



Volume 50 – Number 5
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MIT cheers new Nobelist

Chemistry set really pays off

Elizabeth A. Thomson
News Office

Richard Schrock was 8 when his brother gave him his first chemistry set, a gift that piqued a passion that would ultimately lead to Schrock's sharing the 2005 Nobel Prize in chemistry.

At a wide-ranging MIT press conference on Oct. 5, the new laureate described why chemistry is so compelling for him, what it was like to get "the call" at 5:30 in the morning, and much more.

"I was shaking so hard I could hardly hold the phone," said the Frederick G. Keyes Professor of Chemistry, describing his conversation with representatives of the Royal Swedish Academy of Sciences.

Later he called his soon-to-be 92-year-old mother. "I told her I'd won a Nobel Prize, and she said, 'A what?' She's a little hard of hearing." Once she understood, however, "she was very excited, and happy to hear that she'll visit Stockholm for the first time." (The laureates will receive their prizes in Stockholm in the company of their families on Dec. 10.)

The new laureate expressed his heartfelt thanks, particularly to his wife, Nancy F. Carlson, "who married me in 1971 when my stock was real cheap." He also talked about how much he loves MIT. "I'm overjoyed to be a faculty member at MIT, and that joy has not diminished." This is Schrock's 30th year on the faculty.

"There aren't any colleagues in the

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PHOTO / DONNA COVENEY

MIT Professor Richard R. Schrock learned early on Oct. 5 that he had won the Nobel Prize in chemistry for work he did developing a key chemical reaction.

Prof. Richard Schrock wins 2005 prize

Elizabeth A. Thomson
News Office

MIT Professor Richard R. Schrock has won the 2005 Nobel Prize in chemistry for the development of a chemical reaction now used daily in the chemical industry for the efficient and more environmentally friendly production of important pharmaceuticals, fuels, synthetic fibers and many other products.

Schrock, the Frederick G. Keyes Professor of Chemistry at MIT, shares the prize with Yves Chauvin of the Institut Français du Pétrole and Robert H. Grubbs of Caltech "for the development of the metathesis method in organic synthesis."

Metathesis was discovered in the 1950s by industry researchers, but was not understood until 1971. That was when Chauvin proposed a mechanism for the reaction, in which double bonds are broken and made between carbon atoms in ways that cause atom groups to change places, much like a dance in which the couples change partners. This happens with the assistance of special catalyst molecules.

Once the "recipe" for metathesis was known, the next step was to develop the catalysts. In 1990, Schrock was the first to do this. Two years later Grubbs developed

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PHOTO / DONNA COVENEY

An enthusiastic crowd cheers for Professor Richard R. Schrock at the talk he gave Oct. 5 on the work for which he won the 2005 Nobel Prize in chemistry.

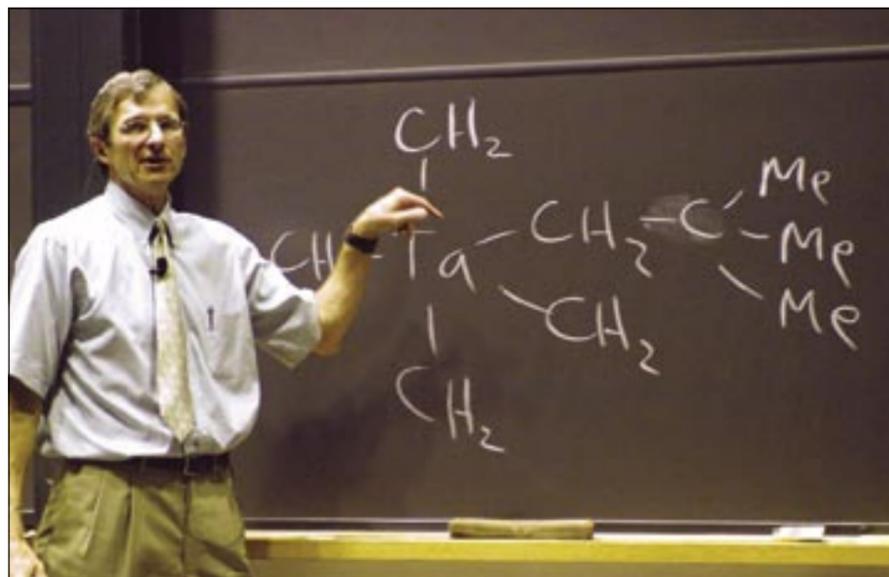


PHOTO / DONNA COVENEY

Chemistry Professor Richard R. Schrock explains the work that won him a Nobel Prize in chemistry at his Nobel lecture, held in Room 10-250 on Oct. 5.

MIT alumnus Aumann wins economics Nobel

Sarah H. Wright
News Office

MIT alumnus Robert J. Aumann is the co-recipient of the 2005 Nobel Prize in economics. Aumann is the third MIT-affiliated Nobel laureate whose models for understanding conflict and decision-making – known as game theory – have been recognized with the famed \$1.3 million prize.

Aumann, who received the S.M. in 1952 and the Ph.D. in mathematics in 1955, shares the 2005 Nobel with Thomas Schelling. Both are pioneers in game theory. The Nobel citation describes their work as having "enhanced our understanding of conflict and cooperation through game-theory analysis."

A professor at the Center for Rationality at Hebrew University of Jerusalem in Israel, Aumann contributed the analysis of "repeated games" to strategic thinking

about conflict and cooperation.

Using logic and mathematics to parse the options for cooperation available to people who face the same conflicts over and over again, he showed that cooperation increases when strategic situations are repeated. Even when there are immediate and pressing conflicts of interest, individuals have more opportunities to build cooperation if they expect to be dealing with the other side repeatedly in the future. Aumann's "repeated games" analy-

sis is now a staple of social science, political and corporate practices.

Aumann's fellow laureates in game theory include an economist and a mathematician affiliated with MIT.

Joseph Stiglitz, who received the Ph.D. from MIT in 1966, co-won the Nobel Prize in economics in 2001 for his work on decision-making in situations in which players

See **AUMANN**

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Alumnus makes 3 major endowments to support MIT Poverty Action Lab

MIT last week announced that alumnus Mohammed Abdul Latif Jameel has committed a substantial gift in support of the Poverty Action Lab in the Department of Economics. The gift will endow a professorship, two fellowships, and a research and teaching fund, all in the areas of poverty alleviation and development economics. All three endowments will be named in honor of Jameel's late father, Abdul Latif Jameel.

MIT President Susan Hockfield said, "We are deeply grateful to Mohammed Abdul Latif Jameel for his extraordinary commitment to MIT. His support will ensure that the Poverty Action Lab can fulfill its great potential to make a significant difference in the international fight against poverty." Hockfield also announced that MIT plans to mark this generous gift by naming the Poverty Action Lab for Jameel's father.

Located in the Department of Economics, the Poverty Action Lab at MIT was founded in 2003 with startup funds from the economics department and the School of Humanities, Arts, and Social Sciences. The mission of

the lab is to translate research into action that helps the lives of the poor in their communities. It is the only research center in the world devoted to combating global poverty by rigorously testing the effectiveness of poverty programs through the use of randomized evaluations. The lab applies the same level of rigor to the measurement of poverty alleviation programs that is routinely used to test the effectiveness of medications.

"The lab is already having a big impact in the field of development economics," said Professor Bengt Holmstrom, head of the economics department. "With this very generous gift, I feel confident that the lab will end up being one of the great initiatives at MIT."

Mohammed Abdul Latif Jameel received his S.B. in civil engineering from MIT in 1978. He is president of the Abdul Latif Jameel Co. (ALJ), which was founded by his father in 1945. In 1955, the company was granted sole distributorship for Toyota vehicles in Saudi Arabia, which the company has maintained ever since. Today, ALJ is the largest pri-

vate independent distributor of Toyota and Lexus vehicles in the world with operations in the Middle East, Africa, Europe, Japan and China. The company's activities also cover the areas of electronics, technology 'startup' investments, real estate development, financial and marketing services. ALJ employs more than 9,800 people worldwide and this year is celebrating 50 years of association with the Toyota Motor Corp.

Jameel is a dedicated philanthropist who supports many programs related to poverty alleviation, job creation, economic development and efforts to promote understanding among different cultures and religions.

In 1994, ALJ made a donation to MIT to establish the Abdul Latif Jameel-Toyota endowed scholarship fund to honor the company's founder. To honor the long-standing relationship between Toyota and the late Abdul Latif Jameel, students receiving the scholarship are called Jameel-Toyota scholars. The scholarship provides financial aid to undergraduates from 28 Middle Eastern and Asian countries who could not attend MIT without financial assistance.



PHOTO / DONNA COVENEY

Massive march

Circus elephants parade down Memorial Drive past the Great Dome of MIT on Oct. 6. The Asian elephants, who arrived in Cambridge area by rail, were en route to their gig at TD Banknorth Garden in Boston, where they performed in the Ringling Brothers and Barnum & Bailey Circus Oct. 7-16.

Faculty meeting slated

A regular meeting of the faculty will take place Wednesday, Oct. 19, at 3:30 p.m. in Room 32-141. The agenda includes:

- Vote on changes to the "Rules and Regulations of the Faculty," Section 1.11 and Section 1.72
- A report from the Special Committee to Review the Discipline System and a proposal to change Section 1.73.7 of the "Rules and Regulations of the Faculty"
- An update on MIT finances from Provost L. Rafael Reif
- Remarks from President Susan Hockfield
- Topics arising and questions for the president, the provost and the chancellor

Vest urges federal science push

A report released last week by the National Academies concludes that "a comprehensive and coordinated federal effort is urgently needed to bolster U.S. competitiveness and pre-eminence" in science and technology.

The congressionally requested report was written by a 20-member committee that included former MIT President Charles M. Vest, CEOs, Nobel Prize-winners and former presidential appointees.

The report cites several reasons why action is needed, including the relatively high cost of hiring American scientists. "For the cost of one chemist or one engineer in the United States, a company can hire about five chemists in China or 11 engineers in India."

Another reason cited is that in 2001, U.S. industry spent more on tort litigation than on research and development.

The committee's recommendations center on attracting exceptional students to math and science teaching careers and investing more in basic research.

For the full report, visit www.nationalacademies.org/morenews/20051012.html.

DIGITALK: WHERE IT'S AT



Virus protection

There's been a steady increase in the volume of incoming e-mail that carries potential computer viruses. To minimize security risks, IS&T strongly encourages all Windows users in the MIT community to install and use VirusScan Enterprise 8.0i. This anti-virus program can detect and remove viruses and prevent scripts from performing malicious actions. It runs on Windows XP computers and on Windows 2000 Server and Windows Server 2003. The MIT-installed version of VirusScan Enterprise 8.0i is configured to perform daily scans and updates. For details, see the VirusScan at MIT page at itinfo.mit.edu/product.php?vid=644.

For Macintosh OS X users, the recommended anti-virus program is Virex. The current version is 7.2.1; IS&T is ramping up a release effort for Virex 7.7. For more information, visit the Virex at MIT page at itinfo.mit.edu/product.php?vid=579.

Spam screening enhanced

Only about half of the community is making use of MIT Spam Screening (web.mit.edu/ist/services/email/nospam/) on their post office servers. This service gives users of MIT e-mail the option of screening incoming messages for spam. Once mail is identified as spam, it can be filtered to avoid cluttering a user's inbox.

If you use an IMAP e-mail client, such as WebMail, Outlook Express, Outlook or Apple Mail, you can enable automated purging of your Spamscreen folder. In response to customer requests, IS&T has added a new setting that lets IMAP users purge spam messages faster than the default of 21 days: The automatic purge threshold can now be set for anywhere from 1 to 31 days. To update your MIT Spam Screening settings (certificates required), see nic.mit.edu/cgi-bin/spam-screen.

MIT PressLog launched

The MIT Press has unveiled a weblog at mitpress.mit.edu/presslog to keep readers informed of breaking news on its books and authors. The MIT PressLog features the perspectives of MIT Press authors, including MIT Professors Thomas Kochan, Eric von Hippel and Yossi Sheffi; the political philosopher Jurgen Habermas; the artist Louise Bourgeois; economist William Easterly; and many others on matters of current interest. Recent posts have discussed copyrights and patents; the "Scopes II" trial in Dover, Pa.; the perils and pitfalls of choice in our society; and how software development resembles extreme sports. The MIT Press is working on a podcasting feature for author interviews and readings.

Database development

In August, IS&T announced a new offering: database development services, which provides departments with help in database design, development and more. The new Departmental Consulting and Application Development (DCAD) Team will coordinate these efforts: DCAD was formed by expanding on IS&T's web communications services team.

After an initial free consultation, DCAD will either work with the department or refer the client to recommended vendors. DCAD provides the following fee-based services: the creation of requirements documentation, project management, database development and application support and maintenance. For more information, visit web.mit.edu/ist/dcad/, or contact the team at dcad@mit.edu or x3-3500.

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25 faculty members earn tenure

The Corporation's Executive Committee approved 25 faculty members for promotion to tenure in May. Here are their profiles:



Charles F. Harvey

Environmental Engineering

Education: B.S. 1986 (Oberlin College); M.S. 1992 and Ph.D. 1996 (both from Stanford University)
Joined MIT faculty: 1998

Harvey is a hydrologist concerned with groundwater and the fate and transport of chemicals in the subsurface environment.



Andras Vasy

Mathematics

Education: B.S. 1993 and M.S. 1993 (both from Stanford University); Ph.D. 1997 (MIT)
Joined MIT faculty: 1999

Vasy is the leading microlocal analyst of his generation.



Max Tegmark

Physics

Education: S.B. 1989 (Stockholm School of Economics); S.B. 1990 (Royal Institute of Technology); Ph.D. 1994 (UC-Berkeley)
Joined MIT faculty: 2004

Tegmark's research focuses on issues related to constraining cosmological models. His main current research interest is cosmology theory and phenomenology.



Bernhardt L. Trout

Chemical Engineering

Education: S.B. and M.S.CEP 1990 (MIT); Ph.D. 1996 (UC-Berkeley)
Joined MIT faculty: 1998

A leader in molecular engineering, Trout does research into clean fuel sources, high-sulfur-fuel emission reduction and minimizing degradation of therapeutic proteins (drugs).



Eran Ben-Joseph

Urban Studies and Planning

Education: B.A. 1982 and Ph.D. 1995 (both from UC-Berkeley); M. Agr. 1986 (National University, Chiba, Japan)
Joined MIT faculty: 1998

A major voice in his field, Ben-Joseph suggests new approaches to shaping urban development in more responsible and effective ways.



Catherine L. Drennan

Chemistry

Education: A.B. 1985 (Vassar College); Ph.D. 1995 (University of Michigan)
Joined MIT faculty: 1996

Drennan uses macromolecular crystallography to investigate metalloproteins that achieve some of the more remarkable chemical transformations in living systems.



Scott R. Manalis

Biological Engineering

Education: B.S. 1994 (UC-Santa Barbara); M.S. 1996 and Ph.D. 1998 (both from Stanford University)
Joined MIT faculty: 1999

Manalis' laboratory develops more efficient methods for measuring specific proteins and DNA. Manalis has played a key role in the creation of a new bioinstrumentation laboratory subject for the biological engineering S.B. major.



Bevin P. Engelward

Biological Engineering

Education: B.A. 1988 (Yale University); Sc.D. 1996 (Harvard University)
Joined MIT faculty: 1997

Engelward's work is focused on environmental and inherited factors that influence human health. The Engelward laboratory created the first animal model that makes it possible to directly detect recombinant cells that arise in adult tissues.



Georgia Perakis

Sloan School of Management

Education: B.S. 1987 (University of Athens, Greece); M.S. 1988 and Ph.D. 1993 (Brown University)
Joined MIT faculty: 1998

A rising star in operations research, Perakis is known for her strong mathematical background and creativity in applying novel, sophisticated mathematical tools to optimization and equilibrium problems.



Andreas S. Schulz

Sloan School of Management

Education: Diploma, mathematics 1993 and Ph.D. 1996 (both from Technische Universität, Germany)
Joined MIT faculty: 1998

Schulz is a leader in the field of machine scheduling. His contributions include not only the solution of specific problems but also the development of methodologies that can be broadly applied.



Jesper B. Sorensen

Sloan School of Management

Education: A.B. 1989 (Harvard University); M.A. 1992 and Ph.D. 1996 (Stanford University)
Joined MIT faculty: 2000

Sorensen is a top scholar in organizational sociology. His research lies at the intersection of organizations (macro-organizational issues) and labor markets (issues of social class and mobility).



Ezra W. Zuckerman Sivan

Sloan School of Management

Education: B.A. 1992 (Columbia University); M.S. 1994 and Ph.D. 1997 (both from University of Chicago)
Joined MIT faculty: 2001

Zuckerman Sivan is a leader in the emerging field of economic sociology. His work is known for both theoretical sophistication and methodological rigor.



Krste Asanovic

Electrical Engineering and Computer Science

Education: B.A. 1987 (University of Cambridge); Ph.D. 1998 (UC-Berkeley)
Joined MIT faculty: 1998

Asanovic occupies an unusual research niche, combining strengths as a circuit designer with strengths as a computer architect. His breakthrough innovations in memory management and in parallel processor design are highly influential within the field.



Isaac L. Chuang

Electrical Engineering and Computer Science

Education: S.B. 1990, S.B. 1991 and S.M. 1991 (all MIT); Ph.D. 1997 (Stanford University)
Joined MIT faculty: 2001

Chuang is a leader in the young field of quantum computation and quantum information and has already made landmark progress toward his research goal, building a practical quantum computer.



Martin F. Polz

Civil and Environmental Engineering

Education: Mag. Rer. Nat. 1991 (University of Vienna); A.M. 1995 and Ph.D. 1997 (both from Harvard University)
Joined MIT faculty: 1998

The focus of Polz's work has been developing a clear picture of the diversity of microbes in nature, an understanding of the evolutionary origins of that diversity and an understanding of what is influencing the rate(s) of microbial processes.



David Autor

Economics

Education: B.A. 1989 (Tufts University); M.A. 1994 and Ph.D. 1999 (both from Harvard University)
Joined MIT faculty: 1999

Autor is a labor economist studying fundamental issues concerning training, information flows and labor market structure. He has built an international reputation for his analysis of current labor market developments.



Muriel Medard

Electrical Engineering and Computer Science

Education: S.B. 1989, S.B. 1991, S.M. 1991, Ph.D. 1995 (all from MIT)
Joined MIT faculty: 1995 (Lincoln Lab)

Medard has made significant contributions in two areas: wireless communications and optical networks. She is credited with laying the foundation for a third field, network coding.



Antoinette Schoar

Sloan School of Management

Education: Diploma, economics 1995 (University of Cologne, Germany); Ph.D. 2000 (University of Chicago)
Joined MIT faculty: 2000

Schoar's work focuses on the relationships between the internal structure and policies of the firm and financial outcomes.

David Dibner, founder of Dibner Institute, dies at 78

Sarah H. Wright
News Office

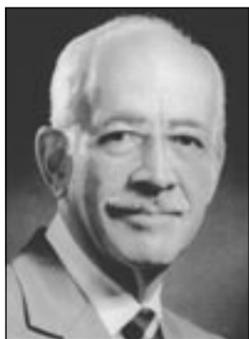
David Dibner, the distinguished philanthropist and civic leader who established the Dibner Institute for the History of Science and Technology, died unexpectedly at his home in Wilton, Conn., on Sept. 28. He was 78.

Rosalind Williams, Metcalfe Professor of Writing and director of the Program in Science, Technology and Society (STS), recalled Dibner as a "lovely person, at once gentlemanly and warm. Through the Dibner Fund, he was a strong supporter of the history of science and technology, and also of many activities relating that history to contemporary issues. The 300 or so recipients of Dibner Institute fellowships continue these missions, carrying on David's legacy further than any of us can predict or even imagine."

The Dibner Institute, a center for advanced study, and the Burndy Library, one of the world's outstanding collections of rare books, manuscripts, incunabula and objects related to the history of science and technology, have been located on the MIT campus since 1992. The Burndy Library was founded in 1936 by Dibner's father, Bern Dibner.

Dibner's service to MIT included endowing the Frances and David Dibner Professorship of the History of Engineering and Manufacturing, currently held by David Mindell.

Mindell said the endowed chair is an "honor, and now that title takes on a special meaning honoring David's legacy. David Dibner's vision for interdisciplinary work in engineering and the humanities provided the impetus for the flowering of research in the history of science and technology currently going on at MIT. He was a great supporter of the STS program, particularly its graduate students, and



David Dibner

a wonderful, warm presence in the MIT community. We will miss him dearly."

A native of Norwalk, Conn., Dibner was chairman of the Dibner Fund, a family foundation founded in 1957, and former chairman of the Burndy Corp., a leading multinational manufacturer of electrical and electronic connectors and tools, which he joined as an engineer in 1952.

Beginning in 1989, he oversaw the Dibner Fund's national and international grant making in science education, humanitarian aid, the environment, peaceful coexistence, Jewish heritage and culture, and local community organizations.

Dibner and his wife, the former Frances Kessler, lived in Wilton for 53 years. Dibner spearheaded the building of Wilton High School and served on the board of Norwalk Hospital. He was a founding member of the American Business Conference, an active trustee of Polytechnic University in Brooklyn and of Columbia University's School of Engineering and was a member of the Committee for the Humanities at MIT. He was also a fellow of the Aspen Institute and a member of the Council on Foundations.

He served in the U.S. Navy in WWII. He received the B.S. degree in industrial engineering from Columbia University in 1950, the same year he married. He continued with post-graduate studies at the London School of Economics and completed the Advanced Management Program at Harvard University in 1968.

Dibner is survived by his wife and his three sons and daughters-in law, Brent and Rely (Wolfson) Dibner, Daniel and Victoria (Clark) Dibner, and Mark and Rachel (Zax) Dibner, and eight grandchildren.

A memorial service will be held in the near future. In lieu of flowers, the family asks that donations be made in Dibner's memory to the Norwalk Hospital Foundation, the Wilton Volunteer Ambulance Corps, or any other charity.

Prospective grad students Converge at MIT

Sasha Brown
News Office

Just a few months ago, Miguel Paredes from the University of Lima in Peru thought MIT was an impossible dream.

After spending time on campus during the all-expenses-paid graduate preview weekend called Converge, Paredes feels his dream is within reach.

"Converge was amazing. Many of the preconceptions I had about MIT were shattered, and my expectations of MIT were greatly surpassed," Paredes said. "After Converge, I am even more convinced that MIT is the place where I want to go for grad school because of the professors, labs, research opportunities — and Cambridge itself."

This is exactly the reaction Converge aims to get from its student participants.

Converge began as a grass-roots effort in 2004, with participation from the Graduate Student Council's Diversity Initiative, administrators in the schools of engineering and science, the Graduate Students Office and the Office of the Provost. A similarly composed planning team organized the event in 2005, and the goal is still to increase the diversity of MIT's graduate student population.

The 24 participants from all over the United States were selected from a pool of 65 applicants. Flown to Boston through the program, they spent the weekend exploring MIT and Cambridge in a series of tours and workshops.

"We want to bring potential students here and show them what MIT is about," said instructor Mandana Sassanfar of the biology department.

Close to 75 current MIT students participated in this year's event, showing prospective students around and answering questions. The students came from a variety of schools, but the planning committee

tried to steer away from the East Coast Ivy League schools. "The targeting is different," said Sassanfar. The ideal Converge candidate is an exceptional student who could find MIT intimidating.

"I had already planned on applying to MIT, but was skeptical because of the name and the famous people that do research there," said Christle Guevarra of San Francisco State University. "I have visited other schools with big names and have gotten a rather cold and unforgiving vibe from the students."

MIT was warm and welcoming, she said. "The graduate students seemed happy and excited to be there. The professors were not only doing awesome chemistry, but they seemed approachable and friendly," Guevarra said.

For many of the students from the West Coast, coming to MIT, with its cold winters and distance from home, can seem daunting. "We need to show them the energy of MIT and the support that is here," said Janet Fischer, special assistant in the Office of the Provost.

It was that support that finally convinced Guevarra that MIT is the place for her. "There was a camaraderie that was apparent throughout the whole weekend," she said. "After attending Converge I am more excited than ever to send in my application."

Kenneth Bota of Clark Atlanta University had the same experience. "The Converge program definitely helped me to solidify my choice to apply to MIT for the upcoming school year," he said. Bota was able to meet with professors in the Department of Brain and Cognitive Sciences, where he hopes to study.

"Most institutions could not provide the type of access to professors that the Converge program did, and I am grateful for having been given this privilege by the MIT community," he said. "I really felt a part of the MIT family."

TENURE

Continued from Page 3



Emma J. Teng

Foreign Languages and Literatures

Education: A.B. 1989, A.M. 1992, Ph.D. 1997 (all from Harvard University)
Joined MIT faculty: 1995

An innovative scholar who has demonstrated leadership nationally in premodern Chinese studies and Asian-American studies, Teng has helped shape the Asian and Asian-American studies curriculum at MIT. Her work combines textual analysis, solid historical scholarship and theoretical inquiries.



Jianshu Cao

Chemistry

Education: B.Sc. 1986 (Zhejiang University); M. Arts 1988, M. Phil. 1989, Ph.D. 1993 (all from Columbia University)
Joined MIT faculty: 1998

Cao's research group develops molecular models for understanding the structure and dynamics of condensed phase molecular systems, to establish relationships between these models and experimental observables and to explore new ways to measure and manipulate molecular dynamics.



Andrei Tokmakoff

Chemistry

Education: B.Sc. (California State University); M. Sc. and Ph.D. (both from Stanford University)
Joined MIT faculty: 1999

Tokmakoff's research focuses on molecular dynamics in the condensed phase. He works on experimental methods to study transient molecular structure and its time-evolution in amorphous molecular condensed phases and biological systems.

No photo available

Victor Chernozhukov

Economics

Education: B.S. 1995 (Nizhni Novgorod State Agricultural Academy); M.S. 1997 (University of Illinois at Urbana-Champaign); Ph.D. 2000 (Stanford University)
Joined MIT faculty: 2000

Chernozhukov is an econometric theorist who has emerged as the leading econometrician in his age group. He combines an outstanding command of mathematical statistical methods with a broad interest in important econometric problems.



Michael B. Yaffe

Biology

Education: B.S. 1981 (Cornell University); Ph.D. 1987 and M.D. 1989 (both from Case Western Reserve)
Joined MIT faculty: 2000

Yaffe is an international leader in the field of signal transduction. His research uses a combination of diverse methods to decipher the structural code that governs the transient interactions between proteins in intracellular signaling pathways.



Chappell Lawson

Political Science

Education: A.B. 1989 (Princeton University); M.S. 1996 and Ph.D. 1999 (both from Stanford University)
Joined MIT faculty: 1998

Lawson's primary research field is Latin America and the emergence of new democracies. He is interested in understanding how the public discourse that links citizens and candidates for office evolves as former authoritarian regimes embrace the trappings of mass democracy.

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MIT space cameras take first pictures

Elizabeth A. Thomson
News Office

X-ray cameras designed by MIT astrophysicists are a key component of a new instrument aboard an orbiting Japanese observatory that will probe the secrets of such phenomena as exploding stars.

Recently MIT's team was overjoyed — and relieved — when the instrument, the X-ray Imaging Spectrometer (XIS), took its first pictures, flawlessly capturing the image of an exploded star in the Small Magellanic Cloud. Only a few weeks earlier, one of the other two instruments on the observatory, known as Suzaku, had failed.

For a little while Mark Bautz, leader of the MIT team, also feared the worst for XIS. He and colleagues had returned home from Japan, where they had activated their instrument, but were awaiting the final step — the opening of the Japanese-built protective covers — before the cameras could start taking images of the sky.

At 2 a.m. one August morning, Bautz waited in Boston for news of whether that step was successful. "I was trading instant messaging with my Japanese colleagues right up until the commands were sent [to open the covers], and then all of a sudden they stopped responding," said the principal research scientist at MIT's Kavli Institute for Astrophysics and Space Research. "I knew we had only a five-minute window, so it wasn't long before I was convinced it hadn't worked."

Half an hour later, the good news finally appeared on his screen. "Turns out they were so excited the instrument worked that they forgot to let me know," said Bautz.

Although humans may revel in the bright hues of a rainbow or the flash of a colorful bird, we are blind to a host of other phenomena because they radiate light, like X-rays, that our eyes can't detect. "It turns out that almost everything you see in the sky emits X-rays as well, so you can learn a lot about an object by taking X-ray images," Bautz said.

Enter Suzaku, the latest observatory to explore the X-ray sky. MIT has also been



PHOTO / DONNA COVENEY

MIT research scientists Mark Bautz, left, and Steve Kissel hold up a copy of the core element used in their X-ray camera.

involved in past X-ray expeditions including the High-Energy Transient Explorer (HETE-2), the Chandra X-Ray Observatory and the Advanced Satellite for Cosmology and Astrophysics (ASCA).

The XIS aboard Suzaku is composed of the four cameras developed by MIT plus four telescopes developed at NASA's Goddard Space Flight Center that focus the sky onto the cameras. The cameras send the images back to Earth.

The researchers hope to learn more about such phenomena as supernovas (exploding stars) and clusters of galaxies

so massive that they trap clouds of hot gas that emit X-rays.

In conjunction with another instrument aboard Suzaku, the XIS will also help scientists study the emission processes near black holes. "There's a nice synergy there because our instrument covers X-rays at very low energies, while the other instrument goes to very high energies. Together they'll help us put together the entire X-ray spectrum coming from matter just outside a black hole," Bautz said.

In addition to MIT and NASA, other institutions involved in XIS are the Insti-

tute of Space and Astronomical Sciences of the Japanese Aerospace Exploration Agency, Osaka University and Kyoto University.

Bautz's MIT colleagues on the XIS team are Rick Foster, Steve Kissel, Beverly LaMarr, Eric Miller, Gregory Prigozhin, George Ricker, Matthew Smith, James O'Connor and Michael Doucette, all of the Kavli Institute, and Jim Gregory, Barry Burke and Al Pillsbury of Lincoln Lab.

The Suzaku mission is a collaboration between the Japan Aerospace Exploration Agency and NASA.

HETE satellite solves mystery of short gamma ray bursts

Deborah Halber
News Office Correspondent

An international team of astronomers led by MIT announced yesterday that it has solved the mystery of the origin of short gamma-ray bursts, violent cosmic events marking the explosive collision of two compact stars.

In a paper to appear in the Oct. 6 issue of *Nature*, the scientists describe how they used NASA's High Energy Transient Explorer (HETE) satellite to make the initial discovery. Accompanying papers by Danish-led and Penn State University-led teams describe follow-up observations of the HETE-discovered event using ground-based telescopes, as well as the Chandra X-ray Observatory and Hubble Space Telescope.

At a NASA press conference held yesterday at 1 p.m., George R. Ricker, senior research scientist of the MIT Kavli Institute for Astrophysics and Space Research, announced the HETE results for the first time.

Gamma ray bursts (GRBs) are the biggest explosions since the Big Bang. Astronomers are fairly certain that typical long GRBs lasting several seconds are caused by the collapse of massive stars, signaling the birth of black holes. Dimmer, short GRBs lasting only milliseconds had been one of the biggest mysteries in high-energy astronomy: How far away were they? What caused them?

A team led by MIT's Ricker discovered a short GRB, designated GRB050709, lasting only 70 milliseconds on July 9. "This particular short burst provides a long-sought nexus, enabling detection of the prompt emission and its afterglow, from the gamma-ray band to the optical, for the very first time," said Ricker.

Discovery

HETE's accurate localization of the

The carefully orchestrated observations by three powerful NASA scientific satellites — HETE, Chandra and Hubble — were essential in making this important discovery.

George R. Ricker
Senior Research Scientist

burst allowed other telescopes to identify the burst's X-ray afterglow, and, for the first time, its optical afterglow, which provided the clues needed to track the burst to its host galaxy. The distinctive signature is that of two neutron stars or a neutron star and a black hole merging, followed by a colossal explosion. The collision happened about 2 billion years ago, creating an energy show so brilliant that we can witness it eons later. "The carefully orchestrated observations by three powerful NASA scientific satellites — HETE, Chandra and Hubble — were essential in making this important discovery," Ricker said.

Ancient history

Neutron stars are stellar corpses — the collapsed, compact remnants of supernova explosions. Half a million Earth masses of matter condensed into a sphere just 10 miles across, neutron stars are incredibly dense. One teaspoonful weighs 5 billion tons.

Usually loners, neutron stars in rare instances are born in pairs. Over hundreds

of millions or billions of years, the partners start to spiral toward each other at velocities eventually verging on the speed of light, whipping around each other thousands of times a second in a mad dash toward a crash so violent the explosion releases more energy than 1,000 trillion suns.

The two objects implode in a cataclysmic one-hundredth of a second, forming a black hole. Although black holes suck up light and anything else that might have made them visible to astronomers, just before black holes are formed, space flotsam and jetsam are flung off in superheated gas jets. These twin, narrow jets, aiming in opposite directions, carry off tremendous amounts of energy. If one of these jets points to Earth, we see it as a burst of gamma rays.

More excitement ahead?

Gamma ray bursts were first detected in the 1960s by U.S. military satellites sleuthing out stray gamma rays potentially tied to putative illegal Soviet nuclear testing in space. Remarkably, the energetic events turned out to be natural phenomena. In the early 1990s, astronomers realized there were two kinds of gamma-ray bursts — short and long. While it now appears that both short and long GRBs are tied to the creation of black holes, the relative proximity of short GRBs may help solve another mystery.

If a short GRB is due to merging neutron stars, then it should produce powerful bursts of gravitational radiation. Although Albert Einstein included gravitational waves in his 1916 general theory of relativity, these waves have never been measured directly. Short GRB sources, 10 times closer to Earth than long GRBs, likely emit gravitational waves that will be detectable for the first time by the second-generation Laser Interferometry Gravitational-wave Observatory (LIGO), in which

both Caltech and MIT are major participants.

Future of HETE

"The unique scientific discoveries that HETE continues to make and its very low operating cost are important reasons for continuing HETE satellite operations in future years," Ricker said. NASA funding for the period beyond December is in doubt, despite pledges of matching support by HETE's international partners. The HETE spacecraft and dedicated international ground network continue to operate reliably and efficiently. All three of its science instruments continue to work well. Thirty-one of 81 HETE localizations have led to detection of an X-ray, optical or radio afterglow, said Ricker.

The HETE satellite was designed and constructed by MIT under the NASA Explorer Program. Ricker serves as the principal investigator for the overall mission. The HETE program is a collaboration among MIT; NASA; Los Alamos National Laboratory, New Mexico; France's Centre National d'Etudes Spatiales (CNES), Centre d'Etude Spatiale des Rayonnements (CESR) and Ecole Nationale Supérieure de l'Aéronautique et de l'Espace (Sup'Aero); and Japan's Institute of Physical and Chemical Research (RIKEN).

The science team includes members from the University of Chicago and the University of California (Berkeley and Santa Cruz), as well as from Brazil, India and Italy.

The HETE research program is supported in the United States by NASA.

At MIT, the HETE team, which both operates the HETE satellite and analyzes data from it, includes Ricker, Geoffrey Crew, John Doty, Roland Vanderspek, Joel Villasenor, Nat Butler, Peter Csatorday, Gregory Prigozhin, Steve Kissel, Francois Martel and Fred Miller.



PHOTO / DONNA COVENEY

MIT Professor Richard R. Schrock poses in his lab at MIT on Wednesday, Oct. 5, the day he learned he won the Nobel Prize in chemistry.

NOBEL

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an even better catalyst.

"Before these catalysts there was no way to do [the metathesis reaction] simply," Schrock explained at a press conference held at MIT on the morning of Oct. 5. "Some of the processes involved rather dramatic agents like ozone, which you can't use safely in the lab day to day."

Together, the laureates' contributions have allowed the creation of many new compounds more efficiently. "Instead of doing something in 10 or 15 steps, you can do it in five steps," Schrock said.

As a result, their work has "already assumed major significance in the chemicals industry, opening up new opportunities for synthesizing molecules that will streamline the development and industrial production of pharmaceuticals, plastics and other materials," according to the Nobel committee.

The production of those materials is also cheaper and more environmentally friendly. The shorter synthesis routes mean fewer byproducts, and the control made possible by the reaction allows more efficient manipulation of raw materials.

Many researchers foresaw the great synthetic potential of metathesis, according to the Nobel committee, but traditional catalysts were ill-suited to applications because they were relatively short-lived - susceptible to air, moisture and side reactions.

Schrock began working on the problem in the 1970s. He knew from Chauvin's work that successful catalysts would contain a metal. But which was the best to use? He tried catalysts containing metals such as tantalum, tungsten and molybdenum, gradually developing an understanding of what metals could be used.

For Schrock, molybdenum and tungsten soon appeared to be the most suitable metals. He produced some catalysts with those metals, but there were still problems.

Then in 1990 the chemist and co-workers reported the construction of a group of very active, well-defined molybdenum catalysts. Although these catalysts are sensitive to oxygen and moisture, "with the



PHOTO / DONNA COVENEY

Dr. Thomas Byrne and President Susan Hockfield congratulate Richard R. Schrock on winning the Nobel prize in chemistry, at a party given in his honor in the Moore Room on Oct. 5, just hours after he received the call from Sweden.

right treatment they are very powerful tools in organic synthesis," according to the Nobel committee.

In 1996 Schrock received the American Chemical Society Award in Inorganic Chemistry for his efforts to develop cleaner and more efficient ways to manufacture chemicals. Accepting the award at the society's national meeting, Schrock said, "The real impact here is ultimately in making pharmaceuticals, polymers and other products where exquisite control is necessary, and now it's possible."

Schrock achieved that exquisite control, according to the citation, with catalysts structured to lock onto and bring together molecules that normally do not react. He focused on those catalysts that contain a metal to which the molecules bind, allow-

ing them to react with each other.

Schrock's particular contribution, the society said, "was to develop a method and a catalyst to break open compounds whose atoms are arranged in a ring. Once opened up into chains, these molecules can be strung together in specific ways to form polymers for everything from garbage cans to athletic clothing. Or he can close up a chain into a ring, for example, from which medicinal chemists can design pharmaceuticals."

Schrock obtained the B.A. degree in 1967 from the University of California at Riverside and the Ph.D. from Harvard University in 1971. He joined the MIT faculty in 1975.

Schrock and his wife, Nancy F. Carlson, have two children.

CHEMISTRY

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world like those at MIT," he said, adding that the same is true about the students. "It's embarrassing teaching students [who are] smarter than you."

He called one of his colleagues, Professor Daniel Nocera, very early Wednesday morning, soon after he learned of the prize. "I had promised," Schrock said, "so I did. And [Nocera] said, 'I'll come right over.'" Schrock grinned. "I said, 'Why don't you wait an hour?'"

What makes chemistry so compelling to Schrock? "I like to manipulate things. I like to cook, I like woodworking, and I like to make molecules." Referring to the catalysts for which he won the prize, he said, "making a truly unique compound is very, very exciting."

In his remarks, Schrock emphasized the importance of basic research, which he defined as the exploration of "an interesting new area that may have potential."

"I got here by doing basic research," he said.

Research "doesn't have a lot of cachet associated with it," but Schrock recalled the day early in his career when he created the catalyst whose successors would earn him the Nobel Prize. "I remember going home and telling my wife that I thought I'd done something really interesting," he said.

And, as Schrock pointed out, his work has had applications. He just didn't know it at the time.

MIT President Susan Hockfield, attending her first MIT Nobel Prize press conference, thanked Schrock "for conveying in a very real way the excitement that goes on in basic science."

On Wednesday afternoon, Schrock described his Nobel-winning compounds



*I got here by doing
basic research.*

Richard R. Schrock

Nobel Prize winner in chemistry

in a packed Room 10-250. Students stood in doorways and sat in the aisles to hear the Nobel lecture, which Dean of the School of Science Robert Silbey pointed out was the fourth since 2001 for the School of Science.

Students listened raptly as Schrock explained how his curiosity led him to create and experiment with different catalysts — using tungsten, molybdenum and tantalum — that could speed up reactions involving organic compounds with double or triple carbon bonds.

Schrock had recently finished grad school and was working at duPont in the 1970s when he began working on the new catalysts that would lead to the Nobel. "I didn't know where (my research) was going to go," he said. "I was just happy to have a job and a wife who loved me."

The work that he pursued purely out of curiosity eventually led to the creation of industrially important compounds, demonstrating the importance of basic research, he told the audience.

"These days, basic research is often frowned upon," he said. And there isn't enough money to fund it, "due to lower taxes and/or the war in Iraq," he said in a dig at the Bush administration that drew thunderous applause.

"All I can say is, 'Mr. Bush, don't do this,'" Schrock pleaded in closing his talk. "Let us do our job."

Anne Trafton contributed to this report.

AUMANN

Continued from Page 1

have varying levels of information. John F. Nash, MIT professor of mathematics from 1951 to 1959, co-won the Nobel Prize in 1994. Nash is known as the father of game theory; he created the "Nash equilibrium," which relates to players in a game who can neither communicate nor make cooperative decisions.

Another of Aumann's major contribu-

tions to game theory is the "correlated equilibrium," a concept that builds on and broadens the Nash equilibrium.

A native of Frankfurt, Germany, Aumann was born in 1930 and fled with his family to New York in 1938 to escape Nazi persecution.

He studied at New York's City College and then at MIT, earning his doctorate in pure mathematics (Knot Theory). His

interest turned to game theory in 1956, when he joined the Mathematics Institute at Jerusalem's Hebrew University, where he has been ever since.

Aumann has published five books and more than 70 scientific papers. Among his other contributions are models of market economies in which the traders appear as a continuum, like the points on a line or the particles in a fluid, and a mathemati-

cal formulation of "common knowledge" among the agents in an interactive environment.

Aumann is a member of the (U.S.) National Academy of Sciences, the American Academy of Arts and Sciences, the Israel Academy of Sciences and Humanities and the British Academy. He holds honorary doctorates from the Universities of Bonn, Louvain and Chicago.

GEM4 shines in launch event



PHOTO / DONNA COVENEY

Subra Suresh, director of the new Global Enterprise for Micro-Mechanics and Molecular Medicine (GEM4), speaks at the GEM4 launch at MIT on Wednesday, Oct. 12.

Elizabeth A. Thomson
News Office

In a launch Oct. 12 worthy of its sparkling acronym, the Global Enterprise for Micro-Mechanics and Molecular Medicine, or GEM4, brought to MIT people from 12 time zones away, many university presidents, leaders of government, and royalty: Princess Chulabhorn Mahidol of Thailand, a scientist and founding president of the Chulabhorn Research Institute (CRI) in Thailand.

Through GEM4, scientists, engineers and health professionals from around the world will work together on such global medical challenges as infectious and cardiovascular diseases, cancer and environmental health. The uniqueness of the initiative lies in its vision of fostering a global engagement among colleagues to promote novel modes of interactions that cannot be established by conventional multi-institutional arrangements.

"Our idea is to bring top researchers together across time zones and disciplinary boundaries, seamlessly and frequently," said Subra Suresh, director of GEM4, Ford Professor of Engineering and head of MIT's Department of Materials Science and Engineering.

At the launch, Princess Chulabhorn Mahidol said she was pleased to offer the infrastructure of CRI to GEM4, part of the global sharing of facilities key to the initiative.

In her remarks, she also noted the history between MIT and her country that ultimately led to Thai involvement in GEM4.



Princess
Chulabhorn Mahidol

That history began almost 40 years ago with research by MIT Professors Gerald N. Wogan and the late George H. Buchi. (Wogan, professor emeritus of biological engineering, attended the GEM4 launch.) Working with colleagues at Thailand's Mahidol University, the two showed that a toxin present in contaminated food was the principal cause of liver cancer in Thailand. Since then, additional studies by researchers from MIT and Johns Hopkins University have led to ways to prevent the disease.

In his remarks, Suresh described GEM4's importance. "In a flat world where institutional, cultural and national barriers are fast disappearing and where instant communication around the clock is bringing people together in unprecedented ways, the infrastructure of GEM4 will be an engine that drives collaborations across disciplinary boundaries with potential for sweeping societal impact on a global scale."

In addressing major health issues, GEM4 will focus initially on nanomechanics in biomedicine and environmental health. These are areas in which a single investigator, institution or region of the world is not likely to have the necessary spectrum of expertise, infrastructure or resources to produce a beneficial global effect.

And as MIT President Susan Hockfield noted in her remarks, "when many institutions work together, the results are significantly more than the sum of their parts."

Other speakers at the launch were President C. Fong Shih of the National University of Singapore, who congratulated MIT and Suresh for visionary leadership; Chancellor Richard Herman of the University of Illinois at Urbana-Champaign; Professor Judah Folkman of Harvard Medical School; and MIT Institute Professor Robert Langer.

In addition to Suresh, John Essigmann and Ram Sasisekharan, professors in MIT's Biological Engineering Division, were among those who played key roles in formulating the GEM4 paradigm, along with senior administrators and faculty from MIT and other participating institutions.

Speakers explore resilience of cities post-disaster

Sasha Brown
News Office

Throughout history, hundreds of cities have been permanently lost to natural disaster and war, but in the last 200 years, the trend has been to rebuild, said Professor Lawrence Vale, head of MIT's urban studies and planning department, at a talk in Kirsch Auditorium on Oct. 5.

Vale, co-editor of "The Resilient City: How Modern Cities Recover From Disaster," was one of three speakers at the second in a series of four symposia addressing the "Big Questions After Big Hurricanes."

Vale pointed to several cities that were not expected to come back, including Hiroshima, Japan, which was devastated by an atomic bomb. "Many people thought it was wiped off the map," Vale said.

Warsaw came back after the Nazi destruction; Tangshan, China, came back

after an earthquake killed at least 240,000 people in 1976; and San Francisco rebuilt after an earthquake and fires devastated the city in 1906.

"The press at the time said it was an opportunity to build back better and stronger," said Vale. With insurance money and assistance from both national governments and international aid agencies, cities are able to come back stronger than before.

Reactions to and personal narratives about the disaster can make a huge impact on resiliency, said Vale. It remains to be seen whether New Orleans — partially destroyed by Hurricane Katrina on Aug. 29 — will be able to come back stronger, said Vale.

In New Orleans, there are race and class issues as well as financial ones, Vale said. And whatever happens in New Orleans, it will never be exactly the same. "Cities are resilient and often bounce back in the same place, but often that place is profoundly changed," Vale said.

Professor Thomas Kochan of the Sloan School of Management and the Engineering Systems Division turned to history for lessons in recovery.

After World War II, President Franklin D. Roosevelt "instinctively understood the need for cooperation and unity in his time of great crisis," Kochan said. FDR's response heralded a joining of business and labor that brought forth important labor reform and workplace practices that are common today, he said.

By comparison, President Bush decided to "go it alone," Kochan said. The most obvious victim of that decision was the airline industry. Already in a slump prior to 9/11, the industry is barely treading water now, he said.

"Clearly cooperation across business, labor, education and community service providers will be needed to address the full dimension of this crisis," said Kochan. "By working together ... we will not only restore hope and trust in the American

dream for Katrina's victims. We might also learn that there are better ways to work together in the crises and in the normal times that lie ahead."

Because New Orleans is one of the poorest cities in the country, many of Katrina's victims were underprivileged minorities. "There are so many poor and desperate black people in New Orleans," said Professor Phillip Thompson of urban studies and planning, who spoke on the poor community's role in rebuilding the city.

"While Katrina could be an opportunity, it appears to be moving toward recreating poverty," he said. Without proper health care and education, the poor community will not be able to recover, he said. Addressing these needs should be at the forefront of the rebuilding effort.

"The poor need government. People need to be protected," he said. "By addressing the needs of the poor (in New Orleans), you can develop a solid blueprint for rebuilding the entire nation."

Brain research makes move toward better prostheses

Cathryn M. Delude
News Office Correspondent

In work that could aid the development of robotic prostheses, neuroscientists at MIT's McGovern Institute for Brain Research have gotten one step closer to understanding how the central nervous system solves a gigantic problem — the production of voluntary movements.

The simplest movement requires choosing which combination of motor neurons will stimulate which of thousands of muscle fibers with just the right amount of force and at the proper time.

But no existing computer can analyze the superabundance of variables involved in the movements of a multijointed limb, such as an arm picking up a coffee cup. That inability poses a major obstacle to designing neuroprosthetics for amputees or people with motor disabilities. (In neuroprosthetics, a person's brain or spinal

cord signals operate a device.)

As a result, engineers designing robots and prosthetics hope to mimic the way that biological systems approach the challenge.

For many years, scientists wondered whether vertebrates tackle this problem from the top down, with the brain micro-managing the process, or by establishing mini command centers in the spinal cord that relieve the brain of this onerous oversight. MIT Institute Professor Emilio Bizzi, a principal investigator in the McGovern Institute, suggests the latter, proposing that the central nervous system handles the daunting number of variables involved in a single movement by grouping sets of muscles and their innervating neurons into an integrated unit called a muscle synergy.

In recent studies in frogs, Bizzi and his collaborators found solid evidence for muscle synergies. They showed that grouping muscles in a small set of muscle synergies simplifies the central nervous system's

control over movement.

But do muscle synergies in the spinal cord operate independently of sensory input, or do they receive feedback from that input (and if so, to what degree)?

Apparently it's a little of both, according to another recent study by Bizzi and colleagues in the *Journal of Neuroscience*.

Vincent Chi-Kwan Cheung, a graduate student in the Harvard-MIT Division of Health Sciences and Technology and first author of the paper, recorded the electrical activity of a frog's hind leg muscles both before and after severing the nerve roots feeding sensory information into the spinal cord from the muscles. He left intact the nerve roots carrying the commands to the muscles.

Cheung found that, for the most part, shutting off sensory input from the muscles did not perturb the synergies involved in natural jumping and swimming movements.

Bizzi explains the value of having both

fixed motor synergies and some feedback from the environment. "If you're walking on a mountain trail, you need to be able to make many small adjustments as you walk, and having a little sensory feedback helps you match your movements to specific conditions."

In practical terms, the near autonomy of the muscle synergies makes it possible to control a large number of muscles with just a few signals generated in the areas of the central nervous system involved in programming voluntary movements. According to Cheung, "That simplifies the future design of neuroprosthetics." Importantly, using a rigorous mathematical analysis, the researchers also found that a computer model representing specific combinations of muscle synergies could predict the movements produced by the animal.

This research was supported by the National Institute of Neurological Disorders and Stroke.



PHOTO / DONNA COVENEY

We are family

Freshman Ian Smith, foreground, calls up a map of the MIT campus to show his family on Friday, Oct. 14. Family Weekend, which brings hundreds of families to campus each fall, was held Oct. 14-16. With Ian from left are his father, Steve, his mother, Gayle, and his brother, Brian, 12. The Smiths are from Elmhurst, N.Y.

New CDO graduate program debuts at MIT and in Singapore

MIT's new S.M. graduate program in Computation for Design and Optimization (CDO) has its first 17 students this semester.

There are five students now on campus and 12 based in Singapore (as part of the Singapore-MIT Alliance) who will be at MIT for the spring semester. Most of the students, faculty and staff met for the first time at a teleconferenced orientation in late August.

This interdisciplinary master's program was established to prepare engineers in computational methods and applications in the design and operation of complex engineered systems.

"Computer-based simulation has replaced the laboratory in many industries for pragmatic reasons," said Alan Edelman, a professor of applied mathematics affiliated with CDO.

"Graduates of the CDO program will have tremendous opportunities in academic and industrial applications, as well as in the computing industry itself," he said.

CDO student Sandeep Sethuraman of New Zealand previously worked in product development at a biomedical company, where he helped design a continuous positive airway pressure machine used in the treatment of sleep apnea.

"The versatility of the CDO program appealed to me. I can work on a variety of projects ranging from electronics to finance. Moreover, there is a huge emphasis on practical applications," he said.

Fellow student Jia Jie Liang of Singapore said he was drawn to the program's interdisciplinary curriculum, which includes courses and faculty from a broad cross-section of MIT's engineering, science and management departments.

"The underlying multidisciplinary nature of the program reflects the direction of future scientific development," he said.

The CDO curriculum is comprised of four core subjects — covering numerical solution of partial differential equations, optimization methods and numerical linear algebra — and restricted electives, including about 25 courses that have computational themes and related components. More elective courses will be added over time.

School of Engineering Dean Thomas Magnanti said he expects the CDO program to provide tremendous value not only to the program's graduates, but also to the Institute.

"CDO is designed to educate professionals who will model, optimize, control and operate the important engineered systems of the future, while contributing to our own increasingly computationally intensive research and educational programs here at MIT. The program provides an engineering school-wide home to numerical simulation and optimization, and should improve outside visibility while providing an economy of scale that will benefit the School of Engineering as a whole," Magnanti said.

CDO-affiliated faculty member David Darmofal, associate professor of aeronautics and astronautics, echoed Magnanti's sentiments. "Computational modeling and design plays a key role in all engineering disciplines. The CDO program recognizes the importance and interdisciplinary nature of computation, and will benefit MIT by encouraging faculty with interests in computation to collaborate in both teaching and researching. This more formal structure will strengthen the role of computational academics across MIT."

The program has its administrative home in the School of Engineering. CDO is led by co-directors Jaime Peraire, professor of aeronautics and astronautics, and Robert Freund, professor of management science. For more information, visit mit.edu/cdo-program/, or write to cdo_info@mit.edu.

Brain and cog opening events slated

Patti Richards
News Office

In association with the opening of its new brain and cognitive sciences complex on Dec. 2, MIT will explore the frontiers of cutting-edge neuroscience research in a variety of events.

Hosted by the complex's primary occupants — the Department of Brain and Cognitive Sciences, the McGovern Institute for Brain Research and the Picower Institute for Learning and Memory — these events will showcase MIT's efforts to address one of the great scientific challenges of the 21st century: the understanding of the human brain and mind.

The MIT community will be invited to participate in a number of these activities.

The McGovern Institute will kick off the festivities on Friday, Nov. 4, with a gala marking the formal opening of the McGovern Institute for Brain Research. The theme of the celebration is neuroscience and society.

Speakers at the Nov. 4 event will include Sen. John Kerry (D-Mass.), television host and author Jane Pauley, Nobel laureate Dr. Eric Kandel, and Robert M. Metcalfe, MIT Class of 1968 and the inventor of the Ethernet. Dinner guests will hear from Alan Leshner, head of the American Association for the Advancement of Science, the world's largest scientific society.

Next, on Thursday, Dec. 1, the Picower Institute for Learning and Memory will celebrate its formal opening with a major scientific symposium titled "The Future of the Brain." Moderated by Ira Flatow of National Public Radio's "Talk of the Nation," the symposium will focus on the future of neuroscience research and will feature talks by five Nobel laureates, including Susumu Tonegawa, director of the Picower Institute, and James D. Watson, chancellor of Cold Spring Harbor Laboratory.

The symposium will look at the impact of learning and memory research on human health and at the relationship between the human brain and the mind. President Susan Hockfield, a neuroscientist herself, will open the day's discussion, and noted neurologist and author Dr. Oliver Sacks will be the featured dinner speaker.

The next day — Friday, Dec. 2 — the Department of Brain and Cognitive Sciences will host a morning symposium to mark the 40th anniversary of its graduate program. Four noted neuroscientists and cognitive scientists with ties to the department will speak on a variety of topics reflecting the breadth of MIT's research and training. Moderated by Department Chair Mriganka Sur, this symposium, titled "Looking Back, Looking Forward: Shaping Neuroscience and Cognitive Science," will provide an overview of the intellectual framework of the Brain and Cognitive Sciences Department and will highlight its many contributions to the study of the brain and the mind.

The formal dedication of the brain and cognitive sciences complex will follow on the afternoon of Friday, Dec. 2, marking the official opening of the new facility.

Located near the corner of Main and Vassar streets, the new 411,000-square-foot brain and cognitive sciences complex — the latest building to open as part of MIT's extensive new building program — will be the largest neuroscience research center in the world.

The bold and elegant facilities — the result of a collaboration between two firms — reflect the extraordinary vision of the lead designer, Charles Correa, and the exceptional design of the laboratories and research spaces by Goody, Clancy and Associates. The complex will house more than 40 faculty and their research groups, and will feature a 90-foot-high atrium, wet and dry research and teaching laboratories, an advanced imaging facility, and even a live freight-rail line that runs directly through the bottom floors of the building.



MIT FILE PHOTO / DONNA COVENEY

Architectural wonders, chapel, Kresge turn 50

Sarah H. Wright
News Office

Two once-controversial additions to MIT's evolving campus celebrate 50 years of service to the spiritual and creative life of the Institute community this year.

The MIT Chapel and Kresge Auditorium, both designed by Finnish-American architect Eero Saarinen, were dedicated in 1955 in a ceremony that included a performance of music commissioned for the event, Aaron Copland's "Canticle of Freedom."

At the time, Saarinen's MIT buildings brought the shock of the new to campus. Since then, both the chapel and Kresge Auditorium have been acknowledged as architectural landmarks.

"Saarinen was an architect of the geometric sublime. His MIT composition of straight lines and arcs has the simple yet awesome clarity of Euclid's great proof constructions. Fifty years after the construction of Kresge and the chapel, architects still make pilgrimages with their sketchbooks and cameras, and try to figure out how this master of mid-century modernism did so much with seemingly so little," said William Mitchell, professor of architecture and media arts and sciences and academic head of media arts and sciences.

The chapel, a brick cylinder stretching 33 feet into the air, topped with an aluminum bell tower and encircled by a shallow moat, was planned as an island of serenity, a space for contemplation and interfaith worship separated from the urban and academic campus.

Saarinen, who had designed furniture that was exhibited at the New York Museum of Modern Art and also created St. Louis' sleek, famous arch, "Gateway to the West," planned the MIT Chapel to project a "self-contained, inward-feeling environment," he wrote at the time.

To enhance this atmosphere of "spiritual unworldliness," Saarinen created undulating brick walls and low rounded windows that allow light reflected from the moat to play on the chapel's interior.

Saarinen was a "virtuoso of sunlight on surface; the interior of the chapel creates absolute magic from the soft glimmer of subtly shaded brick, and the interplay of glitter and gloom," Mitchell noted.

Inside the chapel, a delicate screen of rectangular metal "leaves" hangs behind a plain marble altar, enhancing the sense of light emanating from unseen sources. Harry Bertioia designed the screen.

The chapel's spire and bell tower, designed by sculptor Theodore Roszak, were added in 1956. The bell, also designed by Roszak, was cast at the MIT foundry, which was then located on the top floor of Building 35.

Roszak's drawings for the chapel's bell tower are on exhibit in The Dean's Gallery, Sloan School of Management, through Dec. 16.

The MIT Chapel is used for religious services, memorial services and concerts.

Kresge Auditorium, MIT's performance and rehearsal hall, is the chapel's fraternal – and far from identical – twin. Kresge's graceful roof, sheathed in copper, its triangular plan and its glass-and-



Fifty years after the construction of Kresge and the chapel, architects still make pilgrimages with their sketchbooks and cameras, and try to figure out how this master of mid-century modernism did so much with seemingly so little.

William Mitchell
Professor of architecture

steel windows contain a hive of activity. A little theater, a concert hall and rehearsal rooms within are used for everything from drama to dance to music performances, as well as symposia and science, technology and engineering conferences.

Saarinen's other landmark designs include New York's Kennedy and Washington's Dulles airports, whose terminal buildings resemble Kresge in their signature floating eyebrow-shaped entrances. These bright, aggressively modern public spaces still suggest how events in 1955 – the year that Rosa Parks refused to sit in the back of a Montgomery, Ala., bus; that fiber optics were developed; that the Warsaw Pact was signed; and Albert Einstein and James Dean died — foreshadowed things to come.

Women's studies consortium moves to MIT

Sarah H. Wright
News Office

A pioneering collaboration among prestigious Boston-area universities to advance women's studies scholarship is now housed and administered at MIT.

The Graduate Consortium in Women's Studies (GCWS), launched in 1992, provides team-taught interdisciplinary graduate seminars and other opportunities for collaboration in scholarship through curriculum development and faculty workshops.

Elizabeth Wood, director of women's studies and professor of history, said, "We are thrilled to have GCWS move to MIT. Its presence gives faculty opportunities to teach graduate courses that are both interdisciplinary and interuniversity. The consortium's presence here raises MIT's profile as an institution that is producing cutting-edge work not only in science and engineering but also in the many and diverse fields that fall under the rubric of women's and gender studies."

In addition to MIT, GCWS members include Boston College, Brandeis University, Harvard University, Northeastern University, Simmons College, Tufts University and the University of Massachusetts at Boston. The consortium was previously housed at the Radcliffe Institute for Advanced Study at Harvard.

Ruth Perry, professor of literature and founding director of women's studies at MIT, was one of the founding members of GCWS, known collectively as the "Mother Board."

Perry "expect(s) the GCWS to thrive here. The MIT administration has always been very supportive of this col-



Ruth Perry



Anne McCants



Elizabeth Wood

laborative intellectual enterprise," she said.

Anne McCants, associate professor of history and MacVicar Faculty Fellow, said, "It seems especially fitting to move the consortium to MIT because MIT has assumed such an important role in the national discussion about the status of women in the university community, and their unique contributions to it."

GCWS courses include topics as diverse as "Narratives of Kinship in Developing Countries" and "Gender and Science." Faculty trained in at least two different disciplines co-teach GCWS interdisciplinary graduate seminars, with each one bringing expertise to bear on significant issues where gender makes a difference, Perry noted.

McCants has found "rich rewards in teaching across disciplines — the faculty learn easily as much as the students," she said.

GCWS Program Coordinator Andrea Sutton noted that collaboration within GCWS challenges faculty and students and advances the field of women's studies.

"Cooperative preparation and pedagogy challenges faculty to take a fresh look at familiar material and explore

new ideas related to their discipline. This practice often provides the foundation or inspiration for new publications or invigorated avenues of interest and research. Also, using the GCWS model on the administrative, scholarly and pedagogical levels helps to significantly advance the field, producing new research, action and activism," she said.

Sutton finds it "particularly appropriate that the program be housed at MIT," she said.

"MIT is a site for so much revolutionary discovery in all fields, much of which comes about through creative collaboration across disciplines. Though still new to MIT's climate and culture, I've seen an entrepreneurial underpinning to the work here across the humanities and sciences alike.

"This 'MIT approach' closely parallels that of GCWS. Our collaborative, interuniversity structure and courses require eagerness, analysis and evaluation in an untraditional environment as well as willingness to develop new methods — territory familiar to MIT students in all fields of study," she said.

Housing GCWS at MIT lays the "groundwork for a ripe and fruitful collaboration," thanks to the potential for crossover in scholarly methodology and application of feminist and gender theories in fields such as biology, chemistry, physics, media arts, critical theory and architecture, Sutton said.

GCWS is governed by a rotating board of faculty representatives from each of the member schools.

Other GCWS Mother Board members are Joyce Antler (Brandeis University), Laura Frader (Northeastern University), Carol Hurd Green (Boston College), Barbara Haber (Radcliffe College), Alice Jardin (Harvard University) and Christiane Romero (Tufts University).

CIS forum confronts terrorism

Sarah H. Wright
News Office

A former senator and two scholars who served as national security analysts in the Clinton administration discussed the type and timing of the next terrorist attack on the United States in "Report Card on Terror," a panel held Monday, Oct. 17, in Wong Auditorium.

"Report Card" host Gary Hart, a former Democratic senator from Colorado and presidential candidate (1984 and 1988), co-produced a January 2001 National Security report warning of a terrorist threat and urging changes in security policies.

Former National Security Council staffers Daniel Benjamin and Steven Simon, co-authors of "The Age of Sacred Terror: Radical Islam's War Against America" (2002), are counterterrorism experts. Their new book, "The Next Attack: The Failure of the War on Terror and Strategies for Getting It Right," was the focus of the "Report Card" discussion, a Starr Forum organized by the Center for International Studies (CIS).

The trio might have opened with a chorus of "we told you so," but resisted. Instead, Hart placed a copy of "The Next Attack" — with its searing red and black cover — front and center on the panel's table.

"Report Card" gave comments but no grades. The three said they expect further terrorist attacks and agreed that current U.S. foreign policy "must change." They did not make the Bush administration the object of their attack.

According to Benjamin and Simon, "our own policies," trends in other nations, and the "energy behind the jihadist movement, with its sense of inequity and imposition by the West" will fuel more terrorism worldwide.

Benjamin noted the role of the media in showcasing militant jihadists and pumping up "Islamophobia," and the effect of Christian fundamentalism, which "views confrontation with Islam as a theological necessity."

Hart offered a revised view of American casualties of the war in Iraq — "It's 25,000 casualties, meaning wounded or killed, not 2,000" — then asked, "If U.S. forces withdraw from Iraq, will jihad continue?"

Simon was positive. "Iraq gave a huge boost to jihad, and the effect of the war in Iraq will be long-lasting. When the U.S. withdraws, parts of Iraq will be ungovernable."

AWARDS & HONORS

Junior **Matthew Zedler** was honored as one of 50 Goldman Sachs Global Leaders at the fifth annual Goldman Sachs Global Leadership Institute, held July 11-14 in New York City. Zedler, of Richmond, Va., earned his place in the program by demonstrating his commitment to thinking globally in order to address the world's current and future challenges.

Zedler is studying mechanical engineering and working toward his goal of starting a company that manages development projects in Third World countries.

MIT's head humanities librarian, **Theresa Tobin**, was elected to the American Library Association (ALA) Council in May.

The council is the governing body of the oldest and largest library association in the world. Tobin will be one of 33 councilors chosen to set the policies of ALA and determine programs and activities to be carried out by the divisions. She will contribute to issues that affect libraries nationwide and influence public policy. Prior to her election, Tobin served as chair of the Council Committee on the Status of Women in Librarianship (COSWL) for three years. She has been head of MIT's Humanities Library for the past 15 years.

Karen Polenske, professor of urban studies and planning, has been named a Regional Science Association International (RSAI) Fellow for 2005. Polenske, the first female recipient of the award, was honored for her important scholarly research contributions to

the field of regional science.

Robert Liebeck, a Professor of the Practice in the Department of Aeronautics and Astronautics and manager of Boeing's blended wing program, has been selected by the American Institute of Aeronautics and Astronautics to receive its 2005 Aircraft Design Award. The award is presented to a design engineer or team for the conception, definition or development of an original concept leading to a significant advancement in aircraft design or design technology.

AIAA is recognizing Liebeck for lifetime achievement in aerodynamics, advanced aircraft development and conceptual design, specifically the innovative wing designs for the Boeing Condor, AeroVironment Helios and the blended wing-body approach airliner.

Sarah Song, assistant professor of political science, has been named one of eight visiting scholars at the American Academy of Arts and Sciences. The visiting scholars, selected as part of a national competition, conduct research and participate in the many ongoing programs and activities at the Academy. Song's research project is an analysis of the conflicts that can arise between the pursuit of equal justice for cultural minorities and the pursuit of gender equality.

MIT has been named a winner of the 2005 Council for Advancement and Support of Education/Wealth ID Award for Educational Fund Raising, which honors superior fund-raising programs

across the country.

MIT was selected for the award based on the judges' analysis of data submitted to the Council for Aid to Education's annual voluntary support of education survey.

Jonathan Kroner, a junior in materials science and engineering, has been awarded the Gupton A. Vogt Oxford Cup Memorial Scholarship, presented by the Beta Theta Pi Foundation, for \$600.

Timothy Swager, head of the chemistry department, has received a \$5,000 Homeland Security Award from the Christopher Columbus Fellowship Foundation. The awards were presented to four individuals who are conducting research in the nation's companies, laboratories and universities to deal with the threat of terrorism. Swager's work includes development of novel chemical and biological sensors, which are now being tested by U.S. Marines in Iraq to detect roadside bombs and by the U.S. Air Force to screen cargo.

Several MIT professors were recently inducted to the Biomedical Engineering Society's Inaugural Class of Fellows at the society's annual conference in Baltimore, Md. They are Institute Professor **Robert Langer**; **Roger Kamm**, professor of biological engineering; **Douglas Lauffenburger**, professor of biological engineering; **Chi-Sang Poon**, principal research scientist at HST; and **Laurence Young**, professor of astronautics and aeronautics and professor at HST.

OBITUARIES

HERBERT SINGER

Herbert Singer, an MIT alumnus who worked at Draper Laboratory for 40 years, died Aug. 12 at Beth Israel Deaconess Medical Center after a stroke. He was 71. Singer worked on projects for the Department of Defense and NASA, including the Apollo space mission and satellites Titans, Minuteman, Polaris, Poseidon, Trident I and II and Peacekeeper.

Singer earned a B.S. in mechanical engineering from MIT in 1955 and received a master's degree in mechanical engineering from Northeastern University in 1968. He retired from MIT in 1995.

He is survived by his wife, Beverly Singer of Randolph; a son, Steven Singer of Marlborough; a daughter, Lori Singer of Chestnut Hill; and a sister, Sylvia Rosen of Brighton.



EXPERIENCED UROP STUDENTS

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Information & Applications are available on the UROP website: <http://mit.edu/urop/students/irmp/>. Or you may contact the UROP/IRMP Staff at 253-7306 or <IRMP@mit.edu>.

CLASSIFIED ADS

Members of the MIT community may submit one classified ad each issue. Ads can be resubmitted, but not two weeks in a row. Ads should be 30 words maximum; they will be edited. Submit by e-mail to ttads@mit.edu or mail to Classifieds, Rm 11-400. Deadline is noon Wednesday the week before publication.

FOR SALE

Maytag Neptune front load washer & dryer, 3.5 years old. Great condition. \$725 Boston Interior 5-ft round maple table & 4 chairs, like new, \$750. Call John Benkert, Lincoln Lab, at 781-981-1200 or e-mail benkert@ll.mit.edu.

Electric stove - GE, self-cleaning oven, white. \$125/bst. Call 781-662-1206 or 617-697-1603.

Jet Blue ticket voucher. \$550 voucher for \$475. Tickets transferable, can be used for tickets anywhere Jet Blue flies. Must reserve before 1/6/06, flight can be anytime. E-mail donnamul@mit.edu or call 258-5275.

Four black ladder-back chairs w/ woven seats from Sturbridge Yankee Workshop. Excellent condition, \$125/bst. Call Carol at 781-981-7750.

21" Panasonic color TV, built-in VCR, 8 years old, good condition, \$45 (incl. digital converter for DVD capability). Good turntable, disused for a few years, \$10. Call 253-2408 or e-mail boiko@mit.edu.

Men's jacket. Size large, medium brown leather-

look, below hip length, fleece lining, made in Italy by T. Shearling Sportswear, new. \$55. Call Rosalie at 781-391-1307.

Moving sale - 3 bookcases, 30" by 72", 42" round table, 2 maple chests, 34" by 50", full size bed, 9' by 12' handmade Oriental rug, desk, chairs, etc. all very reasonable price. Call 258-7372 or (781) 729-4591.

HELP WANTED

Part time assistance for retired MIT faculty, flexible schedule, about 10 hrs/week. South Brookline. Contact 253-6704 or lsteiner@mit.edu.

UROP IAP Research Mentor Program seeks experienced UROP students. Earn \$250 for each student you mentor in addition to your IAP 2006 UROP compensation. Application deadline: Thursday, Oct. 20. Information at <http://mit.edu/urop/students/irmp/>.

HOUSING

Furnished room avail. Nov. 1, in spacious Arlington home, near public transportation, parking, kitchen privileges, washer & dryer on premises; own refrigerator & TV. Call 781-648-7425, 24 hrs, leave msg & contact info.

Lincoln townhouse condo avail. on or after Oct. 20. \$2,250/mo +util. 2BR, 2 baths, wd/tile/

carp, gas heat/ac, fin bsmnt, good schls, green, pets ok, call R.H. Ross at 978-505-8892.

2BR/1 bath in 2-family Watertown/Cambridge line(Coolidge Square-shops, restaurants, etc.). Hrdwd floors, Elk, D/D, W/D. On bus route #71, easy commute to MIT. \$1300/month + utilities. Call (617) 924-8944. Avail. now.

MISCELLANEOUS

Part-time childcare available. Licensed daycare teacher. Current college student majoring in education. Contact elizabeth.roberts@wheellock.edu or Liz at 339-223-0146.

Balloons for your holiday office parties available on campus. Experienced (10 years), creative balloon artist available for your holiday parties. Centerpieces, arches, balloon trees. Contact Jennifer Field at 252-3522 or jfield@mit.edu.

VEHICLES

1997 Chrysler Town and Country minivan. 78K. Excellent condition. 3.5 liter v6 engine. Taupe w/ beige interior. E-mail jwojcik@media.mit.edu or call 253-0325.

1992 Toyota Corolla station wagon, \$850. 5-speed, starts & runs great, good gas mileage. 226K - good for many more. Longer description at <http://boston.craigslist.org/car/101934363>.

html. E-mail jceggles@mit.edu or call 617-547-3590 or 253-4426.

2004 Ford Taurus SE, all power, metallic blue, am/fm, 6 cd, alloys, runs great, 16.9K, excellent condition, \$12,500. (Has a humongous trunk) Call 781-762-5479.

MIT employee seeks reliable used car as 2nd car for in-town transportation. \$3K or less. Looks not important. Reliability and mechanical condition must be excellent. E-mail jstein@mit.edu.

STUDENT EMPLOYMENT

Positions for students with work study eligibility

Amigos School needs math tutors for in grades 3-8. Help w/ pre-algebra and geometry. Spanish speakers a plus. Hours flexible between 9 a.m. and 3:30 p.m. every day. Located at the King School, three blocks from #1 MBTA bus. Travel time paid. Contact Michal-Ann Golay at mgolay@cpsd.us. \$14/hr.

New England Citybridge seeks program coordinator to provide admin. support to staff & services to Citybridge grads. Responsibilities incl. assisting directors w/ event planning, tracking students' progress, providing grads w/ info about summer jobs/internships, organizing reunions, assisting SAT prep course planning & registration. Reqs: experience w/ community outreach programs, interest in educ. admin., strong computer skills. Send cover letter w/ resume & at least 2 references. citybridgejobs@concordacademy.org. \$16/hr.

Junior soloist strings together violin, science

Paul Crocetti
Office of the Arts

At age 2, when most kids are learning how to speak and walk, Serenus Hua started playing the violin. An MIT junior now, the 19-year-old has worked his way up in the classical music world, winning numerous competitions and playing everywhere from Juilliard to Jordan Hall, where his performance at age 15 was broadcast as part of the public radio program "From the Top."

This year he won the 2005 MIT Symphony Concerto Competition, which earned him a chance to perform with the MIT Symphony Orchestra in Kresge Auditorium this Friday (Oct. 21). He will be the featured soloist in Pablo de Sarasate's "Carmen Fantasy."

Originally from New Jersey, Hua began studying violin formally at age 7. He went on to enroll in The Juilliard School in New York City and admits that playing music at Juilliard is very different from playing at MIT.

"At Juilliard, it was very technical, very showy," he said. "Everyone was trying to show off. At MIT, most people are going into engineering and science, so it's not a question of who's going to be the best soloist. I have more time to learn the pieces, rather than the techniques."

The piece he will be performing is different from the one in the original opera "Carmen," Hua said. "It has the same basic theme, but this composer has added a lot of tricks and flourishes."

He puts it in the genre of a "show piece," one of his favorite types of music.

"It's what I'm better at," he said. "They're fun to play, fun to listen to. One of my teachers likens it to dessert. You have your main course, with your standards, Bach and Brahms. For dessert, you come back to the show pieces."

Over the years, Hua has found a way to combine music and community service. In high school Hua founded a volunteer group called "Music in Action" that performed at senior homes, day-care centers and school events.

At MIT, he is involved with the MIT Arts Scholars, whose members range from film students to classical musicians like himself. The group is trying to organize a benefit for the victims of Hurricane Katrina.

A chemical biological engineering major, Hua is very interested in science. While he is also majoring in music, he doesn't see himself performing for a living.

"It's too late for me to be a chamber musician," he said. "I'm not in a conservatory, and the market is pretty low these days."

At MIT he plays as much as he can, although it can be difficult to find time. "MIT has kept me busy," he said. "It's always been a balance for me. I practice in between classes, whenever I can. I'll bring my violin to class."

Although he had not yet rehearsed with the MIT Symphony, Hua seemed confident.

"I'm used to performing with an orchestra after one or two rehearsals. For this, it will be about four."

Humbly, he added, "It's a better deal than I'm used to."



Serenus Hua

Get an '80s view of MIT in 'Labs'

Lauren Maurand
Office of the Arts

Few people take an anthropological look at science, which makes Scott Globus' 3,000 photographs of MIT laboratories taken over the course of two years in the early 1980s a sizeable contribution to the field. Now, Globus has brought his work back to MIT to make it available for educational and cultural use. Forty-eight of the images are on display in the MIT Museum's Compton Gallery in "Scientific Settings: Photos of MIT Labs."

The pictures were taken during 1983-84, when Globus was finishing his undergraduate physics degree at MIT. As a visual documentation of MIT laboratories in the second half of the 20th century, it is considered the most comprehensive collection of its kind. Globus traveled from his home in California to attend the special opening for the show on Friday, Sept. 23, and spoke briefly about how the exhibition came together.

The original concept grew from Globus's conversation with Sharon Traweck, who was on the MIT faculty during the '80s with a joint appointment in the Anthropology and Archaeology Program and the Program in Science, Technology and Society (STS). With Traweck's support, the project was funded by the Undergraduate Research Opportunities Program (UROP), beginning in 1983.

Globus was mostly unhindered in his quest for laboratory photographs, although some of the work he photographed was not yet protected by patents, which raised legal concerns. Globus remembers more prominently that there was a "sense of discomfort" from the students, who were "not accustomed to seeing themselves described." Now, he says, there is greater acceptance of the "reality factor."

The exhibit challenges the stereotype of the scientific laboratory as immaculate. "We often think of the clean room as our image of science," said curator Debbie Douglas, but many of these laboratory spaces are actually quite messy, she said,



PHOTO COURTESY / MIT MUSEUM

Learn more about MIT's unique workspaces at "Scientific Settings: Photos of MIT Labs," at the MIT Museum Compton Gallery. The exhibit of photos taken by Scott Globus during the early 1980s is on display through Jan. 6.

typifying "what a chunk of MIT looks like all the time." Some of the prints were first displayed at MIT a month before Globus graduated in 1984, with 60 prints on exhibit in MIT libraries.

Planning for the MIT Museum show began two years ago when Globus contacted Rosalind Williams, professor of writing and director of STS, about bringing his photography back to MIT. She invited him to make a presentation in an STS colloquium last April with a talk called "Looking at Laboratories: MIT Photos From the '80s."

By that time, preparations for "Scientific Settings" were under way. UROP funded the digitization of 400 of his images, which was completed last fall by Kaya Shah, now a senior. This past summer, junior Tabitha Bonilla used the digital images to create the prints that are on display.

At the time many of the photographs were taken, Globus did not know exactly

who or what he was shooting; in an effort to identify more of the subjects and laboratories, the museum is inviting visitors to use the comment books in the gallery to share any information they may have about the photos.

Globus never viewed his photography as separate or even distant from his interest in physics. "Physics is a way to understand the physical world," he said, and photography was a way for him to understand and respond to "life as an MIT student."

There have been some dramatic changes in technology over the past 20 years, as these photos show, but that human element remains essentially constant.

"Scientific Settings: Photos of MIT Labs" is on display in the MIT Museum's Compton Gallery, Room 10-150, weekdays from 9:30 a.m. to 5 p.m. until Jan. 6. Admission is free.

ARTS NEWS

Exhibit digs 'Beneath'

Michelle Fiorenza, administrative assistant in the Sloan School of Management, has curated "Beneath the Surface," an exhibition featuring the work of Carol Blackwell, Edith Green and Nadia Irish, at the Nave Gallery (Clarendon Hill Presbyterian Church, 155 Powderhouse Blvd., Somerville) through Saturday, Oct. 22. Fiorenza helped establish the Nave Gallery in 2004 under the auspices of ArtSomerville. For more information on the Nave, call (617) 625-4823 or visit www.artsomerville.org/nave/exhibits.html.

Singing to cure MS

When Art Mellor (S.B. 1985) was diagnosed with multiple sclerosis, he formed the Boston Cure Project to coordinate the research being done on M.S. A benefit concert for the foundation will be held on Sunday, Oct. 23, at the Pleasant Street Congregational Church at 75 Pleasant St. in Arlington at 3 p.m. **Marion Leeds Carroll**, a web assistant with the MIT Libraries, is organizing the concert and is one of the featured performers. She was diagnosed with M.S. in 1988. Tickets are \$20 in advance and \$25 at the door; \$5 for students and seniors. For more information or to order tickets, call Ruth Seidman at (617) 734-7820 or e-mail SingtoCureMStix@hotmail.com.

Free access to Harvard art

MIT undergraduate and graduate students can now gain free admission to Harvard's art museums (the Fogg, Sackler and Busch-Reisinger Museums) as well as the Agnes Mongan Center for the Study of Prints, Drawings and Photographs) by presenting their MIT student IDs. The agreement is part of a newly established Institutional Membership sponsored by the Council for the Arts at MIT.



PHOTO COURTESY / HAMM AND HUMMEL

Vive la France

Two singers-interpreters-musicians from the Alsace region of France will present a cabaret-style evening of French songs about America, "L'Amerique Dans la Chanson Française" tonight (Wednesday, Oct. 19) at 8 p.m. in Killian Hall. Accompanied by piano and accordion, Jean-Marie Hummel and Liselotte

Hamm will perform a medley of songs centered on enduring French myths about various U.S. icons: Hollywood and its stars; the West and its cowboys, gold-diggers and gangsters; the soldiers of WWI and WWII; and the celebrated cities of New York, San Francisco and Nashville. For more information, call x3-4771.

Staffer to perform Joni Mitchell songs

Singer/guitarist Keith Hampton presents an Artists Behind the Desk concert titled "Refuge: Travel Songs of Joni Mitchell," today (Wednesday, Oct. 19) at noon in Killian Hall. An administrative assistant in the Office of the Arts, Hampton began his

musical studies by learning to play viola at age 9. From there he went on to learn violin, drums, marimba, piano and later guitar. His debut CD, "HOPEfire," was recognized by the Stonewall Society with a nomination for a 2003 genre award.

Clarification

A story in the Oct. 5 issue of Tech Talk suggested that Susan Hockfield may have been the first MIT president to perform "Lincoln Portrait" in concert. In fact, the piece was narrated by former MIT President Howard Johnson in 1969.

MIT EVENT HIGHLIGHTS OCTOBER 19-23

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



PHOTO / PETER CLARK

Architecture lecture

Architect Peter Davidson will discuss Federation Square, a building he designed in the heart of Melbourne, Australia, at a lecture on Tuesday, Oct. 25 in Room 10-250.

WEDNESDAY
October 19

 **Visit the MIT Sukkah**
Visit MIT's award-winning sukkah, erected for the Jewish holiday of Sukkot. All day. Kresge Oval. 253-2982.

 **"Japanese Defense Strategy for the 21st Century"**
Talk by Yumi Hiwatari. Noon. Room E38-615. 253-7529.

 **What's Hot at MIT**
Talks by Sangeeta Bhatia, Yoel Fink and Timothy Swager. Free for students. \$20-30. 6-8 p.m. Kirsch Auditorium. 253-8240.

 **"L'Amérique Dans la Chanson Française"**
"An Evening of French Songs about America," performed cabaret-style by Jean-Marie Hummel and Liselotte Hamm. 8 p.m. Killian Hall. 253-4771.

THURSDAY
October 20

 **Rotating Selection of Videos by Christian Jankowski**
Presented in conjunction with "Everything Fell Together" by German artist Christian Jankowski. Media Test Wall, Whitaker Building 56. On view 24 hours. 253-4400.

 **MIT Chapel Concert**
La Donna Musicale plays music by Baroque women composers. Noon. MIT Chapel. 253-9800.

 **Poetry@mit**
Readings by Anselm Berrigan and Tom Raworth. 7 p.m. Room 32-141. 253-7894.

 **Third Rehearsal for MIT Women's Chorale**
All women in the MIT community are welcome to join. New members welcome until Oct 20. 7:45-10 p.m. Room 10-340. 484-8187.

FRIDAY
October 21

 **Greeting Card Design**
Pre-registration required. \$5. Noon. Room 10-340. 253-0219.

 **"The Building of European Forests: In Search of Turning Points in Forest History"**
Talk by Bernd-Stefan Grewe of the University of Constance, Germany. 2:30-4:30 p.m. Room E51-095. 253-4965.

 **"Homeland" (Zan Boko)**
1988 film from Burkina Faso. 6 p.m. Room 3-133.

 **MIT Symphony Orchestra**
Sarasate's "Carmen Fantasy" with violin soloist Serenus Hua '07, winner of the 2005 MIT Symphony Concerto Competition. \$5. 8 p.m. Kresge Auditorium. 452-2394.

SATURDAY
October 22

 **Varsity Crew - Head of the Charles**
8 a.m. Charles River. 258-5265.

 **TPSS Head of the Charles Pre-BBQ**
Lunch before the races. Noon-2 p.m. NW10-BBQ, Edgerton BBQ Pits.

 **Varsity Football vs. Nichols College**
1 p.m. Steinbrenner Stadium. 258-5265.

 **"March of the Penguins"**
LSC Fall 2005 Film Series. \$3. 7 p.m. Room 26-100. 253-3791.

SUNDAY
October 23

 **Varsity Crew - Head of the Charles**
8 a.m. Charles River. 258-5265.

 **Gallery Talk**
Talk by Jane Farver, director, List Visual Arts Center, in conjunction with "Christian Jankowski: Everything Fell Together." 2 p.m. List Visual Arts Center (E15). 253-4680.

 **MITHAS Concert**
Performance by Aruna Sairam, known for her interpretations of light classical music. \$18, MIT students free. 4 p.m. Wong Auditorium. 258-7971.

 **International Folk Dancing**
International folk dancing, with live music provided by the Cambridge Folk Orchestra. 8-11 p.m. Lobdell Dining Hall. 253-FOLK.

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

EDITOR'S CHOICE

ARTIST BEHIND THE DESK

Performance by singer and guitarist Keith Hampton.

Oct. 19

Killian Hall
Noon

SPINNERS AND BLOGGERS

Talks by Deborah Hayes, Rebecca MacKinnon and Brian Reich on political communications in the digital age.

Oct. 20

Room 3-270
5-7 p.m.

LATINO FILM FESTIVAL

4th annual Boston Latino International Film Festival — "Bridging Communities Through Movies."

Oct. 21

Room 32-123
5-11 p.m.

MIT EVENT HIGHLIGHTS OCTOBER 24-30

MONDAY
October 24

 **"The Future of the United Nations"**
Talk by Professor Alan K. Henrikson, director of The Fletcher Roundtable on a New World Order at Tufts University. 5-7 p.m. Room 7-338.

 **International Take Back Your Time Day**
Talk by Juliet Schor, sociologist of work, consumerism, women's issues and economic justice. 6 p.m. Room 4-237.

 **Heartsafe - Infant/Child CPR (AHA) Class**
This course prepares participants to respond to cardiac emergencies in infants and children up to 8 years. \$35. 6-9 p.m. Room E25-297.

 **English A Capella Folk Music Workshop**
English a capella folk singers Dave Webber and Anni Fentiman. 7:30 p.m. Killian Hall. 258-5629.

TUESDAY
October 25

 **"Cholera: The New Face of an Old Disease"**
Talk by Deborah Cramer. Noon. Room E56-100. 253-6989.

 **"Federation Square"**
Architecture lecture by Peter Davidson. 6:30 p.m. Room 10-250. 253-7791.

 **CAVS Artist's Presentation: Christina Mackie**
Ranging in material from luxurious to ephemeral, Mackie's works reflect her ability to allow ideas the time and space to take shape. 6:30 p.m. Room N52-390. 452-2484.

 **Halloween Contra Dance**
Music by Victor and Emily Troll and Friends. 8-10:30 p.m. Student Center room 407. 354-0864.

WEDNESDAY
October 26

 **"Close-Up (Nama-ye Nazdik)"**
Film presented in conjunction with "Christian Jankowski: Everything Fell Together." All day. Bartos Theater. 253-4680.

 **Object Lesson: "RoboTuna II"**
Gallery talk by Kurt Hasselbach, curator, Hart Nautical Collection. Noon. MIT Museum. 253-4444.

 **Gallery Talk**
Bill Arning, curator of the List Visual Arts Center, speaks on the exhibition "Christian Jankowski: Everything Fell Together." 12:30 p.m. List Visual Arts Center (E15). 253-4680.

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

THURSDAY
October 27

 **MIT Chapel Concert**
Triton Brass Quintet. Noon. MIT Chapel. 253-2826.

 **"Adjusting to life in the US"**
A welcome reception for new international scholars at MIT with a presentation by Anne Copeland of the Interchange Institute. 4-6 p.m. Room W20-306. 253-2851.

 **"Close-Up (Nama-ye Nazdik)"**
List Visual Arts Center Film Night, presented in conjunction with "Christian Jankowski: Everything Fell Together." 7 p.m. Bartos Theater. 253-4680.

 **"Macbeth"**
Shakespeare Ensemble fall production. \$8. \$6 students. Oct. 27-29 and Nov. 3-5. 8 p.m. Kresge Little Theater. 253-2903.

FRIDAY
October 28

 **"Finding Form: The Art of Richard Filipowski"**
A sculptor of international reputation, Filipowski was born in Poland in 1923 and raised in Ontario, Canada. Opening reception 4-6 p.m. MIT Museum. 253-4444.

 **"Do You Remember Dolly Bell? (Sjecas li se Dolly Bell?)"**
Film from Yugoslavia, 1981. Directed by Emir Kusturica. 6 p.m. Room 3-133.

 **Gallery Talk**
Talk by Nicholas Baume, chief curator of the Institute of Contemporary Art, Boston. 6 p.m. List Visual Arts Center (E15). 253-4680.

 **Endellion String Quartet**
Mozart's Viola Quintet in G Minor with Marcus Thompson, viola. 8 p.m. Kresge Auditorium. 253-2826.

SATURDAY
October 29

 **"Four Tables: Projects by Lira Nikolovska"**
Nikolovska is a Ph.D. candidate at the Design and Computation program at the School of Architecture and an associate member of the Media Lab's Computing Culture Group. Room 7-238. All day.

 **AKPIA Workshop: "The Mamluk Domes of Cairo"**
Architecture workshop. 10 a.m.-5 p.m. Room 5-216. 253-1400.

 **Bayou Bash BBQ Jazz Lunch**
Jazz music during the Bayou Bash BBQ. 1-3 p.m. Kresge BBQ area. 253-6777.

 **"The Amityville Horror" (1979)**
LSC Fall 2005 Classic Film Series. \$3. 7 p.m. Room 26-100. 253-3791.

SUNDAY
October 30

 **Varsity Sailing - Erwin Schell Trophy**
9 a.m. Charles River. 258-5265.

 **Brunch**
Sunday morning brunch. 11-1 p.m. Green Hall. 642-8272.

 **Fall Festival Presents Bayou Bash, Featuring Wild Magnolias Concert**
Charity event to support the New Orleans musicians who will be performing as well as local foundations in the Gulf Coast. \$5 MIT students, \$10 MIT staff, \$15 faculty and affiliates and all others. 7-10:30 p.m. Kresge Auditorium. 253-6777.