of Materials Science and Engineering and director of the Crystal Physics and Electroceramics Laboratory was awarded an honorary doctorate (Docteur Honoris Causa) on May 18 from the Universite de Provence, Marseille, France for lifelong achievements in the field of electroceramics. At his investiture attended by members of the humanities and the science faculties, Tuller presented a lecture entitled "Materials Science and the Environment: A Career Theme."

Kelly Scientific Resources, a business unit of Kelly Services, awarded a $2,000 scholarship to **Maia Mahoney**, a senior in electrical engineering and computer science, through its Future Scientists program. The program helps connect science students with jobs, internships and research opportunities at major chemical, pharmaceutical and biotech companies in the United States, and provides a bridge between the scientific expertise in academia and the personnel and recruiting needs of industry.

Assistant Professor **Kristala L. J. Prather** (S.B. 1994), who joined the Department of Chemical Engineering faculty in July, was named one of nine recipients nationwide of the Camille and Henry Dreyfus New Faculty Award. The $50,000 award goes to chemists and chemical engineers who are starting academic careers and helps pay for setting up their new labs. Prather's research is in the optimization of recombinant gene dosages to maximize productivity in metabolically engineering E. coli.

Two members of the music and theater arts faculty—Lecturer **Mark Harvey** and Kenan Sahin Distinguished Professor of Music **Evan Ziporyn**—have been chosen as 2004-2005 ASCAP Award recipients. The cash awards, made by the American Society of Composers, Authors and Publishers, reflect ASCAP's commitment to assist and encourage writers of serious music. They are granted by an independent panel and are based upon the "unique prestige value of each writer's catalog of original compositions as well as recent performances of those works in areas not surveyed by the society. "

Essigmann receives royal honor

Elizabeth Thomson
News Office

Her Royal Highness Princess Chulabhorn of Thailand recently presented MIT Professor John M. Essigmann with an award recognizing his "sustained support for the advancement of science in developing countries and his selfless dedication to teaching and research."

Essigmann received the 2004 Princess Chulabhorn Gold Medal Award at last month's Princess Chulabhorn International Science Congress in Bangkok. The congress was part of a series of events hosted by the royal family as part of the sixth cycle celebration (72nd birthday) of the princess' mother, Queen Sirikit.

The solid gold award, with an accompanying plaque, is given every five years. It honors "persons or organizations that are world-renowned and have provided outstanding support for the activities of the Chulabhorn Research Institute, as well as important support for the advancement of science in developing countries," according to a press release from the office of Thailand's prime minister.

Essigmann began working on toxicological problems affecting Thailand and the developing world as an MIT graduate student more than 30 years ago. "The developing world offers some of the most pressing and scientifically interesting problems in my field. It is a tremendous honor to receive this award from the people with whom I work and teach in Thailand," said Essigmann, who received the S.M. (1972) and Ph.D. (1976) in toxicology.

Essigmann was honored for revealing the mechanism of one of the two risk factors for liver cancer, the leading cause of cancer death in Thailand and in much of the developing world. His work revealed how the chemical substance alfatoxin contributes to the genetic changes underlying liver cancer. This toxin collaborates with hepatitis B virus, also widely present in the developing world, to lead to a high risk for liver cancer.

He was also honored for his teaching in Thailand under the Inter-university Program of the Chulabhorn Research Institute, the Asian Institute of Technology, and Mahidol University. For the last four years he and Professor Ram Sasisekharan of the Biological Engineering Division have taught summer courses in Thailand to students recruited from all over Asia.

Essigmann, the William R. (1956) and Betsy P. Leitch Professor in Residence, has taught biochemistry, bioengineering and toxicology for 23 years. He has appointments in the Biological Engineering Division and the Department of Chemistry.

NEWS YOU CAN USE

Travel Office plans vendors fair

The sixth annual Travel Vendor Fair will be held on Tuesday, Sept. 21 in Lobby 13 from 10 a.m. – 2 p.m. The fair offers information for individuals who travel on MIT business or who are responsible for making travel arrangements for others.

Faculty meeting scheduled

Agenda items for the faculty meeting on Wednesday, Sept. 15 include a vote to establish an S.B. degree in archaeology and materials, by Professor Mark Schuster; the annual update on budget and finances, by Provost Robert Brown; a report on OpenCourseWare, by Professor Steven Lerman and Anne Margulies; and comments from President-elect Susan Hockfield. The meeting is scheduled for 3:30 p.m. in Room 123 of the Stata Center.

Libraries hold special events

In honor of travel and transportation milestones such as the 100th anniversary of the New York City subway, the MIT Libraries invites community members to embark on their own journeys of discovery by exploring the libraries' extensive collections of travel guides, atlases, maps, photos and music from all over this world and even out of this world. During Libraries Week (Sept. 20-24), the Libraries will also offer 3 p.m. study breaks with snacks and the opportunity to get to know librarians in different fields—Monday in the Humanities and Science libraries (14S-100), Tuesday in Barker Engineering Library (10-500), Wednesday in Dewey Library (E53-100), and Thursday in Rotch Library (7-238). For more information, see the Libraries' web site.

Excellence Awards workshops

Team and individual nominations for the annual MIT Excellence Awards are being accepted at web.mit.edu/hr/rewards/excellence and are due Oct. 13. The awards recognize outstanding accomplishments by staff members. Brown bag lunch discussions are being held to help people who have questions about the nomination process or who want help with the nomination form. Lunches are scheduled for Sept. 23, 12:30-1:30 p.m. in Room W20-201; Sept. 24, noon-1 p.m. in Room S2-180 (Lincoln Lab); Sept. 29, noon-1 p.m. in Room E19-207f; and Oct. 6, 12:30-1:30 p.m. in Room 16-151. For more information, contact Kande Culver at 253-5986 or rewards@mit.edu.

Course catalogues available

The MIT Course Catalogue is available in print, on CD, and online at http://web.mit.edu/catalogue. Students can pick up a copy of the print catalogue or CD at the Student Services Center. Faculty and staff can get a copy of the print catalogue at their department headquarters or in a Distributed Mail Center. CDs are available from the Reference Publications Office in E28-100. Copies for alumni are available at the Alumni Center (Room 10-110). Other people can purchase the printed catalogue by going to the MIT Coop or the MIT Press Bookstore, or by mail-order from the MIT Press Bookstore (253-5249) or web site.

SAPweb down

An SAP Production system update is scheduled to take place from 10 p.m. Friday, Sept. 17 to 7 a.m. Sept. 20. SAP, ECAT, and all SAPweb activity including employee self-service, requisitioning, journal vouchers, and credit card verification will be inaccessible during this maintenance period.

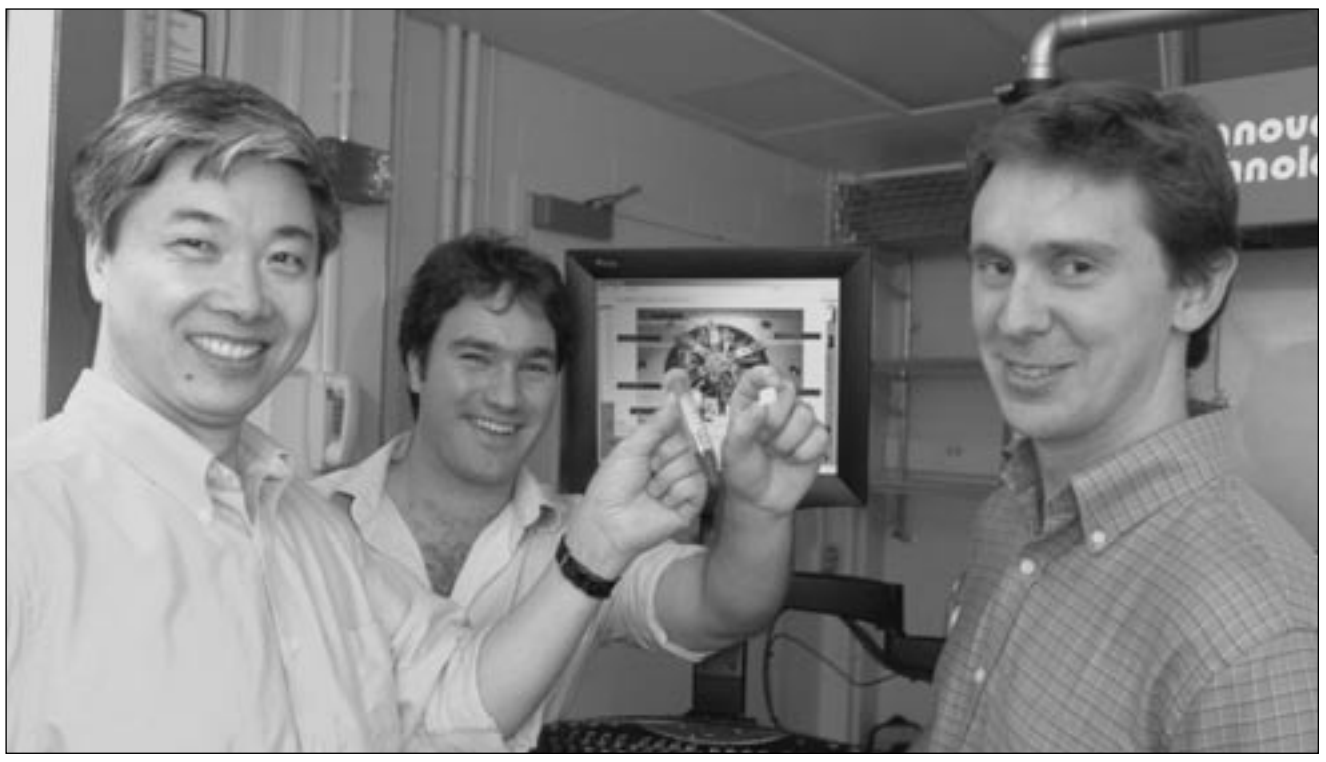


PHOTO / **DONNA COVENEY**

Shuguang Zhang (left), associate director of the Center for Biomedical Engineering, holds a spinach solution, the active component in a completed solar cell. Recent graduate Patrick Kiley, holding a completed chip, and Professor Marc Baldo of electrical engineering and computer sciences complete the team.

SPINACH

Continued from Page 1

The resulting dark green pellets that smell like cut grass were purified still further and coaxed into a water-soluble state. One of the challenges was to keep the proteins in the same configuration as they appear naturally in the organism.

Here's where peptides come in. The 80,000-plus kinds of proteins in our body, when in fragments called peptides, transform themselves like tiny LEGOs™ into millions of substances. Shuguang Zhang, associate director of MIT's Center for Biomedical Engineering, discovered that these same peptides can be tweaked into forming completely new natural materials that perform useful functions. One of his designer nanomaterials, which acts like the main ingredient in soaps and detergents, turns out to be ideal for keeping protein complexes functional on a cold, hard surface.

The spinach-sandwich device has no water. Proteins usually need water to survive, but using Zhang's detergent peptide, the researchers were able to stabilize the protein complexes in a dry environment for at least three weeks. "Detergent peptide turned out to be a wonderful material to keep proteins intact on the surface with electronics," Zhang said. He speculates that the detergent material has some water trapped within it, similar to the way plant seeds hoard oils that maintain the seeds' integrity in dry conditions.

Building the sandwich

The bottom layer of the molecular electronic device is transparent glass coated with a conductive material. A thin layer of gold helps the chemical reaction that assembles the spinach chlorophyll Photosystem I complexes. The researchers then evaporate a soft organic semiconductor that prevents electrical shorts and protects the protein complexes from the layer of metal that completes the sandwich.

The researchers shone laser light on the device to create optical excitation, then measured the resulting current. "An important caveat is that we got very little current out, mostly because we had just a thin layer of the complexes in our devices," Baldo said. "Most of the optical excitation passed straight through without being absorbed. Of the light that was absorbed, we estimate that we converted around 12 percent to charge."

The researchers hope to achieve a power conversion efficiency of 20 percent or more (which would provide an extremely efficient power source) by creating multiple layers of PSI or assembling them on rough surfaces or 3-D surfaces, like skyscrapers that concentrate a huge amount of surface area within a relatively small space.

Patrick J. Kiley (S.B. 2003) of MIT also worked on this research, which is funded by the Defense Advanced Research Projects Agency, the Air Force Office of Scientific Research, and the National Science Foundation.

GINSENG

Continued from Page 1

exciting possibilities of harnessing [its] chemical scaffold as a prototype for wound-healing compounds."

Sasisekharan emphasizes the importance of Sengupta's interdisciplinary approach to the work. "He had the foresight to integrate the biology of cancer and blood-vessel formation with the pharmacological behavior of this drug and its structure."

MIT's role in the collaboration grew from Sasisekharan's expertise in complex sugars, which turn out to be key to ginseng's activity. "The sites where sugars are attached and how they are attached are unique for each of the molecular constituents, the ratio of which are distinct among the different varieties of ginseng," he explained. In 1999 Sasisekharan's lab developed a new tool for characterizing complex sugars.

Sengupta and Sasisekharan's colleagues in the work are from the University of Cambridge, Gaubius Laboratory, TNO-PG, Leiden, the Netherlands, and Hong Kong Baptist University. This work was funded by the Cambridge Nehru Trust, the U.K. Committee of Vice-Chancellors and Principals, Hong Kong RGC, the Dutch Cancer Society, and the U.S. National Institute of General Medical Sciences.

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. TechTalk ads are posted on the Internet. 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

Full size cherry veneer slat bed with Spring Air mattress and box spring. Exc. cond. Used as guest bed. $200. Stackable Sears washer/dryer $150. Kip at 258-5269.

Kitchen set for sale. 1 yr old. Table, 4 chairs, 1 leaf and glass hutch w/lighting. Light wood w/ white legs. Exc. cond. $650. 253-2204.

Amana refrigerator, white, 25-cu-ft side-by-side with water and ice dispenser, very large and very good working condition. $200. jane@media.mit.edu or 253-0325 for pictures and info.

Juki industrial sewing machine w/table. Exc. cond. $550/bst. Michael at 258-2759 or mdeluca@draper.com.

24' Thompson fisherman boat. Exc. cond. Lots of extras: GPS, fish finder, video sounder. $18,000/bst. Trailer included. 253-2593, 781-910-3086, 781-293-3944.

VEHICLES

2000 Nissan Xterra XE with 4WD, 6 cyl, 5sp., silver, many extras, 82K (highway) miles, excellent in and out, $10,900/bst. 258-1948 or pdtaylor@draper.com.

1994 Mitsubishi Eclipse, power windows, moon roof, CD w/10" woofers. 94K miles. $2.500. acentor@mit.edu.

1995 Plymouth Voyager SE. Green, 6 passenger, AL brakes, AC, AM/FM/Cassette, auto, 6 cyl, power steering and brakes, cloth seats, 95K miles. $2,995. 617-567-4749 or 253-4059.

1994 Honda Accord LX. Gd cond., well maintained. Lo-jack, CD/FM/AM, AC. $4,199/bst. 617-921-4253 or hwtaylor@mit.edu.

1992 Saturn. 4 dr. Std shift. 93K miles. Excellent condition. $1,000. Walter at 617-469-9780.

2001 Suzuki RM250. 04 One graphics, factory connection, FMF, V-Force, DP Clutch. Never raced. Very fast. $4,500/bst. 2003 Honda XR80. $1,500/bst, Glenn at 603-429-2332, x0374.

HOUSING

Medford: 2BR, lrg K, dr, lr. Wired for cable/internet, off-street parking, Near Wellington Station, $1,250. 781-504-4300.

For rent: Lrg 1BR condo in Somerville. Avail. 10/01. W/D, dw, fireplace, balcony. Garage parking. No fee. $1,200/mo. depaoli@alum.mit.edu.

Cambridge: Two furnished, very comfortable apts. 10-minute walk to MIT. Laundry, enclosed yard, bicycles. Avail. 10/1. No deposit. 1 BR $1,225; Studio $975. johnnatale@verizon.net.

WANTED

Driver needed to take 11-yr-old to after-school activities 2 days/week (between Lexington and Cambridge/Burlington). Must have perfect driving record. Refs. req'd. chanlian@hotmail.com.

Newton: Drive children to and from after-school activities, any or all M-Th weekdays after 3pm. Must have car and exc. driving record. 617-964-0901 or suzanned1@comcast.net.

Female staffer (high intermediate) seeks M or F tennis partner to hit with—to practice groundstrokes and have fun, not play sets. at112233@yahoo.com.

MISC.

Tutoring avail. for spoken and written Chinese, elem., int. or advanced levels, modern spelling methods. M.A., many years teaching exp. Flexible sched and places. 617-642-1234 or 253-8379.

"American Warship," an image from the "Black Ships and Samurai" exhibit by professors John Dower and Shigeru Miyagawa.

Profs' history show gets Broadway performance

When MIT professors John Dower and Shigeru Miyagawa collaborated on a web-based, OpenCourseWare project commemorating the 150th anniversary of Commodore Matthew Perry's journey to Japan, they never expected that their "show" would end up under the bright lights of New York's theater district.

But imagery from the award-winning project and exhibition titled "Black Ships and Samurai" will be featured in the lobby of Studio 54 when the Roundabout Theater presents Stephen Sondheim's "Pacific Overtures" beginning Nov. 12.

The musical, a revisionist staging of the 1976 Sondheim production, is directed by Amon Miyamoto, one of the foremost musical theater directors in Japan and the first Japanese director ever on Broadway.

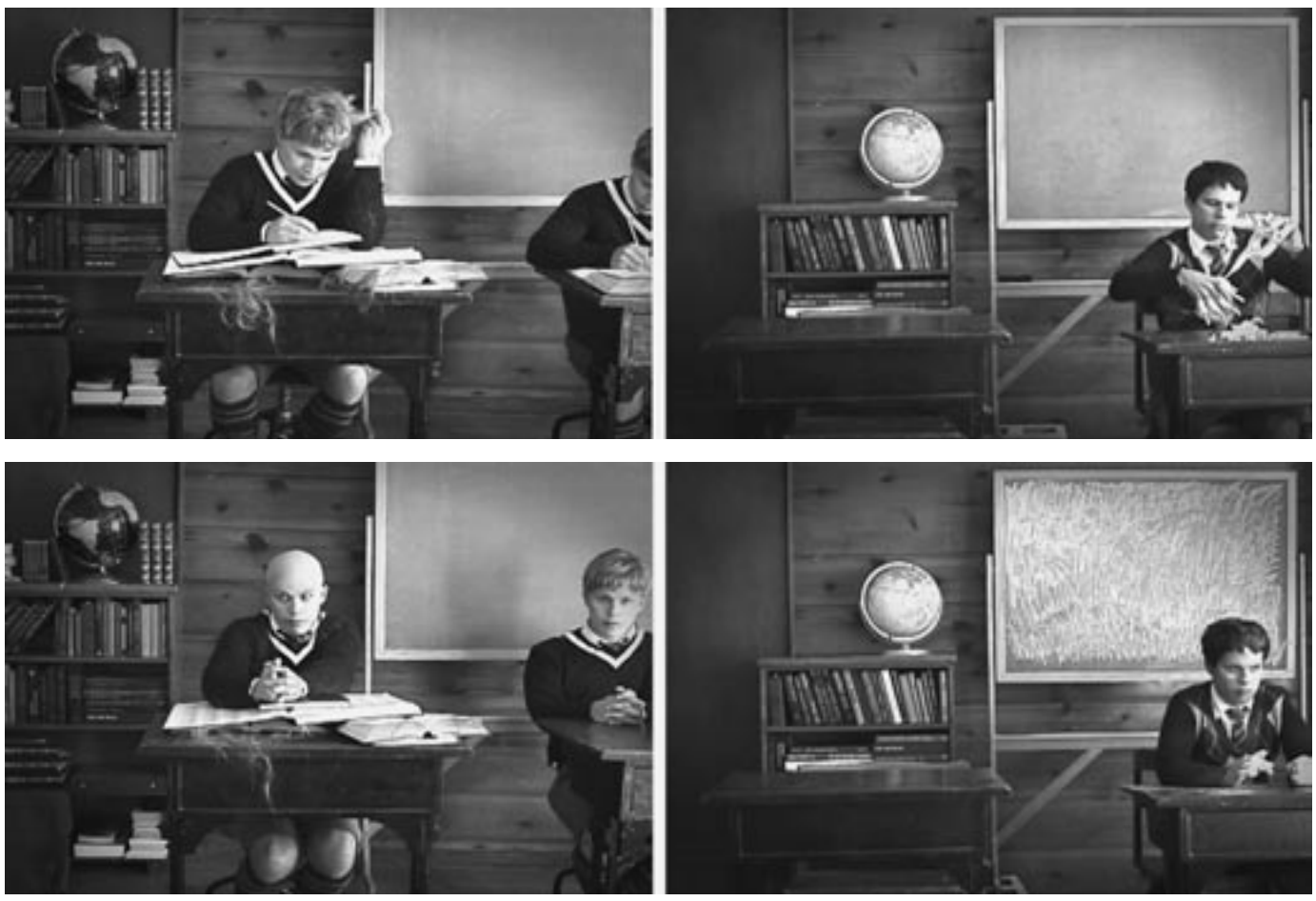
The exhibit in the theater's lobby will provide theater-goers with greater historical context for the musical—a play which captures the culture clash that would ultimately reshape the world in the 20th century, said Miyagawa, the Kochi-Manjiro Professor of Japanese Language and Culture. Ellen Sebring and Scott Shunk are designing the physical exhibit.

Dower, the Ford International Professor of History, whose masterpiece on post-war Japan "Embracing Defeat" won the 1999 Pulitzer Prize, has developed an innovative approach to history using the images from the period of study. He and Miyagawa received this year's Class of 1960 Innovation in Education award for their "Black Ships" project.

A pre-Broadway presentation and discussion, billed as a "unique encounter between Broadway and MIT," will be held at Boston's Museum of Fine Arts on Wednesday, Sept. 22 at 7 p.m. The presentation will feature director Miyamoto and Dower, who will present views of the historic encounter between Japan and the U.S. that occurred when Commodore Perry sought to open up the secluded Japan to the world. Peter Grilli, president of the Japan Society of Boston will moderate.

Dower will present the artwork that he and Miyagawa created for their exhibition, which shows both sides of the encounter.

Sponsors of "Black Ships and Samurai on Broadway" include the MFA and the Consulate General of Japan, as part of the 150th anniversary of U.S.-Japan relations.



No homework in video "Classroom"

Students rushing down the hall toward a class may want to pause before the Media Test Wall in Building 56, which this week features fidgety schoolchildren anxious to get out of class. "Classroom" by Anthony Goicolea uses photographs and videos to show adolescents acting out societal taboos and darkly humorous scenarios in hyper-realistic tableaux. On view through Sept. 19, the work portrays two anxious students: one tugs nervously at his hair until he pulls it out, the other constructs a set of chalk fingernail extensions that allow him to completely cover a chalkboard in one explosive burst of drawing. While nervousness is familiar to most people, these kids' humorously absurd coping mechanisms will not be. The video stills above show the young man before and after pulling out his hair (left) and his frantic-drawing classmate (right).

▶ ARTS NEWS

Singing for alms

MIT graduate students Liz Baraff (brain and cognitive sciences) and Mike King (mechanical engineering) are leading an effort to raise funds for school music education programs in Boston, Somerville and Everett. Vocal Band Aid, a benefit concert featuring local and national bands, will be held Saturday, Sept. 18 at 7 p.m. at the Somerville Theater in Davis Square. Both Baraff and King are members of Integration by Parts, the host group of the event, which will also feature Toxic Audio, Five O'Clock Shadow, All About Buford, Downtown Crossing and East Side Story. Tickets ($40/$30/$20) are available in person at the Somerville Theatre box office or through Ticketmaster. For more information, call (617) 251-8410 or e-mail info@vocalbandaid.org.

Showing off her art

Amy Sanford, administrative assistant in the Admissions Office, is among the 250 artists taking part in the South End Open Studios Sept. 18-19. She will exhibit her tessellated ceramic tiles and wall décor at Studio #114 in The Laconia Lofts, 1200 Washington St. and 433 Harrison Ave. from 11 a.m. to 6 p.m. For more information, call (877) 589-5329.

Rafting the channel

"W.T.L.F.P.C.A.P.T.O.T.L." (Will The Last Fort Point Channel Artist Please Turn Out The Lights), an installation by List Visual Arts Center's curatorial assistant John Osorio-Buck and Matthew Ward, can be seen in the Fort Point Channel through Sunday, Sept. 19. By designing, building and living on a raft in the channel, the artists seek to "territorialize and adapt unused urban space to the needs of displaced artists in the area." The project "presents a future where, perhaps, artists are forced to jury-rig structures and systems on the fringes of urban space to pursue their art," said Osorio-Buck. The installation will reappear for the Fort Point Open Studios Oct. 15-17.

Crossing cultures with music

"Epilogue for a Dark Day," a new CD of works by Christopher Adler (S.B. 1994 in music and mathematics) has been released on the Tzadik Composer Series (TZ 8004). The disc, which features five of Adler's compositions, includes two solos for the khaen, the bamboo free-reed mouth organ of Northeast Thailand and Laos, and a trio for khaen, violin and viola. "This is beautiful cross-cultural music with honesty, imagination and a deep sense of respect for tradition," wrote Tzadik. San Francisco Weekly's Sam Prestianni wrote, "Stunningly distinctive yet steeped in tradition, Adler's work stands as a testament to the power of global-minded music-making." A CD release party will be held in San Diego on Sunday, Sept. 26 at 7:30 p.m. at the Athenaeum Library (1008 Wall St., La Jolla, CA). The recording is available through on-line vendors such as amazon.com and tower.com, directly from the label at tzadik.com, and at stores. Keller (Old King Cole Records).

Praise for DeFrantz book

"Dancing Revelations: Alvin Ailey's Embodiment of African American Culture," a new book by Associate Professor Thomas DeFrantz (Oxford University Press), offers the first complete analysis of choreographer Alvin Ailey's body of work. Ailey, who died in 1989, choreographed his signature piece "Revelations" in 1960. The Village Voice praised DeFrantz's book, saying: "DeFrantz's study … is not the first book about the protean Ailey … but it is perhaps the most comprehensive, combining biography, criticism, the analysis of dance criticism, and a sort of corporate history, siting the now firmly established Alvin Ailey American Dance Theater in the international cultural landscape."

MIT EVENT HIGHLIGHTS SEPTEMBER 15 - 19

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

WEDNESDAY September 15

Is There a "New Warfare"? America's Post-9/11 Wars and the Meanings of Military Transformation
Carl Conetta, co-director, Project on Defense Alternatives at the Commonwealth. Noon-1:30pm. Room E38-615. 452-2542.

THURSDAY September 16

Soldier Design Competition Kickoff
Institute for Soldier Nanotechnologies. 7pm-9pm. Room 10-250.

Imobilare Breakdancing
Weekly practices open to all. 6-8pm. McCormick Hall dance room.

FRIDAY September 17

Putting Your Garden to Bed
Facilities' gardener Rob Lyons will offer tips for putting your garden to bed for the winter. Noon-1pm. Bush Room (10-105). 253-2269.

The Art of Structural Design—A Swiss Legacy
Talk by Gordon Y.S. Wu in conjunction with the exhibition at the MIT Museum. 6pm. Room 10-250. 253-7791.

SATURDAY September 18

"Beyond Exile: Central European Writing and Film"
Screening of "Occident" and discussion with filmmaker Cristian Mungiu. 7pm. Room 10-250.

Carnatic Vocal Concert
Carnatic vocal with violin mridangam. Presented by MITHAS and Sangam. Tickets: $20, $14, $10. MIT students free. 7:30pm, Wong Auditorium. 258-7971.

SUNDAY September 19

"A Question of Love"
Premiere of chamber opera by Charles Shadle (music) and Michael Ouellette (libretto). Presented by Intermezzo: The New England Chamber Opera Series. $20, $15 students and seniors. 4pm. Kresge Little Theater. 482-6441.

GLASS PUMPKIN PATCH SALE

A thousand hand-blown glass pumpkins and gourds in all sizes, shapes and colors will sprout on Kresge Oval Sept. 18. The fourth annual Pumpkin Patch begins with a preview reception on Friday from 5-7 p.m. in front of Kresge Auditorium. The next day, visitors can stroll through the pumpkin patch and purchase their favorite autumnal orb.10 a.m. to 5 p.m. In case of rain, the sale will be held the next day. Prices range from $20 to $200. Browsing is free.

PHOTO / **PETER HOUK**

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

THE GREAT GLASS PUMPKIN PATCH — *Sept. 18*
Hand-blown glass pumpkins, squashes and gourds made in the MIT Glass Lab. Preview Sept. 17. Will be available for purchase.
Kresge Oval
10 a.m. to 5 p.m.

CELEBRATING THE VEST YEARS — *Sept. 18*
An MIT community event with food, music and festivities throughout the afternoon. The program begins at 3 p.m.
Stata Center Amphitheater
2 to 4 p.m.

NATYANJALI — *Sept. 19*
MIT Natya's annual program of traditional classical Indian dance. Tickets: $7 and $5. Make reservations online.
Kresge Little Theater
7:30 p.m.

MIT EVENT HIGHLIGHTS SEPTEMBER 20 - 26

MONDAY September 20

Blood Drive
Four-day campus blood drive. On the first two days donors can also register as bone marrow donors.
Sept. 20—noon to 6 p.m,
Sept. 21—10am to 4pm,
Sept. 22—noon to 6pm,
Sept. 24—noon to 6 p.m.
Appointments available online. La Sala de Puerto Rico, Stratton Student Center.

TUESDAY September 21

The Democratization Movement in Iran: Time for a Requiescat?
Talk by Professor Ali Banuazizi of Boston Univ. Emile Bustani Middle East Seminar. 4:30pm-6:30pm. E51-095. 253-8961.

Multifaceted Aspects in Architecture
Stefan Behnisch. 6:30pm. Room 10-250. 253-7791.

WEDNESDAY September 22

Mosaic Dance Body
Dawn Davis Loring. Artists Behind the Desk. Noon-1pm. Killian Hall. 253-9821.

The Role of Size and Range in the Future of Aerospace Power Projection
Alan Epstein. Security Studies Program. 12pm-1:30pm. E38-615. 452-2542.

THURSDAY September 23

Technology and the Future Warrior: Protecting Soldiers in the 21st Century
MIT Enterprise Forum. 7-8:30pm. Kresge Auditorium. 253-0015.

FRIDAY September 24

Asian American Film Festival: Silkscreens
Friday—8-12pm,
Saturday—8:30am-10pm.
Kresge Auditorium, Room 10-250 and Killian Court. 452-3113.

SATURDAY September 25

Sarod Maestro Amjad Ali Khan
Sarod and tabla. AID-Boston. $100, $70, $50, $30, $20 (students). 6:30pm. Kresge Auditorium. 480-8623.

SUNDAY September 26

Ramayana
Dance drama enacting the Sanskrit epic Ramayana in Indian, Indonesian and Thai classical dance styles. $7 and $10. 6:30pm-10pm. Little Kresge Theater.

ARTISTRY OF SWISS BRIDGE DESIGN

Some of the most acclaimed bridges in the United States are products of Swiss design, including Boston's own Leonard P. Zakim Bunker Hill Bridge, which was designed by Swiss-born Christian Menn. The photo at right shows the Chandoline Bridge over the Rhone River, Switzerland, another of Menn's designs.

Friday, Sept. 17, the MIT Museum begins a celebration of the work of a group of Swiss engineers who are widely recognized as the most innovative structural designers of the 20th century. "The Art of Structural Design: A Swiss Legacy" runs through the end of the year. "Swiss Legacy" focuses on the work of four Swiss designers, two of their teachers and the educational philosophy of the Federal Institute of Technology (ETH) in Zurich. These designers revolutionized the engineering field, creating new forms that elegantly integrated technology and aesthetics, and thus set in motion the modern relationship between form and function.

The exhibition spotlights some of the designers' most widely recognized and acclaimed projects. A talk will be given by the exhibition's curator, David P. Billington, the Gordon Y.S. Wu Professor of Engineering at Princeton University, at 6 p.m. on Sept. 17 in Room 10-250. The talk and reception that follows it are open to the public. President Charles M. Vest will introduce Billington; the consul general of Switzerland, Christoph von Arb, will host the reception in the Bush Room.