



Innovation Initiative

Manufacturing focus of new initiative

By Leon Lin
ASSOCIATE NEWS EDITOR

President L. Rafael Reif announced Friday a new Innovation Initiative at MIT for research and education focused on the role of manufacturing in “accelerating” innovation, which he called the “signature competitive advantage” of the United States.

Reif made the announcement in 10-250 before dozens of industry leaders, who had gathered to hear the findings of a two-year study conducted by the 20 faculty members and 12 students of the Production in an Innovation Economy Commission, co-chaired by political science Suzanne Berger and biology professor Philip A. Sharp.

The study asserts that domestic manufacturing is key to long-term innovation

in the United States, despite the rise of companies like Apple, whose products are manufactured mostly outside of the country.

“For us at MIT, that feels like a call to action,” said Reif at the conference. The study also emphasized the role of institutions that set industry standards, coordinate resource-sharing, and help individual firms pool risks. It cited as examples SEMATECH, a consortium of semiconductor manufacturers, and a Massachusetts county employment board, which brought together machining firms and vocational schools during a labor shortage. Such institutions generate public goods, the study says, that reduce the barriers to innovation for any one firm.

In the vein of the MIT Energy Initia-

Innovation Page 10



DOMINICK REUTER, COURTESY OF THE MIT NEWS OFFICE

Professor Suzanne Berger, above, and Professor Philip A. Sharp co-chaired the Production in the Innovation Economy Commission, which just finished its two-year study of the U.S. manufacturing sector’s role in supporting innovation.

MIT Medical administered 13,492 flu vaccines in 2012

Many still do not receive vaccine; annual MIT walk-in clinics starting Oct. 2 on third floor of W20

By Rosa Ruiz

In addition to changing leaves and cooler temperatures, October brings with it the official start to flu season. According to the Centers for Disease Control and Prevention (CDC), the flu season can last until May. In response, MIT Medical will once again hold free flu vaccination clinics.

Flu vaccines are offered at MIT Medical’s annual walk-in clinics or by appointment and are free to all MIT students, staff, retirees, and anyone enrolled in a MIT Medical health plan. The clinics will occur on Wednesday, Oct. 2 and Oct. 10 from 10 a.m. to 4 p.m. on the third floor of the Student Center. There

will also be clinics throughout October in Lexington for Lincoln Laboratory employees. Children under age 10 may not receive flu shots at the Student Center clinics but may receive them by appointment if over six months old.

According to Deborah Friscino, director of operations at MIT Medical, 2012 saw 13,492 people vaccinated, including 4,601 people on the student/affiliate health plan. It was a record year in the number of flu vaccines administered at MIT, with 5,500 vaccinated in two days of flu clinics alone. David Diamond, associate medical director of MIT Medical, explained, “Each year we give more flu vaccines than [the previous year]; we anticipate giving

nearly 12,000 shots before this season is over.”

Nevertheless, there are still many students who do not receive the shot. Citing interviews of MIT students conducted during the flu pandemic three years ago, Diamond wrote in an email to *The Tech*, “Probably the most common reason [for not getting vaccinated] for all is that they do not feel at risk and therefore don’t need it.” Diamond noted that students are “not at high risk unless there is a really bad outbreak or they have health issues to begin with.” But even a healthy student may miss up to a week of classes while recovering.

“For the average busy, overworked, time-pressured MIT stu-

dent, the protection of getting a flu shot is the smart choice,” said Diamond, adding that wait times at the clinics are usually under 10 minutes.

While past shots only protected against one strain of influenza B and two strains of influenza A, this year’s flu shot covers an additional strain of influenza B, as well as H1N1, according to MIT Medical’s website about the vaccinations.

According to the CDC, for the flu shot to be widely effective, as many people as possible need to be vaccinated. They recommend that everyone over the age of six months receive a flu shot, especially those with asthma, diabetes, or chronic lung disease.

Addressing concerns about the

usefulness of the flu shot, the CDC states that the effectiveness of the flu shot “can range widely from season to season,” depending on the person who is receiving the shot, and how similar the flu vaccine is to the flu viruses actually passing through the community. However, receiving the vaccine will still reduce the chance of infection. People vaccinated last year still need one this year. Since it takes two weeks after the shot for the body to grow the antibodies to fight influenza, it is best to get vaccinated as early as possible.

For more information about flu vaccinations at MIT, visit <http://medweb.mit.edu/about/news/flu/index.php>.



RACHEL E. AVILES—THE TECH

Undergraduate students, graduate students, and alumni waited to enter the Fall Career Fair on Friday, September 20, in a line that went from the Z-Center, down Mass Ave and onto Amherst Street. The career fair provides opportunities to find internships and full time positions, as well as collect lots of free “swag” from companies.

IN SHORT

The UROP Fall Direct Funding deadline is Thursday, Sept. 26. Submit your application at <https://sisapp.mit.edu/uropweb/home.mit>.

The Fall 2013 final exam schedule is now online at <http://web.mit.edu/registrar/classrooms/exams/finals/index.html>.

Send news information and tips to news@tech.mit.edu.

FYRE results reveal disparity in dorm demand

This was the second year of the First Year Residence Exchange (FYRE), the process allowing freshmen to switch their dorm assignment. Participation dropped from 159 to 124 students. As of this year, students could no longer move into Maseeh Hall during FYRE, but the total number of moves increased from 96 to 107.

As in previous years, Baker house was the most popular

dorm with 30 first choices of the 124 students who entered the lottery. Simmons followed with 22 first picks, and MacGregor with 16. In last place, with two move-in requests, was New House. New House also saw the most residents try to leave the dorm through FYRE — 24 percent of New House freshmen wanted to move out. Of these, only two lived in cultural houses. “The cultural houses use a mutual

selection process, so students are not assigned to the houses unless it is one of their top choices and the individual agrees to the assignment,” said Connie Hemenway, a communications manager with the Division of Student Life. East Campus and MacGregor followed with 18 percent each.

Lucas A. Orona ’14, president

FYRE, Page 9

Slight increase in bids given in sorority recruitment

The MIT Panhellenic Association held sorority recruitment for five of MIT’s six sororities beginning Aug. 31 with an afternoon kickoff on Kresge Oval and ending with bid night on Sept. 4. The “4-day process [is] designed to introduce [women] to MIT sorority life,” according to the association’s online FAQ page.

MIT’s sororities issued more bids this year than they have in each of the past two years, with a total of 189 bids, up from 173 bids

in both 2011 and 2012. Sigma Kappa issued the most bids this year, with a total of 39. No sorority participating in formal recruitment issued fewer than 37 bids, with Alpha Phi and Pi Beta Phi each issuing 38 bids and Alpha Chi Omega and Kappa Alpha Theta each issuing 37. MIT’s smallest sorority, Alpha Epsilon Phi did not participate in formal recruitment due to their small size and their desire to host low-key events and issue fewer bids than

other sororities, according to Nantanya R. Kerper ’14, the sorority’s Vice President of Membership and Recruitment.

The Panhellenic Association’s vice president of recruitment Stephanie Holden ’13 (also a *Tech* associate news editor) is happy with the improved numbers and commented that she is “pleased to see improved attention for recruitment.”

—William Navarre

AN ILLUSORY TRADE-OFF

Working for a large corporation isn’t necessarily complacent.
OPINION, p. 4

Q.E.D.: CROSSWALK DILEMMA

The light is blinking. Should you make a run for it? **FUN, p. 5**

WHERE DO I FIND WHITE DOVES

For stellar wedding reviews?
FUN, p. 5



INTRODUCING: SKETCH YOUR LOOK

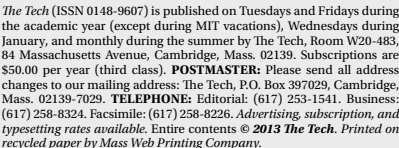
How to avoid high prices and sketchy products while still being stylish.
CAMPUS LIFE, p. 7

FINDING HOME AT A HACKATHON

t=0 hackathon brought together MIT’s doers and innovators.
CAMPUS LIFE, p. 6

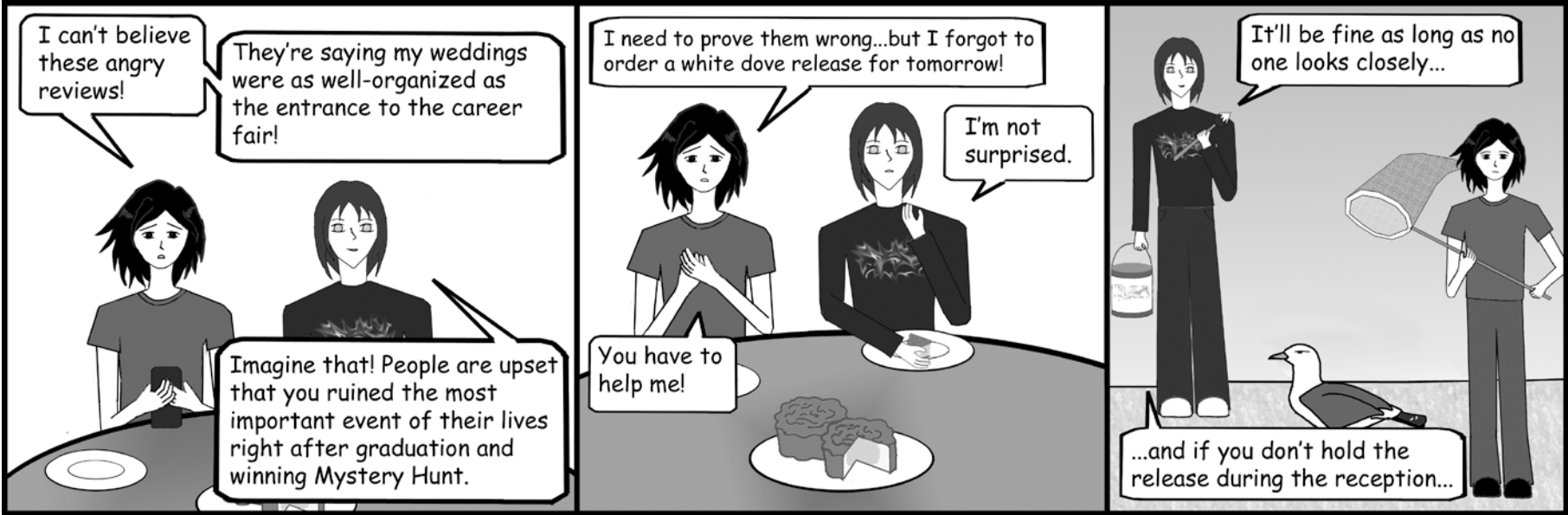
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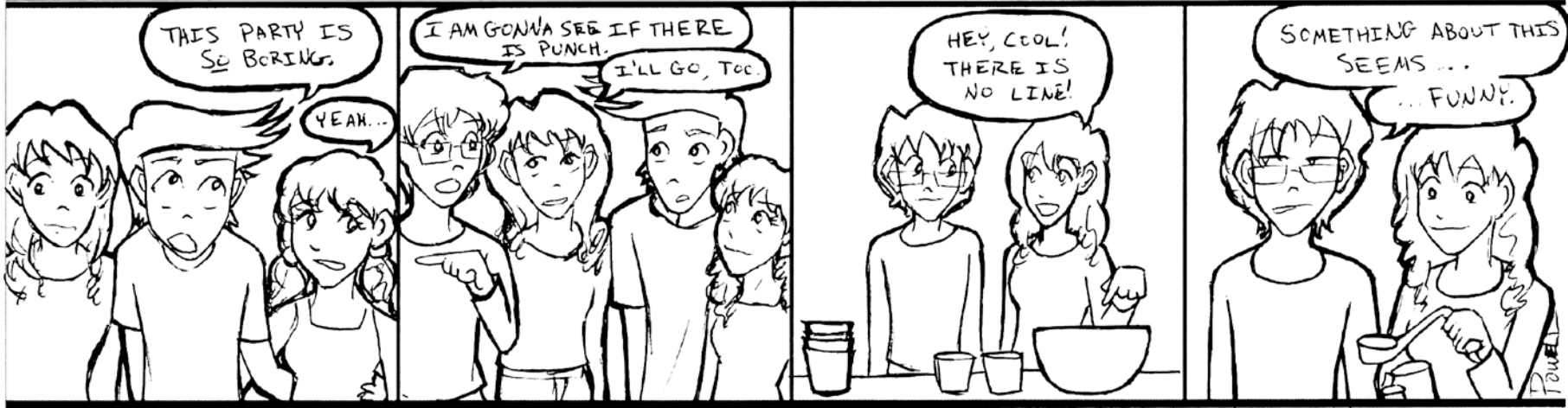


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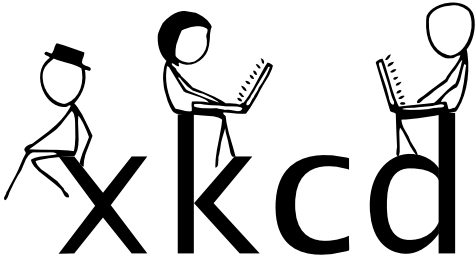
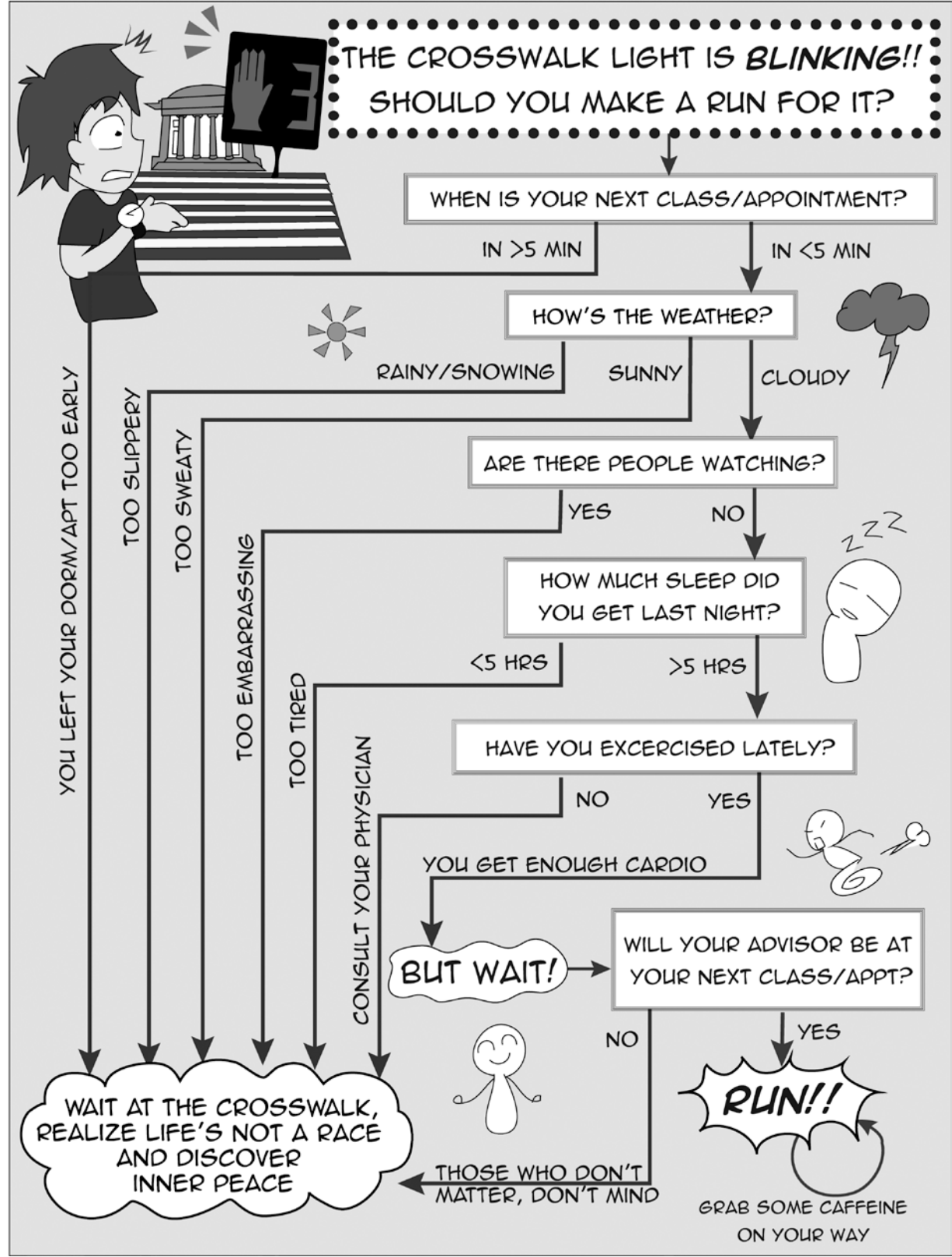
Somewhere on the Search for Meaning by Letitia Li



WE DO CALCULUS BY PAELLE POWELL Sept'13



Q.E.D. (QUITE EASILY DONE) BY ERIKA TRENT



A WEBCOMIC OF ROMANCE, SARCASM, MATH, AND LANGUAGE by Randall Munroe

[1267] Mess



MY ROOM NEVER LOOKS AS NICE AS THE ROOMS OTHER PEOPLE APOLOGIZE FOR. BAGE PIT. 'Sorry, I left out my glass of water from last night.' OH GOD I APPARENTLY LIVE IN A GAR-

A random sampling of people you'll meet during a typical dinner at The Tech:

Derek, Course 1	Austin, Course 8	Chris, Course 16
Sarah, Course 2	Ian, Course 9	Anne, Course 17
Annia, Course 3	Joyce, Course 10	Leon, Course 18
Dohyun, Course 4	Sara, Course 11	Jack, Course 19
Elijah, Course 5	Vince, Course 12	Stan, Course 20
Deborah, Course 6	Anthony, Course 14	Stephen, 21/CMS
Kali, Course 7	Maggie, Course 15	Keith, Course 22

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EVENTS

SEPT. 24 – SEPT. 30

TUESDAY

(10:00 a.m. – 12:30 p.m.) Water, Water Everywhere: How clean is it? seminar — E38-300

(7:15 p.m. – 9:00 p.m.) The World’s Religions: Precepts Practices and Principle Beliefs — W11-Main dining room

WEDNESDAY

(7:30 p.m. – 9:00 p.m.) Katsura Sunshine presents Japanese Rakugo comic story-telling — 32-123

THURSDAY

(4:00 p.m. – 5:00 p.m.) CSAIL Colloquium: Innovating for Society: Realizing the Transformative Impact of Computing and Communication — 32-G449

(6:00 p.m. – 8:30 p.m.) The Future of MOOCs: Prospects and Pitfalls, the MIT Perspective — 34-101

FRIDAY

(7:00 p.m., 10:00 p.m.) LSC shows *Much Ado About Nothing* (2012) — 26-100

SATURDAY

(10:00 a.m. – 12:00 p.m.) Animal Petting Zoo — E55-Court-yard

(6:00 p.m. – 8:00 p.m.) Living in the Future, talk — MIT Museum

SUNDAY

(11:00 a.m. – 3:00 p.m.) MIT Bike Show and Market — N10, Annex parking lot

(4:00 p.m. – 6:00 p.m.) MITHAS presents: Violin Maestro Padmashri Lalgudi G. Jayaraman Memorial Concert & biography book release — E51-Wong auditorium

MONDAY

(6:00 p.m. – 7:15 p.m.) Archipelago Town-lines: A sustainable model for urban growth, lecture — 7-429

Send your campus events to events@tech.mit.edu.

STARTUP DIARIES

Hacking my way home

Finding my place on campus at my first MIT hackathon

By Erica Swallow

Walking into last week’s t=0 hackathon, the first official hackathon of the school year, I was well aware of my status as a Sloanie, that species of MIT grad student prone to business plan writing and jargon slinging.

As a first-year Course 15, I was still settling in and getting to know my place on campus, a puzzle that I was incredibly anxious to solve. I had arrived on campus a few weeks earlier to scope out the scene, meet new people, and get involved in campus entrepreneurship before orientation week, but still, two weeks into classes, I didn’t have a grasp of where I’d fit in (or stand out) among my peers.

hackathon goers could find us, and started strategizing. Before long, classmate Ana Villanueva approached us, mentioning that if she didn’t find a team for her social music app idea, she’d love to join us. A glimmer of hope flashed before my eyes and I felt butterflies in my stomach — was Ana our next teammate? After about 10 minutes, fate had its way, and indeed, Ana joined the cause. I was excited to have her on my team as we had volunteered together the prior week at the demo day for Global Founders’ Skills Accelerator, MIT’s summer startup accelerator. We spent that day prepping startup founders before they stepped on stage to demo — through that experience, I had learned that Ana was highly

some quick conversations, I had managed to recruit a team of bright, motivated colleagues to collaborate on a project, and here they were, all sitting at the same table, laptops glowing and ideas flowing, working towards a shared goal.

It was that moment — when we all looked around the table and settled in for a weekend of intense ideation and creation, among homework assignments and other commitments — that I knew I had found my place at MIT. The previous two weeks had been filled with info sessions and orientation events, and as any other doer, I was itching to just get started! “Enough orienting, let’s just do this!” I had thought on a number of occasions.

But there, at the first hackathon of the semester, I was joined by a room of creators and doers — it was exactly what I had expected of MIT and was something I had missed among all the introductory events. I loathed, for example, attending the mandatory career development events, which were targeted at those interested in recruiting, not the group of MBAs interested in starting their own businesses.

As the hackathon kicked off, more than 100 students graced the stage, armed with 30-second idea pitches.

As the hackathon kicked off, more than 100 students graced the stage armed with 30-second idea pitches. Among the lot, I pitched my concept of a peer-to-peer delivery service that enables locals to connect and help each other out with pickups and drop-offs — such as grocery shopping, dry cleaning, and IKEA runs — that fit into their daily routines.

The quality of ideas was high, with students proposing projects that ranged from storytelling apps for children to sunrise-simulating sleeping masks. The anxiety began to kick in: Did anyone like my idea? Was it innovative enough for MIT? Or had I just totally embarrassed myself during the first month of school?

I had come to the hackathon with one teammate, Kiho Suh, a user experience designer from the Rhode Island School of Design. Kiho and I had met two months prior at another MIT startup event, and he had expressed interest in my idea, which I had also pitched at that event.

The two of us, excited to get started, staked out a table together, drew a sign so that interested

interested in fashion and music technology, worked well in a team, and had a way of making everyone around her feel happy and motivated. I could already tell that this was going to be a fun weekend of hacking.

At about that time, another classmate, Thomas Iljic, a Frenchman who had lived in Japan for the past seven years, stopped by our table to check out the situation. “Are you guys all on a team?” he asked. Ana beamed and explained the concept behind Deliverish, the name I had come in with for the project. By the end of the conversation, we had another almost-convert — Thomas had proposed an idea, too, and was still on the prowl for teammates. If he could generate interest, he was going to go his own way, but if not, he told us, he’d be down to work with us. The positive energy began flowing, and I exclaimed, “We’d love to have you! There’s plenty to do!” He walked off, but within minutes had caved and was back for the adventure. Four strong, we were off to a start.

I had passed my first test as a budding startup founder at MIT — through a 30-second pitch and

At the first hackathon of the semester, I was joined by a room of creators and doers.

With many hackathons and startup competitions ahead of me this year, though, I now know that there will be many opportunities ahead to get my hands dirty. I’m looking forward to digging deeper into MIT’s hacking culture and aiming to further spread that ethos to Sloan, where models and theories currently prevail. Mens et Manus, my fellow students. Let’s rock this!

For Deliverish’s pitch at t=0, see http://www.youtube.com/watch?v=L1ue_645TQQ.

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■ Thursday, October 10th, 10am-4pm

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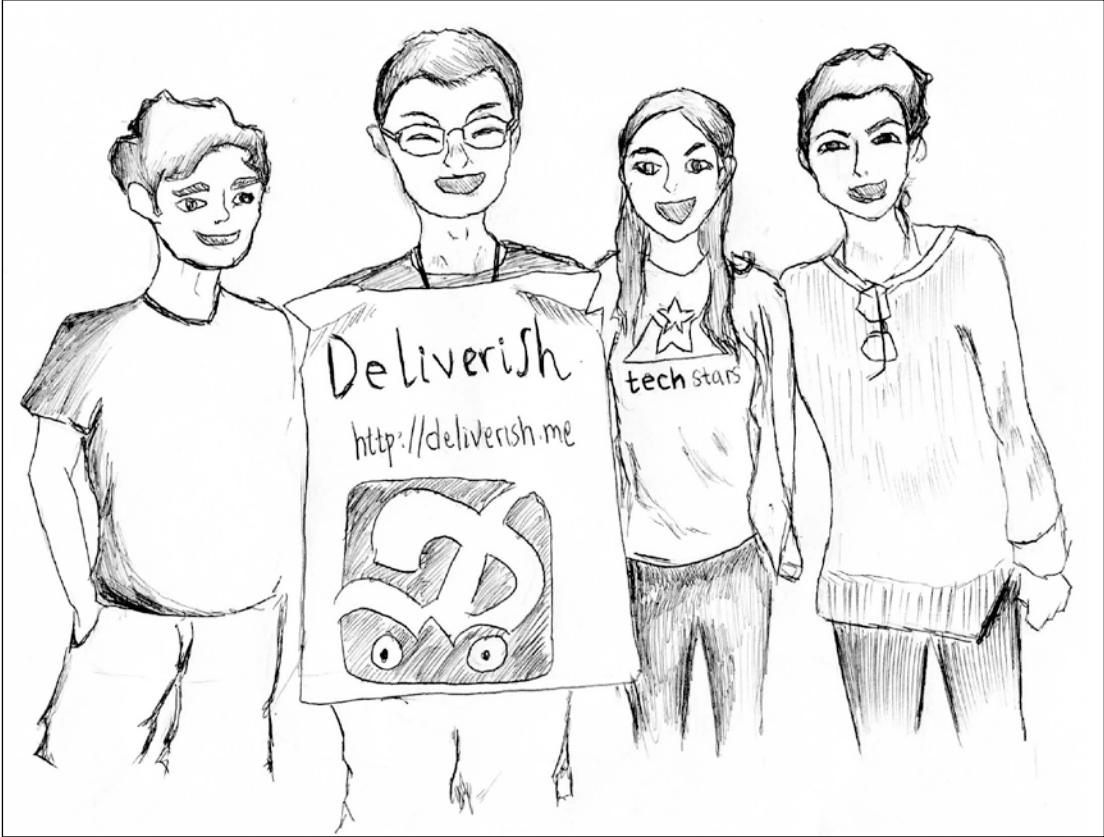


ILLUSTRATION BY HAYOON CHUNG

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8 PM

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KILLIAN HALL



Even The Tech needs tech support and we’re looking for some. join@tech.mit.edu



Solution, page 11

ACROSS

- 1 Colorful talkers
- 7 Makes a play for
- 14 Novel that strongly
influenced the Robin Hood
legend
- 16 Italian for "what is above"
- 17 Order
- 18 Order reinforcement
- 19 It may work with a plunger
- 20 "Pride goeth before . . ."
source: Abbr.
- 22 Things handed down
- 23 Fleet with stars on its
tailfins
- 25 Photo finish focus, maybe
- 27 Cuisine using jasmine rice
- 28 Bask in
- 31 Irritant of a sort
- 33 "Catch, __ she change . .
." Pope
- 34 Initiate a cooling trend
- 36 Offering uncertain footing
- 38 Volatile scenario
- 40 Park featuring Navajo
Sandstone
- 42 Like the World Cup finals

- 46 Small beads
- 47 Dalmatian, for example
- 49 Release
- 50 Shelley's descriptor of
heaven
- 52 Folks
- 54 Manila money
- 55 Three-time NL MVP
- 57 Umbrella features
- 60 Second-oldest US record
label
- 61 Edith Wharton theme
- 63 Leave little to chance,
perhaps
- 65 Party favorite
- 66 Oldest state capital
- 67 Common occurrence on 7
Down
- 68 Warded off

DOWN

- 1 Call a bad name
- 2 Anne of Green Gables town
- 3 Radio show with a wrench in its logo
- 4 One in a caste system
- 5 Bash

- 6 Captious
7 TV vehicle for Justin Bieber
8 Course with novice budgeters
9 Took off on
10 Property
11 Top-10 surname in Spain
12 Not segmented
13 Richie's Happy Days pal
15 "The chief nurse of England's statesmen"
21 Element of much film noir
24 Put something over on
26 Draconian
29 Skating repertoire
30 Game ____
32 Uproar
35 Campaign worker
37 Yellow-blooming perennial
39 Afterthought introducer
40 First name among American explorers
41 Setting of the 1945 Pulitzer Prize photo
43 Tracing paper, e.g.
44 Brand whose success was groundless?

45 Betrayed overloading
46 Ride (on)
48 Seasonal stat
51 Recess declaration
53 Enjoys at leisure
56 Bunch of waiters

- 58 Auto-finish protectors
59 On the way
62 Joined
64 National grp. since 1897
that elected its first male
head in 2009

Solution, page 11

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Solution, page 11

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

```
File Edit Options Buffers Tools Im-Python Python Help
import new_skills

def learnMarketableJobSkills():
    return linux, OSX, javascript, applescript, perl, python

if you.interest == True:
    print "E-mail join@tech.mit.edu"

----:----F1 joinTechno.py (Python)--L1--Top-----
```

FYRE, from Page 1

of House 3, said that some houses within New House don't have very many returning upperclassmen. "When freshmen get back here, the houses look vacant," said Orona, "which turns a lot of freshmen off."

Orona emphasized, though, that the number of freshmen trying to switch out of has been going down from over 60 percent three years ago, to 51 percent, to 44 percent, and now 24 percent. REX events incorporating every house, coupled with a bigger emphasis on REX and CPW, have contributed to the decrease, said Orona.

Additionally, New House is also in the peculiar position of having many open rooms, according to Orona, when some other dorms have forced triples. Hemenway stated that when students move out of New House, those rooms are then made open to students wanting to move in. "When you are talking about building vacancies, you also have to look at the demand for the building," said Hemenway.

—Bruno Faviero

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Samuel A. Worthington, National Executive Director, Childreach with a sponsored child in Tarija, Bolivia.



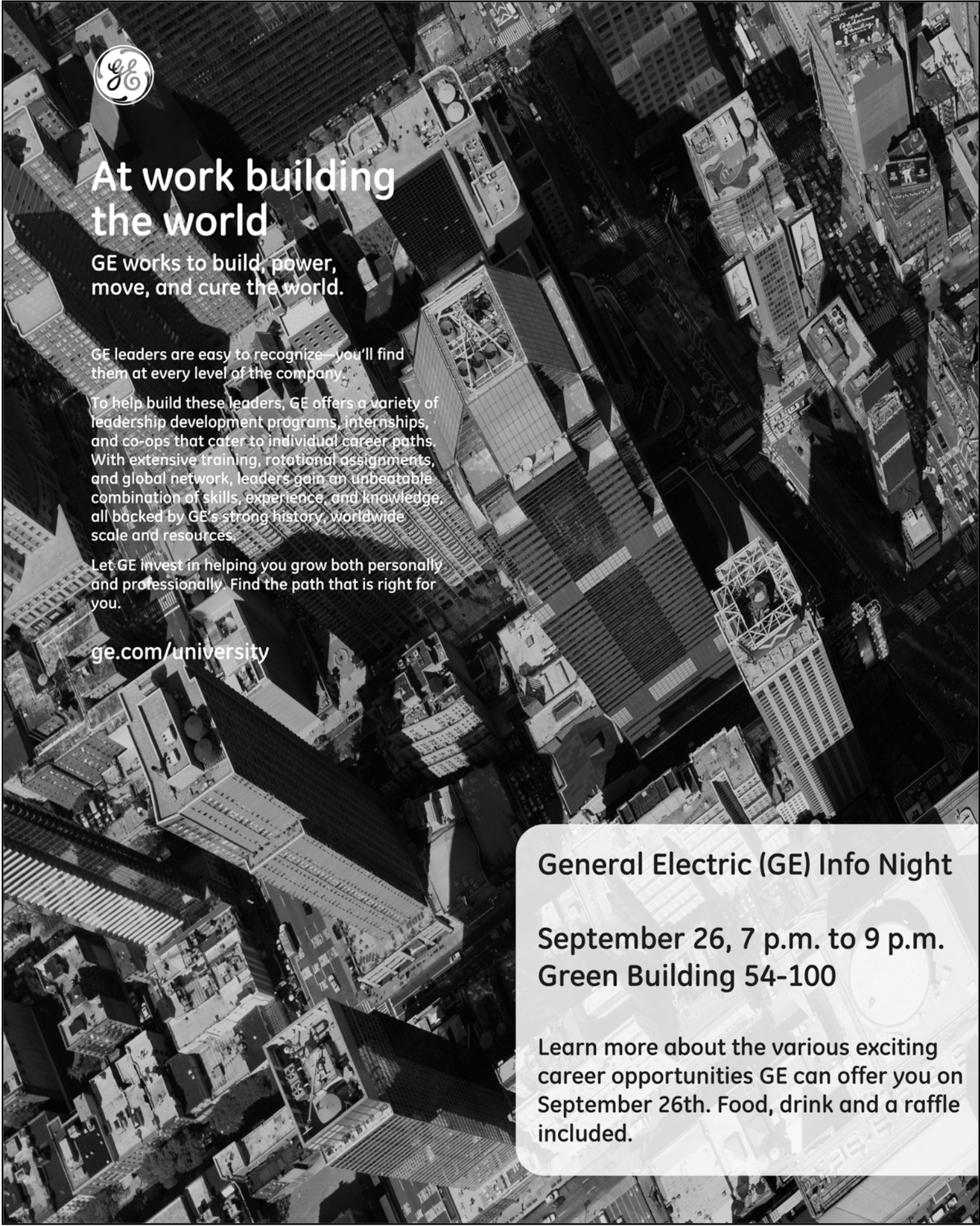
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Got Something to Say?



Dining ignites campus

Despite loud opposition, new plan s

By Maggie Lloyd
ASSOCIATE NEWS EDITOR

Few topics caused as much tension on campus in 2010 as the ever-changing House Dining Plan, scheduled to go into effect Fall 2011. In March 2010, the Division of Student Life (DSL) formed the House Dining Advisory Group (HDA) to study the current plan and propose alternatives. The group has been working for several days a week, including Maseeh Hall, set to open in Fall 2011. Costs for the 10, 12, or 14 meals-per-week options were projected to be \$2,900, \$3,400, and \$3,800 per year, respectively, and the number of meals per week were required to be equally split between breakfast, lunch, and dinner. The plan also includes a close-up of a student's face.

Former varsity sports, profiled

Money not the only problem

What's down with Town Greening, MIT 150, real estate discussed

Greening, MIT 150, real estate discussed

Two fraternities suspended for four years

PBE suspended for four years

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New MIT innovation effort

Initiative seeks to involve manufacturing industry

Innovation from Page 1

tive, which began during Susan Hockfield's presidency, the new Innovation Initiative will connect related efforts at MIT under a name and mission intended to bring in money from corporate sponsors, philanthropists, foundations, and the government, according to associate provost Martin Schmidt in a phone interview with *The Tech*. MITEI has attracted \$100 million from the oil and gas companies BP, Eni, Saudi Aramco, and Shell alone, according to its website.

"We are eager to engage our industry allies in the challenge of shortening the time to market," Reif said, referring to the time it takes to develop and commercialize a new idea. "Making this vision real

will give innovators a competitive advantage."

The initiative will support engineering research into areas such as continuous pharmaceutical manufacturing, which streamlines drug synthesis. It will also oversee policy research for innovation incentives.

The study contests the idea that manufacturing has no place in a high-wage economy.

Programs like the Gordon-MIT Engineering Leadership Program and the MEng in Manufacturing offered by MechE would fall under the purview of the initiative's

educational "pillar," according to Schmidt. Reif also said there could also be a role for edX, the online education initiative founded by MIT and Harvard.

To help MIT "walk the talk," Schmidt also said that the initiative would join the Martin Trust Center, the Deshpande Center, and contests like the 100K Competition in boosting entrepreneurship at MIT. This effort is analogous to MITEI's campus energy efficiency programs in that it promotes the initiative's vision through programs on campus.

Details about the initiative will be announced "in the next few weeks," Reif said. "I can tell you now that this will be a serious effort, and I believe it will make an important difference."

Ad Council

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Experimental treatment for muscular dystrophy

Treatment uses exon skipping to counteract genetic errors causing muscular dystrophy

By Andrew Pollack
THE NEW YORK TIMES

Terri Ellsworth is convinced that her 12-year-old son Billy, who has Duchenne muscular dystrophy, is being helped by an experimental drug that counteracts the genetic mutation causing his disease.

His ability to walk has not deteriorated in the two years he has been on the drug, whereas many boys with the disease would be in wheelchairs by his age. Billy opened a Gatorade bottle by himself recently, beaming from ear to ear. He even took off down an uneven dirt path without falling.

"He never would have done that, ever," said Ellsworth, 55, a kitchen and bath designer from Coraopolis, Pa., outside Pittsburgh. "Without this drug, he would not be walking today."

Such anecdotal reports, and data from small clinical trials, have raised hopes that a new genetic technique called exon skipping may slow the progression of Duchenne muscular dystrophy, finally yielding a treatment for which parents have prayed for decades. Scientists say the technique or related ones might also point the way to treatments for other inherited diseases, including Huntington's.

The idea behind exon skipping is an ingenious one: a disease can be cured, or at least ameliorated, not by replacing a defective gene, as is done in gene therapy, but by correcting it.

"We're sort of manipulating what the gene is ultimately making," said Adrian R. Krainer, a professor of molecular genetics at the Cold Spring Harbor Laboratory.

Hopes for the new technique suffered a big blow Friday when the results of the first large randomized clinical trial of a drug designed to induce exon skipping were announced. The drug, called drisapersen, was no better than placebo in preserving muscle function of boys with Duchenne muscular dystrophy.

The announcement was devas-

tating to some parents of boys with muscular dystrophy and has raised questions about whether exon skipping will ever work. Could parents like Ellsworth be seeing only what they wish to see?

But some scientists and parents of children with muscular dystrophy said it was too early to write off the technique.

"We are fully confident in the exon-skipping technology as a viable platform to develop a treatment for Duchenne, and Duchenne families should not give up hope," Debra Miller, chief executive of CureDuchenne, an advocacy group that sponsored research on the technique, said in a statement.

Drisapersen is being developed by GlaxoSmithKline and Prosensa, a small Dutch company whose stock lost 70 percent of its value after the announcement.

Billy Ellsworth is taking a different exon-skipping drug, eteplirsen, developed by Sarepta Therapeutics. The two drugs are different chemically, and it is possible that eteplirsen may prove more effective.

Duchenne, which affects as many as 15,000 Americans, mainly boys, is the most severe common form of muscular dystrophy, the focus of those Jerry Lewis telethons.

There is no good treatment, though steroids help. Boys with Duchenne are typically in wheelchairs by their early teenage years and die from cardiac or respiratory failure in their 20s.

People with Duchenne have a genetic mutation that prevents their bodies from producing dystrophin, a protein that is a sort of coiled spring and acts as a shock absorber for muscles.

Genes contain the recipes for the body's proteins. They exist in the chromosomes in discrete segments called exons that are spliced together in RNA to form templates for proteins. Mutations resulting in missing exons can lead to the wrong proteins being produced, or none at all.

The chemical units in RNA, typically represented by the letters A, C, G and U, are read three letters at a time, with each three-letter combination specifying a particular amino acid, the building blocks of proteins. Sometimes, a three-letter combination starts in one exon and continues into the next.

Consider this stretch of oversimplified hypothetical exons: CAUUUU-CAA-GAAG-CC. The protein recipe would be read CAU-UUU-CAA-GAA-GCC. But if the second

exon, UUUU, were missing because of a mutation, the sequence would be read CAC-AAG-AAG. The wrong amino acids would be specified and the correct protein would not be made.

A clever, perhaps counterintuitive solution to this problem: create a drug that causes an additional exon to be deleted, or skipped, in a way that restores the proper reading. In this example, if the drug caused the initial exon, CA, to be deleted, the remaining sequence would be read CAA-GAA-GCC. The first two amino acids specified by the original sequence are missing, but the amino acids after that are the correct ones.

In muscular dystrophy, this exon-skipping technique results in a dystrophin protein missing a piece in the middle. But scientists are hoping that the protein is at least partly functional.

"It's a shock absorber," Hans Schikan, the chief executive of Pro-sensa, said. "If you miss a ring in a shock absorber, it still works."

The main measure used to assess the progression of Duchenne is how far a patient can walk in six minutes. Before beginning treatment, the 186 boys in the big drisapersen trial could walk an average of about 340 meters,

about 372 yards, in six minutes.

After 48 weeks of injections, the distance covered by those receiving placebo was about 53 meters less, on average, while those getting the drug walked 42 meters less. The difference was far from statistically significant. In smaller, earlier trials the difference had been closer to 30 meters.

Serepta's exon-skipping drug, eteplirsen, is being studied in only 12 boys. Two lost the ability to walk soon after starting on the drug. The others though, have had an average decline of only about 20 meters, or 6 percent, over 84 weeks.

Four boys who received a placebo drug weren't able to walk as far after the first six months of the trial, but they have stabilized since being switched to the drug.

For now, the question is whether any exon drug will ever be approved.

GlaxoSmithKline and Prosensa say they will continue to analyze the data from the disappointing late-stage trial and others to see if certain patients might still benefit from drisapersen.

Sarepta plans to apply for approval of eteplirsen based on the results of its 12-patient trial. If it succeeds, the drug could get to market by the end of 2014.

The idea behind exon skipping is an ingenious one: a disease can be cured, or at least ameliorated, not by replacing a defective gene, as is done in gene therapy, but by correcting it.

"We're sort of manipulating what the gene is ultimately making," said Adrian R. Krainer, a professor of molecular genetics at the Cold Spring Harbor Laboratory.

Hopes for the new technique suffered a big blow Friday when the results of the first large randomized clinical trial of a drug designed to induce exon skipping were announced. The drug, called drisapersen, was no better than placebo in preserving muscle function of boys with Duchenne muscular dystrophy.

The announcement was devastating.

teach anything

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Solution to Sudoku

from page 3

1	5	6	7	4	8	3	2	9
2	8	4	3	6	9	7	1	5
9	7	3	1	2	5	6	4	8
8	9	2	6	7	3	1	5	4
5	3	1	8	9	4	2	7	6
6	4	7	5	1	2	8	9	3
3	2	5	4	8	1	9	6	7
7	1	8	9	5	6	4	3	2
4	6	9	2	3	7	5	8	1

Solution to Techdoku

from page 8

3	4	5	1	6	2
4	5	6	2	1	3
5	6	1	3	2	4
6	1	2	4	3	5
1	2	3	5	4	6
2	3	4	6	5	1

Solution to Crossword

from page 8

M	A	C	A	W	S		C	H	A	T	S	U	P		
I	V	A	N	H	O	E		S	O	P	R	A	N	O	
S	O	R	T	O	U	T		I	M	E	A	N	I	T	
T	N	T		P	R	O	V		E	D	I	C	T	S	
E	L	A	L				N	O	S	E		T	H	A	
R	E	L	I	S	H		I	T	C	H		E	R	E	
M	A	K	E	P	E	A	C	E		O	O	Z	Y		
							T	I	N	D	E	R	B	O	X
	Z	I	O	N		M	O	N	T	H	L	O	N	G	
D	E	W		S	L	A	V		W	A	I	V	E	R	
E	B	O	N		O	N	E	S		P	E	S	O		
P	U	J	O	L	S		R	I	B	S		R	C	A	
E	L	I	T	I	S	M		P	R	E	P	L	A	N	
N	O	M	I	N	E	E		S	A	N	T	A	F	E	
D	N	A	T	E	S	T		S	T	A	Y	E	D		

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Engineers stay undefeated with NEWMAC win

Michelle H. Teplensky '13 and Molly K. Duffy '13 accounted for all of MIT's scoring in a 3-2 NEWMAC field hockey victory over Springfield College on Saturday afternoon. Teplensky produced two goals and an assist while Duffy had one goal and an assist for the nationally-ranked No. 19 Engineers (7-0, 1-0 NEWMAC).

her second effort was set up by Duffy just over four minutes later. The remainder of the frame was a defensive battle as the Engineers were awarded four penalty corners but could not convert while keeping Springfield out of its offensive zone.

Faced with a new goalie in the second stanza, MIT immediately tested her with two shots on goal before the Duffy-Teplensky connection resulted in what proved to be the game-winning goal

after five minutes elapsed. The momentum began to shift to the hosts following their own timeout in the 46th minute. Springfield recorded eight shots, five of which were on goal, and four penalty corners before cutting its deficit in half (3-2) with 10:53 on the clock. The Pride kept the pressure on down the stretch courtesy of a trio of penalty corners while its two attempts at tallying the equalizer were turned away by sophomore Evie S. Kyritsis '16 with 2:59 and 1:10 remaining in regulation.

Kyrtsis finished the day with six saves while the Engineers were credited with two team saves. For the game, Springfield had a 15-14 edge in shots and an 11-6 margin in penalty corners.

MIT continues its roadtrip on Thursday, Sept. 26 when it visits non-conference foe Endicott College.



The MIT sailing team braved grey skies and rain this past Sunday, Sept. 22 in a regatta against Boston University.



On the heels of their outstanding performance at the Toni Deutsch Regatta, MIT sophomores Rosalind R. Lesh '16 and Lisa Sukharev-Chuyan '16 were selected as the New England Intercollegiate Sailing Association Women's Sailors of the Week. The duo finished first in the B Division by a margin of 28 points to help the Engineers secure second place out of 17 squads in the competition.

Lesh and Sukharev-Chuyan were victorious in five rounds, captured second in four outings and were third on two occasions. The pair never finished outside the top 10 in the 17 rotations that were held on the Charles River.

The nationally-ranked No. 11 women's team returns to action this weekend at the Mrs. Hurst Bowl hosted by Dartmouth College.

—Mindy Brauer

Tuesday, September 24

Women's Volleyball vs. Mount Holyoke College

7 p.m., Rockwell Cage

Thursday, September 26

Sailing vs. Midweek Firefly Invite I

6 p.m., Charles River



Rachel Hunt '14 spikes the ball during MIT's home volleyball game this Saturday, Sept. 21 against Springfield College.



Michelle Battipaglia '15 rushes after the ball in the women's soccer game on Saturday, Sept. 21 against WPI. MIT won 3-0.