Prompt treatment of a microbe that causes stomach ulcers and other ailments can reverse damage to the lining of the stomach and ultimately prevent one of the most lethal forms of cancer from developing there, MIT researchers have concluded.

In the May 1 issue of Cancer Research, a journal of the American Association for Cancer Research, the scientists say their study results should lay to rest any question about whether—and when—antibiotic treatment of Helicobacter pylori (H. pylori) can eliminate or reduce risk of developing gastric, or stomach, cancer.

The findings are important, the researchers say, because stomach cancer is the second-leading cause of cancer death worldwide and approximately half of the world’s population is infected with H. pylori. Although H. pylori infection is now recognized as the major cause of both peptic ulcers and gastric cancer, and has been classified as a group I carcinogen by the World Health Organization, physicians are not sure whom to screen and treat with costly antibiotics, aside from first-degree relatives of gastric cancer patients and those with peptic ulcer disease.

Since it typically takes several decades for gastric cancer to develop in those who are susceptible—which is estimated to be up to 3 percent of infected people—researchers also do not know when to treat.

To improve MIT’s ability to communicate rapidly with members of the community during an emergency, MIT emergency planners are asking students, faculty and staff to enter or update their emergency notification information at http://web.mit.edu/mitalert. This information will only be used to alert students, faculty and staff of a life-safety or public-health emergency.

The impetus to gather complete information for everyone on campus follows the testing last August of a new emergency notification system designed to alert students, faculty and staff of an emergency via phone, text message and e-mail. The system—part of the comprehensive MIT Alert emergency communications program—dispatched phone calls and text messages to members of the MIT community for whom we had information. As part of the test, a broadcast e-mail was also sent to the entire campus.

Based on what was learned from the test, we are implementing changes and, in particular, working to collect more cell-phone data from students and staff to facilitate future testing and enhancements of the MIT Alert system,” said David Barber, Emergency and Business Operations. MIT Facilities gardener Kathy Coletti plants red azaleas by the Landau building near East Campus as spring begins to bloom on campus.
Three of MIT’s thinkers—Noam Chomsky, Esther Dufo and Neil Gershenfeld—have been named among 100 "global intellectuals" by Prospect Magazine.

The three are cited in the web-exclusive portion of the British monthly magazine’s website for their work on foreign policy, poverty and quantum computing.

Chomsky, a professor of linguistics, is cited as being "a groundbreaking linguist and a prominent critic of U.S. foreign policy" as well as the winner of the magazine’s 2005 global intellectuals poll.

Dufo, the Abdul Latif Jameel Professor of Poverty Alleviation and Development Economics, was noted for her work on "health, poverty and credit issues in the developing world."

Gershenfeld, director of the Center for Bits and Atoms at MIT and a professor of media arts and sciences, "takes an interdisciplinary approach to quantum computing, nanotechnology and personal fabrication," the magazine’s citation notes.

Readers will now vote on their choice for "top global public intellectuals."—for the first time since Chomsky won the title in 2005—until May 15 at http://www.prospectmagazine.co.uk.

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Clarification

In the April 30 edition of TechTalk, the website for more information on the new administration officer program being run by human resources was mistakenly left out. Info can be obtained at http://www.mit.edu/development/.

The Department of Mathematics hosting Clay Research Conference May 12-13

MIT professor Thomas Mrowka and seven other speakers will present a variety of topics, ranging from quantum gravity and its connection with probability theory, to the solution of two recent conjectures, the Kodaira conjecture and the Weinstein conjecture.

The Clay Research Awards will be presented at 2 p.m. on May 12. This year’s recipients are Claire Voisin of the Centre National de la Recherche Scientifique in France, and Cliff Taubes, chair of Harvard’s mathematics department.

The conference will be held at Bartos Theatre in the MIT Media Lab (Building 115). For the schedule, visit http://www.math.nas.edu. Graduates and undergraduate students are encouraged to attend.

Arts, sciences fellows named

Eight MIT faculty members are among the 2008 fellows recently elected to the American Academy of Arts & Sciences, one of the nation’s oldest and most prestigious honor societies and independent policy research centers.

For 228 years, the Academy has served the public good by convening leading thinkers and doers from diverse perspectives to examine—and provide practical policy solutions to—the pressing issues of the day, said Academy Chief Executive Officer and William T. Golden Chair Leslie Berlowitz. “I am confident that this distinguished class of new members will continue that tradition.”

The academy will welcome this year’s new fellows at its annual induction ceremony in October at its Cambridge, Mass., headquarters.

The new MIT fellows are:

• Tobias Colding, professor of mathematics
• Christopher Cummins, professor of chemistry
• Alan D. Grossman, Preciss Professor of Biology
• Timothy L. Grove, professor of geology
• Jonathan Gruber, professor of economics
• Klavs F. Jensen, chemical engineering department head
• Warren K. Lewis, Professor of Chemical Engineering and professor of materials science and engineering
• Marc A. Kastner, Donner Professor of molecular and cellular biology, School of Science
• Henry J. Smith, professor of electrical engineering

The new NAS members from MIT are:

• Edward A. Boyle, professor of ocean geochemistry, Department of Earth, Atmospheric and Planetary Sciences. Boyle’s research focuses on trace metals and trace metal isotope ratios in the oceans, estuaries, rivers, and ice cores.

• Stephen L. Buchwald, Camille Dreyfus Professor of Chemistry, Department of Chemistry. Buchwald’s research combines techniques of organic synthesis, physical organic chemistry and organometallic chemis- try to devise catalytic processes of use to organic and medicinal chemists.

• Edward F. DeLong, professor of civil and environmental engineering and institute director, Department of Civil and Environmental Engineering. DeLong’s research is currently focused on applying contemporary genomic technologies to design complex microbial assemblages.

• Marc A. Kastner, dean of the School of Science and professor of neuroscience. Kastner’s research interests include studying the motion of elec- trons in nanometer-size semiconductor structures and in transition-metal oxides.

• Frank T. Leighton, professor of applied mathematics, Department of Mathematics. Leighton is known for his work on the world’s preeminent algorithms for network applications. He has numerous patents involving cryptography, digital-rights management, and algorithms for network.

• Timothy M. Swager, head of the Department of Chemistry and John D. MacArthur Professor of Chemistry. Swager’s research looks into supramolecular and materials chem- istry with an emphasis on the synthe- sis and construction of functional assemblies.

• Jack L. Wisdom, professor of planetary sciences, Department of Earth, Atmospheric and Planetary Sciences. Wisdom’s research includes long-term evolution of the orbits and spins of the planets and natural satellites, qualitative behavior of dynamical systems, chaotic behavior and dynam- ics of planetary rings.

Last week’s election brings the total active number of NAS members to 2,041, with 197 active, nonvoting foreign associates.

HOW TO REACH US

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Mit Tech Talk

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Dr. Ahmed Zewail receives a lifetime achievement award from MIT Arab Students Organization’s President Iman Kandali ’09 during the group’s fifth annual Science and Technology Awards Banquet on Saturday, April 26.

Zewail, a professor at Caltech who won the Nobel Prize in chemistry in 1999, was presented with the organization’s lifetime achievement award.

The organization presented several other awards at the ceremony, held at the Sheraton in Boston. Dina Katabi, MIT associate professor of electrical engineering and computer science, was given a young professional award; Loai Ibrahim Kanan, an MIT senior in civil and environmental engineering, was given an undergraduate student award.

"Every spring, the MIT Arab Students Organization celebrates exceptional Arabs and Arab-Americans who have made noteworthy contributions to science, technology and other areas of scholarship that will best serve the nation and the world in the 21st century," said Iman Kandali, president of the MIT Arab Students Organization.

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Seven MIT Faculty members are among the 72 newly elected members and 18 foreign associates of the National Academy of Sciences in recognition of their distinguished and continuing achievements in original research.

Election to the NAS—a private organization of scientists and engineers dedicated to advancing science and its use for the general welfare—as considered a top honor for those in the science and engineering fields. Established in 1863, the NAS acts as an official adviser to the federal government, upon request, in any matter of science or technology.

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Last week’s election brings the total active number of NAS members to 2,041, with 197 active, nonvoting foreign associates.
Millions missed by all those who knew her. Donations in 2006 with an Infinite Mile Award. She would reach out to everyone with her laughter, held a farewell party for her upon her retirement. members of the Department of Biology—who also where she was loved by Hospital.

21, at Brigham and Women’s from cancer on Monday, April

Ishii is best known for creating the field of Tangible User Interfaces to realize seamless connections between humans, digital information and the physical world. A faculty member at the Media Lab since 1995, Ishii holds the Muriel R. Cooper Professorship of Media Arts and Sciences, heads the Tangible Media research group and co-directs the Things That Think (TTT) consortium. His work focuses on inventing the future of digitally augmented objects and environments.

Two named associate directors at MIT Media Lab

Two long-term, prominent researchers at the MIT Media Lab, Hiroshi Ishii and Andrew Lippman, have been named associate directors at the lab. Director Frank Moss announced this week.

In announcing the appointments, Moss emphasized the key roles they will play in helping to realize new directions for the lab. “As the Media Lab explores creative ways for technology to have a lasting impact on people and society, we will also be looking for deeper collaboration with industry, to bring important innovations to the real world,” Moss said.

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Before coming to the Media Lab, Ishii spent the majority of his career at NTT (Nippon Telegraph and Telephone Corporation), where his research team pioneered video-mediated remote collaboration technologies that created shared workspaces across distances.

A founding member of the Media Lab, Lippman has a more than 30-year history at MIT. He established and has directed the Digital Life consortium, which focuses on the confluence of technical invention and human understanding to create a networked world where communication becomes fully embedded in our daily lives. Lippman heads the Lab’s Virtual Communications research group, which focuses on constructing infrastructure-free, scalable, collaborative systems that permit uncontrolled growth and use minimal power systems that move intelligence “from the trunk to the leaves.” He also co-directs MIT’s interdisciplinary Communications Futures program.

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For more information, go to:

MIT Tech Talk

A regular audio podcast of recent news.

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http://web.mit.edu/newsoffice/subscribe-rss.html
Study of universal day care paints mixed picture

Adults benefit, but children appear to suffer
Sarah H. Wright
News Office

Universal day care, the recurring dream of working parents everywhere, benefits adults economically but may burden young children with health and behavior problems, according to a MIT economist's study of a highly subsidized child-care program in Quebec.

Working with colleagues at two Cana- dian universities, MIT Professor Jonathan Gruber studied the impact of Quebec's child-care policy a decade ago, begin- ning with the provincial government's move in 1997 to subsidize universal day care for 3-year-olds and kindergarten for 5-year-olds. By 2000, the program included infants to 5-year-olds.

In their study, which has been issued as a working paper by the National Bureau of Economic Research, the researchers focused on changes in families' use of day care, the rate of mothers' return or entry into the workforce and the effects of day care on children.

“The Quebec Family Policy was a major government innovation. Its ‘five-dollar-a- day’ plan has given us a rare experimental environment for analyzing the effects of publicly financed child care,” says Gruber, professor of economics.

Their first finding falls in the “if you build it, they will come” category: The introduction of universal child-care subsidies led to a 14 percent increase in the proportion of 4-year-olds enrolled in government centers. Other age groups' use of the centers increased as well.

The researchers' second finding presents a puzzling result: The number of married women (the study only used data on married women) participat- ing in the labor force increased by almost 8 percent—less than the 16-percent increase in 4-year-olds in day care. So what accounts for the short- fall of workers or the big rush of kids?

“The new policy did more than enable some mothers to go to work. It also enabled all families—including those who use day care for lifestyle reasons—to replace informal arrangements with subsi- dized care. We found the number of moth- ers who went to work was not enough to offset the costs of the child-care subsidies,” says Gruber. Those costs are still borne by the government.

Other costs are borne by the children themselves, Gruber and his colleagues note in their summary of the effects of the Quebec child-care policy.

Their analysis of the well-being of children in day care, based on data from Canada's National Longitudinal Survey of Children and Youth (NLSCY), produced a disheartening picture.

The researchers found consistent and robust evidence of negative effects of Quebec's policy on children, parenting and parenting outcomes, they write. Child outcomes include hyperactivity, inat- tention, aggressiveness and illness, and parental health and relations deteriorated, according to the study of NLSCY data.

Gruber, widely known for his work on health-care reform, admits the study suggests that day care looks bad for children.

“But maybe that's the case for very young children. Maybe it reflects tough adjust- ment to day care for them. We can't let that brush taint the whole picture,” he says.

Gruber conducted the study, “Univer- sal Childcare, Maternal Labor Supply and Family Well-Being,” with Michael Baker of the University of Toronto and Kevin Milligan of the University of British Columbia.

MIT researchers find novel way to repair airway injuries
Anna Rafflon
News Office

MIT tissue engineers have successfully healed airway injuries in rabbits using a technique they believe could apply to the trachea and other parts of the human body. The work, published in the advance online issue of the Proceedings of the National Academy of Sciences the week of May 5, expands researchers' understanding of the control of tissue repair and could lead to new treatments for tracheal injuries, such as smoke inhalation and damage from long-term inhalation.

The new technique heals airway inju- ries by placing new tracheal cells around the injury site. Two types of tracheal cells, embedded within a three-dimensional gelatin scaffold, take over the functions of the damaged tissue.

“We can begin to replicate the regula- tory role cells play within tissues by creat- ing engineered constructs with more than one cell type,” said Elazer Edelman, the Thomas D. and Virginia W. Cabot Profes- sor of Health Sciences and Technology and senior author of the paper.

Patents on the technique have been licensed to Persys, a company co-founding by Edelman, which develops cell-based therapies that induce repair and regenera- tion in a wide array of tissues.

The trachea and other respiratory tubes, like most tubes in the body, have an imitative, three-layer architecture. The inner layer, or epithelium, interacts with whatever is flowing through the tube—in the case of the trachea, air. The middle layer is composed of muscle that constrists or relaxes the tube, and the outer layer consists of connective tissue that supports microvessels and small nerves.

Most attempts at tissue regeneration seek to rebuild this complex architecture with structural precision. However, the MIT researchers found that it is not necessary to recognize the ordered layering to heal injuries. Instead, they concentrated on restoring cellular health. When cells are intact and have regained their biological function, they need only reside near the injured tissue to enhance overall repair.

Edelman and colleagues achieved this repair state by delivering a mixture of new healthy cells derived from the epithelial lining and the nourishing blood vessels. The combination of epithelial and endothelial cells take over the biochemi- cal role lost with cell damage. The healthy cells release growth factors and other molecules necessary for healing tissue, and can modulate their delivery in response to physiological feedback control signals. “Cells are not just an array of bricks surrounded by mortar, nor are they passive dumping pits. Cells are active elements that respond to the dynamic changes of their environment with modulated secretion of critical factors. They don't need to be stacked in one specific fashion to function, but they do need to be healthy and near the injured tissue,” said Edelman, who is also a professor at Harvard Medical School and cardiologist at Brigham and Women's Hospital.

To get the best results, both epithelial and endothelial cells must be replaced in the injured airway. "One cell type can't do it alone. With this complex disease, each regulatory cell offers something unique and, together they optimize repair," Edel- man said.

The cells must also be grown within a 3-D scaffold, otherwise, the two types of cells will stay segregated and will not work as effectively.

Because of the similarities between the trachea and other tubes in the body, such as those of the vascular, genitourinary and gastrointestinal systems, the researchers believe their approach could translate to other organs.

“We can apply this same approach to so many different parts of the body,” said Brett Zani, a postdoctoral associate in the Harvard-MIT Division of Health Sciences and Technology and lead author of the paper.

Other authors are Koji Kojima and Charles Vacanti of the Laboratory of Tissue Engineering and Regenerative Medicine at Brigham and Women's Hospital.

The research was funded by the National Institutes of Health.
Harnessing sunlight on the cheap

MIT students work on a new kind of solar generator that employs low-cost materials. Here they mount the frame of the concentrator (which will be mounted with mirrors) on the base near Tang Hall on Memorial Drive.

For a project that could be on the very cutting edge of renewable energy, this one is actually decidedly low tech—and that’s the point.

A team of students, led by mechanical engineering graduate student Spencer Ahrens, has spent the last few months assembling a prototype for a concentrating solar power system they think could revolutionize the field. It’s a 12-foot-square mirrored dish capable of concentrating sunlight by a factor of 1,000, built from simple, inexpensive industrial materials selected for price, durability and ease of assembly rather than for optimum performance.

Rather than aiming for a smooth parabolic surface that would bring the sunlight to a perfect focus, the dish is being made with 10-inch-wide by 12-foot-long strips of relatively low-cost, lightweight bathroom-type mirror glass. The frame is assembled from cheap aluminum tubing, with holes drilled in precise locations using a simple jig for alignment, so that the struts can be assembled into a framework that passively snaps into just the right parabolic curvature.

The control mechanism, which allows the dish to track the sun automatically across the sky, is also remarkably simple—photocells mounted on each side of the dish with opaque baffles, which cast a shadow on the cell when it drifts out of alignment, connect to a simple circuit that turns on small electric motors to push the dish back into the right position.

The technical challenge here is to make it simple,” Ahrens explains. “The team is keeping careful track of all the costs for parts and the time spent on assembly, to provide a baseline for figuring out what an eventual large-scale field of such dishes would cost. “We’re using all commodity materials that are all in high production,” he says.

“Honest stock contrast to most attempts to build solar dish concentrating systems, which have tended to use expensive custom-made equipment to achieve high efficiency. A few large companies that have built such prototypes tend to “turn it into an ultimate high-tech, high-end project,” says Jefferson Tester, HP Messner Professor of Chemical Engineering, who has been advising the student-led group. “Then Spencer came along and said, ‘We’re going to fundamentally change this and make this an affordable technology for popular, widespread deployment.’”

Ahrens thinks that in mass production the dishes can be competitive in cost with other energy sources and could produce heat for space heating and electric power at the same time. The prototype isn’t quite finished yet, because of delays in getting the mirror glass shipped from the factory. And the details of assembly and operation could well present some unexpected snags ahead, but that’s the case with new designs, Tester says. Still, “they’re smart kids, they know what they’re doing,” he says. “That’s how you learn.”

This is not the kind of thing you’d build for a single-home, backyard power system, however. Because the highly concentrated sunlight will be so powerful, the team is employing several precautions to safeguard against potential safety risks, and the prototype will not operate in public without supervision.

Instead, the systems are designed to be deployed in large, utility-scale fields, fenced in to protect anyone from being in the wrong place. But because the beam comes to a focus about 12 feet from the surface, the danger is strictly localized—no risks for adjacent buildings or for planes flying overhead. Ahrens explains. When not attended, the dish will be covered “parked” pointing straight up, and will be mounted 7 feet above ground.

The students working on the project, because of their close proximity, will have to take precautions, wearing all-white clothing, to reflect the light, and welder-type goggles to protect their eyes.

Ahrens believes that such a design could quickly produce both hot water for space heating and electricity for the grid at prices that would be competitive today. Unlike conventional photovoltaic systems that are still far too pricey for base load generation, “In the sunbelt, our dish would make about 10,000 peak watts of heat and 3,500 peak watts of electricity,” he says.

Deported in large numbers, the systems could make a big difference: “One square meter of concentrator is worth about one barrel of oil per year,” he says.

“It’s designed for long life—-we hope they will last more than 30 years with good maintenance—and for indigenous manufacturing in the developing world with minimal training,” Ahrens says. “We want to get something up that will be kind of viral and be widely adopted around the world.”

We want to get something up that will be kind of viral and be copied around the world.

Spencer Ahrens Mechanical engineering graduate student

BIRDSONG: Research finds that young birds babble before singing

Continued from Page 1
circuit,” Fee explains.

Past research has shown that the zebra finch has two distinct brain circuits dedicated to song, one for learning and another—known as the motor circuit—for producing the learned song. Damage to the first circuit while the bird is still learning prevents further learning, so the song remains immature. Yet in an adult that has already learned its song, disabling the learning circuit has no effect on song production.

Scientists assumed that the motor circuit is equally impotent at producing babbling. But surprisingly, no one had done the experiments to find out. First author Dmitry Aronov and co-author Aaron Andalman, both graduate students in Fee’s lab, adapted existing techniques previously developed in the Fee lab so that they could temporar-ily disable parts of the brain and record from neurons in the singing bird.

The results were surprising: When they disabled a part of the motor circuit known as HVC in these very young birds, the babies continued to sing, implying that some other brain region produces the babbling. The authors suspected that a key component of the learning circuit, called LMAN, has a previously unknown motor function. They confirmed this by showing that when LMAN was disabled in very young birds, they ceased babbling.

“This tells us that singing is driven by two different motor circuits at different stages of development,” explains Aronov. “We’ve long known that these two pathways develop physiologically at different times, so there’s an elegant parallel between our functional findings and what is already known about anatomy.”

But what happens if LMAN is in adulthood, after birds have learned their song? Contrary to the “use it or lose it” assumption, the authors found that LMAN retains its ability to drive babbling even in adulthood. Disrupting HVC in adults causes the birds to revert immediately to babbling, suggesting that LMAN can take over again if the more powerful signals from HVC are blocked.

Fee speculates that these results may apply more broadly to immature or exploratory behavior in humans as well as birds. “In birds, the exploratory phase ends when learning is complete,” he says. “But we humans can always call upon our equivalent of LMAN, the prefrontal cortex, to be innovative and learn new things.”

The NIH and graduate fellowship from the Hertz Foundation and the Friends of the McGovern Institute funded this study.
Conventional wisdom holds that the standardized tests some employers require of job-applicants are a fair and equal employment. But a pioneering study shows just the opposite: Screening increases employment disparities among applicants, favoring white and Asian applicants at the expense of minority hiring.

“Job testing has the potential to raise productivity by improving the match between worker and firm,” said Autor. “But because of the near-universal finding that minorities fare relatively poorly on standardized tests, there is a pervasive concern that better candidate selection comes at a cost of reduced opportunity for groups that might not otherwise rise to the top.”

Moreover, the authors found, productivity gains were equally large among minority and majority hires.

“Initially, I was surprised. I expected the increase in productivity that followed job testing would such that the expense of minority hiring,” Autor says. “But this research may be that surprise, the moment when accepted beliefs dissolve in the face of new evidence. The paradox that job tests may harm minority workers is resolved quite simply, Autor notes. Referring to the new test, the retailer informally screened for the personal characteristics that are measured by the test. Job candidates made the test more precise and systematic, but research showed it did not tip the scales against particular groups of applicants. Consequently, the productivity gains from screening can be limited only by the hiring of groups favored by the test. Then productivity suffers and neither employer nor workers profit.”
A dream come true

Donna Coveney
News Office

At the inauguration this week of a new mosque in the Cambodian village of Tramung Chrum will represent a dream come true for the Muslim enclave in the overwhelmingly Buddhist country.

The dream was brought to life by Alan Lightman, MIT physicist and writer who a decade or so ago, with his wife, Jeanne, made a pact to turn their energies toward humanitarian pursuits. Without a firm concept or funding, they formed the nonprofit Harpswell Foundation in 1996.

Within a few years, Lightman, Jeanne and their daughter, Elyse, would attend the opening of a school Lightman helped fund in a tiny Muslim village 35 miles from Phnom Penh, build and manage a women’s dorm and leadership center in Phnom Penh and, finally, build the mosque in Tramung Chrum.

Lightman has been entranced by science and the arts from an early age. Appointed professor of science and writing and senior lecturer in physics at MIT in 1989, he went on to head the Program in Writing and Humanistic Studies from 1991 to 1995 and helped found the Catalyst Collaborative, a collaboration between MIT and the Underground Railway Theatre of Boston in 2004. His novel, “Einstein’s Dreams,” published in 1993, was an international bestseller and has been translated into 30 languages.

Lightman’s mother was a Cambodian refugee who came to the United States after World War II. While living with three Muslim Chams (of the San Cham sect). The mosque (shown below) was funded by donations from family and friends, the Harpswell Foundation with villagers, Muslim Chams, Buddhist temples, but in the gritty capital, there were no places to stay, so few women attended college.

Once again, he took on the challenge, found contractors and built the dormitory and leadership center in Phnom Penh.

But that was only the beginning. Lightman reckons, “One-third of my waking hours I spend on Cambodia every year.” From sleeping security guards to the students’ need for medical procedures, funds for upkeep, teachers, food and all life’s issues, Lightman is the go-to guy. His daily electronic communications with the dorm represent the sole exception to Lightman’s personal ban on using e-mail.

He is presently trying to raise a $500,000 endowment to keep the dorm and all it offers up and running in the future.

As he busied himself managing the dorm and leadership center, the village of Tramung Chrum, thrilled with their school, asked him to build a mosque. To Lightman, health care seemed a more compelling need, but he understood that it had to be what the entire village wanted. So he asked the men of the village to choose five representatives each, and he met with the two groups separately. The men wanted a mosque, the women wanted health care.

A meeting was convened to give the 10 representatives the opportunity to address the whole village and then vote on which project to take forward. After a civil discussion, all the men and three women voted for the mosque. To Lightman, health care seemed a more compelling need, but he understood that it had to be what the entire village wanted. So he asked the men of the village to choose five representatives each, and he met with the two groups separately. The men wanted a mosque, the women wanted health care.

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Design Squad takes systems-based approach to attracting future engineers

According to the National Science Foundation, the United States faces a daunting challenge: College-bound students’ interest in engineering majors are decreasing and statistics show an even greater decline in interest among minority and female students. Design Squad aims to help address this situation and attract a larger, more diverse talent pool of future engineers who can create future technological innovations and help the United States remain competitive in the global marketplace. Its holistic, systems-based approach involves partnering with engineering societies, industry, universities, middle- and high-school teachers to produce not just the TV series, but also a web site, after-school program and public events across the country to demonstrate just how creative and exciting the engineering profession can be, and also to provide a model for teamwork.

Major funding for Design Squad comes from the National Science Foundation and the Intel Foundation. The project is also supported by Tyco Electronics, The Harold and Esther Edgerton Family Foundation, Noyce Foundation, Intel Corporation, IEEE, ASCF and the National Council of Examiners for Engineering and Surveying.

Several MIT faculty and students were recently delighted to learn that Design Squad, the PBS series created to attract boys and girls in their ‘teens and tweens to consider engineering as a profession, was named a winner of the prestigious George Foster Peabody Award. From hosting the show to advising behind the scenes, members of the MIT community have played an important role in developing and implementing this popular series.

It began in 2002, with Associate Professor of Mechanical Engineering and Engineering Systems Daniel Frey, who served as the show’s first adviser. In collaboration with series producers at WGBH-TV Boston, he created Design Squad’s curriculum. Later, under Frey’s guidance, MIT students (including Design Squad host Nate Ball ‘05, SM ’07) participated in the show as part of the university’s Undergraduate Research Opportunities Program. Frey, who holds a dual appointment with Mechanical Engineering, Mechanical Engineering Systems Division, played a central role in developing the design challenges during the program’s piloting phase and first season—he and the students conceptualized the challenges, tested their feasibility and formulated kits of materials.

Frey notes that the National Science Foundation Career Development Award he received during that time facilitated his research on a systems-based approach to engineering and implementing this popular series. Frey, who holds a dual appointment with Mechanical Engineering, Mechanical Engineering Systems Division, played a central role in developing the design challenges during the program’s piloting phase and first season—he and the students conceptualized the challenges, tested their feasibility and formulated kits of materials.

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