

Weinberg weighs ethics in genetics

The rapid advance of genetic technology is creating powerful new tools for diagnosing disease as well as serious new ethical issues about the possible misuse of genetic testing, American Cancer Society Professor of Biology Robert A. Weinberg said at an IAP lecture last week.

Professor Weinberg's January 6 talk, "Genetic Diagnosis and Its Societal Impact," opened a series of IAP lectures sponsored by the biology department. Forthcoming session topics include new diet drugs developed by MIT researchers and the possibility of an AIDS vaccine.

"The new genetics will have a greater impact on our lives than any other aspect of modern biology. It will affect us from cradle to grave," Professor Weinberg said.

To date, most genetic tests are for gross abnormalities, such as the extra copy of chromosome 21 that usually causes Down syndrome. "But with the technologies that are developing, we have the possibility of prenatal diagnosis that can, in principle, determine the entire genetic sequence (of a fetus)," Professor Weinberg said.

The impact of such genetic testing is widespread and controversial, he said. For example, he posed the question of whether a positive test for

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Professor Neil Gershenfeld of the Media Lab and his newborn twins, Eli (left) and Grace, with graduate student Josh Smith (left) and research scientist Joe Paradiso.

Photo by Webb Chappell

Chair research yields boon for infants

■ By Robert J. Sales
News Office

Professor Neil Gershenfeld has two excellent reasons to hope that sensors developed in the Media Laboratory alleviate the threat that activated automobile airbags pose to infants in rear-facing baby seats.

The reasons are Eli and Grace, twins born on October 10—not a bad birthday for the children of a digital thinker. They are the first-born of Professor Gershenfeld, head of the Media Lab's Physics and Media Group. The twins share their birthday with the Media Lab, which opened in 1985.

Professor Gershenfeld calls the baby seat project a "serendipitous" example of the unique ability of the Media Lab to use research from a fun experiment to solve a real-world problem. "Nobody set out with a business plan to develop a baby seat," he said.

The Physics and Media Group started exploring the relationship between electrical fields and the human body while developing sensors for a collaboration between cellist Yo-Yo Ma and Professor Tod Machover's group. Using this technology, Motorola Fellow Josh Smith created furniture that can "see" and Tom Zimmerman (now at

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MIT wins kudos for work-family policies

■ By Alice C. Waugh
News Office

MIT is one of several institutions named as a Leadership Campus for its "family-supportive" poli-

cies in a study of US colleges and universities. Among the 94 such campuses, MIT ranked in the top third.

The study examined the employer roles of the nation's 3,400 colleges and universities. It revealed that many cam-

puses—which are often the largest employers in their communities—face many of the same complex economic, social and technological changes faced by corporate work-

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Three MLK awards to be presented Feb. 6

MIT alumnus Dr. Sylvester James Gates Jr., a physics professor at the University of Maryland, and retired

Medical Department social worker Myra Rodrigues will receive Dr. Martin Luther King Jr. Leadership Awards at the 23rd annual celebration of the slain civil rights leader's ideals on Thursday, February 6. The Committee on Campus Race Relations will also receive a Leadership Award.

Professor Gates received SB degrees in physics and mathematics from MIT in 1973 and the PhD in physics in 1977. He joined Maryland's Department of Physics and Astronomy in 1984 as an associate professor and was promoted to full professor in 1988. He was an assistant professor of applied mathematics in the MIT Department of Mathematics from 1982-84.

Ms. Rodrigues worked at MIT for 25 years before retiring in July. She provided a range of social work services for the entire MIT community and was the co-leader of separate discussion groups for male and female minority students.

"Never have I known a person whose life—her everyday conduct—so exemplified the principles and values that one associates with Dr. King," wrote Ron Fleming, chief of social work services, in nominating Ms. Rodrigues for the award.

The Leadership Award winners will be presented at the Dr. Martin Luther King Celebratory Breakfast at La Sala de Puerto Rico in the Stratton Student Center at 8am on February 6.

In addition to President Charles M. Vest and Provost Joel Moses, Boston University Professor John H. Cartwright will speak at the breakfast. Dr. Cartwright, the Dr. Martin Luther King Jr. Professor of Social Ethics at BU since 1977, is a graduate of the BU School of Theology and an ordained elder in the United Methodist Church. He was the founding director of the University's King Center from 1968-70.

Admission to the breakfast is by invitation. Requests must be received by January 31. For more information, see the Web site at <<http://web.mit.edu/mlking/www>>.

The eyes have it



Professors Rosalind Picard and Marvin Minsky of the Media Laboratory look through the "eye" of HAL 9000, the computer from 2001: A Space Odyssey whose "birthday" was celebrated last Friday at MIT. See page 7.

Photo by Donna Coveney

Joseph recalls King's courage

■ By Robert J. Sales
News Office

The first time he saw Dr. Martin Luther King Jr., Richard A. Joseph was a 17-year-old pre-med sophomore at Dartmouth College. It was 1962, the height of the civil rights movement.

Dr. King, who was there to deliver a lecture, scanned the packed audience at Dartmouth Hall, navigating a sea of white faces. When he came to the young Mr. Joseph, sitting in the balcony, the two exchanged a knowing glance.

"I knew what he was looking for, and I knew he'd found it when our eyes connected for a moment," said Dr. Joseph, then one of a dozen blacks among 3,000 undergraduates at Dartmouth and now a Dr. Martin Luther King Jr. visiting professor at MIT.

The seeds for Richard Joseph's political activism were planted during the upsurge of sit-ins and demonstrations of the time, many of them inspired by Dr. King. Soon after the Dartmouth speech, he was taking political science courses, his medical ambitions a thing of the past, and organizing civil rights activities as a member of the Dartmouth Christian Union. While he appreciated the eloquence and the moral force of Dr. King's message of nonviolence, in those days Professor Joseph identified with leaders who advocated more radical tactics in the pursuit of racial justice.

As he contemplates the celebration of what would have been Dr. King's

68th birthday today, Professor Joseph is concerned about the transformation of Dr. King into a "feel-good symbol," often to camouflage reality, a development Dr. King would have deplored.

"I was from the more militant school," recalled Professor Joseph, who is in the Department of Political Science. "Stokely Carmichael, Fannie Lou Hamer, Robert Moses and Malcolm X were closer to my way of thinking. With the passage of time, I have developed more regard for the emphasis on nonviolence, on the need for multiple tactics. I feel differently about Dr. King now. It's been an intellectual process. Perhaps it's maturity."

In fact, Professor Joseph once turned off the radio in exasperation during a "turn-the-other-cheek" sermon by Dr. King while traveling through the South. As a senior at Dartmouth, he also played a central role in bringing Malcolm X to the college for a speech shortly before he was murdered.

While differing with him philosophically during his youth, Professor Joseph always had enormous respect for Dr. King's courage. When working on a voter registration drive in Montgomery, AL, in 1965, he was asked to deliver a written message to someone traveling with Dr. King after a rally. Despite the constant terror that enveloped civil rights workers in those days, no one stopped Professor Joseph as he ran up to the car. The aide to Dr. King rolled down the window to accept the note, politely thanking him for making the delivery. Dr. King's accessibility during such a confrontational period was striking to Professor Joseph.

Later, when Dr. King led the march from Selma down the main streets of Montgomery, AL, Professor Joseph

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Student Notices

*-Open to public
 **-Open to MIT community only
 ***-Open to members only

ANNOUNCEMENTS

Career Services and Preprofessional Advising Recruitment Presentations—Jan 21:** Lehman Brothers Investment Banking, 6pm, Rm 4-149. **Jan 22:** Andersen Consulting, 7pm, Rm 34-101.

RELIGIOUS ACTIVITIES

The Chapel is open for private meditation 7am-11pm daily. Regular Chapel services are:

Baptist Campus Ministry**—Weekly events: Tuesday night dinner at 5:15pm; Tuesday night bible study, 6pm; Monday graduate discussion, noon. Meets in Bldg W11.

Campus Crusade for Christ**—Weekly meeting on Wednesdays, 8pm, PDR 1 & 2, 3rd fl Student Center. Daily prayer, Rm W11-080 (CFL), 8am. More info: x2-1781 or <absfree@mit.edu>.

Tech Catholic Community**—Weekday Mass Tues & Thurs 5:05pm, Friday 12:05pm, Saturday 5pm, Sunday 9:30am & 5pm. Call x3-2981.

Christian Science Organization**—Thursdays at 7pm. Call x3-8797 or <lnorford@eagle.mit.edu> for further information.

Communitas-Life Together**—Protestant Worship Sunday at 11am. Sponsored by: American Baptist Church, United Church of Christ, United Methodist Church, Presbyterian Church (USA). Chaplain John Wuestneck, x2-1780 or <chaplain@mit.edu>.

Lutheran-Episcopal Ministry at MIT**—Regular Wednesday worship, 5:10pm, followed by supper in the Bldg W11 dining room. Bible Studies, Sundays at 5pm, Bldg W11. More info: x3-0108.

Meditation and Discourse on the Bhagavad Gita*—With Swami Sarvagatananda, MIT Chaplain and Head, Ramakrishna Vedanta Society of Boston. Every Friday, 5:15-6:30pm, MIT Chapel. Sponsored by the MIT Vedanta Society. More info: 661-2011 or <mehta@jimmy.harvard.edu>.

MIT Orthodox Christian Fellowship**—Wednesdays at 5:30pm in Student Ctr DR 1 for dinner followed by Chapel Vespers. Mike Decerbo, Dorm x5-7569.

Other religious meetings:

Baptist Student Fellowship*—Weekly meetings on Tuesdays, include dinner followed by Bible Study, 5:30-7pm, Bldg W11, small dining room. Sponsored by Baptist Campus Ministry. More info: x3-2328.

Graduate Christian Fellowship**—Weekly meetings in Student Ctr, PDR 1&2, Fridays at 5:30pm. Also weekly Bible studies and Responsible Technology discussion group. Andrew Crabtree 868-0488 or <crabtree@mit.edu>.

Hillel*—More info: x3-2982.

Lincoln Laboratory Noon Bible Studies*—Wednesdays at noon, South Lab S2-410. Annie Lescard, Linc x2899.

MIT Muslim Students Association*—5 daily prayers, Bldg W11; also Friday congregation 1:10-1:45pm, Rm W11-110. Info: x8-9285.

OPPORTUNITIES

Marvin E. Goody Prize. A \$5000 award for a graduate thesis that advances the building arts. The aims of the award are to extend the horizons of existing building techniques and use of materials, to encourage links between the academic world and the building industry, and to increase appreciation of the bond between good design and good building. The award is given to a graduate student preparing a thesis for the SM or equivalent degree (e.g., MArch, SMArchS, SMTB or MCP degree) to be completed not later than September 1997. Application forms and further information are available in Room 7-337. Application deadline: **Jan 17, 5pm.**

Undergraduate Economics Department Writing Competition. Authors of three papers chosen will have their papers published in UEA Journal, due out this spring, and will receive cash prizes of \$100 each. Requirements: minimum of 10 pages, double spaced, on an economics-related topic. Paper can be from a class (e.g. Econometrics) or can be written specifically for this contest. Open to Undergraduate MIT students of all majors. Deadline: **Jan 31.**

Ford Development Grants. The Center for International Studies announces summer research funding for doctoral students engaged in research in comparative politics and political economy. Priority will be given to students conducting research in developing areas and who have participated in the year-long Ford Methodology Workshop. Awards

will be for amounts up to \$4000. While students may be at any stage in their doctoral training, priority will be given to students at the pre-proposal stage for feasibility field studies. Proposals will also be accepted for summer intensive language or area studies training and limited dissertation field work necessary for completion of a thesis. For application requirements contact Liz Leeds, x3-9861 or <eleeds@mit.edu> Application deadline: **Feb 4.**

International Energy and Environmental Policy Research Grants. For MIT faculty, researchers and advanced doctoral students working on relevant faculty projects, with particular emphasis this year on research on issues of energy in Asia. Amounts up to \$25,000. Proposals will be considered for research seed funding, publications, and attending workshops and conferences. Sponsored by the Center for International Studies. For details contact Elizabeth Leeds, Rm E38-652, <eleeds@mit.edu>, x3-9861. Deadline: **Feb 4, 1997.**

Predocutorial Summer Internships/Fellowship Competition for Summer 1997 for Program in Transnational Security Issues. Sponsored by the MacArthur Foundation. Predocutorial students may be funded for research at the pre-proposal (feasibility) or dissertation stages. The focus of the Program is on the theme of personal and group security and transnational society, which connotes that either the source of the perceived or actual threat is abroad, or that the solution to the threats would involve transnational networks or organizations. Proposals may, for example, deal with such issues as the effect of economic globalization, refugee flows, cross-border ethnic conflict, international efforts at conflict resolution, etc. Students with relevant research interests from any discipline are encouraged to apply. Stipends up to \$6000. For full description and application details contact Elizabeth Leeds, Center for International Studies, x3-9861 or <eleeds@mit.edu>. Application deadline: **Feb 4, 1997.**

Predocutorial Fellowship Competition for AY 1997-98 for Program in Transnational Security Issues. Same focus, contact and deadline as listing above. Fellowships will provide full tuition and stipend.

The Peter J. Elooranta Summer Undergraduate Research Fellowships. Several \$5,000 stipends are available to MIT undergraduates (including June 1997 graduates) planning to spend the summer on an independent investigation or branching out in a new direction inspired by some previous work. The planned work should be student-originated or student-directed. It may be in any field. Call Undergraduate Academic Affairs at x3-7909 for details. Deadline for proposals: **April 1, 1997.**

STUDENT JOBS

There are more job listings available at the Student Employment Office, Rm 5-119, or on the Web at <<http://web.mit.edu/seof/>> (student access only).

Off-Campus, Technical. We are currently seeking detail oriented programmers to work on a one year contract in downtown Boston. You will develop various applications and database related tasks, software testing as well as user and technical documentation. Candidates must have experience in Visual Basic and C++. Familiarity with NT and MS SQL Server a plus. Call Robert Zanghi at 266-1046.

Off-Campus, Non-Technical. One of the nation's largest providers of Federal PLUS and Stafford loans is looking for a least one well spoken individual with at least 2 years of experience working in a financial aid office of a college to provide free information and counseling to high school counselors and college bound high school students and their parents. Since compensation will be based on the number of loan applications received as a result of your efforts, we prefer individuals who are currently unemployed or employed by a Direct Lending School since compensation may not be paid for assistance provided to students who attend a school you are employed by. Contact Debi Philbrick at (800) 328-1240 x235.

On-Campus, Non-Technical. General office help: computer/data entry, sort/deliver mail as needed, and drive MIT vans. Prefer ability to drive stick shift (not required). Call Penny Guyer at 253-6000.

For students with a Federal Work Study component in their aid package (see <<http://tute.mit.edu/seof/wwwcl/sersum.html>> or contact Student Employment Office for full details).

Tutors. Academic tutors needed to assist middle and high school students with their homework and in specific subject areas. Drop-in Tutoring Center serves a culturally diverse group of students from the Dorchester area. The center operates from 2:30-6pm Monday thru Thursday. Contact Tom Mullen at 288-3230 x269.

Web Site Builder. Primary Source is a fast-growing non-profit center promoting multicultural and global studies for K-12 teachers. It seeks a committed, experienced techni-

Public Service Center relocates

■ By Alice C. Waugh
 News Office

MIT's Public Service Center (PSC) has changed its headquarters but not its programs as the new term's volunteer opportunities get under way.

The PSC moved late last fall into the Student Center (Rm W20-311, behind the 24-Hour Coffeehouse) to make room for the new Student Services Center in Rm 3-123. To help reacquaint students, faculty and staff with the Center's services in bringing together volunteers and community agencies, there will be a volunteer fair on Tuesday, Jan. 28 in Lobby 13 from 3:30-5pm. Representatives of organizations including Cambridge School Volunteers, Friends of the Elderly, the Environmental League, Little Brothers and CASPAR will be on hand to answer questions. The event is co-sponsored by Delta Sigma Theta, an organization of African-American students from MIT, Harvard and Tufts.

Even as the PSC was moving to its

roomier quarters, it co-sponsored (with the Panhellenic Association) a record-breaking Giving Tree drive over the holidays. The effort collected more than 1,200 donated new toys and distributed them to needy children in Cambridge and Boston. Organizers were Michelle Berris and Rhonda Patton, both sophomores in mechanical engineering.

The students involved with the Giving Tree "did a really top-notch job meeting and exceeding the many requests," said Paul Parravano, assistant for community relations in the President's Office. "I'm just amazed at how well organized it was and how many gifts they collected."

PROGRAMS CONTINUE

Other ongoing activities the PSC oversees include SCORE (Service in the Community Oriented toward Relations Enhancement), an annual program started at MIT in May 1995 which has just been adopted as an annual event by the Order of Omega, a national service fraternity. There is also

KEYs (Keys to Empowering Youth), which mentors girls interested in science and engineering; the Science Expo, in which children in grades 5-8 will exhibit projects and tour labs at MIT on April 30; the PSC Fellowship Program, which has placed 20 MIT students in paid positions in local elementary schools this IAP; and LINKS, which brings MIT students to Cambridge elementary schools to help with science education.

The PSC also offers information, start-up money and advice on future fundraising for many other community service projects, noted Emily Sandberg, director of the Center. "I want to encourage students to come by with their ideas. We're always here to coach and advise students on individual projects, and we want to be a resource for all the community service chairs in independent living groups," she said.

For more information about PSC activities, see the Center's updated Web page at <<http://web.mit.edu/psccenter/www/psc.html>>.

United Way drive at 88% of goal

As of January 10, the MIT community has come through with \$263,700 in pledges and donations for the annual United Way of Massachusetts Bay campaign, or 88 percent of the \$300,000 goal. The campaign was slated to end on December 31, but donations will be accepted until the end of this month.

So far, the Office of Special Community Services has recorded 1,050 donors, including 61 Leadership Givers who have pledged at least \$1,000 apiece. Those donors have contributed a total of \$99,545.

Everyone who contributes is automatically entered in a raffle. A drawing will be held on February 14 at a thank-you party for chief solicitors in the Student Center at a time to be announced. Winners will be notified by telephone.

Prizes donated by area businesses include \$100 American Express gift cheques; an overnight stay for two at The Inn At Harvard; vouchers for the Regatta Bar at the Charles Hotel and the Sheraton Commander Hotel; tickets to *Shear Madness* at the Charles Playhouse, *Carmen* by the Boston Ballet, and performances by the Boston

Classical Orchestra and the Handel and Haydn Society; passes to the Topsfield Fair, Plimoth Plantation, Water Country and the New England Aquarium; and Boston Celtics autographed pictures.

CLOTHING DRIVE A WINNER

The campaign's clothing drive in December was very successful, said William Wohlfarth, senior electrical engineer in Physical Plant and a campaign Steering Committee member. "It was a tremendously positive experience. The amount of clothes we collected was just phenomenal," he said. Physical Plant workers delivered an estimated 250-300 large garbage bags of clothes from seven campus drop-off locations to three United Way agencies: CASPAR, Shelter, Inc., and the Salvation Army.

At the shelters, "some of the people volunteered to help unload the truck, and I think they were quite overwhelmed," Mr. Wohlfarth said. "These are the people who are actually going to wear the stuff. You could see tears in a few people's eyes. They couldn't believe that MIT came through in this way."

Newport School Department Even Start Family Literacy Evaluation, should contact Carrie Staudinger, Research Coordinator, MSPCC at (617) 227-2280 x329.

Massachusetts AmeriCorps. AmeriCorps is a national service program funded by the Massachusetts National and Community Service Commission which engages citizens in a year-long service to Massachusetts communities in the areas of public safety, education, the environment, and human needs. In exchange for their service, AmeriCorps Members receive a living allowance and a post-service education award. Intent-to-apply forms are due on Feb. 7, 1997 and proposals are due on Feb. 21. To receive application materials, please call the MNCSC at (617) 542-2544 x90.

Parents & Children's Services/Parental Stress Line. A 24 hour telephone counseling service for parents under stress. Volunteers are needed as telephone counselors, speakers, and in program development. Requires minimum of 3 to 10 hours per week, days, evening, or weekends. Contact Cynthia Bell (617) 437-1990.

CABLE

For more information about cable at MIT, call Randy Winchester at x3-7431, Rm 9-050, e-mail: <randy@mit.edu>. World Wide Web: <<http://web.mit.edu/org/mmitcable/www/home.html>>.

Continuously Running Programs—Channel 11: NASA Television most days, sometimes interrupted for other uses. **Channel 12:** Today at MIT - a listing of MIT events. To submit your event listings for this channel, send email to <tv-messages@mit.edu>. **Channel 13:** International Channel: see <<http://www.i-channel.com>> for more information.

Through Jan 30: Channel 9: "Destinos"—8pm: Beginning level Spanish language instruction with a continuing story line.

Other United Way events included the Choralleries concert at Walker Memorial on December 4 and the MIT Bellingers on December 9 in Lobby 7.

Those who would still like to contribute to the United Way campaign but do not have pledge forms should contact their department solicitors or the Office of Special Community Services in Rm 20A-023, x3-7914.

Alice C. Waugh

Crewel on display

Priscilla Gray will hold a crewel embroidery demonstration and exhibit during IAP on Tuesday, Jan. 28. The event, which will take place in the Emma Rogers Room (10-340) from 10am-3pm, will feature a sampling of works by her students.

MIT TECH TALK

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Global alliance members to meet

The Alliance for Global Sustainability (AGS), formed by MIT and universities in Japan and Switzerland to pool research resources and engage the business community, will hold its annual meeting at MIT from January 22-25.

The Swiss Federal Institutes of Technology (ETH) in Zurich and the University of Tokyo joined MIT in founding the group in 1995. The presidents of all three founding universities—Charles M. Vest of MIT, Jakob Neusch of ETH and Hiroyuki Yoshikawa of the University of Tokyo—will attend the sessions at MIT. The first annual meeting was held in Tokyo last January.

In a statement written to greet the participants, President Vest said, "From Asia, Europe and North America, the Alliance partners bring diverse views and experiences to the definition and implementation of sustainable development. Furthermore, each of us brings an extensive network of relationships with other institutions in the developed and developing worlds to further enrich our programs."

"We look forward to a lively and productive exchange of information and perspectives among the participants at this meeting."

The universities founded the AGS to build new knowledge about complex issues that lie at the intersection of environmental and economic goals. Researchers from the three universities are working together to develop and promote effective new policies and processes to deal with sustainability issues such as energy for the 21st century, environmentally conscious design and manufacturing, future cities and mobility. When the AGS was formed, the universities pledged to share their research findings with governments, industry, public interest groups and other universities.

Plenary sessions during the annual meeting will be open to the MIT community, including a discussion by members of the AGS International Advisory Board entitled "Industry as an Agent of Change: What Could a Partnership Between AGS and Industry Do to Address Sustainability?" It is scheduled for Friday, Jan. 24 from 3:30-5pm in the Wong Auditorium (Building E51).

Talks on 'Net, libertarianism scheduled

A Technology and Culture Forum next week will address financial issues surrounding the fast-growing Internet. "Feeway or Freeway? Economics of the Internet" will take place on Wednesday, Jan. 22 at 4pm in Rm 34-101.

Panelists will be David Clark, senior research scientist in the Department of Electrical Engineering and Computer Science and a primary architect of the Internet in the early 1980s, and Hal Varian, an economist at the University of California at Berkeley. The moderator will be Robert Metcalfe (SB '68), inventor of Ethernet, founder of 3Com Corp. and vice president for technology at International Data Group. The public is welcome.

Charles Murray, author of *What It Means to be a Libertarian: A Personal Interpretation*, will give a talk of the same title tonight at 7pm in the Tang Center (Building E51). Mr. Murray—the Bradley Fellow at the American Enterprise Institute who is also well known as co-author of *The Bell Curve*—will argue that the concept of personal liberty as set forth by the Founding Fathers has nearly disappeared, and he will offer a vision for reducing government and addressing many pressing national problems. He earned the BA in history from Harvard and the PhD in political science from MIT.

The panel, with Dean Glen Urban of the Sloan School of Management acting as the moderator, will also explore tactics for building such a partnership. The Advisory Board members participating in the discussion will be Livio D. DeSimone, chairman and CEO, Minnesota Mining and Manufacturing; Stephan Schmidheiny, chairman, UNOTEC, AG; Edgar S. Woolard, chairman, E.I. du Pont de Nemours and Co., and Professor Jose Goldemberg of the University of São Paulo.

In another session open to the MIT community, Professor Nazli Choucri of the Department of Political Science will offer an introduction to the Global System for Sustainable Development (GSSD), a cyberspace information system developed at MIT that coordinates worldwide environmental activities. The session will be at 5pm on Wednesday, Jan. 22, at the Faculty Club (Rm E52-600).

For further information, contact conference coordinator Megan Van Frank at <vanfrank@mit.edu>.

Robert J. Sales

524 offered early admission to Institute's Class of 2001

MIT has accepted 524 of 1,900 applicants for early admission in September 1997, 418 of whom are in the top 5 percent of their high school graduating class, including 129 class valedictorians.

The other 1,376 will be considered for acceptance along with the pool of general applicants. A year ago, 511 of the 1,751 early-admission candidates were accepted and 351 matriculated. Of the remaining 1,240, 141 were admitted along with 1,295 who applied by the regular action deadline (January 1).

Students who were offered early admission have until May 1 to decide whether to join the class of 2001.

The mean Scholastic Aptitude Test scores for this year's candidates were 726 verbal and 763 in math. The corresponding scores last year were 722 and 764.

This year's early acceptances in-

cluded 218 women, or 42 percent of the group, and 306 men. Of these, 126 indicated that they intended to concentrate in the Department of Electrical Engineering and Computer Science and 58 in the Department of Biology.

Last year, the early acceptances included 199 women, or 39 percent of the group, and 312 men.

The number of African-Americans among the early acceptances dropped from 23 a year ago to 15. This year's group includes 44 Mexican-Americans, Native Americans and Puerto Ricans. Last year, there were 37 Mexican-Americans, Native Americans and Puerto Ricans.

Early acceptances this year included 140 Asian-Americans, or 27 percent of the total. A year ago, there were 151 Asian-Americans comprising 30 percent of the group.

Robert J. Sales

Leonard is Doherty Professor

John J. Leonard, assistant professor of ocean engineering, has been awarded the 1997 Doherty Professorship in Ocean Utilization from the MIT Sea Grant College Program.

Every year, the program selects one new faculty member for a supplemental award of \$25,000 per year for two years.

Dr. Leonard's research will focus on dynamic underwater sonar data fusion—an important requirement in many marine robotic tasks. While state-of-the-art marine robot systems can produce vast amounts of data, the potential of such systems is limited by the difficulty of processing those data.

Enlisting the aid of graduate and undergraduate students, Dr. Leonard will investigate techniques for dynamic underwater sonar sensing.



Leonard

This will include experiments that combine sensing and motion control to imitate dolphin echolocation. Potential applications include autonomous underwater vehicle navigation and marine mapping, searching and salvage. Such innovations can not only improve access to the oceans, but also foster a greater understanding of the ocean ecosystem and our ability to preserve it.

In 1996, Paul Laibinis, assistant professor of chemical engineering, was awarded the two-year chair for his proposal to study chemical synthesis, the design of new chemicals and chemical structures.

The Doherty Professorship, endowed by the Henry L. and Grace Doherty Charitable Foundation, encourages promising, non-tenured professors to undertake marine-related research that will lead to more innovative uses of the ocean's resources. The area of research may address any aspect of marine use and/or management, whether social, political, environmental or technological.

Here & There

■ **Dr. David Ho**, an alumnus of the Harvard-MIT Program in Health Sciences and Technology, was named the 1996 Man of the Year by *Time* in its December 30 issue. Dr. Ho was a member of the program's third class and received the MD from Harvard in 1972. He is professor of medicine and microbiology at New York University School of Medicine and scientific director and CEO of the Aaron Diamond AIDS Research Center.

In 36 pages, *Time* cited Dr. Ho's pioneering work in combining several drugs in the treatment of AIDS. Patients who take a combination of protease inhibitors and antiviral drugs such as AZT have shown significant decreases in

viral levels and increases in T-cell counts, resulting in marked improvements in their condition. Earlier, Dr. Ho was the first to show that HIV grows in macrophages.

■ The December 13 issue of *The Chronicle of Higher Education* featured a comprehensive story on Associate Provost for the Arts **Alan Brody** and the arts at MIT. Titled "Where Art and Science Meet," the piece by Zoë Ingalls has multiple photographs—many in color—of Professor Brody, visiting artists-in-residence and student musicians and artists.

"...MIT boasts myriad activities—more than 400 events in theater, music, and dance every year, as varied as Shakespeare and Afro-Cuban dance.

Piece of cake



Celebrating the recent opening of the new MIT Student Services Center with a cake-cutting in Lobby 10 are (left to right) Carrie Groves of the Registrar's Office, Carmen Velez of Financial Aid and Erin McCoy of the Bursar's Office. Photo by Donna Coveney

Moniz leaves US post, plans return to MIT

■ By Robert J. Sales
News Office

Professor Ernest J. Moniz has resigned as the associate director for science of the President's Office of Science and Technology Policy (OSTP), effective January 31, and he will return to MIT as the head of the Department of Physics on February 3.

Professor Moniz, 51, was appointed by President Clinton in 1995 after working with his predecessor, Professor M.R.C. Greenwood of the University of California at Davis, and presidential science adviser John H. Gibbons on the administration's 1994 science policy report, "Science in the National Interest."

Reflecting on his first experience in public service, Professor Moniz said, "In many ways, it was much better than I expected. I was particularly impressed by the quality, the commitment and the extraordinary hard work done by my colleagues on the Presidential staff."

In an atmosphere that placed a premium on deficit reduction through reduced spending, Professor Moniz was gratified to be able to play a role in maintaining federal support for scientific research. About \$40 billion was earmarked to develop new knowledge and technologies in the last budget, and he expects a similar amount to be allocated in the budget that will be proposed next month by the President. Of the total, basic research in the areas of physical, life and social sciences receives about \$15 billion.

"We've done quite a respectable job in sustaining the scientific investment," he said.

In addition to playing a role in the budget process, Professor Moniz helped formulate principles on which scientific grants will be judged in the future, and he helped advance procedures to deal with research misconduct. He also worked on education standards in science and math for students from kindergarten through high school, strengthened the partnership between the federal government and research universities, and reviewed the US research program in Antarctica.



Moniz

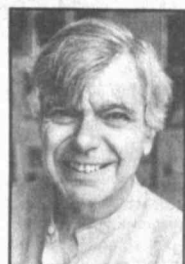
Noting that working in the White House was "intense, demanding and yet very fulfilling," Professor Moniz said, "I'm looking forward to getting back into the academic environment."

Would he accept another government post in the future?

"Maybe, after a rest, if it were the right opportunity," said Professor Moniz, who joined the MIT faculty as an assistant professor of physics in 1973 and was named department head in 1991. He received the BS in physics from Boston College in 1966 and the PhD in theoretical physics from Stanford in 1971.

"MIT has a tradition of public service," he said. "I was pleased to become a part of that tradition."

This might not be out of the ordinary at a major liberal-arts college or conservatory, but the variety is astonishing at an institution devoted to science and engineering," Ms. Ingalls wrote after interviews with Professor **Ellen Harris**, MIT's first Associate Provost for the Arts; Professor **Alan Lightman**, director of the Program in Writing and Humanistic Studies; MIT students, and Dr. Brody. "There's an energy in the air at MIT that is difficult to describe



Brody

but is palpable nonetheless. On the fourth floor of Building 6, classical music seeps into the hall from behind the closed door of a laboratory bearing the sign Caution: Radioactive Material."

but is palpable nonetheless. On the fourth floor of Building 6, classical music seeps into the hall from behind the closed door of a laboratory bearing the sign Caution: Radioactive Material."

QUOTES:

"The American miracle is that despite how badly we short-change education and how little we save, we manage to be so rich. And the reason is that we're so efficient. The way we do that is a wild free-for-all of competition and decentralized initiative." —Professor **Paul Krugman** of economics, in a quote cited as one of the best of 1996 by the *Kansas City Star* (December 21).

Copy centers offer new services, longer hours

MIT's three Copy Technology Centers are now open longer and have expanded their services to include Docutech printing, slides, copy-right clearance and help with departments' own photo-copiers.

Reengineering

The remodeled CopyTech centers (formerly the Quick Copy Centers) in Rms 11-004, E52-045 and 2-217 took over many of the copying and printing services of Graphic Arts when that department closed in September. The centers, managed by Steven Dimond, continue to offer binding, self-service copying and over-the-counter drop-off production service as before.

Hours of the CopyTech Center in Rm 11-004 are now 8am-9pm from Monday-Friday, and 8am-5pm on Saturday. That facility now houses the Xerox Docutech publishing system of networked, high-speed laser copiers. The CopyTech Center in Rm E52-045 is open from 8am-6pm, Monday through Friday.

Customers can send Docutech job requests electronically from anywhere in the Institute, eliminating the need to mail or carry over a hard copy. The resulting prints are of much higher quality than those scanned from hard copy or reproduced on conventional copiers, especially when the document contains screens or halftones. With the Docutech, copy center staff can also electronically store an entire job and its specifications for future use after it has been scanned or printed.

Other Copy Technology Center services in Rm 11-004:

- The Media Service area has self-service computer workstations (three

Macintosh and one PC), and consultation if needed. Printer options include high-speed black and white laser prints, color thermal wax, and dye sublimation color prints.

- Customers can make color copies from hard copies or 35mm slides on three sizes of paper or overhead transparencies. There is also a fax service and a new slide service that can transfer presentation material from a computer file onto 35mm slides within 24 hours.

- A new Copyright Clearance service expedites the process whereby faculty members assemble course readers for their classes while ensuring that they comply with copyright laws.

- For community members who are coordinating a conference or seminar, CopyTech can provide copying, assembly and delivery of printed materials.

- The Institute Copier Program helps departments purchase copiers by providing information on available products and negotiating favorable prices. Under a separate program, CopyTech staff will also install departmental copiers, maintain the equipment and monitor supplies.

Builders in training



Students in Professor John de Monchau's Urban Design Studio (11.332J/4.163J) designed the area around a train station in Barcelona, Spain, for a class project last term. Barcelona officials recently visited MIT to see the final presentation and design prototype. Graduate student Wolfgang Ungerer (in white shirt) explains part of the design to Joan Antonio Solans, director-general of urbanism for the Generalitat of Catalonia (far left); student Adrian L'Orange of Barcelona; MIT architecture graduate student Wai Kuen Chan, who was TA for the subject; Mark Schuster, associate professor of urban studies and planning (behind Mr. Ungerer); Ellen Dunham-Jones, assistant professor of architecture; Joaquin Sabate of Barcelona, and Professor de Monchau, former dean of the School of Architecture and Planning. Photo by Donna Coveney

Purchasing gives tips for speeding up requisition process

■ By Janet Snover
Community Involvement Team

The Purchasing Department is offering some suggestions for the community which should help in get-

ting requisitions processed as quickly as possible by the Purchasing and Sub-contract offices.

It is important for requisitioners to remember that they can distribute the charges for each line item on a requis-

ition either by percentage or by quantity to different accounts. For example, you can send one requisition to Purchasing for five laser printers. The printers can all be charged to one account; they can be charged to five separate accounts; or two could be charged to one account, two to another account and the fifth to a third account. (Using SAP, the distribution cannot be done by dollar amounts.)

If the account distributions are not clear, Purchasing has to contact the requisitioner, which delays issuing the purchase order.

Most retail firms that normally work on a cash or credit-card basis do not accept purchase orders from MIT. The Purchasing staff can, in most cases, provide the name of another vendor who will supply an equal-quality or better product at a lower price, and who will accept an MIT purchase order. The Institute prefers to do business with these established partners, but there are emergency situations when a department requires a product which can be obtained most quickly from a retail firm.

If a department needs to make an MIT purchase from retailers such as Lechmere, the Micro Center, Somerville Lumber, Sears, Service Merchandise or Home Depot, it's best to use cash or a credit card and then submit a request for payment form for reimbursement. Since MIT is a tax-exempt organization, requisitioners will not be reimbursed for sales tax. Therefore, it's advisable to get a tax-exempt certificate from Purchasing before buying the product.

Mail-order houses such as Dell Marketing, Gateway and Microware-

house usually require a hard copy of a purchase order rather than just a purchase order number over the telephone. Though mailing or faxing the purchase order takes more time, this is required by these vendors. (They do not require money up front and will invoice MIT for the goods and services provided.)

Other reminders about proper requisitioning include the following:

- Provide the vendor's name and address
- Specify the name of the person who should receive the blue copy of the purchase order in the field labeled "Send req. copy of PO to." (If this is left blank, Purchasing sends the blue copy to the requisitioner.)
- When purchasing items such as food, beverages or flowers, include the name of the event or committee meeting for which they are needed, because this information is required by government auditors.

The procedure for blanket orders has not changed since the conversion to SAP. Requisitions for blanket orders can be sent to the Purchasing Office with an account number. (If requesting a renewal of a blanket order, reference last year's purchase order number.) All invoices against the blanket order will be approved by the department, which can charge any authorized account at the time of approval.

A Selection of Source justification form (available in the Purchasing offices) must be provided along with the requisition for all orders of more than \$2,500.

All subcontract requisitions of more than \$2,500 must include a copy of the vendor's quotation and a justification

(continued on page 5)

Institute Calendar

- *-Open to public
- ** -Open to MIT community only
- ***-Open to members only

January 15 - February 2

SEMINARS & LECTURES

WEDNESDAY, JANUARY 15

Life-Cycle Assessment—Is it the Appropriate Tool for the Evaluation of Eco-Efficiency? Case-studies from the Chemical Industry*—Dr. Markus A. Meier, Safety & Environmental Technology Group, Swiss Federal Institute of Technology, Zurich. Sponsored by the Ralph Parsons Laboratory, 4pm, Rm 48-316. More info: Janni, x8-5554 or <janiscka@mit.edu>.

How to Make Money on the Internet*—MIT Enterprise Forum Case Presentation: "Making Money on the Internet: Does Content or Software Drive Value Creation?", 6-9pm, Rm 10-250. Features Reuters NewMedia Sr. Vice President David Graves and a case profile of Firefly Network, Inc. Registration: members/\$10, non-members/\$15. More info: x3-8240.

TUESDAY, JANUARY 21

Environmental Acoustics and AUVs*—Henrik Schmidt, MIT. Autonomous Underwater Vehicles Seminar Series sponsored by MIT Sea Grant, Draper Lab, Dept of Ocean Engineering, 12 noon, Rm E38-300. Note: rescheduled from Jan. 14. More info: x3-9310.

"Banishing the Scourge of Childhood": The Control of Diptheria in New York City, 1880-1930*—Evelynn Hammond, MIT. Hosted by Herman Eisen. Sponsored by the Department of Biology, 4:15pm, Rm 6-120. More info: x3-4701.

TUESDAY, JANUARY 28

Biomedical Research in a Time of Health Care Chaos*—Samuel Thier, President, Massachusetts General Hospital. Hosted by David Baltimore. Sponsored by the Department of Biology, 4:15pm, Rm 6-120. More info: x3-4701.

COMMUNITY CALENDAR

Family Ice Skating**—Jan 26: Annual open house for family ice skating hosted by the MIT Activities Committee (MITAC) and the Athletic Department. At the MIT Rink at

the Johnson Athletic Center, 2-5 pm. Limited skate rentals are available for a minimal fee, complimentary cookies and beverages provided. Free to the MIT community; MIT ID card will be required.

Informal Needlework Group**—Sponsored by the MIT Women's League, 10:30am-1:30pm, Rm 10-340 (Emma Rogers Room). Upcoming meetings: Jan 15, Feb 5, 19, Mar 5, 19, Apr 2, 16, May 7, 21, June 4.

MIT Pistol & Rifle Club, Basic Pistol Marksmanship Course*—Starts Jan. 16: 4 nights: Jan 16, 17, 23, 24, 6-9pm. DuPont pistol range. NRA certified course covers safe handling, storage and use of firearms, as well as developing marksmanship skills to meet local police department requirements for pistol permits. Fee \$50, \$10 deposit. Info/registration: Valerie Lowe, Draper x8-4769 or e-mail: <vlowe@draper.com>.

User Groups and Quick Start Classes**—Jan 15: Eudora Quick Start, 12-1pm, Rm 3-133. HTML Demo, 1-4pm, Rm E40-302. PageMaker Styles, 2-3pm, Rm 3-133. Jan 16: Internet Commerce, 3-5pm, Rm E51-345. OS/2 User Group, 5-6:30pm, Rm 2-105. Jan 17: Excel Quick Start, 12:15-1pm, Rm 11-206. A Tour of MIT's Data Center, 1-2:30pm, Rm W91. Jan 21: World Wide Web Quick Start, 12-1pm, Rm 3-133. Kerberos, 1-3pm, Rm 10-250. Jan 22: Windows 95 Quick Start, 12-1pm, Rm E40-302. Apple's Masters of Media, 1-2pm, Rm 3-133. Jan 23: Adaptive Technology, 10-11:30am, Rm 3-133. Dr. Solomon, 12-1pm, Rm E40-302. CWIS User Group, 12-1:30pm, Rm 3-133. Jan 24: PowerPoint Quick Start, 12-1pm, Rm 3-133. Jan 27: Mac Tech partners, 12-1:30pm, Rm E40-302. Jan 28: HTML Demo, 9am-12 noon, Rm 3-133. Microsoft Word User Group, 12-1pm, Rm E40-302. Jan 29: ECAT Demo, 12-1pm, Rm 3-133. Computer Ethics Workshop, 2-5pm, Rm 3-370. Jan 30: Resumé Workshop, 1-3pm, Rm 1-115. Jan 31: Open Transport Overview, 12-1pm, Rm 3-133. All events free. Sponsored by Information Systems.

Using SAP presentation**—Jan 30: Demo covering: creating a req. in SAP, getting a PO, viewing account statements online. Training plans discussed. Co-sponsored by the Working Group on Support Staff Issues and the Management Reporting project, noon-1pm, Rm 10-250.

SENIOR FOCUS

Lifestyles: What to Consider before (or during) Your Retirement**—Jan 14, 28: Same

presentation both dates by Dr. Dawn Metcalf, LICSW, of the Medical Department, Benefits Office IAP Seminar, noon-2pm, Student Center Twenty Chimneys. Registration requested: leave name, phone number and date you plan to attend at x3-4276 or e-mail <roslyna@mit.edu>.

Fundamentals of Estate Planning**—Jan 16, 29: Same presentation both days by Nina Schwitters, MBA, of TIAA-CREF, Benefits Office IAP Seminar, noon-2pm, Student Center Twenty Chimneys. Registration requested: leave name, phone number and date you plan to attend at x3-4276 or e-mail <roslyna@mit.edu>.

SOCIAL ACTIVITIES

MIT Ballroom Dancing Winter Formal*—Jan 18: "An Evening in Vienna." Showcase, raffle, hors d'oeuvres, light refreshments. 8pm-midnight, La Sala de Puerto Rico, 2nd fl., MIT Student Center. Tickets \$7/students, \$10/general, no experience or partner needed, formal attire. Presented by the MIT Ballroom Dance Team. More info: Vikas 617-225-9859.

MOVIES

Admission to below Lecture Series Committee Movies is \$2.00, and MIT or Wellesley identification is required. For the latest Lecture Series Committee movie and lecture information, call the LSC Movieline, x8-8881, or check TechInfo or the Web.

Jan 15: Vertigo, 7 & 10pm, Rm 26-100. Jan 17: F/X, 7 & 10pm, Rm 26-100. Jan 18: F/X, 8pm, Rm 26-100. Jan 19: The Color Purple, 7 & 10:30pm, Rm 26-100. Jan 22: Some Like It Hot, 7 & 10pm, Rm 26-100. Jan 25: Science Fiction marathon, 7pm, Rm 26-100, with: Terminator 2: Judgment Day, Patlabo 2, The Philadelphia Experiment, The Day the Earth Stood Still, The Stuff, Colossus: The Forbin Project, Back to the Future, 2010, Capricorn One. Jan 29: A Night at the Opera, 7 & 10pm, Rm 26-100. Jan 31: Enter the Dragon, 7 & 10pm, Rm 26-100. Feb 1: The Ref, 7 & 10pm, Rm 26-100.

Next deadline for listings: 12 noon Friday, January 24. Covers events from Wednesday, January 29 through Sunday, February 9. Listings for the Institute Calendar and Student Notices may be e-mailed to <ttcalendar@mit.edu> or mailed to Calendar Editor, Rm 5-111. Faxes are not accepted. Early submissions encouraged.

SAP demonstration on tap

To give people a feel for what it will be like to use the new SAP financial system, a presentation will be held on Thursday, Jan. 30 from noon-1pm in Rm 10-250.

The Working Group on Support Staff Issues and the Management Reporting (MR) project are co-sponsoring the program.

Katherine Cochrane, MR project manager, will provide a brief overview on the use of SAP at MIT. Project member Robert Murray will give a demonstration, covering topics such as creating a requisition in SAP, obtaining a purchase order and viewing accounting statements online. Cindy

Vallino, the project's training coordinator, will describe plans for training SAP users.

Questions can be submitted in advance by e-mail to Tawney Wray, <wray@mit.edu>, or Joanne Jones, <jjones@mit.edu>. Both are members of the Working Group's reengineering task group, which has arranged the event. Questions will be organized and answered at the end of the presentation.

Though the program is geared toward support and administrative staff who will ultimately use SAP, all members of the MIT community are welcome to attend.

Distance-learning program launched with design exercise

Students in the inaugural class of MIT's new System Design and Management (SDM) program got a taste of real-world challenges at a chilly outdoor exercise on Briggs Field last week.

On their first day (Monday, Jan. 6), the students formed six teams for their first assigned group design project: devising a means of transmitting information (35 pages of students' résumés) across a 100-meter MIT soccer field without using human power. The rules aimed to simulate the conditions of two Bosnian villages isolated by a mine field and wanting to exchange information. Designs tested on Friday included a line attached to spools and helium balloons. In another game that started this week, students will try to design and organize an auto industry to meet the unique needs of the new Eastern European market.

The program for professional engineers is offered jointly by the School of Engineering and Sloan School of Management. Using a hybrid on-campus/off-campus approach to education, it is designed to return students to their engineering organizations prepared to assume positions as technically grounded senior managers, directors of engineering or chief technology officers.

"This type of program is the wave of the future," Dr. Vest said at the students' orientation last week. "Given the rapid pace of change in technical and scientific knowledge, most working professionals need to seek out new paths of continuous learning simply to stay current. Yet, as all of us know, just staying current is not enough in today's workplace. Those who wish to be leaders need to know how to thrive in a constantly changing, complex environment. This means becoming continual learners—as individuals and as organizations—bringing an active, systems approach to new problems and new challenges as they arise."

The two-year SDM distance-learning

program begins with an intensive month-long January session at MIT. Distance-learning students then return to their work sites, where for 20 months they take MIT classes part-time using videoconferencing, videotape and Web-assisted instruction. They then return to MIT for a final semester in residence. Collaborative projects are done remotely from different work sites, reflecting the way work teams have now "gone global." The curriculum includes courses in systems architecture, systems engineering and systems and project management; disciplinary design electives; and fundamental course work in engineering and management.

ON-CAMPUS OPTION

Another option permits students to complete the program in 13 months of full-time study at MIT. All students earn a Master of Science in Engineering and Management degree. The inaugural class consists of 27 distance-learning students and nine on campus. On average, they are 33 years old and have seven years of work experience.

Companies are motivated to be SDM partners because the program allows them to send fast-track engineers they don't want to lose—and cannot spare—for MBA training coupled with the latest in systems learning. Eastman Kodak and United Technologies Corp. are sustaining enterprise partners, together enrolling more than 20 students. More than 10 other companies are sponsoring SDM students.

"In the past, technical innovation by itself was often a singular requisite for business success," said Thomas L. Magnanti, SDM program co-director and George Eastman Professor of Management Science. "Increasingly, however, technical excellence by itself will no longer suffice; to prosper, corporations must acquire a systems perspective that brings together the best thinking of both engineering and management. SDM is exciting because it aims



Students in the first System Design and Management class began their MIT education with a challenge to get a package from one end of Briggs Field to the other without using human power. This team, called Six Pack, used a 10-watt motor and a bicycle wheel spinning against the wheel of a small car to successfully convey their carefully wrapped résumés. Members of the team were (left to right) John Sullivan, Marco Sanchez and Tom Toner.

Photo by Donna Coveney

to address this need squarely, and it seeks to use the best of modern technology to make systems education available to a broad audience of practicing engineers." The other director is

Professor Edward F. Crawley of aeronautics and astronautics.

The SDM curriculum and program design is a result of more than four years of market studies and collabora-

tion with industry leaders in aerospace, automotive, and telecommunications companies and government representatives. It builds on an 11-student pilot program that was offered last year.

Experts present transportation ideas

By Scott Campbell
Center for Transportation Studies

Private companies and government agencies plan to meet future transportation needs with high-speed rail lines, highway improvements and general reorganization, said experts at the "Chief Executive Viewpoints" seminar series sponsored by the Center for Transportation Studies.

Amtrak is now engaged in a high-speed rail project scheduled for completion in August 1999 which includes infrastructure improvements, electrification, and new equipment and facilities, said Thomas Downs, Amtrak's chairman, president and CEO. As part of that project, the company is rebuilding the 160-year-old Boston-to-New Haven route at the rate of one mile a day to eventually create 165 miles of continuous welded rail.

Since there are enough curves between Boston and New York to form eleven complete 360-degree circles, the trains will also have tilt technology so they can lean into the curves, and the cabins will be slightly pressurized to alleviate the discomfort of pressure changes when they go through tunnels, Mr. Downs said.

Ultimately, there will be 18 new trains—"whisper quiet" even when traveling at 125-135 miles an hour, he said—with large windows, work tables, computer jacks and phone jacks. The project also involves new stations and improved reservations, ticketing, baggage handling, food and wine service, etc.

Although other industries such as telecommunications are reinventing themselves, "we haven't even begun to turn ourselves upside down" in the world of public transportation, said Ann Canby, Delaware's secretary of transportation. Until recently, she said, officials have often tackled transportation problems backwards—first deciding what they wanted to do and then justifying the action. To correct that, Delaware has strengthened its planning efforts by identifying three planning categories—growth areas, where officials want to see development occur; management areas, where they want to improve the existing system, and preservation areas, which they want to leave alone.

Delaware also consolidated all highway operations, bringing the turnpike

authority into the Department of Transportation (DOT), so all highways are now treated as one road network, and it created a pavement and bridge management program uniting 21 separate databases. Officials created an office of external affairs to communicate with their constituencies, something that is usually "grossly overlooked" by DOTs, Ms. Canby said.

CONTINENTAL REVIVAL

When Gordon Bethune took over as president and CEO of Continental Airlines in February 1994, the company was ranked 10th in measures of customer satisfaction such as on-time arrivals, baggage handling and number of complaints. He set out to change the company's culture, which has been largely focused on negative events, he said. His "Go Forward" business plan included a marketing strategy which refocused efforts on Continental's three hubs (Newark, Cleveland and Houston), resulting in less capacity but improved pricing, and a financial plan which improved the airline's cash balance, credit rating and borrowing ability.

For every month in which Continental rated among the top five airlines in on-time arrivals, the resulting savings (about \$65 per person per month) were turned over to employees in separate checks. In a further effort to align employees' interests with those of shareholders and customers, a toll-free

number was set up so workers could get a company "snapshot" of stock updates, baggage handling data, etc., at any given moment.

Although Maryland's DOT has a \$2 billion annual budget and a reputation for one of the best-maintained transportation systems on the East Coast, government resources are declining even as expectations and needs are increasing, said Parker Williams, administrator for Maryland's State Highway Administration. Technological innovation is the key to accomplishing more with less, he said. Intelligent transportation systems are very important in Maryland because its jurisdiction includes the second most congested area in the country—the Washington/Baltimore grid, a problem that can't be solved merely by more construction.

The state will also be opening new HOV (high-occupancy vehicle, or carpool) lanes, and expects to spend about \$50 million in the next several years on sound barriers. Meanwhile, Baltimore is also getting a new international air terminal and access routes, plus an extended light-rail system.

To help pay for these projects, the agency is looking to its real estate holdings, some of which could be profitably transferred to private-sector development. The agency is also leveraging capital by reducing operating expenses and parlaying those savings into new capital through bond issues.

Requisition tips offered

(continued from page 4)

memo. This should contain a detailed cost analysis showing why the price is reasonable and explaining why this vendor has been selected.

The Office of Sponsored Programs must approve the following kinds of requisitions being charged to an OSP account: those for equipment costing more than \$500 and all requisitions for more than \$25,000.

The dollar limit for department-awarded purchase orders (DAPOs) was increased from \$1,000 to \$2,500 in

September 1996. Using a DAPO is the quickest way to get a purchase order number. All previous restrictions on the use of DAPOs remain in place. For example, they may not be used to purchase restricted items such as syringes, food and beverages, license agreements or consulting services. A complete list of these items appears at the beginning of an EREQ transaction.

When a requisitioner isn't certain about how to properly order a product or service, it's best to call Purchasing first at x3-7241.

Diabetic?

Or know someone who is?

Get the latest info

Tuesday, January 21

- Diabetic Delight...Food Glorious Food, 11am-noon in 1-135
- Foot Care for Diabetics, 1-2pm in 1-135

Wednesday, January 22

- OPEN HOUSE, 10am-2pm in lobby7
- Diabetic Eye Care, 11:30am-12:30pm in 1-135

Thursday, January 23

- Managing Diabetes, noon-1pm in 1-190
- Diabetic Drugs, 1:30-2:30pm in 1-135

Tuesday, January 28

- Exercise for Diabetics noon-1:00 in 1-150

For more information, call
Health Education at MIT Medical
● (617) 253-1316 ● E23-205



Obituaries

WALLACE G. CLAY

A funeral was held on December 7 in Brigham, UT, for Wallace G. Clay, 68, of Ogden, UT, who died on December 4. Dr. Clay was a sponsored research staff member at Lincoln Laboratory for 32 years until his retirement in 1989. He worked as a physicist at Lincoln and at White Sands, NM.

Dr. Clay is survived by his wife, Kaye D. Clay; three daughters, Julie A. of Midvale, UT, Diane Smith of Germantown, MD, and Katie Maerrill of Ogden, UT; two sons, Wallace of Centerville, VA, and William of Indianapolis; two brothers, three sisters and four grandchildren. He was buried in Brigham City Cemetery.

EMORY W. LOWE

A funeral Mass was said on December 31 at St. Malachy's Church in Burlington for Emory W. "Ed" Lowe, 73, of Burlington. He was hired at Lincoln Lab in 1981 and was a Group 12 service staff member when he retired September 30.

He is survived by his wife, Elizabeth M. (a former employee of Lincoln Group 72); three daughters, Nancy Conley of Billerica, Elizabeth Currier of Amherst, NH, and Eileen of West Roxbury; two sons, Edward of Woburn and James of Burlington; two brothers and seven grandchildren. He was buried in Pinehaven Cemetery in Burlington. Donation in his memory may be made to the American Heart Association, 20 Speen St., Framingham, 01701.

Biotech CEOs honor MIT/Whitehead for genome mapping

■ By Eve K. Nichols
Whitehead Institute

Biotechnology industry leaders have chosen the completion of mouse and human genome maps by the Whitehead Institute/MIT Center for Genome Research and the French research institute Genethon as "the most significant scientific achievement of 1996."

Each year, the biotech industry's CEOs gather for The Biotech Meeting at Laguna Niguel in southern California to exchange ideas and information. "As part of the event, they honor their peers for the previous year's outstanding achievements. In 1996, they took the unusual step of looking beyond the industry to academia, and recognized the Whitehead Institute and Genethon for their extraordinary achievements in genome research," said G. Steven Burrill, a host of the meeting.

The Whitehead Genome Center, directed by Professor of Biology Eric S. Lander, is the largest federally funded genome center sponsored by the National Center for Human Genome Research (NCHGR) of the National Institutes of Health (NIH). Recent Whitehead achievements include:

- Human physical map—construction of the crucial scaffold map of the human genome, containing 15,000 DNA landmarks, required to begin sequencing all human chromosomes.
- Mouse genetic map—completion of

the first comprehensive genetic map of the mouse genome, containing nearly 8,000 genetic markers that can be used to trace inheritance.

● Human gene map—leadership of an international consortium to develop a unified gene map establishing the locations of human genes, which has so far identified the sites of more than 16,000 human genes (more than half mapped at the Whitehead Institute).

"The young scientists responsible for these projects have surpassed every goal we set for them," said Dr. Lander. "Their efforts have greatly advanced our ability to search for the genetic origins of human disease and provided the foundation necessary to begin decoding the exact sequence of all 3 billion DNA letters that make up a human being." (In April 1996, Whitehead was one of six US centers selected by NCHGR to begin sequencing the human genome.)

Under the direction of Dr. Thomas Hudson, Whitehead's human genome mapping group created a comprehensive physical map of the human genome containing more than 15,000 landmarks in little more than 12 months, greatly accelerating completion of one of the major goals of the Human Genome Project.

"Dr. Hudson's group is largely responsible for the fact that we met the international goal of a 30,000-landmark map two years ahead of schedule," Dr. Lander said.

The mouse genome mapping group, co-directed by Drs. William F. Dietrich and Joyce Miller, also came through ahead of schedule and under budget, Dr. Lander added. Mapping and sequencing the mouse genome is essential, he explained, because much of human disease research is done in laboratory models and the best model available is the mouse. Even before it was finished, the Whitehead's mouse genetic map contributed to the analysis of previously intractable genetic traits, providing new insights into the origins of asthma, hypertension, colon cancer, diabetes and epilepsy.

Whitehead's success has resulted in part from strong commitments to both informatics and robotics, Dr. Lander said. The Whitehead infor-

matics group, headed by Dr. Lincoln Stein, has created innovative systems for capturing and analyzing new data, monitoring data accuracy, and guiding both scientists and machines on the optimal setup of new experiments. In addition, the group has established a Web site that makes all data from the Whitehead Genome Center available to the public via the World Wide Web as soon as it has been checked for accuracy.

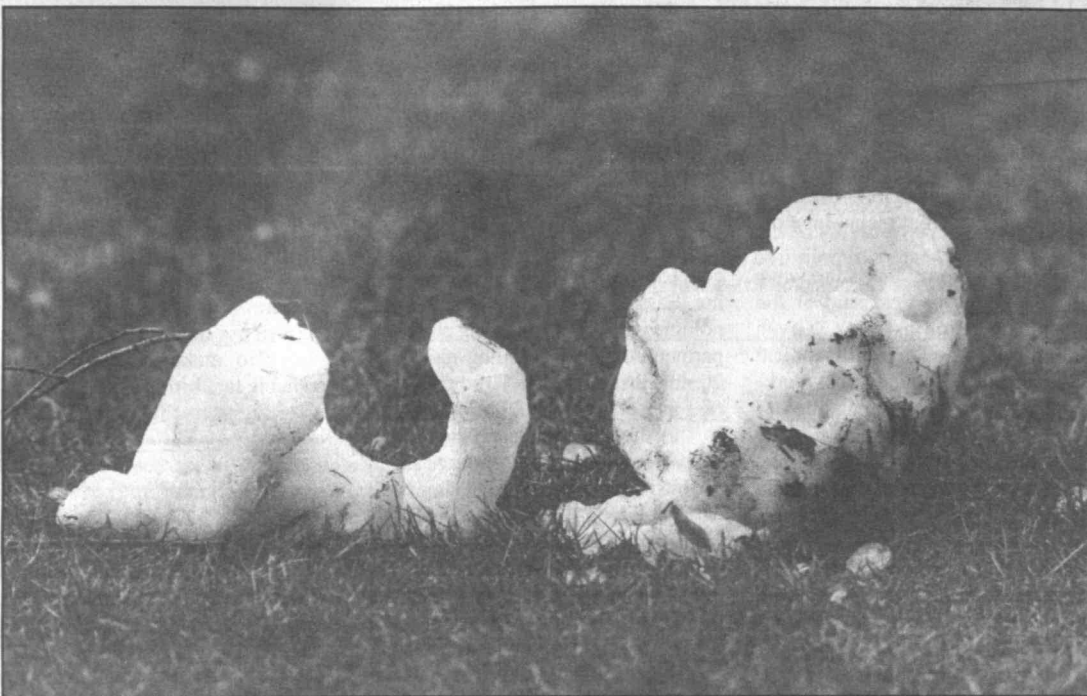
The achievements in robotics are even more dramatic, including two successive generations of robots for setting up and carrying out the polymerase chain reaction (PCR) assay, and three generations of a fully integrated robotics system for DNA sequencing.

The former, the Genomatron, boosted the Whitehead's output from

6,000 PCR reactions per day to 300,000 and played a vital role in the development of the comprehensive genome maps described above. The sequencing robot, called the Sequatron, carries out DNA purification and sequencing setup without human supervision. Whitehead intends to build a collection of Sequatrons capable of generating enough DNA samples to sequence the human genome in three years.

More than 100 biotech CEOs participated in the voting process for the achievement award. The Biotech Meeting, now in its 10th year, is a private meeting held for biotech company CEOs and is co-hosted by the firms Burrill & Company in San Francisco and Kleiner Perkins Caufield & Byers in Menlo Park, CA.

Snow summons



A remnant of snow, surrounded by bare grass in front of the Medical Department, seems to make a beckoning gesture.
Photo by Donna Coveney

Classified

Ads

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Deadline is noon Friday before publication.

FOR SALE

1997 Encyclopedia Britannica, in sealed boxes, \$900 or bst. Call 489-1386 eves.

Toshiba Sub-Notebook, T3400 CT Protege active matrix screen, 33 MHz, 4MG RAM ext dr: 250 MG hd dr: 14.4 modem card, case, softwr, 1995, \$1000. J. May, Draper x8-2843 or 576-5125.

RCA F-z camcorder, 6 yrs old, incl battery pack, tripod & carrying case, \$175. Sandi x8-9109 or <slipnosk@mit.edu>.

Three pairs of tickets to the Boston Symphony: Feb 13, Mar 20, Apr 17; seats together main floor, center section; all Thursdays, 8pm, \$150 or bst. David <dz@vetrec.mit.edu> or x3-5995.

Olympus camera, Infinity Zoom 210, point/shoot 35mm flash camera, 38-76mm zoom lens, flash, fully auto, like new. \$75. Alex 924-6294.

Kitchen table w/4 padded chairs, glass table top, cream color, 1 yr old, hardly used, \$70 or bst; wooden videotape/cd/cassette rack, \$10. Kim x3-1736 or <kimf@space.mit.edu>.

Aiwa boombox, AM/FM cass/CD & Camb Soundworks amplified subwoofer & satellite spkrs; spkrs run off 12V or w/AC, can be used separately, \$300 new 696, askg \$220. Call x8-5482.

Juicer: makes great fruit & vegetable juices, Juiceman Jr., exc cond, \$25 firm. Call x3-6794 or 696-1631.

Sunbeam frying & cooking elec skillet, temp controlled, heavy aluminum, 10" sq w/cover, exc

cond, \$8; Bearducci ravioli & cookie form, metal plates, \$15 value, sell for \$5. Rose 776-3748.

Green velvet swivel rocking chairs, \$95/ea; green/gray loveseat, \$110; oak-glass china cabinet, \$200; 6 table lamps, \$25/ea; metal skier wall sculpture, \$40. Call 861-9472.

5-drawer dresser, \$60; desk (44"x21"x30" high), \$65; desk chair, \$15; 2 armchairs, \$45 and \$30; round 42" iron table, \$35. Call Alice, x8-5401.

VEHICLES

1989 Toyota Tercel, 2-dr, red, auto, cc, a/c, AM/FM/cass, 4 new tires, lifetime warr new muffler, new radiator, alternator & batt, 114K, exc cond, \$2999 or bst. Tsu-Mu 577-5893 or <tmkao@mit.edu>.

Two cars: both auto, ps, AM/FM/cass, airbags: 1994 Acura Integra LS, 22K, white, exc cond; 1990 VW Cabriolet, 74K, yellow/black, looks & runs well. Jack x3-2772 or 396-4221.

HOUSING

Kendall Sq. area: room for rent, walk to MIT, subway, eateries, Kendall Cinema, prkg, refs req, avail Jan 1, \$400/month plus 1/3 utils. J. Blair, Draper x8-2843 or Ken 508-325-6499.

N. Cambridge: 5 rm apt, 2BR, hdwd flrs, porches, quiet, near Davis Sq., non-smkg, no dogs, w/d, \$950+/mo, refs. Contact: <marino@ll.mit.edu>.

Somerville: steps away from bus stop to Kendall Sq, spacious 1BR, great loc, \$700, no utils. Rich 391-0959.

Watertown: 2BR townhouse at the "Village," 10-min walk to transp, hdwd flrs, cent heat/air, full bsmt, prkg, laundry hookups, swimming pool, Feb 1, \$1100+. Call 926-2155.

WANTED

Bottom large basket wanted for Sears built-in dishwasher (model 7024, mfr, in 1982). Reply to <sigia@mit.edu> or Ginny at x3-9317.

Housing wanted 4/15-6/15/97 for Delft Univ. visiting scientists (faculty couple); looking for an aesthetically pleasing Boston/Camb. sublet. Dr. J. Schoonman at <schoonman@stm.tudelft.nl>.

40 voice women's choir seeks volunteer accompanist for Thurs. eve. rehearsals at MIT beginning Feb 6 for May 11 concert. Contact Jennifer x3-1757 or Nancy Wanger 566-3278.

CHILDCARE

Family seeks affectionate, experienced person to care for our six month-old son in our Somerville home two days a week; moderate English and refs req, non-smkr. Call 625-6717.

MIT family programs highly rated

(continued from page 1)
places. They also take into account other factors that may affect family policies, such as academic calendars, autonomous departments or colleges, career paths and tenure tracks, and competition for research grants.

According to the study—which was conducted through a collaboration between the College and University Personnel Association Foundation and the Families and Work Institute (FWI)—Leadership Campuses including MIT have an average of 30 policies or programs designed to help employees (both faculty and staff) balance their work and personal lives. The study used a survey to create an overall measure of "family friendliness," examining both policy provisions and campus culture. Those that scored in the top 25 percent of survey respondents on this scale were rated as Leadership Campuses.

Among the most prevalent policies found on Leadership Campuses were family leave, part-time work schedules, flextime, employee assistance programs, flexible spending accounts, workshops on family topics, opportunities for faculty to start and stop the tenure clock, child care services and training for supervisors on work-family issues. Other schools in the top third of Leadership Campuses include Harvard, Cornell, Johns Hopkins, Northwestern, Stanford, and the Universities of California, Chicago, Delaware, Miami, Montana, Pittsburgh and New Hampshire.

In the report, MIT's parenting education programs are singled out as a "model initiative." The document includes a profile of the MIT Family Resource Center's parenting seminars and briefings, which number more than 50 each year. Staff for the seminars come from the Family Resource Center, the Medical Department, other administrative departments and the faculty, as well as from outside MIT. The

report notes that each model initiative that it described "is valued because it demonstrates the campus' commitment to work-family issues."

One of the reasons for the success of MIT's parenting programs—which have more than 1,000 participants each year—is that they fit in well with MIT culture, according to Rae Simpson, parenting programs administrator at the FRC.

"Many people in a university think in terms of learning by attending seminars and classes. It's a familiar way of getting information for a significant number of people in the MIT community," she said in the report.

"However," Dr. Simpson added last week, "we also have many other services for those who prefer to get information other ways, including individual consultations, books, materials, on-line resources, and referrals to other resources inside and outside the Institute."

LINK TO RESTRUCTURING

Another key finding is a correlation between the schools with the most comprehensive work-family agendas and those that have recently experienced some change, such as restructuring, downsizing, or a change in top leadership. Other studies have found the same correlation at corporate workplaces. At MIT, the report notes, the FRC is expanding its services to address re-engineering, with events and resources "that help families cope with changes and transitions."

"For many campuses, the upheaval created by major change efforts and concerns about cost containment are used to justify moving work-family issues to the back burner," said FWI researcher Dana Friedman. "But when an institution examines its priorities, it often finds that problems like reduced recruitment and retention are a window of opportunity for work-family

programs. The institutions we've called Leadership Campuses are often the ones that see family-supportive initiatives as an effective and inexpensive way to address these other issues."

MIT was also spotlighted along with Stanford University for its "model initiative" policy of extending health benefits to same-sex domestic partners of employees. About one-quarter of all Leadership Campuses—"mostly located on the west or east coast, where the social climate tends to be more liberal, according to the report—offer cash benefits to employees with domestic partners.

"A primary reason for expanding benefit coverage is fairness and equity," the report said. "Not offering these benefits, some institutions believe, is contrary to the philosophy of supporting a diverse work force and does not recognize the different family constellations in their communities."

Other findings of the report:
● A school's work-family agenda evolves over a period of several years, usually beginning with some type of institutional needs assessment. Of Leadership Campuses, 82 percent have engaged in such a process. MIT was one of the first US universities to conduct a work/family assessment. The study completed by the MIT Ad Hoc Faculty Committee on Family and Work in 1990 led to the establishment of a permanent, presidentially appointed Council on Family and Work.
● Though the number of institutions with focused work-family agendas is still relatively small, many believe that such initiatives will expand. Eighty-four percent of Leadership Campuses expect work-family activity to grow.
● Smaller schools have fewer work-family programs and policies than larger ones, but they are just as likely to have a work culture that is supportive of the personal and family needs of their employees.

Arts at MIT

Scientists, fans mark HAL's birthday

■ By Robert J. Sales
News Office

Professor Marvin Minsky, meet Mark Lucas. You both played a major role in celebrating HAL's birthday on January 12.

Professor Minsky, who was the scientific expert on the set of the 1968 movie *2001: A Space Odyssey*, entertained an overflow IAP crowd celebrating HAL's birth at the Tang Center's Wong Auditorium. Mr. Lucas, pastry chef at Creative Gourmet in Allston, baked the cake.

Dr. Minsky, the Toshiba Professor of Media Arts and Sciences, was the final speaker on a panel that included

David G. Stork, editor of the new book *HAL's Legacy: 2001's Computer as Dream and Reality* (MIT Press, 1997); Murray S. Campbell, research scientist for IBM who worked with the Deep Blue computer chess team, and Rosalind W. Picard, associate professor of media technology at the Media Laboratory.

Mr. Stork, an MIT alumnus (SB '76) who is chief research scientist at the Ricoh Research Center in California, addressed the question of the various years recorded for HAL's birth.

In Arthur C. Clarke's novel, HAL says, "I became operational... In Urbana, Illinois, on January 12, 1997." In the movie, director Stanley Kubrick made HAL five years older. According to Stork, the script said it took place in 1991.

Without question, Mr. Stork said, logic dictates that it happened in 1997. "Who would want to use a nine-year-old computer on a space mission?" he wondered, before adding, with perfect show biz timing, "Maybe NASA, I'm afraid."

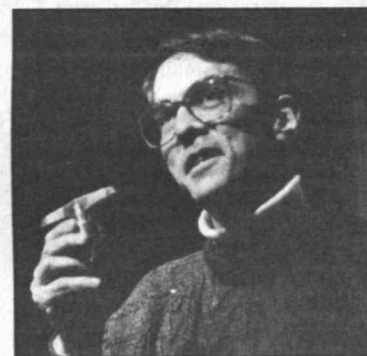
Mr. Stork played a recording that author Clarke heard at Bell Laboratories in 1962 of an ILLIAC computer singing "Daisy," which HAL sings in the movie (the voice was Canadian Shakespearean actor Douglass Rain). "It's amazing," Mr. Stork said. "In the film, it's sung in the same key."

Mr. Campbell, who showed clips of Deep Blue playing chess against Russian world champion Gary Kasparov last year, noted that HAL played chess "in the human style" in the movie, meaning he reacted with intelligence.

Noting that HAL was "the most

emotional character in the film," Professor Picard cited his dying words: "I can feel it... I'm afraid."

Professor Minsky said that three factors differentiate human and artifi-



MIT alumnus David Stork, editor of *HAL's Legacy*, addresses the birthday crowd.

Photo by Donna Coveney

cial intelligence: common sense, short-term memory and emotions. "No computer is as smart as the average 4-year-old child in putting things together," he said.

After the panel discussion (and before viewing the movie), the crowd was invited to enjoy a slice of the white butter cream birthday cake, decorated with a confectionery image of HAL's all-seeing lens. Mr. Lucas, 32, created the cake ornament from a photograph and an oral description by Bob Prior of the MIT Press Bookstore. Mr. Lucas has never seen the movie or read the book.

"This definitely piqued my interest," he said. "I'd like to learn more about it now."



THAT'S SOME OF MY EARLIER WORK."

A Sidney Harris cartoon.

Science cartoonist hopes to draw crowd at Museum

In conjunction with the MIT Museum's exhibition, *What's So Funny About Science? The Cartoons of Sidney Harris*, the science cartoonist will present a slide talk entitled "What's So Funny About Sidney Harris" on Thursday, Jan. 30 at noon at the Museum (Building N52, 2nd floor). Mr. Harris will discuss his work for the first hour and sign books in the Museum

Shop during the second.

Mr. Harris, who is not a scientist, spoofs all trades but is a recognized master of the science cartoon. Over the last 25 years, his work has appeared in the *American Scientist*, *Discover* and *Science* magazines. He is also a regular contributor to the *New Yorker*.

The exhibition is on view through May 31.

Ladd reading



Florence Ladd, director of Radcliffe's Bunting Institute, will read from her recent first novel, *Sarah's Psalm*, followed by a Q&A session and a book-signing on Thursday, Jan. 16 at 7pm in Killian Hall. *Sarah's Psalm* relates the story of a young black Harvard graduate's search for identity and her fascination with all things African. A pre-reading reception will be held at 6pm outside Killian Hall.

Dr. Ladd has been associate dean of MIT's School of Architecture and Planning, associate executive director of Oxfam America and dean of students at Wellesley College. She recently announced her retirement from the Bunting Institute to travel and work on her second novel, a sequel to *Sarah's Psalm*.

For more information, call x3-5683.

Arts News

■ **Elizabeth Goldring**, exhibits and projects director with the Center for Advanced Visual Studies, will read from her new book of poems, *Without Warning*, on Sunday, Jan. 19 at 3pm at the Bromfield Art Gallery in Boston. Ms. Goldring, a visual artist and a poet, will present the reading as part of the gallery's annual Members Show which showcases the work of 16 gallery artists.

■ The Communications Office not only hopes you'll judge the 1996-97 **MIT Bulletin** by its cover, but admire the cover enough to want the poster version. The color image of Lobby 7, incorporating illustrations, photographs and text from the Bulletin and designed, illustrated and

photographed by artist and designer Tim Moore, is available at the Coop, the MIT Press Book Store and the MIT Museum Shop for \$15. MIT offices can purchase the posters in bulk quantities at a discount through the Communications Office, Rm 4-237, x3-1705.

■ The US Chapter of the International Association of Art Critics awarded the **List Visual Art Center's Louise Bourgeois: Drawings** exhibition third place in the alternative-space category in their 1995-96 Best Show Competition. The show, organized by the University Art Museum in Berkeley, CA, was on view through December 29.

Institute Arts

For more arts-related information call the 24-hour hotline at 253-ARTS or consult the World Wide Web at <<http://web.mit.edu/arts/www/>>.

MUSIC

IAP Orchestra Concert*—Jan 24. Lawrence Isaacson, director. Mozart's *Overture to The Magic Flute*, Schumann's *Symphony No. 3*, and Verdi's *March from Aida*. Also, Boston soprano Annelise Skovmand will perform excerpts from Mozart, Massenet, Gounod and Floyd. 8pm, Kresge Aud. x3-2826 or James Li, x5-8387 or <jamescli@mit.edu> or <<http://web.mit.edu/jamescli/www/iapsym.html>>.

Theremin Concert*—Jan 28. Local thereminist James Coleman gives a short concert on the theremin, arguably the world's first electronic instrument—a wooden box with two antennae, played by placing hands in proximity of the antennae. Part of the authors@mit.edu series sponsored by The MIT Press Bookstore and The MIT Humanities & Dewey Libraries. Refreshments served. 7:30pm, Killian Hall. x3-5249

IAP and Opera unMet*—Jan 31: Opera Live excerpts from *Carmen*, *Aida* and *Figaro*, 8pm, Kresge Auditorium. Cast includes D'Anna Fortunato and MIT's Phil Lima and Marshall Hughes. Narrated by Stephanie Harriston-Diggs. Tickets \$6 (no ticket limit) for MIT community, \$15 others. For ticket information contact Phil Huang <philsh@mit.edu> or call x3-5256.

MIT Guild of Bell Ringers*—Change ringing on hand bells. Beginners always welcome. Will also ring for occasions. Meets Mondays,

6:30pm, 2nd floor balcony of Lobby 7. Ken, 784-6114

DANCE

Tech Squares Dance*—Jan 28: You don't need to bring anybody. Come to solve puzzles, get some exercise and for the free food. 8pm, Student Center 2nd floor. x3-7000 or <<http://www.mit.edu/activities/tech-squares>>.

MIT Folkdance Club*—Sun—International Dancing: Early teaching for beginners—7-8pm; Teaching & requests—8-11pm, Sala de Puerto Rico or Lobby 13. **Tues—**Advanced Balkan Dancing: Regular teaching & requests, 8-11pm, Student Center 4th floor. **Weds—**Israeli Dancing: Early teaching for beginners—7-8pm; Teaching & requests—8-11pm, Sala de Puerto Rico or Lobby 13. MIT/Wellesley students free, 25¢ others. Call x3-FOLK or e-mail <fdc-request@mit.edu> for locations on a given week.

THEATER

Under Milk Wood: A Play for Voices by Dylan Thomas*—Jan 31-Feb 2: Directed by Joseph Kaye '99. Supported in part by the Council for the Arts at MIT. 8pm, Lewis Music Library (14E-109). Information: 758-1305 or email <umw@mit.edu>.

READINGS

Sarah's Psalm: An Evening with Florence Ladd*—Jan 16: The director of Radcliffe

College's Bunting Institute will read from her recent first novel, *Sarah's Psalm*, followed by a question and answer session and a book-signing. Pre-reading reception—6pm, outside Killian Hall. Reading—7pm, Killian Hall. x3-5683

EXHIBITS

List Visual Arts Center (E15)*—Joseph Kosuth—Re-Defining the Context of Art: 1968-97. Kosuth, a key figure in the redefinition of the art object that took place during the 1960s and 1970s with the formulation of Conceptual art, will site this new project at the List Visual Arts Center and venues around Cambridge and Boston. **Jan 25:** "Seeing Reading and Asking"—Talk presented by Joseph Kosuth. 3pm, Bartos Theater (E15). **Jill Reynolds, Artist-in-Residence: The Shape of Breath.** Seattle-based artist Jill Reynolds will create this new project employing an artistic vocabulary that includes stone, blown-glass, graphite, paper, water, breath, leaves and other natural and found objects. **Jan 15-Feb 10:** Artist in residence dates. **PORT: Navigating Digital Culture.** This thematic exhibition organized by the New York-based collaborative artnetweb, will present the work of artists who use the internet as their medium. Schedules and descriptions: <<http://artnetweb.com/port>>. **Jan 24:** Opening Reception, 5:30-7:30pm. Mr. Kosuth and Ms. Reynolds will attend. All shows run through March 29. Hours: Tues-Thurs & Weekends 12-6pm; Fri 12-8pm; closed holidays. Curatorial Office Hours—Meet the curatorial staff for informal discussions—Weds, 12:30-1:30pm. x3-4680

MIT Museum (N52)*—Gestural Engineering: The Sculpture of Arthur Ganson. Permanent

installation of Ganson's whimsical kinetic sculptures address emotional and philosophical issues between the animate and inanimate, human and machine. Ganson is a former MIT Artist-in-Residence. Ongoing. *What's So Funny About Science?* Exhibition of cartoons of New Yorker science cartoonist Sidney Harris. Jan 10 through May 31. *Maps from the Age of Atlases.* Rare maps from the MIT Museum's Hart Nautical Collections. Through Mar 31. Ongoing: *LightForest: The Holographic Rainforest. Holography: Artists and Inventors; MIT Hall of Hacks; Light Sculptures by Bill Parker; Math-in-3D: Geometric Sculptures by Morton C. Bradley, Jr.; MathSpace.* 265 Mass Ave. Tues-Fri 10-5, Weekends 1-5. More info: x3-4444.

Compton Gallery—Research Lab for Electronics 50th Anniversary Exhibition. Bldg 10, 1st floor. Through Jan 31. Weekdays: 9-5. x3-4444

Hart Nautical Gallery*—Ships for Victory: American Shipbuilding's Finest Hour. Shipbuilding production during World War II. Permanent Exhibition of MIT Museum's Ship Models. Ongoing. Weekdays 9-5pm. More info: x3-5942.

Wolk Gallery—The Ephemeral, The Transient, The Static: Ritual Architecture and Urbanity. Exhibition exploring the spiritual and emotional through the living traditions of ritual architecture in India. Through Feb 17. Wolk Gallery (Bldg 7, 3rd floor). x8-9106

The Dean's Gallery—Midge Slavin: Picking up the Pieces. Figurative and landscape images in mixed media on paper. Through Jan 24. The

Dean's Gallery, Sloan School of Management, E52-466. Weekdays 9-5pm. x3-9455 or <<http://web.mit.edu/deans-gallery/www/>>

Women's Studies. Permanent exhibition of archival photographs documenting the role of women at MIT over the decades. Rm 14E-316. More info: x3-8844.

OTHER

Arts Grant Deadline—Jan 17.** Second of three deadlines for 1996-97 Council for the Arts Grants funding. Forms available at the Office of the Arts, E15-205, x3-4005

New Landmarks: MIT Hacks, Myths, and Lore*—Jan 21, 28. Collaborate with artist Mags Harries on creating a new definition of landmark/public monument at MIT based upon experiences, recollections, projections, or ideas about life here. The project will be organized around charting this new landmark on the Global Positioning System (GPS). Meeting times will be used to discuss and generate ideas, explore the campus, and pinpoint the project object. Sponsored by the List Visual Arts Center and the Associate Provost for the Arts. Jan 21—3-5pm, Student Ctr Rm 407; Jan 28—1-5pm, Student Ctr Rm 407. Attendance at all sessions is recommended. Info/registration: Jennifer Riddell, x3-4400, <jjr@mit.edu>.

Applications for Wiesner Student Art Gallery—**All students welcome to apply to put up an exhibit. Information: Ted Johnson, Campus Activities Complex, Rm W20-500.

Sharp: biotech to keep driving drug innovations

The fast-paced biotechnology industry will continue to drive innovations in drug therapies over the next decade, said Professor Phillip A. Sharp, 1993 Nobel laureate and head of the Department of Biology, at an IAP lecture on January 8.

In a session entitled "Biology and Biogen," Professor Sharp detailed the origins and growth of the US biotechnology industry, particularly through his experiences with Biogen Inc., a company he helped found.

Located in Kendall Square, Biogen is the second-oldest biotechnology company in the country behind Genentech Inc. of San Francisco. Biogen sells Avonex, a beta-interferon treatment for multiple sclerosis, alpha interferon for treating hepatitis, and other products.

Professor Sharp credited Genentech with establishing a trend for Wall Street to finance biotechnology companies, which typically do not turn out products and profits until at least seven or eight years after they begin operation.

"It can take a decade between an investment in a technology and when it makes revenues," Professor Sharp explained. Biogen, for example, was losing more than \$20 million a year in 1986 when it began selling products. The company did not make significant sales until 1990. And this was despite a relatively quick turnaround for its first main product, alpha interferon. The product resulted from research by Biogen co-founder Charles Weissmann of the University of Zurich, who isolated a cDNA gene for antiviral activity in 1979.

"We knew this was of great financial importance," Professor Sharp said. Indeed by 1996, sales of alpha-inter-

feron products worldwide were approaching \$1 billion.

The antiviral activity of interferon was first discovered in 1957, and in 1978 human interferon was purified by Hoffman-LaRoche. In 1979, Dr. Weissmann cloned alpha interferon. From 1979-81, Biogen scaled up formulation and increased expression of alpha interferon in bacteria so it could be reproduced for pharmaceutical use. From 1981-86, the company conducted toxicology and clinical studies. In 1986 it registered alpha interferon to treat hairy-cell leukemia, with other potential uses for venereal warts, hepatitis B and C, and Kaposi's sarcoma (a cancer associated with AIDS). The cycle from idea through product development took about seven years.

Because biotechnology companies tend to be small and many are just beginning to reap revenues after years of research and development, many tend to go out of business or be purchased by larger companies, particularly pharmaceutical companies seeking innovative research and products, Professor Sharp said. To put the company sizes into perspective, he said Merck & Co., Inc., one of the largest pharmaceutical companies in the world, by itself is the size of the entire US biotechnology industry: both had revenues of about \$10 billion last year.

Still, biotechnology companies are starting up in record numbers.

"Last year more biotechnology companies were started and supported (by Wall Street) than in any period before, so Wall Street is continuing to invest in them," Professor Sharp said. "Demand will continue for biotechnology companies over the next 10 years, driven by the rate of change of science."

Weinberg weighs ethical issues in genetic research

(continued from page 1)

diseases like Huntington's—an inherited disease that hits people in their late 30s, causing degenerative spasms and a gradual loss of mental faculties—justifies terminating a pregnancy.

While aborting all fetuses that test positive for Huntington's disease would eventually eradicate the disease, it also raises strong protests from anti-abortionists, Professor Weinberg noted.

"We are now beginning to wrestle with these issues. They are not so futuristic," he said.

Professor Weinberg said that to date, more than 100 diseases—a number he said is still "small"—have been linked to specific genes. Errors in the sequence of base pairs of genes can lead to diseases or predispositions to cancers and other illnesses because the errors are passed from parent to child. There currently are about 2,000 documented human disease traits.

"It is likely that over the next decade, each of those will be associated with specific genes," he said. "We will probably also discover genes that affect various aspects of the function of the brain like anxiety disorders, manic depression and cognitive ability."

Research into behavioral and cognitive links to genes, as well as into genetic predispositions to diseases or behaviors that are linked to race, brings up explosive ethical issues, Professor Weinberg said. "You now begin to have a form of racism not driven by irrational cultural prisms, but with scientific, reproducible results that 'rationalize' racism with the new genetics."

Other downsides to genetic testing include negative impacts on a person's ability to obtain health insurance, a job or an education, or to marry. He also suspects genetic predisposition could become an excuse for criminals.

"Genetic determinism has a flipside that says everything we do is a consequence of the genes we've inherited rather than our free will, so we may see an abdication of responsibility by indi-

viduals such as criminals in the future," he said.

While he said he doesn't hold out much hope that genetic therapy to "repair" defective genes will proliferate any time soon, if ever, Professor Weinberg added that he does believe research such as the international Human Genome Project (HGP) can produce new or preemptive treatments. For example, women with certain inherited breast cancers can already choose prophylactic mastectomies.

About 5 percent of the HGP's research budget is for studying the ethical issues of the new genetics, he said.

While most genetic research to date has focused on major diseases, Professor Weinberg said that in coming years, scientists also will explore genes that affect normal human variabilities, or polymorphisms. "We know almost nothing about genes that determine eye or hair color, weight or the width of one's fingernails," he said.

Baby seat sensor invented

(continued from page 1)

IBM) devised a way to send data through the human body. Then research scientist Joe Paradiso worked with magicians Penn and Teller to develop the Spirit Chair, a device which literally channels a field through a performer's body to control music.

Phil Rittmueller, vice president for automotive technologies for NEC Technologies Inc., in Itasca, IL, saw a brief mention of these experiments in *Wired* and made an immediate connection. He called the lab and was invited to discuss the Spirit Chair.

Professor Gershenfeld and Mr. Smith worked closely with NEC to develop an inexpensive car seat sensor that could be depended upon to signal an airbag when to deploy—and when not to.

"They built the prototype," Mr. Rittmueller said, "and we moved it up a

Shuttle science



Beginning training for the Neurolab Mission, which is planned for launch on the space shuttle in the spring of 1998, are astronauts and members of the NASA team who recently visited MIT to check out a virtual reality display and software. Left to right: James Pawelczik, NASA scientist and payload specialist; Stuart Johnston, experimental support; David Williams (seated), NASA mission specialist from Lockheed Martin; and Charles Oman, director of the MIT Man-Vehicle Lab in the Department of Aeronautics and Astronautics. Photo by Donna Coveney

Professor Joseph recalls Rev. King's courage

(continued from page 1)

noted the leader's vulnerability and stoicism in the face of real danger and great tension. "My mind was so taken with that," Professor Joseph said. "It was almost a war zone. I wondered what it was like to know that gunshots could break out at any moment. He had to know that any minute could be his last." Dr. King was assassinated in 1968.

Professor Joseph, who is organizing a major conference on African renewal at MIT to coincide with the 40th anniversary of Ghana's independence in March, has been a Martin Luther King Jr. Professor since September 1995. He is a tenured political science professor at Emory University in Atlanta. As a fellow of the Carter Center from 1988-94, he was involved in several missions to promote the peaceful resolution of conflicts and democratic transitions in Africa. He believes that such work is part of the enormous global legacy of Dr. King, "exceeding that of any other American of our age."



Lee

Professor Joseph is one of six Martin Luther King Jr. Professors currently at MIT. The others are:

• Dr. Steven L. Lee, a computer scientist and mathematician at the Oak Ridge Labo-

ratory and an adjunct assistant professor at the University of Tennessee, who is in MIT's Department of Mathematics. He participated in a summer program at MIT while in high school.

• Dr. William W. Quivers Jr., chairman of the Department of Physics at Wellesley College, who received the PhD in physics from MIT in 1982.

• Dr. Oliver McGee III, an aerospace engineer at the Georgia Institute of Technology.

• Dr. Walter Rodriguez, Louis Berger Professor of Design at Tufts University. He was in the Department of Civil and Environmental Engineering during the fall semester.

• Ernesto J. Cortes Jr., director of

the Texas Industrial Areas Foundation in Austin, will join the MIT Department of Urban Studies and Planning next fall.

The Dr. Martin Luther King Visiting Professors program was established in 1995 to enhance and recognize the contributions of minority scholars through a greater presence of minority scholars on campus.

Names of nominees are submitted by department or section heads in consultation with their deans. Appointments are given to members of minority groups, with an emphasis on African-Americans. The visiting professors play an active role in the intellectual life of MIT through teaching programs, seminars, lectures and original scholarship.

"The program is going very well, thanks to the people in the host departments," said Professor Philip L. Clay, the associate provost. "They're the ones who make it work."

Charm School returns to IAP

"Should I speak to strangers when riding in an elevator? At what point in an interview should I ask about salary range? How do I write a pleasant thank-you note for a gift I hated? How do I ask for a date?"

The answers to these questions and many others can be found at MIT's fifth annual Charm School during IAP on Thursday, Jan. 30. The event has become an MIT tradition and has garnered nationwide fame, including spots on Good Morning America and CNN.

Etiquette-related subjects will be taught in an informal atmosphere from noon-4 pm in Lobbies 7 and 10. No preregistration is required; students are free to choose from the many topics offered. Subjects covered will include Nerd Love (Asking for a Date), Clothing Statements, Ballroom Dance, Battering Up Big Shots, Small Talk, Impressive Interviewing, Body Language, Overcoming Shyness, Table Manners, and many more.

Among the new subjects this year will be Hello, World (international manners), hosting and attending parties, and networking.

Students may earn "charm credits" toward a formal Charm School "degree." A bachelor's degree is awarded for completing six subjects, a master's for eight and a PhD for 12. Degrees will be awarded by President Charles M. Vest at the Charm School Commence-

ment from 4:30-5pm in Lobby 10. All members of the MIT community are encouraged to attend all Charm School events.

Although more than 40 MIT faculty, staff and students have already volunteered to serve on the Charm School "faculty," many more volunteers are needed, as demand for instruction has often exceeded supply in previous years. The only prerequisites for teaching are a particular area of expertise—be it joke-telling, e-mail protocol, faculty-student communication or anything else—and a willingness to share your knowledge with others.

To volunteer as a Charm School faculty member or receive additional information, contact Charm School Coordinator Stacey Young, a senior in biology, at x5-6172 or <charm@mit.edu>.

It's a fact

Institute Professor Emeritus Paul A. Samuelson was the second person and first American to win the Nobel Prize in economics in 1970. Institute Professor Emeritus Franco Modigliani received the award in 1985 and Institute Professor Emeritus Robert M. Solow won it in 1987.