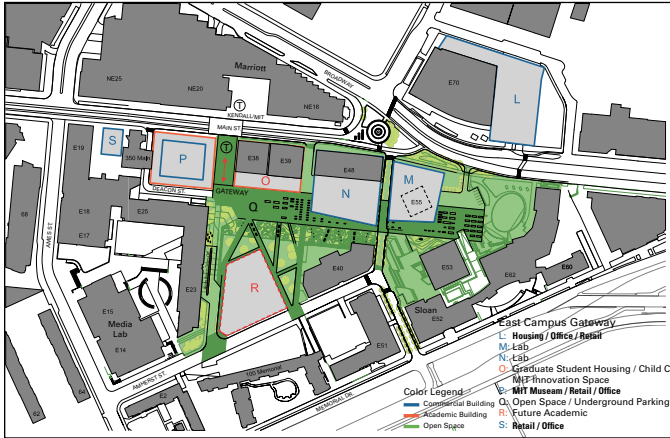


Kendall redevelopment proposal



TOP: TAMAS KOLOS-LAKATOS; BOTTOM: MIT NEWS OFFICE

MIT's current thinking on the proposed plan for Kendall Square, as of July 14, 2014. At the top is an aerial view of the East Campus/Kendall Square area which is the locus of the proposal. At the bottom is a map of the proposed changes to the area, which calls for new buildings for commercial, retail, and academic uses, as well as new graduate student housing.

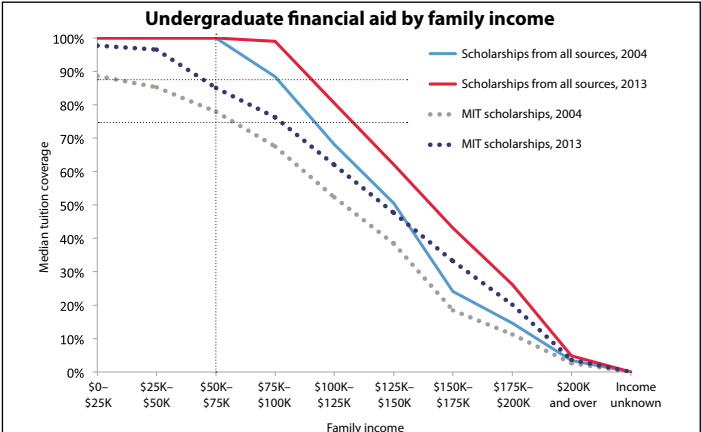
Financial aid tune-up targets upper-middle-class applicants
Policy change hoped to make MIT more 'competitive'

By Leon Lin
NEWS EDITOR

Tired of losing students to schools like Harvard, Princeton, Stanford, and Yale, this year MIT tweaked its financial aid formula to sweeten the deal for undergraduates from families making \$100,000 to \$150,000.

The MIT Student Financial Services office cited those four schools as offering more generous aid than MIT in that range, which Provost Martin A. Schmidt PhD '88 called MIT's "least competitive" income bracket.

"We don't want a student who wants



SOURCE: MIT STUDENT FINANCIAL SERVICES, VIA THE PRELIMINARY REPORT OF THE TASK FORCE ON THE FUTURE OF MIT EDUCATION

Financial aid, Page 11

Summer classes try digital tools
Educational experiment gets mixed reviews from students

By Katherine Nazemi

While researchers were running experiments in MIT labs this summer, the Institute was conducting an educational experiment of its own, piloting for-credit summer classes through the "summer@future" initiative.

Five courses were offered, from the physics, biology, materials science, and mechanical engineering departments. As an incentive for students,

MIT offered free housing and tuition for anyone who enrolled in a summer course. A total of 129 students registered.

Courses ran for eight weeks, from June 9 to August 1, but planning for summer@future began much earlier.

"The idea initially stemmed out of discussions in the Task Force on the Future of MIT Education," said Professor Karen E. Willcox PhD '00, Chair of the Task Force Working Group on

MIT Education and Facilities for the Future.

President L. Rafael Reif asked the Task Force to recommend "possible experiments and pilot programs" that would both "incorporate online learning tools" and "[maximize] the value of face-to-face learning for both faculty and students."

Summer@future fits these goals by

Summer, Page 10

Waitlist sees use again, 3 years later
Admissions yield inches slightly higher as nearly 1,050 enroll

By Shenghao Wang

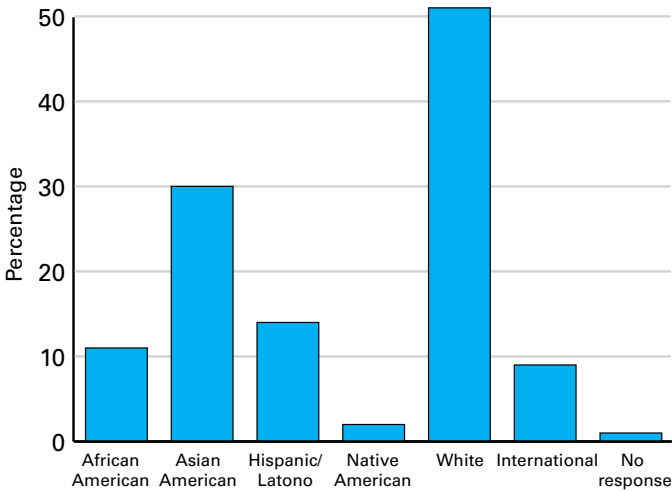
For many, the wait was over. But 28 students who held out months longer than everyone else this year finally received welcome news from MIT: they were admitted from the waitlist.

Of those 28 students, 25 are enrolling in the fall. In the preceding two undergraduate admissions cycles, no students were accepted from the waitlist.

In total, MIT currently expects to enroll 1,047 students in the Class of 2018, or 72.4 percent of the 1,447 students accepted, who themselves make up 7.9 percent of the 18,357 applicants. (These figures differ slightly from those in earlier reports because of waitlisted students, students who decide to take a gap year, and other factors.)

Based on these numbers, this year's

Class of 2018 racial composition



INFOGRAPHIC BY JUDY HSIANG

Class of 2018, Page 11

Economics professor to assume DOJ post

Nancy L. Rose PhD '85, a professor of applied economics at MIT, has been named Deputy Assistant Attorney General for Economic Analysis by the U.S. Department of Justice.

Rose is an expert on firm behavior in imperfectly competitive industries and regulatory

economics. At the DOJ, she will head a team of economists in the Antitrust Division, which works to prevent monopolies and promote economic competition.

Rose joined MIT's faculty in 1985 through the Sloan School of Management, and has been a faculty member in the Department

of Economics for twenty years. In 2012, she was granted MIT's highest honor in undergraduate teaching, becoming a Margaret MacVicar Faculty Fellow.

She will take a leave of absence from MIT to fill her post with the DOJ, which begins Sept. 8.

—Katherine Nazemi

Cambridge man arrested in possible connection to aiding marathon bombers

Federal authorities recently arrested the man believed to have provided the gun allegedly used to slay MITPD Officer Sean Collier. The origin of the gun that the alleged killers used was previously unknown.

Stephen Silva was arrested last month and appeared in federal court on multiple charges, including possession of a handgun that had its serial number removed in February 2013, two months before the marathon bombings.

The gun mentioned in the

indictment, a Ruger model P95 9mm pistol, is the same type of gun used to kill Officer Collier. WFXT cited two unnamed sources who told them that authorities had linked the gun to the killing of Collier. A spokeswoman from the US Attorney's office declined to confirm the connection.

Silva attended the same high school as the Boston Marathon bombing suspect Dzhokhar Tsarnaev and was good friends with him, according to one of Silva's neighbors.

—Shenghao Wang

IN SHORT

Summer housing is ending. If you do not have a fall housing assignment, you must move out of your summer housing assignment by August 10. If you have a fall housing assignment, you can check into your assignment starting Tuesday, August 12. You must complete your move by Thursday, August 14. Any student who remains in their summer housing as-

signment after these dates will be charged a \$595 late check-out fee.

Undergraduate students can start registering for Quarter 1 PE classes on Wednesday, Aug. 27 at 8 a.m. The registration period ends on Wednesday, Sept. 3 at 1 p.m. Sign up early to get the classes you want!

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

A WORD FROM MENTAL HEALTH

Alan Siegel addresses recent deaths in the MIT community.

OPINION, p. 4

CONFUSED ABOUT BOYHOOD?

See our take on this lauded new film.

ARTS, p. 5

OM NOM NOM

See our tips for making the most of Restaurant Week.

ARTS, p. 5



MISS OUT ON COMIC-CON?

Check out our debriefing and photos

p. 6-7

CHECK OUT THE FUN SECTION

Find a puzzle that's just right for you.

FUN, p. 9

SECTIONS

World & Nation . . . 2
Opinion 4
Arts 5
Fun Pages 8
Campus Life . . . 12



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Letter regarding recent deaths of MIT community members

Editor's Note: This letter was sent to The Tech shortly after the publication of our last issue.

Dear editors of *The Tech* and members of the MIT community:

In recent days, *The Tech* has reported on the deaths of seven members of the MIT community (including emeriti faculty), and as part of its reporting it has provided information about the causes of death. In three cases, the reported cause was suicide.

All of the deaths are and will be painful to those who knew and loved the departed.

But I write especially to those members of the MIT community who have lost someone they care about to suicide.

With these tragedies, it is natural and normal to have powerful, sometimes puzzling reactions. We question life, ourselves, and life's meaning. In times like this, it's important for us to look after each other, and to pay attention to the thoughts, feelings, and reactions of people we know and care about.

At the foot of this letter, you'll find online resources that many people dealing with suicide have found very helpful. But all of the information in these websites does not match the help that each of us can receive from our friends, families, and colleagues. I encourage you to talk about this with people you know and care for. Certainly the staff at Mental Health and Counseling are available to talk with you in groups and individually, by appointment and more urgently. Please call 617-253-2916 anytime and ask to speak

with one of our clinicians. After hours and weekends, a staff member is available by phone 24/7 for urgent concerns.

Let me finally say that if you are suffering from issues surrounding suicide, you are truly not alone. In the most recent year for which we have data, suicide accounted for 12 deaths for every 100,000 people nationwide, making it the country's 10th leading cause of death. Unlike many other leading causes of death, suicide continues to claim more lives each year. Coming to terms with a given death by suicide is complex and challenging; I urge you, if you are having a hard time or feel confused in any way, to allow the MIT community to embrace you. Because, truly, it will.

Alan E. Siegel, Ed.D.
Chief, Mental Health and Counseling
Service

Links can be found in the online version of this article.



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Dissents are the signed opinions of editorial board members choosing to publish their disagreement with the editorial.

Letters to the editor, columns, and editorial cartoons are written by individuals and represent the opinion of the author, not necessarily that of the newspaper. Electronic submissions are encouraged and should be sent to letters@tech.mit.edu. Hard copy submissions should be addressed to *The Tech*, P.O. Box 397029, Cambridge, Mass. 02139-7029, or sent by interdepartmental mail to Room W20-483. All submissions are due by 4:30 p.m. two days before the date of publication.

Letters, columns, and cartoons must bear the authors' signatures, addresses, and phone numbers. Unsigned letters will not be accepted. *The Tech* reserves the right to edit or condense letters; shorter letters will be given higher priority.

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Guest columns are opinion articles submitted by members of the MIT or local community.

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Three days at San Diego Comic-Con

Navigating signatures, panels, a “Pizza Thrower,” and shopping

By Steve Sullivan
STAFF COLUMNIST

After buying enough protein bars, beef jerky, and vitamins to sustain me for three days, I packed away all my food along with a space blanket and some sunscreen. I wasn’t going on a camping trip, though. I was headed to San Diego Comic-Con.

San Diego Comic-Con (SDCC) has become legendary in the pop culture world for being the biggest pop culture show you could possibly imagine. At times described as a nerd mecca, SDCC is the result of a multitude of comics publishers, TV networks, movie studios, toymakers, creative talent, and much more all gathering in one place. That place is the San Diego Convention Center — during SDCC, it hosts well over 130,000 people over the course of four and a half days. That’s more than ten times the student and faculty population of MIT.

Although I’m not new to the comic convention scene, having attended Boston Comic Con a few times, I was still nervous about SDCC. It has a reputation for congested hallways, long lines that sometimes begin overnight, and fierce competition from other fans to see anything you want to see. I bought the protein bars because I didn’t want to be stuck eating the fast food in the convention center or find myself starving in a long line.

But I was pleasantly surprised by what I was able to see and do at the convention. The convention center houses a massive exhibit hall with rows of large, brightly decorated booths and an upper floor with rooms for panels, screenings, and other large presentations. Outside the convention center, attractions like a giant inflatable Homer Simpson head and a Gotham City-themed zipline towered over lines of convention attendees.

I spent my first day at the convention trying to meet and get signatures from some of my favorite comic book creators. I’ve started taking a sketchbook to comic book shows to collect signatures and drawings from different creators in one place. I missed seeing some creators because their signings were ticketed — tickets and wristbands that were distributed early in the day. But I was able to meet a few creators who didn’t have ticketed signings, such as Stan Sakai, writer and artist of the long-running Usagi Yojimbo samurai comic, who was attending his 36th San Diego Comic-Con. I was also able to see *Teenage Mutant Ninja Turtles* co-creator Kevin Eastman, whom I had met earlier at the 2012 Boston Comic Con. Whereas in Boston I had to wait for over two hours in line to meet him, I only waited around 30 minutes at SDCC.

While SDCC draws some of the comic industry’s top talent, the spotlight on them isn’t as strong due to the huge movie and

TV presence, so it’s not as difficult to see comics creators. Eastman was kind enough to sketch a *Ninja Turtles* headshot in my sketchbook, and we talked about one of his upcoming appearances in Boston. He expressed genuine excitement when I mentioned the upcoming *Ninja Turtles* movie, saying, “It’s going to be awesome.” Other autographs I received were from Jeff Smith, creator of *Bone*, and Ed McGuiness, a prominent artist at Marvel.

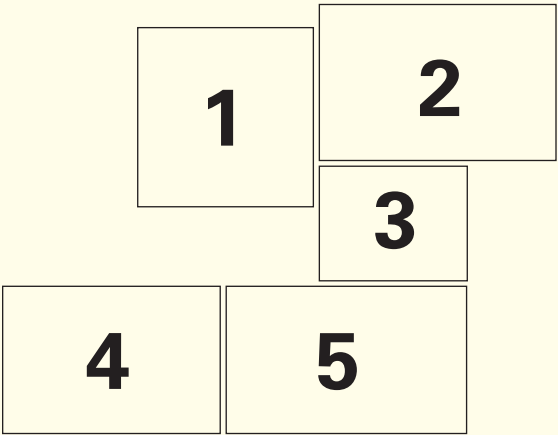
I attended a few panels given by comic artists at SDCC as well. I showed up for a panel by Brian K. Vaughan, writer of the popular *Saga* series, two hours early, expecting some kind of line outside to get in. As it turns out, the arrive-very-early rule for panels only applies to the more popular TV and movie panels — I never had any trouble getting into comic book-focused panels. Usually panels will focus on one or a few creators with a moderator who spends some time driving their conversation on a main subject before opening up the floor to the audience for questions.

Brian K. Vaughan’s panel was very different, and ended up being my favorite panel at the convention. He walked into the panel room alone and announced that he would not only be doing nothing but taking audience questions, but also be giving out signed comics, some of which were exclusive variant editions, to anyone who asked a question. After he introduced himself, I heard a loud rumbling behind me and felt the floor vibrate under my feet. When I looked up, a line had already formed from the microphone at the front of the room to the back wall, and was still growing along the sides.

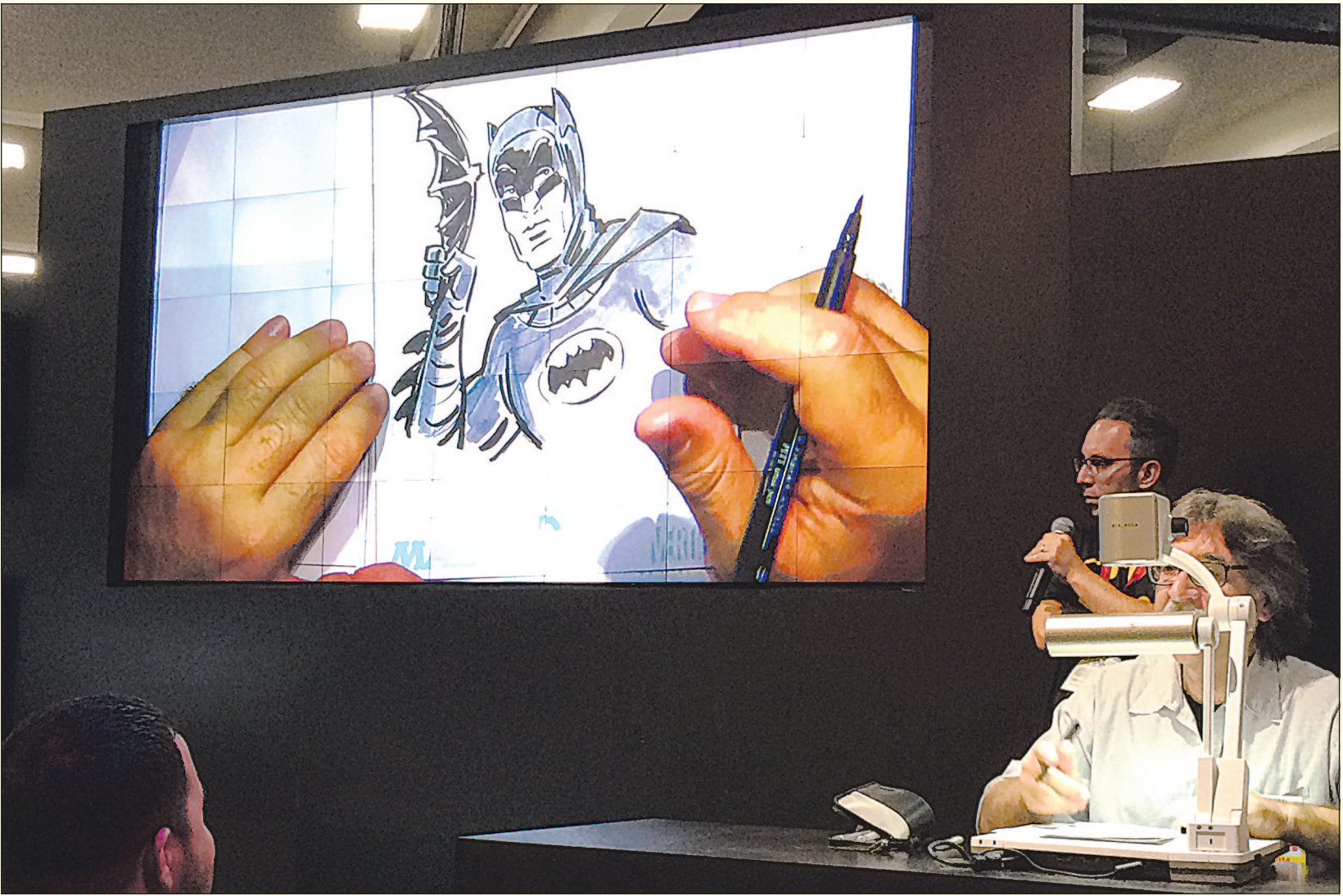
At the PhysicsCentral booth, attendants offered a small stack of comics to anyone who passed by, saying “Free science comics!” PhysicsCentral is a project that aims to bring physics to the younger generation, and one part of their approach is comic books. I spoke with author Rebecca Thompson about how she began her comic and some of her favorite moments her work has brought her.

“I wanted to get people interested in and excited about physics, [but] I didn’t want to do classroom teaching. I wanted to have the freedom to do different stuff,” said Thompson. Eventually, through work for the American Physical Society, she created the comic book superhero Spectra. “All of her powers are things that lasers actually do... the idea is to get people interested in the story through her life, and then teach them the physics underneath that.” Thompson’s approach seems to have found some success thus far. “What’s really wonderful is when adults will say something and their kids will correct them. And eight-year-olds talking about total internal reflection is just awesome.”

The second day of the convention, I set out on a mission to win a shirt. Video games



- STEVE SULLIVAN—THE TECH
1. A Joker cosplayer shows off his smile outside the Cinema Makeup School booth.
 2. Batman ‘66 artist Ruben Procopio shows off his illustration skills for fans at DC Comics’ booth.
 3. Comic Con attendees enjoy some game time on custom-built arcade cabinets at the Behemoth booth.
 4. A zombie cosplayer poses with zombie actors at the *Walking Dead* display.
 5. The massive head of the fearsome dragon Smaug glowers at Weta booth passerby with an animated eye.



also had a large presence at SDCC, so many game demos were on display. Super Smash Bros. players could earn a coveted piece of Nintendo swag: an exclusive Super Smash Bros. SDCC t-shirt. To win the shirt, attendees had to win a minigame on the Nintendo 3DS version of the game. They could then enter a match against three other attendees on the Wii U, the winner of which would get a shirt. After waiting in line to play both the 3DS and the Wii U, the players were heavily invested in each prize match, which made the fights some of my most intense convention experiences. I could hear my own pulse pounding in my head when I was finally able to defeat the other contestants by using one of the new Smash Bros. characters, Greninja.

On the last day of San Diego Comic-Con, I did something a little different: I operated a tank that fired pizza. Built to promote the upcoming *Ninja Turtles* movie, the “Pizza Thrower” was set up in the parking lot for Petco Park, a stadium not too far from the convention center. After firing some full-size pizza replicas of *Ninja Turtles* enemies from the seat on top of the turret, I was invited to take a look inside the Pizza Thrower, which reminded me in many ways of an MIT hack. The tank was built off a Toyota Tundra, so the crew was able to drive it around. The pizza-throwing mechanism was a spinning tire on the end of a powerful hand drill. The turret rotated left and right through use of a belt drive with limit switches to keep it from rotating too far. The crew informed me that *Ninja Turtles* stars Megan Fox and Will Arnett visited the site earlier.

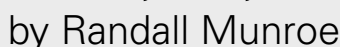
I spent most of my last day at the convention shopping for merchandise and looking for gifts for other people. More so than any other comic convention, San Diego Comic-Con is host to tons of exclusive toys, comic book covers, and other exclusive merchandise, which ranges from free swag to items priced in the hundreds of dollars. Exclusives and swag were powerful lures for convention goers, so much so that the owner of one prominent comics distributor, Mile High Comics, complained that convention exclusives were decreasing the amount of business at his comics booth and blamed them for the monetary loss he suffered at the show.

“In a nutshell, the comics publishers with booths at the San Diego convention have so cleverly exploited the greed and avarice of comics fans through limited edition publications that are only available through their own booths, that there is no longer enough disposable income left in the room to sustain us. A sad state of affairs, but also completely true,” said company president Chuck Rozanski.

One such piece was a gold-plated “Legacy Dragon Dagger,” a toy replica from the *Power Rangers* TV show. You had to stand in a long line just to enter a raffle to win a ticket in order to buy this \$150 dagger. It’s true that some con-goers buy some items just to turn an eBay profit. The Dragon Dagger currently has over 75 listings on eBay and is selling for upwards of \$300. I obtained one SDCC exclusive myself — a *Dragonball Z* action figure of the character Vegeta with special coloring from his first appearance on the show.

At the end of each day at SDCC my legs were as sore as they’ve ever been, but it was worth it to experience a truly unique place where almost everyone was wearing a geeky shirt or costume. I met a lot of cool people, saw exciting booths and events, and brought home hundreds of amazing photographs from the experience. The only thing I would have changed about my experience would have been to go with someone — conventions are more fun when you can experience them with other people and get dragged to a few events you didn’t think you would enjoy. However, the nice thing about San Diego Comic-Con is that it guarantees plenty of unique and unexpected experiences no matter where you’re headed.





The nice thing about headcannons is that it's really easy to get other people to believe in them.

...PLUUSHH:: Looks like you won't be making it to Vinland today, Leat Erikson.



Solution, page 11

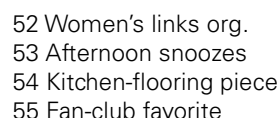
- 1 Hot-springs resorts
- 5 Computer clickers
- 9 Shabby-looking
- 14 Fill-in worker
- 15 In the center of
- 16 Identifier for the 21 Down
- 17 Region
- 18 Was generous
- 19 Agenda listings
- 20 On a treadmill, for example
- 23 Fishing-line holder
- 24 __ down (disappoint)
- 25 Swear (to)
- 29 Portion of butter
- 30 Mornings: Abbr.
- 33 Knights' titles
- 34 Insurance broker
- 36 Physician, informally
- 37 Staying current
- 41 Historical period
- 42 Is introduced to
- 43 Unlock
- 44 "Spring forward" period: Abbr.
- 45 Crib or cot

46 Bulls on a ranch
48 Unopened blossom
49 Seniors' org.
51 Stalling
58 Coke competitor
59 Opera solo
60 Creative notion
61 Start up
62 Fringe benefit
63 Sports defeat
64 Informal language
65 Observes
66 "If all __ fails . . ."

DOWN

1 Top-billed performer
2 Where Lima is capital
3 Prayer ending
4 Reach across
5 Refrigerator stick-on
6 Mirror reflection
7 Courteous
8 Biblical garden
9 Short dagger
10 Continuously bother
11 Business boss, for short
12 Ten-cent coin

13 Football field distances: Abbr.
21 Treasury Dept. branch
22 Shrub or bush
25 Inquired
26 Wedding-cake levels
27 Pet's reward
28 Sixth-sense letters
29 Energizes, with "up"
30 Cope with change
31 Roadside stopover
32 Part of a play
34 Grew up
35 Belly
38 "Dinner's on me"
39 "___ say more?"
40 Small speck
46 Frogs' sounds
47 Showery spring month: Abbr.
48 Washbowl
49 Think alike
50 In flames
51 Banana covering



56 Untidiness
57 Make less difficult
58 Sesame Street
broadcaster

Guinea-pig students receive free summer housing

Professor tries out automatically graded fill-in-the-blank proofs in online assignments

Summer, from Page 1

exploring a summer session to give students increased flexibility in completing degree requirements and broadening interests, and by experimenting with digital learning tools.

“It’s a chance to experiment with different ways of teaching, particularly more project-based, hands-on, more intensive ways of teaching,” Willcox said. “It’s also an opportunity to look at ways to infuse online learning and blended learning models into classes.”

Proposals were solicited from professors early in 2014. Out of seven proposals received, five were accepted and offered as summer courses. Director of Digital Learning Sanjay E. Sarma and Claudia Urrea PhD ’07 managed the program once the call for proposals had been sent.

When the program was announced to students on March 20, the response was overwhelming. “In the first day we had 160 people reply saying they would like to take a class in the summer,” Urrea said. In total, summer@future received initial responses from 347 students, and after a selection process in which students each wrote a paragraph detailing their reasons for wanting to take the course, 165 students were accepted.

An optional survey was sent out to students during the application process asking about their motivations for signing up for courses. According to the final report released by the Task Force, 74 percent of students selected “subsidized summer housing,” 72 percent selected “exploring a new field,” 70 percent indicated that they were “already planning to be in Cambridge over the summer and wouldn’t mind taking a summer class,” and 60 percent indicated that they wanted the “opportunity to

earn credits at no financial cost.” Less common reasons included “advancing towards degree” and “a friend also plans to take the class.”

The Tech sat down with professors and students in each of the five classes to find out how they went.

8.371J Quantum Information Science II

8.371, a graduate course in quantum information science, experimented with online problem sets.

“I had observed in this class which I’ve taught since 2001 that graduate students kept on dropping out of the discussions as the class went on because they would fall further and further behind by having feedback so late in the process,” Professor Isaac Chuang ’90 said. “They would not realize they’d misunderstood something in the problems sets, and it would catch them in the next lecture, and they’d just turn quiet on you.”

In the summer iteration of the course, limited-submission problem sets, lecture videos, and open-ended research questions intended to stimulate student curiosity and class discussion were all posted online. There were, however, trade-offs when working in the online system.

“It took away some things, but it gave some other kinds of things,” Chuang said. “I couldn’t ask students to prove a theorem because the computer can’t check proofs — at least not very well, at least not the kind of hard ones that we have ... But what is interesting is that you can introduce new and different problems which are above and beyond what I could write in a paper problem set.”

These “new and different problems” allowed students to construct quantum circuits using a feature of

the MITx platform, and even interact with the system in a symbolic mathematical language.

He also created online proof questions by using a feature of the MITx platform which allows users to drag and drop labels onto images.

“Instead of saying ‘prove this,’ what I did is say ‘fill in these equations and these steps so that the proof is correct,’” said Chuang.

“It makes me a little sad to not be able to give open questions,” Chuang said. “On the other hand, because the problem sets were structured, it gave me more time to be unstructured in class ... I let the problem sets take care of more of the technical aspects of teaching, freeing me up as a faculty member to spend more time talking with students about what is actually at the edge of knowledge, and I like that a lot.”

One element of the course which has remained unchanged from the semester to the summer version is the final project, which counts for a large portion of the grade and represents students’ original work in the field.

Student responses to online problem sets were varied. Some lamented the fact that the online grading system could not give partial credit for questions, since it was only a student’s final answer which was input to the system.

“It’s nice with problems where you kind of already know the steps and you just do it and get to the answers,” said Kevin B. Burdge ’15, “[but] on the harder problems it can be a real struggle to just have an input and then have an all-the-points-or-nothing sort of system.”

Some students felt that the lack of partial credit came to the detriment of the problems themselves.

“Every problem had to be truly handholding,” said Dan S. Borgnia ’15, “because the way the submissions worked, they couldn’t give you partial credit.”

“It’s nice to have your whole question graded instantly,” Borgnia said, “but it’s not as constructive to the learning for you to get, at every single step of the question, feedback saying ‘you got that right, you got that wrong.’” More constructive, he said, is when “you play with it for a while, you get it wrong at the end ... and you start understanding ‘this part’s right, and that part’s right,’ and that’s actually where you learn ... I feel like that’s a really crucial part to learning we missed out on.”

Graduate student Anand V. Natarajan described the online problems sets as “a good approximation.”

“Obviously there are some kinds of questions that you can’t do very well on online psets, like proof questions,” he said. “I think he still managed to get some of those approximated — there were some questions where you’d have to fill in a lot of numerical things and you’d end up walking through the proof by doing that.”

Jordan Ugalde ’16 felt that the online problems, which often required numerical answers, didn’t allow students to develop “as strong an intuition for the material.”

“In my opinion, this is the type of subject in which you would need to derive proofs, do rigorous arguments, do problems where you can get partial credit ... and that type of problem is not facilitated by edX, at least not as it is currently formatted,” he said. “Our professor has posted lectures on edX and I found those helpful ... but online psets I do not think are appropriate for the subject.”

2.S03 Special Subject: Dynamics I

Since 2.03x had previously been available as an online course, Professor Sanjoy Mahajan wanted to use 2.S03 as an opportunity to explore in-class teaching styles and uses of online material.

“Given that all that material was already there, what could we do with it to improve education? What can we do in the classroom that’s different?” he asked.

2.S03 made use of a number of online resources — online problem sets, lecture videos, and office hour videos from when the course was offered residentially. The course’s midterms were also taken online, though the final exam was in-class. Some questions were written such that the online problem set checker gave hints if the answer submitted was incorrect.

In designing and teaching the course, Mahajan said his focus was on ways to improve the quality of education both online and in-class.

“All the stuff that’s best learned from some kind of reference material” students can learn on their own from digital learning tools,” he said. “Instead of writing equations down — I may copy them correctly onto the board, you may copy them incorrectly down into your notes — all of that is now sorted out. Instead, we’ll actually use the equations, struggle with them ... increase the contact quality and not lose any of the contact time.”

With more of the technical information of the course moved online, Mahajan has tried to use class time to develop students’ intuition. But the next step, he said, is to “put more of the intuitive conceptual questions

Classes, Page 11

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Solution to Hot

from page 9

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

Solution to Cold

from page 9

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

Solution to Hard

from page 9

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

Solution to Soft

from page 9

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

Solution to Fast

from page 9

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

Solution to Slow

from page 9

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



The Peculiar Mindset of a GISHWHEES
Collins M. Perez S

Abstract: Very little is known about the effects on the human body of yearly participation in "GISHWHEES". This paper presents a detailed overview of the physiological and psychological changes humans undergo throughout the process of becoming a "GISHWHEES".

Classes from Page 10

online.”

Students seemed to react positively to the online elements of the course, noting differences in the lecture format.

“I really like the hybrid learning,” said Kai Aichholz ’17. “It lets you get deeper into the technical learning and equations, and then the lectures are more conceptual.”

Said Christopher M. Knapp ’16, “the idea is good. Watching lectures and doing psets online allows one to ask more nuanced questions during physical lecture, and the redundancy in material also gives the professor the opportunity to go over stickier points and off-topic ideas as he or she sees fit. I think the execution — especially the online portion — still has room for improvement, but it was the first installment, so that is to be expected. Overall, I’d say it was a success.”

7.S390 Creating Digital Learning Materials for Biology

In 7.S390, a course offered for the first time this summer, students created their own digital learning tools, each addressing a misconception in the field of biology.

“As MIT students you’ll likely have to communicate science to the world in some way in your career in the future, so we want to help train undergrads and even grad students and postdocs if they are interested in the future to communicate science well,” said Mary Ellen Wiltrout PhD ’09, an instructor of the course along with Nathaniel S. Schafheimer PhD ’13 and Sera Thornton PhD ’14.

Students worked on a timeline to produce their final projects, first identifying a misconception and specifying learning objectives, then planning and storyboarding their projects.

“Some people are doing assessments, some are doing video, and one person’s doing a simulation ... it’s fun to see what they’re creating,” said Wiltrout.

Projects addressed misconceptions about evolution and natural

selection, and the widespread myth that humans use only 10% of their brains, among other topics.

Students taking the course come from a mix of departments, including EECS, Biology, and Biological Engineering. Many created educational videos, but several designed learning sequences on the MITx platform. Students took advantage of features of the platforms to ask different kinds of questions, including multiple choice questions embedded throughout longer readings, problems with boxes for numerical answers, and images and graphs to be labeled by users.

MITx currently allows three methods of assessing open-ended questions: self-assessment, where a user submits a response and receives a rubric to check their answer against; peer-assessment, where three to four other students in the course will grade the submission anonymously; and AI, where the computer will assess a student’s submission. Some 7.S390 students used the self-assessment feature to ask open-ended questions, providing users with a rubric of their own design.

In terms of 7.S390’s learning objectives, the main idea was that “at the end of the course, [students] would be able to design content based on misconceptions, design teaching materials in ways that are following the best practices, and then extend that to applying the best practices to online material and the online medium,” said Wiltrout.

7.S391 Quantitative Biology Workshop

7.S391, led by the same teaching team as 7.S390, evolved out of a workshop-based course typically offered in January.

“It was never an MIT course officially,” said Wiltrout. “The biology department ran an outreach program for four or five years, and that program invited graduate students or postdocs or faculty to come to meet the students who were visiting — the students were from universities around the U.S. ... The faculty members would give a talk based on

quantitative biology and something in the field, a bigger picture kind of talk. Then the graduate students and postdocs would come in and do an activity with the students for that day, and a lot of time the projects involved MATLAB or R or Python or PyMOL.”

“What changed last year is that we tried to put the workshops on the platform, so that the directions would be there, and every step, there were checks for students,” Wiltrout said. Once the content was online, Wiltrout used the summer@future program to offer this course to MIT students. “It seems like students do want that mix of biology and quantitative tools,” she said.

The course still involves graduate students leading workshops and talking to students, helping them “understand how what they’re doing in class is directly related to the research side,” Wiltrout said.

“Pretty much all of our class was online,” said Linda Wang ’16, “we’d have lecture videos that we’d watch before coming to class, and when we came to class, someone would give a small lecture, but ... we do the exercises online and all of our homework is online.”

Since the course is in computational biology, Wang felt that the online medium was useful. “I liked it,” she said. “With coding it’s hard to do pen and paper stuff.”

3.S01 Special Subject: Materials Selection and Design of Nanostructured Catalysts for Sustainable Energy

3.S01 was one of two courses designed from scratch for the summer@future program, the other being 7.S390.

“We took the opportunity of this program being launched to try and do a project-based class that hadn’t been taught before,” said Assistant Professor Elsa A. Olivetti PhD ’07, who taught the course with Assistant Professors Alexie M. Kolpak and Yuriy Roman.

The class focuses on the design of catalyst materials, “in particular for hydrogen generation that would then be used downstream in a fuel cell,”

said Olivetti. Materials are evaluated from a technical perspective, but also from an environmental perspective and an economic perspective.

The online content was developed specifically for this summer, with the teaching team creating new lecture recordings. The course used screen captured lectures to introduce each new topic and interspersed them with comprehension questions. A portion of the course depended on using software tools to design materials.

“The main paradigm we used was trying to see if we could focus the in-class time on using the [software] tools and running calculations,” said Olivetti.

When designing the online content and determining the distribution between online and offline material, one of the professor’s goals was “taking advantage of the fact that you have this different forum for delivering the content instead of taking the content the way you’d normally deliver it in lecture and then delivering it the exact same way,” Olivetti said.

Moving forward

Ultimately, summer@future was an experiment in several directions that still has some kinks to be worked out.

Burdge noted that, in this first iteration, some administrative details such as add/drop dates and potential for using junior/senior P/D/F were not well-communicated.

Said Urrea, “One of the lessons is, if we want to open a summer semester ... registration has to open much earlier, because when we announced [which applications were accepted] in April, students had already decided whether they were going to take UROPs.” Students needed to hear back quickly about whether they’d been accepted so they could make housing arrangements, and, if necessary, make arrangements to miss UROP time for classes which were all offered during the workday.

Many of the students *The Tech* spoke with were involved in research or UROPs over the summer and most found it manageable to balance both

a class and a UROP.

Students also expressed a desire to see HASS classes offered in any future summer program.

“I think it would be fantastic if MIT offered HASS classes over the summer,” said Burdge, partly because summer HASS classes might allow students to “delve into a HASS class” and also work on a UROP. “If you offer technicals, fine, but just be aware that a full-time UROP with a technical is much less manageable than a full-time UROP with a HASS class,” he said.

“It’s going to be different for every student,” said Willcox, referring to what students will want in any program, “and that’s why flexibility is so key — the last thing we have in mind is anything that becomes mandated. It’s really about putting options on the table for students.”

Was the experiment a success?

Ultimately, said Willcox, “there are many ways success can be measured — if it’s progress toward a degree requirement that makes room for something else in the semester, for a UROP experience, or for an extra class; or if it’s an extra class that a student takes that they wouldn’t otherwise get to take where they acquire a skill outside their major — we think these are all really positive things for students. And on the faculty or educational side: learning, trying new things, even offering a class with a different style of pedagogy which can reach different students. For example, we know that some students love hands-on learning, while some prefer the more traditional lectures. If we can get that kind of variety infused into the curriculum, it makes for this rich educational environment.”

Summer@future ... in the future?

“We have to look carefully at how things go this summer, but the indications are that there are a lot of positives there, and if you look solely at the interest from the students, you can see there’s a lot of demand,” said Willcox. “We think this is something that could continue.”

Student Center ATM closes

The Citibank ATM found in W20 has been closed as of Friday, July 25. A sign has been placed at the site instructing customers to visit a “full service” branch at 565 Massachusetts Ave. or 200 Technology Square.

According to Citibank’s website, transactions are also “free for Citibank customers when they use ... an ATM found at MoneyPass,” an ATM-sharing network. As the MIT Federal Credit Union is a member of the network, Citibank customers can make transactions at one of MIT FCU’s ATMs without being charged a fee.

MIT FCU ATM locations closest to main campus include Building W20, Building 10, Building E17, and Building 32.

—William Navarre



ALEXANDER C. BOST—THE TECH

Padma Lakshmi, host of the television show *Top Chef*, has a discussion with Professor Linda Griffith and Professor Anantha P. Chandrakasan during a visit to the CGR on Wednesday, June 18. Lakshmi, who suffers from Endometriosis and co-founded the Endometriosis Foundation of America, has been a supporter of the CGR since its inception in 2009.

Yield rate highest ever
Institute’s yield rate beats Princeton’s

Class of 2018, from Page 1

overall yield is the highest in MIT’s history, continuing a recent trend of increasing yield numbers. (Last year’s yield rate came out to 72.1 percent after the final enrollment dropped to 1,116 students after *The Tech* reported the Class of 2017 yield rate.)

The Class of 2018 is slightly smaller than the Classes of 2015, 2016, and 2017, which were admitted between the opening of Maseeh Hall and the closing of Bexley Hall. These three classes each numbered slightly over 1,100 students.

As for the students who were accepted but ultimately decided to go elsewhere, Schmill said that “Two of the more common choices of schools are Stanford and Harvard.”

Many of MIT’s peer institutions also posted high yields. Harvard,

Stanford, Princeton, and Yale reported yields of 82 percent, 79 percent, 69 percent, and 72 percent respectively.

The Class of 2018 is 48 percent female and 52 percent male; 25 percent of the class is a member of an underrepresented minority (African American, Hispanic, or Native American); 17 percent are first-generation college students; and 9 percent are international students from 54 countries, according to Schmill.

Furthermore, 11 percent of the class self-identifies as African American, 30 percent as Asian American, 14 percent as Hispanic or Latino, 2 percent as Native American, 51 percent as White, and 9 percent as International; 1 percent did not respond. (The figures add up to more than 100 because respondents could select more than one option.)

To increase yield,
MIT ups student aid
New policies affect middle class

Finacial aid, from Page 1

to come to MIT deciding to go to somebody else because our financial aid package is so different that it compels them to do that,” Schmidt said.

But after speaking to students in that income bracket who were admitted to both MIT and one of its “peers,” campus officials found a “measurable difference in the financial aid,” Schmidt said. “That difference is a factor in their decision.”

In an effort to close the gap, MIT no longer considers home equity on the primary residence when calculating how much financial aid a family needs, provided it earns less than \$150,000 a year.

The threshold prior to the 2014-2015 academic year was \$100,000, according to Schmidt and Student Financial Services, which is headed by Elizabeth M. Hicks.

The change affects 14 percent of MIT undergraduates and will cost the Institute an estimated \$1.5 million, SFS said in a written response to questions.

MIT’s need-based undergraduate financial aid budget for the academic year is \$95 million. This figure is down slightly from last year. SFS said that this was in part because an improving economy has made families better able to pay, and that families whose situations did not change are actually receiving more aid. (Tuition has also increased.)

Many colleges do not factor in home equity on the primary resi-

dence when calculating how much a family can pay, regardless of the family’s income. Neither does the government’s Free Application for Federal Student Aid. Other colleges, like MIT, do consider home equity, but put some restriction on or cap how it’s used in the formula.

The rationale? “I might be sitting on some gargantuan home that’s already paid for,” Schmidt said. “So in theory because I have this huge asset, I could go out and get a home equity loan and use that home equity loan to help pay for part of my child’s education.”

For the poorest, both MIT and its peers offer full rides. And for the richest, differences between financial aid packages offered by different schools might not matter as much, Schmidt suggested.

But MIT found that its formula had been a “pain point” for households in the \$100,000–\$150,000 range, according to Schmidt, and decided to make the change this year on the recommendation of the Committee on Undergraduate Admissions and Financial Aid.

MIT nudges its tuition up every year, but its commitment to financial aid has increased over time as well. Annual undergraduate tuition and fees net of scholarships (from MIT and others) has fluctuated between \$13,700 and \$20,500 (in 2012 dollars) since the mid-1980s, according to an Institute committee report. The figure was \$17,984 in 2013.

“I think MIT can and should be proud of what it’s done to try and make an MIT education affordable,” Schmidt said.

Solution to Crossword

from page 8

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

