

EdX to offer proctored exams worldwide

Yesterday, edX announced a partnership with Pearson VUE that would allow students the option of taking a proctored final exam for their online class. Under the agreement, those enrolled in an edX course will have the option of taking the course final exam at one of over 450 Pearson VUE test centers in more than 110 countries, for a nominal fee. The proctored test will be the same rigorous test that those who take it fully online experience.

"Our online learners who want the flexibility to provide potential employers with an independently validated certificate may now choose to take the course exam at a proctored test site" said Anant Agarwal, president of edX, in a press release.

Pearson VUE provides academic, government, and professional testing programs around the world, and also provides proctored tests for online education provider Udacity.

—Stan Gill



ELIJAH MENA—THE TECH

After a two-year rush suspension, PBE is rushing for the first time this year since 2010. Two other fraternities, Alpha Sig and Beta, have also started recruitment this year.

Three fraternities join rush

PBE rejoins rush; Beta, Alpha Sig find founders

By Bruno B.F. Faviero
STAFF REPORTER

Fraternity rush was busier than ever this year, with three additional fraternities joining the recruitment craze — Phi Beta Epsilon (PBE), which was on rush suspension for two years; Alpha Sigma Phi (Alpha

Sig), whose founding fathers are expanding their group; and Beta Theta Pi (Beta), which is recruiting a group of founding fathers to start anew.

Phi Beta Epsilon

PBE is rushing for the first time since 2010, after evidence of hazing submitted to the IFC

resulted in a four-year ban on rushing. After reaching an agreement with MIT, the suspension was reduced to two years. During that time, the fraternity has been in a period of "self improvement," according to PBE President Timothy M. Galvin '13,

Frat rush, Page 6

MIT unresponsive on Kendall development

Faculty Task Force formed, but report not released until later this fall

By John A. Hawkinson
STAFF REPORTER

With six hours of public meetings on Kendall and Central Squares this week across two committees, the city is trying to decide between competing plans for Kendall Square, but MIT has still not weighed in definitively on its intentions.

The provost has launched a faculty committee to advise him in determining MIT's position, but it only formed last month.

Additionally, the Cambridge Historical Commission has set its sights on designating

three MIT buildings on Main Street as landmarks, further limiting the options.

There are more questions than there are answers, and there is no semblance of a clear timeline for resolution.

Faculty task force formed

On Thursday, Aug. 9, 2012, Provost Chris A. Kaiser announced to the faculty that he had appointed a "Task Force on Community Engagement in 2030 Planning" chaired by former chair of the faculty Thomas A. Kochan (Management).

The committee is charged with advising the

provost about "decisions related specifically to the development of MIT property in Kendall Square" as well as figuring out how to engage the MIT community in the MIT 2030 decision process. "MIT 2030" refers to MIT's future real estate development planning effort.

The committee's appointment is a reaction to criticism among the faculty of MIT's development process, as articulated in articles in the Faculty Newsletter and a statement by nine faculty read at the May faculty meeting by Professor Jonathan A. King (Biology). Faculty expressed concern that land historically reserved for academic use was being allotted to commercial development, and that it might not be possible to ever reclaim that property in the future as academic needs increased.

Kochan said on Wednesday that the committee was still working on finding its way, and expected to have a recommendation some time this fall.

E38, E39, E48 as landmarks?

A complicating factor in future Kendall development is the potential designation of three

Kendall, Page 7



ARTHUR PETRON—THE TECH

Concerns about the Koch Institute's frontage on Main Street, above, have been repeatedly brought up by Cambridge Planning Board. See sidebar article, p. 7. Some board members felt there is too much dead space in Main Street's retail, isolating the new 610 Main (Pfizer) to the west from Kendall Square to the east.

Alcator C-Mod may lose funds

Shutdown could lead to massive lay offs for Tokamak team

By Leon Lin

President Obama's budget request to Congress for fiscal year (FY) 2013, announced in February, proposed to shut down MIT's federally-funded Alcator C-Mod, a tokamak (toroidal magnetic confinement device). To give itself six more months to agree on a formal appropriations bill, Congress will pass a continuing resolution this month. The resolution will likely sustain funding for Alcator C-Mod at current levels until the final budget for FY 2013 is out. If the final budget passed by Congress is in line with the president's request, technical, engineering, and administrative staff would be laid off, and some 30 PhD students in Nuclear Science & Engineering (Course 22) would be forced to graduate by October 2013.

The Department of Energy (DOE) has ordered Alcator C-Mod not to operate in the interim. However, researchers at the tokamak will not begin dismantling the device just yet, in case Congress decides to resume funding for research at Alcator C-Mod, which aims to develop a source of clean energy from nuclear fusion power.

"Our best information at this point indicates that C-Mod will be put into a 'ready standby,'" says Zach S. Hartwig, a Course 22 PhD student, who believes and hopes that there will be no layoffs. "We are essentially buckling down until the next continuing resolution, due in February or March of 2013, or approved FY13 budget, under which we hope to receive funding to resume full experimental operations."

In June, 12 MIT PhD students, including Hartwig, and an undergraduate from the University of Texas at Austin visited Congress, meeting with almost 30 congressional offices. "Our goal was to educate congressional offices on the situation and ask for support for domestic fusion in the upcoming continuing resolution," says Hartwig.

The only three tokamaks in operation in the United States are Alcator C-Mod, DIII-D at General Atomics, and NSTX at the Princeton Plasma Physics Laboratory. The presidential FY 2013 budget would cut money out of all three to support ITER (International Thermonuclear Expansion Reactor), an international

Alcator C-Mod, Page 11

IN SHORT

Today is the last day to register! Late registrations are subject to a \$50 fine.

Final term seniors must submit their HASS concentration completion forms and second term juniors must submit their HASS

concentration proposals today. Late forms are subject to a \$50 fine.

Today is the last day of the APO book exchange! Go to W20-307 until 6 p.m. today to buy used and cheap textbooks!

The deadline to waive the

MIT Student Extended Insurance Plan or enroll your family is Sept. 15. To waive, go to <http://medweb.mit.edu> and file your electronic waiver.

PE classes start on Monday!

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

MIT PE NEEDS TO CHANGE

Students should be able to test out of PE classes. **OPINION, p. 4**

A LOVE LETTER TO MIT

A Wellesley alum reflects. **OPINION, p. 5**

NFL PREDICTIONS

Who will succeed this season? **SPORTS, p. 16**



REEFER MADNESS

Do you DARE see MTG's newest production? **ARTS, p. 9**

A SHORT INTRO TO ENGINEERING

Even MIT students could brush up. **ARTS, p. 10**

SECTIONS

World & Nation ... 2
Opinion ... 4
Arts ... 9
Fun Pages ... 13
Sports ... 16

Enthusiasm in Europe helps lift US stocks

By Nathaniel Popper
THE NEW YORK TIMES

Decisive moves by the head of the European Central Bank to preserve the eurozone pushed the benchmark U.S. stock index to a four-year high Thursday and fueled hopes that the rally may have staying power.

The markets have greeted several previous efforts to solve Europe's economic woes with euphoria, only to be quickly deflated. While there could be some setbacks along the way this time, too, investors suggested that the enthusiasm may not be fleeting. They showed a willingness to dive back into stocks and risky Spanish and Italian bonds and sold safer assets like Treasury bonds. The Standard & Poor's 500 index surged

nearly 2 percent, surpassing the peak reached earlier this year, hitting a level last seen in January 2008, before the financial crisis. The Nasdaq composite index rose to its highest point since 2000.

Stocks in the U.S. were also helped by promising data about the U.S. employment picture, ahead of Friday's highly anticipated jobs report.

A weak employment number could easily derail investor optimism. But on Thursday, investors were captivated by the ECB president Mario Draghi's announcement that he is ready to launch a bond-buying program that will provide what he said was a "fully effective backstop" for the struggling euro.

"The central bank is clearly prepared to tackle the problem head

on," said Bernard Baumohl, the chief global economist at The Economic Outlook Group. "I think people will grow more encouraged that we are finally seeing the light at the end of this tunnel."

The markets have been moving up since Draghi announced his intention to do "whatever it takes" to save the eurozone in late July. Since then, the eurozone's blue chip index, euro Stoxx 50, has risen nearly 10 percent, bringing it up over 20 percent for the summer. The index leapt 3.4 percent on Thursday.

The plan Draghi announced was not much different than what investors had been anticipating. But the full details he provided displayed the breadth of measures he is ready to take.

Assassination highlights rifts facing Syria rebels

By David D. Kirkpatrick
THE NEW YORK TIMES

BEIRUT — The assassination of a Syrian rebel fighter linked to al-Qaida called new attention Thursday to the ideological differences among the Islamists fighting the government of President Bashar Assad and threatened to set off new strife among the rebels.

The mystery surrounding the fighter's death has opened a new window among the rebels, loosely allied as the Free Syrian Army, at a time when uncertainty about the opposition's unity and character —

in particular, the potential inclination toward intolerant or sectarian Islamist politics — has deterred the West from more muscular support for the cause of Assad's ouster.

The fighter, Abu Mohamed al-Shami Abu al-Absi, led a brigade known as Jubhat al-Nusra, which calls itself an al-Qaida affiliate. His body was found Wednesday in an area known as Sarmada on the Turkish border, several rebel fighters said in interviews over the Internet. All said he had disappeared three days earlier and was evidently kidnapped and assassinated.

His killing aroused calls for revenge from his family as well as the

group of Islamist brigades operating in the area, known as the Islamic Shura Council, in which he also played a leading role.

Some quickly pointed the finger at a major fighting group based in Homs, Al Farouq Brigade, which is considered Islamist but is opposed to al-Absi's hard-line ideology. Brigades often collaborate on specific actions or fights, but each typically reports to its own leader.

"There has been tension between Al Farouq fighters and the rebels from the Shura Council," said the commander of another brigade in the area, speaking on the condition of anonymity for his safety.

Japan said to have tentative deal to buy disputed islands

KYOTO, Japan — The Japanese government has struck a tentative agreement to buy three uninhabited islands that are part of a chain at the center of a heated territorial dispute with China, a person close to the talks said Thursday.

A government negotiator got a verbal agreement from the islands' owners, a family living in suburban Tokyo, according to the person knowledgeable about the talks, who asked not to be identified because the negotiations were still in a sensitive stage. He said the particulars of the deal, including a price, had yet to be decided, and that the deal could still fall through.

A deal would allow the government to nationalize three of the five major islands in the East China Sea chain, known as the Senkaku in Japan and the Diaoyu in China. It would not directly affect the more crucial issue of sovereignty over the islands, which are already administered by Japan but claimed by China and also Taiwan.

While the dispute has been simmering for decades, emotions flared in April after Tokyo's outspoken rightist governor, Shintaro Ishihara, proposed that his city buy the islands. That started a series of landings last month on the islands by nationalists, first from China and then Japan; the Japanese landing contributed to anti-Japanese protests in China.

—Martin Fackler, *The New York Times*

Scores of migrants die after boat sinks off Turkish coast

ISTANBUL — At least 58 migrants drowned in the Aegean Sea just off the Turkish coast after the fishing boat that was carrying them sank early Thursday, local officials told a Turkish news agency.

Forty-six others who were on the boat, including the two-man crew, got to shore safely, and have been detained, the semiofficial Anatolian News Agency reported, adding that two of the passengers were hospitalized. Fifteen of the dead were apparently locked in a cabin on the sinking boat, and it was not clear why, the officials said.

The boat, about 39 feet long, was carrying more than 100 Syrians, Iraqis and Palestinians who were apparently trying to migrate to the European Union when it struck rocks and foundered near the Turkish township of Menderes in Izmir province, the agency said. The boat was only about 160 feet from shore at the time.

In remarks to Turkish reporters, Ardahan Totuk, the deputy governor of Izmir Province, declined to say where the boat was headed. Turkey's Aegean coastal region and the Greek islands a short distance offshore are a frequent route for illegal immigrants seeking refuge in Europe, often by paying smugglers to transport them clandestinely by sea. The Greek island of Samos is less than 20 miles from where the boat sank.

—Sebnem Arsu, *The New York Times*

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LETTERS TO THE EDITOR

A note from IS&T

In the "EC cell phone woes" article in the August 24 edition of *The Tech*, Stan Gill writes that "Residents on several halls, unhappy that the antennas were malfunctioning, disconnected power from the antennas themselves in order to restore service."

IS&T understands the importance of

having these services in working order for the students and the campus, but it is not acceptable for anyone to tamper with the infrastructure for any reason. MIT and IS&T partner with vendors in various infrastructure initiatives that benefit the community, and ask that community members be respectful of the equipment owned and installed by vendors.

Students should report any IT-related issue to the Help Desk (617.253.1101 or helpdesk@mit.edu), and IS&T will take the appropriate steps to resolve it. This is both for student safety and to ensure quicker restoration of service. If equipment is tampered with, it can cause other problems that may take a lot more time to fix.

Robyn Fizz, *IS&T News Coordinator*

GUEST COLUMN

A fairer PE policy

Testing out of PE allows students to be more autonomous

By Sam Shames

In prepared remarks to the MIT community last year, President Reif declared that one of his most cherished values includes "a commitment to meritocracy." Indeed meritocracy is one of the values which make MIT great. Recognizing, rewarding, and encouraging the talents of its students and general population help MIT attract the brightest people in the world and keep these people happy and productive during their time here.

All across the Institute, a number of programs exist that ensure MIT remains meritocratic. Advanced Standing Exams offer students of all ranges a chance to demonstrate mastery and receive credit for subjects they have mastered. MIT even allows undergraduate students to take graduate classes. If a student proves he/she has sufficient talent, MIT proudly opens a wide range of possibilities to further challenge the student intellectually.

Meritocratic policy however, is not limited to academics. Athletics is another area where MIT recognizes and rewards students for their achievements — matching an institute record with 88 All-Americans this past year — and talents of its student body. One way that MIT rewards its athletics for their talent is by offering them PE credit for their sport. For all the hard work they invest into their sports, it is easy to see why varsity athletics deserve PE credit.

Beyond varsity sports, MIT has a number of other students who excel at athletics and physical education. These athletes practice club sports, train for races and triathlons, or simply work-out in order to stay in shape. Many of them work as hard as varsity athletics and are equally as talented. However, the Department of Athletics, Physical Education, and Recreation (DAPER) currently offers no incentive or reward for these students' commitments. For PE, to really offer the kind of commitment to meritocracy that President Reif had described — the kind that MIT already has in areas like academics — DAPER

administrations must find a way to recognize the athletic talent of the non-varsity population.

Offering students the opportunity to earn PE credit in ways outside the PE classes provides more flexibility for students. Just as it does for students who master General Institute Requirements and take Advanced Standing Exams (ASEs) to test out of them, MIT should let students who are proficient in physical education and wellness have the option to test out as well. There are multiple ways in which this could be done.

A fair test should be an equal combination of physical fitness and mental health, combining physical benchmarks with a written section.

A first possible model for a more meritocratic PE requirement is one where students have the option to pass a single fitness and wellness test instead of taking four different PE classes. The specifics of the test would be set by DAPER and would be reflective of the core values of their program. It might include sections on wellness, nutrition, and stress management, as well as fitness, testing students on all the necessary components. Students who pass the test should demonstrate a proficient understanding of the core values of DAPER and how to utilize the values to build a healthy and balanced lifestyle. A fair test should be an equal combination of physical fitness and mental health, combining physical benchmarks with a written section. The test could even be offered only once per semester so it doesn't cause an excessive administrative burden. DAPER could even make the test harder to pass than the Biology ASE. What is important though is for some

system to exist which offers non-varsity athletes a chance to demonstrate their athletic ability and receive credit for their talents.

Passing a single fitness test is not the only possible model for a more meritocratic PE requirement. Another model offers students the chance to receive credit for specific PE classes and use the earned credit towards the eight points. For example, a student who is on the golf team, a club sport which stopped receiving PE credit after it was cut from the varsity lineup, could take the golf PE test and demonstrate sufficient knowledge about the sport. This student would then receive the two PE points he would have gotten for having taken the golf class. DAPER could make tests for a number of different PE classes, offering students who already know a great deal about one specific activity a way to receive credit for their specialty. Having a way to demonstrate and receive credit for learning different PE activities also promotes general fitness and learning new skills; offering students a chance to receive PE credit for learning a new sport provides an additional incentive for students interested in learning a new sport or activity. In this sense, this second model promotes education as much as meritocracy.

The two models outlined above are just some possibilities to make the PE requirement more flexible. Offering club sports PE credit, an idea about which I have previously written, would also be a great way to make the requirement more flexible. Beyond the implications about how a more flexible PE policy makes MIT more meritocratic, the idea is important in a broader sense: increasing the freedom and flexibility of the student body. MIT already treats its students like adults, offering freedom and autonomy beyond other the scope of other colleges. Extending this freedom to PE — offering students more freedom to demonstrate their ability to lead a healthy lifestyle — seems like a logical next step.

Sam Shames is junior in course 3.



OPINION POLICY

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GUEST COLUMN

A love letter to MIT

The Institute affects its immediate community too

I received my bachelor's from Wellesley College ('06), master's from Boston University ('08), master's from Harvard University ('08), and will be receiving my doctorate from Harvard; but it's you, MIT, that has made the biggest impact on my life — academically, socially, and personally. And for that, I love you. You have succeeded in making a positive impact not just on your immediate family members, but you have touched the lives of people who are only a mere part of your extended network.

You made yourself an open playground. Literally, your buildings are always open. You can easily find an open classroom for students and friends to gather to brainstorm startup ideas. This is quite different from Harvard where even if you are a student, you are often met with locked doors. You allowed me to conduct my senior thesis research through UROPs (the Undergraduate Research Opportunities Program) at what is now the Koch Institute for Integrative Cancer Research, and take courses at MIT without any hassle. By being a cross-registered student of even just one course, you gave me access to everything at MIT. I could ride on the SafeRide, print for free, and access all your buildings and libraries.

By you making it possible for me to be an efficient learner (not having to worry about gaining access to buildings and classrooms, paying for printing, getting around), you made me a more successful person academically. I was able to spend my time thinking about more meaningful things than logistical hurdles to overcome. At Boston University, only one computer lab

allowed free printing, and you would have to stand in line to pick up your printouts. At Harvard, I couldn't ride the shuttle because only select schools within Harvard could use them. Yes, I don't get it either. And that's why I love you. You get us. You get your students. You get people.

By you making it possible for me to be an efficient learner, you made me a more successful person academically.

Even now, being at Harvard, I am still benefiting from MIT. Your professors open their arms to all students regardless of whether they are getting a degree from MIT. My doctoral research at Harvard entailed interviewing scientists at the forefront of 21st century science, and your most notable professors were there for me. Robert Langer replies to emails on his Blackberry with an average response time of one minute. And yes, I mean Bob Langer, the PI of the largest biomedical engineering lab in the world and winner of the Noble Prize-equivalent for engineers (Charles Stark Draper Prize). Philip Sharp agreed to a sit-down conversation without any hesitation, a Noble Prize winner. I am always so amazed at how the people at MIT are so humble given their brilliance, a rare trait among the elite schools; I know this from being at a school where people wear double pop collars and

white pants with pearls. I even have MIT professors sitting on my Harvard dissertation committee. None of them have any obligation to me as I am not an official student at MIT, but they do it because they care about their contributions beyond the walls of the institution. This is the energy you foster at MIT. Thank you.

Besides enriching my academic and research life, you enriched my social life during college. By allowing Wellesley shuttles to drop off students at various MIT locations, you've enriched the love lives of many Wellesley and MIT students. From MIT, I've dated the right and wrong guys, and ended up with my current husband (MIT '06; the right guy). Trust me, there are a lot of happily married Wellesley-MIT husbands and wives, thanks to you. I got to experience the fraternity life, being a "rush" girl, throwing rush week events, and taking childish jabs at other fraternities. I even lived at an MIT fraternity over a summer, as they become co-ed over the summer, and lived unofficially as a resident girlfriend during other times. You gave me the best times of my life at MIT. I got to party with people that were uncannily witty, jovially sarcastic, and all the while had substance and big goals for their lives. It was through seeing your students working together from two o'clock a.m. to sunrise on problem sets that were almost always impossible to solve that I learned the bigger purpose in life. It's not all about getting A's, which is surprisingly a more random process than you might want to believe, but being able to unselfishly collaborate, share information, and come out of the experi-

ence with a memorable story to tell and a band of friends that will be secretly thinking about all the people you've dated while you're saying your wedding vows.

I love you MIT for making your constituents' lives easier and more efficient, which consequently enable us to lead a more meaningful life. I love you for hosting numerous contests to support your students in becoming innovators and entrepreneurs; this is what makes your students so attractive and why I fell in love with one of them. I love you for being an open university, literally and figuratively, providing free access to knowledge like OpenCourseWare and now edX. I love you for being out-of-the-box fun by turning a blind eye to the ingenious hacks by MIT students. Yes, I was there when a group of MIT students moved the 1.7 ton Fleming Cannon from Caltech across the country to MIT and adorned it with a MIT Brass Rat ring over the cannon as if a finger; it was only after MIT notified Caltech did they realize the cannon was missing and it took them weeks to figure out how to move it back. I love you, MIT, for valuing creativity over titles or degrees. For example, hiring Joi Ito to be the director of Media Lab, who has never graduated from college, but is a recognized cyber-elite. Now, that's bold!

These are but a sampling of the myriad of reasons for my deep-seated love for you. If you only remember one thing, just know that you have touched more lives than you recognize. I love you with all my heart.

Debbie Liu is a graduate student at Harvard University.



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PBE, Beta, Alpha Sig vie for frosh at Greek Griller

PBE's probation ends, Beta, Alpha Sig recruiting their founding fathers to colonize

Frat Rush, from Page 1

which included the development of a new "open source" member education program, the full text of which is available online as part of a focus on transparency. PBE is also bringing anti-hazing "to the forefront" as it expands its anti-hazing initiative from the Greek community into clubs and sports teams, according to Galvin.

PBE went into Rush this year with only a senior class of brothers, so they were open to rushing freshmen, sophomores, and juniors. Despite this, Galvin said this rush was not much different from past rushes, since "alumni were essentially covering what we would be doing at full capacity." The fraternity remains focused on quality, interested candidates rather than quotas, said Kyle J. Hannon '13, because new members will need to assume leadership positions almost immediately due to the situation.

So far, Rush has been going well for PBE. "We've happy with the numbers we've seen, the potential new members we've seen," said Galvin, "though we won't know for sure until bids close on Wednesday."

PBE also has plans to start a \$7 million house renovation in project that will involve building a multi-story tower on the current building and making the property modern

and environmentally friendly, said Galvin. The residents will move out of the house in the spring, and the renovations should be complete by Fall 2013.

Beta Theta Pi

Meanwhile, there was another new (but returning) face at the Greek Griller: Beta Theta Pi. The fraternity is currently searching for

The alumni, along with Beta international and MIT, made the decision to come back a year early.

founding fathers to recolonize its MIT chapter, which was placed on suspension by its national organization in 2011, when members were told to move out and the chapter ceased to operate.

This recolonization effort follows a time of self-assessment for the fraternity, as the international organization realized that many of its chapters were not "operating in a matter in line with [Beta's] principles," according to Colony Development Coordinator Ryan Gee. Beta closed 50 percent of its approximately 160 chapters nationwide

over the last several years, though it has expanded or recolonized 40 chapters since then.

While the original plan for the MIT chapter mentioned a Fall 2013 return, Gee said that there was strong interest among alumni in having an undergraduate chapter established and in place to celebrate Beta's MIT founding in 1913. The alumni, along with Beta international and MIT, made the decision to come back a year early.

Gee is currently staffed at MIT for a full year to recruit a group of anywhere between 15 and 40 founding fathers to recolonize the chapter. The main recruitment will begin on Sept. 15 so as not to compete with Rush, said Gee, adding that Beta wants to "operate in partnership with the existing groups and the existing community."

Like many frats claim, Beta says it will offer a different experience from other fraternities, but Gee says that there will be some concrete differences. According to Gee, Beta's two houses on Bay State Road will be "dry," meaning no alcohol consumption on the premises, and there will be a strong focus on leadership development.

During the main recruitment phase, Gee will have three additional staff members on campus helping to recruit students "seeking an entrepreneurial experience"

to become founding fathers, and Gee himself will remain on campus until next May, when a successor will take over for another year. Gee plans to advertise around campus, and also build relationships and networks with students, in addition to working with Alpha Sigma Phi, which is also still recruiting founding fathers. The fraternity will also receive help from the IFC. "We can help out through using our system, seeing who went to some events, who declined their bids, and point them to those directions," said IFC Vice President Louis DeScioli '14. The recruitment period will be one

There is a new fraternity that will attempt to colonize MIT, Triangle fraternity.

of "rolling bids," and founding fathers will be initiated by the end of the fall semester. "We have a couple of students that are showing strong signs of interest," said Gee, who so far has only had one event at the Beta house. New members will be able to move into the house in Fall 2013, when the leases of the current graduate student tenants expire.

Alpha Sigma Phi

Alpha Sigma Phi came to MIT in the spring, when it sent a recruiter from its national organization to recruit founding fathers for what will become MIT's chapter of Alpha Sig. It was successful in recruiting eight founding fathers, who are continuing to recruit to their group this fall. The group has hosted several events around campus during Rush, which were well attended, said President Cosmos Darwin '15.

"Recruitment is going very well for us," said Darwin. Alpha Sig plans on adding a handful of new members after Rush, which in terms of absolute numbers "will be less than most fraternities, but it will be a huge expansion for us," said Darwin.

Triangle

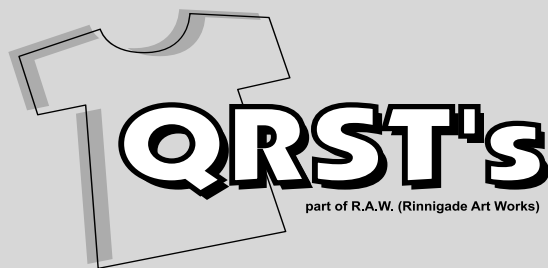
DeScioli also revealed during an interview that there is a new fraternity that will attempt to colonize MIT, Triangle fraternity. Triangle, which only recruits students studying engineering, architecture, math, and the sciences, is "ambitiously" planning to begin colonization next fall, but will most likely start in Fall 2014, said DeScioli. The fraternity will be able to colonize MIT following a change in its bylaws that will allow it to include graduate students when determining the size of schools that the organization can colonize, said DeScioli.

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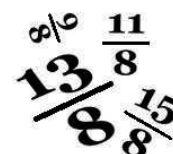


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Solution to Techdoku I

from page 13

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

Solution to Crossword

from page 14

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

Solution to Sudoku

from page 13

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

Kendall buildings historical landmarks?

Historical commission affects plans for the new Kendall square

Kendall, from Page 1

MIT buildings along Main Street as historical landmarks: E38, the MIT Press bookstore at 292 Main St. ("Suffolk Engraving Building"); E39, with Rebecca's Cafe at 264 Main St. ("J.L. Hammet Building"); and E48, the Kendall clock tower building ("Kendall Square Building") at 238 Main St., which houses the MIT Investment Management Company (MITIMCo) and some Sloan programs.

When MIT first proposed changes to Kendall in the spring of 2011, it envisioned an open crossroads reminiscent of Times Square in the area where E38 is now. In addition to demolishing E38 in entirety, it would have removed much of E39.

But Charles Sullivan, the executive director of the Cambridge Historical Commission, objected. The commission began evaluating the buildings and working with MITIMCo in July, 2011, and encouraging them to find a plan for MIT's Kendall properties that retains the three buildings.

Sullivan and his staff produced a report in July 2012 recommending the six-member commission designate those buildings as landmarks. The commission chose not to vote on the proposal to designate the buildings as landmarks at its July 17 meeting, but Sullivan strongly supports it.

At Tuesday night's planning board meeting, city planning staff seemed to assume that MIT's revised proposal would keep those buildings untouched. Steven C. Marsh, MITIMCo's managing director for real estate, said: "We have heard loud and clear, certainly from the Historical Commission. ... We're committed to seeing if we can make it work."

But such a move could be potentially disastrous for MIT's future flexibility.

"It is a goddamn disaster," said O. Robert Simha, MIT's retired planning director. Simha has repeatedly spoken out opposing MITIMCo's proposed development of property south of Main Street for other than academic use.

"You will never have the kind of quality open space that would be possible there," Simha said. "It could be a sun-filled space that would really complement and enhance the quality of life."

"Secondly, those buildings are dogs," he said. "We have spent millions of dollars over the years trying to make them work for academic purposes, and they just eat money.... It is just throwing good money after bad."

"These buildings have no merit," Simha

said.

But, as a member of the planning board said: "In this political world, if you go against Charlie Sullivan, you pay a price."

Dueling visions at planning board

At the meeting of the Cambridge Planning Board on Tuesday Sep. 4, MIT's plan for its portion of Kendall was center-stage, with 15 staff members from MIT in attendance (Facilities and MITIMCo staff; no faculty were in attendance). This was the third of several recent meetings focused on Kendall Square zoning issues.

Over the summer, the board had looked at two different approaches to Kendall zoning. The first was the proposal from the city's consultants, Goody Clancy & Associates, which was produced in conjunction with the Kendall Square Advisory Committee and was the result of scores of public meetings.

The board made no decisions between the two plans, but spent the time absorbing the options and becoming more familiar with them.

The second was a proposal paid for by the East Cambridge Planning Team (a neighborhood association), and executed by CBT Architects (the CBT plan) in March. The CBT plan had previously been presented to the planning board, and the board had asked the city's staff to try to cherry-pick the best features of both proposals and integrate them together.

Iram Farooq, a senior planner in the city's Community Development, began Tuesday's meeting with a 45-minute presentation of options for the MIT-owned areas of Kendall.

The CBT proposal recommended more residential space. It envisioned 446,000 square feet of residential space within the MIT area, as opposed to 200,000 square feet in the Goody Clancy proposal. The CBT proposal also has less commercial space than the Goody Clancy plan: 776,000 square feet versus 1 million.

Farooq's presentation also included illustrations of how the building forms might appear in each option. The figures were produced by Minjee Kim, a graduate student in

MIT's Department of Urban Studies and Planning who interned with the city this summer. Kim has also illustrated the first round of detailed zoning language presented to the board on Aug. 7.

As visualized in the presentation, CBT's proposal includes a residential high-rise on the current site of E39; discussion at the meeting seemed to assume that historical preservation would take that option off the table.

The board made no decisions between the two plans, but spent the time absorbing the options and becoming more familiar with them. They also recognized a need to wait for MIT to express its intention.

It's "our petition"

Planning board chairman Hugh Russell emphasized that while MIT had said "when we [MIT] file our petition," he hoped that when the petition gets filed, it would be "our petition," meaning belonging to both the Board and the MIT. A joint effort.

"I think it's best for the city if what gets filed has a built-in constituency of everyone who is in the room," Russell said.

After Farooq, MIT went on to present its current view of its intentions. MIT's presentation was fairly high-level; it was given by MITIMCo's Marsh and by MIT's hired architect, David Manfredi of Elkus-Manfredi Associates.

The most significant aspect of MIT's talk was to note that they intend the housing portion of their proposal to be adjacent to One Broadway, on the north side of Main Street. MIT proposes this to be consistent with the recent increase in residential and retail activity along the "Third Street corridor," adjacent to One Broadway.

Planning board vice chairman Thomas Anninger asked quite pointedly: "We can't keep talking at this level...When will you be ready? When can we schedule the next meeting to achieve that next round of, call it negotiation?"

There was a ten second pause as MIT struggled to figure out how to respond.

Marsh stood up and acknowledged that he really did not know and he was "hopeful that it is very soon," and mentioned giving the new MIT President, L. Rafael Reif, a chance to provide his input.

The planning board will meet again next week Tuesday, and while it will discuss Kendall, MIT issues will not be at the fore. MIT is expected to be the focus of the Oct. 2, 2012 meeting.

Differing views on Koch's Main Street

One of the side issues in the city's planning process is the Main Street streetscape at the new Koch Institute, Building 76.

All participants in the planning process agree — from MIT to the neighborhood to the board to the public — that ground-floor retail and other street-level activity are essential to the success of the square.

MIT's Koch Institute is an anomaly in this. Between Ames and Vassar streets, Koch occupies the full south side of the block. The north side of the block is occupied by the Whitehead Institute and the Broad Institute, which are similarly devoid of active ground-floor uses. City Councillor Ken Reeves has called the block "a dead zone."

These concerns are heightened as new development takes place to the west of Koch, at 610 Main Street. The new Pfizer building there will have ground-floor retail, but ability to connect to the rest of Kendall's retail may be limited by Koch, Whitehead, and the Broad.

MIT has been repeatedly and formally asked how it plans to address this issue, but the Institute has not responded.

The planning board has regularly expressed how Koch should not be viewed as a model for other development in the city.

At the Aug. 7 planning board meeting, Vice Chair Thomas Anninger asked MITIMCo's Steven C. Marsh directly: "What ideas do you have about animating a building that as you know has disappointed a lot of people along that stretch?"

Marsh said he had "heard that out there" but didn't think he had heard it formally. "We'll put that on the radar screen for consideration. I get the point," he said.

The planning board met again, with Kendall on the agenda, on Aug. 21, but MIT representatives could not make it.

But then the board met on Sept. 4, with 15 representatives from MIT present and MIT squarely on the agenda. And MIT didn't mention Koch.

At the end of the meeting, Anninger asked again: "I don't want to belabor the point tonight, but you know it's been raised before. ... It's an open space that does not meet the standard that you talked about. It's a street line that doesn't meet the standard that you talked about. And somehow we have to find a way to get there. And so we need to add that to the list of things to address."

Marsh did not respond.

Asked after the meeting, Marsh said: "I promised to take it back; I haven't had the opportunity to do that yet."

In defense of the space

The Koch Institute has a public gallery, open 8 a.m. — 6 p.m. weekdays, with artwork and educational some educational exhibits with an audio track accessible via smartphone.

The gallery is curated by Alex Fiorentino, the public outreach coordinator. In an interview with Fiorentino and Robert G. Urban, executive director of Koch, in July, both expressed pride in the gallery.

It is a "peaceful oasis," said Sarah E. Gallop, MIT's community government liaison. Gallop professes to be a fan of the block.

In the gallery, artwork rotates and features imagery from biological research around the Institute. Fiorentino said the gallery regularly does outreach to the public and hosts school group tours. Koch's cafe is also open to the public, Urban said.

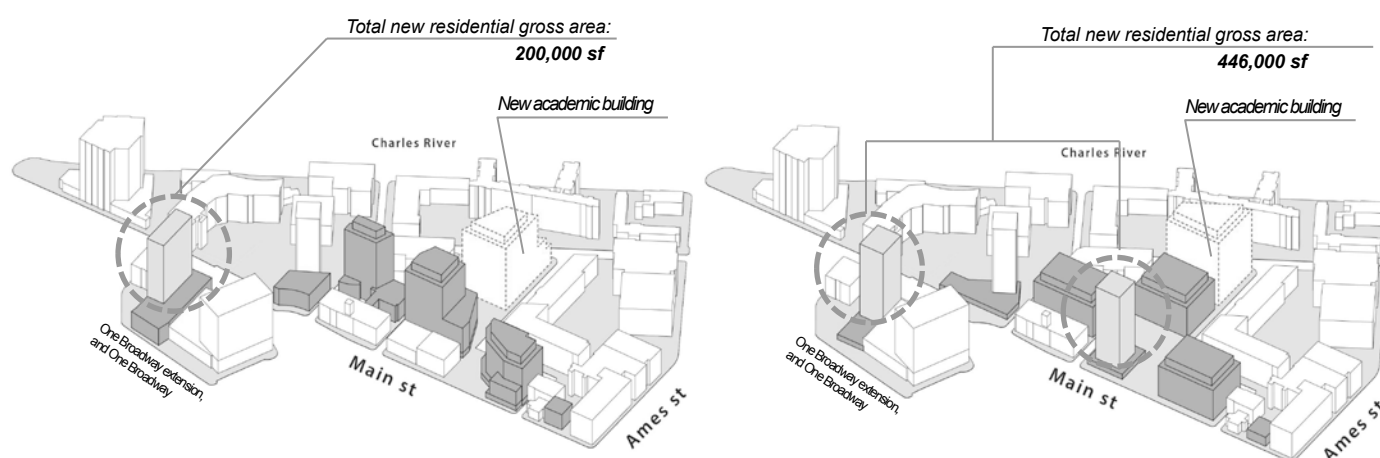
One criticism of the gallery has been the unwelcoming "Private property / No trespassing" signs on the entrances to the buildings. Urban said that new signage for the entrances is in development, and it will highlight the gallery and its public access.

— John A. Hawkinson

Comparison of "dueling visions" for MIT district of Kendall Square

K2 Advisory Committee Plan,
by Goody Clancy & Associates
(David Dixon, et al.)

East Cambridge Planning Team Plan
by CBT Architects
Childs Bertman Tseckares, Inc.
(Kishore Varanasi)



NEW development sf	K2 Advisory Committee Plan	CBT Plan
Residential	200,000 sf	446,000 sf (approx. 2.2 times the amount of Committee's Plan)
Commercial (incl. retail)	1,000,000 sf (approx. 1.3 times the amount of CBT's Plan)	776,000 sf
Academic	800,000 sf of development capacity reserved for academic use. The dotted building in both plans show an academic building of approximately 400,000 sf. Remainder anticipated as infill.	
Historical	Preserves the assemblage of historic buildings along Main St	

SOURCE: IRAM FAROOQ, CAMBRIDGE COMMUNITY DEVELOPMENT. ILLUSTRATIONS BY MINJEE KIM G.

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BOOK REVIEW

On the pillars of our craft

This into covers everything from the wheel to the design of sustainable systems

By Roberto Perez-Franco
STAFF WRITER

If you are reading *The Tech*, there is a good chance you have learned the basics of engineering at MIT. In which case, an invitation to read a book called *Engineering: A Very Short Introduction* might strike you as — mildly put — unnecessary. If you are the cocky type, you may even be tempted to declare, with a smile and a zinger (“Why don’t you go ask the College of Cardinals to attend Sunday school?”), that this book is not for you. But you would be wrong.

Any engineer who has spent a few years out of the classroom can benefit from reading this tiny volume.

Any engineer who has spent a few years out of the classroom (like yours truly) can

benefit from reading this tiny volume as a refresher course on some basic, yet key, concepts of engineering: How pulleys can be used for mechanical advantage; the different stages of the Carnot cycle; how a turbo jet engine shares the same working cycles as a four-stroke piston engine; how electricity and magnetism interact to create movement in an electric motor; how silicon is used to make transistors, and these to make logic gates, and these to make flip-flops, and these to make digital arithmetic — and computers — possible.

Even if all these fundamental ideas from key areas within major branches of engineering are still crisp in your memory, you may still benefit from the big picture that the book offers. Blockley acknowledges six divisions of engineering activity — civil, mechanical, electrical, chemical, computing, and medical — yet he structures his book along the five ages into which “the story of engineering naturally divides”: gravity, heat, electromagnetism, information, and systems. The classification of the material into these five ages works won-

derfully as a didactic mechanism.

It is only when the author himself deviates from his proposed structure that the book seems to lose steam. In particular, Chapter two, nominally on the age of gravity, is severely weakened by an unnecessarily long journey into the history of philosophy and science that consumes one-tenth of the whole book and leaves out precious gravity-related material, while pushing other details into the next chapter. With this exception, the rest of the content adheres to the structure, to great effect.

The price of the book is more than covered by chapter six alone, on the age of systems, which deals with a subject dear to the heart of those at MIT’s Engineering Systems Division: complex sociotechnical systems. This chapter on systems crowns the book and left me with a deeper understanding of why systems thinking is, or should be, the new way of doing engineering — not only because the fruits of our previous engineering efforts have grown to a level of complexity such that they have started to exhibit unexpected behaviors,

★★★★☆

Engineering: A Very Short Introduction

By David Blockley

Oxford University Press

September 2012

but because the stakes are now higher than ever. After discussing risk in systems like nuclear plants and the power grid, Blockley goes to the heart of the matter: The defining test is climate change, where such high stakes affect our very future. “Engineers have to deliver sustainable systems,” he advises, “making systems durable, repairable, adaptable, robust and resilient.” As one who works within this field, all I can say is “Amen, brother! Amen.”

MIT 2012-13 VISITING ARTISTS PROGRAM

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Artists and Community Planning

Presentation: September 24, 7:00 PM | Bartos Theater

VIK MUNIZ

Waste Land Screening: October 2, 6:30 PM | E14 Little Theater

Presentation: October 3, 6:30 PM | Bartos Theater

JOHN AKOMFRAH AND LINA GOPAUL

Handsworth Songs Screening: October 29, 7:00 PM | Bartos Theater

The Nine Muses Screening & Discussion: October 30, 7:00 PM | ACT Cube

DON BYRON

Gospel Concert: October 27, 7:30 PM | Kresge

MIT Wind Ensemble Concert: March 16, 8:00 PM | Kresge

TOMÁS SARACENO

MIT Center for Art, Science & Technology Visiting Artist

Moving Beyond Materiality

Panel Discussion: November 15, 6:30 PM | SA+P Long Lounge

GUILHERME MARCONDES

Animation Demo & Discussion: January 24, 5:00 PM | MIT Museum



Tomás Saraceno, *Cloud Cities*, 2011.
Installation view at Hamburger Bahnhof, Berlin, 2011.
Photography by Studio Saraceno.

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Alcator C-Mod may lose funds in favor of ITER

Largest experiment at MIT would be shut down if federal budget changes as proposed

Alcator C-Mod, from Page 1

project to build the biggest and best tokamak fusion reactor yet.

Of the three, Alcator C-Mod has received the smallest share of the DOE's fusion energy funding. Alcator C-Mod is also the only one that would be completely shut down under the presidential budget request.

The budget request allocates about \$150 million to ITER contributions (up nearly \$50 million from FY 2012) and about \$250 million to domestic programs, maintaining the total of about \$400 million that has gone to fusion energy sciences in the past few years. The Senate Energy and Water Subcommittee has proposed legislation with similar numbers.

The House Energy and Water Subcommittee, however, has proposed a bill that would supply about \$300 million to the domestic fusion energy program and about \$180 million to ITER. According to Hartwig, "\$300 million is a widely agreed upon 'minimum funding' level required to maintain a robust, successful domestic program."

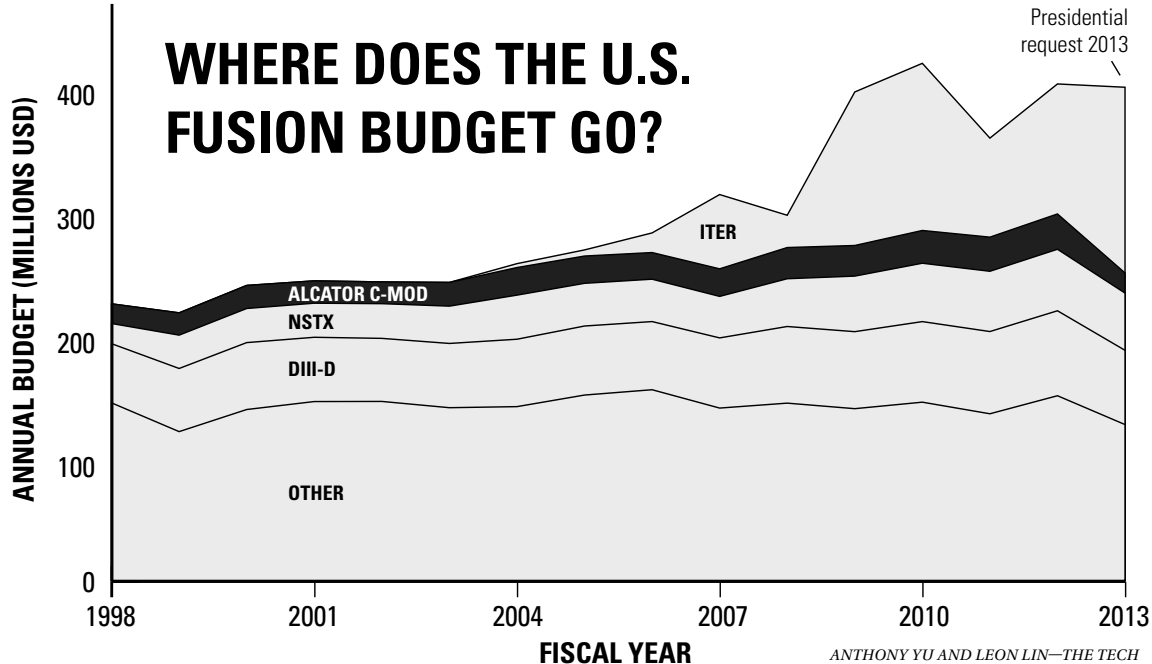
Does the U.S. need three tokamaks?

The heads of DIII-D, Alcator C-Mod, and NSTX told *Nature* for the journal's July article that all three sites contribute uniquely to science and preliminary research for ITER. They have also argued that a strong domestic fusion energy presence will be necessary to benefit from ITER results.

"We must be training the next generation of fusion scientists and engineers, which requires domestic facilities to train them on, as well as maintaining our scientific lead as one of the great fusion powerhouses of the world, which requires our unique domestic facilities to perform the research, if we hope to be 'building' fusion power plants in the future rather than 'buying' them from China or Europe. Sacrificing the domestic program for ITER makes no sense," says Hartwig.

The ITER budget has nearly quintupled since the U.S. became an ITER partner, said Hartwig, and at the time the DOE and "the U.S. fusion community" agreed that funds would not be siphoned from domestic programs to support ITER.

Alcator C-Mod is the single largest experiment at MIT, according to <http://fusionfuture.org>,



which was started by graduate students to campaign against funding cuts. According to Hartwig, it's the largest in terms of both of funding and number of people employed. Alcator C-Mod supports about 120 people directly, including scientists, professors,

students, and technical staff. The grant money also supports the equivalent of about 100 MIT staff and another 80 full-time jobs from subcontracting.

Supporters of the domestic fusion program foresee serious consequences if Congress decides to

wind down Alcator C-Mod in FY 2013. Hartwig worries that MIT's plasma physics group will disappear. Hartwig also echoes *fusionfuture.org's* warning that "without an increase in funding, the domestic fusion program will be effectively eliminated to pay for ITER."

Solution to Techdoku II
from page 15

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

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SMBC, from Page 15

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Far from 'junk,' DNA dark matter crucial to health

ENCODE project, successor of Human Genome Project, results like 'Google maps' of DNA

By Gina Kolata
THE NEW YORK TIMES

Among the many mysteries of human biology is why complex diseases like diabetes, high blood pressure and psychiatric disorders are so difficult to predict and, often, to treat. An equally perplexing puzzle is why one individual gets a disease like cancer or depression, while an identical twin remains perfectly healthy.

Now scientists have discovered a vital clue to unraveling these riddles. The human genome is packed with at least four million gene switches that reside in bits of DNA that once were dismissed as "junk" but that turn out to play critical roles in controlling how cells, organs and other tissues behave. The discovery, considered a major medical and scientific breakthrough, has enormous implications for human health because many complex diseases appear to be caused by tiny changes in hundreds of gene switches.

The findings are the fruit of an immense federal project, involving 440 scientists from 32 labs around the world. As they delved into the "junk" — parts of the DNA that are not actual genes containing instructions for proteins — they discovered it is not junk at all. At least 80 percent of it is active and needed.

The result is an annotated road map of much of this DNA, noting what it is doing and how. It includes the system of switches that, acting like dimmer switches for lights, control which genes are used in a cell and when they are used, and determine, for instance, whether a cell becomes a liver cell or a neuron.

The findings have immediate applications for understanding how alterations in the non-gene parts of

DNA contribute to human diseases, which may in turn lead to new drugs. They can also help explain how the environment can affect disease risk. In the case of identical twins, small changes in environmental exposure can slightly alter gene switches, with the result that one twin gets a disease and the other does not.

In the case of identical twins, small changes in environmental exposure can slightly alter gene switches, with the result that one twin gets a disease and the other does not.

"It's Google maps," said Eric Lander, president and founding director of the Broad Institute of Harvard and the Massachusetts Institute of Technology. Its predecessor, the Human Genome Project, which determined the entire sequence of human DNA, "was like getting a picture of earth from space," he said. "It doesn't tell you where the roads are, it doesn't tell you what traffic is like at what time of the day, it doesn't tell you where the good restaurants are, or the hospitals or the cities or the rivers."

The new result "is a stunning resource," said Lander, who was not involved in the research that produced it but was a leader in the Human Genome Project. "My head explodes at the amount of data."

The discoveries were published Wednesday in six papers in the

journal Nature and in 24 papers in Genome Research and Genome Biology. In addition, The Journal of Biological Chemistry is publishing six review articles and Science is publishing yet another article.

Human DNA is "a lot more active than we expected, and there are a lot more things happening than we expected," said Ewan Birney of the European Molecular Biology Laboratory-European Bioinformatics Institute, a lead researcher on the project.

In one of the Nature papers, researchers link the gene switches to a range of human diseases — multiple sclerosis, lupus, rheumatoid arthritis, Crohn's disease, celiac disease — and even to traits like height. In large studies over the past decade, scientists found that minor changes in human DNA sequences increase that risk that a person will get those diseases. But those changes were in the junk, now often referred to as the dark matter — they were not changes in genes — and it was not clear what their significance was. The new analysis reveals that a great many of those changes alter gene switches and are highly significant.

"Most of the changes that affect disease don't lie in the genes themselves; they lie in the switches," said Michael Snyder, a Stanford University researcher for the project, called ENCODE, for Encyclopedia of DNA Elements.

And that, said Dr. Bradley Bernstein, an ENCODE researcher at Massachusetts General Hospital, "is a really big deal." He added, "I don't think anyone predicted that would be the case."

The discoveries also can reveal which genetic changes are important in cancer, and why. As they began determining the DNA se-

quences of cancer cells, researchers realized that most of the thousands of DNA changes in cancer cells are not in genes; they are in the dark matter, the junk. The challenge is to figure out which of those dark matter changes were driving the cancer's growth.

"These papers are very significant," said Dr. Mark A. Rubin, a prostate cancer genomics researcher at Weill Cornell Medical College. Rubin, who was not part of the ENCODE project, added, "They will definitely have an impact on our medical research on cancer."

The project began in 2003, as researchers began to appreciate how little they really knew about human DNA.

In prostate cancer, for example, his group found mutations in important genes that are not readily attacked by drugs. But ENCODE, by showing which regions of the dark matter control those genes, gives another way to attack them: Target those controlling switches.

Rubin, who also used the Google maps analogy, explained: "Now you can follow the roads and see the traffic circulation. That's exactly the same way we will use these data in cancer research."

ENCODE provides a road map with traffic patterns for alternate ways to go after cancer genes, he said.

Bernstein said, "This is a resource, like the human genome, that will drive science forward."

The system is stunningly complex, with lots of redundancies. Just the idea of so many switches was almost incomprehensible, Bernstein said.

"People have trouble digesting the number," he added. "Why would you need to have a million switches to control 21,000 genes?"

There also is a sort of DNA wiring system that is almost inconceivably intricate.

"It is like opening a wiring closet and seeing a hairball of wires," said Mark Gerstein, an ENCODE researcher from Yale. "We tried to unravel this hairball and make it interpretable."

There is another sort of hairball

as well: the complex three-dimensional structure of DNA. Human DNA is such a long strand — about 10 feet of DNA stuffed into a microscopic nucleus of a cell — that it fits only because it is tightly wound and coiled around itself. When they looked at the three-dimensional structure — the hairball — ENCODE researchers discovered that small segments of dark-matter DNA are often quite close to genes they control. In the past, when they analyzed only the uncoiled length of DNA, those controlling regions appeared to be far from the genes they affect.

The project began in 2003, as researchers began to appreciate how little they really knew about human DNA. In recent years, some began to find switches in the 99 percent of human DNA that is not genes, but they still could not fully characterize or explain what a vast majority of it was doing. By the time the National Human Genome Research Institute, part of the National Institutes of Health, embarked on ENCODE, there had been major advances in DNA sequencing and computational biology that made it conceivable to try to understand the dark matter of human DNA.

Even so, the data analysis was daunting — the researchers generated 15 trillion bytes of raw data. Just organizing the researchers and coordinating the work has been an enormous undertaking. Gerstein, who was one of the project's leaders, has produced a diagram of the authors with their connections to one another. It looks nearly as complicated as the wiring diagram for the human DNA switches. Now that part of the work is done, and the hundreds of authors have written their papers.

"There is literally a flotilla of papers," Gerstein said.

But, he added, more work has yet to be done — there are still parts of the genome that have not been figured out.

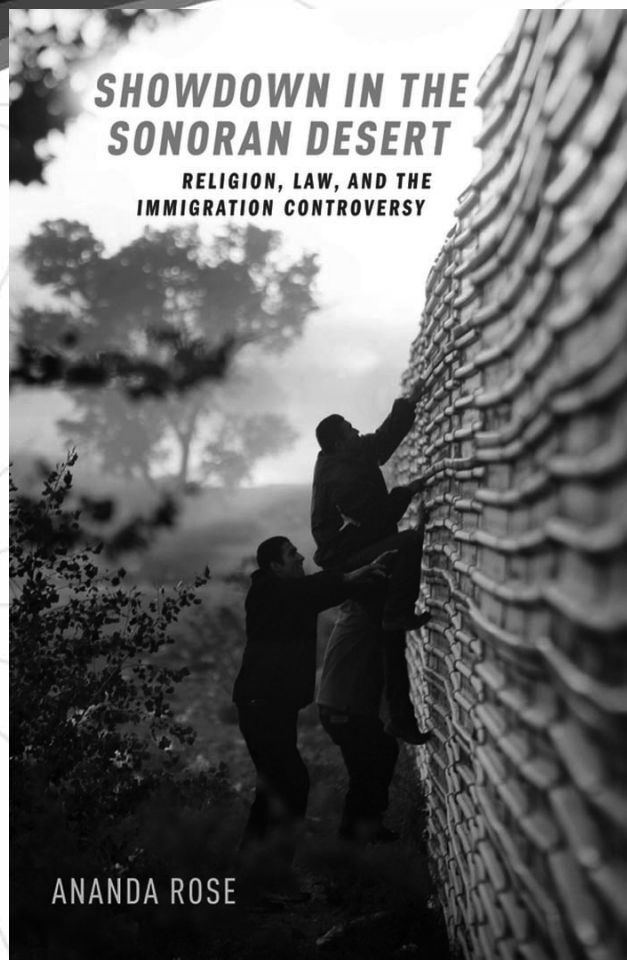
That, though, is for the next stage of ENCODE.



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Book talk with Ananda Rose

Ananda Rose holds a doctorate from Harvard University. She is a published poet, journalist, and theologian. Her book, *Showdown in the Sonoran Desert*, Oxford University Press, was published in June 2012.



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Lamech's birth to Seth's death: 3×56 years

Lamech's death to Kenan's death: 416 years
Lamech's birth to Mahalalel's death: 416 years
Enosh's death to the birth of Noah's sons: 416 years

Lamech's birth to Enosh's death: 1×84 years
Jared's death to Noah's death: 2×84 + 416 years
Enoch's birth to Lamech's birth: 3×84 years

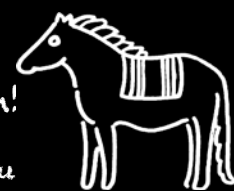
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Packers and 49ers expected to go far this season

By Austin Osborne
SPORTS STAFF

NFC East

1. Philadelphia Eagles (12-4)
2. New York Giants (9-7)
3. Dallas Cowboys (8-8)
4. Washington Redskins (8-8)

Each year the NFC East is one of the most competitive divisions in the NFL, and 2012 should be no exception. Philadelphia came into last season with high expectations after the acquisitions of Nnamdi Asomugha and Dominique Rodgers-Cromartie, but disappointed with their subpar 8-8 season. This year, they return with a new anchor for their defense in linebacker Demeco Ryans.

The Giants come off last year's Super Bowl win with basically the same roster, so they should have a competitive team. Victor Cruz will look to build on his break out season of 2011. However, New York has never been known for their regular season success. Their schedule may be too difficult to get them into the playoffs and duplicate their 2011 Super Bowl run.

To counter all the great wide receivers in the East, Dallas improved its pass defense by signing Brandon Flowers. With the emergence of Demarco Murray and Dez Bryant, the Cowboys should return with an explosive offense next season. However, they will still have difficulty reaching the playoffs again this year with Tony Romo at the helm.

Finally, Washington enters the season with the highly touted second overall pick, Robert Griffin III. The Redskins have been a revolving door for quarterbacks lately, with Donovan McNabb and Rex Grossman the most recent culprits of subpar QB play. Some are skeptical and believe RGIII will bring

the same incompetency as those in the past, but the Redskins should at least be able to improve on last year's abysmal season. With a talented defense lead by Brian Orakpo, they should be able to scrounge together at least eight wins.

NFC North

1. Green Bay Packers (13-3)
2. Chicago Bears (12-4)
3. Detroit Lions (10-6)
4. Minnesota Vikings (2-14)

The Green Bay Packers are a perennial favorite to win the NFC, and this year is no different. As long as Aaron Rodgers is at the helm, Green Bay will be able to compete. Even though they finished last season at 15-1, their early playoff exit to the Giants was very disappointing. Expect them to learn from their mistakes and advance deeper this year.

Last season, the Bears were cruising. They were on their way to the playoffs and looked like a formidable team in the NFC. Then, Jay Cutler broke his thumb and missed the rest of the season. Chicago still has the same great defense they had last year, and with the addition of Brandon Marshall, the Bears get the superstar wide receiver they've desperately needed to handle Jay Cutler's cannon of an arm. They should reach the playoffs with ease this season.

Although Detroit was one of the surprise teams last year, they shouldn't have caught the NFC off guard. It was Matt Stafford's first healthy season in the NFL and Calvin Johnson is the most physically gifted receiver in the league. They have also built an incredibly talented defensive line anchored by Ndamukong Suh and Nick Fairley. They will regress slightly this season, but as long as Stafford stays healthy, they still have a playoff caliber roster.

The Vikings are a mess. Star running back Adrian Peterson is coming off a devastating knee injury which resulted in a tear in his ACL and MCL. There is no telling if he will ever return to his form of years past. Christian Ponder showed signs of promise last season, but he doesn't appear ready to lead a playoff team. This will be a rebuilding year for Minnesota.

NFC West

1. San Francisco 49ers (13-3)
2. Seattle Seahawks (7-9)
3. St. Louis Rams (3-13)
4. Arizona Cardinals (3-13)

Alex Smith showed why he wasn't a bust last season, coming one drive short of leading San Francisco to a Super Bowl appearance. With one of the most tenacious defenses in the NFL, the 49ers will rack up plenty of sacks this season from Justin and Aldon Smith. Randy Moss is a positive acquisition for the 49ers, but it shouldn't greatly change their offensive production.

The Seahawks signed Matt Flynn in the offseason, presumably to be their quarterback of the future. However, after the pre-season coach Pete Carroll named third round pick Russell Wilson the starter. Wilson shows potential, but the team just doesn't have enough to reach the playoffs, even in a weak division.

The Rams continue trying to reclaim their past glory from the early 2000s behind QB Sam Bradford and RB Steven Jackson, but they just don't have enough talent on either side of the ball to compete on a consistent basis. They have a good young nucleus so they will be relevant again in the near future.

Arizona has a quarterback battle brewing between Kevin Kolb and John Skelton, but it shouldn't matter who wins out. The Cardi-

nals' rush defense is lacking and the NFC West is full of bruising running backs going up and down the field. Even with a great wide receiver like Larry Fitzgerald, Arizona needs someone to get him the ball, and they won't succeed until they do.

NFC South

1. New Orleans Saints (12-4)
2. Atlanta Falcons (10-6)
3. Carolina Panthers (10-6)
4. Tampa Bay Buccaneers (3-13)

After the bounty scandal this offseason, the Saints are in turmoil. Without Sean Payton, Gregg Williams, and Jonathan Vilma, they will have some defensive problems. Especially in a tough division, this may be an issue. A team led by Drew Brees can never be forgotten, however, especially since he is coming off a record-setting season. There shouldn't be too much offensive regression, due to the emergence of tight end Jimmy Graham.

Atlanta is a puzzling team. Led by Matt Ryan (a proven regular-season winner), Atlanta never seems to capitalize on their playoff opportunities. With a greater development of Julio Jones, however, the Falcons sport one of the best 1-2 wide receiver combos in the

NFL with Jones and Roddy White. They should be playoff-caliber again this year.

Every year, there are teams that surprise everyone and take the NFL by storm. Last season, Cincinnati and Detroit greatly improved on their previous records and even made the playoffs. This season, the Cam Newton-led Panthers look to be that unexpected contender. After improving last year due to Newton's outstanding rookie campaign and Steve Smith's resurgence, Carolina should ride their momentum into this season and contend for a playoff position. They might even make it to the Super Bowl.

Tampa Bay is a confusing team. Two years ago, rookie QB Josh Freeman led them to a very promising 10 win season and it looked as though the team was regaining their championship caliber play they showed in the early 2000s. Freeman suffered a major sophomore slump last season, however, and the Bucs fell to four wins, never establishing themselves as a factor in the tough NFC South. Their problem constantly comes back to the lack of offensive firepower, and until they can sign or draft some play makers, they will continue to be the bottom feeders of the division.

UPCOMING HOME EVENTS

Saturday, September 8

Sailing vs. Toni Deutsch Regatta	9:30 a.m., Charles River
Women's Tennis vs. Assumption College	1 p.m., duPont Tennis Courts
Football vs. Becker College	1 p.m., Roberts Field

Sunday, September 9

Sailing vs. Toni Deutsch Regatta	9:30 a.m., Charles River
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